Water Quality Financial Assistance 2015-2017 Biennium Outcomes Report

Protecting Washington Waters

Publication #18-10-019

DEPARTMENT OF ECOLOGY
State of Washington

Table of Contents

Figure 1. Willapa Bay provides shellfish, fishing, and aquaculture jobs in Pacific County. Photo Credit: Pacific County

Contents

Publication # 18-10-019

Water Quality Program Mission

The mission of the Ecology **Water Quality Program** is to protect and restore Washington's waters to sustain healthy watersheds and communities.

Water Quality financial assistance programs support this mission by providing grant and loan dollars directly to local communities to implement high-priority water quality projects.

Why is this work important?

Public Health

Clean drinking water is essential to public health, and the quality of water in our environment is directly linked to the water flowing to your tap. Some communities rely on surface water, while others rely on underground aquifers.

Natural Resource Economy

Water quality impacts agriculture, fishing and shellfishing, recreation, and water supplies. Pollution from wastewater, stormwater, and nonpoint sources degrades water quality, threatening our economy and public health. Environmental regulations help to protect the natural resources these industries and communities rely on.

Pollution Sources

Homes, businesses, and industries produce wastewater from kitchens, bathrooms, commercial and industrial operations, and everyday activities. Some sources of stormwater pollution come from car leaks, improper pet waste disposal, lawn care products, road-side litter, runoff from rooftops, illicit discharges in gutters and storm drains, and many other sources especially in developed areas. Nonpoint pollution comes from across the landscape, such as farmlands, logging activities, yards, construction sites, roads and driveways, and on-site sewage systems. Rain and snowmelt runoff can carry a toxic slurry of heavy metals, oil, bacteria, chemicals, soaps, fertilizers, and pesticides to our streams, rivers, lakes, estuaries, and aquifers.

Figure 2. Stormwater pollution can be toxic for wildlife, like this Coho salmon in the Duwamish River.
Photo Credit: Puget Soundkeeper Alliance

Excessive nutrients in surface water can deplete oxygen and lead to toxic conditions for fish, shellfish, and other wildlife. Pathogenic bacteria, viruses, and toxic chemicals pose serious public health risks that diminish fish and shellfish harvests, cause beach closures, and impact recreation and other beneficial uses of Washington's surface waters.

Publication #18-10-019

Water Quality Financial Assistance Overview

How do we help communities?

Small Communities

Small communities often have to stretch limited resources to provide important services, such as wastewater infrastructure. Staff in small local government often wear multiple hats. Ecology provides financial and technical assistance to supplement local expertise. Funding packages that include grant and loan subsidy are available to help hardship-eligible communities accomplish high priority

Critical Infrastructure

Forests, vegetation, wetlands, and floodplains capture and filter pollutants as water moves through the watershed. However, as land is developed for human activities, we lose the water quality benefits of these natural systems. To mitigate this loss, we provide funding for infrastructure to mimic these functions as well as possible.

Stormwater facilities: Stormwater infrastructure combines modern engineering with the benefits of natural systems to provide treatment and flow control for runoff. These facilities often look like landscaped planter beds by roads and parking lots. Many communities are including stormwater retrofits with road and utility improvement projects to achieve multiple benefits, including pollution reduction.

Wastewater facilities: Many sewer collection systems and treatment plants in Washington are decades old, needing repairs and upgrades. Public wastewater systems also need to expand to accommodate population growth and failing on-site sewage systems. Technology is improving over time to achieve higher levels of treatment, and many communities are upgrading to advanced treatment to turn wastewater into a safe resource, by reclaiming water for reuse.

Figure 3. Sunset Terrace Regional Stormwater Facility bioretention cell provides enhanced treatment for 2.9 acres. Photo Credit: City of Renton

Figure 4. Port Gamble S'Klallam Tribe constructed a new membrane bioreactor treatment facility. Photo Credit: Port Gamble S'Klallam Tribe

Publication #18-10-019

Water Quality Financial Assistance Overview

What do our funding programs provide for Washington?

Support for High-Priority Projects

Communities apply for funding to help prevent and address water quality problems, and to comply with regulations. Our financial assistance program supports best management practices, and helps communities achieve and maintain compliance with water quality standards. Many projects help address issues related to TMDLs, the Shoreline Protection Act, and NPDES municipal permits. Our projects support cleaner water, our economy, and protected beneficial uses.

Project Management and Accountability

Once funds are awarded, Ecology uses a team approach to support the recipient as they implement their project. The team includes a regional Ecology project manager, technical expert, and financial manager who provide:

- Technical assistance and guidance to achieve project outcomes and water quality improvements.
- Assistance for maintaining a high level of accountability for the use of state and federal funds.
- **Annual reviews by EPA and the state auditor confirm we run a well managed and transparent program.**
- Easy access to Ecology staff for questions and support.

Leveraging Funding

Funding recipients leverage Ecology funding with local and federal funds to support their work. This frees up local dollars for ongoing programs and maintenance. The predictable annual cycle of the Water Quality Combined Funding Program is part of Ecology's effort to improve consistency of financial assistance for communities that struggle with unstable funding sources.

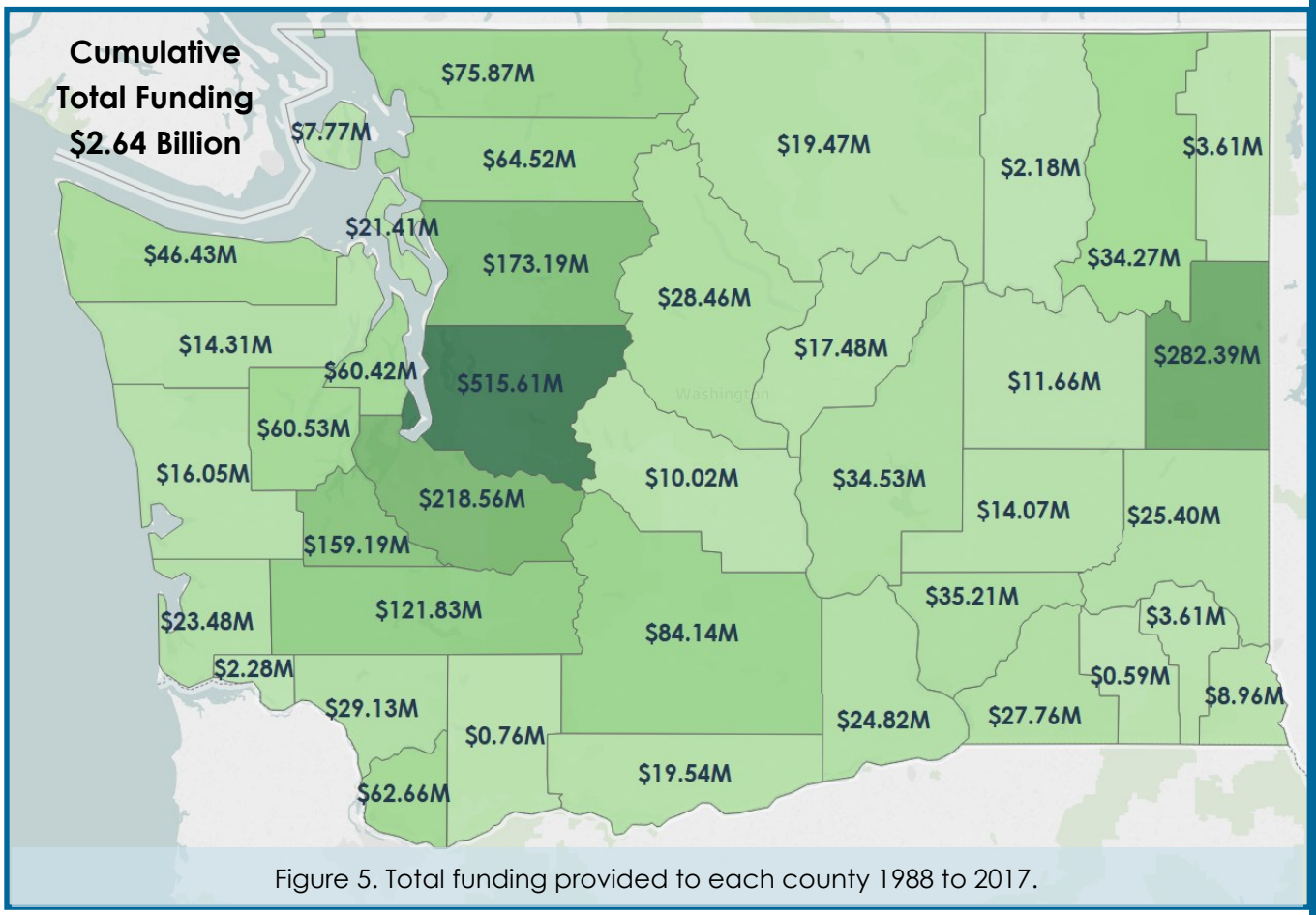

Figure 5. Total funding provided to each county 1988 to 2017.

Protecting Washington Waters
Publication #18-10-019

Water Quality Combined Funding Program

What do our funding programs provide for Washington?

Water Quality Combined Funding Program

Combined Program

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Clean Water State Revolving Fund (CWSRF)

Provides low-interest loans, primarily for wastewater facilities, on-site sewage systems (OSS), some stormwater facilities, and nonpoint source activities.

Centennial Clean Water Grants

State grants for nonpoint activities, OSS, and wastewater facilities for hardship-eligible small communities.

Clean Water Act Section 319 Grants

Federal grants for nonpoint source pollution control activities.

Stormwater Financial Assistance (SFAP)

State grants to retrofit existing infrastructure with stormwater facilities and activities that provide stormwater pollution control.

Hardship

Infrastructure projects can be very expensive, and especially challenging for lower income, small communities. A portion of funds are designated to meet these needs for hardship-eligible wastewater and stormwater projects. In these cases, funding packages may include a combination of forgivable-principal loans, Centennial grants, or reduced interest rates and match requirements.

Matching Funds

Grant funding typically requires that recipients provide match funding to encourage projects that are high priority, with local buy-in and commitment. In-kind match also helps recognize contributions of effort, including staff time, supplies, and equipment.

Streamlined Funding Application

Communities can apply to four funding programs in one application on a predictable annual funding cycle. The result – communities spend less time searching and applying for financial assistance, and more time planning and implementing high-quality projects.

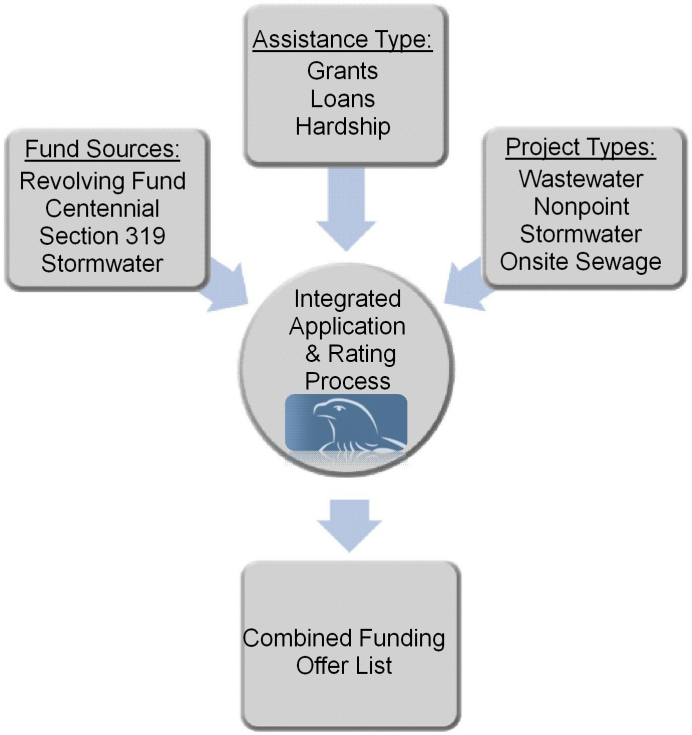

Figure 6. This diagram shows how one application includes a variety of funding.

Protecting Washington Waters
Publication #18-10-019

Additional Funding Programs

Stormwater Capacity Grants

In Washington, cities and counties with urbanized areas (or populations over 10,000) are required to manage stormwater under Phase I or Phase II municipal stormwater permits. Capacity grants are non-competitive, and are provided to all municipal permittees to help fund ongoing activities to achieve and maintain compliance. All activities must specifically address stormwater.

Capacity Grants Help Small Jurisdictions

• • •

"Capacity Grants are very important in ensuring permit compliance especially for Eastern Washington jurisdictions. Most Phase II Permittees in Eastern Washington are small jurisdictions both in size and population. This means that we have much smaller and tighter stormwater utility budgets.

…

They have helped our jurisdictions bridge the gap between costs for routine stormwater program activities like operation and maintenance of our stormwater systems and costs for non-routine permit requirements like effectiveness studies, equipment purchases to increase program efficiency, and municipal code review to allow LID practices."

– Brad Daly, Stormwater Coordinator
City of Walla Walla

Stormwater Grants of Regional or Statewide Significance (GROSS)

GROSS grants are also provided to Phase I and Phase II municipal stormwater permittees. Work can include research studies, education and curriculum, technical guidance, and many other stormwater activities throughout the eastern and western regions, or the entire state.

Freshwater Algae Control Grant Program

Toxic algae blooms can make people, pets, and livestock sick. We offer a funding program to address problem blooms. The annual funding cycle provides grants of up to $50,000 for toxic algae bloom management projects. The funds are supported by boat registration fees. Cities, counties, Tribes, and special purpose districts are eligible to apply.

Aquatic Invasive Plant Management Grants Program

The Aquatic Invasive Plant Management Program provides financial and technical assistance to help control aquatic invasive plants. This includes management plans, plant control activities, education and outreach, mapping and surveys, and effectiveness monitoring. The program is sustained by boat trailer registration fees.

Figure 7. Algae blooms interfere with recreation in Cranberry Lake, Island County.

Publication #18-10-019

What have we accomplished?

2015-2017 Biennium Outcomes Overview

$449,689,891 of funding assistance provided for **341 projects** completed by **199 recipients.**

Projects with closeout dates between July 1, 2015 to June 30, 2017.

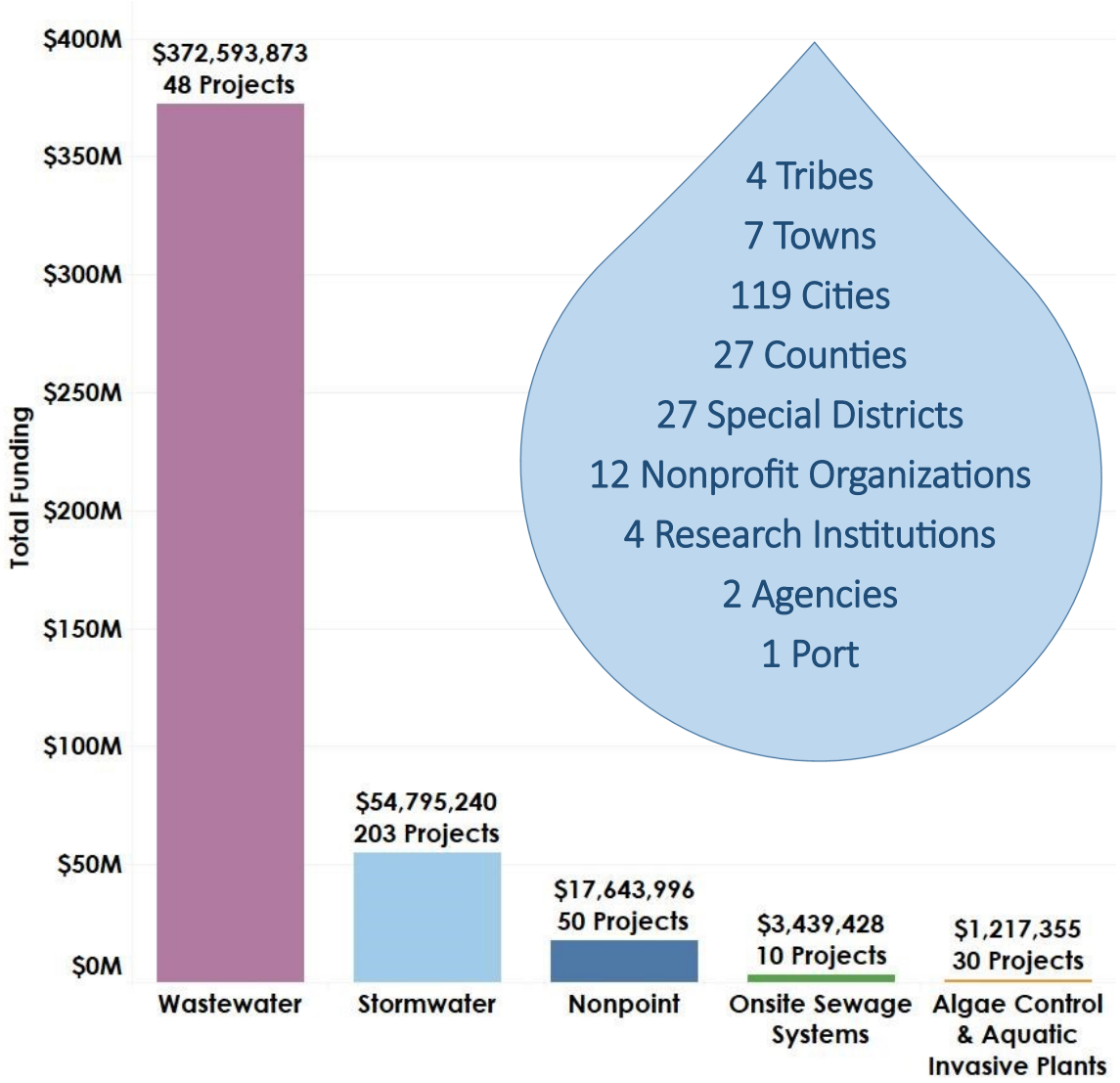

Figure 8. Funding provided and number of projects per project category.

Table 1. Funding provided per funding source.

CWSRF Standard Loan	$273.41M
Centennial Grants	$127.18M
Stormwater Capital Grants (SFAP)	$35.99M
Section 319 Grants	$3.48M
Stormwater Capacity Grants	$3.16M
CWSRF Forgivable Loan	$2.73M
Stormwater GROSS Grants	$1.78M
Aquatic Invasive Species Grants	$1.12M
Centennial & 319 Grants	$0.74M
Algae Control Grants	$0.10M
Grand Total	$449.69M

Publication #18-10-019

2015-2017 Biennium Outcomes Overview

Padden Creek Daylighting Project

Total Project Cost: $4,368,771
Ecology Funding Provided: $1,426,00 (loan), $500,000 (grant)

The City of Bellingham Padden Creek Daylighting project restored 2300 feet of stream channel, reconnecting it to Connelly Creek.

"We have lived here for over 12 years and walked the creek trail year round. Never in my time have I ever seen a salmon in Connelly Creek! … So imagine the shock we felt when my oldest daughter pointed out a tail sticking out from under a foot bridge…. We knelt on the bridge in awe just watching.

It was incredible…. Yea Daylighting project!"

-Jaime Buyagawan, Bellingham resident

Figure 9. Local residents point to a salmon upstream from the Padden Creek Daylighting project. Photo Credit: J. Buyagawan

Project Outcomes

Projects protect and improve water quality in different ways, from direct treatment to land use practices that minimize pollution at the source.

Project implementation provides work for engineers, contractors, local government officials, nonprofit organization employees and small businesses. Additional benefits include habitat improvement and community engagement.

Each project addresses one or more water quality improvement categories.

Table 2. Each funded project include different types of work that address multiple water quality improvement categories.

Water Quality Improvement Category	Description	# of Projects
Pollutant Load Reduction	Improved or increased treatment and removal of pollutants.	159
Capacity	Increased volume of water collected and/or treated by facilities.	58
Repairs and Upgrades	Existing infrastructure need repairs and upgrades to continue protecting and improving water quality.	111
Plans and Designs	Effective projects begin with careful planning and design.	124
Regulatory Compliance	Permits and TMDLs specify pollutant limits from point and nonpoint sources.	192
Behavior Change	Pollution sources are often directly linked to choices people make, from car maintenance to farm practices.	48

The following pages take a deeper look at each of these programs, and how these dollars are put to work.

Publication #18-10-019

Figure 10. Clark Public Utility District recruited volunteers from the community to help restore Salmon Creek. Large woody debris (LWD) helps stabilize streambanks, reduce sediment, and provide habitat. Photo Credit: Clark Public Utility District

Figure 11. Manchester Stormwater Park is an innovative project that combines stormwater treatment with a community park. Kitsap County Public Works invested local and state dollars to improve water quality and safety for vehicle, bike, and pedestrian traffic. Photo Credit: Kitsap County

Biennium Projects: Wastewater

Why are wastewater treatment facilities important?

Most people tend not to worry what happens to water when it goes down the drain. Reliable sewer service is an expected amenity, along with running water, electricity and even breathable air. Whether served by a collection system and centralized wastewater treatment facility, or an on-site sewage system, the average resident doesn't think about it until there's a problem. When it becomes a problem, it can quickly result in unsafe conditions. Wastewater facility projects plan, design, and construct this essential infrastructure.

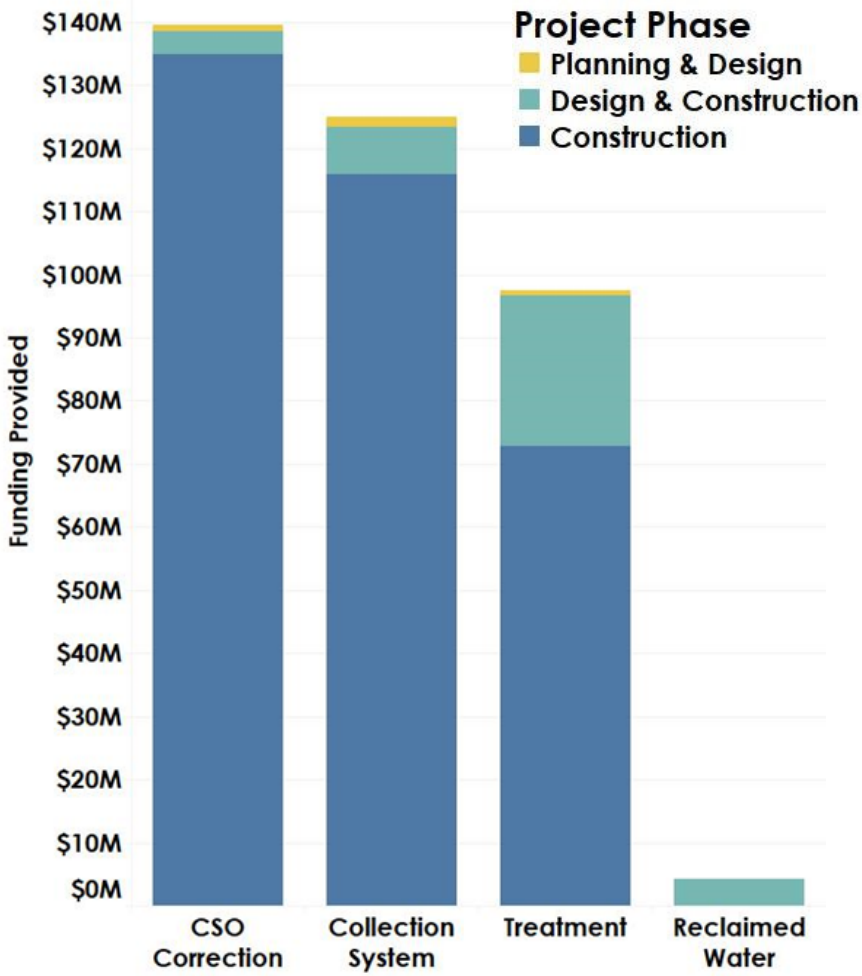

Figure 13. Project funding by facility type and project step.

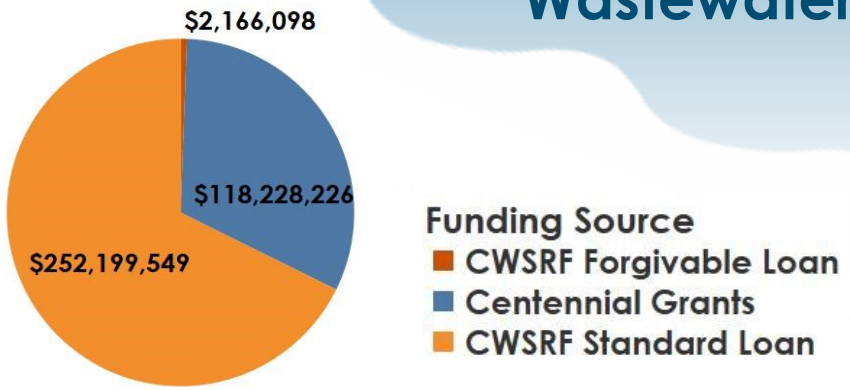

Figure 12. Wastewater project funding by funding source.

What have we accomplished?

$372,593,873 of funding assistance provided
48 projects completed

Reclaimed Water

1 project, 93,911 people served, 1 million gallons per day (MGD)

LOTT Clean Water Alliance constructed a 1 million gallon storage tank, which will provide irrigation for a public golf course. This means less effluent carrying nitrogen into Budd Inlet in Thurston County.

Reducing Combined Sewer Overflows

10 projects, 540,706 people served, 280.04 MGD.

Extreme storm events can exceed combined sewer capacity, causing overflow from manholes or controlled discharge points and posing public health hazards. The City of Spokane and King County completed CSO projects to achieve compliance with the regulatory limit of one overflow event per year. Spokane developed a CSO reduction plan, eliminated the Hangman Creek outfall, and increased storage capacity and flow control to accommodate peak rainfall in 3 basins along the Spokane River. King County increased storage capacity at five CSO outfalls.

Publication #18-10-019

Biennium Projects: Wastewater

Toledo Wastewater Treatment Facility Upgrade

Total Project Cost: $9,613,000
Ecology Funding Provided: $5,000,000 (grant)

The City of Toledo recently transformed their old lagoon system to a fully automated state-of-the-art facility, which provides better treatment, increased capacity, and more efficient operations.

"I don't think we could have waited any more time to build this plant without putting a bunch of money into the old system. … We can actually access the plant remotely. That's kind of neat. I don't have to drive down here at two in the morning if something goes wrong… We're trying to cut all the power down to as low a consumption as possible"

-Craig McCown, Public Works Superintendent, City of Toledo

Repairing and Expanding Collection Systems

19 projects, 135,404 people served, 193.26 MGD

A leaky pipe, whether in the home or in the ground is a problem. Collection systems require occasional maintenance and replacement. The Town of Carbonado completed a comprehensive sewer plan to address problems related to an aging system of clay pipes.

As population grows, and as on-site sewage systems age, many communities are expanding their collection systems. In Pend Oreille county, the town of Sacheen Lake expanded a collection system to eliminate 275 lakeside On-site Septic Systems.

Removing Pollutants:

18 projects, 349,514 people served, 53.64 MGD

Wastewater carries pathogens and chemicals that pose significant environmental and public health risks. Treatment systems are essential to ensure clean water in our surface waters and aquifers. Port Gamble S'Klallam Tribe upgraded their treatment system to a membrane bioreactor that discharges to groundwater instead of the ecologically-sensitive Hood Canal. Lake Stevens decommissioned and cleaned up a former treatment facility and residual bio-solids to protect Ebey Slough and the floodplain from contamination. The Spokane-Rathdrum Prairie Aquifer Protection project expanded sewer collection system expansion, reduced infiltration and inflow, reduced CSOs into the Spokane River, and improved the city's wastewater treatment plant. This critical drinking water source was protected by eliminating 30 thousand on-site sewage systems in aquifer recharge areas. The City of Granger relocated an outfall, and increased the treatment capacity to address biological oxygen demand and nitrogen.

Figure 14. The City of Oak Harbor replaced an outfall to protect Crescent Harbor.

Publication #18-10-019

Biennium Projects: Stormwater

Why is stormwater a problem?

Uncontrolled stormwater is one of the most significant causes of water quality degradation. Stormwater flows commonly carry pollution, cause erosion and other damage to streams, and can overwhelm sewer treatment plants, causing sewage overflow (CSO). Stormwater management projects address these problems with a combination of source control, flow control, and treatment.

What have we accomplished?

$54,795,240 of funding assistance provided

203 projects completed

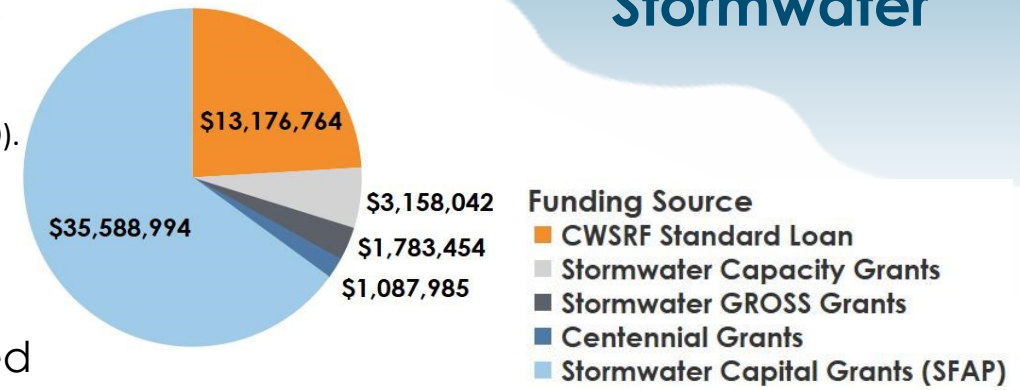

Figure 15. Wastewater project funding by funding source.

Figure 16. Centralia Regional Decant Facility.
Photo Credit: City of Centralia

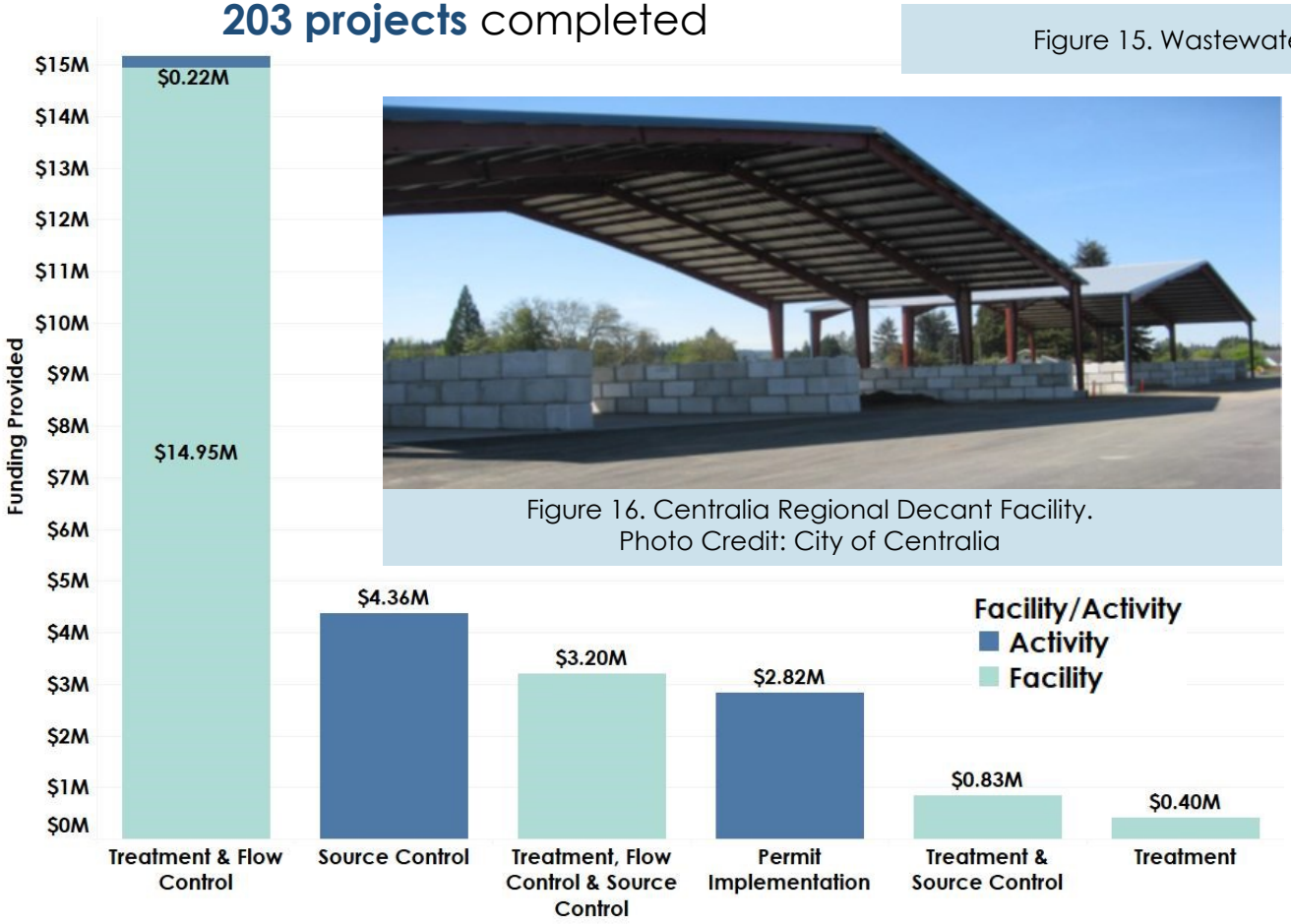

Figure 17. Funding provided for each combination of stormwater management strategies.

Source Control

18 projects

Street sweeping and decant facilities remove pollution from streets and keep it out of surface waters, such as the Chehalis River and Henderson Inlet. The cities of Kirkland, Lacey and Centralia installed decant facility projects to expand capacity, and add pre-treatment BMPs.

Pollution can be prevented by educating the public to properly dispose of pet waste, practice chemical-free yard care, prevent vehicle fluid leaks, and dispose of hazardous liquids appropriately.

Over 30 recipients included education and outreach activities in their projects. GROSS grants funded efforts such as “Don’t Drip and Drive” campaign, “Drain Rangers” curriculum and a Spanish language outreach effort this biennium.

Publication #18-10-019

Biennium Projects: Stormwater

Flow Control

38 projects, >1,294 acres of drainage area

Slowing down water prevents erosion and allows stormwater to replenish groundwater. Funded flow control facilities are designed to prevent pollution from reaching surface waters by reducing erosion, improving infiltration and routing water to treatment facilities. The City of Sunnyside constructed infiltration swales with pre-treatment devices to protect the Yakima River from highway pollution. Asotin County installed drywells to detain and infiltrate stormwater to keep pollution from reaching the Snake River.

Figure 18. Underground tanks and lift station store, and divert stormwater surges to a treatment facility. Photo Credit: Asotin County.

Treatment

57 projects >1,949 acres of drainage area

More and more cities and towns are constructing facilities that treat stormwater close to the source. A variety of facility types are commonly used, and each facility is designed for a specific site. This involves careful engineering to accommodate the drainage area and its primary pollution sources. A combination of sand, gravel, compost or other media is used to treat key pollutants. In some cases, multiple treatment methods are combined to provide the treatment needed. The City of Longview constructed pretreatment devices and bioretention cells to treat for oil, sediment and phosphorus along a busy road. Kitsap County Public Works completed the Manchester Stormwater Park, which provides treatment for over 100 acres neighboring Puget Sound.

Permit Implementation

114 Projects

Municipal permittees used Stormwater Capacity grants for street sweeping, education and outreach, illicit discharge detection and correction, development of ordinances and technical manuals, water quality monitoring, equipment purchases, inspections and maintenance, staff training, mapping of stormwater systems, and annual reporting. These funds are of particular importance to small communities, who have limited resources for permit implementation.

Figure 19. Bioretention facility in the City of Longview.

Publication #18-10-019

Biennium Projects: Nonpoint

How is nonpoint source pollution prevented?

Local jurisdictions work closely with landowners to implement best management practices (BMPs) to restore native ecosystems, minimize pollution from rural land use activities, and engage communities in watershed protection.

What have we accomplished?

$17,643,996 of funding assistance provided
50 projects completed

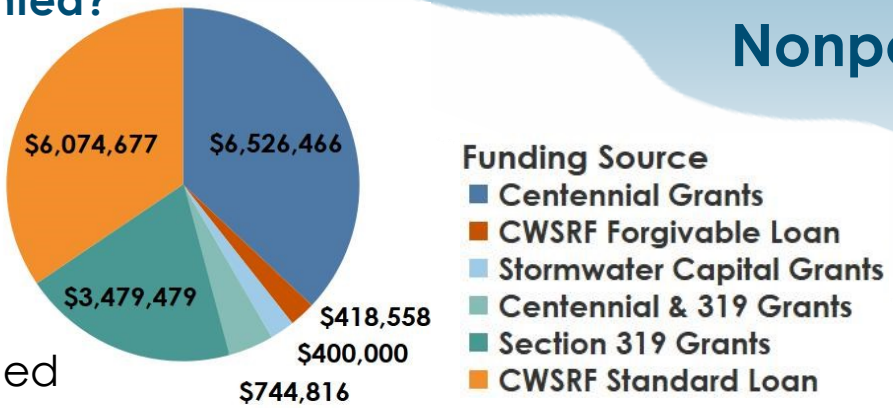

Figure 20. Nonpoint project funding by funding source.

Conservation Districts

16 conservation districts completed 23 projects with over $7 million of Ecology's financial assistance.

Conservation districts provide unique services to farmers and land owners to support local natural resource priorities.

Restoration and Community Engagement

42 projects, 32 recipients*

Lewis County Conservation District (CD) worked with 19 landowners to protect and restore streambanks by removing invasive species and planting native trees and shrubs along Lincoln Creek. Many grant recipients excel at engaging their communities, such as Clark Public Utilities, who recruited over 430 volunteers (>1,800 hours) for their Salmon Creek restoration project by participating in 55 events, reaching over 9,000 community members. Snohomish CD also engaged their community, and compared the cost-effectiveness of traditional and alternative outreach methods, in addition to their BMP implementation and monitoring activities.

Table 3. Summary of BMPs implemented.

Type of Work	Best Management Practices	Amount Installed
Agriculture	Direct Seed	22,870 acres
	Fencing	16.8 miles (88,761 feet)
	Livestock Heavy Use Area Protection	2 acres (72,000 square feet)
	Off-Stream Watering	9 facilities
	Waste Storage	2 facilities (288 square feet)
Restoration	Wetland Restoration & Conservation	91 acres
	Stream Channel Restoration	18 miles (94,836 feet)
Restoration & Agriculture	Riparian Buffers	7,303 acres
Monitoring	Water Quality Monitoring	260 Stations 41,868 Field Collections 7,520,519 Data Points

Source: EPA's Grant Reporting and Tracking (GRTs) and Ecology's Environmental Information Management (EIM) databases.

Publication #18-10-019

Biennium Projects: Nonpoint

Agricultural Best Management Practices (BMPs)

26 projects, 20 recipients

Farmlands rely on accessible, clean water for livestock and irrigation, however many agricultural activities can pollute waterways. Asotin County CD used grant funding to help farmers install exclusion fencing and off-stream water sources for livestock to prevent compaction and contamination of streams.

Most of these projects also include planting riparian buffers, which prevent erosion, filter pollution, and provide shade and habitat next to streams. Clark County CD worked with multiple partners to broaden their outreach and connect with more agricultural landowners. Their Centennial grant supported agricultural BMP curriculum development, workshops, tours, and technical assistance for over 300 people, in addition to planting 16,200 native trees and shrubs in riparian buffers.

Direct Seed Loan Program

Total Project Cost: $8,487,751
Ecology Funding Provided: $3,576,509 (loan), $73,765 (grant)

For over 15 years the Direct Seed Loan Program has helped farmers transition from conventional to no-till and direct seed practices on over 150,000 acres.

Direct seed is a farming technique that reduces erosion, protecting streams and salmonid habitat from overloads of sediment and nutrient pollution. This benefits farmers by conserving valuable soil from season to season.

The Spokane Conservation District leveraged Ecology grant and loan dollars with their own funds to perform outreach and provide 46 loans to local farmers to purchase direct seed equipment.

Monitoring and Vegetation Maintenance

24 projects, 18 recipients

For the first few years, maintenance is essential for plant survival rates. Water quality monitoring provides valuable data to assess changes in stream conditions over time. The Central Klickitat CD performed maintenance of previous planting sites and they've been gathering monitoring data for nearly two decades, in addition to implementing restoration activities and agricultural BMPs along the Little Klickitat River.

Table 4. Pollutant load reductions are estimated using a model (STEPL) based on land use type and BMPs implemented.

Pollutant Load Reduction *(estimated)*

Sediment	103,124 tons/yr
Biochemical Oxygen Demand (BOD)	220 tons/yr
Nitrogen	215 tons/yr
Phosphorus	72 tons/yr

Planning

7 projects, 6 recipients

Addressing nonpoint pollution is complicated, and involves collaboration between many partners. The City of Poulsbo performed a watershed assessment and developed a TMDL Implementation Plan to help guide efforts of future projects. Kitsap County helped farmers develop plans to address water quality.

Publication #18-10-019

Biennium Projects: On-site Sewage Systems

Why do on-site sewage systems need attention?

Many residents in Washington have on-site sewage systems (OSS), especially in rural areas. As these systems age, failures are more likely. Pollution from failing OSS is a significant issue for drinking wells, swimming beaches, and shellfish beds. Repairing and replacing OSS is expensive, and can be unaffordable for some property owners.

What have we accomplished?

$3,439,428 of funding assistance provided
10 projects completed

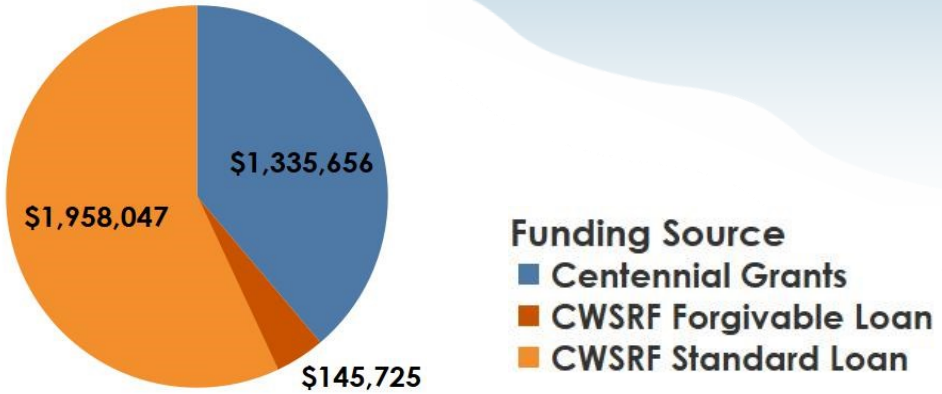

Figure 21. OSS project funding by funding source.

OSS Repairs and Replacement

10 projects

In some cases, property owners complete these repairs as the result of county outreach or enforcement efforts, without financial assistance. Island County repaired 28 OSS, protecting Whidbey and Camano Island Sole Source Aquifers, streams, and marine waters. Overall, financial assistance from Ecology helped homeowners repair or replace 280 failing OSS.

Water Quality Monitoring and Sanitary Surveys

1 project

Jefferson County analyzed over 900 water samples and confirmed 'hot spots' in Port Hadlock, Cape George, Middle Point, Oak Bay and Marrowstone Island, where high hits led to investigations that found failing OSS. The county used this data to prioritize locations for sanitary surveys (over 400 completed), and 70 septic repairs were permitted in this project. They also provided educational workshops for homeowners.

Figure 22. Skagit County repaired 20 OSS. Photo Credit: Skagit County

Publication #18-10-019

Biennium Projects: On-site Sewage Systems

Figure 23. Drainfields sometimes need to be replaced to help prevent pollution from reaching surface waters, like Puget Sound. Photo Credit: Craft3

Financial Assistance

9 projects

Many counties have provided local loan programs to provide financial assistance to residents for OSS repair and replacement. During this biennium, Pacific, Pierce, Thurston and Whatcom counties have transitioned to a new partnership in the Regional Loan Program (RLP) This partnership includes 14 western Washington counties and the non-profit organization, Craft3, which provides loan administration on behalf of these local governments.

This means more flexible lending options to support more financially distressed land owners. The RLP also frees up local staff to provide outreach and technical assistance for the public they serve. Instead of each local agency having to apply for funding every year or two, they can take turns applying with one application on behalf of the RLP.

Water Quality Monitoring and Sanitary Surveys

1 project

Jefferson County analyzed over 900 water samples and confirmed 'hot spots' in Port Hadlock, Cape George, Middle Point, Oak Bay and Marrowstone Island, where high hits led to investigations that found failing OSS. The county used this data to prioritize locations for sanitary surveys (over 400 completed), and 70 septic repairs were permitted in this project. They also provided educational workshops for homeowners.

Publication #18-10-019

Biennium Projects: Algae and Invasive Aquatic Plant Control

How are algae and invasive aquatic plants addressed?

Invasive plant management and algae control work involves planning, surveys and mapping, education and outreach, and plant removal. Invasive species removal helps restore native plants, salmon passage, and activities like swimming and kayaking. Most counties in Washington have Noxious Weed Control Boards (NWCB), leading these efforts.

Figure 24. Aquatics project funding by funding source.

What have we accomplished?

$1,217,355 of funding assistance provided
30 projects completed

Planning and Research

12 Projects

Lake Management Plans and Integrated Aquatic Vegetation Management Plans (IAVMPs) use research, plant surveys, and analysis to inform appropriate actions to restore lakes and rivers to healthy, native ecosystems. This biennium, funding helped create IAVMPs for Wiser Lake (Whatcom County), Rock Creek (Klickitat County), Coldwater Lake (Skamania County), and several lakes and major rivers in Okanogan County. The City of Anacortes performed research to determine the cause of algae blooms in Heart Lake. The Washington Cooperative of Fish and Wildlife completed a peer-reviewed research paper on the effects of aquatic herbicides on amphibians.

Education and Outreach

6 projects

Informational signs and brochures inform the public about where invasives come from, why they're a problem, when removal activities are happening, and how to help. The Heart Lake Management Plan project included over 20 meetings to present their research and hear comments from the public and stakeholder groups.

Figure 25. A diver removing flowering rush near a boat ramp in the Pend Oreille River. Photo Credit: Pend Oreille NWCB

Publication #18-10-019

Removal Activities

20 projects

Many of the grantees also began implementing their plans. Thurston County Noxious Weed Control Board (NWCB) worked over 30 river miles in the Chehalis River to control *Brazilian elodea,* where infestations have made the river shallower and harder to navigate for fish and people. Pierce County implemented a five-year program to eliminate variable-leaf milfoil in Florence Lake, Clear Lake and Blue Lake.

Pend Oreille County NWCB is working with partners in the Pend Oreille River to address flowering rush with adaptive management strategies. Their survey captured over 870 GPS points of invasives along 142 river miles, and they have targeted removal activities, working their way downstream.

Figure 26. Before

Figure 27. After

Flowering rush infestation on the Pend Oreille River was removed to improve boating access and recreation. Photo credit: Pend Oreille County NWCB

Publication #18-10-019

Figure 28. Pend Oreille County, and other partners work to protect the Pend Oreille River from invasive plants and pollution. Photo credit: Pend Oreille County NWCB.

Figure 29. The Methow Conservancy relocates "nuisance" beavers higher in the watershed where they help restore stream complexity and riparian habitat. Ecology funding supported monitoring and outreach efforts.

Figure 30. South Fork Beaver Creek. Beaver pools help replenish aquifers and improve stream temperatures.

Publication Information

Publication information

This report is available on the Department of Ecology's website at https://fortress.wa.gov/ecy/publications/SummaryPages/1810019.html

Cover Photo: Commencement Bay, Puget Sound

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DEPARTMENT OF ECOLOGY
State of Washington

Water Quality Financial Assistance
2015-2017 Biennium Projects Completed

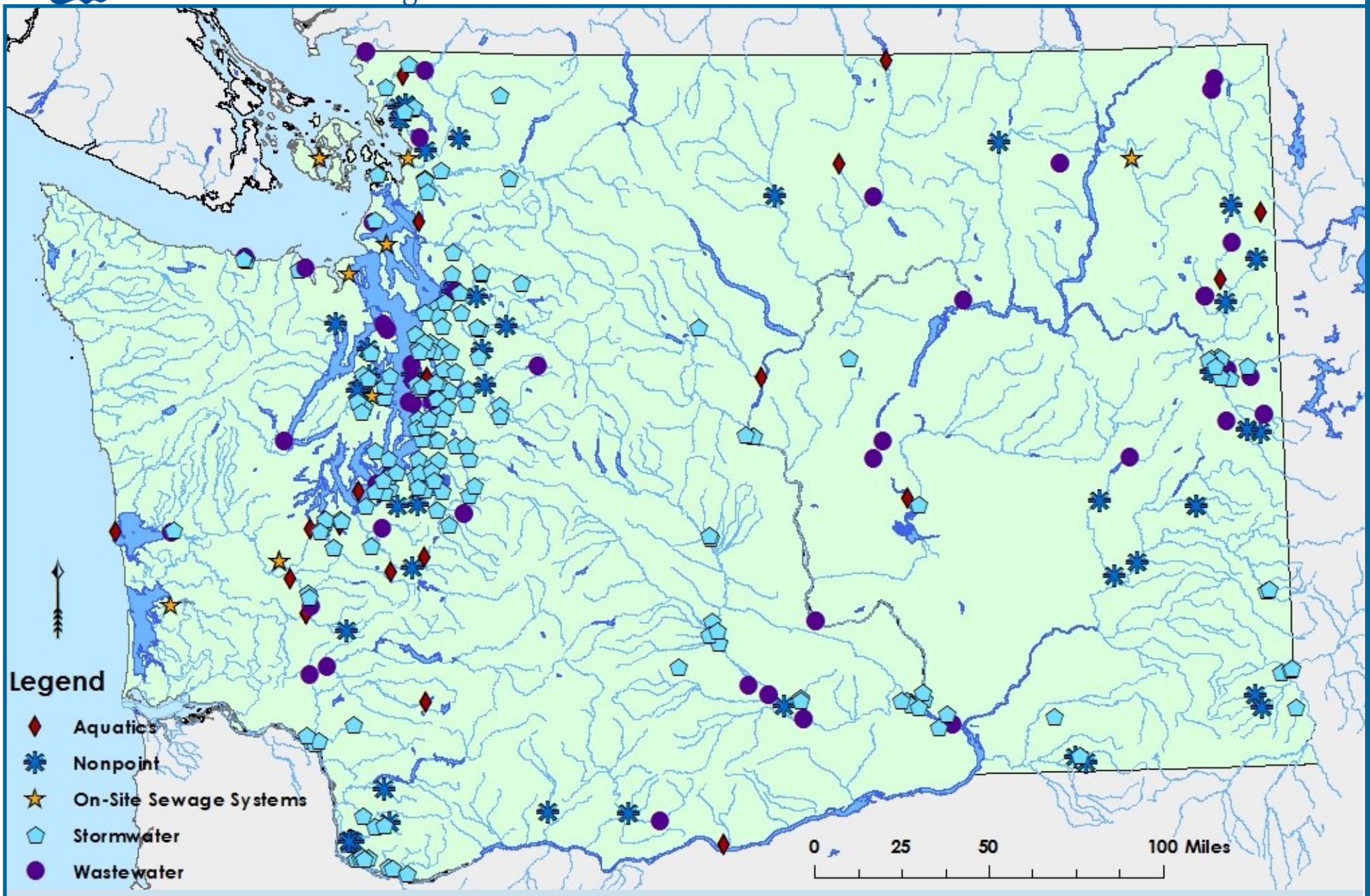

Figure 31. Map of 341 projects that closed between July 1, 2015 - June 30, 2017.

Publication #18-10-019