



DEPARTMENT OF
ECOLOGY
State of Washington

2019 Columbia River Basin Water Supply Inventory Report

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Publication and Contact Information

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Cover photo: Icicle Peshastin Irrigation District outfall, Icicle Creek

2019 Columbia River Basin Water Supply Inventory Report

Office of Columbia River
Washington State Department of Ecology
Union Gap, Washington

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1250 West Alder Street • Union Gap, Washington 98903 • (509) 575-2490

December 20, 2019

The Honorable Jay Inslee, Governor
Honorable Members of the Washington State Legislature
Olympia, Washington

RE: Columbia River Basin Water Supply Inventory Report

The Office of Columbia River is pleased to present the 2019 *Columbia River Basin Water Supply Inventory Report* to the Legislature, meeting the requirements under RCW 90.90.040. This report is now available at the following website:

<https://fortress.wa.gov/ecy/publications/SummaryPages/1912004.html>

As we continue our aggressive pursuit of water supplies to meet the instream and out-of-stream needs in Eastern Washington, we provide an annual report summarizing water supply development project progress made and milestones met over the past year. This report also includes an inventory list of water fully developed through our program.

If you have any questions regarding this report or would like more information, please contact me by phone at (509) 574-3989 or by email at: thomas.tebb@ecy.wa.gov. If you would like hard copies of the report, contact Colleen Smith by phone at (509) 454-4239 or email at: colleen.smith@ecy.wa.gov.

Sincerely,

G. Thomas Tebb, L.H.g., L.E.G.
Director
Office of Columbia River

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RCW 90.90.040

Columbia river water supply inventory—Long-term water supply and demand forecast.

1. To support the development of new water supplies in the Columbia river and to protect instream flow, the department of ecology shall work with all interested parties, including interested county legislative authorities and watershed planning groups in the Columbia River Basin, and affected tribal governments, to develop a Columbia river water supply inventory and a long-term water supply and demand forecast.

The inventory must include:

- a. A list of conservation projects that have been implemented under this chapter and the amount of water conservation they have achieved; and
 - b. A list of potential water supply and storage projects in the Columbia River Basin, including estimates of:
 - i. Cost per acre-foot;
 - ii. Benefit to fish and other instream needs;
 - iii. Benefit to out-of-stream needs; and
 - iv. Environmental and cultural impacts.
2. The department of ecology shall complete the first Columbia river water supply inventory by November 15, 2006, and shall update the inventory annually thereafter.
 3. The department of ecology shall complete the first Columbia river long-term water supply and demand forecast by November 15, 2006, and shall update the report every five years thereafter.

[2011 c 83 § 6; 2006 c 6 § 5.]

RCW 90.90.020

Allocation and development of water supplies.

- (1) (a) Water supplies secured through the development of new storage facilities made possible with funding from the Columbia River Basin water supply development account, the Columbia River Basin taxable bond water supply development account, and the Columbia River Basin water supply revenue recovery account shall be allocated as follows:
 - (i) Two-thirds of active storage shall be available for appropriation for out-of-stream uses; and
 - (ii) One-third of active storage shall be available to augment instream flows and shall be managed by the department of ecology. The timing of releases of this water shall be determined by the department of ecology, in cooperation with the department of fish and wildlife and fisheries co-managers, to maximize benefits to salmon and steelhead populations.
- (b) Water available for appropriation under (a)(i) of this subsection but not yet appropriated shall be temporarily available to augment instream flows to the extent that it does not impair existing water rights.
- (2) Water developed under the provisions of this section to offset out-of-stream uses and for instream flows is deemed adequate mitigation for the issuance of new water rights provided for in subsection (1)(a) of this section and satisfies all consultation requirements under state law related to the issuance of new water rights.
- (3) The department of ecology shall focus its efforts to develop water supplies for the Columbia River Basin on the following needs:
 - (a) Alternatives to groundwater for agricultural users in the Odessa Subarea aquifer;
 - (b) Sources of water supply for pending water right applications;
 - (c) A new uninterruptible supply of water for the holders of interruptible water rights on the Columbia river mainstem that are subject to instream flows or other mitigation conditions to protect streamflows; and
 - (d) New municipal, domestic, industrial, and irrigation water needs within the Columbia River Basin.
- (4) The one-third/two-thirds allocation of water resources between instream and out-of-stream uses established in this section does not apply to applications for changes or transfers of existing water rights in the Columbia River Basin. [2011 c 83 § 4; 2006 c 6 § 3.]

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The Office of Columbia River

In 2006, Washington State Legislature passed RCW 90.90 determining that a Columbia River Basin water supply development program was necessary to meet the current and future water needs of the basin. In response to the demand to meet these needs, the Department of Ecology (Ecology) created the Office of Columbia River (OCR) whose mission is to aggressively pursue development of water supplies to benefit both instream and out-of-stream uses.

This Columbia River Basin Annual Water Supply Inventory Report, submitted to the Legislature and governor, summarizes the ongoing accomplishments of the Office of Columbia River (OCR), as defined in Chapter 90.90 of the Revised Code of Washington (RCW). Throughout this report, you will see a set of icons (Figure 1) next to the project or program title that represent the legislative directive each project addresses.

Under our legislative mandate to aggressively pursue water supplies for the Columbia River Basin, we invest and implement programs and projects (Figure 2) that deliver integrated water supplies across central and Eastern Washington for both instream flow benefits and out-of-stream water uses.

To date, we have successfully developed 413,845 acre-feet (ac-ft) of sustainable water supplies while achieving 90% compliance on well monitoring within the basin. Looking ahead, we aim to develop an additional 340,000 ac-ft over the next five years with a total goal of 1 million ac-ft of water developed over the course of the next 10 years.

As we work to meet current water supply demands, we also consider the future water needs of the basin. Every five years, we publish a long-term water supply forecast¹ that anticipates possible impacts of climate change, aging water conveyance infrastructure, and an ever-growing population on the basins water supplies. These forecasts allow us to focus on projects and programs that provide enough water to meet the anticipated needs in a timely manner.

Next year, we look forward to the completion of East Low 47.5 system (EL 47.5). The EL 47.5 is scheduled to deliver enough water to convert up to 10,500 acres of farmland from groundwater to surface water for irrigation during the 2020 irrigation season. We also anticipate significant progress on the Walla Walla Water 2050 and Icicle Creek Water Resource Management Strategy, as well as the proposed Switzler Reservoir Storage Project.

Throughout the report, these symbols are used to identify the legislative directive that the project addresses:

 : Alternatives to groundwater for Odessa Subarea

 : Pending water right applications

 : Future water supplies for interruptible water right holders

 : Future water supplies for municipal, domestic, industrial and irrigation

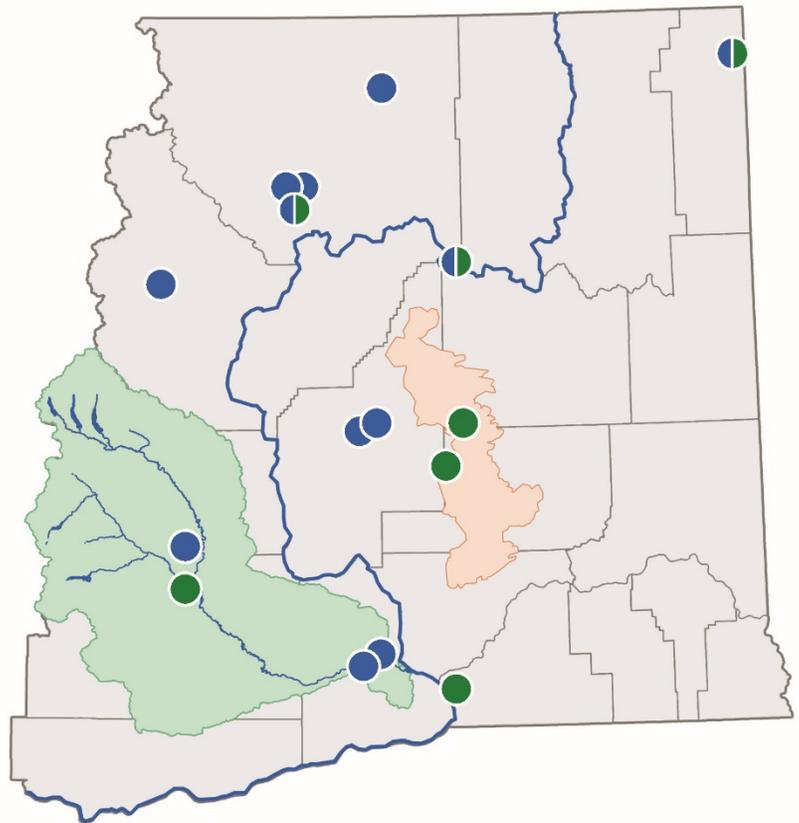
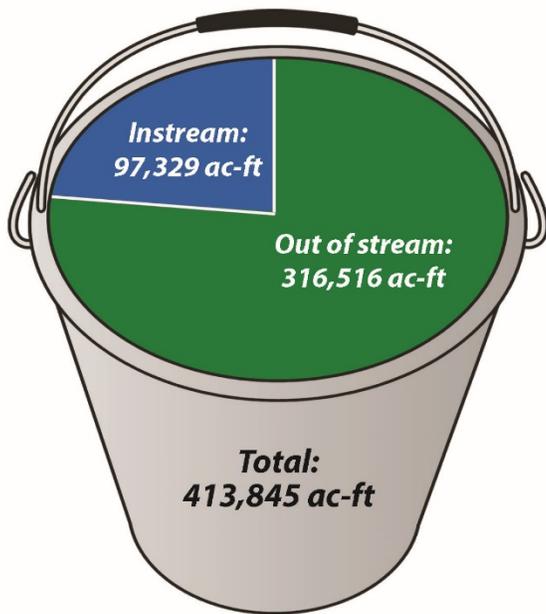
 : Instream benefits

Figure 1 Icon Legend

¹ Columbia River Basin Long-Term Water Supply and Demand Forecasts can be found on our website at: <https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Office-of-Columbia-River/Office-of-Columbia-River-Legislative-reports>

Water Supply Development by the Office of Columbia River

Developed 2006-2019



Key

- Instream
- Out of Stream
- ◐ Both
- Odessa Subarea
- Yakima Basin

Near Term 2019-2022

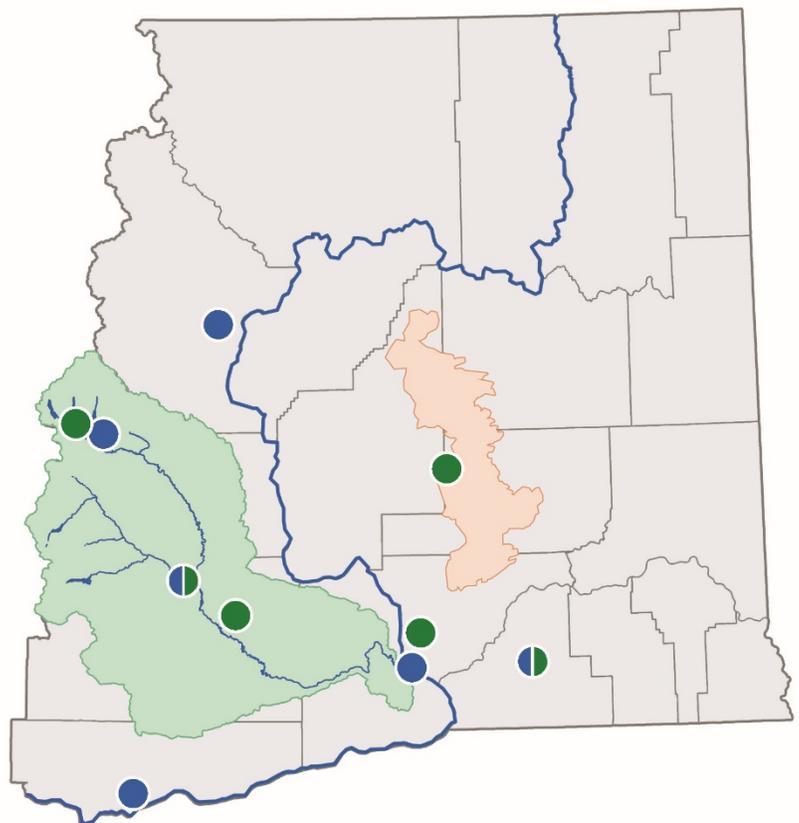
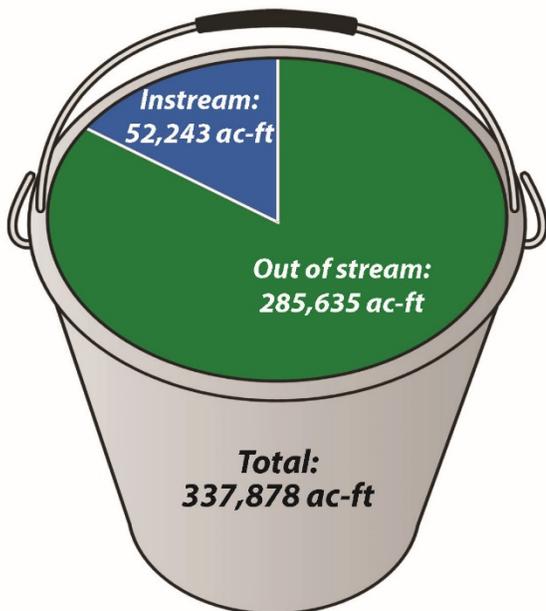
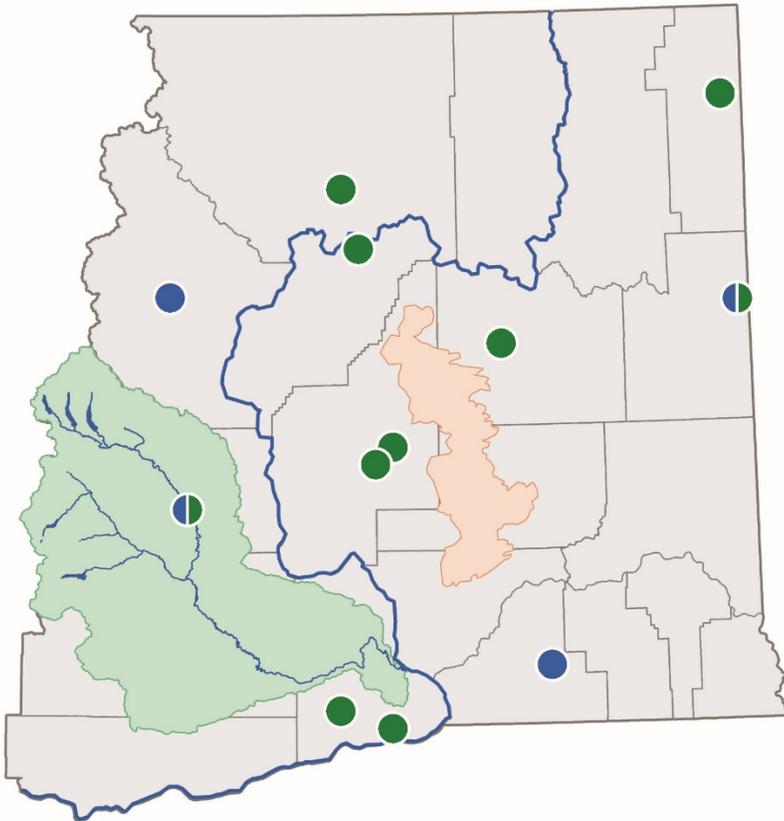
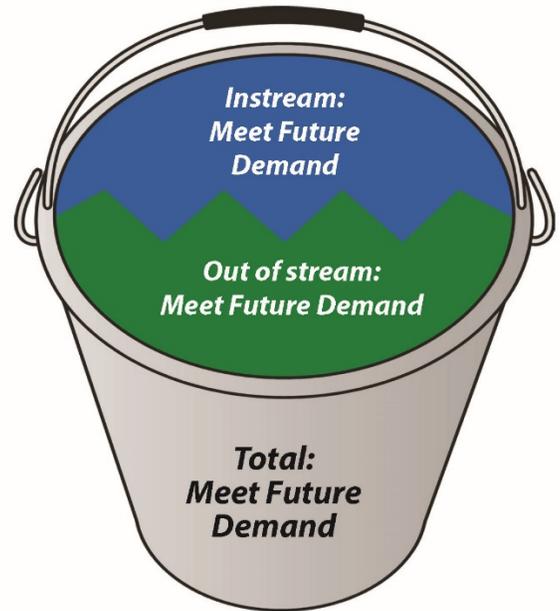


Figure 2 Water Supply Development by the Office of Columbia River



Long-term 2022+



Projects

Developed 2006-2019

- Barker Ranch: 6,436 ac-ft
- Columbia Basin ID Piping: 35,955 ac-ft
- Conservation Commission Irrigation Efficiency: 3,476 ac-ft
- Donations: 14,396 ac-ft
- KID/Red Mountain: 11,005 ac-ft
- Kennewick General Hospital 4,000 ac-ft
- Lake Roosevelt: 132,500 ac-ft
- Lower Wenatchee Piping: 7,823 ac-ft
- Manastash: 1,300 ac-ft
- Methow Trust Water Acquisition: 79 ac-ft
- Methow Projects: 2854 ac-ft
- Odessa Subarea: 164,000 ac-ft
- Peshastin ID Piping: 360 ac-ft
- Potholes Feed Route (conveyance)
- Pine Creek Acquisition: 900 ac-ft
- Sullivan Lake: 14,000 ac-ft
- Port of Walla Walla Leases: 4,761 ac-ft
- Upper Kittitas Tributary Enhancement (conveyance)
- Weber Siphon (conveyance)
- Yakima City ASR: 10,000 ac-ft

- Icicle Creek Water Management Strategy Projects: 20,000+ ac-ft
- Kennewick ASR: 318+ ac-ft
- Pasco Basin Water Supply: TBD
- Pasco Municipal Supply Improvements: 5,000 ac-ft
- SVID: 7,815 ac-ft
- White Salmon ASR: 145 ac-ft
- Yakima Basin Enhanced Conservation: 85,000 ac-ft
- Yakima Basin Shallow Aquifer Recharge: TBD

Long-term 2022+

- Regional Aquifer Storage and Recover: TBD
- Conservation Commission Retiming: TBD
- Goose Lake & Nine Mile Flat Storage: TBD
- Horse Heaven Hills: 61,000+ ac-ft
- Kittitas Distributed Off-Channel Small Storage: TBD
- Lincoln CD Passive Rehydration: TBD
- Mill Creek Storage: 2,000 to 11,000 ac-ft
- Peshastin Pump Exchange: TBD
- Rilette Aquifer Storage and Recovery: TBD
- Spokane-Rathdrum ASR: 105,000 ac-ft
- Switzler Off-Channel Storage: 44,000 ac-ft
- Walla Walla Flow Enhancement: 25,500 to 58,500 ac-ft
- Yakima Basin Integrated Plan Projects: 150,400+ ac-ft

Near Term 2019-2022

- Cle Elum Pool Raise: 14,600 ac-ft
- Columbia Basin ID Piping: 5000 ac-ft
- Kachess Drought Relief Pumping Plant: 200,000 ac-ft
- East Low Canal Widening: (conveyance)

Ecology’s 2019-2021 Strategic Plan

Ecology’s 2019-2021 Strategic Plan outlines how the agency will address ongoing environmental challenges such as climate change, preventing and reducing toxic threats, delivering integrated water solutions, and protecting and restoring the Puget Sound. Delivering integrated water solutions is key to solving the Columbia River Basin’s complex water problems.

The work of OCR is highlighted throughout Ecology’s 2019-2021 Strategic Plan to demonstrate how water supply development projects and multifaceted water solutions provide real results for the instream and out-of-stream water needs of today and beyond. Our office sets the standard of performance for developing a holistic approach to meeting the water needs of growing communities, agriculture, and the natural environment. Our work is now modeled by others, such as Ecology’s Office of the Chehalis Basin², as they tackle their own water challenges.

Drought Resiliency

The 2019 Washington State Drought Contingency plan states “Whether it is appropriate or necessary to replicate this (Office of Columbia River) approach on the west side of the Cascades, it is reasonable to assume that doing so would provide more financial and analytical support for water supply resiliency projects in west side watersheds.”

Climate change impacts include an increased frequency of drought declarations in the Columbia River’s tributary watersheds. As in previous years, these challenges continued to decrease water supplies throughout the Columbia River basin in 2019.

While much of the State experienced substantial low elevation snowfall during late winter 2019, many mountainous areas within the sub-basins of the Columbia River basin experienced lower than normal precipitation. Interestingly enough, southeast Washington watersheds, including Walla Walla, generally benefitted from these late winter storms.

By April 4, 2019, Governor Inslee declared the Okanogan, Methow, and Upper Yakima subbasins to be in emergency drought status. By the end of May 2019, twenty-seven (27) watersheds were added to the declaration including the Lower Yakima and most of the watersheds in western Washington. Although flows in the Columbia River were sufficient in 2019, we must be prepared to face future drought years where low flows could affect those with interruptible water rights on the mainstem.

Through our development and implementation of integrated water solutions that address a basins unique water needs in both wet and dry years, we continue to lead the way in drought preparedness. By anticipating and preparing for low water supply years, we can reduce drought related impacts on both the economy and instream flows.

² RCW 43.21A.730(3) In operating the office of Chehalis Basin, the department must follow, to the greatest extent practicable, the model being used to administer the Columbia river basin water supply program established in chapter 6, Laws of 2006



Integrated Solutions for Complex Problems

To successfully meet the unique water needs of each basin, it is crucial we work with all stakeholders to develop and implement actions that achieve our common goals. Securing adequate water for the instream and out-of-stream needs of any given basin requires consensus among tribal, local, state and federal governments, environmental interests and citizens, for the benefit of all.

Each plan, strategy, and partnership coordinates the implementation of a suite of actions that together seek to achieve sufficient clean and cool water supporting healthy stream flows for fish and other wildlife, as well as providing reliable agricultural, industrial, and municipal/domestic water needs now and for years to come.

Photo: Icicle Creek Workgroup

Icicle Creek Water Resource Management Strategy



Current water management practices in the 212-square mile Icicle Creek Sub-basin consistently fail to meet instream and out-of-stream demands in the sub-basin. To ensure adequate water supplies are available, a new approach towards managing the sub-basins water supplies is warranted. The Icicle Strategy (Figure 3) provides integrated water resource management solutions addressing both the complex water supply issues facing the basin today and potential future impacts due to climate change.

In January 2019, the Icicle Strategy co-leads, Ecology and Chelan County, moved the Icicle Strategy from planning to implementation with the release of the Final Icicle Creek Water Resource Management Strategy Programmatic Environmental Impact Statement (FPEIS). Alternatives presented in the FPEIS include multiple integrated, long-term water resource management and habitat restoration actions designed to meet the purpose and need of the Icicle Strategy.

Chelan County and Ecology determined that the suite of projects and elements that comprise Alternative 1 are best suited to meet the Icicle Strategy Guiding Principles. Additionally, we believe Alternative 1 has the highest likelihood of receiving funding, and will have the lowest environmental footprint than the other alternatives. Actions identified in the FPEIS are designed to achieve instream flow goals, 100 cubic feet per second (cfs) during average water years and 60 cfs during dry years. For reference, Icicle Creek flowed as low as 16.4 cfs during the 2015 drought.

Guiding Principles of the Icicle Strategy

- Improving instream flows.
- Protecting tribal and non-tribal fish harvest.
- Improving the sustainability of Leavenworth national fish hatchery.
- Improving domestic supply.
- Improving agricultural reliability.
- Enhancing Icicle Creek habitat.
- Complying with all federal, state, local and wilderness laws.

Icicle Strategy Workgroup Members

- Department of Ecology
- Chelan County
- Cities of Leavenworth and Cashmere
- Icicle-Peshastin Irrigation District and Cascade Orchard Irrigation Company
- Icicle Creek Watershed Council
- Yakama Nation
- Confederated Tribes of the Colville Reservation
- Cascadia Conservation District.
- Washington Department of Fish & Wildlife
- Washington Water Trust
- Trout Unlimited
- NOAA Fisheries
- US Bureau of Reclamation
- US Fish & Wildlife Service
- US Forest Service
- Individual Agriculture Representatives

ICICLE STRATEGY

The purpose of the Icicle Creek Work Group ("Work Group") is to develop a comprehensive Icicle Strategy through a collaborative process that will achieve diverse benefits defined by all of the Guiding Principles below. The Work Group will use best available science to identify and support water management solutions that lead to implementation of high-priority water resource projects within the Icicle Creek drainage.

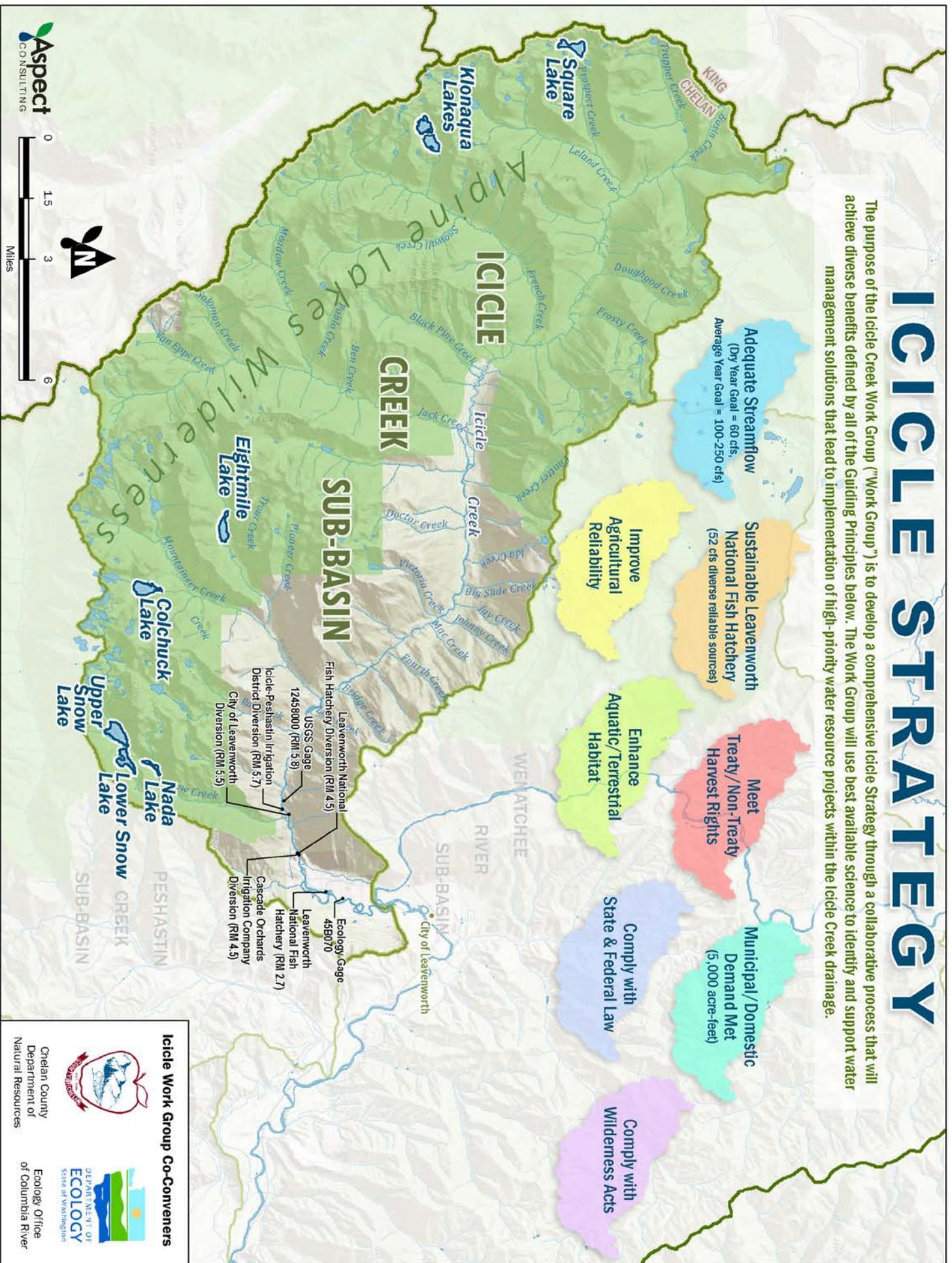


Figure 3 Map and Goals of the Icicle Strategy

Walla Walla Basin



Spanning across the Washington/Oregon state line (Figure 4), the Walla Walla Basin is a complex watershed that falls short of meeting regional water needs. The inability to meet current water needs of the region affects not only the ability to maintain sufficient instream flows when fish need it the most, but also limits rural and urban growth and development.

Over the years, the Walla Walla Watershed Management Partnership (Walla Walla Partnership) in Washington State has worked with the Walla Walla Basin Watershed Council in Oregon, the Confederated Tribes of the Umatilla Indian Reservation (Umatilla Tribes), and Ecology’s Office of Columbia River (OCR) and Water Resources Program to improve water supplies in the bi-state watershed.

Walla Walla Bi-State Flow Study

The Walla Walla River flows from its headwaters in the mountains of Oregon, through Washington where it converges with the Columbia River near the Tri-Cities. OCR has continued to invest in the Walla Walla Basin over the 2017 to 2019 biennium, specifically for a feasibility study to improve flows in the mainstem Walla Walla River. The overall goal of the Walla Walla Flow study is to evaluate strategies/projects to achieve flow targets in the mainstem Walla Walla River for native fish, while maintaining the water supply viability for agriculture, residential and urban uses.



Figure 4 Map of the Walla Walla Basin

The 2017 flow study reviewed and analyzed potential water supply solutions to achieve meaningful instream flows in the Walla Walla River. The Bi-State steering committee (developed to implement this study) evaluated a variety of projects to meet flow targets, including water conservation projects in Washington and Oregon, managed aquifer recharge, surface water storage, pump exchanges, water right transactions, and legal protection of water across the State border. The nature of the Bi-State Flow Study adds a level of complexity, as it requires cross-border coordination and cooperation among the numerous state, local, tribal, and other stakeholders involved in this important work.

The 2019 feasibility study will build on the 2017 report and include construction costs, operation and maintenance costs, water volumes associated with each project, as well as a water availability analysis and identify data gaps.

Because the watershed extends through Oregon and Washington, it is important to continue to foster collaboration and partnership in the Walla Walla River Basin. With the Umatilla Tribe’s ongoing support, we have been able to provide continued funding for the Bi-State Flow Study.

Reassessing Walla Walla Pilot

The Walla Walla Partnership process is based on the belief that greater flexibility in the way water is managed will improve instream flows while maintaining existing out-of-stream uses. While the Walla Walla Partnership program has had good results in establishing a variety of programs to assist water users in the basin, it has not achieved meaningful instream flow benefits in the Walla Walla River.

In 2019, the Legislature tasked both the Walla Walla Partnership and Ecology to work together on the development of a 30-year strategic water resource management plan for the Walla Walla Basin. This collaborative effort by the Walla Walla Partnership and Ecology, named Walla Walla Water 2050, kicked off in October with a two-day workshop. Here, stakeholders were encouraged to share their visions on how water can best be managed over the next 30 years.

OCR remains optimistic that the Walla Walla Partnership's previous work efforts will provide a foundation that can be built on to create a plan more in line with a comprehensive integrated water resource management strategy similar in approach to the Yakima Basin Integrated Plan and the Icicle Creek Strategy. The Walla Walla Partnership worked with local legislators, Ecology, Umatilla Tribes and other stakeholders to develop a legislative strategy and introduce legislation during the 2019 session that extends the statute (RCW 90.92) expiration to June 30, 2021. The Walla Walla Partnership worked with local legislators, Ecology, Umatilla Tribes and other stakeholders to develop a legislative strategy and introduce legislation during the 2019 session that extends the statute (RCW 90.92) expiration to June 30, 2021.

Next Steps

This legislative effort was successful and the Walla Walla Partnership is now re-authorized for a two-year period to achieve the following:

- Prepare a multi-decade integrated strategic plan to meet growing water demands and protect ecological function, to be presented to the Legislature by January 31, 2021.
- Coordinate with Ecology to perform an environmental scoping for a programmatic Environmental Impact Statement for a 30-year integrated water resource strategic plan that includes the Comprehensive Flow Enhancement Study as an early action.
- Undergo performance and financial audits to inform decision makers on previous efforts of the Partnership program elements.
- Continue work on existing programs and efforts during the transition period, including co-chairing the Bi-State Flow Study Steering Committee.

Explore interstate agreements to maximize water management across the State line. Ecology strongly believes that the Walla Walla River Basin is an ideal setting to develop an integrated water resource strategy. Ecology is committing additional resources to the two-year transitional process for the Walla Walla Partnership and Bi-State Flow Study work and will strive to successfully implement the amended statute.

Yakima River Basin Integrated Water Resource Management Plan



The Yakima River Basin Integrated Water Resource Management Plan³ (Yakima Basin Integrated Plan) moves forward actions that, once completed, will provide sufficient water supplies for both instream and out-of-stream needs, including:

- Providing opportunities for ecological restoration and enhancement, including fish passage at five reservoirs within the basin and restoring, enhancing and maintaining healthy habitats for fish.
- Improve the ability of water managers to respond and adapt to the potential effects of climate change.
- Develop a comprehensive approach to conserve water used to meet out-of-stream water demands.
- Contributing to a sustainable economy and environment.

To achieve these goals, the Yakima Basin Integrated Plan advises implementation of the following seven elements:

1. Habitat/Watershed Protection and Enhancement
2. Fish Passage
3. Enhanced Water Conservation
4. Structural and Operational Changes
5. Surface Water Storage
6. Groundwater Storage
7. Market Driven Reallocation



Cle Elum Fish Passage Construction, August 2019

³ More information regarding this plan can be found on Ecology’s website: <https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Office-of-Columbia-River/Office-of-Columbia-River-Legislative-reports>

Securing Federal Authorization

In the spring of 2019, the Yakima Basin Integrated Plan celebrated a huge milestone. After years of hard work and many trips by the Yakima Basin Integrated Plan Implementation Committee to Washington DC, to confer with federal partners and legislators, Congress passed a land-use and natural resource bill (S. 47)⁴, which contains authorization of the first 10-year phase of the Yakima River Basin Integrated Water Resource Management Plan. President Trump signed S.47 into law on March 12, 2019.

We expect that throughout the remainder of 2019, Ecology, the US Bureau of Reclamation, along with the Yakama Nation and Yakima Basin Integrated Plan Workgroup, will gather to build a framework for the second 10-year development phase of the Yakima Basin Integrated Plan. This workgroup will cover next steps in the plan and how that interplays with future federal, Washington State Legislative and other partners' support.



Sen. Maria Cantwell and Rep. Dan Newhouse at Ecology's Central Regional Office signing celebration of the Land Package S.47

Other Milestones Achieved During 2019

- Construction of Cle Elum fish passage secant vault that will hold the helix structure.
- Release of the Final Supplemental Environmental Impact Statement for the Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance.
- Large wood installation for floodplain restoration in North Fork Manastash Creek and Satus Creek.
- First full recharge cycle of City of Yakima's aquifer storage and recovery project.

⁴ Lands Package Bill S. 47 John D. Dingell, Jr. Conservation, Management, and Recreation Act can be found online at <https://www.congress.gov/bill/116th-congress/senate-bill/47/text>



Odessa Groundwater Replacement Program



The Odessa Groundwater Replacement Program fulfills a top mandate by the Legislature to make surface water available to farmers in the Odessa Subarea. Through this cooperative approach in solving the complex water problems affecting the Odessa Subarea, we continue to work with our partners, Reclamation and all three East Columbia Basin Irrigation Districts, on progressing large-scale infrastructure projects forward. Once complete, this program will convert 87,700 acres of cropland, currently irrigated with groundwater, to surface water.

Photo: Siphon frame, Odessa Subarea

The Odessa Subarea

The Odessa Subarea lies within the heart of the Columbia River Basin and is part of the federal Columbia Basin Irrigation Project (CBP). Since the 1960s, farmers in the Odessa Subarea area have relied on unsustainable groundwater supplies as the primary source of water for crop irrigation. They have lacked access to surface water due to the development of the CBP stalling in the 1960s and 1970s.

Unsustainable Groundwater Dependence

The Odessa Subarea aquifer farmers have depended on for decades as their sole source for irrigation is running dry. Some areas of the aquifer are experiencing groundwater declines in excess of 125 feet (Figure 5)⁵. Wells in these more significantly declining areas could run dry within the next few years.

Now, farmers are faced with drilling deeper wells, which in turn requires pumps to work harder to deliver water to the surface. Water drawn from these depths is usually hotter and higher in sodium than water drawn from the shallower layers, which is not ideal for crops.

As the water table in the Odessa Subarea aquifer drops, the reduced supply, the added costs for power coupled with the possibility of crop damage, due to higher temperatures and increased salinity, has strained local farmers.

To rectify this problem, OCR partnered with Reclamation and the East Columbia Irrigation District (ECBID), to secure and deliver the needed CBP surface water to eligible farmers in the Odessa Subarea.

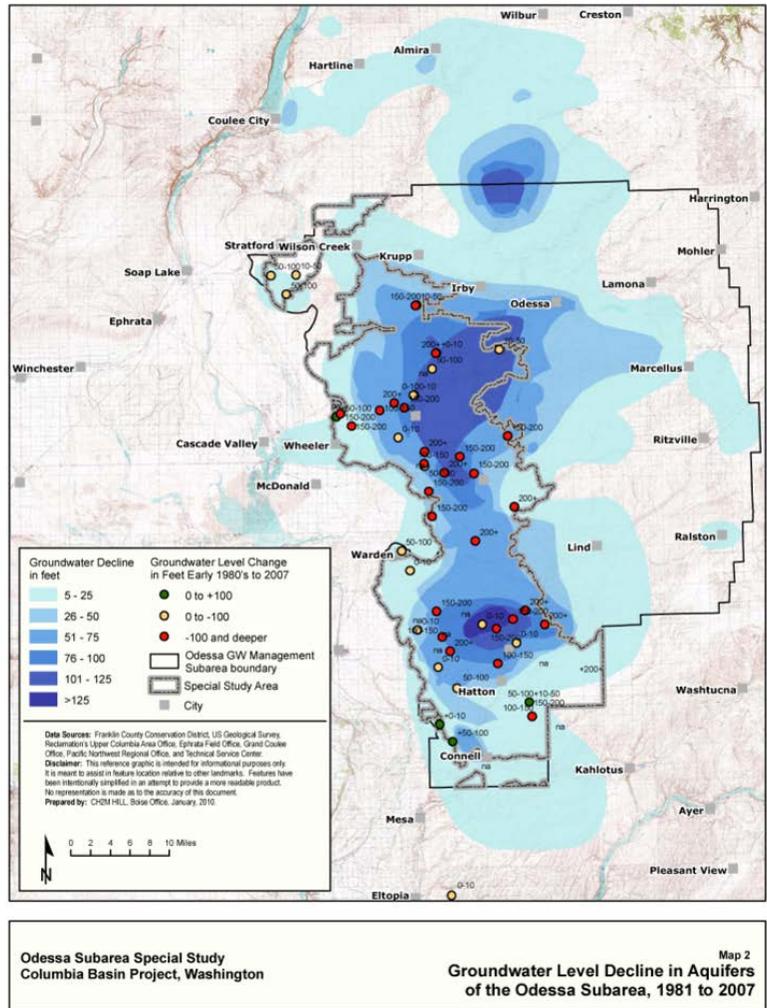


Figure 5 Groundwater Level Decline in Aquifers of the Odessa Subarea from 1981 to 2007 (figure comes from the Odessa Special Study EIS).

⁵ The Odessa Subarea Special Study Final Environmental Impact Statement can be found online at: <https://www.usbr.gov/pn/programs/eis/odessa/index.html>

Delivering Surface Water

For over a decade, the Odessa Groundwater Replacement Program (OGWRP) has invested in making improvements to existing canals and infrastructure to convey this large amount of water to the Odessa Subarea (Figure 6, next page). East Low Canal (ELC) improvements include the construction of new siphons, radial gates, pumping plant, water check structures and miles of canal widening. Additionally, narrow bridges crossing the canal need to be modified in order to alleviate choke points along the canal.

To date, Ecology has issued 29 water right change authorizations, allowing currently permitted groundwater users in the Odessa Subarea to move their place of use to areas closer to the anticipated distribution line locations reducing conveyance costs. In addition to these change authorizations, the ECBID has entered into water service contracts covering approximately 14,000 acres.

In 2019, work efforts focused on completing the installation of the last two major siphons needed to increase conveyance along ELC, Kansas Prairie 1 and Kansas Prairie 2. However, the full conveyance capacity down the canal will not be achieved until the ten remaining county road bridges that span the ELCLC are modified.

During the 2019-2021 biennium, the Legislature allocated Ecology \$15 million in the capital budget to shift the focus of OGWRP work from East Low Canal improvements to design and construction the East Low 22.1 pumping plant and delivery system. Ecology, ECBID and Reclamation have held several meetings with the EL 22.1 landowner group to discuss all the necessary steps involved in designing a federally owned pumping plant and delivery system. The parties are working on a mutually agreed upon scope of work for the first phase of design for the EL 22.1 system.

In 2019, approximately 6,800 acres of Odessa groundwater irrigated lands have been switched over to surface water, which rely on individual direct pumping contracts with ECBID. The first OGWRP pumping plant (EL 47.5), which will provide enough water to irrigate 8,500 acres of farmland, is expected to be operational in 2020.



OGWRP Tour, August 22, 2019

Back Row (left to right)

1. **OCR Director, Tom Tebb**
2. **Dept. of Agriculture Director, Derek Sandison**
3. **Representative Mary Dye**
4. **Representative Alex Ybarra**

Front Row (left to right)

1. **US Dept. of Agriculture, National Resources Conservation Service, Associate Chief Kevin Norton**
2. **Representative Tom Dent**
3. **Senator Judy Warnick**
4. **US Natural Resource Conservation Service WA State Conservationist, Roylene Rides-at-the-Door**

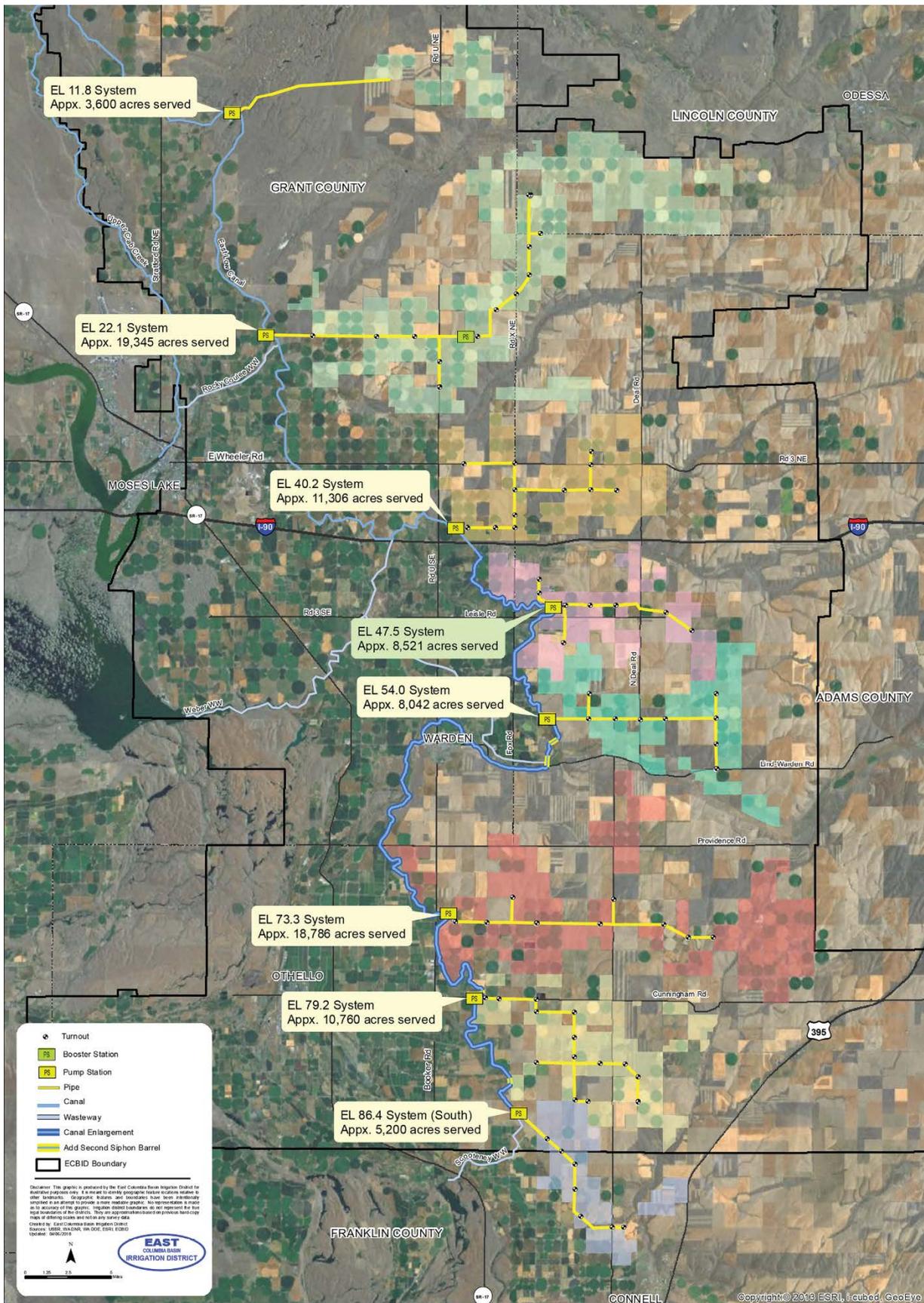


Figure 6 Map of Proposed Pumping Plant, Delivery Systems and Service Area.

Objectives

- Convert 87,700 acres of crop irrigation currently served by groundwater wells in the declining Odessa Subarea aquifer, to Columbia Basin Project surface water.
 - Construct infrastructure necessary for the delivery of this surface water to the Odessa Subarea water users.
 - Modify narrow county road bridges after the canal widening to prevent water delivery bottlenecks.
 - Continue working with Reclamation, ECBID, counties and landowners to make the process of changing from groundwater to surface water use as smooth as possible.
-

Water at a Glance

- 87,700 acres of surface water supplied by:
 - Banks Lake for 64,020 acres.
 - Lake Roosevelt for 11,840 acres.
 - Coordinated Conservation Program for 11,840 acres.
-

2019 Milestones

- Began construction on the last two remaining siphons on East Low Canal (Kansas Prairie Siphons 1 & 2).
 - Supported ECBID as they continued to meet with landowner groups to discuss funding, design and next steps for pumping plant and delivery systems along the EL 11.8, EL 22.1, EL 40.2, EL 79.2 and EL 86.4 distribution lines.
 - ECBID and Reclamation finished negotiations and signed a master service contract in October 2019 that includes delivering up to 70,000 acres of OGWRP water.
-

Future Work

- Modify, replace or remove the remaining 10 county road bridges along East Low Canal.
- Install remaining radial gates and water check structures.
- Complete remaining pumping plant and delivery system design and construction.

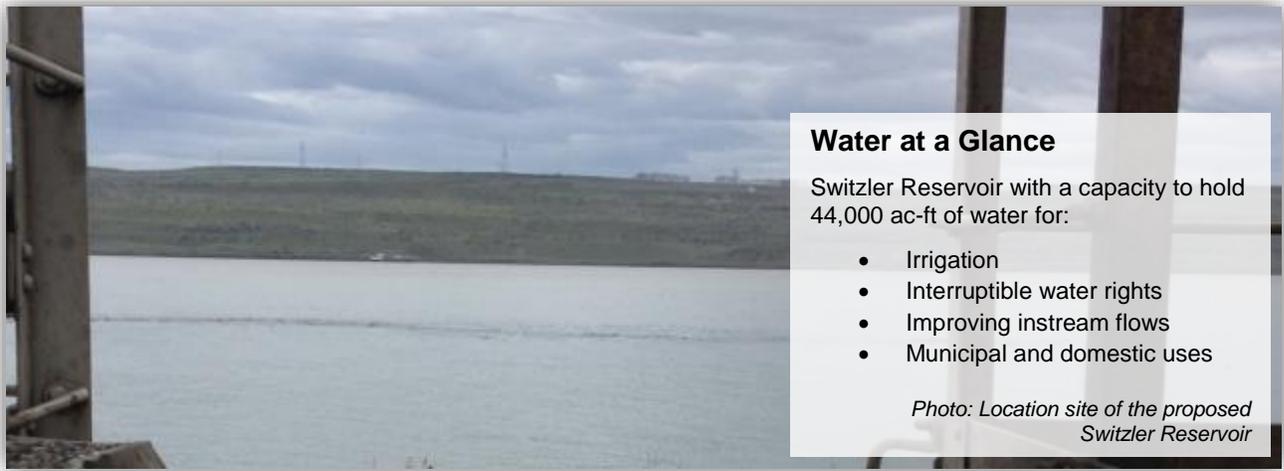


Developing Water Supplies for the Columbia River Basin

In 2006, the State Legislature found that development of new water supplies is a key priority of future water resource management to meet the economic and community development needs of people and the instream flow needs of fish in the Columbia River Basin (RCW 90.90.005). Under the direction of the Legislature, Ecology created the Office of Columbia River with the directive to aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses including surface water and groundwater storage projects.

Once water is developed, two-thirds will be available for out-of-stream uses including municipal and domestic, industrial, and/or agricultural needs. The remaining one-third will be reserved for the augmentation of instream flows timed to maximize benefits to salmon and steelhead populations (RCW 90.90.020). In this section, we highlight our water supply projects currently under development.

Photo: Columbia River near Lyle, WA



Water at a Glance

Switzler Reservoir with a capacity to hold 44,000 ac-ft of water for:

- Irrigation
- Interruptible water rights
- Improving instream flows
- Municipal and domestic uses

Photo: Location site of the proposed Switzler Reservoir

Proposed Switzler Reservoir Storage Project



The proposed Switzler Reservoir Storage Project (Switzler Reservoir) site is located in the Switzler Canyon approximately 16 miles south of Kennewick and 11 miles east of Plymouth, Washington.

We are continuing to collaborate with Benton and Klickitat counties on an environmental review for the proposed reservoir. The final summary of public comments regarding the scope of a proposed Environmental Impact Statement (EIS) is anticipated by the end of 2019.

Once the scoping process is completed, the co-leads will begin developing the EIS that will evaluate project alternatives and potential impacts associated with the construction and operation of the proposed reservoir.

Objectives

- Construct an off-channel surface water reservoir in Rock-Glade watershed (Water Resource Inventory Area 31) that:
 - Will hold 44,000 ac-ft of water pumped in from the Columbia River (McNary pool) during times of high flows.
 - Will provide mitigation water for instream flows for new water rights issued downstream.
- The reservoir would make water available for some combination of the following:
 - Augmenting instream flows below McNary dam through targeted reservoir releases.
 - Irrigation of additional 12,000 to 28,000 acres of farmland.
 - Municipal supply to service up to 1,000 new homes.
 - Mitigation of interruptible water rights.

Aquifer Storage and Recovery



Groundwater storage is one of the most cost effective ways to develop water supplies compared to the time and costs associated with building new surface water reservoirs. Increasingly, we are exploring aquifer storage and recovery (ASR) as a viable water storage option across Eastern Washington.

ASR (Figure 7) works by capturing surface water during high flows and injecting that water into a local naturally occurring aquifer. Due to the geology that created the aquifer, the collected water can be held without additional infrastructure.

During times of low surface water flows, the same injection well can be used to pump the water back out of aquifer and into the end users distribution system for out-of-stream uses. In turn, water users would rely more on their stored water and less on surface water sources, allowing more water to remain instream.

Benefits of Aquifer Storage and Recovery

Since ASR requires minimal infrastructure and takes advantage of existing aquifers, these projects are cost-effective, have minimal environmental impacts compared to traditional surface water reservoirs, and can be used in places where traditional surface water storage are not practical or feasible, such as urban, industrial and residential areas. These benefits have drawn in a few municipalities, including the cities of White Salmon, Othello, Yakima and Kennewick.

Due to its low cost and multiple benefits, the number of ASR projects in the State has increased over the past few years.

Small municipalities facing declining groundwater levels make up a large percentage of ASR project exploration, as an option to provide additional drinking water source(s).

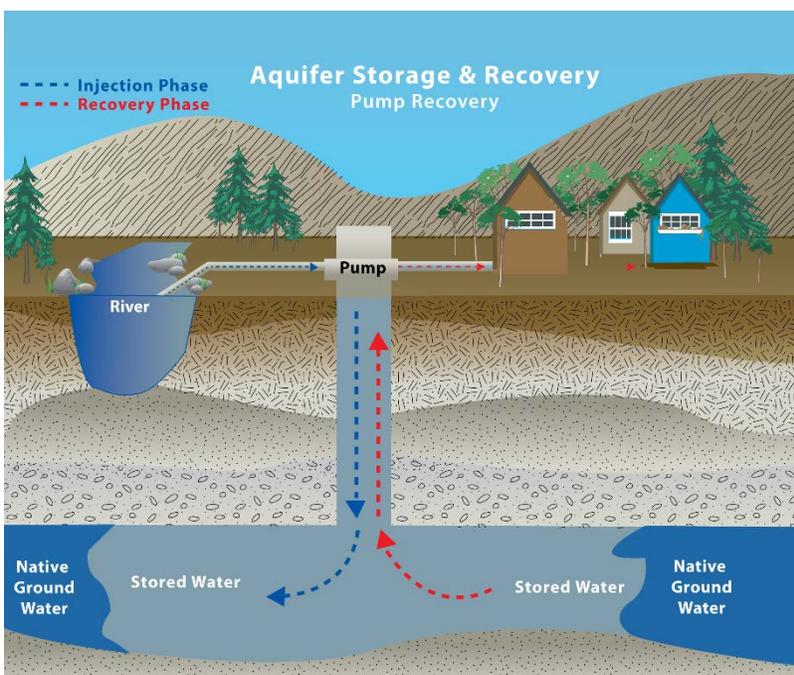


Figure 7 Life Cycle of Water within an Aquifer Storage and Recovery Project

Objective

Explore and evaluate potential locations throughout the Columbia River Basin where local geologic conditions support ASR operations.

In Progress

- Cities currently exploring ASR viability:
 - Quincy
 - Othello
 - West Richland
 - Pasco
 - Kennewick
 - White Salmon

Challenges

A challenge to ASR project engagement may be due, in part, to the small number of operational examples or significant investment costs for feasibility studies and associated analyses.

No individual project is like another due to the differing geology, water quality, and water quantity available. In order to quantify the amount of water that can be injected and recovered, analysis and modeling may be necessary. This type of information takes time and money to collect and process.

Costs associated with beginning an ASR project include:

- Feasibility and pilot studies
- Water quality analysis
- Drilling for production and/or observation wells
- Well monitoring
- Environmental review
- Permitting
- Upgrade existing drinking water infrastructure systems
- Operation and maintenance



Test well drilling site, City of Kennewick



Delivering Water to the Columbia River Basin

To date, OCR has developed 413,835 ac-ft of sustainable water benefitting instream flows and hydrating out-of-stream uses. In this section, we highlight water developed through our water supply projects and programs from which we are able to issue water use permits.

Photo: John W. Keys III pumping plant on Lake Roosevelt

Water Right Application Processing and Permitting

Our water rights permitting team continues to screen water permit requests and issue water rights through our Lake Roosevelt and Sullivan Lake water supply programs. Water right applications are evaluated for suitability with either our Lake Roosevelt or Sullivan Lake programs and, if needed, applicants are contacted directly to assess the current viability of their requests.

To date, our office has processed over 195 water right applications including 60 that were withdrawn or rejected, 45 change or transfer requests, 13 new water right applications on tributaries to the Columbia River mainstem, and 77 new water right applications on the Columbia River mainstem (Figure 8). On average, we issue around ten permits yearly, while simultaneously handling up to 15 new applications requesting water from an already fully allocated system. Most applications we permit are on the Columbia River mainstem. We also process water right changes and transfers. Fewer permits are issued on tributaries to the Columbia River, where limiting factors include impacts to senior water users, streamflows and fish.

Of the 34,333 ac-ft of water developed through our Sullivan Lake Water Supply Project and Lake Roosevelt Incremental Storage Release Program, 62 percent has been allocated leaving only 38 percent available for out-of-stream uses. With 38 percent water remaining available, it is imperative that we continue our on-going efforts in securing new water supplies that will meet existing and future water demands.

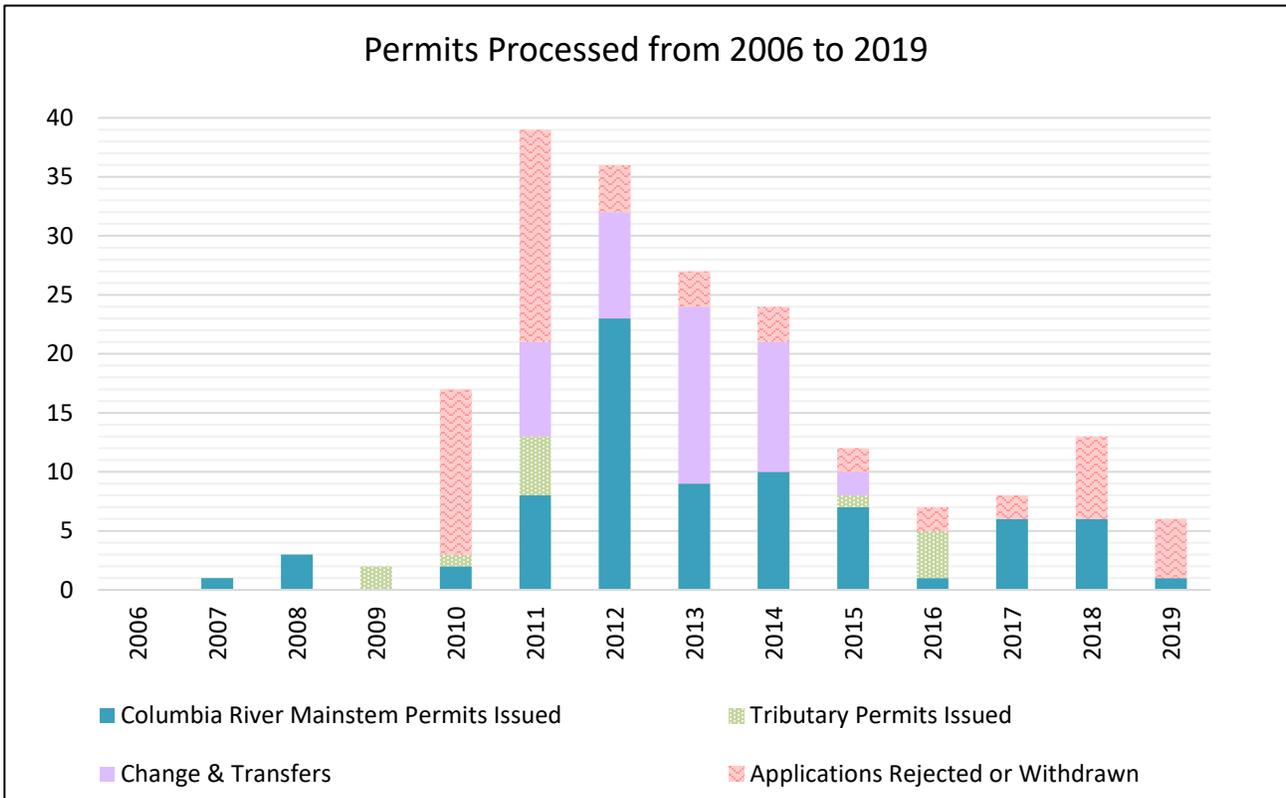
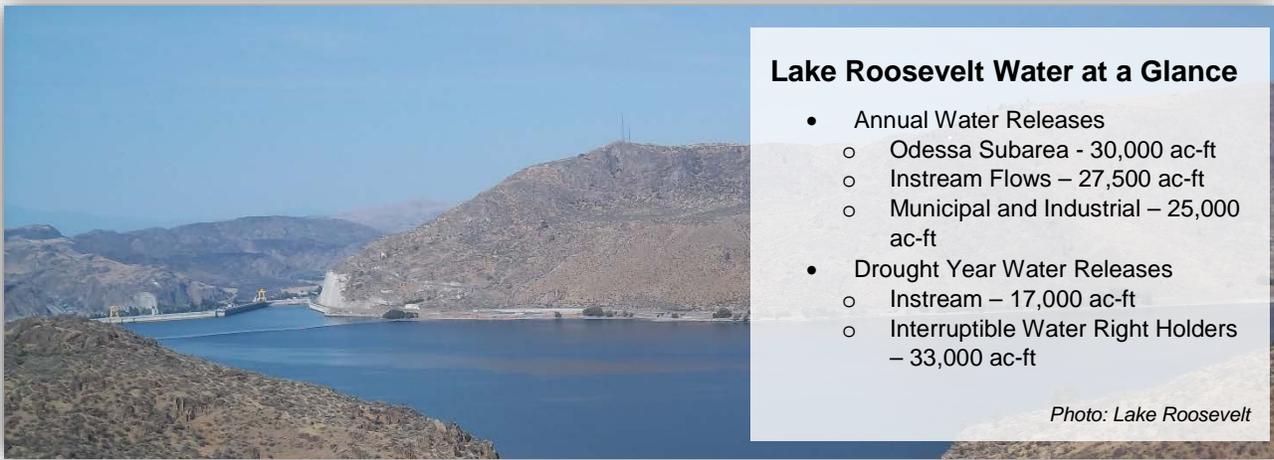


Figure 8 OCR Permits Processed from 2006 to 2019



Lake Roosevelt Water at a Glance

- Annual Water Releases
 - Odessa Subarea - 30,000 ac-ft
 - Instream Flows – 27,500 ac-ft
 - Municipal and Industrial – 25,000 ac-ft
- Drought Year Water Releases
 - Instream – 17,000 ac-ft
 - Interruptible Water Right Holders – 33,000 ac-ft

Photo: Lake Roosevelt



Lake Roosevelt Incremental Storage Release Program

Through the Lake Roosevelt Incremental Storage Release Program (Lake Roosevelt Program), we have been able to tap into 132,500 ac-ft of water already stored behind Grand Coulee Dam that is released to the Columbia River to offset new water uses. In accordance with state statute, this water is split for instream and out of stream benefits.

Every year, 82,500 ac-ft of water is released from Lake Roosevelt to support OCR programs (Figure 9, next page). Those include; water designated to irrigate the Odessa Subarea in place of groundwater withdrawals and water available for new municipal and industrial uses (M&I); and maintaining healthy instream flows. Thirty-thousand (30,000) ac-ft of released for the Odessa Subarea is diverted via OCR infrastructure construction projects and improvements, including added siphons, widened canals and other updated mechanisms.

To date, 15,214 ac-ft (61 percent) of the 25,000 ac-ft available for municipal and industrial uses (M&I water) has been permitted, leaving 9,786 ac-ft available for new uses. This includes the City of Pasco water right permit that is in the final processing phase. During drought years, an additional 50,000 ac-ft of water is released to minimize drought related impacts to interruptible water right holders facing potential curtailment and providing vital hydration for instream flows when salmon need it the most.

Objectives

- Permit the entirety of 25,000 ac-ft of water for municipal and industrial uses.
- Make drought-year-water available to interruptible water right holders through an efficient and manageable process.

Permits Issued to Date

- Quad cities (Pasco, Kennewick, Richland and West Richland)– 4,014 ac-ft
- All others (44 permits total) – 6,200 ac-ft

In Progress 2019

- Finish processing the City of Pasco water right permit for 5,000 ac-ft of municipal and industrial water.
- Continue soliciting interests from new water right applicants.
- Continue processing new applications for M&I water as they are received.
- Continue efforts to streamline the process of providing water to interruptible water right holders during times of drought, as described in the sub-section: Drought Response and the Lake Roosevelt Program.

Processing Water Right Applications

In 2019, OCR’s permitting team continued to reach out to applicants who previously shelved their water requests, due to their inability to put water requested to use within 7 years of their expected permit issued date.

Of the 70 applicants we contacted in 2019, 30 responded with continued interest in obtaining a water permit. Currently, we are working with these applicants to determine the total annual quantity requested by all 30 applicants.

Those who did not respond or are no longer interested in this program have been removed from the list of applicants for Columbia River water.

Once permits are approved, each water service contract is charged a cost recovery fee of \$35 per ac-ft every year. Proceeds go toward reimbursing the State for the cost of developing Lake Roosevelt water.

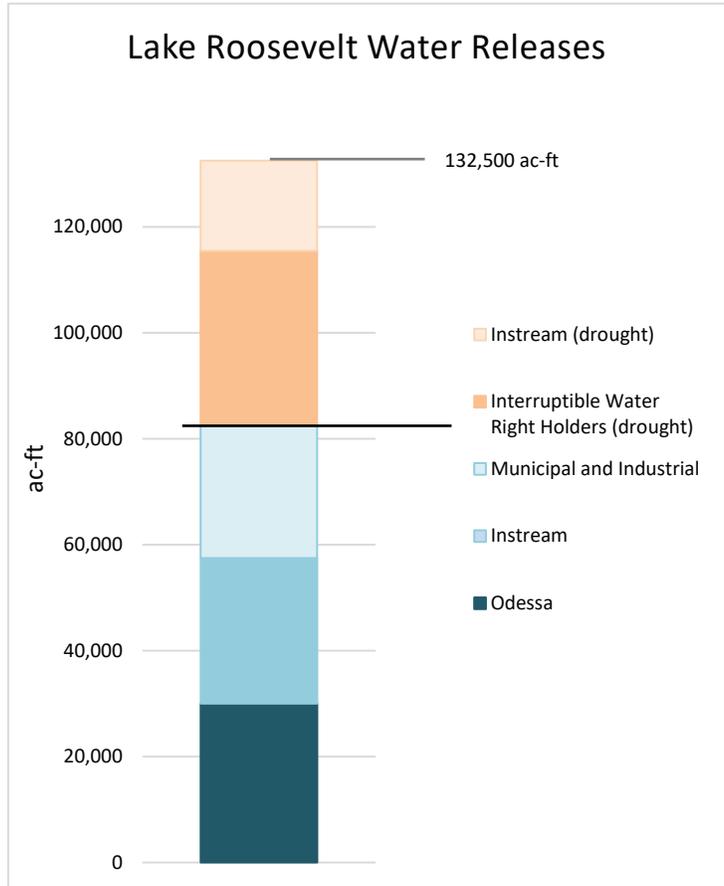


Figure 9 Breakdown of Lake Roosevelt Water Releases



Grand Coulee Dam



Sullivan Lake Water at a Glance

- 14,000 ac-ft water available
 - 4,667 ac-ft to remain instream
 - 9,333 ac-ft available for out-of-stream uses
- Water designated for Douglas, Ferry, Lincoln, Okanogan, Stevens, and Pend Oreille counties

Photo: Sullivan Lake

Sullivan Lake Water Supply Project



The Sullivan Lake Water Supply Project retimes the release of water, already stored in the lake, from the wetter months of October, November and December to the drier months of June through September. The details of the retiming are embodied in a memorandum of understanding between OCR and the Pend Oreille Public Utility District (PUD). Retiming the release of this stored water provides for additional instream flows and out-of-stream uses when water demands are at their highest.

Use of the 14,000 ac-ft of water made available through this project is limited to Douglas, Ferry, Lincoln, Okanogan, Stevens, and Pend Oreille counties in northeast Washington as directed by RCW 90.90.110.

Consistent with the statute, one-third of this water (4,667 ac-ft) remains instream and is protected downstream to the mouth of the Columbia River. The remaining two-thirds (9,333 ac-ft) of this water is available for local out-of-stream uses, including municipal, domestic, and industrial uses (4,666 ac-ft), and agricultural uses (4,666 ac-ft).

Water users benefitting from the Sullivan Lake water supply pay a one-time cost-recovery fee of \$1,500 per ac-ft, or \$60 per ac-ft for 25 years, to help offset the development costs of this water.

By the end of 2019, the Sullivan Lake water supply project will hit a major milestone once the two permits currently in queue for irrigation water are issued, the water set aside for irrigation purposes will be fully allocated.

Objectives

Allocate the 9,333 ac-ft of water provided through this project for municipal, industrial, and irrigation uses.

Water use limited to the northeast counties of:

- Douglas
- Ferry
- Lincoln
- Okanogan
- Stevens
- Pend Oreille

Permits Issued to date

- Irrigation
 - Two permits totaling 993 ac-ft
- Municipal
 - One permit for 1,100 ac-ft

In Progress 2019

- Finalizing two permits that will allocate the remaining 3,473 ac-ft of irrigation water.
- Finalizing two permits for 631 ac-ft of municipal and industrial water.



Port of Walla Walla Water at a Glance

- 4,496 ac-ft of water available on a temporary basis.
- All temporary permits are set to expire by November 30, 2020.

Photo: Walla Walla River



Port of Walla Walla Lease Program

Short-term water users in the Walla Walla basin have had access to 4,496 ac-ft of water through the Port of Walla Walla Lease Program.

Providing these short-term permits allow water users time to find permanent water sources, and bring unauthorized (non-compliant) water users into compliance.

To offset Ecology's cost to develop this water, users benefitting from this program are charged an annual cost-recovery fee of \$105 per ac-ft.

At this time, these short-term permits are set to expire on Nov. 30, 2020 or sooner. We are also in negotiations with the Port of Walla Walla to extend the water lease mitigation program.

Objectives

- Provide water on a temporary basis, allowing water users time to find permanent water sources.
- Bring non-compliant water users into compliance.

Permits Issued to Date

- Four permits have been issued, allocating all 4,496 ac-ft.

Budget, Outreach, and the Columbia River Treaty

Budget Sustainability

Ecology’s Office of Columbia River received approximately \$40 million dollars in capital budget appropriations (Table 1) in the 2019-2021 Capital Budget. Of the appropriations, \$15 million is provisioned for the engineering, design and construction of the EL 22.1 distribution system associated with the Odessa Groundwater Replacement Program. This significant financial investment and endorsement by the State Legislature of our work demonstrates the value of our mission.

Table 1 Columbia River Basin Water Supply Development (CRBWSD) Funding Sources

	CRBWSD Account	CRBWSD Recovery Account	Other State Funding Sources⁶	Total
Prior Biennia Expenditures	\$200,000,000	\$4,200,000	\$16,800,000	\$221,000,000
2019-2021 Appropriations		\$2,400,000	\$37,600,000	\$40,000,000
TOTAL	\$200,000,000	\$6,600,000	\$54,400,000	\$261,000,000

The successful implementation of our projects since 2006 has been due, in part, to \$200 million in dedicated general obligation bonds authorized by the State Legislature in 2006. This stable source of funding laid the foundation in the successful implementation of large-scale water delivery and water conservation projects, as well as development of basin-wide integrated water management solutions. At the close of the 2017-2019 biennium, these funds have been fully obligated or expended.

Today, we now operate under a “pay-as-you-go” (Pay-go) model that requires capital-funding requests to be made each biennium. The uncertainty associated with each biennial ask puts many long-term projects at risk, while simultaneously increases state’s oversight and implementation costs.

While we continue to seek out and secure a stable long-term funding source, we are also continuing to explore additional funding strategies including federal assistance programs and public-private partnerships. Under RCW 90.90.010(6) OCR has the ability to enter into water service contracts⁷ with applicants receiving water developed through an OCR program. Charging a cost recovery fee, allows us to recover some, or all, of the project development costs. However, these fees do not include recovery of staff costs.

⁶ State Building Construction Account and State Taxable Building Construction Account.

⁷ See Lake Roosevelt Incremental Storage Release Program, Sullivan Lake Water Supply Project, and Port of Walla Walla Lease Program subsections for more information regarding these fees.

Partnerships and Public Outreach

Public outreach and active stakeholder engagement is crucial to successful water supply development projects. The Columbia River Policy Advisory Group and Yakima River Basin Water Enhancement Project Workgroup meetings are held on a quarterly basis. These groups provide advice to Ecology and our project partners as we implement innovative water supply solutions across Eastern Washington. These meetings are open to the public and public participation is encouraged.

Members of these groups consist of representatives from tribal, local, state and federal governments, as well as local industrial, municipal and agricultural interests and other stakeholders. Talks during these meetings center on policy, project development, and budget issues and needs that must be addressed. As always, Ecology’s Office of Columbia River will continue building and nurturing our partnerships through on-going public outreach and constructive stakeholder engagement.

Columbia River Treaty

OCR continues to participate in the development of regional recommendations associated with the current negotiations between Canada and the United States on updating the Columbia River Treaty. The most recent round of negotiations occurred on August 15-16, 2019, in British Columbia, Canada. According to the US State Department website, the US negotiating team underscored the U.S. objectives that include careful management of flood risk, ensuring a reliable and economical power supply, and better addressing ecosystem concerns.

With many of OCR’s long-term goals hinging on the results of these negotiations, we will continue to be an active participant in development of regional recommendations associated with this update to the treaty. Jill Smail, appointed as the lead negotiator by the US State Department in 2017, continues to formally negotiate on behalf of the US.

Looking Ahead

Since 2006, OCR has remained committed to aggressively pursuing water supply solutions for the Columbia River Basin. Through our holistic approach in developing integrated solutions to meet the water needs in Eastern Washington, we have developed over 413,845 ac-ft of water for municipal, industrial and interruptible water users, irrigators within the Odessa subarea, as well as water to maintain healthy instream flows. Facing future climate change impacts, in addition to an ever-growing population, we must do more to ensure sustainable water supplies will be available for the streams and residents of Eastern Washington.

We have achieved several milestones during 2019, including:

- Achieving a metering compliance rate of 94 percent.
- Issuing the Icicle Creek Water Resource Management Strategy Programmatic EIS with our co-lead Chelan County.
- In coordination with the East Columbia Basin Irrigation District, began construction on the final two siphons (Kansas Prairie 1 and Kansas Prairie 2) within East Low Canal to bring additional conveyance capacity for water deliveries to the Odessa Groundwater Replacement Program.
- Finalize the permitting process for both pending and new applications for Lake Roosevelt and Sullivan Lake water.
- Passing of federal legislation authorizing the initial development phase of the Yakima River Basin Integrated Plan.
- Advanced ASR feasibility studies and/or pilot tests with five Eastern Washington municipalities.
- Completion of the John Day McNary Reserve Interpretive Statement clarifying the language associated with the estimated date allocation of the reserved water would be completed.

Near Term Goals

On the heels of our recent accomplishments, we are excited to continue our work in developing and delivering water for instream and out-of-stream needs in Eastern Washington. In 2020, we are looking forward to continuing efforts in all of our programs, partnerships, and projects including:

- Pumping plant and delivery system design and construction for the Odessa Groundwater Replacement Program for the East Low (EL) 47.5 and EL 22.1 delivery systems.
- New and pending application processing for the remaining water available through our Lake Roosevelt and Sullivan Lake programs.
- Exploration and development of additional ASR projects.
- Water conservation actions taken under the Columbia Basin Project Coordinated Conservation Plan.
- Developing a water resource strategic Bi-State Plan for the Walla Walla Basin and kicking off a co-led groundwater basin study with the State of Oregon.

- Implementation of the Icicle Creek Water Resource Management Strategy to achieve improved instream flows.
- Advancement of the Switzler Reservoir Storage Project EIS.
- Continue moving projects forward under all seven elements of the Yakima River Basin Integrated Water Resource Management Plan.

In Conclusion

Published annually, this Columbia River Basin Water Supply Inventory Report describes our current water development efforts in Eastern and Central Washington. In our aggressive pursuit of water supplies to meet the both instream and out-of-stream needs of today and in the future, we have found value in investing in a wide range of water development, storage and conveyance projects, and locally managed integrated water resource management plans that tackle their basins unique and complex water supply and demands.

Integrated Water Management Becoming the ‘Model’

Through our projects, programs, and integrated plans we have secured over 413,846 ac-ft of water. This is enough water to serve 100,000 acres of farmland, 80,000 homes and maintain healthy instream flows for fish in 17 Columbia River tributaries. One of the most significant and complex integrated water resource management efforts lead by OCR today in the Yakima River Basin Integrated Water Resource Management Plan. Locally, nationally and internationally recognized, the Yakima Basin Integrated Plan has proven to be the model of successful cooperative and collaborative water resource management. Today, the Icicle Creek and Walla Walla river basins are utilizing this plan as a model for the development of their own integrated water management plans.

In 2016, the State Legislature tasked Ecology with the creation of the Office of the Chehalis Basin to address the flooding issues and aquatic restoration needs of the basin. Under RCW 43.21A.730(3), in the operation of the Office of the Chehalis Basin, the department must follow, to the greatest extent practicable, the model being used to administer the Columbia river basin water supply program established in chapter 6, Laws of 2006. As the Legislature has recognized this as the model water management program, we will continue looking to the future in securing water supplies through innovated partnerships and groundbreaking technology.

Responding to Ongoing Challenges

In the dynamic world of securing water for today and tomorrow, we have faced many unique challenges. Whether we are facing long-term funding uncertainties, international water treaty negotiations, aged and failing infrastructure, increasing water demands or the effects of climate change, we have successfully built innovative partnerships with a wide range of governments and stakeholders and secured sustainable water for instream and out-of-stream needs.

It is recognized that additional significant investments in water infrastructure is needed to support growing communities, address declining groundwater areas, improve instream flows for fish, recreation and sustainable agriculture for Washington’s long term economic well-being. It is

crucial that we be nimble and creative to achieve future goals. We can no longer rely as we have on slowly melting snowpack and tapping into groundwater to meet the challenges ahead.

As our climate continues to change, and drought conditions worsen, we must redouble our efforts to carefully manage this finite resource. This means improving our capacity to capture and retine when water is available, as the precipitation changes from snow to rain. We must carry over more water from one season to the next, and expand water markets and conservation.

This program gives us the tools we need to move forward. Our efforts together will help us to meet the vision of a water secure and drought resilient Washington.