



## Project Benefits Both Cities

The partnership is the culmination of Tigid's 15-year search for a stable source of water. Tigid customers benefit by obtaining a secure, dependable, affordable drinking water source. Lake Oswego water customers benefit by sharing the costs for needed upgrades to the community's water system.

Lake Oswego and Tigid are committed to protecting and enhancing water quality and fish habitat in the Clackamas River, and are already working with Clackamas

River Water Providers, Clackamas River Basin Council, US Geological Survey, and Clackamas County Water Environment Services to improve watershed conditions.

Extensive federal and state environmental permit processes are in place to protect the Clackamas River and other natural resources. The project must meet all requirements of the agencies that hold permitting/approval authority.

## Facts and Figures

	Lake Oswego	Tigid
Population served	24,000	57,000
Peak demand (million gallons per day)	15	13
Future demand (million gallons per day)	19-24	16-20
Current primary water source	Clackamas River	Portland/Bull Run Groundwater
Future primary water source	Clackamas River	LO/Clackamas River Groundwater
Future water back-up sources	Portland/Bull Run, Washington County	Portland/Bull Run, Washington County

## Learn More

For more information about the Lake Oswego Tigid Water Partnership visit [www.lotigidwater.org](http://www.lotigidwater.org) or contact:

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# Lake Oswego · Tigid Water Partnership

sharing water · connecting communities



Winter - Spring 2010

## Two Cities Form Partnership

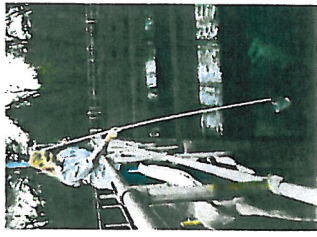
In August 2008, the cities of Lake Oswego and Tigid formally endorsed a partnership agreement for sharing drinking water resources and costs. Lake Oswego's water supply system is near capacity, and key facilities need expansion and upgrades. Tigid residents need a secure, dependable water source. Both cities want to keep water affordable for their customers and sharing the cost of new infrastructure to serve both communities does that.

Sharing water resources isn't new. Lake Oswego and Tigid have benefitted from a water sharing relationship dating back to the 1970s - Lake Oswego as the seller of water, Tigid as the buyer. The Oregon Department of Water Resources and the conservation community encourage regional water supply planning and collaboration between multiple communities as a smart way to manage water needs.

Under the partnership agreement, the City of Lake Oswego will manage and build the water system improvements. An Oversight Committee provides leadership and guidance, with representatives from Lake Oswego and Tigid City Councils. A technical team includes staff from both cities.

## How the Partnership Works

Costs will be allocated to Lake Oswego (43%) and Tigid (57%), recognizing Lake Oswego's ownership of existing facilities. Funding sources will likely include revenue bonds repaid by customers' monthly water charges, and systems development charges (SDCs) assessed against new development. Public agencies typically sell bonds to fund large capital projects. Both cities will need to increase water rates to pay back the principal and interest on bonds.



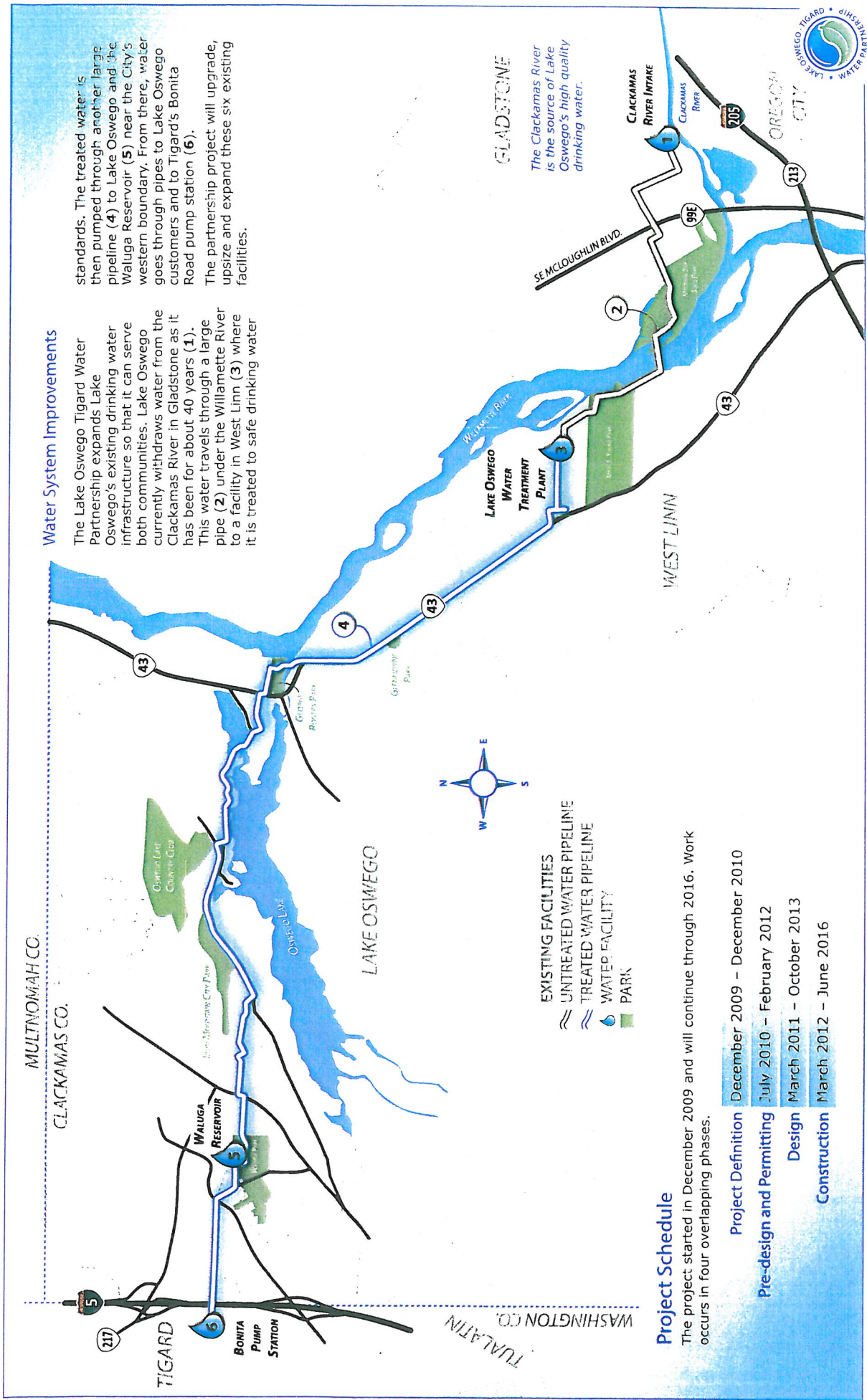
Water Treatment Plant Manager, Karl Duncan, tests water daily to ensure quality.



Lake Oswego Water Treatment Plant in West Linn

## Water Conservation a Priority

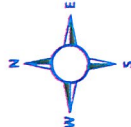
Conserving water is the first and most important supply option for the Lake Oswego Tigid partnership. Effective conservation measures alone, however, won't be enough to meet the two cities' needs.



**Water System Improvements**

The Lake Oswego Tigard Water Partnership expands Lake Oswego's existing drinking water infrastructure so that it can serve both communities. Lake Oswego currently withdraws water from the Clackamas River in Gladstone as it has been for about 40 years (1). This water travels through a large pipe (2) under the Willamette River to a facility in West Linn (3) where it is treated to safe drinking water

standards. The treated water is then pumped through another large pipeline (4) to Lake Oswego and the Waluga Reservoir (5) near the City's western boundary. From there, water goes through pipes to Lake Oswego customers and to Tigard's Bonita Road pump station (6). The partnership project will upgrade, upsize and expand these six existing facilities.



- EXISTING FACILITIES
- UNTREATED WATER PIPELINE
- TREATED WATER PIPELINE
- WATER FACILITY
- PARK

**Project Schedule**

The project started in December 2009 and will continue through 2016. Work occurs in four overlapping phases.

Project Definition	December 2009 – December 2010
Pre-design and Permitting	July 2010 – February 2012
Design	March 2011 – October 2013
Construction	March 2012 – June 2016





For more information about the Lake Oswego Tigard Water Partnership and the water treatment decision visit [www.lotigardwater.org](http://www.lotigardwater.org) or contact:

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Or you can go online to learn more about drinking water treatment:

US Environmental Protection Agency  
 The Office of Ground Water and Drinking Water  
<http://www.epa.gov/safewater>

City of Lake Oswego – Drinking Water  
[www.ci.oswego.or.us/wtp](http://www.ci.oswego.or.us/wtp)  
 Oregon Department of Human Services

Drinking Water Program  
[www.oregon.gov/DHS/ph/dwp](http://www.oregon.gov/DHS/ph/dwp)

City of Tigard – Drinking Water  
[www.tigard-or.gov/city\\_hall/departments/water](http://www.tigard-or.gov/city_hall/departments/water)

For questions about drinking water treatment methods or water quality contact:



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Issue #1

WHAT YOU NEED TO KNOW ABOUT YOUR DRINKING WATER

March 2010

# Water Savvy

## Drinking Water Treatment Decision

In August 2008, the cities of Lake Oswego and Tigard formally endorsed a partnership agreement for sharing drinking water resources and costs. Lake Oswego's water supply system is near capacity and key facilities need expansion and upgrades. Tigard residents seek ownership in a water supply system. Both cities want to keep water affordable for their customers and sharing the cost of new infrastructure to serve both communities does that. The Partnership is planning to expand Lake Oswego's existing drinking water infrastructure to serve both communities.

*Selecting the best drinking water treatment method is the first and most important decision in Partnership planning. The upgraded treatment plant will be in service for up to 50 years and represents a significant investment for both communities.*

## Clackamas River Provides High Quality Water

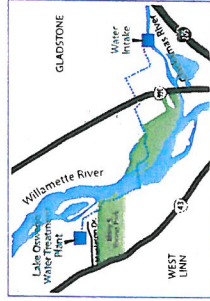
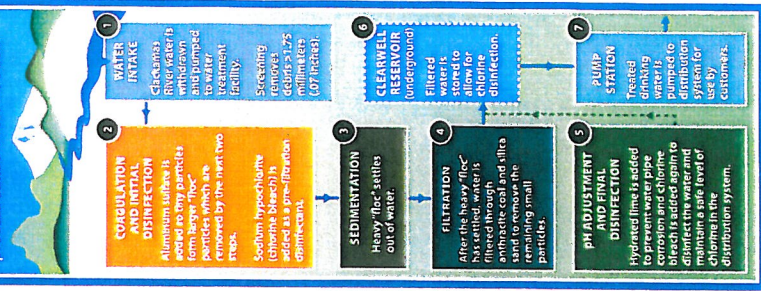
The Lake Oswego Tigard partnership in the Clackamas River water source will benefit from access to a high quality water source: the Clackamas River. The 950-acre Clackamas watershed provides drinking water for the cities of Estacada, Gladstone, Lake Oswego, Milwaukie, Damascus, Happy Valley, Oregon City, and West Linn and several water service districts. The Clackamas River is one of Oregon's high-quality drinking water sources and is protected from new discharges through a state law called the *Three Basin Rule*.

*The Three Basin Rule applies to the Clackamas River and two other rivers in the region – the North Santiam River (Salem's drinking water source) and the McKenzie River (Eugene's source). The rule recognizes the high quality of the three rivers, and prohibits any new surface water discharges (e.g., wastewater treatment plants).*

Being considered a high-quality drinking water source doesn't mean it is free of all contaminants. Natural and human-made contaminants exist

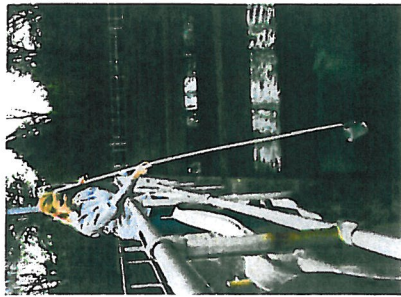
## Lake Oswego's Current Water Treatment Process

Lake Oswego's water treatment plant located in nearby West Linn has been producing clean, safe, and reliable drinking water since 1968. Water from the Clackamas River is treated through a process called *direct filtration*.



*Clackamas River water is withdrawn and pumped to the Lake Oswego Water Treatment Plant in West Linn.*

## Drinking Water Regulations Protect Public Health



Lake Oswego Water Treatment Plant Manager, Kari Duncan, tests water daily to ensure quality.

The federal Safe Drinking Water Act (SDWA) sets standards for drinking water. Oregon's Drinking Water Program administers and enforces SDWA standards for public water systems across the state. SDWA standards are based on sound science to protect public health. They set maximum levels for contaminants in drinking water and require treatment of water to remove or inactivate contaminants.

The SDWA also sets rigorous water quality testing and reporting requirements. Results of testing must be reported to Oregon's Drinking Water Program and annually to customers'.

## Customer Expectations

Results of recent surveys conducted in Lake Oswego and Tigard water service areas confirm customers are satisfied with the current level of water service. They expect their drinking water to be safe and meet state and federal drinking water standards.

- 93% of Lake Oswego residents and 95% of Tigard water service area residents are very satisfied or satisfied with their drinking water service.
- 88% of Lake Oswego residents and 93% in Tigard's water service area say their city is doing a very good or a good job providing drinking water that is pleasant tasting.
- 86% of Lake Oswego/Tigard service area residents say it is very important or important to treat drinking water so it is safe to drink and meets all state and federal standards. Fewer residents – 62% – say it's very important or important to provide customers with the safest possible drinking water at any cost.

- 55% support the partnership approach to drinking water improvements. The 31% who oppose are chiefly concerned about rising costs.

tee of policymakers from Lake Oswego and Tigard will recommend the best treatment option to both City Councils for their consideration. An evaluation process will be used to compare drinking water treatment methods, focusing on the environmental and public health benefits, costs, community impacts and risks of each alternative treatment method.

The water treatment decision team will participate in workshops over a four-month period, March-June, 2010, concluding with a treatment recommendation forwarded to both City Councils by Fall 2010.

## Water Treatment Decision Factors



Source water quality



Current and future regulations



Customer expectations



Capital and ongoing operating costs

## Water Treatment Decision

Under the water partnership agreement, Lake Oswego's existing water treatment plant will be upgraded to serve both communities' needs into the future. The upgraded facility will use a water treatment technology that produces safe, pleasant tasting water that meets / exceeds all drinking water regulations and can be adapted to meet future regulations.

National and regional experts in water treatment and public health are teaming up with staff and Citizen Sounding Board members from Lake Oswego and Tigard to evaluate different treatment methods. A subcommit-

## Treatment Methods to be Considered

There are many drinking water treatment methods available. The following methods were selected for further study because they are widely used and appropriate for treating surface water sources such as the Clackamas River. The methods differ in the type and size of contaminants removed as well as cost, complexity of operation, facility size, energy use and waste by-products. These are briefly described below and displayed 'at-a-glance' in the table below.

**Filtration systems** treat water by passing it through sand or other granular materials that remove the contaminants. Disinfectants are also added.

- Direct filtration** (currently used by Lake Oswego) adds a chemical coagulant to the source water prior to filtration. The mixture is stirred to create tiny suspended particles that form larger and more easily removed "floc".
- Conventional filtration** is similar to direct filtration, but uses sedimentation to allow the heavier "floc" to settle out of water prior to filtration.
- High rate conventional filtration** process is a compact variant of the conventional filtration system that uses rapid flocculation and sedimentation processes prior to filtration.

**Membranes** are thin sheets of synthetic material that separate and sieve particulates based on size. Contaminants are separated out as water passes through the membrane.

**Ozone** is pumped into water systems to eliminate biological contaminants and to oxidize certain types of unwanted organic and inorganic compounds, primarily to enhance taste and odor and control disinfection by-products.

**Powdered and granular activated carbon** is an adsorption treatment process. As water passes through the carbon, contaminants that impart color, taste, and odor to water are adsorbed or captured. This process removes organic compounds like those described in the chart below.

**Ultraviolet (UV)** inactivates microbes like Cryptosporidium, Giardia, and bacteria.

**Advanced oxidation** uses a series of processes to treat water, e.g., ozone, hydrogen peroxide, and ultraviolet radiation. This treatment is useful for removing very difficult to treat organic compounds.

## Comparing Drinking Water Treatment Methods

TREATMENT METHOD	TREATMENT METHOD REMOVES					COST COMPARISON
	Particulates (small particles)	Microbes: bacteria, viruses, algae	Protozoa: Cryptosporidium, Giardia	Inorganics (nitrate, arsenic, mercury, etc.)	Organics (pesticides, herbicides, etc.)	
Direct filtration	●	●	●	●	●	Low
Conventional filtration	●	●	●	●	●	Medium
High rate conventional	●	●	●	●	●	Medium
Membranes	●	●	●	●	●	High
Ozone		●	●	●	●	Medium
Powdered & granular activated carbon		●	●	●	●	Medium
Ultraviolet (UV)		●	●		●	Medium
Advanced oxidation processes					●	High

● Primary benefit from treatment method

● Some benefit from treatment method