2018 Oregon Nonpoint Source Pollution Program Annual Report

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

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Executive Summary

In 2018 Clean Water Act Section 319(h) funds paved the way for projects across Oregon that helped restore and protect riparian buffers, ensured best management practices were implemented on forests, farms, and rangeland, improved pesticide management and provided valuable education on water quality to Oregonians of all ages.

The Oregon Nonpoint Source Pollution Program 2018 Annual Report documents activities and accomplishments of the Oregon Department of Environmental Quality's implementation of the state's Nonpoint Source Program. DEQ developed the report to meet the requirements of Section 319 of the federal Clean Water Act and the U.S. Environmental Protection Agency's 2014 Nonpoint Source Program and Grant Guidelines.

The report summarizes nonpoint source activities implemented by the state during 2018 and highlights the progress Oregon is making toward meeting the challenges presented by nonpoint source impairments such as temperature, dissolved oxygen, sedimentation and bacteria which account for approximately 74 percent of current impaired waters listings in the state. The report includes updates on milestones, implementation targets and annual reporting requirements identified in the 2014 Oregon Nonpoint Source Management Plan and 2016-2018 Performance Partnership Agreement with EPA. Annual status updates ensure that Section 319 funding, technical support and other resources are effective and efficient.

The 2014 Oregon Nonpoint Source Management plan and 2016-2018 Performance Partnership Agreement have 82 nonpoint source program related actions identified. Discussion of these actions or milestones, scheduled to be ongoing or completed in calendar year 2018 is presented in this document. DEQ has completed the majority of the action milestones identified, including issuing Watershed Basin Status and Action Plans. In addition,

DEQ actions not fully meeting scheduled milestones include:

- Developing TMDLs and WQMPs in accordance with 303(d) list schedule;
- Receiving a Five Year Report from the U.S. Bureau of Land Management;
- Discussing the United States Forest Service and Bureau of Land Management's programmatic strategy for agricultural activities on federal lands, such as grazing, at the annual check in meeting;
- Providing landscape condition information in water quality status and trends reports for ODA's biennial review process;
- Development of an approvable Coastal Nonpoint Pollution Control Program;
- Revising the DEQ/Oregon Department of Forestry MOU; and
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Due to limited program resources, some of the key vacancies continue to remain open in 2018. The 319 workload was redistributed to existing staff in order to meet deadlines in a more timely and efficient manner.

Some significant activities and actions accomplished in 2018 include:

- Improving the nonpoint source annual report. Starting in 2016, the report was reorganized to be more succinct in response to EPA's recommendations. Among the revisions: a summary of

nonpoint source accomplishments and a more in-depth look at nonpoint source implementation activities occurring statewide. The revisions continue in 2018.

- The Drinking Water Protection Program continues to address non-point sources within watersheds used for drinking water by completing "Updated Source Water Assessments" (50 in 2018) that provide information on risks to drinking water supply and susceptibility; hosting Source Water Protection Workshops focused on forestry and agriculture to encourage local partners and water systems to address source water areas; partnering with state (Oregon health Authority and Business Oregon) and federal agencies (NRCS, EPA, USFS, BLM) to fund watershed assessment and restoration and providing technical assistance to water systems and local partners throughout Oregon.

- Pesticide Stewardship Partnerships: Pesticide Stewardship Partnerships are a cooperative, voluntary process designed to identify potential concerns regarding surface and groundwater affected by pesticide use. Its purpose is to reduce pesticide residues in Oregon's water bodies where there is potential concern by working with local stakeholders and to provide a mechanism to share successful strategies with all Oregonians. The program's goal is to achieve measurable environmental improvements, making Oregon waters safer for people and aquatic life.

  The partnerships combine local expertise and water quality sampling to encourage voluntary changes in pesticide use and management practices. State partners including DEQ, the Oregon Watershed Enhancement Board, Oregon Health Authority, Oregon State University's Extension Service, Oregon Department of Agriculture and Oregon Department of Forestry work with diverse parties, including watershed and other natural resource groups, local landowners and growers, soil and water conservation districts and tribal governments to find ways to reduce pesticide levels while measuring improvements in water quality and crop management. Data collected as part of the partnerships appears to show the continued effect on pesticide management strategies as evidenced by a decline in the number of exceedances of benchmarks and a decline in the maximum level of the pesticides detected in certain watersheds.

- Water Quality Status and Trends Reports for Agricultural Rule and Plan Reviews continue to be developed. DEQ produced eighteen reports in 2018, which in addition to the sixteen reports during 2017 brings to 34 out of 38 Agricultural Water Quality Management Areas. Oregon statute and administrative rules require ODA to consult DEQ during the biennial review of Agricultural Water Quality Management Area Rules and Plans (Oregon Revised Statute 568.930). DEQ Total Maximum Daily Load and nonpoint source program staff conduct these reviews based on ODA's biennial review schedule of its area rules and plans. ODA's Agriculture Water Quality Program is outcome based, explicitly describing prohibited conditions, similar to DEQ's TMDL and nonpoint source programs which explicitly define water quality targets and goals. The reports present data and analysis that will help DEQ fulfill its roles in the biennial review process. The reports present an analysis of water quality data readily accessible from public databases and available in sufficient quantity to indicate status and trends.

- Conservation Effectiveness Partnership: The Conservation Effectiveness Partnership (CEP) is a collaborative effort between Natural Resources Conservation Service, Oregon Watershed Enhancement Board, Oregon Department of Agriculture, Oregon Department of Fish and Wildlife, and DEQ with a mission to describe the effectiveness of cumulative conservation and restoration actions in achieving natural resource outcomes through collaborative monitoring, evaluation and reporting.

  During the years 2013 and 2014 Tillamook Estuaries Partnership (TEP) supplied the CEP team with bacteria data collected by the TEP. The team used this the data, collected from 1997 through

2012, to produce the Wilson River Success Story. TEP continued to collect bacteria data as part of its Volunteer Water quality Monitoring Program (VWQMP). In 2018, DEQ/TEP began working with OWEB/CEP to update the Wilson River Success Story with 2016 data. Work continues by DEQ/TEP on the 2018 VWQMP bacteria data analysis summary report. The report will summarize the status and trends of the data through 2018. DEQ produced the status and trend analysis for TEP used in this forth coming report.

- Over the past five years, DEQ has struggled with demonstrating water quality improvements because of the lack of accessibility to DEQ and third-party data. In 2017 DEQ acquired and launched the Ambient Water Quality Monitoring System (AWQMS) to manage DEQ's environmental monitoring data. This system will manage data that is generated from DEQ's laboratory as well as third-party data. In addition, DEQ will use the system to upload data to the EPA's WQX/STORET database. Throughout 2018 and into the years ahead DEQ will be focusing on transitioning legacy data from the now retired LASAR database as well as other environmental monitoring data currently not in a database.

Oregon's nonpoint source program continues to use innovative, cooperative, and community-based methods to protect and improve water quality affected by nonpoint sources of pollution. This is done by working with state, local and national partners as well as tribal nations on water quality protection and restoration, supporting and encouraging implementation of TMDLs and monitoring Oregon's water quality to support water quality program needs. It is through this collaborative process that Oregon can identify emerging issues, understand water quality status and trends and inform management activities targeted at restoring Oregon's water quality and beneficial uses. The Oregon Nonpoint Source Program also leverages work from other Clean Water Act Programs within DEQ and relies on federal and state authority to protect and improve Oregon's water quality.

1. Introduction

This Oregon Nonpoint Source Pollution Program 2018 Annual Report meets the requirements of Section 319 of the Federal Clean Water Act. The report documents the activities and accomplishments of the Oregon Department of Environmental Quality's implementation of the state's Nonpoint Source Program.

This report provides a summary of activities implemented by the state during calendar year 2018 intended to address nonpoint sources. The summary includes progress on implementing the nonpoint source program including actions or milestones identified in the 2014 Oregon Nonpoint Source Management Plan and in the 2016-2018 Performance Partnership Agreement between Oregon DEQ and EPA. This report also highlights progress Oregon is making improving water quality in different parts of the state.

2. Oregon's Nonpoint Source Program

This section provides a description of Oregon's nonpoint source program and the baseline regulatory statues and non-regulatory programs.

The nonpoint source program's long-term goal as identified in the 2014 Nonpoint Source Management Program Plan is to develop and implement strategies to protect, prevent, control, and eliminate water pollution from nonpoint sources in waters of the state to meet water quality standards and TMDL load allocations. Protecting water quality also protects beneficial uses, the environment and Oregon's economy by reducing capital costs for water treatment infrastructure and flood mitigation. Implementation of the Plan is also informed by the DEQ-EPA Performance Partnership Agreement (PPA) for 2016-2018 which ended on June 30, 2018 and 2018-2020 which began July 1, 2018.

The program's short term goals, as outlined in the 2014 Nonpoint Source Management Plan and the PPA, include implementation of key actions, commitments and ongoing program activity. Progress of the implementation of the NPS Management Plan is documented in this annual report. Current links to Oregon's Nonpoint Source Program website can be found here: http://www.oregon.gov/deq/wq/programs/Pages/Nonpoint.aspx.

The program is built around a diverse set of programs, plans, and tools; which use regulatory, voluntary, financial, and technical assistance approaches to achieve a balanced program (Figure 1). These efforts and many of the funding sources are described immediately below and in more depth in subsequent sections.

Figure 1. Representation of Oregon's Nonpoint Source Program as a diverse, interlinked set of programs. NPS long and short term goals are referenced above.

2.1. Water Quality Standards

The Water Quality Program's mission is to protect and improve Oregon's water quality. Protecting Oregon's rivers, streams, lakes and estuaries keeps these waters safe for multiple beneficial uses such as drinking water, fish and aquatic wildlife habitat, recreation and irrigation. This is accomplished by identifying the most sensitive beneficial use and establishing the water quality level or target that is protective of that use. Establishing water quality standards for Oregon is at the core of DEQ's Water Quality Program.

2.2. Monitoring and Assessment - Section 303(d) and 305(b)

Collection and assessment of water quality data is important for the section 303(d) and 305(b) Integrated Report and other aspects of the Oregon Nonpoint Source Management Program. Oregon DEQ conducts both routine ambient monitoring and special studies such as toxics monitoring, groundwater monitoring, biological monitoring, and pesticide monitoring. In addition to samples collected by DEQ, the Volunteer Monitoring Program supports collection of data from third parties across the state, such as local watershed councils and Soil and Water Conservation Districts. The program provides technical guidance on monitoring efforts and maintains a loan program for water quality monitoring equipment. This assistance helps third parties identify and begin addressing the state's water quality problems. In addition to supporting local water quality awareness and management, data collected by third parties is submitted to the DEQ and is often a very valuable addition to DEQ's monitoring dataset.

Monitoring data is used in the nonpoint source program for understanding statewide water quality trends in major rivers and streams, identifying and characterizing toxic contaminants in water, supporting the

development of new, or revised water quality standards, identifying impaired beneficial uses and waterbodies, and responding to environmental emergencies and investigations.

2.3. Total Maximum Daily Loads and Water Quality Management Plans

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

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

The Water Quality Management Plan is the framework for TMDL implementation that is issued by Oregon along with the TMDL (Oregon Administrative Rules 340-042-0040(l)). The plan provides the blueprint for TMDL implementation for multiple sectors plan and includes the reasonable assurance that the TMDL will be implemented and allocations will be achieved (See Section 3.8).

2.4. Oregon Forest Practices Act

Oregon's nonpoint source program for private non-federal forestlands is administered by the Oregon Department of Forestry (ODF) through the Oregon Forest Practices Act (FPA). ODF has exclusive jurisdiction over water quality regulation on non-federal forestlands unless additional protections are required by the federal Clean Water Act. Under ORS 468B.110(2), ORS 527.765, and ORS 527.770, the Board of Forestry establishes best management practices or other control measures by rule that, to the maximum extent practicable, will ensure attainment and maintenance of water quality standards. If the Environmental Quality Commission (EQC) does not believe that the FPA rules will accomplish this result, the EQC is authorized to petition the Board for rules that are more protective. If the EQC petitions the Board, the Board has two options: terminate review with the EQC concurrence or begin rulemaking.

If the Board determines that BMPs should be reviewed, rules specifying the revised BMPs must be adopted not later than two years from the filing date of the petition for review, unless the Board, with concurrence of the EQC, finds that special circumstances require additional time. Upon the EQC's request, the Board is required to take interim action "to prevent significant damage to beneficial uses" while the BMPs are being reviewed. The "BMP shield" under ORS 527.770 is lost if the Board fails to complete BMP revisions, or makes a finding that revisions are not required, within the statutory deadline. In addition, under 468B.110(2), the EQC cannot adopt rules regulating nonpoint source discharges from forest operations and the DEQ cannot issue TMDL implementation plans or similar orders governing forest operations unless "required to do so by the CWA." This authority would also be triggered by the failure of the Board to adopt adequate BMPs to implement TMDL allocations for forestry or to avoid impairment of water quality such that standards are not met. The FPA rules are periodically evaluated to insure that forest practices do not contribute to violations of water quality standards and that changes to rules be evaluated if the Board of Forestry finds evidence of resource degradation and the public policy process under ORS 527.714 is completed.

2.5. Oregon Agriculture Water Quality Management Act

The Agricultural Water Quality Management Act (ORS 568.900 to 568.933) authorizes the Oregon Department of Agriculture (ODA) to develop Agricultural Water Quality Management (AGWQMP) Area Plans (area plans) and rules throughout the state. The statute authorizes the development of Agricultural Water Quality Management Area Rules (area rules) to serve as a regulatory backstop to the voluntary efforts described in the area plans. ORS 561.191 states that ODA shall develop and implement any program or rules that directly regulate farming practices to protect water quality. The Agricultural Water Quality Management Program is the main regulatory tool to prevent and control nonpoint source pollution from agricultural lands. The area plans and rules are reviewed every two years for each management area. DEQ provides review and comment on the area plans and rules during these biennial reviews. Water quality standards and TMDL load allocations for agricultural lands should be met through implementation of area plans and enforcement of area rules. The program staff members are also involved with the development of Ground Water Management Act action plans, and lead implementation of action plans to improve groundwater quality. DEQ and ODA's program staff and management work collaboratively to address agricultural nonpoint sources.

2.6. Drinking Water Protection Program

The Oregon Health Authority (OHA) administers the Drinking Water Revolving Loan Fund (DWRLF). OHA, which regulates drinking water under state law and the Safe Drinking Water Act, works cooperatively with DEQ on source water protection efforts. Money from the loan fund is used to fund: Source Water Protection Grants (up to $30,000 per water system) to fund source water protection activities, monitoring, and planning to reduce risk in Drinking Water Source Areas and loans for improving drinking water treatment, source water protection activities, or land acquisition in source areas. Oregon's Infrastructure Finance Authority is responsible for administering these projects. The loan fund also funds five Drinking Water Protection positions at DEQ. These positions delineate source areas, integrate Clean Water Act programs (including the Nonpoint Source Program) with source water protection needs, provide technical assistance to public water systems, and research the impacts of nonpoint source pollution on surface and ground drinking water sources.

The Drinking Water Providers Partnership is a collaboration of the Geos Institute, USDA Forest Service Region 6, DEQ, Washington Department of Health, EPA Region 10, the U.S. Bureau of Land Management OR/WA Office, and Wild Earth Guardians. Together, the partners coordinate an annual, competitive grant solicitation and award program for environmental conservation and restoration projects in municipal watersheds across the Northwest. The partners share a common vision that watershed restoration is an important and effective way to provide clean, inexpensive drinking water to communities and protect native fish populations, particularly when downstream and upstream users work together. Goals of the partnership are to:

- Restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them.
- Support local partnerships between drinking water providers, landowners, and restoration practitioners.

2.7. Clean Water State Revolving Fund (CWSRF)

DEQ's Clean Water State Revolving Fund program offers below-market interest rate loans and bond purchases to public agencies for planning, design, construction or implementation of the following water quality improvement activities:

- Wastewater collection, treatment, water reuse and disposal systems
- Nonpoint source water pollution control projects
- Development and implementation of management plans for federally-designated estuaries in Oregon (Tillamook Bay and Lower Columbia River)

Eligible agencies include tribal nations, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and certain intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards and are necessary to protect beneficial uses. Applicants that submit applications for eligible projects are included on the project priority list. However, DEQ does not commit or reserve funds for individual projects until an applicant meets all loan requirements. This indicates the project's readiness to proceed. DEQ funds projects that are ready to proceed in priority order.

DEQ accepts loan applications at any time but reviews and scores applications three times a year.

In addition to offering loans for nonpoint source pollution control, DEQ also offers a Sponsorship Option loan that can offset the overall debt service for a point source, treatment works project and a nonpoint source project combined, when an eligible applicant submits applications for both a point source and nonpoint source loan.

The loan program objectives include:

- Supporting emerging markets to obtain loans: irrigation modernization, tribal nations and local community loans;
- Encouraging innovative and non-traditional projects, such as green infrastructure, water and/or energy efficiency, climate resilience, sustainability, and environmentally innovative projects; and
- Encouraging communities to focus on high priority, water quality improvements projects statewide, including stormwater, nonpoint source pollution control and estuary projects.

2.8. Oregon Watershed Enhancement Board (OWEB)

The Oregon Watershed Enhancement Board is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands, and natural areas. Community members and landowners use scientific criteria to decide jointly what needs to be done to conserve and improve rivers and natural habitat in the places where they live. OWEB grants are funded from the Oregon Lottery, federal dollars, and salmon license plate revenue, along with other funding sources. The agency is led by an 18-member citizen board drawn from the public at large, tribes, state natural resource agency boards and commissions, and federal agencies.

OWEB offers a variety of grant types and programs:

https://www.oregon.gov/OWEB/grants/Pages/grant-programs.aspx

The OWEB mission of helping to protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies implicitly recognizes that specific goals for improvement will vary between watersheds. OWEB grants fund a variety of activities that local partners have identified as priorities in watershed assessments, action plans, or regional plans such as ESA Recovery Plans, Groundwater Management Areas, or TMDLs. Restoration actions address watershed process and functions necessary to support natural processes that are indicative of healthy watersheds. This includes, but is not limited to improving water quality, water quantity, habitat complexity, flood plain interaction,

vegetation structure, and species diversity. Examples of OWEB grant programs and initiatives that support voluntary actions helping to address nonpoint source pollution include, but are not limited to:

- *Coordinated Streamside Management and Strategic Implementation Areas* -- Under the interagency, collaborative approach titled Coordinated Streamside Management, OWEB is collaborating with Oregon Department of Agriculture (ODA) to provide grants to local partnerships in Strategic Implementation Areas (SIAs) for technical assistance that will design projects to restore riparian function, improve watershed health and increase water quality. SIAs are identified through ODA's Agriculture Water Quality Program as areas with water-quality concerns. SIAs result in an implementation plan outlining a set of coordinated restoration actions that address such limiting factors as poor streamside vegetation and/or increased temperature, sediment, and nutrients. An important companion to the technical design work is watershed-scale effectiveness monitoring to track the cumulative effectiveness of coordinated projects that will be implemented. This monitoring is being led by an interagency partnership of OWEB, ODA, DEQ and Oregon Department of Fish and Wildlife (ODFW).
- *Conservation Reserve Enhancement Program (CREP)* -- Riparian habitat protection continues to be a focus through OWEB's partnership investments, including via CREP. This program is a partnership between the U.S. Department of Agriculture and the State of Oregon designed to protect and improve riparian habitat, primarily on agricultural lands, to benefit aquatic species, water quality and streamside habitat. Conservation practices implemented through CREP contracts (typically 10-15 years in length) are cost-shared by OWEB, which provides 20% of the project costs using state funds. OWEB recently completed an effectiveness monitoring study of CREP, and is using findings of this study to support adaptive management of the program.
- *Conservation Effectiveness Partnership (CEP)* -- CEP brings together technical staff from OWEB, DEQ, ODA, the Natural Resources Conservation Service (NRCS) and ODFW to evaluate the effects of conservation and restoration investments on agricultural water quality and overall watershed health. DEQ, ODA, NRCS, and OWEB formed the partnership in 2010. Through a Memorandum of Understanding effective through 2020, the agencies have committed to participate in CEP. In 2016, ODFW joined the CEP as a technical advisor to help the team consider questions about the connections between water quality and fish species and habitats.
- *Restoration Priority Activities*. Including projects that address or involve: altered watershed functions affecting water quality, water flow, and the production capacity for fish; removal or remediation of structures such as roads, culverts, and channels to improve water quality and/or fish habitat; land management practices to address the causes of chronic disturbances to the watershed; direct evidence of collaboration between stakeholders and agencies over single-party projects and upslope and upstream treatments.

3. Nonpoint Source Activities and Accomplishments in 2018

This section provides a description of Oregon's administration and implementation of the nonpoint source management plan, description of the Performance Partnership Agreement (PPA), use of 319 funds, and identification of annual project implementation activities for various programs and projects.

As outlined in Figure 1, Oregon's nonpoint source program includes a broad spectrum of related program activities. The 2014 update to the Oregon Nonpoint Source Management Program Plan provides focus and direction to the program by identification of current and planned goals, priorities, actions and timeframe milestones for the five year period from 2014-2019. The PPA between DEQ and EPA also clarifies how DEQ will use federal funds to implement programs, including the nonpoint source programs in 2018.

The goals and priorities outlined in the plan and agreements address a broad spectrum of activities ranging from 319 grant administration, TMDL development and implementation, to working with partners in various land use sectors such as urban, forestry, and agriculture.

This annual report provides the basis for tracking annual progress under the program plan and Performance Partnership Agreement. The sections to follow describe the nonpoint source related activities and reported outputs accomplished in 2018 for each program area identified in the 2014-2019 nonpoint source program management plan and the PPA.

3.1. Water Quality Standards

DEQ identified several water quality standards related action items in the 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2018.

Table 1. Description of Water Quality Standards actions or outputs identified in the Performance Partnership Agreements and the status in 2018.

PPA Element	Action	Time Frame	2018 Status
PPA - 1.1	Temperature Cold Water Refugia Plan for the Lower 50 miles of the Willamette River. The purpose of the plan is to interpret the narrative Cold Water Refugia criterion and allow for implementation of the criterion through DEQ's Clean Water Act authorities.	To be revised by November 2019	In progress. See Section 3.1.1.
PPA - 1.2	Track, provide input, and comment on EPA's aluminum criteria promulgation for Oregon.	Ongoing through 2020	In progress. See Section 3.1.2.
PPA - 1.3	Conduct a review and prepare for rulemaking to revise relevant water quality regulation(s) as they related to Oregon's temperature water quality standard. Determine how to address natural thermal regimes and variability for temperature.	Ongoing through 2020	In progress. See Section 3.1.3

PPA Element	Action	Time Frame	2018 Status
PPA - 1.4	Address water quality standards-related action needs (e.g., variances, site-specific background pollutant allowance, UAAs and/or SSC) arising from implementation of revised human health criteria or the remaining effective portion of Oregon's temperature standard	Ongoing	Ongoing
PPA - 1.5	Conduct rulemaking to update Oregon's aquatic life use designations based on updated data, including clarifying application of resident trout spawning-related standards. In response to the July 2015 USFWS Biological Opinion, DEQ will revise bull trout use designations.	June 2020	Starting in 2019.
PPA - 1.6	Amend Oregon's rules to clarify the definitions for cool and cold water species to address inconsistency with definitions used in dissolved oxygen standard.	June 2020	In progress.
PPA - 1.7	Issue individual variances for 4 municipal wastewater treatment facilities for the human health methylmercury criterion	December 2019	In progress. See Section 3.1.4.
PPA - 1.8	Develop and conduct a rulemaking to adopt a multiple discharger variance for methylmercury for the Willamette Basin	January 2020	In progress. See Section 3.1.5.
PPA - 1.9	Evaluate concurrence memo from NMFS regarding the need for an additional numeric temperature criterion for the lower John Day River to protect steelhead smoltification, and work with EPA to determine next steps.	2018	Completed.

3.1.1. Cold Water Refuge Plans

In late 2017, DEQ began work on a Cold Water Refuge plan for the lower Willamette River. This is a Triennial Review recommended task and a requirement to satisfy a reasonable and prudent alternative for the 2015 NMFS Biological Opinion on Oregon's Temperature Standard. DEQ is currently drafting the report and will convene an expert scientific review panel to provide input in May 2019. A completed plan is due by November 2019.

3.1.2. Aluminum Criteria Promulgation

EPA is expected to finalize a promulgation of aluminum criteria for Oregon by March 2020, following the 2013 EPA disapproval of Oregon's freshwater aluminum aquatic life criteria, adopted by DEQ in 2004. DEQ has been tracking the rule development and will provide comments to the EPA. If EPA's new criteria pass Endangered Species Act consultation with the Services for application in Oregon, DEQ will

consider its own adoption of aluminum criteria into state rule during a future update of the state's aquatic life criteria.

3.1.3. Rulemaking related to Oregon's Temperature Water Quality Standard

DEQ is developing strategies to potentially update the water temperature standard. This follows the invalidation of Oregon's natural conditions criterion (NCC) for temperature by a Federal court in 2012. These strategies for a new temperature water quality standard could be important for effective implementation of the Water Quality Program.

3.1.4. Individual variances for wastewater treatment facilities for the human health methylmercury criterion

In July 2017, Clean Water Services applied for variances from Oregon's methylmercury water quality standard for their four wastewater treatment facilities that discharge to the Tualatin River in the Willamette Basin. The variance application is based on the factor that the human health criterion for methylmercury cannot be met due to manmade sources of methylmercury that cannot be remedied or would cause more environmental harm to remove than to keep in place.

DEQ is in the process of reviewing the variance applications, determining appropriate permit requirements related to the variance and coordinating with CWS and EPA to ensure that federal variance requirements adopted in 2015 are met including development of appropriate permit limits and implementation of a mercury minimization plan that will result in progress toward the human health criterion for methylmercury.

3.1.5. Rulemaking to adopt a multiple discharger variance for methylmercury for the Willamette Basin

The Department of Environmental Quality is developing rules that will establish a variance for methylmercury in the Willamette Basin. The variance proposes a temporary change in the water quality standard that applies to permitted wastewater dischargers. A variance is needed because there is no current technology that dischargers can use to achieve the current standard.

Wastewater dischargers in the Willamette Basin with a National Pollutant Discharge Elimination System permit will be able to apply for a variance under the rules. Dischargers who receive coverage under the variance will have a permit limit based on the mercury level the permittee can achieve. In addition, they will be required to develop and implement a plan to reduce mercury. To maintain coverage, they must show progress in reducing mercury.

Triennial Review In 2018, DEQ worked on several of the priorities identified in the December 2017 Triennial Review report, including the Lower Willamette River Cold Water Refuge Plan, responding to individual variance applications from Clean Water Services, an approach to methylmercury, including a multiple discharger variance for the Willamette Basin, and initial work on a temperature strategy.

Anti Degradation In May 2018, DEQ finalized a series of memoranda clarifying how the agency implements its antidegradation policy found at OAR 340-041-0004. These memoranda address findings in a 2013 EPA review of DEQ antidegradation procedures, including those related to determining if a lowering of water quality is *de minimis*, procedures for general permits and procedures related to point and nonpoint requirements when allowing a lowering of water quality

Water Quality Standards Mapping Project. In 2016, DEQ initiated an effort to develop a Water Quality Standards GIS layer. At that point in time, the only Standards related data that existed in a GIS format were fish use and spawning layers. The initial focus was to transfer the existing fish use data onto the

current NHD High hydrography linework. By the end of 2017, the fish data had successfully been transformed and incorporated into the NHD format.

Once the fish use updates were complete, all other Beneficial Use information was captured into the GIS layer. This additional information had previously only been available in table format for each OWRD basin.

The end product now contains DEQ's complete Standards information integrated into the NHD High hydrography layer. With one click on a map, the user can determine all Beneficial Uses that apply to that reach of stream. With use of several related tables, additional information can easily be returned showing which Standards apply for each Beneficial Use, along with the criteria that apply for each Standard.

This dataset is currently being made available in a web application for internal use in tandem with the release of our draft 2018 assessment results. The application will be made publically available at the same time the assessment results are released and 2018-2020

3.2. Monitoring and Assessment

DEQ identified several monitoring and assessment related action items (Table 2) in the PPA. The following sections describe progress on these action items in 2018.

Table 2. Description of Monitoring and Assessment actions or outputs identified in the 2016-2018 and 2018-2020 Performance Partnership Agreements and the status in 2018.

PPA Element	Action	Time Frame	2018 Status
PPA - 1.13	DEQ will update Oregon's 2012 Integrated Report and 303(d) list websites and databases following EPA's approval and final action. DEQ will communicate the final 2012 303(d) list for agency and public use.	July 29, 2016	EPA approved and finalized in December 2018
PPA - 1.14	DEQ will assist EPA to identify relevant data elements and georeferenced Integrated Report information to contribute to EPA's national water quality summaries and performance measure and 303(d) Vision tracking and analysis.	Ongoing	Ongoing. See accomplishments in Section 3.2.4
PPA - 1.15	DEQ will implement its WQ Strategic Plan to improve Oregon's Integrated Report and 303(d) list and will focus efforts on: Assessment information and data system infrastructure improvements and Assessment process, methods, and procedure improvements DEQ will implement these improvements to prepare assessment information and compile Oregon's 2018 Integrated Report and 303(d) list.	Ongoing tasks as needed to assemble and call for assessment data in early 2017.	Ongoing. See 2018 accomplishments in Section 3.2.4.
PPA - 1.16	DEQ's 2018 Integrated Report and 303(d) list will be submitted into EPA's ATTAINS data system. DEQ will continue its participation in ongoing ATTAINS development discussions to identify opportunities to use and build upon EPA's ATTAINS framework.	Ongoing DEQ work with EPA ATTAINS and Water Quality Framework design team.	Ongoing. DEQ expects a fall 2019 submittal of the 2018 IR to EPA.

PPA Element	Action	Time Frame	2018 Status
PPA - 1.17	DEQ will consider options and data system requirements needed to transition to ATTAINS in planning and designing DEQ's assessment data system improvements.	July 2016	Completed. See Section 3.2.4.
PPA - 1.18	DEQ will review and prioritize assessment process, methods, and procedures improvements. Improvements will be planned and implemented to inform and provide specifications for data system improvements.	Improvements project plan: July 2016 Progress check- in on scope and scale of next assessment effort – October - November 2016 Draft revised assessment methodology – early 2017	A revised 2018 Assessment Methodology was finalized in Fall 2018. Refer to Section 3.2.4
PPA - 2.7	Work with EPA on 303(d) Vision timelines for prioritization, assessment, protection, alternatives, engagement, and integration.	Ongoing	Ongoing. Worked with EPA and incorporated vision into ATTAINS work (see Section 3.2.4) and preparation for 2018- 2020 PPA.
PPA - 7.2	Ambient Monitoring Network -DEQ will continue to monitor approximately 130 ambient water quality station 6 times annually throughout Oregon. These stations provide status and trends data for understanding water quality.	Ongoing	Ongoing. See accomplishments in Section 3.2.1.
PPA - 7.3	Collect water quality data to support TMDL development.	Ongoing	Ongoing. See accomplishments in Section 3.2.1.
PPA - 7.4	Statewide statistical survey of lakes.	As scheduled	Completed. See Section 3.2.1.
PPA - 7.5	Reporting of biological, chemical and habitat data at reference and study locations in Western Oregon, at statewide trends sites and in the Deschutes Basin.	2018	Scheduled for completion in 2019.
PPA - 7.6	Identify business requirements for migrating DEQ water quality, biology and habitat data into WQX.	2018	Scheduled for completion in 2019.
PPA - 7.7	DEQ will collaborate with EPA, as resources allow, on EPA monitoring projects conducted in Oregon.	As scheduled by EPA	Ongoing. See accomplishments in Section 3.2.1.

In 2018 the Water Quality Monitoring section collected over 5400 water samples representing almost 40,000 analyses,

Monitoring efforts in 2018 focused on:

- Ongoing, long-term, ambient water quality monitoring
- Monitoring for the development of TMDLs,
- Cyanotoxin monitoring of vulnerable public water facilities,
- Adaptive management of pesticide use in targeted watersheds
- Data collection to support the issuance of beach bacteria and harmful algae bloom advisories
- Characterization of groundwater quality in vulnerable aquifers
- Data collection for trend analysis in Groundwater Management Areas
- Biomonitoring at random statewide location and targeted sites of potential concern
- Technical support for volunteer organizations.

Highlights of the Monitoring and Assessment program for 2018 include:

- Cyanotoxin source-water monitoring at 97 vulnerable public water bi-weekly.
- Assessed the status and trends of Oregon's surface waters through the Ambient Monitoring Network - DEQ monitored approximately 160 ambient water quality stations 6 times annually in order to provide aggregate water quality information to local, state, and federal partners as well as members of the state legislature;
- Pesticide Stewardship Partnership (PSP), collected and analyzed over 1000 water samples across nine PSP watersheds.
- Monitored over 90 wells in the Harney County to evaluate potential nitrate, arsenic, and pesticide contamination issues;
- Monitoring for temperature and bacteria to support TMDL development and implementation and status and trend in the following basins with high priority water quality issues: Necanicum, Nehalem, Nestucca, Alsea, Beaver, Clackamas, and Sandy River watersheds.
- Continuous DO, temperature, pH, conductivity, instantaneous flow, and other grab samples of field nutrient parameters in North Fork Beaver Creek, South Fork Beaver Creek, mainstem Beaver Creek, Alsea River, North and South Fork Alsea Rivers, Five Rivers, and Fall Creek to support development of the Dissolved Oxygen and pH TMDLs in the Mid-Coast. Effective shade and canopy cover measurements were collected in the Powder River, and North Fork Powder River to support the Powder Dissolved Oxygen pH, and Temperature TMDLs.
- Provided resources and technical assistance to volunteer organizations to collect and assess data in their own watersheds through the volunteer monitoring program.
- Monitored 70 locations at 18 beaches along the Oregon Coast for bacteria to inform the Beach Action Value (BAV) that triggers beach advisories;

3.2.1. Surface Water Quality Monitoring

Ongoing, long-term, ambient water quality monitoring of conventional water quality parameters and pollutants (e.g. temperature, dissolved oxygen, pH, bacteria, nutrients, turbidity, and conductivity) at fixed stations around the state continues to provide valuable insights into long-term statewide trends in water quality. Data from this program are used for permit and TMDL development in addition to

providing important data for water quality standards development. In addition to its internal use at DEQ, long-term ambient data are used to calculate water quality status and trend, which is used to support review and comment on agricultural water quality management area plans and rules (see Section 3.10.2) and supports the Oregon Water Quality Index.

Cyanotoxin monitoring of vulnerable public water facilities was coordinated by DEQ laboratory staff from July through October. Over 1,200 samples were collected, analyzed, and evaluated using EPA Health Advisory Levels for microcystin and cylindrospermopsin as follows:

- 102 drinking water facilities were deemed to be at risk for harmful algae blooms by Oregon Health Authority and DEQ.
- 98 facilities participated in the DEQ/OHA monitoring program.
- Largest facility: Portland Water Bureau: 614,000 people.
- Smallest facility: Wolf Creek Campground: 10 people.
- Drinking water for 2,318,000 people, 56% of Oregonians.
- 1,269 samples.
- 2,173 analyses.
- 30 samples over the total microcystins action level for vulnerable people.
- 2 samples over the cylindrospermopsin action level for vulnerable people.
- 8 facilities had total microcystins detections over the action levels.
- 1 facility had a detection over the cylindrospermopsin action level.
- 4 sources of the HABs:
    - 4 Detroit Lake (Santiam, Willamette basin).
    - 1 Gooseneck Creek Pond (Yamhill, Willamette basin).
    - 2 Lake Selmac (Rogue basin).
    - 1 Siltcoos Lake (Mid Coast basin).

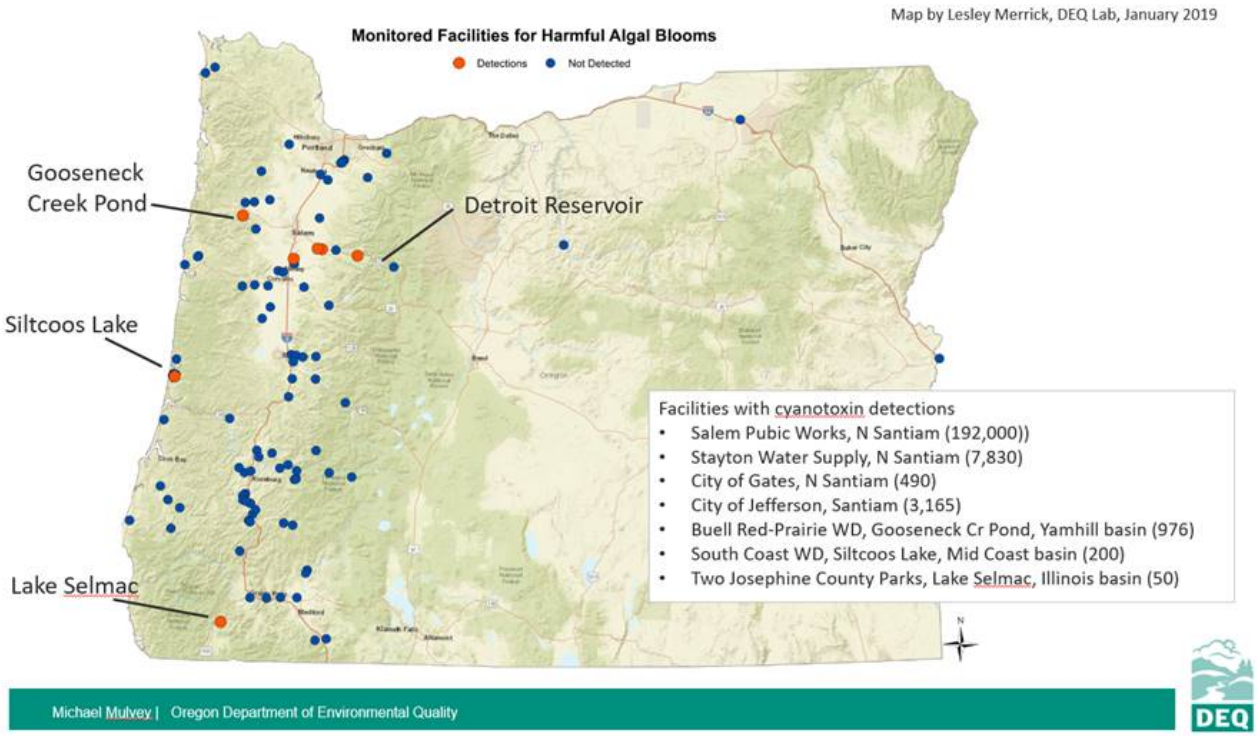

Figure 2. Monitored facilities for harmful algal bloom detections.

TMDL monitoring activities in 2018 focused on data collection in priority watersheds. Water quality parameters and data collection efforts were specifically planned for use in the development or refinement of water quality models used to assign waste load and load allocations to designated management agencies.

3.2.2. Biomonitoring Program

The Biomonitoring Program collected macroinvertebrates, and zooplankton samples at approximately 25 randomly selected rivers and streams in Oregon to characterize the biological condition of flowing waters statewide. Macroinvertebrates were also collected at 13 statewide reference sites. Macroinvertebrates and other aquatic communities like zooplankton and fish are indicators of water quality, habitat and other environmental conditions. As organisms live and adapt to the chemical and physical changes that occur daily, seasonally and over longer timeframes, aquatic communities come to represent the waterbody conditions. By looking at the relative abundance of individual organisms within a community, their unique requirements and tolerances depict the overall conditions of the water they live in and suggest some of the potential causes, if any, of impairments to the system. In addition, in most cases aquatic communities are a direct measure of the beneficial use the water quality standards are designed to protect.

3.2.3. Groundwater Monitoring Program

In addition to surface water monitoring, the Statewide Groundwater Monitoring Program conducts regional groundwater studies throughout Oregon. The study area was selected based on a variety of data including past studies and nitrate data collected during real estate transactions. DEQ completed one regional groundwater study in 2018 in Harney County. The study included two sampling events totaling 91 wells to look into seasonal and climatic differences in groundwater quality. The sample locations included a variety of domestic, irrigation, livestock, and dedicated monitoring wells, including some well over 500 feet deep. That data will be made available in 2019.

The Walla Walla Basin Study data and the Mid-Willamette Basin Study data was made publically available in 2018 and that data will be used to create Summary Reports in 2019 and 2020. Several presentations on the findings of the Mid-Rogue Groundwater study conducted in 2015 and the North Coast Groundwater study in 2015-2016 were provided to local stakeholder groups. Full reports on regional groundwater studies can be accessed here:

https://www.oregon.gov/deq/wq/programs/Pages/GWP.aspx.

The DEQ Groundwater Technical Advisory Team met in the summer of 2018 and decided to select Klamath Basin as the groundwater monitoring study area for 2019. That sampling will be begin in Fall of 2019. Sampling of the three existing Groundwater Management Areas continued in 2018. The Lower Umatilla Basin Groundwater Management Area (GWMA) was sampled quarterly as in previous years. The Northern Malheur County GWMA was only sampled once in 2018, as opposed to quarterly, as a result of permanent reductions in the 2017-19 budget. Sampling in the Southern Willamette Valley GWMA was also reduced. The full well network in the Southern Willamette Valley GWMA was sampled once, and a sub-set of twelve wells was sampled quarterly.

3.2.4. Integrated Report - Section 303(d) and 305(b) Assessments

Progress continued in 2018 on the next sections 305(b) and 303(d) integrated report. DEQ updated its integrated report assessment methodology to include:

- A new approach to defining Assessment Units (segments) based on the National Hydrography Dataset (NHD);
- Revised listing and delisting methodologies for toxic and conventional parameters using the binomial distribution test;
- Removal of seasonal listings for year-round criteria parameters
- Method to assess continuous dissolved oxygen criteria
- An updated delisting methodology.

Scientific peer review was provided for DEQ's current methodology for assessment of biocriteria using the PREDATOR model and incorporation of the binomial distribution test into its assessment methodology. DEQ's 2018 Assessment Methodology was finalized in fall of 2018.

DEQ completed its statewide call for data for the 2018 Integrated Report on July 25, 2018 and is currently in preparation of its 2018 Integrated Report. DEQ received submittals from 13 organizations outside of DEQ during its data call, processed data from approximately 70 outside organizations. In addition, the Assessment program has automated the assessment process through development of R-scripts which are available to the public. DEQ staff have also created a web application tool for both DEQ staff and the public to help navigate the results of the 2018 Integrated Report. Submittal of the 2018 Integrated Report will align with EPA's new ATTAINS reporting system.

DEQ completed its call for data on July 25, 2018 and is currently in preparation of its 2018 Integrated Report. DEQ received submittals from 13 organizations outside of DEQ during its data call, processed data from 36 volunteer monitoring organizations and twenty-eight additional entities from the WQ Portal. Submittal of the 2018 Integrated Report will align with EPA's new ATTAINS reporting system.

3.2.5. Environmental Monitoring Database

DEQ acquired and launched the Ambient Water Quality Monitoring System (AWQMS) at https://orwater.deq.state.or.us/ to manage DEQ's environmental monitoring data. This system will manage data that is generated from DEQ's laboratory as well as third-party data. In addition, DEQ will

use the system to upload data to the EPA WQX/STORET database. During 2018 DEQ's historic water quality data that were housed in LASAR have been migrated to our new online data portal, AWQMS. This was no small task. In fact, this migration included the evaluation and review of millions of data points. AWQMS now contains over 20,000 stations with information dating back to 1949, including the backlog of volunteer monitoring data (grab and continuous) from the past 10 years.

3.3. Drinking Water Protection Program

In 2018, approximately $750,000 from Drinking Water Revolving Loan Fund Program (DWRLF) was used to fund five FTE at ODEQ to help implement the Drinking Water Source Protection program, a portion of which is non-point source related. Nonpoint source drinking water projects and accomplishments for 2018 include:

- As of June 30, 2018, 314 community water systems (35 percent of Oregon's community water systems) have "substantially implemented" a strategy to protect their drinking water. These water systems include many of Oregon's larger communities and serve approximately 2.97 million Oregonians, more than which accounts for 85% of Oregonians served by community water systems.
- Completed an additional 50 "Updated Source Water Assessments" for public water systems using surface water in the Rogue, Santiam, Yamhill, Molalla, Coast and Middle Fork Willamette, and several eastern region subbasins. Updated Source Water Assessments give public water systems information on geographic setting, and point and non-point pollution risks to drinking water supply.
- Provided technical support to Oregon Health Authority on Harmful Algae Blooms (HABs) in drinking water including assisting with the response to cyanotoxin detections in City of Salem post-treatment drinking water, identifying source and watershed criteria that suggest public water systems are susceptible to cyanotoxins, and assisting with temporary and permeant drinking water system rule development.
- Collaborated with EPA and others to host workshops in 2018 to bring together drinking water operators, land managers, funders, and restoration practitioners to discuss shared goals. The Umpqua workshop focused on potential restoration projects or conservation actions. The North/Mid-Coast workshop prioritized forestry practices. The NW Community Forest Forum focused on local community forests. Additional workshops are underway for 2019.
- In 2018, NRCS selected five Oregon drinking water source areas to undergo a "readiness" phase for the National Water Quality Initiative Source Water Protection Pilot. Combined, these communities will receive $492,420 in Conservation Technical Assistance dollars in 2019 to develop a detailed watershed assessment and an outreach strategy to address agricultural-related impacts to source water quality. Following the readiness phase, these SWPAs would then be eligible to receive federal Farm Bill funding to implement the measures identified in their plans specific to agricultural impacts.
- Steering committee work for "Trees to Tap", a project funded by the Oregon Forest Resources Institute and conducted by OSU's Institute for Natural Resources to develop a science-based summary of the effects of forest management on drinking water sources. Work in 2018 included review and modification of research protocols, providing literature for review and GIS data for a drinking water atlas, and coordinating with OHA staff to provide information on water system treatment methods. The report will be finalized in 2019.
- Assisted multiple public water systems in various subbasins to encourage protection strategies on a watershed scale basis. This includes coordinating with surface water providers in the Rogue, Willamette, Umpqua, Siletz, McKenzie, North Coast, and Clackamas subbasins.

- Promote the use of the Drinking Water Source Protection Fund for loans and grants primarily addressing nonpoint sources of pollution within drinking water areas. Seven drinking water protection projects were recommended for funding with funding awards totaling $192,170. Projects recommended for funding include activities such as: forest road relocation work that will reduce sediment erosion and turbidity; riparian zone repair and revegetation projects; the development and acquisition of conservation easements; design and installation of educational signage and watershed models; retrofitting stormwater facilities to mitigate turbidity and contaminants from privately owned land; and the removal of an aging above ground fuel storage tank and its underground piping. Specific project details are discussed in the Basin Reports in **Appendices A - R**.
- Collaborated with federal partners on the Pacific Northwest Drinking Water Providers Partnership which includes USDA Forest Service, BLM, EPA Oregon Ops, Washington Department of Health, and the Geos Institute to develop concepts for watershed restoration and improvement projects within municipal watersheds. All projects enhance habitat for listed species and improve water quality for the communities that rely on streams and rivers for drinking water. In 2018, a total of ~$200,000 was awarded in Oregon supporting projects to remove invasive species, construct large instream wood complexes, plant native riparian vegetation, remove road segments, re-establish off-channel habitat, and install cattle exclusion fencing. Specific project details are discussed in the Basin Reports in **Appendices A - R**.
- Continued to work with other state and federal agencies to raise the profile of the need for drinking water protection in Oregon, including the Department of Agriculture, Department of Forestry, US Forest Service, USDA, BLM to raise the priority level for drinking water protection in Oregon. Source Water Assessment data is provided as needed to other agencies to facilitate incorporation of protection strategies into their respective programs. Furthermore, this coordination has identified new opportunities for DEQ and OHA to enhance the depth and quality of technical assistance provided to public water systems;
- Participation in Southern Willamette Valley Groundwater Management Area events.
- Provided data on drinking water sources, drinking water quality issues, potential contaminant sources, and recommendations for action for Agricultural Water Quality Management Plans.
- Developed methods for evaluating erosion susceptibility following human or natural disturbances in conjunction with ore reviewed by Natural Resources Conservation Service, Oregon Department of Agriculture, and Oregon Department of Forestry

3.4. Clean Water State Revolving Fund (CWSRF)

In 2018, the Clean Water State Revolving Fund loan program obligated $16,072,265 toward eight nonpoint point source pollution control projects. This is an increase from 2017 and includes some of the same projects as many projects have long-term, multi-phased construction schedules. Table 3 summarizes active project funded during 2018. More information about these projects including reported. More information about these projects including reported accomplishments in 2018 are in the Basin Reports in **Appendices A - R**.

Table 3. CWSRF projects active or funded in 2018.

Admin Basin	Project Name	Project Implementer	Budget
Rogue	Bear Creek, Immigrant Creek and Ashland Creek Riparian Buffer Restoration	City of Ashland	$1,300,000
Deschutes	Siphon Power Property Canal Irrigation Piping Project	Central Oregon Irrigation District	$3,113,311
Mid Coast	Smith Rock and Kingway Irrigation District Piping Project	Central Oregon Irrigation District	$2,000,000
South Coast	6th Avenue Culvert Replacement project	City of Coos Bay	$2,200,000
Clackamas	Septic System Loan Program	Clackamas Soil and Water Conservation District	$250,000
Mid-coast	Bay Moore Stormwater Project	City of Newport	$4,128,454
Deschutes	Watson and McKenzie Main Canal Pipeline Project	Three Sisters Irrigation District	$1,080,500
Deschutes	Tumalo Feed Canal Piping Project	Tumalo Irrigation District	$2,000,000

3.5. Nonpoint Source Program Plans

DEQ identified four nonpoint source program plan related action items (Table 4) in the 2014 nonpoint source management program plan and PPA's. The following sections describe progress on these action items in 2018.

Table 4. Description of specific nonpoint source program plan actions or outputs identified in the 2014 Nonpoint Source Management Program Plan, 2016-2018 Performance Partnership Agreement and the 2018 status.

Goal #	Goal Topic	Action	Time Frame	Current Status
NPS - 1	Update Nonpoint Source Management Program Plan every 5 years	Update Oregon's Nonpoint Source Management Plan that describes how the state's Nonpoint Source management program achieves water quality standards and TMDL load allocations through restoration and protection.	2019	Not Complete. An update to the plan will start in 2018-2019. See Section 3.5.1.
NPS - 2	Implement Nonpoint Source Management Program Plan	Implement the Nonpoint Source Management Plan to achieve the Nonpoint Source Program goals and priorities.	Ongoing 2014 to 2018	See summary in Executive Summary of this report.

Goal #	Goal Topic	Action	Time Frame	Current Status
NPS – 3 and PPA 8.4	Issue Nonpoint Source Annual Report	The Nonpoint Source Annual Report describes the progress in implementing the Nonpoint Source Management Program Plan and achieving the Nonpoint Source Program goals and objectives. DEQ issues and submits annually to EPA. PPA: Prepare an annual report of NPS program accomplishments	Annually 2014 to 2018	In progress for 2018, completed for 2017. See Section 3.5.2.
NPS – 4 And PPA 8.9	Complete the Coastal Nonpoint Pollution Control Program	Submit to EPA and NOAA a plan for achieving Additional Management Measures for Forestry, as needed, in response to federal comments on the state's strategy PPA: DEQ works with ODA, ODF and EPA on CZARA Coastal Nonpoint Control Plan	2015-2016 Revised to Ongoing until full approval is obtained.	Not Complete. See Section 3.5.3.

3.5.1. Oregon's Nonpoint Source Program Management Plan

Oregon's nonpoint source program management plan describes how the state's NPS management program achieves water quality standards and TMDL load allocations. This annual report describes annual progress implementing the management plan. The current 2014 plan approved by EPA on June 15, 2015 is due to be updated and submitted to EPA in 2019. In 2018 there was no activity on drafting an update. Staff time was prioritized to respond to litigation and court orders instead of working on updating the NPS Management Program Plan, while other staff time was prioritized to provide water quality status and trends analysis to evaluate water quality outcomes in relation to nonpoint sources. An update to the plan will start in 2019.

3.5.2. Oregon's Nonpoint Source Program Annual Report

Each year DEQ prepares a nonpoint source program annual report describing the annual progress implementing the management plan. This report serves as the annual report.

Starting in 2016, the report was reorganized to be more succinct in response to EPA's recommendations. The revisions include a summary of nonpoint source accomplishments and a more in-depth look at nonpoint source implementation activities occurring statewide. The revisions added to the 2018 report include project outputs from Section 319, Oregon Watershed Enhancement Board, Drinking Water, non-grant related TMDL implementation actions by Designated Management Agencies, and Clean Water State Revolving loan nonpoint source projects or activities. Also included is the status of TMDL implementation plan annual reports submitted by Designated Management Agencies and reviewed by DEQ.

3.5.3. Coastal Nonpoint Pollution Control Plan

Under the Coastal Zone Act Reauthorization Amendments states and territories are required to develop Coastal Nonpoint Pollution Control Plan (CNPCP). In its program, a state or territory describes how it will implement nonpoint source pollution controls, known as management measures. This program is administered jointly with the National Oceanic and Atmospheric Administration (NOAA). The state of

Oregon has not yet gained full approval and has committed to address the outstanding management measures.

DEQ and DLCD work with the other State of Oregon agencies for submittal to EPA and NOAA. In 2016, the state submitted a CNPCP plan to EPA and NOAA describing the state's plan to achieve the additional management measures for forestry.

No activity occurred in 2018 on revising or submitting a new CNCP. Discussions between EPA and the state on how to move forward to obtain full approval of the program have been very limited. Staff who would be working on this effort are currently focused on completing TMDLs by the court ordered deadlines.

3.6. 319 Grant Program and Project Implementation

DEQ identified eight 319 grant program related action items in the 2014 nonpoint source management program plan, PPA's (Table 5, Table 6). The following sections describe progress on these action items in 2018.

Table 5. Description of 319 grant program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
319 - 1	319 Grant Funding DEQ Nonpoint Source Program	DEQ uses 319 Grant funds to implement DEQ activities that achieve the Nonpoint Source Program goals and priorities.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.6.1.
319 - 2	319 Grant Funding for pass through Grants	319 Grant funding of projects that address Oregon's Nonpoint Source Program priorities.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.6.2.
319 - 3	Priority projects to receive 319 Grant Funding for pass through Grants	Region and HQ staff identifies and rank projects to receive pass through 319 grant funds for addressing Nonpoint Source Program priorities.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments Section 3.6.3.
319 - 4	319 Grant RFPs	Continue process improvement of 319 Grant RFPs for timely and efficient issuance. Provide training to DEQ Nonpoint Source and TMDL staff to increase efficiency and timeliness.	Annually 2014-2018	Ongoing. See 2018 accomplishments in Section 3.6.4.
319 - 5	319 Grant Administration	Provide guidance to DEQ staff and grant recipients for grant administration. Guidance includes, planning, contracting, invoicing and reporting.	2015. Revised to ongoing	Ongoing. See 2018 accomplishments in Section 3.6.4.

Goal #	Goal Topic	Action	Time Frame	2018 Status
319 - 6	GRTS	Continue to report 319 Grant Data into GRTS; Meet annual reporting deadlines.	Annually 2014-2018	Ongoing. See 2018 accomplishments in Section 3.6.5.
319 - 7	Nonpoint Source Implementation	Collect information from NRCS, USFS, BLM and OWEB on annual Nonpoint Source project implementation activities including 319 Grant projects.	Annually 2014-2018	See 2018 accomplishments in Basin Reports Appendices A – R.
319 - 8	DEQ's Nonpoint Source Program Website	DEQ's Nonpoint Source Program Website updated as needed	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.6.7.

Table 6. Description of 319 grant program actions or outputs identified in the Performance Partnership Agreements and the status in 2018.

PPA Element	Action	Time Frame	2018 Status
PPA - 8.1	Distribute 319 grants to fund project proposals to Oregon's priority basins based on TMDL development and implementation, drinking water source areas and GWMAs.	May 2017 and May 2018	Completed. See Section 3.6.2.
PPA - 8.2	DEQ develops a waiver from the 50/50 Section 319 grant fund requirement for years 2015 and 2016.	August 2016	Completed. See Section 3.6.2.
PPA - 8.3	DEQ develops an approach to begin in 319 Grant year 2017 where DEQ staff time used to implement Watershed Based Plans can be used for leverage exemption from the 50/50 319 Grant Program requirements.	December 2016	Completed. See Section 3.6.2.
PPA - 8.6	Enter GRTS 319 mandated elements to 319 project tracking data by national deadlines, including load reductions as available.	February 2017, February 2018 load reduction, other GRTS data (National GRTS reporting deadlines	Complete. See 2019 accomplishments in Section 3.6.5.

Federal Section 319(h) funds are provided annually through the EPA to states for the development and implementation of each state's Nonpoint Source Management Program. In Oregon the 319 grant funding is divided between Performance Partnership Grant funds which fund nonpoint source staff positions and pass through funds which support priority projects that are funded through the Nonpoint Source Grant Program. The following sections describe use of these funds and implementation of 319 program action items.

3.6.1. Funding the Nonpoint Source Program at DEQ

DEQ uses 319 grant funds to implement DEQ activities that work toward achieving the nonpoint source program goals and priorities.

In 2018, the federal 319 program appropriation funded a total of 9.23 full-time equivalent positions within DEQ's performance partnership grant. These positions support the implementation of the Nonpoint Source Program and 319 funded activities such as: management of nonpoint sources of pollution, water quality standards and assessment, TMDLs, DEQ's groundwater program, and water quality data analysis, management and monitoring (Table 7).

Temporary staff were hired using funding for permanent staff until there was clarity on the budget for funding positions. These positions worked on high priority water quality status and trends analysis to evaluate water quality outcomes in relation to nonpoint sources. Because of federal funding levels to DEQ for nonpoint source work, DEQ anticipates that we will continue to be challenged for adequate staffing to meet the nonpoint source needs.

Table 7. Oregon's 2018 319 Grant funded positions for nonpoint source program activities.

Nonpoint Source Program Activity	FTE
Nonpoint Source TMDL Modeling	1.89
Regional Nonpoint Source Implementation and Nonpoint Source TMDL Development and Implementation	3.34
Prorates and Management and Administrative Support	1.01
319 Grant Administration and Provision of Technical Assistance with Applicants, DEQ Staff and Coordination with Other Funding Agencies	1.00
Nonpoint Source Policy Development, Collaboration and Provision of Technical assistance with Stakeholders and other Local, State, and Federal Agencies	2.00
Total	9.24

Clean Water Act Section 319(h) National Program Guidance suggests states use at least 50 percent of the Section 319(h) funds to implement nonpoint source watershed projects guided by a watershed based plan (including TMDLs). States may use watershed project funds to support staff time spent implementing a watershed based plan. Eligible staff activities include:

- Implementing a local cost share program to fund BMPs in critical areas described in the watershed based plan or acceptable alternative plan.
- Providing one-on-one technical assistance to confirm landowner participation in watershed project(s) and to determine which suite of BMPs are most appropriate to achieve water quality targets articulated in a watershed based plan or acceptable alternative plan.
- Providing technical expertise with siting and designing BMPs.
- Tracking implementation efforts in the watershed to evaluate progress towards the water quality targets in the watershed based plan or acceptable alternative plan.
- Providing coordination support among key partners in addressing NPS pollution within the watershed.
- Leveraging and targeting other state, private, and non-§ 319 federal funds in the watershed.
- Conducting targeted local education/outreach events (such as technology transfer workshops) that promote the voluntary implementation of BMPs.

- Providing technical assistance to support the implementation of a watershed restoration or watershed protection project. Sub-grantee time spent managing project work plans, deliverables, reimbursements, modifications, and reporting for watershed project(s).
- Water quality results monitoring to assess the effectiveness of on-the-ground activities to improve water quality as part of the implementation of a completed watershed based plan or acceptable alternative plan, regardless of the entity conducting this monitoring.

In 2018, $839,270 of section 319 funds were used to support DEQ staff implementing eligible activities. Combined with pass through grants that directly funded watershed projects identified in Table 8, the total proportion of 319 funds spent on watershed based projects and eligible activities by DEQ staff was $1,096,415. This sum represents 65% of the total 2018 appropriation and exceeds the 50% target outlined in EPA guidance.

The dollar amount was estimated using DEQ's timekeeping QTIME system and associated expenditure tables.

3.6.2. Funding Community or Partner Projects

DEQ uses a portion of 319 grant funds as "pass through" funds to support community or partner projects that address Oregon's nonpoint source program priorities. In 2018, DEQ recommended funding 17 stakeholder projects with $257,245 in Section 319 grant funds (Table 8).

Table 8. List of projects recommended for 2018 319 grant funding.

DEQ Region	Project Name	Submitted by	Type of work	Budget
Willamette	Storm and Drinking Water Protection Improvements From Urban and Agricultural Lands	Long Tom Watershed Council	Storm water management, Best management practices implementation	$23,324
Mid-Willamette	Tiered Approach for Assessment of Pesticide Use and Groundwater Vulnerability for Drinking Water Protection Areas in Oregon Watersheds: Phases 2 and 3.	Oregon State University	PSP, Groundwater study, DWP	$20,000
Umatilla	Walla Walla Basin Watershed Council Water Quality Education and Outreach	Walla Walla Watershed Council	Water quality education/outreach	$9,100
Tillamook	Northwest Oregon Restoration 2018	Tillamook Estuary Partnership	Native plants, education	$10,000
Lower John Day	Lower John Day UAV Protocol Development Project	Gilliam Soil and Water Conservation District	Best management practices development, riparian vegetation monitoring	$26,235
Tillamook	Tillamook SWCD 2018 Stream Enhancement & Restoration	Tillamook Soil and Water Conservation District	Riparian restoration, fencing	$11,000

DEQ Region	Project Name	Submitted by	Type of work	Budget
Nestucca Neskowin	Nestucca, Neskowin and Sand Lake Basin Riparian Improvement Project	NNSL	Riparian planting	$11,000
Sandy	Campus Creeks Clean Water Retrofit - Phase I Implementation	Sandy River Watershed Council	Water Quality restoration, aquatic habitat	$13,874
Tillamook	Backyard Planting Program 2018	Tillamook Estuary Partnership	Riparian restoration	$11,000
Upper Nehalem	Nehalem - Riparian Restoration and Water Quality Monitoring	Upper Nehalem Watershed Council	Riparian restoration, baseline monitoring	$8,998
Malheur	Gettin' with the Flow: Monitoring the Owyhee and Malheur Rivers	Malheur County Watershed Council	Trend analysis, BMP implementation	$19,415
Umatilla	South Fork and Mainstem Walla Walla River Heat Source Water Temperature Modeling	Walla Walla Watershed Council	Data collection, Infrared imagery, modeling	$19,350
Clackamas	Macroinvertebrate Rapid Bio-Assessment Sampling to Test for Restoration Efficacy	Clackamas River Watershed Council	Data collection	$8,128
Rogue River/Bear Creek	Bear Creek TMDL Effectiveness Monitoring Analysis	Rogue Valley Council of Governments	Collating and analyzing WQ data, evaluation	$23,100
Alsea River	Alsea River and Beaver Creek Monitoring / Siletz BMP Development	Lincoln Soil and Water Conservation District	WQ monitoring, BMP development	$15,931
Umpqua	S. Umpqua NPS Nitrate WQ Monitoring	Partnership of Umpqua Rivers	nitrate probe, water quality monitoring	$11,645
NWR/DWP	Arch Cape Community Drinking Watershed Protection	Sustainable Northwest	action plan development, public stewardship	$15,145
Total				$257,245.00

Although federal 319 funds have decreased since 2014, Oregon continues to fund priority projects that target nonpoint source pollution (Figure 2). DEQ has targeted 319 nonpoint source grants for the following projects areas: best management practice implementation, outreach and education, and riparian restoration.

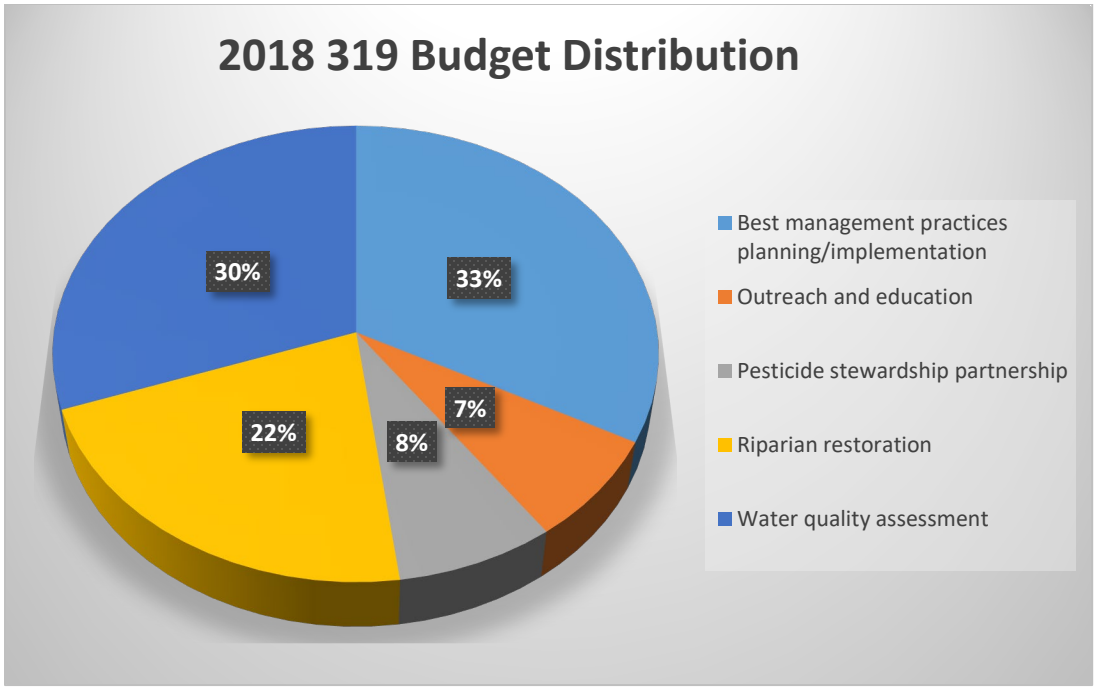

Figure 3. Project areas and 2018 319 Funding Distribution

Table 9. Oregon Total Section 319 Funding 2014 to 2018.

Year	DEQ Staff	Projects (Pass Through)	Total
2018	$1,435,755	$257,145	$1,692,900
2017	$1,383,959	$327,041	$1,711,000
2016	$1,384,049	$333,501	$1,717,550
2015	$1,370,949	$80,851	$1,451,800
2014	$1,200,000	$905,000	$2,105,000
Totals	$6,774,712.00	$1,903,538.00	$8,678,250.00

3.6.3. Prioritizing Projects

Every year, DEQ regional and headquarter staff identify and rank projects to receive pass through 319 grands funds that are intended to address the nonpoint source program priorities.

Funding priorities were identified in the 2018 319 Request for Proposals as regional and statewide project priorities. Those priorities as presented in the RFP can be reviewed in Appendix S.

Funded project types and the amount requested from EPA are presented in Table 10.

Table 10. Oregon 2018 funding priorities with corresponding amounts as presented to EPA.

2018 Type of Project	Amount Requested	% of Total Request
Riparian restoration in priority waters	$82,107	32%
Groundwater/Drinking water	$43,324	17%
Outreach/stewardship	$19,000	7%
Watershed Management	$112,714	44%
Total Request	$257,145.00	100%

3.6.4. 319 Grant RFP and Administration

DEQ is committed to improve the 319 grant process to ensure timely and efficient issuance of 319 grant RFPs and by training staff to increase efficiency and timeliness. DEQ also committed to providing guidance to DEQ staff and grant recipients for grant administration, planning, contracting, invoicing and reporting.

A 319 process improvement team has been in place to meet these goals. The 319 process improvement team contains staff from TMDL and nonpoint source programs in the regional and headquarters offices, as well as individuals from DEQ's business office. The team has monthly conference calls to identify and prioritize program areas in need of increased efficiency and streamlining.

Some of the accomplishments of the process improvement team during 2018 include:

- Reviewed and updated the 2019 Request for Proposals
- Assisted with boilerplate edits for drafting 319 grant agreements with stakeholders
- Planned and provided training for 319 staff
- Updated 319 related milestone schedule
- Reviewed and recommended a Watershed Basin Plan (WBP) strategy, following EPA's recommendations for identifying and funding 319 projects, starting with the 2019 funding cycle.
- Revisions of the 319 grant administration guidance to keep it up to date

3.6.5. Reporting to EPA

All states, including Oregon, are required to report to EPA the details of projects funded under Section 319 of the Clean Water Act and the projects which match federal Section 319 funds, using EPA's Grants Reporting and Tracking System (GRTS).

As an on-going task, DEQ keeps the GRTS database updated with the following information:

- Drafted and approved agreements implementing approved work plans;
- Amendments, completed projects;
- Implementation work-plans and final reports;
- Estimated load reductions.

For the year 2018, load reduction estimates for projects completed during 2018 were entered into GRTS by the new EPA deadline of February 28th, 2019. The table of the load reductions entered into GRTS can be found in Section 3.6.6.

3.6.6. Estimates of Load Reductions from 319 Projects

Section 319 (h) (11) requires states to "report annually on what their nonpoint source programs are accomplishing, including available information on load reductions and actual water quality improvements." Annual load reduction estimates are completed for projects funded through the 319 program (Table 11).

EPA requires that DEQ complete nonpoint source pollutant load reductions using EPA's Section 319 Grants Reporting and Tracking System (GRTS). To estimate nutrients, sediment and biological oxygen demand DEQ used the EPA Region V load reduction model, "Spreadsheet Tool for Estimating Pollutant Load, STEPL". Load reduction estimates were included in the EPA system.

Currently EPA provides tools to estimate reduction in BOD, nitrogen, phosphorus and sedimentation loading, but not for other pollutants. The lack of a tool to estimate other pollutants has caused Oregon to chronically underreport water quality improvements as DEQ cannot accurately capture all the work being done to address these other TMDL allocations. DEQ is exploring the use of the status and trend information as one way to describe the change in pollutants across various waterbodies.

Table 11. Total 2018 load reduction estimates by pollutant for seven 319 funded projects. These were projects where it was appropriate to estimate load reductions.

Project Number	Project Title	Funding Year	Project Recipient	319 Budget	BOD lbs/Yr	Nutrients, N, P P lbs/Yr		Sed T/Yr
W13708	Backyard Program Planting	2013	Tillamook Estuary Program	$26,948	3,653	1,186	371	180
W14751	Lower Mill Creek Riparian Restoration Project	2014	Wasco Co SWCD	$36,250.00	21.9	7.5	2	1.3
W14772	Expanding the benefit: Riparian Revegetation in Luckiamute Basin	2014	Luckiamute WSC	$31,387.00	22.4	15.5	4.9	3.5
W15601	Nestucca Neskowin and Sand Lake Riparian Restoration	2015	Nestucca Neskowin WSC	$9,454.00	6.1	3.1	1.2	1
W16656	Backyard Program Planting	2016	Tillamook Estuary Program	$14,980	1113	1155	1375	1260
W16652	Milk Creek Riparian and Stream Restoration Project	2016	Clackamas Soil and Water Conservation District	$14,980	65	450		23
W16650	Upper Nehalem riparian Restoration Project	2016	Upper Nehalem Watershed Council	$13,970	89	357		43

3.6.7. Updating the Nonpoint Source Program Website

DEQ committed to updating the nonpoint source program website at least annually to reflect current information.

The current URL for the nonpoint source program is
http://www.oregon.gov/deq/wq/programs/Pages/Nonpoint.aspx.

In 2018 the nonpoint source program website was updated with the following information:

- A link to the current 319 grant RFP;
- A downloadable grant application;
- Background information on the 319 grant program;
- Links to multiple water quality status and trend reports used for biennial reviews of the agricultural water quality management area rules and plans (see Section 3.10.2).

3.7. Watershed Reports

DEQ committed to four watershed report action items (Table 12) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2018.

Table 12. Description of watershed approach and basin report actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
WBP - 1	Watershed Basin Status and Action Plans	Develop a template for Watershed Basin Status and Action Plans. DEQ provides training to DEQ Nonpoint Source and TMDL staff on its use.	2015	Complete. See Section 3.7.1.
WBP - 2	Watershed Basin Status and Action Plans	Develop Watershed Basin Status and Action Plans within identified priority watersheds that identify priority problems and waters.	Ongoing 2014-2018	Ongoing. See Section 3.7.1.
WBP - 3	EPA's Nine Key Elements	Report on how TMDL Implementation Plans and Watershed Basin Status and Action Plans meet EPA's Nine Key Elements.	Annually 2014-2018	Ongoing. See 2018 accomplishments in Section 3.7.2.
WBP - 4	Volunteer Monitoring	Volunteer Monitoring Watersheds Sample Plans Are Developed.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.7.3.

3.7.1. Watershed Basin Status and Action Plan Development

To help protect, improve and enhance the quality of Oregon waterways, DEQ conducts in-depth assessments of the state's basins. These assessments take the form of local water quality status and action plans, which describe water quality conditions and include recommendations for actions that DEQ and others who are interested in these basins can take to improve water quality.

DEQ completed three basin status/action plans. DEQ plans to cover the state's major basins in the next few years then re-visit each to mark progress and reassess how to deal with lingering water quality problems.

In 2016 DEQ divested its resources from developing additional watershed basin status and action plans although some of the elements that were to be included in the action plans continue to be developed. For example, water quality status and trends are being developed for all 39 agricultural management areas across the state. In addition, TMDL implementation activities and implementation related project outputs are included in the Basin Reports in **Appendices A - R** of this annual report.

3.7.2. Nine Key Elements of Watershed Based Plans

Through the annual 319 funding agreement, EPA requires the Oregon Department of Environmental Quality ensure a watershed-based plan or acceptable alternative plan, which includes all of the information in key elements (a)-(i) as presented §319 grant guidelines, be completed prior to beginning to implement any on-the-ground project with Section 319 watershed project funds.

During 2018 DEQ staff worked to comply with the 9-key element approach requirement and accomplished the following

- A "9-Key Elements Worksheet" was prepared to document how each TMDL, WQMP, and associated TMDL Implementation plans address the nine key elements. The checklist identifies all the relevant watershed plan documents, the hydrologic codes and watershed names where they apply, the pollutants addressed, and the location in the plans (i.e. section, chapter, page number) where the information for each element may be found. DEQ was notified by EPA Region 10, that a complete checklist will be considered a sufficient watershed-based plan documentation strategy.
- Ten watershed basin plans were prepared using the "9-Key elements Worksheet" (Table 13). As referenced above, the plans were then included in the 2019 319 RFP. As eligible watersheds.

EPA Region 10 has communicated to Oregon DEQ their intent to review at least one (1) watershed plan per year.

Table 13. List of basins for which a 9-Key Element Worksheet was prepared and approved during 2018 by DEQ as providing detailed information to be considered a watershed-based plan strategy.

DEQ Region	Watershed	Pollutants Addressed	Submitted
Eastern	John Day Basin	Bacteria	2018
Eastern	John Day Basin	Temperature to address biological conditions and dissolved oxygen	2018
Eastern	Lower Malheur Subbasin Upper Malheur Subbasin Willow Creek Subbasin Bully Creek Subbasin Middle Snake-Payette Subbasin	Bacteria from private agricultural lands. Total phosphorus from private agricultural lands to address chlorophyll a impairments	2018
Eastern	Williamson River Subbasin Sprague River Subbasin	Temperature	2018

DEQ Region	Watershed	Pollutants Addressed	Submitted
	Williamson River Subbasin, Sprague River Subbasin, Upper Klamath Lake Subbasin	Total phosphorus to address dissolved oxygen, pH, and chlorophyll a impairments in Agency Lake and Upper Klamath Lake	2018
Eastern	East Fork Hood River Watershed West Fork Hood River Watershed Hood River Watershed Mosier Creek – Columbia River Watershed Eagle Creek – Columbia River Watershed	Temperature	2018
Northwest	Tillamook River Watershed Trask River Watershed Wilson River Watershed Kilchis River Watershed Miami River Watershed Tillamook Bay-Frontal Pacific Ocean Watershed	Bacteria and Temperature	2018
Western	Little Butte Creek Watershed in the Upper Rogue Subbasin	Bacteria	2018
Western	Long Tom River Watershed	Bacteria	2018
Western	Tenmile Creek-Frontal Pacific Ocean (Tenmile Lakes Watershed)	Sediment and phosphorus to address Aquatic Weeds/Algae and pH	2018

3.7.3. Volunteer Monitoring Sample Plans

In 2018 DEQ conducted outreach and education activities and provided technical assistance to support volunteer monitoring in watersheds throughout Oregon. Staff reviewed and assisted in the development or amendment of eight sampling plans for organizations and worked with additional organizations to refine monitoring strategies or goals outside of the sampling plan process. Volunteer program staff expanded the impact of the program on the ability of the state to assess NPS pollution.

Volunteer sampling plans reviewed by the program included:

- Umatilla County SWCD Coombs Creek-McKay Creek Strategic Implementation Area Monitoring Sampling Analysis Plan,
- Powder Basin Watershed Council Macroinvertebrate Study Sampling Analysis Plan
- Oregon Department of Agriculture's Long-Term Stream Temperature and Vegetation Monitoring Sampling Analysis Plan
- Coquille Watershed Association's Winter Lake Restoration Effectiveness Monitoring Project Sampling Analysis Plan
- Luckiamute Watershed Council Temperature Monitoring Sampling Analysis Plan
- Scappoose Bay Watershed Council's Sauvie Island Canals Project Sampling Analysis Plan
- Rogue Valley Sewer Services' Sampling Analysis Plan Update

- Nestucca, Neskowin, Sand Lake Watershed Council's Temperature Monitoring Sampling Analysis Plan

DEQ staff provided water quality testing equipment or supplies to 16 different organizations. There are approximately 40 active organizations with equipment around the state working on over 24 separate monitoring projects. Staff provided technical assistance on equipment and protocols over the phone and conducted training in water quality monitoring techniques.

In 2018, volunteer program staff continued to implement a data management system for water quality data generated by partner organizations. Volunteer staff made great progress in the effort to get volunteer data out of the local database and available on EPA's WQX via DEQ's AWQMS database. The data from over 103,000 sample activities were processed using the system that provides assessment and summary of data collected by organizations and stores the data in a format consistent with EPA Store/WQX data requirements.

3.8. TMDLs and TMDL Implementation

DEQ identified seven TMDL and TMDL implementation related action items in the 2014 nonpoint source management program plan (Table 14) and five in the 2016-2018 Performance Partnership Agreement (Table 15). The following sections describe progress on these action items in 2018.

Table 14. Description of TMDL and TMDL implementation program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
WQP - 1	TMDL Guidance or IMD	Develop TMDL Guidance or IMD on how to produce work plans that identify data needs and how to design a monitoring study.	2015	Completed in 2017.
WQP - 2	Technical Assistance	DEQ headquarters and region staff will provide technical assistance to DMAs, DEQ staff, other local, state, and federal staff on TMDL development and TMDL implementation efforts.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.8.2
WQP - 3	TMDL Implementation Plans	Work with DMAs to develop and implement TMDL Implementation Plans (including annual reports) as described in the TMDL/WQMP.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.8.3.
WQP - 4	TMDL Implementation Plans	DEQ reviews TMDL Implementation Plan annual reports.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.8.3

Goal #	Goal Topic	Action	Time Frame	2018 Status
WQP - 5	TMDL Implementation Plan Guidance	Develop a process for DEQ staff to review TMDLs and TMDL Implementation Plans every 5 Years.	2014	Completed in 2014. DEQ developed a process for the Willamette Basin Five Year Review.
WQP - 6	TMDL & Nonpoint Source Implementation	Develop a spreadsheet and process for DEQ to track and report on landscape condition for achieving TMDL implementation timelines and milestones including water quality status and trends.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Sections 3.8.3, 3.10.1 and 3.10.2.
WQP - 7	Reasonable Assurance	Conduct analysis during TMDL/WQMP development to provide reasonable assurance and guide implementation for TMDLs.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.8.4.

Table 15. Description of Monitoring and Assessment actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2018.

PPA Element	Action	Time Frame	2018 Status
PPA - 2.1	Develop TMDLs and WQMPs in accordance with 303(d) list schedule.	Ongoing from 2016 – 2018 depending on TMDL	Ongoing. See 2018 accomplishments in Section 3.8.1.
PPA - 2.3	Implement the Willamette River Basin TMDL. Work with watershed councils, local governments, and other DMAs to develop appropriate management practices and plans for controlling pollutants to the Willamette River. Work with USDA agencies to leverage Farm Bill resources to implement priority best management practices in critical areas.	Ongoing	Ongoing. See 2018 accomplishments in Sections 3.8.3, and the Willamette Basin Report in Appendix R.
PPA - 2.4	Include robust Reasonable Assurance documentation in the TMDL and WQMP to implement TMDLs for Nonpoint Sources in subbasins where TMDLs/WQMPs have been completed or are being completed. Work with watershed councils, local governments and other DMAs to develop appropriate management practices and plans for controlling pollutants. Work with USDA agencies to leverage Farm Bill resources to implement priority best management practices in critical areas.	Ongoing	Ongoing. See 2018 accomplishments in Section 3.8.4, Section 3.8.3, and the Basin Reports in Appendices A - R.

PPA Element	Action	Time Frame	2018 Status
PPA - 2.5	Implementation of load allocations or require TMDL implementation plans for all sources assigned load allocations.	Ongoing	Ongoing. See 2018 accomplishments in Section 3.8.4, Section 3.8.3, and the Basin Reports in Appendices A - R.
PPA - 2.6	Develop and implement TMDL/WQMP/IP as one of the approaches to address the deficiencies in the CZARA Coastal Nonpoint Control Plan additional management measures for forestry identified by EPA and NOAA (7/28/2015) as described in the Governor's Natural Resource Office letter (2/10/2016). Incorporate New Development guidelines and Onsite Sewage Disposal Systems (OSDS) actions in TMDL/WQMP as described in CZARA management measures.	At issuance of TMDLs	This will occur as TMDLs are developed. See 2018 accomplishments in Section 3.8.1.

3.8.1. TMDL Development

Several TMDLs were under development in 2018:

Western Hood Subbasin Temperature TMDLs: A modified Western Hood Subbasins Temperature TMDL was issued to EPA in February of 2018. EPA approved the TMDL in June of 2018. This modification updated the TMDL to the currently adopted temperature standards and established new waste load allocations for a variety of municipal and industrial wastewater dischargers.

Coquille River Subbasin TMDLs: TMDLs for the Coquille River Subbasin are being developed to address dissolved oxygen, chlorophyll a, and bacteria. Modeling of the North, Middle, and South Fork Coquille River has been completed with waste load allocations developed for the Coquille Valley wastewater dischargers. The narrative for the Coquille TMDL draft is currently under development and designated management agency outreach in the fall of 2019. Initially the Coquille River TMDL was scheduled for issuance in December of 2016. The Coquille River Sub basin TMDL is now expected to be submitted to the EPA for approval in 2020.

Upper Klamath and Lost Subbasins TMDLs: Public comment was held on a revision to the nutrient TMDLs for the Upper Klamath and Lost Rivers from July 27, 2018 through August 10, 2018. The revised TMDL was issued by DEQ and submitted to EPA for action in January 2019. These set of TMDLs address dissolved oxygen, pH, ammonia toxicity, and chlorophyll a impairments and was originally issued in December 2010 when it also included temperature TMDLs. The nutrient part of the TMDL was reissued by DEQ in December 2017. Three entities in the Klamath Basin requested reconsideration, which was granted by the Director of DEQ in early 2018. The TMDLs were updated to include new information as it pertains to the Water Management Districts and their responsibilities for TMDL Implementation Planning.

Development of the temperature TMDLs for the Upper Klamath and Lost Subbasins was under development in 2018. The temperature TMDL must be approved by EPA by the court ordered deadline of September 30, 2019.

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Willamette Basin Mercury TMDL: In September 2006, EPA approved DEQ's mercury TMDL for the entire Willamette Basin. DEQ developed the TMDL to meet a mercury target in place at the time. A lawsuit was filed in 2012, which argued the validity of the mercury TMDL and EPA's approval of the TMDL. In April 2017, the US District Court issued a ruling requiring EPA and DEQ to revise the TMDL by April 2019, and allowing the 2006 TMDL to remain in effect until EPA issues or approves the revised TMDL. The court has since approved a DEQ and EPA extension request to Nov. 29, 2019.

DEQ and EPA are revising the TMDL to meet Oregon's current water quality criterion for methylmercury, which is eight times more stringent than the target in effect in 2006. EPA approved Oregon's revisions to its methylmercury fish tissue concentration criterion for the protection of human health in October 2011. The revised criterion changed the acceptable level from 0.3 mg/kg (milligram of methylmercury per kilogram of fish tissue) to a significantly more protective level of 0.040 mg/kg. To satisfy elements of the court's ruling, the TMDL is being revised to include recent data, provide Waste Load Allocations for permitted sources, provide daily loading capacity and meet the current water quality standards for mercury.

Mid-Coast watershed TMDLs: TMDLs for various watersheds in the Mid-Coast are being developed to address impairments for bacteria temperature, biocriteria, and dissolved oxygen. The TMDLs were initially scheduled for issuance in December of 2017. TMDLs addressing biocriteria impairments in the Indian Creek Watershed; the bacteria TMDLs for the Upper Yaquina, Salmon, and Big Elk watersheds, and the beach impairments on Nye, Agate, and Yaquina Bay State Park Beaches are scheduled for issuance pending completion of other TMDLs; and in the third quarter of 2019 in the Salmon River watershed. A temperature TMDL for the Yachats River Watershed is now expected to be issued to EPA by the first quarter of 2020.

The dissolved oxygen TMDL for the Upper Yaquina is expected in the second quarter of 2020. During 2018, the TMDL model was calibrated and loading capacities for contributing pollutants were determined after accounting for a margin of safety. A calibration report was completed and reviewed by DEQ and EPA.

Powder River Basin TMDLs: Currently DEQ is working on TMDLs that will address impairments for bacteria, dissolved oxygen, and chlorophyll a in the Powder River, Burnt River, and Brownlee Reservoir Subbasins. Riparian areas and channel widths have been delineated via GIS for use in model for dissolved oxygen and pH impairments in the Powder River. Bacteria load duration curves in all three subbasins (Powder, Brownlee, and Burnt) have been completed and undergone DEQ and EPA review in accordance with a work plan completed in 2016. The target date for completion of the TMDLs is the fourth quarter of 2020.

3.8.2. Technical Assistance

DEQ headquarters and regional staff provide technical assistance to DMAs, DEQ staff, other local, state, and federal staff on TMDL development and TMDL implementation efforts.

In 2018 technical assistance for TMDL development was focused on

- Coquille Subbasin dissolved oxygen, pH, and bacteria, and temperature TMDLs;
- Upper Yaquina Subbasin bacteria, dissolved oxygen, and temperature TMDLs;
- Middle Siletz Subbasin dissolved oxygen and temperature
- Powder and Burnt Subbasins bacteria, pH, and dissolved oxygen TMDLs;
- Upper Klamath and Lost River Subbasins dissolved oxygen and temperature TMDLs; and
- Willamette Basin Mercury TMDLs

Technical assistance for TMDL implementation efforts was focused on:

- Assistance to Designated Management Agencies on development or revision of TMDL implementation plans, primarily in the Willamette but also in the Rogue, North Coast, and Sandy (see Section 3.8.3);
- Review of Designated Management Agencies TMDL implementation annual reports (see Section 3.8.3);
- Implementation of management strategies and BMPs and monitoring assessments in the North Coast, South Coast, Willamette, Rogue, Klamath, John Day, Grande Ronde, Hood, Umpqua and Malheur Basins;
- Production of twenty water quality status and trend reports for biennial review of agricultural water quality rules and area plans (see Section 3.10.2);
- Review and comment on agricultural water quality rules and area plans (see Section 3.10.2).

3.8.3. DMA Implementation Plans and Annual Report Reviews

DEQ regularly works with DMAs to develop and implement TMDL Implementation Plans. As in previous years, most DMAs continue to implement their TMDL implementation plans. A sampling of DMA implementation activities reported to DEQ in 2018 are described in the Basin Reports in **Appendices A - R**. DEQ also supports DMAs as they develop or revise TMDL implementation plans and submit their TMDL implementation plan annual reports.

DEQ staff regularly receive and review TMDL implementation plans. For TMDLs issued, DEQ has:

- Required approximately 168 implementation plans to be submitted;
- Received 121 implementation plans (72% of those required); and
- Reviewed or took action on 99 (82%) of the received implementation plans.

DEQ staff regularly receive and review TMDL implementation plan annual reports. For the 2018 reporting period, DEQ:

- Required approximately 137 annual reports be submitted;
- Received 88 annual reports (64% of those required); and
- Reviewed or took action on 66 (75%) of the received annual reports.

DEQ improved the tracking of DMA and TMDL implementation related requirements. DEQ uses the ACES database to systematically track TMDL enforcement and reporting requirements and their status. The ACES system tracks DMA annual report due dates, five-year review due dates, TMDL implementation plans or plan revision due dates, the dates of report acceptance, review, and the approval by DEQ, as well as enforcement actions. To date DEQ's Western Region has entered TMDL reporting requirements for most county, city, special district, and state agency DMAs for the Applegate, Bear Creek, Rogue Basin, and Willamette Basin TMDLs. DEQ's Northwest Region has begun entering data into ACES and anticipates to make steady progress in 2018. DEQ's Eastern Region has not yet started data entry into ACES.

3.8.4. Reasonable Assurance.

In 2018 DEQ and EPA continued working on developing recommendations to improve the clarity and documentation of reasonable assurance for implementation of Total Maximum Daily Loads and Water Quality Management Plans (WQMP). These components were documented in either the TMDL, WQMP, TMDL implementation plans, or DMA annual reports. Future TMDLs will include additional clarity and documentation on reasonable assurance with recommendations that include:

Process to develop implementation actions for sources:

- With the assistance from the TMDL advisory committee, perform analysis to better understand the causes of impairments and identify pollutant sources, including point sources and land use and management sources and linkages to water body impairments;
- Work with the TMDL advisory committee and Designated Management Agencies (DMAs) to identify the management strategies needed to achieve pollutant reductions;
- With the TMDL advisory committee and DMAs, determine the timelines and milestones to meet allocations (including surrogates) and applicable water quality criteria in the watersheds for each DMA;
- Identify specific implementation actions in the WQMP for each sector, source, or category of source.
- Evaluate that the DMA Implementation Plan be at least as effective as the strategy set out in the WQMP; and
- The WQMP will describe the actions necessary to evaluate the effectiveness of the management strategies and steps required for structured decision making and adaptive management.

WQMP development that addresses permitted sources, land use, and land management sources of the pollutant:

- Management strategies designed to meet the waste load allocations and load allocations in the TMDL, including a categorization of sources and a description of the management strategies proposed for each source category;
- Timelines for implementing management strategies including schedules revising permits, achieving appropriate incremental and measurable water quality targets, and completion of other measurable milestones;
- Explanation of how implementing the management strategies will result in attainment of water quality standards or represent control to the maximum extent practicable;
- Identification of sector-specific, source-specific, or category-specific implementation plans at the time the TMDL is issued;
- Identification of persons, including designated management agencies (DMAs), responsible for implementing the WQMP management strategies and for revising sector-specific, source-specific, or category-specific implementation plans as needed for adaptive management; and
- Timeline and milestones for implementing TMDL allocations.

WQMP expectations for DMAs:

- Provide a timeline for implementing management strategies and a schedule for completing verifiable milestones;
- Provide performance monitoring with a plan for periodic review and revision of the implementation plan;

- Schedules for preparation and submission of sector-specific or source-specific implementation plans by a DMA if the DMA wants to use alternatives to the approaches in the WQMP; and
- Explanation of the DMA's determination that there is reasonable assurance that management strategies and sector-specific, source-specific, or category-specific implementation plans will be carried out through regulatory or voluntary actions.

3.9. Toxics

In order to make progress on the nonpoint source program goals related to toxic chemicals, DEQ committed to two action items (Table 16) in the 2014 nonpoint source management program plan and another (Table 17) in the 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2018.

Table 16. Description of the toxics program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the 2018 status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
TOX - 1	Water Quality Pesticide Management Team and Pesticide Stewardship Partnerships (PSPs)	Continue to work with the Water Quality Pesticide Management Team and implement programs to address water quality pesticide issues including the Pesticide Stewardship Partnerships (PSP) projects.	Ongoing 2014-2018	Ongoing. Please refer to accomplishments in Section 3.9.1.
TOX - 2	Public Water System (PWS)	Continue developing contaminant-specific reduction strategies for public water system use, such as for nitrates and pesticides from urban and rural residential lands.	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Sections 3.9.2 and.

Table 17. Description of Toxic Program actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2018.

PPA Element	Action	Time Frame	2018 Status
PPA - 8.8	Implement Agency Toxics Reduction Strategy.	Ongoing	Ongoing.

3.9.1. Water Quality Pesticides Issues

DEQ works with the Water Quality Pesticide Management Team (WQPMT) and implements programs to address water quality pesticide issues. The NPS management program plan identified that within the timeframe from 2014-2018, the nonpoint source program will reduce, where need, instream pesticide concentrations. Each subsection below identifies progress made on this goal.

3.9.1.1. Water Quality Pesticide Management Team Activities

Several state agencies are responsible for the development and enforcement of water quality policies in Oregon. The Water Quality Pesticide Management Team, an interagency team comprised of

representatives from the Oregon Department of Agriculture, DEQ, Oregon Health Authority, and Oregon Department of Forestry was formed to address pesticide contamination issues in waters across the state.

The team seeks to reduce concentrations and frequencies of pesticide detections in waters of the state through facilitation and coordination of water quality related activities such as monitoring, data analysis and communication, prioritizing program activities, review and implementation of federal policies.

http://www.oregon.gov/ODA/programs/Pesticides/Water/Pages/AboutWaterPesticides.aspx

The Water Quality Pesticide Management Team is guiding the expansion and enhancement of the Pesticide Stewardship Partnership Program. The WQPMT selected the Middle Rogue Watershed as the newest full scale Pesticide Stewardship Partnership (PSP) project after conducting periodic stream monitoring since 2014. Those initial monitoring results showed a broad range of multi-use herbicides in several streams throughout the watershed. Although the vast majority of detections were below EPA aquatic life benchmarks, the consistent detections of pesticides (mostly herbicides) across different types of land use was a major factor in the selection of the Middle Rogue. The other primary factor was the engaged participation and interest of wide array of local stakeholder groups.

The Water Quality Pesticide Management Team coordinated with those local partners to plan baseline monitoring timing and locations, as well as outreach activities.

In addition, the Water Quality Pesticide Management Team decided to conduct a second phase of targeted pilot monitoring in the Middle Deschutes and South Umpqua in 2017 and 2018, based on an evaluation of data from 2014 and 2015. The Middle Deschutes monitoring results at one stream showed elevated levels of several agricultural used pesticides, which led to the establishment of an additional monitoring location on that stream. Monitoring at sites on two other streams in 2017 and 2018 showed frequent detections of some pesticides, but fewer exceedances of EPA benchmarks as the stream with two monitoring locations. The team has been presenting the data results to local management agencies and stakeholders to identify opportunities for improved practices and building a longer term Pesticide Stewardship Partnership in the watershed.

In the South Umpqua, the initial pilot monitoring data showed detections of several multi-use herbicides at multiple monitoring locations. No benchmark exceedances were observed, but the consistent detection of several herbicides in different parts of the watershed warrant continued monitoring. Several of the detected herbicides are associated with industrial forest land use, however, they can also be used for rights-of-way and other applications. Therefore, the Water Quality Pesticide Management Team recommended monitoring at locations that isolate land uses more than during the first round of monitoring. This new South Umpqua monitoring approach was employed in 2017 and 2018. Many of the same herbicides detected in the initial 2014-15 pilot effort were also detected over the past two years. The team is currently evaluating the viability of establishing a longer term Pesticide Stewardship Partnership project that could be the most representative of managed forest land uses now that the South Yamhill PSP project was suspended. Monitoring was discontinued in the South Yamhill Watershed after an assessment of the data from 2010-2016. Detections of pesticides in this forested watershed were relatively infrequent, and all but two of the detections were below 10% of the lowest EPA benchmark concentrations. However, without more precise information on pesticide application timing, uncertainty remains about whether the data results represent peak concentrations and detection frequencies.

The Water Quality Pesticide Management Team finalized a report by summarizing the South Yamhill findings, challenges associated with sample timing, and recommendations for similar future projects. https://www.oregon.gov/ODA/shared/Documents/Publications/PesticidesPARC/SouthYamhillPSPReport.pdf.

In 2018 the Water Quality Pesticide Management Team coordinated and conducted five agricultural and commercial pesticide waste collection events. These events removed nearly 70,000 pounds of unusable and "legacy" pesticides from Oregon watersheds that were brought in by 92 growers or other applicators

The WQPMT also reviewed and evaluated technical assistance grant proposals in 2017, and selected five projects to fund for the biennium. These projects includes tools for implementing urban and agricultural Integrated Pest Management and pesticide risk reduction actions, research trials for non-pesticidal materials that could replace highly toxic insecticides in fruit growing, preventing pesticide and sediment run-off from hazelnut orchards, and developing a model integrated watershed pesticide stewardship program plan.

3.9.1.2. Pesticide Stewardship Partnerships

Established in 2000 in the Hood River Watershed, the Pesticide Stewardship Partnership (PSP) Program uses local expertise with water quality sampling results to encourage and focus voluntary changes in pesticide use and practices. Through 2012, the program was supported primarily by nonpoint source grants and in-kind contributions. The 2013 Oregon Legislature provided the Oregon Department of Agriculture and DEQ with stable state funding for the program, and this financial support has continued through the 2017 Legislative Session. The program has expanded to encompass nine long-term watershed projects, and pilot water monitoring projects in two other watersheds. The pilot monitoring projects are designed to be short-term, with the results used to determine whether a long-term project is warranted. In addition, the pesticide collection events and stewardship technical assistance grant program, referenced in Section 3.9.1.1, are now largely supported by state funding.

In 2017 and 2018, the surface water monitoring conducted in five of the PSP watersheds was enhanced to include flow monitoring. The flow data allows DEQ and ODA to calculate pesticide loading changes over time, rather than just focusing on in-water concentrations. Given wide fluctuations in precipitation from year-to-year at some monitoring locations, as well as variations caused by changing water withdrawals and discharges, concentrations may not accurately reflect improvements in best practices that could result in reductions in total pesticide loading to streams. Having both pesticide concentration and mass loading data provides more insights into water quality issues in PSP watersheds, as well as impacts from pesticide stewardship activities. The DEQ Laboratory has also recently expanded its analytical capabilities to include additional pesticides that are widely used in Oregon. In 2018, watershed partners helped DEQ collect 550 grab water samples across all PSP watersheds, which were analyzed for over 130 pesticide ingredients and degradates. DEQ, ODA and our partners communicate the data results to pesticide applicators and community groups prior to spring pesticide applications.

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With regard to the successes, most malathion detections continue to remain below the water quality criterion in streams near The Dalles, OR after elevated levels were detected in 2010 and 2011. (Figure 2). In 2018, only four malathion detections were observed and none exceeded the 0.1 microgram/liter water quality criterion for the first time since monitoring resumed in the areas in 2010. Median concentrations of malathion in 2018 were also the lowest over the past 9 years of monitoring.

Communication of the monitoring data to local cherry growers occurs regularly, and they have responded by implementing multiple best management practices. These practices include relying more on weather station data to ensure pesticide applications occur when meteorological conditions minimize off-target drift, and using ground spraying, rather than aerial, for orchard blocks close to streams. Similarly, the herbicide diuron is now observed infrequently at levels only slightly above detection limits in Walla Walla PSP Watershed streams, after concentrations were detected above aquatic life benchmarks between 2009 and 2011 (Figure 3). In 2012, the irrigation district began using weed burning devices as a mechanical control, and followed up with spot spraying of a much less persistent and toxic herbicide. In

addition, the levels and occurrence of the herbicides diuron and simazine have been reduced significantly in Fifteenmile Creek (Wasco County PSP watershed). The use of diuron in rights-of-way applications in this watershed was discontinued or reduced significantly. The specific reasons for the simazine decline aren't known, but some agricultural landowners in the county have transitioned to alternative chemistries for weed and vegetation control.

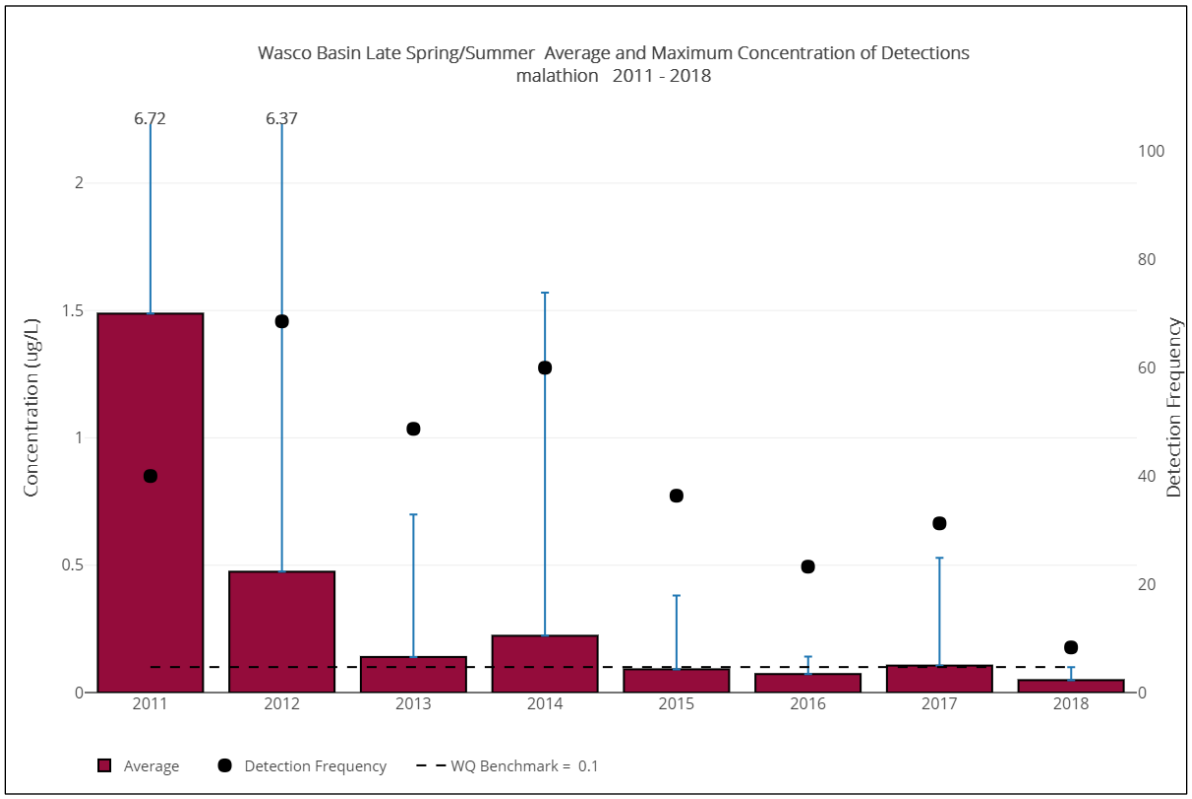

Figure 4. Median and maximum malathion concentration and detection frequencies in the Wasco PSP Watershed, 2011-2018.

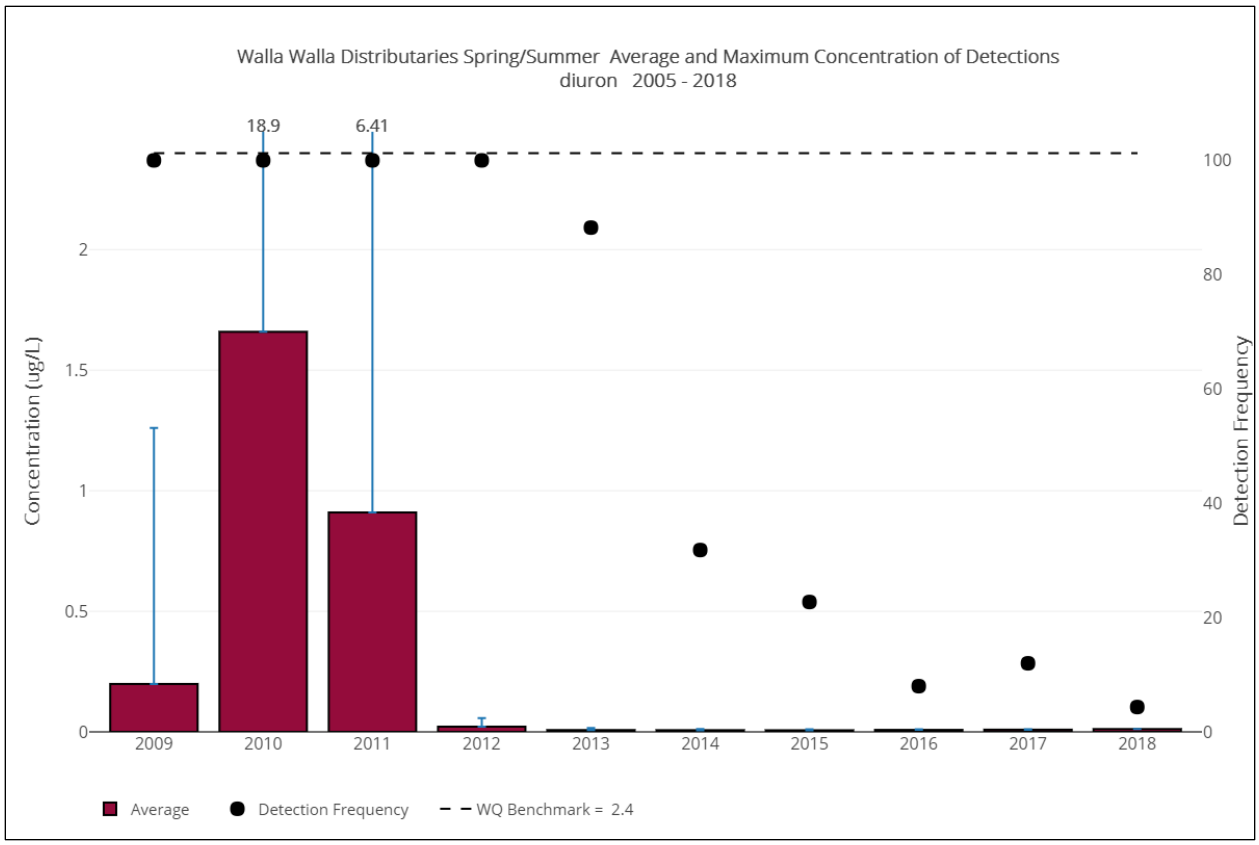

Figure 5. Average and maximum concentration and detection frequencies of diuron in the Walla Walla PSP watershed.

In the Yamhill and Clackamas, most of the benchmark exceedances have occurred in small agricultural sub-watersheds where landowners with a diverse array of crop types use pesticides with high toxicity to aquatic life. Most of these exceedances are related to insecticides, such as chlorpyrifos, diazinon, bifenthrin and imidacloprid. In addition, periodic detections of diuron have exceeded benchmarks in these two watersheds. Although used for some agricultural crops, diuron use in rights-of-way and other non-crop applications within these agricultural areas are likely contributors to the total concentrations observed. The streams in the Middle Deschutes with benchmark exceedances are surrounded by less diverse agricultural crop types than those in the North Willamette watersheds, but a wide variety of insecticides, herbicides and fungicides are registered for use on the specialty crops that are grown in that watershed. There is relatively little urban or other non-crop types of uses for the pesticides exceeding benchmarks in the Middle Deschutes.

In addition, very few benchmark or criteria exceedances of any pesticide were observed in the Hood watershed over the past four years, thus achieving the primary goals of that PSP project.

Below is a summary of 2018 data results for each PSP watershed.

Table 18. Summary of 2018 pesticide detections and exceedances per watershed

PSP Area	# of samples	Detections	Exceedances
Amazon	7568	241	1
Clackamas	6327	254	22
Hood	5183	80	0
Middle Deschutes	3798	217	17
Middle Rogue	8370	106	4
Pudding	4112	147	2
South Umpqua	5837	58	0
Walla Walla	6136	45	7
Wasco	7696	52	1
Yamhill	7776	646	53

***Note:** samples in this case relate to the number of water samples multiplied by the number of pesticides or degradates analyzed for in the sample. For example, 10 grab samples analyzed for a suite of 146 compounds results in 1,460 samples.

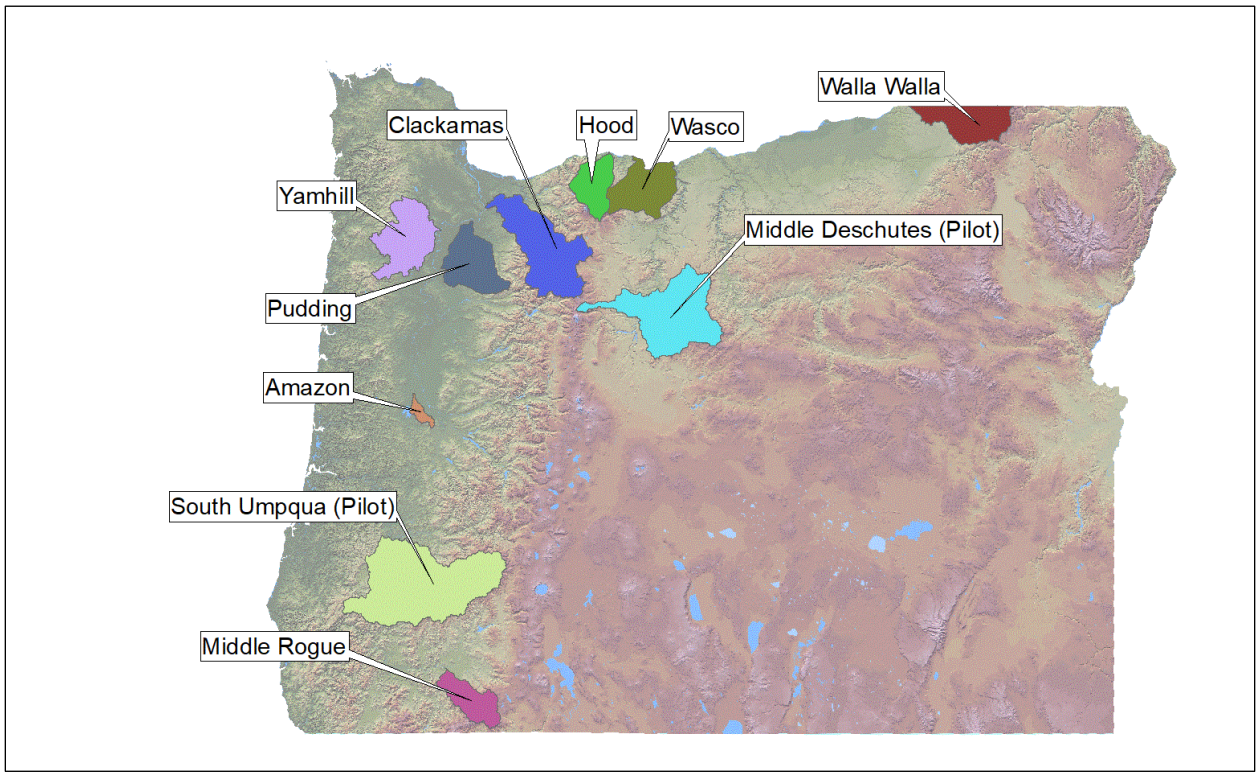

Figure 6. 2018 Pesticide Stewardship Partnership Watersheds.

Another significant element of the Pesticide Stewardship Partnership program is the collection of waste pesticides from commercial, agricultural and institutional entities in watersheds throughout the state. The Oregon Legislature has provided funding for this component of the program since 2013, in addition to supporting the enhancement of the monitoring and stewardship activities. Since 2014, the pesticide collection program has brought in more than 340,000 pounds of waste from 550 growers and other pesticide applicators. Legacy pesticides, such as DDT and chlordane, continue to be collected at these events. This is noteworthy, given how little of these materials can cause impairments to surface and groundwater.

3.9.2. Public Water System Reduction Strategies

DEQ, public water systems, and restoration partners continue to use the statewide "Resource Guides" for both groundwater and surface water sources which were developed in 2017 to provide contaminant specific reduction strategies for public water systems to use, such as for reducing nitrates and pesticides from urban and rural residential lands. These strategies are being evaluated and implemented throughout Oregon. Many of the projects implemented reduce the risk from nonpoint source activities in municipal watersheds. For example, coastal water providers have been evaluating methods to minimize pesticide and turbidity inputs in the source area upstream of their intakes. Multiple water providers who all obtain drinking water from the Rogue River are working together to identify and address the highest priority risks from urban and rural lands, stormwater inputs, and agriculture/forestry land uses. Partners in the Lincoln City (Schooner Creek), Langlois (Floras Creek), Arch Cape (North Coast), and Glide (North Umpqua) watersheds are decommissioning roads and restoring riparian vegetation to reduce turbidity in their watershed. There are also several water systems improving sensitive riparian areas by fencing out livestock and planting native trees and shrubs including Baker City and South Coast Water District.

DEQ's Drinking Water Program and Toxics programs have been coordinating with OHA's Drinking Water unit on per- and polyfluoroalkyl substances (PFAS) monitoring and data review. In addition, DEQ is planning in 2019 to include potential sources of PFAS environmental contamination into its GIS mapping database to assist local public water systems in conducting source water protection plans and actions. DEQ is tracking the efforts of EPA and other states to develop drinking water standards (maximum contaminant levels, or MCLs) for individual compounds as proposed in the EPA's PFAS Action Plan, as well as any new proposed public water system monitoring requirements.

3.9.3. Agency Integrated Toxics Reduction Strategy

DEQ completed a Toxics Reduction Strategy in 2012 to complement and support DEQ's on-going Water, Air and Land Quality toxics reduction and assessment efforts through improved integration across agency programs, and by filling gaps in existing programs. In 2018, DEQ completed an update to the Toxics Reduction Strategy and presented it to the Environmental Quality Commission. The strategy proposes 14 toxic reduction and assessment actions that are organized into activities ready for implementation, and those needing evaluation and research to identify the best path forward.

DEQ developed guiding principles to assist with implementation of the strategy actions. These principles include an enhanced focus on environmental justice and recommendations for engaging communities who may experience disproportionate impacts from toxics in the environment. Other principles are enhancing collaboration between DEQ programs and external partners, developing and using metrics to measure and report on progress, and building on the advances made through the 2012 strategy actions.

DEQ is developing implementation plans for each of the 14 strategy actions, many of which focus on preventing non-point sources of toxics pollution from consumer products or other substances used widely by diffuse sources. Below is a brief summary of these actions:

Implementation-Ready Actions

1. **Update DEQ's "Toxics Focus List" of priority chemicals:** The focus list identifies the highest priority chemicals or classes of chemicals to protect public health and the environment.
2. **Monitor for priority toxics in all environmental media:** After the focus list is updated, DEQ's Laboratory and Environmental Assessment Program will work on adding chemicals missing from its current air, water and land monitoring activities.
3. **Reduce environmental and human exposure to toxics in the built environment:** A wide array of toxic chemicals are used in building materials. DEQ aims to minimize these toxics in the design, construction, use and demolition of buildings in partnership with interested stakeholders.
4. **Build demand for clean diesel vehicles and equipment in public works projects:** DEQ partners are building a marketplace demand for clean diesel equipment and engines. DEQ will share and build technical expertise related to emissions reduction technologies.
5. **Partner with product manufacturers, vendors, and users to more fully evaluate, disclose, and/or label toxic ingredients to reduce toxics:** Providing consumers with complete and transparent information on toxic ingredients allows them to make informed purchasing decisions, and serves as an incentive to manufacturers to reduce the number and quantity of toxic chemicals in products.
6. **Expand government procurement of low toxicity products and materials:** In 2012, Governor's Executive Order 12-05 aimed to increase government procurement of low toxicity products to stimulate market demand for products with safer chemical ingredients. DEQ will explore accelerating these state and local government procurement efforts and broadening the range of products and materials.
7. **Accelerate safer chemical alternatives assessments:** Collaborate with other states and regional research entities to advance safer chemistry. State agencies, including DEQ, now have more opportunities to increase research and training activities to help businesses and consumers make informed choices for safer alternatives.
8. **Develop and implement a metals manufacturing, coating, and finishing outreach pollution prevention program:** Metals manufacturing, finishing and coating businesses use toxic materials that can generate pollutants in populated areas. These are mostly small and medium sized businesses and may need additional resources for comprehensively assessing and implementing toxics pollution prevention measures.

Program Evaluation and Research Actions

9. **Assess fate and transport of priority toxics from consumer products:** Knowing how toxic chemicals in consumer products enter the environment can help DEQ and others effectively conduct outreach and pollution prevention actions. Identifying and addressing data gaps for wastewater and solid waste pathways is a key step in this process.
10. **Assess and characterize diesel emissions impacts:** Diesel is a source of many priority toxic pollutants in air that adversely affect public health and contribute to land and water contamination. A long-term strategy for evaluating the range of diesel impacts will support effective reduction efforts.
11. **Evaluate effectiveness of existing mercury reduction programs in Oregon to determine gaps and opportunities:** Several regulatory and non-regulatory mercury reduction initiatives have been implemented over the past 25 years in DEQ's water, land and air programs. The evaluation will determine their effectiveness and any gaps that should be addressed.

12. **Evaluate DEQ's toxics use regulation and program:** Evaluate Oregon's Toxic Use and Hazardous Waste Reduction Act and program to identify opportunities to further reduce toxics use and modernize the program. The *Materials Management in Oregon: 2050 Vision and Framework* serves as the guiding framework for future recommendations.
13. **Enhance the pesticide stewardship partnership program to include environmental justice communities:** The Pesticide Stewardship Partnership Program has successfully used water monitoring data to drive voluntary actions to improve water quality. DEQ will expand the program to include monitoring, stewardship technical assistance, and waste collection in areas with disproportionately impacted populations and deliver services directly to those communities.
14. **Provide toxics reduction technical assistance to all DEQ programs:** Identify and formalize a cross-program, technical assistance team to provide toxics information, support, tools, training and other resources to DEQ programs and partners.

In 2018, DEQ continued active participation in regional and interstate activities to advance green chemistry and safer chemical alternatives assessment. These activities include the Interstate Chemicals Clearinghouse (IC2), Northwest Green Chemistry, and a West Coast States' collaboration. DEQ coordinated with the Washington Department of Ecology and other entities to offer multiple chemical hazard and alternatives assessment trainings for businesses and governments. An EPA Pollution Prevention grant obtained by DEQ supported these trainings.

This grant also supported work with Northwest Green Chemistry to research and evaluate safer alternatives for bridge coatings, and to develop a report that provides a roadmap for assessing alternatives to per and poly-fluorinated (PFAS) chemicals in food packaging. This report (https://www.oregon.gov/deq/FilterDocs/toxicsRoadmap.pdf) can be used in Oregon and other states to conduct comprehensive alternatives assessments for food packaging with these fluorinated substances. PFAS are a growing concern for water quality programs due to their toxicity, persistence and presence in a range of consumer and business products. DEQ is engaged in a number of interstate and EPA workgroups and forums focused on reducing environmental impacts of PFAS, including groundwater and surface water contamination.

3.10. Agriculture

In order to further the goal that agricultural lands attain TMDL load allocations and water quality standards, DEQ committed to six action items (Table 19) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2018.

Table 19. Description of agriculture related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan, 2016-2018 Performance Partnership Agreement, and the 2018 status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
AG - 1	Landscape Condition for TMDLs and WQS	Document definition of system potential and site capable vegetation.	2014	Complete. See Section 3.10.1.
AG - 2	Landscape Condition for TMDLs and WQS	Conduct effective shade assessments for evaluating implementation to achieve TMDL/WQS goals under area rules and plan.	2014.	Complete. See Section 3.10.1.

Goal #	Goal Topic	Action	Time Frame	2018 Status
AG – 3 and PPA – 8.10	Biennial Review of Area Rule and Plan	Participate in ODA's biennial review process by providing water quality status and trends and landscape condition in priority areas. Ag Area Plan & Rule biennial reviews and ODA/DEQ MOA implementation	Ongoing 2014-2018	Ongoing. See 2018 accomplishments in Section 3.10.2.
AG - 4	Update DEQ Guidance for Biennial Reviews	Collaborate with ODA for updating DEQ guidance for providing comment during ODA's Biennial review Process.	2015	Complete. With additional work in continuing in 2018. See Section 3.10.3.
AG - 5	Grant Funding	Participate in local grant funding process to direct resources to high priority agricultural issues.	Ongoing 2014-2018	Ongoing. DEQ has ongoing coordination with ODA on grant funding process through CEP, 319, and NWQI.
AG - 6	ODA Area Rule Compliance	Work with ODA to prioritize and help develop assessment methodologies for addressing temperature, sediment and sedimentation, bacteria, nutrients, and pesticides.	Ongoing 2014-2018	Ongoing. DEQ has ongoing coordination with ODA on assessment methodologies through CEP. See 2018 accomplishments in Section 4.1.

3.10.1. Landscape Condition Assessments

During 2018, DEQ actively evaluated new methods to conduct future landscape condition assessments. One of the limiting factors in conducting these assessments using current methods is the resources required to acquire the necessary remote sensing data and complete the analysis. Scaling the method up to the entire state is resource intensive. To evaluate alternative approaches DEQ funded a PSU master's student to evaluate empirical methods intended to estimate effective shade using freely available remote sensing data. These methods can potentially be scaled up to large geographic areas in order to deliver assessments on the timelines required for each biennial review. The results of this evaluation supported using freely available remote sensing data to estimate effective shade along the Middle Fork Coquille River and were published in a Masters of Environmental Management Thesis in 2018. In 2019, DEQ would like to develop this model further and investigate its applicability to other waterways in Oregon.

3.10.2. Review of Area Rules and Plans

DEQ Basin coordinators participate in Oregon Department of Agriculture's biennial review process for agricultural water quality management area rules and plans by providing comment and recommendations on any changes or additions necessary to achieve water quality standards and TMDL agricultural load allocations. As part of this process DEQ develops water quality status and trends reports. DEQ, ODA and the ODA Local Advisory Committees often this information during the biennial reviews.

In 2018, DEQ prepared water quality status and trend reports and provided comments or recommendations to ODA for biennial reviews in the following twenty agricultural management areas:

- Burnt River
- Coos Coquille
- Crooked River
- Curry
- Hood
- Lower Deschutes
- Lower John Day
- Malheur River
- Middle John Day
- Malheur River
- Middle John Day
- Middle Willamette
- Molalla-Pudding French Prairie North
- North Coast
- Owyhee
- Tualatin River
- Umatilla
- Umpqua River
- Upper Deschutes
- Upper Mainstem and South Fork John Day River

The water quality status and trend reports can be found at https://www.oregon.gov/deq/wq/programs/Pages/wqstatustrends.aspx.

Under goal AG – 3 DEQ committed to provide information about landscape condition in the status and trend reports. DEQ did not include information on landscape condition in the status and trend reports issued in 2018 due to insufficient data and resources to complete the characterizations. However, DEQ has been actively evaluating methods and collecting new remote sensing data to support future characterizations. See Section 3.10.1 for more information on 2018 activities related to landscape condition assessments.

3.10.3. DEQ Biennial Review Guidance

DEQ committed to collaborate with ODA while updating DEQ's guidance for providing comment during ODA's biennial review process. DEQ updated the biennial review guidance in coordination with ODA in 2015. DEQ has ongoing coordination with ODA on biennial review guidance but did not make any updates in 2018. In December of 2017 ODA and DEQ held a meeting to begin a complete programmatic review of the DEQ-ODA consultation process for biennial reviews. This work continued during 2018.

3.11. Private Forestry.

To further the goal that private and state forestlands attain TMDL load allocations and water quality standards, DEQ committed to three action items (Table 18) in the 2014 Nonpoint Source Management Program Plan. The following sections describe progress on these action items in 2018. The following sections describe progress on these action items in 2018.

Table 20. Description of the Private Forestry related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.

Goal #	Goal Topic	Action	Time Frame	2018 Status
FOR – 1	FPA Evaluation	Participate with ODF to jointly develop evaluation methods and study designs (with funding sources) to address unanswered monitoring questions from the Private Forests Monitoring Program Strategic Plan.	2015	Complete. See Section 3.11.1.
FOR - 2	Forest Practices Act Rules	Participate in Forest Practices Act rule analysis and concept development for water quality issues and revisions to management plans for state forests.	2014	Complete. See Section 3.11.2.
FOR - 3	ODF/DEQ MOA	Participate with ODF on revising the current MOA between ODF and DEQ.	2015	Not Complete. See Section 3.11.3.

3.11.1. Forest Practices Act Evaluation

DEQ committed to participate with Oregon Department of Forestry (ODF) to jointly develop methods and study designs with funding sources to address unanswered monitoring questions from the Private Forests Monitoring Program Strategic Plan. Proper evaluation of the ability of forest practice rules to meet water quality standards and protect beneficial uses requires monitoring of both compliance with existing rules and the effectiveness of those rules for meeting standards.

DEQ staff serve on the external review committee for ODF's Forest Practices Act (FPA) compliance audit to evaluate landowner/operator compliance with existing forest practice rules. DEQ has served in this capacity since 2012. Current rule sets being evaluated include riparian, harvest, and road rules. Data show that compliance rates are generally high (>90%) with compliance with some riparian rules (e.g. protection of small Type-N streams and small wetlands) lower and in need of improvement. These data allow ODF to target internal and external education and training. Future rule sets under consideration for compliance monitoring include chemical and other petroleum products and reforestation rules.

In 2016, the Board of Forestry identified a need to evaluate the efficacy of streamside protection rules and policy in ODF's Siskiyou and Eastern Oregon geographic regions. ODF surveyed stakeholders to find out their opinions on the methods (e.g. literature reviews, field studies, GIS analysis) and priorities for developing potential monitoring questions (e.g., stream temperature, fish habitat, large wood recruitment, and other water quality parameters). DEQ staff participated in this survey and had related discussions with ODF staff and management. In 2018, ODF drafted a report which ODEQ has reviewed, ODEQ is currently waiting on ODF to submit a final report.

One priority identified by stakeholders in the draft report was climate change. Stakeholders voiced concern over the consideration of climate change when assessing the effectiveness of FPA rules in achieving desired conditions. However, ODF indicated there is no Board policy on climate change, and it is not currently a part of the FPA; therefore, ODF has no goal by which to assess the effectives of the FPA in regard to climate change, though it has been identified as an emerging issues for the Board to review. Stakeholders also indicated concern over the lack of disturbances (e.g., fire and flooding) incorporated into the analysis, though ODF considered such disturbances out of scope. The results of this

review can result in a range of outcomes for the FPA, as determined by the Board of Forestry: the FPA rules are working as designed, FPA or rules may not meet stated objectives, additional study is warranted, or no action necessary.

3.11.2. Forest Practices Act Rules

DEQ committed to participate in Forest Practices Act rule analysis and concept development for water quality issues and revisions to management plans for state forests.

In 2002, ODF initiated the "RipStream" riparian study to evaluate if the Forest Practices Act rules were effectively meeting water quality standards for temperature. RipStream showed that riparian protections on small and medium fish-bearing streams do not ensure achievement of the protecting cold water criterion of the temperature standard west of the crest of the Cascades and excluding the Siskiyou region. During 2018 ODF performed a literature review and sought contextual information for evaluating effectiveness of rules meeting DEQ's standards for riparian management for the Siskiyou region. This information was presented to the Oregon Board of Forestry (Board) for recommending the need for more information before making a recommendation on sufficiency of riparian rules. At the Board's September 2019 meeting, ODF will present a suite of methods for gathering additional information.

The Board of Forestry adopted final rules on April 26, 2017 and which took effect on July 1, 2017 that increased protections on salmon, steelhead, and bull trout (SSBT) streams to ensure achievement of the protecting cold water criterion in Oregon's temperature standard. DEQ and other agency staff participated in this rulemaking process.

The final revised rules have three prescription options for salmon, steelhead and bull trout (SSBT) streams within the Coast Range, South Coast, Interior, and Western Cascades ODF geographic regions including:

Retaining all trees within 60 feet and 80 feet of the high water level on small and medium SSBT streams respectively (Prescription 1 Oregon Administrative Rules 629-642-0105(10);

1. Basal area targets and live conifer tree requirements shown in Table 21. (Prescription 2 Oregon Administrative Rules 629-642-0105(10);
2. Retaining all trees within 40 feet of the high water level on the north side of SSBT streams where the stream valley direction is between 60 and 120 degrees east and 240 and 300 degrees west on a compass bearing of 0 and 360 degrees as north (Prescription 3 Oregon Administrative Rules 629-642-0105(12);

ODF also developed a model to predict potential temperature change associated with changes to shade due to riparian stand management.

The analysis of various rule options was summarized in an ODF staff report to the Board of Forestry for agenda item two at the Board meeting on July 23rd, 2015. Rule concepts evaluated in the staff report that DEQ staff believe were likely to achieve the protecting cold water criterion after the first harvest entry almost or more than 50% of the time included:

- 90 foot and 100 foot no-cut buffers,
- variable retention option 170/275 with a 170 foot wide Riparian Management Area (RMA) and 275 square feet of basal area target retained per 1,000 foot of stream, and the current State Forest Management Plan (FMP).

ODF has finished their analysis of temperature based on RipStream results and are now working on analyzing riparian stands and large wood recruitment. ODF is additionally working on developing a modelling approach using RipStream data.

Table 21. Oregon Department of Forestry vegetation retention requirements along Salmon Steelhead and Bull Trout (SSBT) streams, Prescription option 2 in Oregon Administrative Rules 629-642-0105(11).

Basal Area Target		Live Conifer Trees	
Square feet (ft^2) of basal area per each 500-foot stream segment, each side of the stream (any combination of conifers and hardwoods 6 inches or greater DBH)		(8 inches or greater DBH) per each 500-foot stream segment, each side of the stream	
Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet	Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet
0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.
20 to 50 feet: minimum 18 ft^2	20 to 40 feet: minimum 10 ft^2	20 to 50 feet: minimum 7 trees	20 to 40 feet: minimum 4 trees
50 to 80 feet: minimum 18 ft^2	40 to 60 feet: minimum 10 ft^2	50 to 80 feet: minimum 7 trees	40 to 60 feet: minimum 4 trees
RMA Total (20 to 80 feet) = 69 ft^2	RMA Total (20 to 60 feet) = 37 ft^2	RMA Total (20 to 80 feet) = 15 trees	RMA Total (20 to 60 feet) = 8 trees

3.11.3. ODF/DEQ MOA Revision

DEQ committed to participate with ODF on revising the MOA between ODF and DEQ. The MOA was last revised in 1998. No revisions were made in 2018. The MOA revision is no longer considered a high priority and staff resources have been focused on the Forest Practices Act rulemaking described in Section 3.11.2.

3.12. Urban and Rural Residential

In the 2014 Nonpoint Source Program Management Plan DEQ identified that the development of guidance (Table 22) to improve and establish consistent coordination between TMDL and stormwater programs as the highest priority in order to improve program implementation and effectively address nonpoint sources on urban and rural residential lands.

Table 22. Description of the urban and rural residential related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan that were scheduled to be ongoing or completed by the end of 2018.

Goal #	Goal Topic	Action	Time Frame	2018 Status
STW - 1	TMDL and Stormwater	Development of DEQ guidance to improve and establish consistent coordination between TMDL and stormwater programs.	Ongoing 2014 - 2018	Complete. See this section.

The DEQ Stormwater Integration Group (SWIG) was formed in January 2015 and was made up of staff from the TMDL, Municipal Separate Stormwater Sewer System, Clean Water State Revolving Fund, 401 Water Quality Program, Underground Injection Control, and Industrial Construction programs. It was tasked with providing internal coordination and problem-solving for DEQ's program areas that have policy, regulatory, technical and/or outreach components involving stormwater. The SWIG Charter was developed and finalized in May 2015. The charter outlined the mission and desired goals and objectives of the group. The group's mission was to develop a clear, consistent, cross-program vision of DEQ's stormwater policy, procedures and requirements, identify problems and issues and develop solutions The group works to enhance external and internal communication on stormwater issues and topics of interest. A survey of DEQ staff was completed in 2015 which identified five major stormwater priorities:

- Develop a Statewide Stormwater Manual;
- Identify stormwater subprograms that share parallel requirements and identify topics and tasks where internal coordination will create clear and consistent messages, regulatory requirements and permit conditions;
- Evaluate and identify technical resources and priorities for stormwater data management and analysis, best management practices and engineering concepts review, and subsequent best management practices approval and compliance assurance among subprograms;
- Develop a plan for internal and external communication on stormwater topics and a mechanism to deliver the information to the respective stakeholders; and
- Develop tools and resources aimed at small communities (with populations of 10,000 or fewer residents) for developing and implementing stormwater requirements.

Accomplishments in 2018 include:

- Revising the charter to reevaluate and confirm new team membership as required by the charter annually
- Developed a report to improve current internal coordination and implementation of DEQ stormwater requirements stemming from several federal statutes

3.13. Federal Lands

In order to further the goal that federal lands attain TMDL load allocations and water quality standards, DEQ committed to three action items (Table 14) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2018.

Table 23. Description of the federal lands related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan that were scheduled to be ongoing or completed by the end of 2018.

Goal #	Goal Topic	Action	Time Frame	2018 Status
FED - 1	USFS Annual Status Report	The USFS will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	Annually 2014 - 2018	Not received. See Section 3.13.1.
FED - 2	USFS/DEQ 5-Year Progress Report	The 2013 USFS/DEQ MOU requires the preparation of a USFS/ DEQ 5-Year MOU Progress Report.	2018	Not received. See Section 3.13.2.

Goal #	Goal Topic	Action	Time Frame	2018 Status
FED - 3	BLM Annual Status Report	The BLM will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	Annually 2014 – 2018. Revised to every 2.5 years.	Not received. Mid-term due in late 2019/early 2020. See Section 3.13.3.
FED - 4	BLM 5-Year Progress Report	The 2011 BLM/DEQ MOU requires the preparation of a BLM/ DEQ 5-Year MOU Progress Report.	2016, 2022	Not Received in 2016. See Section 3.13.4.
FED - 5	Coordination of USFS and BLM with DEQ	The USFS and BLM will coordinate with DEQ for establishing priorities, strategies, and funding using a watershed approach to protect and restore water quality on BLM and USFS administered lands, this will include WQRPs.	Annually 2014 - 2018	Ongoing. See 2018 accomplishments in Section 3.13.5.
FED - 6	USFS BMPs	As needed, USFS will develop Oregon specific land use activities BMPs and monitor implementation and effectiveness of BMPs following the USDA National Best Management Practices for Water Quality national protocols.	Annually 2014 - 2018	Ongoing. See 2018 accomplishments in Section 3.13.6.
FED - 7	BLM BMPs	BLM develops Oregon specific land use activities BMPs, monitor implementation and effectiveness of BMPs, and submits to DEQ for review and comment.	Annually 2014 - 2018	Ongoing. See 2018 accomplishments in Section 3.13.6.
FED - 8	Pre-TMDLs and Post-TMDL	The USFS and BLM will use the Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, May 1999, Version 2.0.	Annually 2014 - 2018	Ongoing. See 2018 accomplishments in Section 3.13.7.
FED - 9	Agricultural Activities	The USFS and BLM will develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing.	Annually 2014 - 2018	Not Complete. See Section 3.13.8.

3.13.1. USFS Annual Status Report

DEQ and USFS verbally agreed to transition away from Annual Status Reports to a mid-term report (2.5 years) and a final (5 year) progress report. As a result, no annual report was submitted in 2018. USFS has submitted other monitoring and implementation repors that are functionally equivalent to the Annual Status Report.

3.13.2. USFS Five-year Progress Report

The next five-year progress report for USFS was scheduled to be completed in 2018 but was not received by DEQ. An amendment to the MOU extended the MOU and the time frame for the 5-year Report for one more year.

3.13.3. BLM Annual Status Report

The MOU between DEQ and BLM includes a reporting requirement for a mid-term (2.5 year) status report and final (5 year) progress report. The next mid-term report is scheduled to be completed in 2019-2020.

3.13.4. BLM Five-year Progress Report

BLM committed to submitting a progress report to DEQ every five years. The last five year progress report, due in 2015, has not been submitted to DEQ. The next five-year progress report is due in 2022.

3.13.5. Coordination with USFS and BLM

DEQ did not hold formal annual meetings with USFS and BLM in 2018, but progress towards restoration activities and land management changes to improve watershed health is ongoing.

The Drinking Water Provider program is coordinating with USFS and BLM on the Drinking Water Providers Partnership to allocate up to $625,000 in grant funds in Oregon and Washington. In 2018, a total of $250,947 was awarded in Oregon. Specific project details are discussed in the Basin Reports in **Appendices A - R -** most of these projects reduce the risk from nonpoint source activities in municipal watersheds.

3.13.6. USFS and BLM Best Management Practices

As needed, USFS and BLM has and will develop Oregon specific land use activity BMPs. Both agencies monitor implementation and effectiveness of BMPs following the USDA National BMP's for water quality protocols. In 2016, the USFS completed their first multi-year regional scale analysis of the implementation and effectiveness of water quality BMPs. Based on the 2017 annual report to DEQ USFS completed 241 BMP evaluations in Oregon from 2014 to 2016. Results indicate that on average over the three years, BMPs were fully or mostly implemented on 63% of the project sites monitored, had marginal implementation (some BMPs were implemented) on 26% of sites, and BMPs were not implemented on 11% of the sites.

USFS also determined if the "site-specific BMP prescriptions as designed and implanted work to protect water quality?" The USFS developed a rating system where a rating of "not effective" indicated there is potential risk for impacts to water quality or to the waterbody but do not necessarily indicate water quality criteria exceedance or impairment of designated uses. Over the 3 years, 74% of evaluations met the criteria for "effective" or "mostly effective", and 26% were found "marginally effective", or "not effective".

3.13.7. Addressing Impaired Waters

The USFS and BLM address Clean Water Act Section 303(d) listed water through water quality assessments, providing data, validating listings, and by working with DEQ and other state and local tribes to implement watershed improvement work. USFS and BLM develop Water Quality Restoration Plan (WQRPs). WQRPs describe what the USFS and BLM plans to do to meet water quality standards and TMDLs. USFS has drafts of six WQRPs including:

- Upper Deschutes Subbasin WQRP

- Little Deschutes Subbasin WQRP
- Crooked River, Mill Creek WQRP
- Malheur River WQRP
- Miles Creek WQRP (Middle-Columbia Hood Subbasin)
- Walla Walla Subbasin WQRP

3.13.8. USFS/BLM Agricultural Programmatic Strategy

The USFS and BLM develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing. The USFS and BLM address agricultural activities through district management plans and revisions to their grazing and riparian rules. In 2018 DEQ, USFS, and BLM did not discuss agriculture activities on USFS or BLM managed land.

4. Nonpoint Source Studies and Multi-Agency Partnerships

Building partnerships with multiple agencies and communicating regularly is necessary to implement actions to meet the goals and objectives identified in the 2014 Nonpoint Source Management Plan. DEQ engages in a number of collaborative efforts to improve efficiencies around water quality monitoring and evaluation of the effects of conservation and restoration investments.

4.1. Conservation Effectiveness Partnership

The Conservation Effectiveness Partnership (CEP) is a collaborative effort between the Natural Resources Conservation Service, the Oregon Watershed Enhancement Board, Oregon Department of Agriculture, and DEQ with a mission to: describe the effectiveness of cumulative conservation and restoration actions in achieving natural resource outcomes through collaborative monitoring, evaluation and reporting. The goals of the partnership are:

- Build an understanding of the extent of the investment in watershed improvement and the watershed response through the agencies' collective grant programs
- Develop a clearer understanding of how local organizations are utilizing the agencies respective grant programs, in concert
- Evaluate the effects of conservation and restoration investments on water quality and watershed condition
- Design tools and methods for reporting results of investments.

4.1.1 Wilson River

In approximately 2014 DEQ supplied the CEP team with bacteria data collected by the Tillamook Estuaries Partnership (TEP). The team used this the data, collected from 1997 through 2012, to document the Wilson River Success.

During 2018 TEP continued to collect bacteria data as part of its Volunteer Water quality Monitoring Program (VWQMP). In 2018, DEQ-TEP began working with OWEB, the CEP OWEB representative, to update the Wilson River Success Story with 2016 data. OWEB reIeased an update during 2018. Current work includes preparing the 2018 VWQMP bacteria data analysis summary report. This is a TEP document and a requirement of an OWEB grant that TEP is working under. The report will summarize the status and trends of the data through 2018. DEQ produced the status and trend analysis for TEP used in this forth coming report.

A summary of this work includes: Continued monitoring with standardized equipment used in six bacteria monitoring stations set up along the 8.5 mile stretch of Wilson River monitored the presence of *E. coli*. TEP continued to collect bacteria data as part of its Volunteer Water quality Monitoring Program (VWQMP). Data collected from those sites from 1997 through 2016 showed that bacteria levels have steadily declined since 1997 and now consistently meet the recreational use.

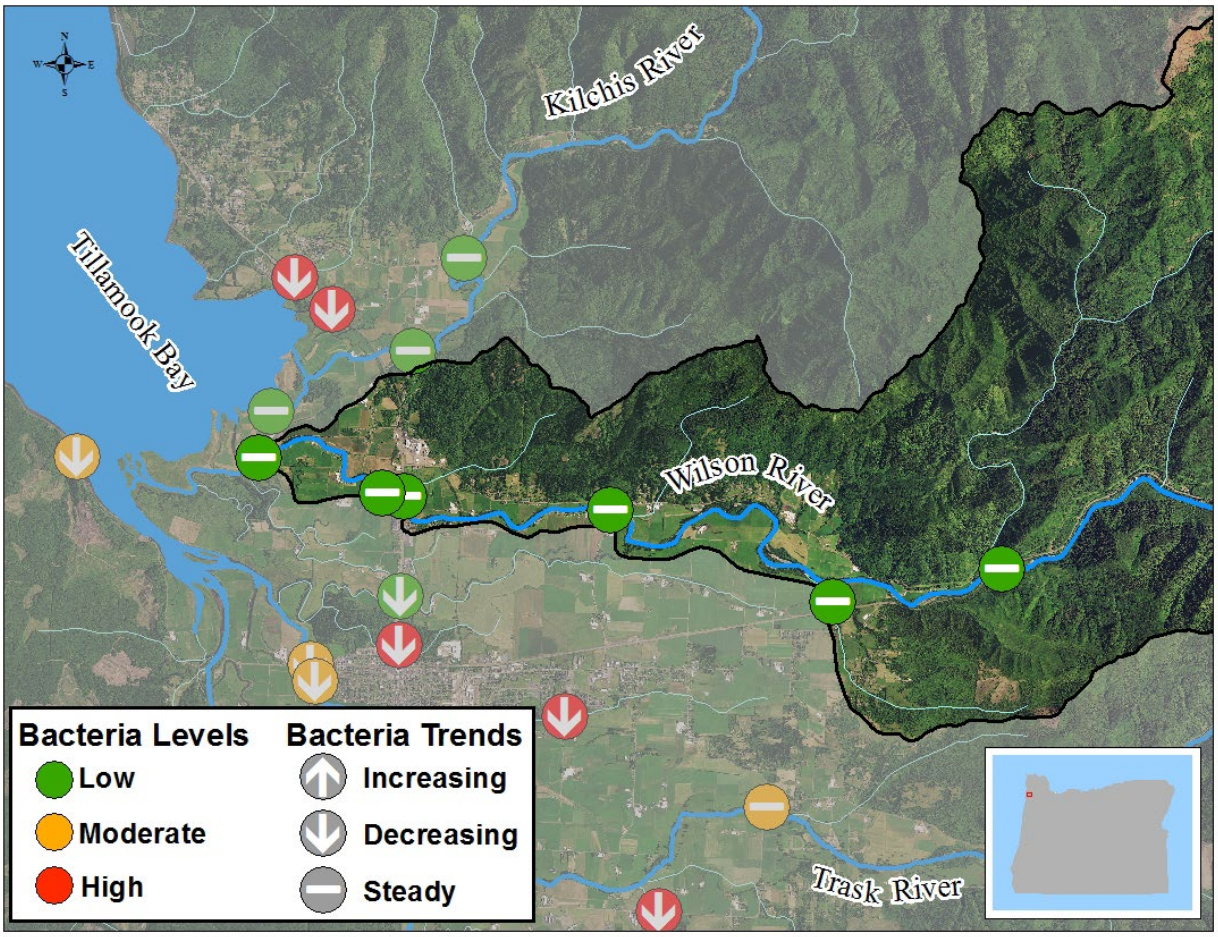

Figure 7. Map of the Wilson River and monitoring locations for bacteria.
Water is checked regularly for bacteria at six monitoring locations along the lower 8.5 miles of the Wilson River. This figure 7 shows that all Wilson monitoring sites continue to demonstrate relatively low levels of bacteria (green location), with trends holding steady. Work is underway throughout the Tillamook Bay watershed to address other areas of concern.

4.1.2 Fifteenmile Creek

In 1998 several streams in this watershed were identified as impaired for sediment and temperature on Oregon's 303(d) list. Since the early 1990's, this watershed has been undergoing large-scale restoration focused on reducing erosion, building healthier soils, providing cleaner water and improving fish habitat. Now, almost 100% of the agricultural lands in the watershed are farmed using direct seeding practices.

The United States Forest Service, Oregon Department of Agriculture and DEQ collected a variety of sediment and biological data from across the watershed in 1994, 2000, 2015 and 2016. In 2018, the DEQ worked with CEP agency staff to analyze this data and determine whether sediment conditions have improved over time in response to conservation agriculture practices.

Results of the data analysis were inconclusive due to the limitations of incomparable sampling methods and sample locations. However, six out of seven stations with data available for comparison showed improved sediment quality, as measured with a decrease in the percent fine sediment. Three of these stations were adjacent to agricultural land. Eleven out of fourteen samples collected in recent years met the Oregon Department of Fish and Wildlife recommended benchmark for sediment, and six of these

were adjacent to agricultural land. Figure # shows subset of particle size distribution plots from the final Fifteenmile Creek Sediment Analysis Report.

This project demonstrated the importance of evaluating sediment condition with consistent methods so that results can be compared over time to evaluate watershed response to agricultural conservation practices. Biological studies, such as looking at the freshwater macroinvertebrate community, can provide a relevant and cost-effective way to evaluate habitat condition. Together, the DEQ and CEP presented these lessons learned and future water quality monitoring recommendations to the Wasco SWCD and the Fifteenmile Watershed Council.

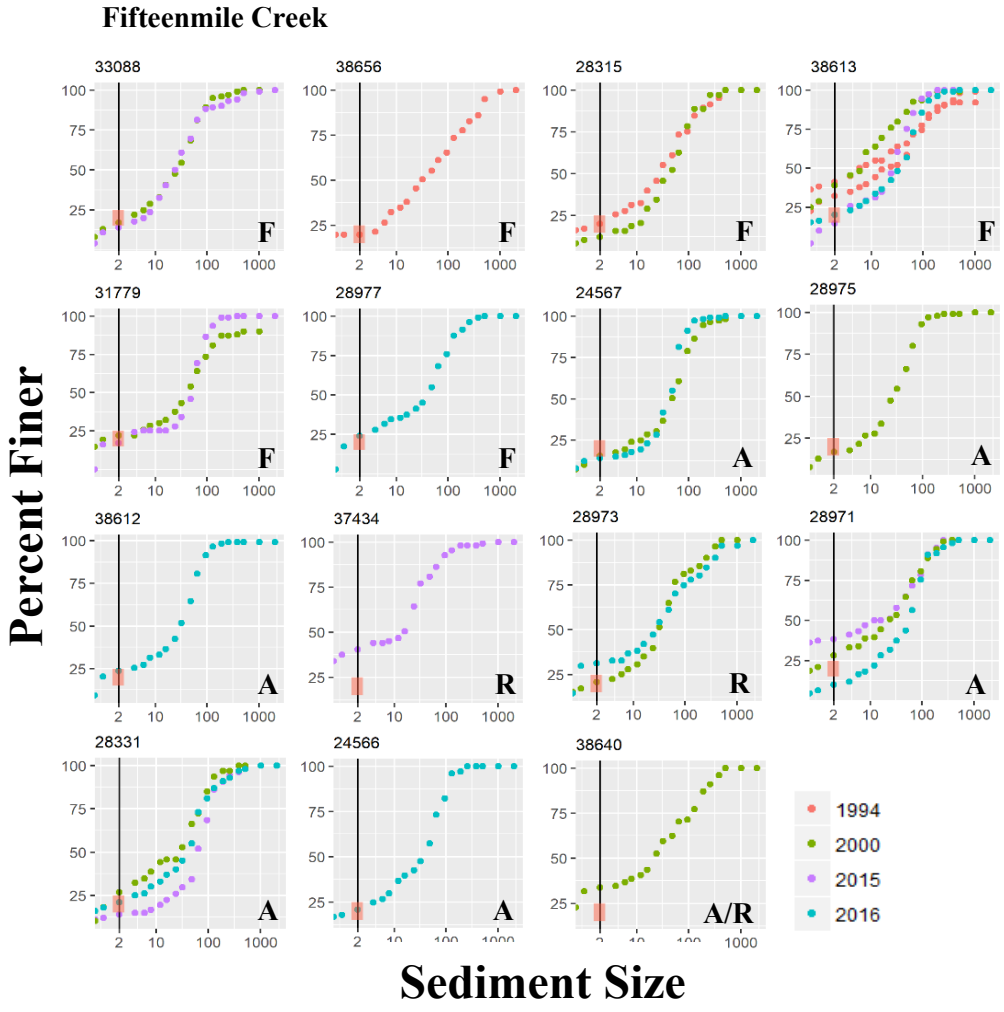

Figure 8. Particle size distributions for Pebble Counts in Fifteenmile Creek.
Plots are ordered from upstream (left) to downstream (right). The number above each plot is the LASAR station identification. The vertical line indicates percent sand and fines less than 2mm (SAFN). The red box represents SAFN benchmarks used by ODFW to assess habitat suitability for steelhead spawning; less than 12% SAFN is ideal and more than 25% SAFN is undesirable. The letter in the plot indicates land use adjacent to the sample station; A for agriculture, F for forest, R for residential.

4.2. Neal Creek Stream Temperature Evaluation

As part of the revision to the 2001 Western Hood Subbasin Temperature TMDL, Oregon DEQ evaluated temperature data collected by local partners in the Neal Creek watershed between 1998 and 2018. The purpose of the analysis was to evaluate the current status in achieving the applicable temperature criteria as well as the temperature trends since 1998 in order to understand if stream temperatures are reducing in response to the vegetation restoration and other implementation efforts. This watershed has been a priority for implementation efforts by the Hood River Watershed Group, Hood River Soil and Water Conservation District, ODA, and the Local Advisory Committee.

Using a Seasonal Kendall test DEQ evaluated the trend in seven-day average daily maximum temperatures and the daily degree hours above the applicable temperature criterion at a number of sites on Neal Creek and West Fork Neal Creek. A daily degree hour is the product of the number of hours and degrees Celsius in a day a site exceeds the applicable temperature criteria. The metric is used as an indicator of the magnitude and frequency of exceedance. A seasonal Kendall test removes the influence of season-to-season fluctuations by calculating the Mann Kendall test on each season separately and then comparing the slopes. A significant positive or negative trend was determined across all seasons and years when the significance of the seasonal slopes had a two-tailed $p < 0.10$. Prior to applying the seasonal Kendall test, data was grouped into monthly "seasons" (July-September). Observations within each month were collapsed into a single value using the median.

Figure 7 shows the results at the mouth of Neal Creek in the month of July. The results show at the mouth of Neal Creek there has been a significant ($p<0.05$) improvement in 7-day average daily maximum stream temperatures since 1998. While there are still occasional exceedances of the biologically based numeric criterion during the summer months, the magnitude and frequency of the exceedances has been significantly reduced illustrated by the decreasing trend in the number of daily degree hours above the applicable temperature criterion. This same pattern is seen at this site in August and September (not shown), as well as at the monitoring site on Fir Mt. Road (approximately river mile 2.3). Both of these sites on Neal Creek are downstream of areas where restoration and implementation activities have occurred. In contrast, no significant trends in stream temperature were observed at the site on West Fork Neal Creek near the USFS boundary (Figure 8). This site is upstream of the restoration and implementation activities. Stream temperatures at the USFS boundary were well below the numeric criterion back in 1998 and have continued to stay below the criterion.

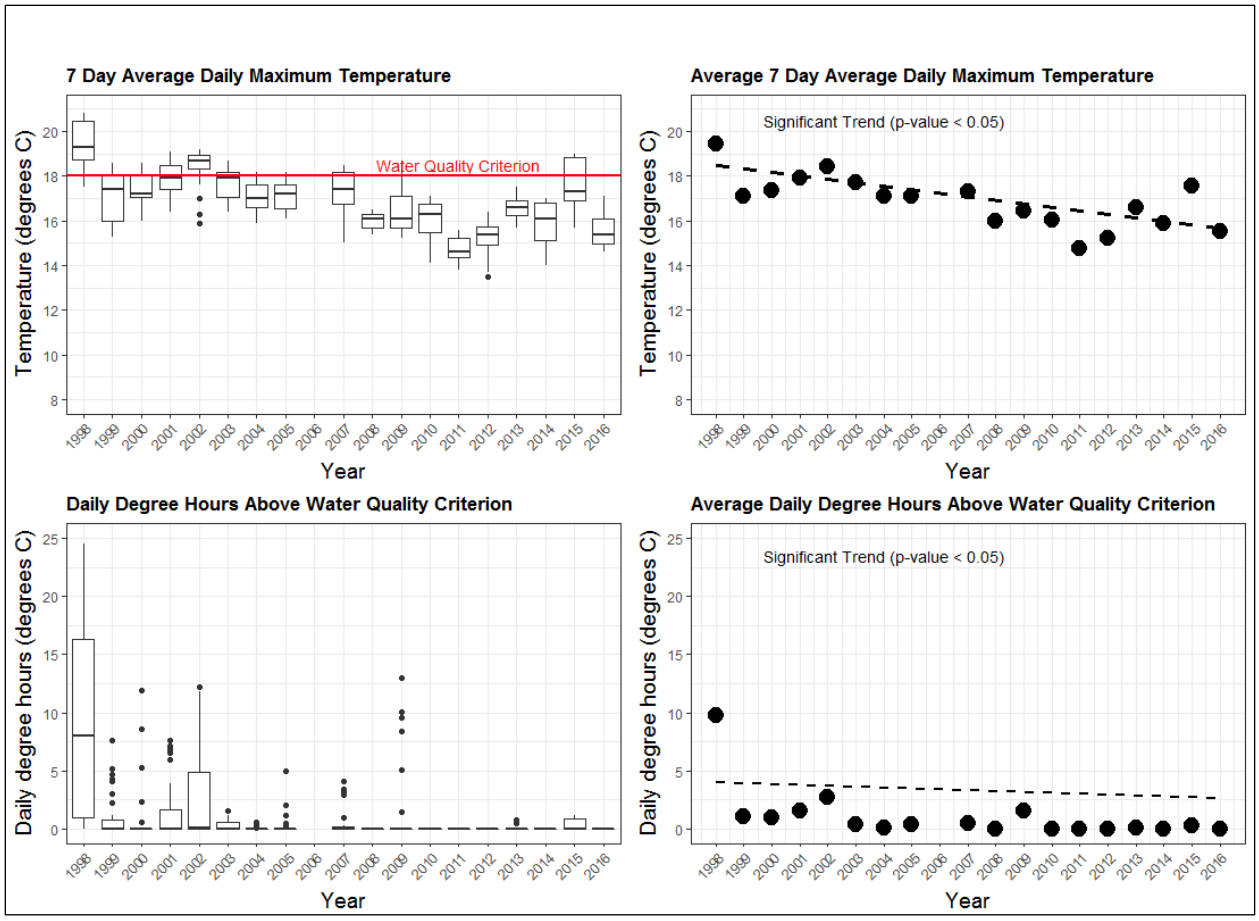

Figure 9. Status and trends in stream temperature at the mouth of Neal Creek in July.

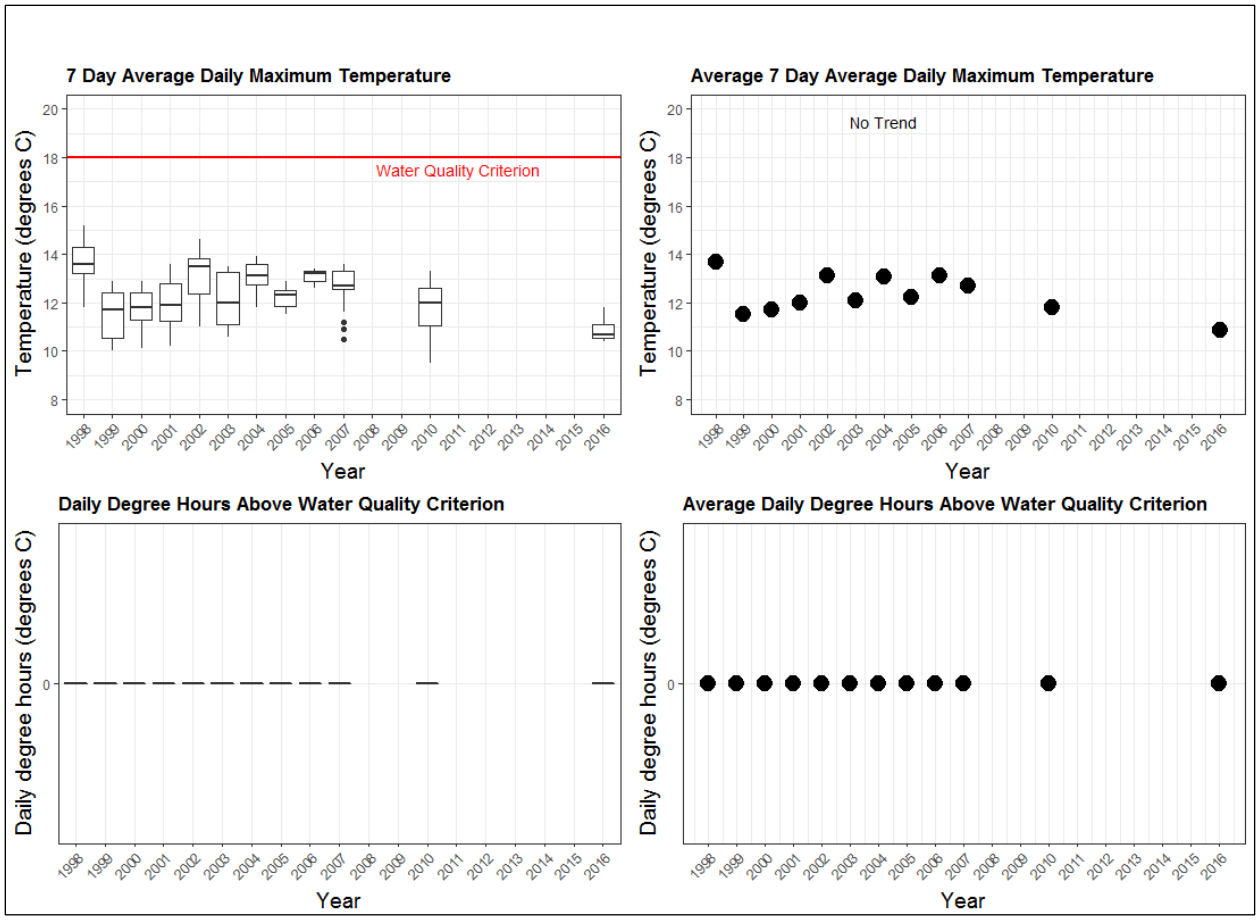

Figure 10. Status and trends in stream temperature on West Fork Neal Creek at the USFS boundary in July.

4.3. National Water Quality Initiative (NWQI)

The 2013 Nonpoint Source Program and Grants Guidelines for States and Territories directs DEQ to devote sufficient Section 319 resources to coordinate with the Natural Resources Conservation Service. In Oregon, Natural Resources Conservation Service has partnered with DEQ, Oregon Department of Agriculture, U.S. Fish and Wildlife Service and others to identify National Water Quality Initiative watersheds and monitoring projects with clear goals and objectives, approved methods, strong local partnerships and the availability of prior monitoring data. In addition to on-the-ground implementation of conservation practices, 319 funds are also being used to conduct effectiveness monitoring in National Water Quality Initiative watersheds.

During the 2017 319(h) funding cycle, there were $16,000 funds targeted to four NWQI areas in Oregon, the Willow, Pudding, Klamath Lake and Fifteenmile Creek. The Willow Creek NWQI's main purpose was to purchase and install of a flow gage. The Pudding and Klamath were not identified as needing continued monitoring at that time. Effectiveness monitoring plans have been developed for Fifteenmile Creek and Willow Creek and implementation has been ongoing since 2014 and expected to continue until at least 2019.

In 2018, NRCS expanded the scope of NWQI to include source water protection, including both surface and ground water public water systems. A pilot project in Fiscal Year 2019 will assist partners in adapting and expanding source water protection plans to identify critical source areas needing further treatment related to agricultural land uses. Five source water protection pilot projects were selected in Oregon. The five communities selected for the National Water Quality Initiative readiness phase are:

- Cities of Canby and Molalla SWPA – Molalla River
- City of Myrtle Point SWPA – North Fork Coquille River
- City of Baker City SWPA – Multiple watersheds in the Powder Basin
- City of Eugene / Eugene Water & Electric Board, McKenzie River SWPA
- Cites of Winston and Dillard, South Umpqua River, Lookingglass Creek Sub-Watershed SWPA

Combined, these communities will receive $492,420 in Conservation Technical Assistance dollars in FY2019-20 to complete a "readiness" phase, which involves developing a detailed watershed assessment and an outreach strategy to address agricultural-related impacts to source water quality. Following the readiness phase, these SWPAs would then be eligible to receive federal Farm Bill funding to implement the measures identified in their plans specific to agricultural impacts. Oregon's strong partnerships between NRCS, Oregon Watershed Enhancement Board, and the Departments of Agriculture and Environmental Quality help better connect federal Farm Bill programs with state drinking water agencies and utilities that can benefit from investments in Oregon communities.

4.3.1. Fifteenmile Creek Watershed NWQI

In 2018, the Oregon DEQ produced a report summarizing sediment monitoring and data analysis completed in the Fifteenmile Creek Watershed since 1994. This report concluded that sediment conditions have not changed much since the early 2000's; however, due to how and where sediment was monitored, the data supporting this conclusion was very limited.

Anecdotally, farmers and scientists with a long history of working in Fifteenmile continue to see less erosion from fields that are using "minimum till" and direct seed practices. With programs like CREP and active local partners (like the Fifteenmile Watershed Council) communication among landowners and land managers (like the U.S. Forest Service) continues to improve as partners share lessons learned and coordinate restoration and irrigation efficiency projects. The results of recent reports can inform future studies on water quality, macroinvertebrate community and fish habitat response to land management and natural events, such as floods and fires, in the watershed.

4.3.2. Willow Creek NWQI

During 2018, project partners worked with DEQ to install the gage with 319 funds. Data will be collected starting in 2019 (weather dependent).

4.4. EPA Success Stories, WQ-10, SP-12

In the 2016-2018 Performance Partnership Agreement DEQ identified it would determine with EPA available success stories (Table 24).

Table 24. Description of nonpoint source success stories action identified in 2016-2018 Performance Partnership Agreement and the 2018 status.

PPA Element	Action	Time Frame	2018 Status
PPA - 8.5	Determine with EPA available NPS Success Stories documenting either water quality progress or full restoration under PAM.	September 2016 and September 2017	Not Complete. See Section 4.4.

The Section 319 Nonpoint Source success stories website features stories about primarily nonpoint source-impaired waterbodies where restoration efforts have led to water quality improvements. Waterbodies are separated into three categories, depending on the type of water quality improvement achieved:

- Partially or fully restored waterbodies
- Progress toward achieving water quality goals
- Ecological restoration

The Nonpoint Source Success Stories serve two main purposes. First, they offer an opportunity for states to highlight where their restoration efforts have resulted in water quality improvements in nonpoint source-impaired waterbodies. Second, they allow EPA to track the number of nonpoint source-impaired waterbodies that are partially or fully restored—which is a key measure in the effort to document how nonpoint source restoration efforts are improving water quality across the nation. These measures show Congress why 319 funds are needed and document the success of these funds towards improving water quality.

All previous Oregon's Watershed Measures and Waterbody Restoration Stories (i.e., “Success Stories”) were developed by DEQ staff with assistance from EPA’s contractor Tetra Tech. Previous success stories can be found at: https://www.epa.gov/nps/nonpoint-source-success-stories.

Due to lack of resources, nonpoint source success stories were not developed in 2018, however several sampling sites in watersheds across Oregon are demonstrating measurable improvements in water quality (See Section 4.1**,** and the referenced Status and Trend Reports described in Section 3.10.2).

5. Nonpoint Source Basin Level Achievements in 2018

Implementation of the Nonpoint Source Program has been summarized for each Oregon administrative basin excluding the Columbia and Snake Rivers in Appendices A - R. The basin reports provide summaries of basin characteristics, impairments, TMDLs, and nonpoint source related implementation efforts reported to DEQ.