



Source Water Protection Strategy

Regional Water Providers Consortium

July 2017

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Regional Water Providers Consortium Members

- City of Beaverton
- Clackamas River Water
- City of Forest Grove
- City of Gladstone
- City of Gresham
- City of Hillsboro
- City of Lake Oswego
- City of Milwaukie
- Oak Lodge Water Services
- City of Portland
- Raleigh Water District
- Rockwood Water PUD
- City of Sandy
- City of Sherwood
- South Fork Water Board
- Sunrise Water Authority
- City of Tigard
- City of Tualatin
- Tualatin Valley Water District
- West Slope Water District

Overview

The [Regional Water Providers Consortium](#) (Consortium) serves as a collaborative and coordinating organization to improve the planning and management of municipal water supplies in the greater Portland, Oregon, metropolitan region.

Formed in 1997, the Consortium serves most water providers and their customers in Multnomah, Clackamas, and Washington counties. The Consortium is made up of [20 water providers](#) and together, these entities provide about 85% percent of the Portland metropolitan area’s drinking water.

Since its inception, the Consortium’s key projects and activities have involved 1) studying and analyzing future water supplies in the region, 2) developing regional water system resiliency, and 3) providing a water conservation program that members can leverage as part of their water supply planning efforts. By working together, Consortium members not only achieve economies of scale but also ensure that the region has a long-term, reliable, efficient, and safe water supply for years to come.

The Consortium was formed to oversee the implementation of the Regional Water Supply Plan (RWSP), which was first compiled in 1996 by the region's water providers. The RWSP provides a comprehensive, integrated framework of technical information, resource strategies, and implementation actions to meet the water supply needs of the Portland metropolitan area to the year 2050.

In 1998, Consortium adopted a [Strategy for Participation in Source Water Protection Efforts](#) (Strategy). The primary purpose of developing the Strategy at the time was to identify what activities the Consortium should participate in to advocate for the protection of all the sources selected and considered in the Regional Water Supply Plan.

The Strategy identified long and short-term actions for water providers and the Consortium to support with consistent positions on source water protection. The Strategy recognized that a



one-size-fits-all strategy is not appropriate for the region because of the variety of water sources. As a result, the Consortium has focused on promoting source water protection efforts with the member agencies and elected officials, and on legislative efforts. The Strategy was incorporated into the 2004 RWSP Update.

As part of implementation of the Strategy, the Consortium engaged in some notable work including the Consortium's advocacy to establish and fund a state-wide pesticide use and

reporting system. The Consortium supported the elimination of a safe harbor for users of Methyl tert-butyl ether (MTBE). Consortium staff also participated on Metro's Water Resource Policy Advisory Committee during the development of Metro's Regional Framework Plan Title 3 relating to water quality and flood management and with Metro's compliance with Oregon's statewide planning Goal 5 relating to natural resources. The Consortium has continued to support and implement water efficiency programs which was identified as a Strategy action.

The 2012 Five-Year Strategic Plan directed the Consortium to reevaluate the Strategy to determine if the Consortium continues to benefit from having a specific source water protection strategy in place, to evaluate existing and future threats to drinking water quality in the region, and to consider ways for the Consortium to continue to foster and communicate effective source water protection strategies. The Consortium Technical Committee agreed that there is benefit to the Consortium in having an updated Strategy and recommended specific actions which are provided at the end of this report.

Chapter six of the 2016 RWSP Update looked at current water provider and watershed specific source water protection efforts and highlights source water protection efforts in the region. The update of this Strategy draws heavily on the work from the 2016 RWSP Update.

Summary of Source Water Protection Efforts for Surface Water Sources

Although development of source water protection plans is voluntary, a plan can lead to financial, public education, and water quality benefits. Protecting source water quality by implementing a source water protection plan and program may help reduce treatment costs, aid in protecting public health, improve aesthetic water quality characteristics (such as taste and odor problems), create opportunities to leverage funds from multiple sources, and provide additional messaging to communicate with the public.

Source water protection plans and programs are unique to each water system. The final plans and programs are highly dependent on the size and type of the water source, watershed or recharge area, land uses, potential contaminant sources, and the water provider's goals. Following a cooperative effort between the Oregon Department of Environmental Quality (DEQ) and the Oregon Health Authority (OHA), water providers completed source water assessments for all public water systems in the state between 2000 and 2005. The assessments delineated the source area supplying drinking water, identified areas sensitive to contamination, and inventoried potential contamination sources. Some providers have conducted additional assessments or developed source water protection plans and programs.

In addition to water providers, there are a number of other organizations that are involved in protecting water quality in the region for multiple purposes. This section focuses on the specific efforts of water providers.

Bull Run Watershed

The [Bull Run Watershed](#) is the primary drinking water supply for the City of Portland (City) and its 20 wholesale customers. The protected Bull Run watershed is located 26 miles east of downtown Portland in the Sandy River Basin. The Bull Run Watershed Management Unit (BRWMU) includes the 102-square-mile area that drains to the water supply intakes, as well as about 40 square miles of surrounding buffer land.

Approximately 95 percent of the BRWMU is federal land administered by the U.S. Forest Service; four percent is owned by the City of Portland; and one percent is federal land administered by the U.S. Bureau of Land Management. In 2007, the City and Forest Service signed a partnership agreement to update watershed management roles and to promote communication and collaboration.

The Bull Run watershed is one of the most protected water supply watersheds in the nation, and the pollution control strategy relies heavily on prevention. The watershed has been closed to private development, agriculture, and recreation for more than 100 years. Commercial timber harvest is prohibited. The watershed and its surrounding area are closed to public entry; only escorted public tours are permitted. Trespassers are subject to federal law enforcement and substantial fines. Best management practices, contract specifications, and standard operating procedures are used to strictly control human sanitation, exclude domesticated animals, limit the risk of introduction and spread of invasive species, and otherwise restrict activities that may impair water quality. The City of Portland, U. S. Forest Service, and Oregon Department of Forestry coordinate closely throughout the fire season to control the risk of human-caused forest fires, monitor weather conditions that increase fire risk, and ensure prompt response to fire starts in or near the watershed.

The City conducts an extensive water-quality monitoring program for the reservoirs and tributary streams in order to detect short- and long-term changes in source water quality. In 1992, the City was granted a waiver from federal requirements under the Surface Water Treatment Rule to filter the water supply, one of a handful of such waivers in the nation. Maintaining this exception from federal rules requires extensive water quality monitoring, strict adherence to watershed protection control measures, reporting on watershed conditions and controls, and inspections by the state of Oregon.



Bull Run Lake

In addition to the protections for source water quality described above, the City is implementing a federally approved habitat conservation plan, approved in 2008, to maintain compliance with the federal Endangered Species Act (ESA). This plan involves 49 measures to protect and improve habitat for both aquatic and terrestrial species. The plan is implemented in partnership with public and private organizations working together on habitat conservation in the larger Sandy River Basin.

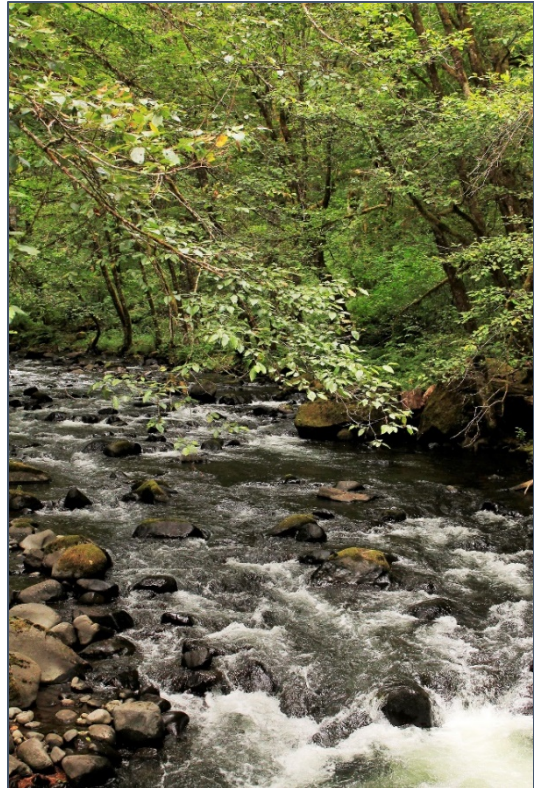
Tualatin and Trask Rivers

The Tualatin and Trask Rivers provide drinking water for many residents in Washington County and supply water for 10 public water systems including the following Consortium members: City of Beaverton, City of Forest Grove, City of Hillsboro and Tualatin Valley Water District. The source water protection efforts for the Joint Water Commission (JWC) and the City

of Forest Grove are described below. The City of Hillsboro owns and operates a water treatment plant (WTP) and distribution system in the upper Tualatin River watershed in addition to receiving water from the Joint Water Commission. The source area for this WTP is encompassed by the source area for the Joint Water Commission. There are also numerous public and private wells in the watershed.

Joint Water Commission. The [Joint Water Commission](#) (JWC) is a collective water supply agency consisting of the Cities of Beaverton, Forest Grove, Hillsboro, and the Tualatin Valley Water District. The JWC is responsible for treating, transmitting and storing potable water for approximately 400,000 customers in Washington County including the member agencies and wholesale customers. The [Source Water Protection](#) program is coordinated by the City of Hillsboro, the managing agency for JWC, with guidance from a technical advisory committee consisting of representatives from each member agency.

The drinking water source area for the JWC is composed of two surface water systems. The first surface water system is a 220-square-mile portion of the upper Tualatin River Basin that drains to the WTP intake. The second surface water system is the 8.2-square-mile watershed of Barney Reservoir in the upper Trask River Basin. Water released from Barney Reservoir is diverted to the upper reaches of the Tualatin River. The land within the drinking water source area is owned by a myriad of private landowners and public agencies, and the JWC does not have regulatory authority over activities occurring within it. The western section is in the Oregon Coast Range characterized by steep terrain and forested land in timber production. The eastern section is dominated by flatter terrain and agricultural activities. The areas closest to the WTP intake include residential land and major transportation corridors.



Tualatin River

In 2003, a Source Water Assessment (SWA) of the JWC's drinking water source area was completed through a cooperative effort between Oregon DEQ, OHA, and the JWC. The analysis found that 200 of the 306 potential contamination sources were classified as high risk and located in sensitive areas.

In 2013, a more thorough and spatially explicit SWA was completed. Contamination risks and watershed sensitivities were combined in a GIS tool to guide determination of the highest priorities for the SWP program to address. Overall results were that two percent of the area that had a relatively high contaminant risk ranking was located in highly sensitive areas. About 71 percent of the drinking water source area did not have a risk present in a sensitive area. A

water quality database was also developed that enables viewing water quality monitoring sites and data on maps.

In 2014, a [Source Water Protection Plan](#) was finalized based on the results of the 2013 SWA that outlines source water protection programs in nine categories. Tasks were identified for each program category in a five-year implementation plan (Fiscal Years 2014–19). This schedule is dependent on annual budget approvals and annual program approval from the SWP TAC. The program categories are:

- Agricultural Runoff
- Forestry
- Septic Systems
- Point Source Discharges
- Nonpoint Sources
- Water Quality and Turbidity Projects
- Public Outreach
- Research and Education
- Water Quality Monitoring

Forest Grove. While the City of Forest Grove (City) is a member of the Joint Water Commission (JWC), it also independently owns and operates a water treatment plant. The City of Forest Grove owns 4,225 acres of the land in the upper Clear Creek Watershed of the Tualatin River Basin within the JWC’s drinking water source area. The land is on the forested mid-to-lower slopes of the Oregon Coast Range about four miles northwest of the City. It includes almost 1,000 acres of 90- to 110-year-old forest.

In 1917, the City of Forest Grove began buying land to have a controllable source of water for its water treatment plant. Most of the land was purchased after World War II. The City obtains about 50 percent of its water from five diversion structures on the watershed (on Clear Creek, Roaring Creek, Deep Creek, Smith Creek, and Thomas Creek). These five structures combined provide a supply of about two-to-four million gallons per day (mgd). The City of Forest Grove serves approximately 22,500 people.

In July 2013, the City of Forest Grove updated its Watershed Stewardship Management Plan. The plan describes the current forest conditions and management accomplishments since 2001, establishes monitoring and evaluation protocols, and updates forest policy and management recommendations. It is intended to guide activities until 2022.

These lands are managed to protect and improve forest ecosystem health for the purpose of providing the City with high-quality drinking water. The plan strives to increase the natural diversity of the forest and enhance its wildlife habitat.

The City conducts tree harvesting as a sustainable resource management activity. The City's practices are consistent with the Forest Stewardship Council's certified forest management practices. An independent third-party assessment ensures that forest management meets stringent standards for environmental sensitivity, sustainability, and community and social concerns. The plan also protects one-third of the land from harvesting due to sensitive characteristics including riparian areas, steep slopes, inaccessible areas, representative ecosystems, and old forest. Herbicide use is minimized and strictly controlled. Public access in the watershed is restricted, and recreational activities are prohibited.

The recommended actions in the updated plan include:

- stream restoration, including slope stabilization
- sustainable tree harvest and stand condition monitoring
- wildlife surveys and habitat enhancement
- road maintenance, improvement, and condition monitoring
- control of invasive vegetation
- public education and involvement through public tours
- land acquisition
- fire management coordination with Oregon Department of Forestry

Clackamas River

The Clackamas River serves most residents in Clackamas County and supplies water for the following Consortium members: Clackamas River Water, City of Gladstone, City of Lake Oswego, Oak Lodge Water Services, South Fork Water Board, Sunrise Water Authority, and City of Tigard.

The Clackamas River is a drinking water source for more than 300,000 people in Clackamas County. The watershed drains approximately 940 square miles. More than half of its length runs through forested areas over rugged terrain, and the lower reaches flow through agricultural and densely populated areas. Seventy-two percent of the watershed is publicly owned, three percent is tribally owned, and 25 percent is privately owned. There are five municipal surface water intakes on the Clackamas River represented by the [Clackamas River Water Providers](#) (CRWP): Clackamas River Water, City of Estacada, City of Lake Oswego, North Clackamas County Water Commission (City of Gladstone, Oak Lodge Water Services, and Sunrise Water Authority), South Fork Water Board (Oregon City and West Linn), and City of Tigard.

The water providers in the Clackamas River Basin have worked together on various water resource issues for more than a decade. In July of 2005, an Intergovernmental Agreement for Joint Funding for Watershed Activities in the Clackamas Basin was signed between water providers and Clackamas County Water Environment Services to formalize collaborative work on watershed and water-quality-related projects.



Clackamas River

In 2007, an Intergovernmental Agreement created the Clackamas River Water Providers (CRWP). CRWP funds and coordinates efforts relating to source water protection and watershed education. The CRWP has no regulatory authority over activities other than its own within the Clackamas River watershed. There are multiple federal, state, and local authorities that do have existing and proposed rules, regulations, and programs that can protect water quality. The CRWP supports existing protective requirements and positively affects proposed protections for the Clackamas River.

In 2002 and 2003, DEQ and DHS, with the assistance of the Clackamas Basin Watershed Council and the water providers, completed four source water assessments on the Clackamas River. These assessments were for the U.S. Forest Service Timber Lake Job Corp; the City of Estacada; a joint assessment for South Fork Water Board, the North Clackamas County Water Commission, and Clackamas River Water; and the City of Lake Oswego. More than 1,200 potential contaminant sources were identified and ranked by risks (low, moderate, high).

In 2010, a [Drinking Water Protection Plan](#) was approved by CRWP. The overall drinking water protection strategy includes eight sub-programs that outline management measures, programs, and strategies to accomplish the goals of addressing various threats to water quality and ensuring the long-term viability of the Clackamas River as a drinking water source. The sub-programs include:

- Basin Analysis: Studies, GIS, Modeling, and Water Quality Monitoring
- Education and Research Assistance
- Point Source Evaluation and Mitigation
- Nonpoint Source Evaluation and Mitigation

- Disaster Preparedness and Response
- Public Outreach and Information Sharing
- Watershed Land Use Tracking and Management
- Land Acquisition

Every year the CRWP completes a report summarizing the year’s source water protection activities.

Willamette River

The Willamette River currently provides drinking water for the City of Sherwood and the City of Wilsonville. Tualatin Valley Water District and the City of Hillsboro are also partnering to develop the mid-Willamette River at Wilsonville as an additional water supply source.

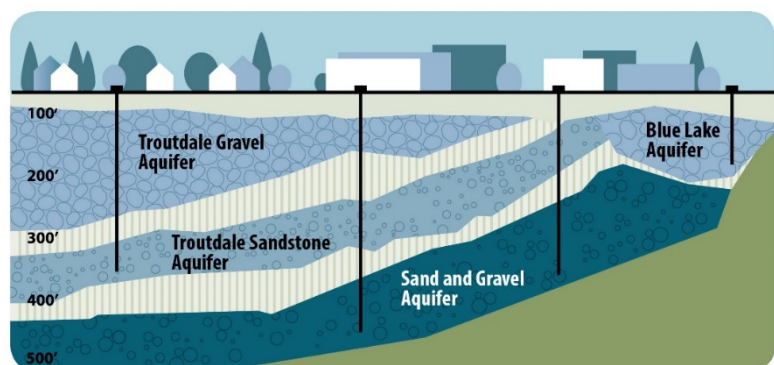
In 2002 and 2003, Source Water Assessments were conducted by DEQ and OHA for all public water systems using the Willamette River or tributaries as a source at that time. Currently, no formal SWP plan is administered by Consortium members, but many other organizations conduct work in the watershed that benefits water quality. As the Tualatin Valley Water District and the City of Hillsboro develop this supply source, development of a source water protection plan is anticipated.

Summary of Source Water Protection Efforts for Groundwater Sources

Groundwater is the primary and/or secondary drinking water source for several communities in the greater Portland metropolitan area including the City of Gresham (secondary), City of Milwaukie (primary), the Portland Water Bureau and its wholesalers (secondary) and Rockwood Water People’s Utility District (secondary). The cities of Portland, Gresham, and Fairview have partnered to implement a groundwater protection program to protect the Columbia South Shore Well Field. Gresham and Rockwood jointly administer the Cascade Well Field Protection Program.

Columbia South Shore Well Field

The Portland Water Bureau operates a well field capable of producing close to 100 mgd of high-quality drinking water. The [Columbia South Shore Well Field](#) (CSSWF) is the second largest water source in the state of Oregon and the largest developed groundwater source, containing about half of the daily capacity of



Portland's Bull Run source. The well field is located just south of the Columbia River, east of Portland International Airport, and west of Troutdale. Water is drawn from three aquifers using 26 wells spread over a 12-square-mile area.

The cities of Portland, Gresham, and Fairview protect the aquifers of the CSSWF through joint implementation of a [groundwater protection program](#) that meets the requirements of Oregon's Wellhead Protection Program (OAR 340-40-170). The goal of the groundwater protection program is to prevent future groundwater contamination, and to discover and remediate preexisting contamination.

Businesses within the state-certified [wellhead protection area boundary](#) are subject to regulation if they transport, store, or use certain types and quantities of chemicals. Regulated businesses are required to implement spill prevention and containment measures, train employees on groundwater protection practices, and annually report their hazardous materials directly to the Portland Water Bureau.

The Portland Water Bureau provides technical assistance to regulated businesses through a partnership with the Columbia Corridor Association. Portland routinely monitors groundwater quality at 80 locations and has an intergovernmental agreement with DEQ to expedite remediation within the CSSWF. Outreach and education for the general public are conducted through a partnership with the Columbia Slough Watershed Council and focus on how residents can help protect the city's drinking water.

Powell Valley Well Field

The City of Portland is in the process of updating the groundwater protection program for the Powell Valley Well Field (PVWF) located near Powell Butte. The Powell Valley Well Field was annexed to the City in 2005 and is not currently in use, but it is part of the City's long-term water supply strategy.

Cascade Well Field

The Cascade Well Field Protection Area (CWFPFA) encompasses portions of the cities of Fairview, Gresham, Troutdale, and Wood Village. The City of Gresham, in partnership with the Rockwood Water People's Utility District, developed and administers the [Cascade Well Field Protection Program](#). Both agencies provide financial support for the program.

The designated groundwater protection area is based on a groundwater model simulation of the 30-year time of travel to the Cascade production wells. For sites located in the designated CWFPFA, the transport, storage, and use of mobile chemicals that are halogenated solvents, hazardous substances, hazardous waste, or petroleum products (including fuel) may be subject to requirements similar to those in place within the CSSWF. Regulated businesses are required to submit an annual site plan and hazardous materials inventory report; participate in site inspections; maintain adequate containment areas for hazardous materials; maintain spill kits,

procedures, and signage; and provide spill response training program for employees. The program also provides recommended best management practices.

Milwaukie Well Field

Milwaukie has seven operating wells that range from 300 feet to nearly 500 feet deep that tap the Troutdale Gravels Aquifer (TGA). The TGA encompasses about 300 square miles and extends from northern Clark County in Washington to south of Milwaukie and from east of Troutdale to the Willamette River. A source water assessment was completed in 2004 and updated in 2010.

At that time, the drinking water protection area was slightly expanded. The [City of Milwaukie](#) is currently extending its wastewater service area to reduce threats from septic systems. They work closely with DEQ and EPA to monitor and clean up past contaminated sites.

Aquifer Storage and Recovery (ASR)

The City of Beaverton started an aquifer storage and recovery (ASR) program in 1999 and since then, ASR on the Westside of the Metro area has steadily increased. The City of Beaverton and the Tualatin Valley Water District share an Oregon Water Resources Department (OWRD) ASR limited license. Additionally, the cities of Tigard and Tualatin have ASR wells, and other providers have wells in development.

Nearly 3.74 billion gallons of water have been stored and 4.10 billion gallons of water have been pumped (ASR storage plus native groundwater) from the local Columbia River Basalt aquifer.

Water Quality Monitoring

Water quality monitoring is required for ASR activities to demonstrate that the injected and recovered water quality meets potable standards, to assess potential chemical reactions between source water and native groundwater that could result in clogging of the injection wells or adversely affect native groundwater quality, and to comply with ASR limited license requirements. The complete list of parameters is extensive, and water quality testing is to be conducted by an Oregon-certified laboratory.

Safe Drinking Water Act Compliance

Analytical results must show that the water quality meets EPA/OHA drinking water standards for regulated parameters for source water, storage water, and recovered water. Quality assurance/quality control (QA/QC) must be performed on all analyzed data in general compliance with U.S. Environmental Protection Agency's National Functional Guidelines, with no exceedances or QA/QC issues identified.

Recommended Actions

A tremendous amount of work has been done to protect the water quality of regional water supply sources since the Consortium prepared its first source water protection strategy back in 1998. Many of the recommended strategies have been implemented. Looking forward, the Consortium will continue to be a champion for source water protection through legislative advocacy, partnerships, grants, studies, conservation, and education. Individual water providers and partner organizations will continue to evaluate, implement, and expand their individual plans to ensure the long-term quality of our region's water sources.

Specific actions the Consortium will undertake to promote source water protection include:

- continuing to promote water efficiency and raise awareness about the role water conservation can play in source water protection through the increased longevity of existing and potential drinking water sources;
- tracking changes in water quality and source water protection regulations by monitoring existing rules and regulations for changes and amendments that could impact drinking water quality;
- supporting regulatory efforts that promote the protection of water quality;
- participating in or pursuing legislation and administrative mechanisms to promote source water protection;
- supporting implementation of [Oregon Integrated Water Resources Strategy](#) measures that promote source water protection;
- participating in and tracking state and regional research efforts on climate change and its effect on water supply, fire risk, disease, and water quality related to temperature and stream flow;
- educating policy makers, including the Consortium Board, legislators, and state agency policy bodies about the importance of protecting drinking water sources and related issues;
- utilizing and augmenting Consortium outreach resources such as its webpage, social media, and communication network to provide information to the public on the importance of source water protection and what water providers are doing in their own watersheds.

Conclusion

The Consortium will continue to advocate for source water protection in the region, state and nationally. Actions taken will be reflected in the Consortium triannual and annual reports.