

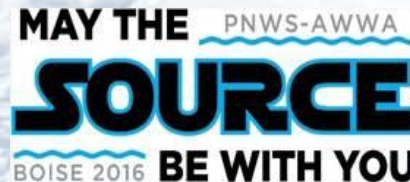


Lake Oswego · Tigard
Water Partnership
sharing water · connecting communities

Persistence and Teamwork Pay Off:

Technical, Permitting, Management,
and Communication Solutions Deliver
State-of-the-Art Supply System for
Lake Oswego and Tigard.

Joel B. Komarek, P.E., CWRE
May 6, 2016



**THE FOLLOWING PRESENTATION HAS
BEEN APPROVED FOR**

M

**MATURE
WATER PROFESSIONALS**

**PRESENTATION DOES NOT REFLECT
POLITICAL VIEWS OF PRESENTER**

Outline

- Partnership Overview
- Program Drivers
- Program Retrospective (2006 to 2016)
- Concepts to Completion
- Questions



Population: 55,000
Connections: 22,000
ADD: 6.4 mgd
PDD: 13 mgd
King City, Durham, TWD

Population: 37,000
Connections: 13,000
ADD: 5.4 mgd
PDD: 12 mgd
Serve 5 wholesale customers

Tigard
Water Service Area

Lake Oswego
Water Service Area

Potential Water Service Areas



Program drivers

Lake Oswego

- Peak day demands exceed system “firm” capacity
- System components are old, obsolete and vulnerable
- “Go it alone” financing infeasible
- Beneficial use of full LO water rights

Tigard

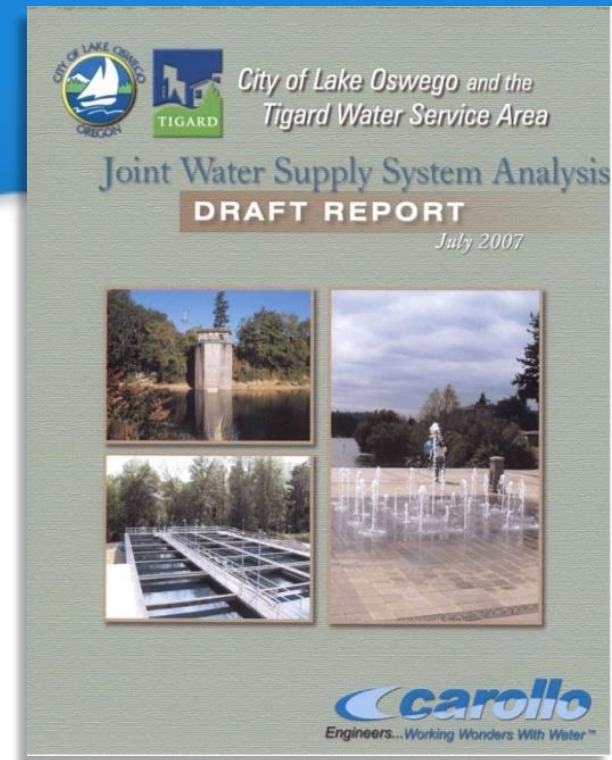
- Portland wholesale water customer, contract expires 7/16
- Wants control over cost of water
- Owning assets allows cost recovery through SDCs



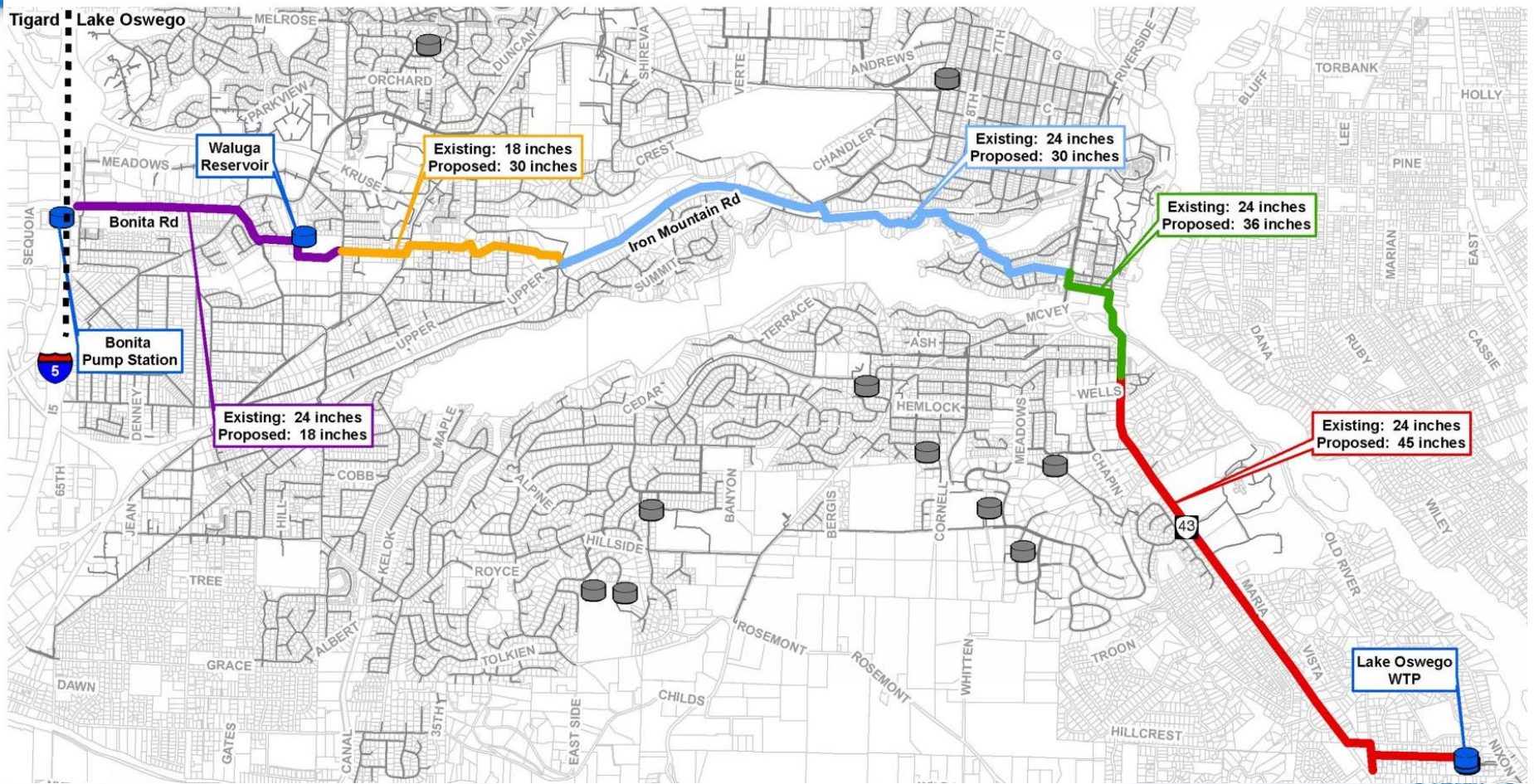
Program Retrospective (2006 – 2016)

2007 Feasibility Study

- \$135M program
- 2-phase expansion
 - Ph. 1 - 16 mgd to 32 mgd
 - Ph. 2 - 6 mgd (future; LO only)
 - Initial expansion complete by 7/1/2016
- Capacity allocation: 24/14 (LO/Tigard)
- Cost allocation: 43%/57% (LO/Tigard)
- Significant cost savings over other options



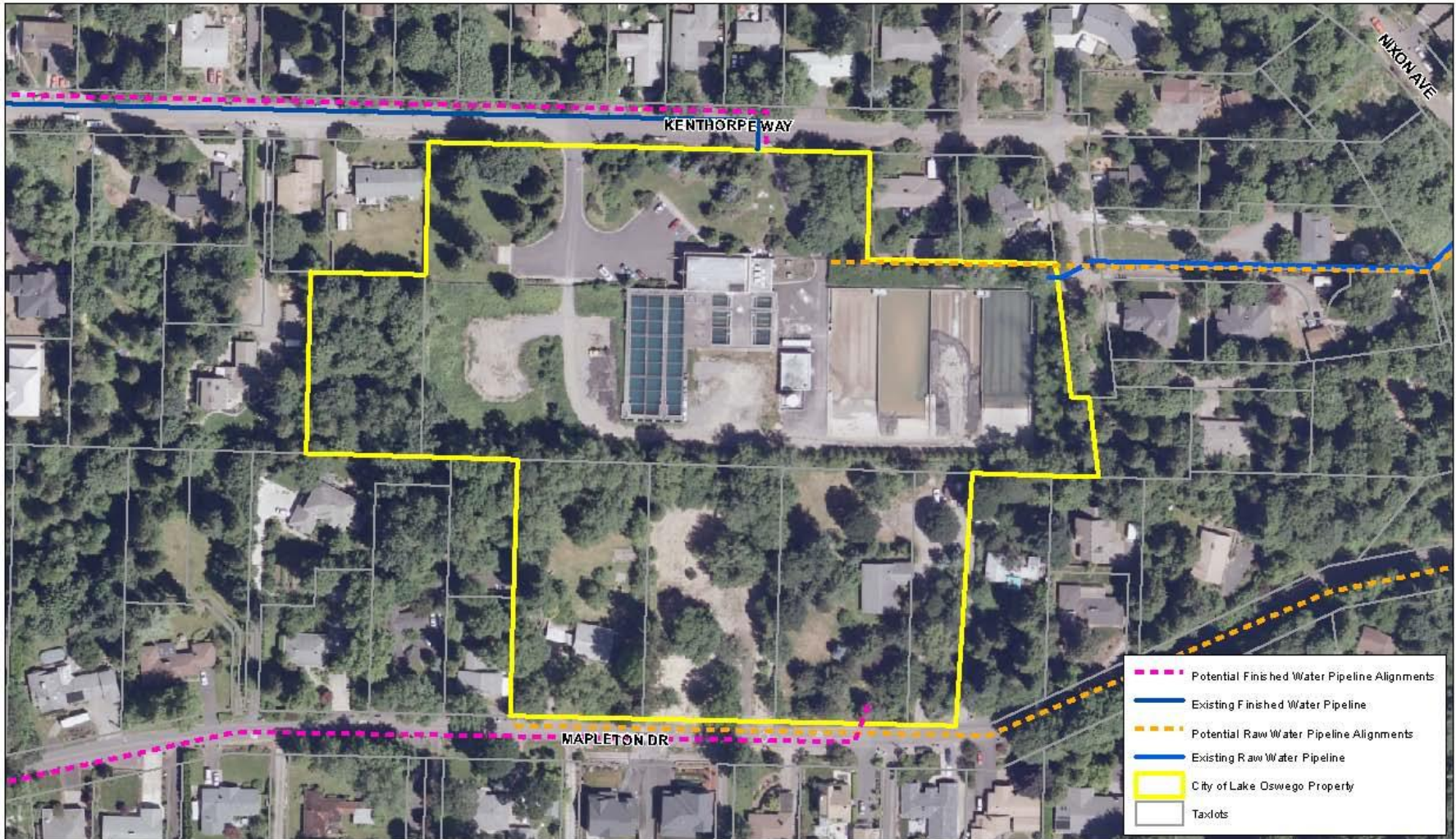
Finished Water Pipeline



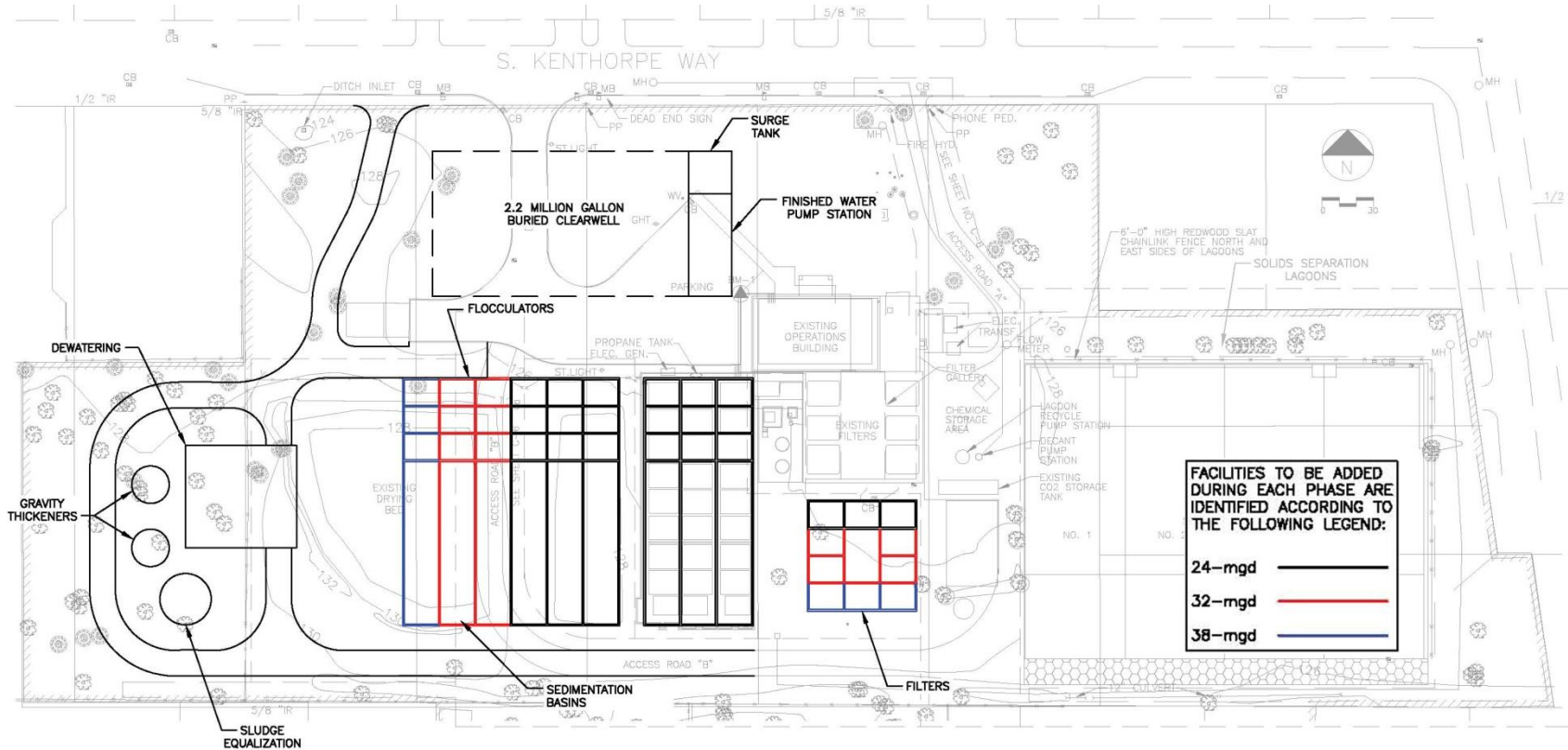
2007 Alignment, 38 MGD



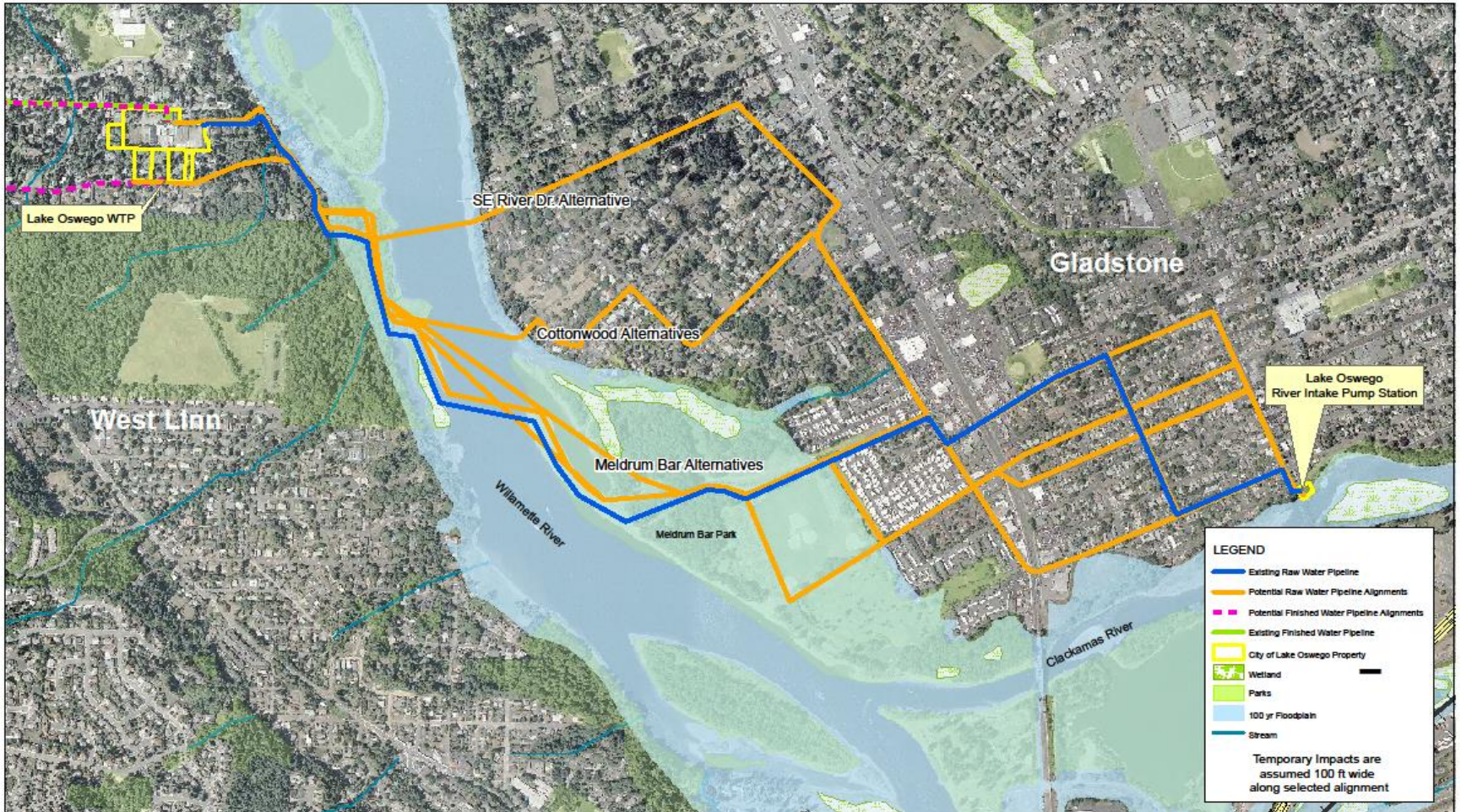
Existing Water Treatment Plant in West Linn



16 mgd addition on existing WTP



Raw Water Pipeline



Existing Bonita Road Pump Station



Program Retrospective

August 2008

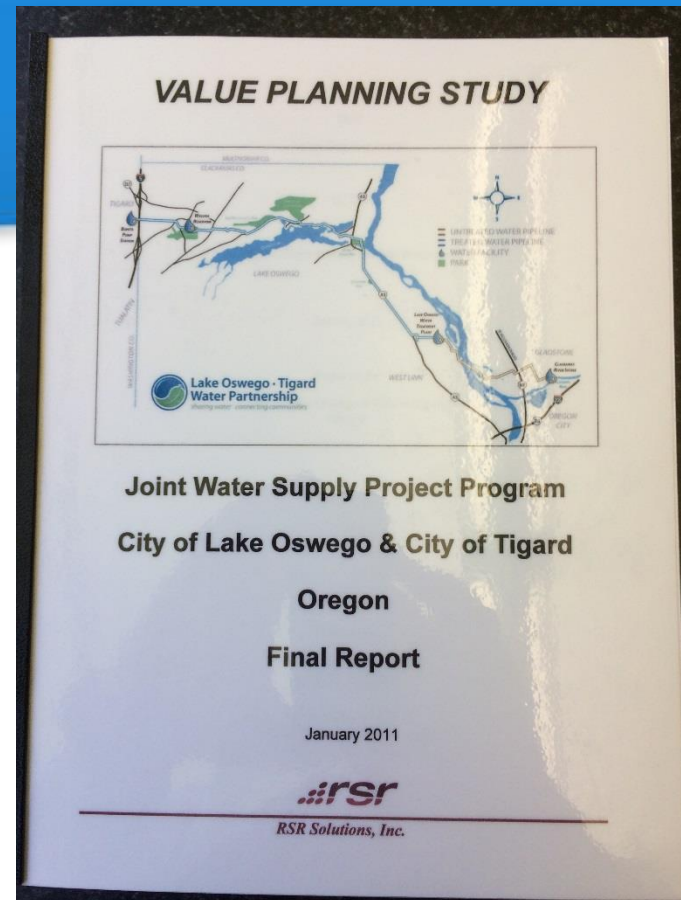
“We have an Agreement, now What?”



Program Retrospective (2006 – 2016)

2009 - 2010 (Validation Phase)

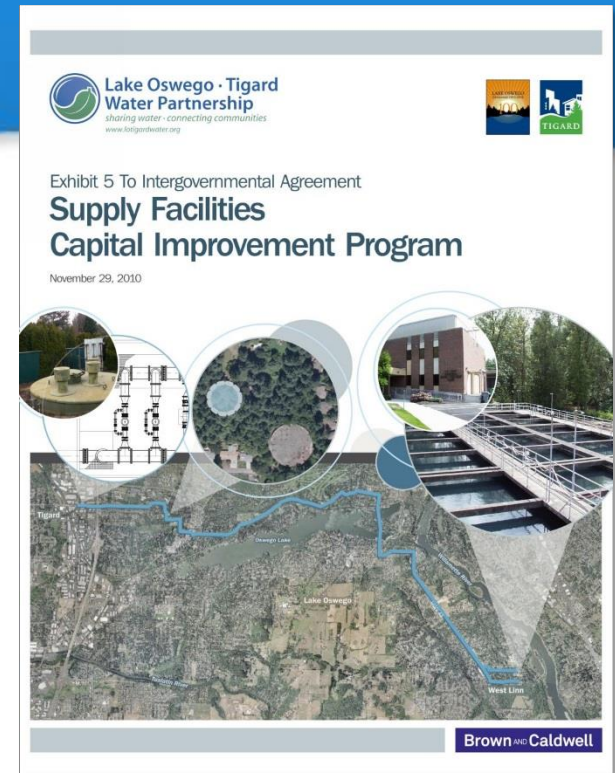
- Analyze/validate 2007 Study design assumptions:
 - Add 16 mgd to exist WTP
 - Conventional treatment
 - Cut-cover X'ing of Willamette R.
 - Cut-cover through MSY State Park
 - HDD crossing of Oswego Creek
 - New pipe parallels exist RWP/FWP



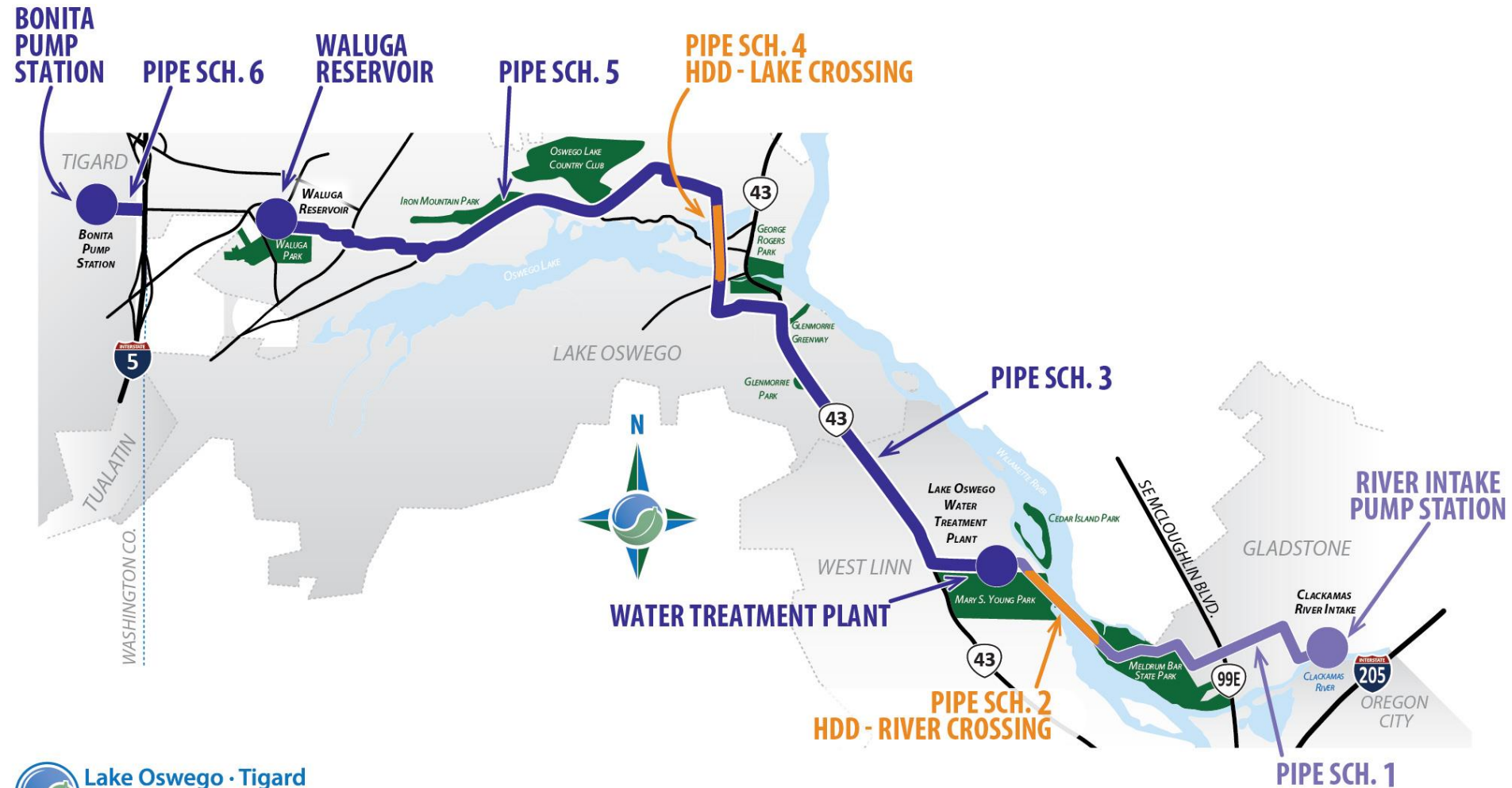
Program Retrospective (2006 – 2016)

2010 Program Definition Phase

- \$230M program due to:
 - Inflation
 - Replace existing WTP
 - Ozone and BAF added
 - Eliminate 2-phase exp.
- Capacity allocation: 24/14 (LO/Tigard)
- Cost allocation: 47%/53% (LO/Tigard)
- Cities approve SFCIP and authorize pre-design



Supply Facilities Capital Program



Required Permits & Clearances

Waluga Reservoir
 SHPO Clearance
 ODEQ NPDES 1200-C
 City of Lake Oswego Permits

Waluga Reservoir

Bonita Pump Station

Bonita Pump Station
 SHPO Clearance
 ODEQ NPDES 1200-C
 City of Tigard Permits

Finished Water Pipeline
 USACE Section 404/10 & ODSL Removal Fill
 State & Federal Endangered Species Act Consultation
 USFWS Migratory Bird Treaty Act
 NMFS Magnuson Stevens Act
 ODEQ 401 Certification
 ODEQ NPDES 1200-C
 ODFW Mitigation Policy
 ODOT X-Permit
 SHPO Clearance
 Cities of Lake Oswego, Tigard & West Linn Permits
 Lake Corporation Easement
 UPRR Encroachment Permit

Lake Oswego Water Treatment Plant
 ODHS DWP Design Certification
 ODEQ NPDES 200-J
 ODEQ NPDES 1200-C
 SHPO Clearance
 Cities of West Linn Permit

Lake Oswego Water Treatment Plant

Clackamas River Intake

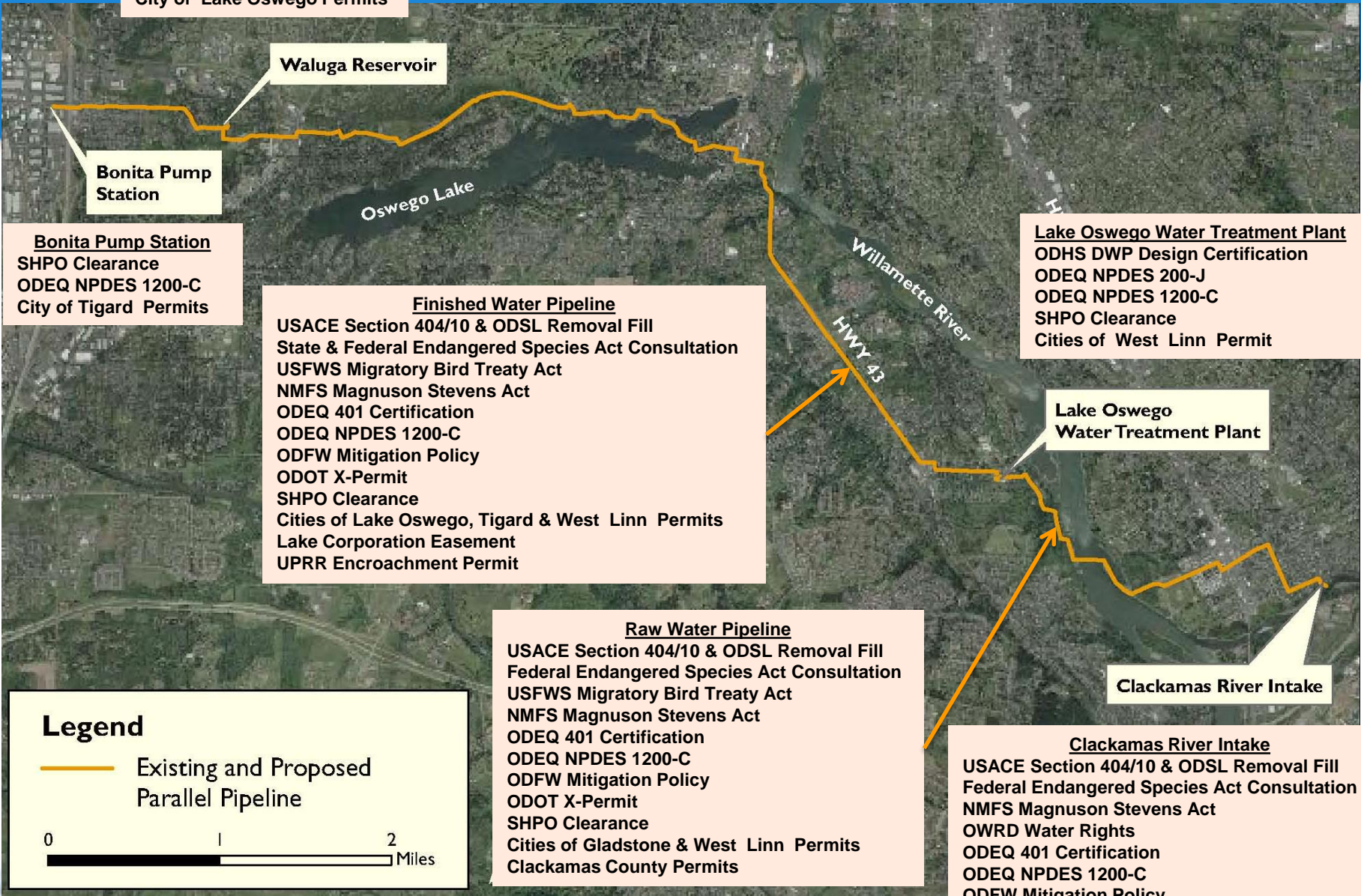
Raw Water Pipeline
 USACE Section 404/10 & ODSL Removal Fill
 Federal Endangered Species Act Consultation
 USFWS Migratory Bird Treaty Act
 NMFS Magnuson Stevens Act
 ODEQ 401 Certification
 ODEQ NPDES 1200-C
 ODFW Mitigation Policy
 ODOT X-Permit
 SHPO Clearance
 Cities of Gladstone & West Linn Permits
 Clackamas County Permits

Clackamas River Intake
 USACE Section 404/10 & ODSL Removal Fill
 Federal Endangered Species Act Consultation
 NMFS Magnuson Stevens Act
 OWRD Water Rights
 ODEQ 401 Certification
 ODEQ NPDES 1200-C
 ODFW Mitigation Policy
 SHPO Clearance
 City of Gladstone & Clackamas County Permits

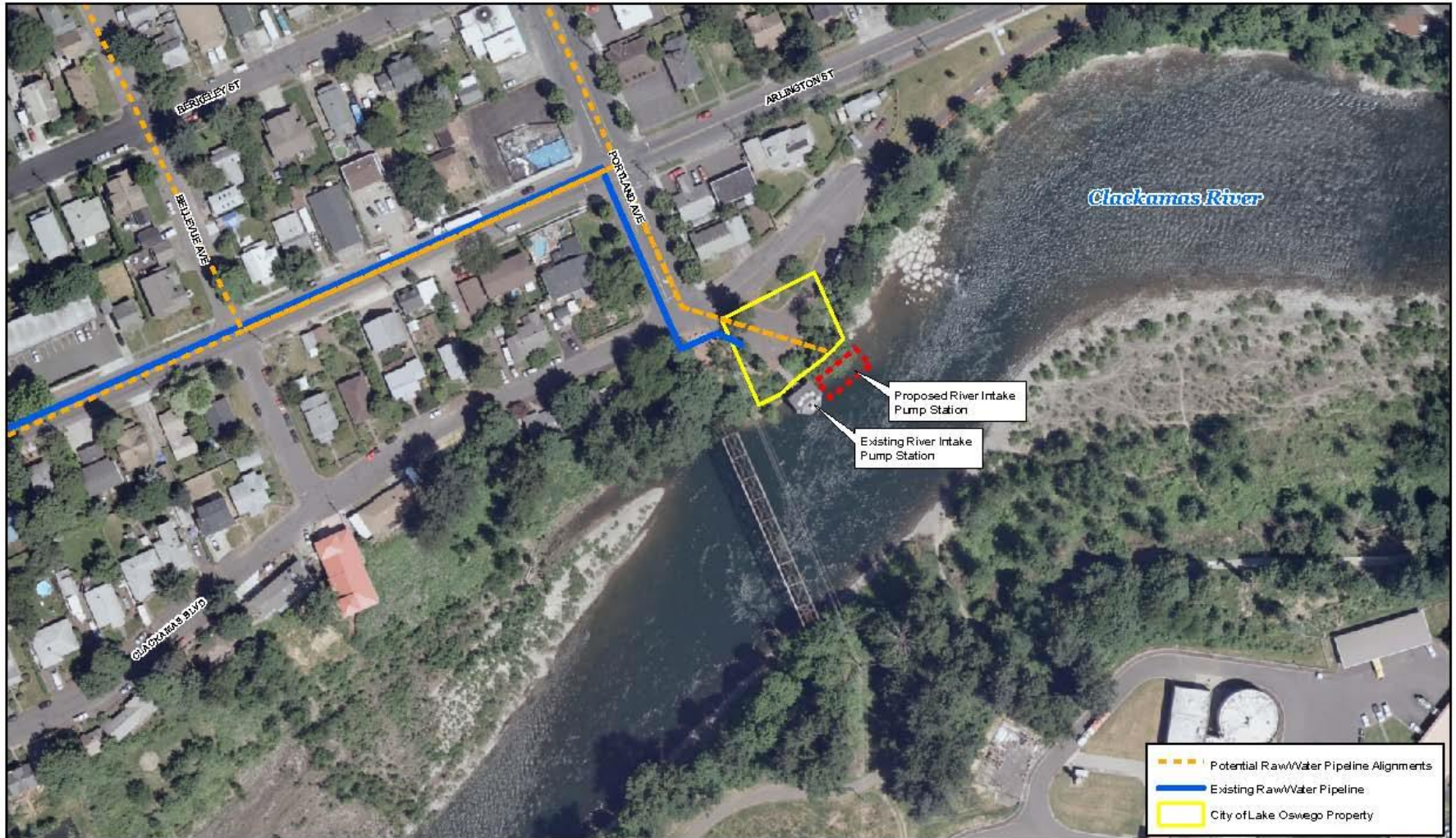
Legend

— Existing and Proposed
 — Parallel Pipeline

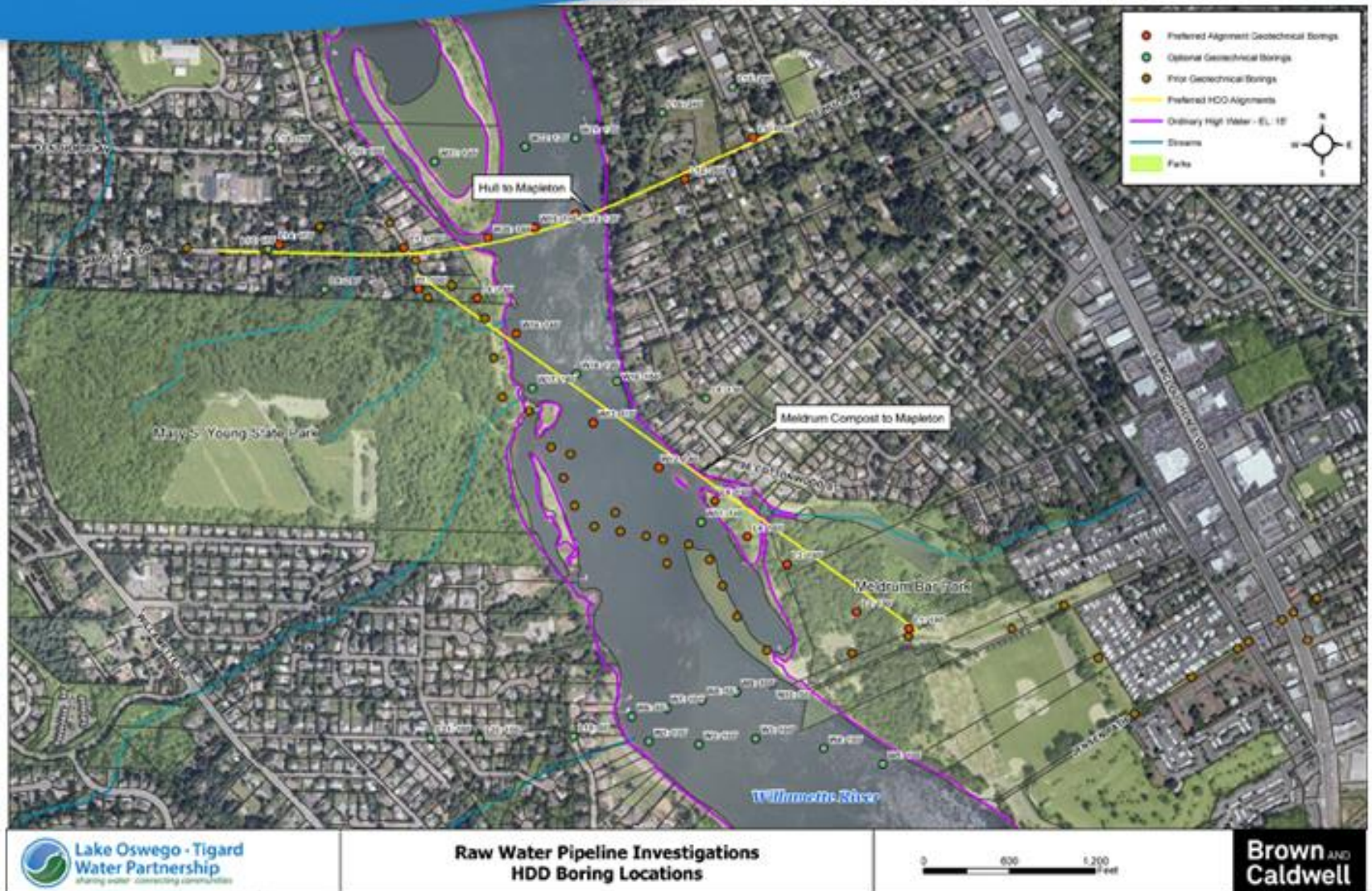
0 1 2 Miles



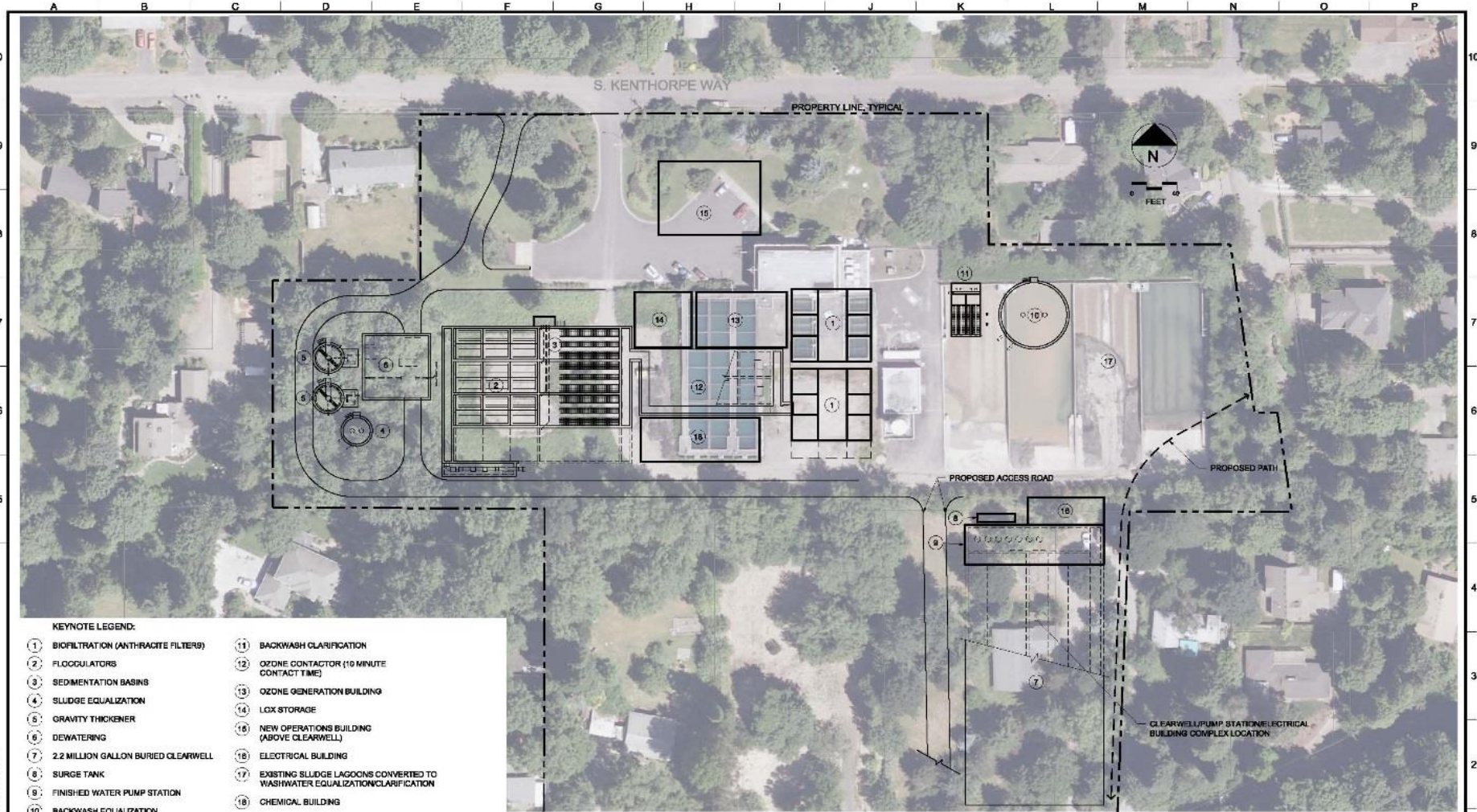
New River Intake Pump Station Next to Existing



Local Codes Dictate Alignment For RWP



Early Layout of New 38 mgd WTP



KEYNOTE LEGEND:

- | | |
|---------------------------------------|--|
| ① BIOFILTRATION (ANTHRACITE FILTERS) | ⑪ BACKWASH CLARIFICATION |
| ② FLOODIATORS | ⑫ OZONE CONTACTOR (10 MINUTE CONTACT TIME) |
| ③ SEDIMENTATION BASINS | ⑬ OZONE GENERATION BUILDING |
| ④ SLUDGE EQUALIZATION | ⑭ LOG STORAGE |
| ⑤ GRAVITY THICKENER | ⑯ NEW OPERATIONS BUILDING (ABOVE CLEARWELL) |
| ⑥ DEWATERING | ⑰ ELECTRICAL BUILDING |
| ⑦ 2.2 MILLION GALLON BURIED CLEARWELL | ⑱ EXISTING SLUDGE LAGOONS CONVERTED TO WASTEWATER EQUALIZATION/CLARIFICATION |
| ⑧ SURGE TANK | ⑲ CHEMICAL BUILDING |
| ⑨ FINISHED WATER PUMP STATION | |
| ⑩ BACKWASH EQUALIZATION | |

BROWN AND CALDWELL

LINE IS 2 FEET
AT FULL SIZE
(BY MAP P. SCALE REDUCED)

EXTERNAL REFERENCE RULES
(BRN) TITL BURGUNDY

PRE-DESIGN

THIS DRAWING IS NOT VALID FOR CONSTRUCTION PURPOSES UNLESS IT BEARS THE SEAL AND SIGNATURE OF A DULY REGISTERED PROFESSIONAL



LAKE OSWEGO WATER TREATMENT PLANT

**ALTERNATIVE 1.2B
CONVENTIONAL TREATMENT WITH
OZONE AND BAF**

FIGURE 1.2B LAYOUT 1, 10/14/10
REVISION NUMBER
130204
SCALE
DRAWING NUMBER
LAYOUT 1
SHEET NUMBER
OF 06

PLOT DATE: October 14, 2010, 5:00AM
 FILE: C:\OSWEGO\PROJECTS\101010\101010.dwg
 USER: cawley

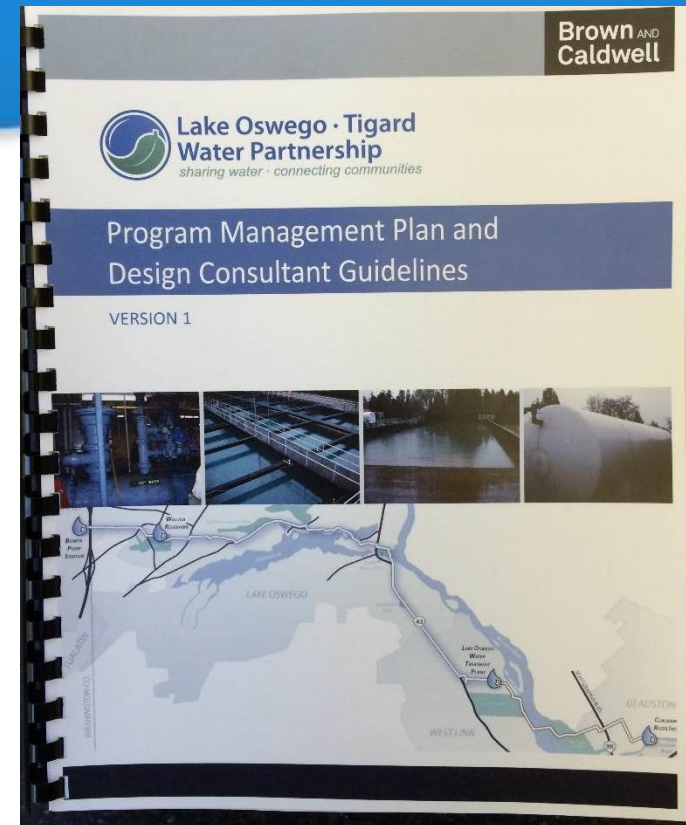
New Bonita Pump Station Site



Program Retrospective (2006 – 2016)

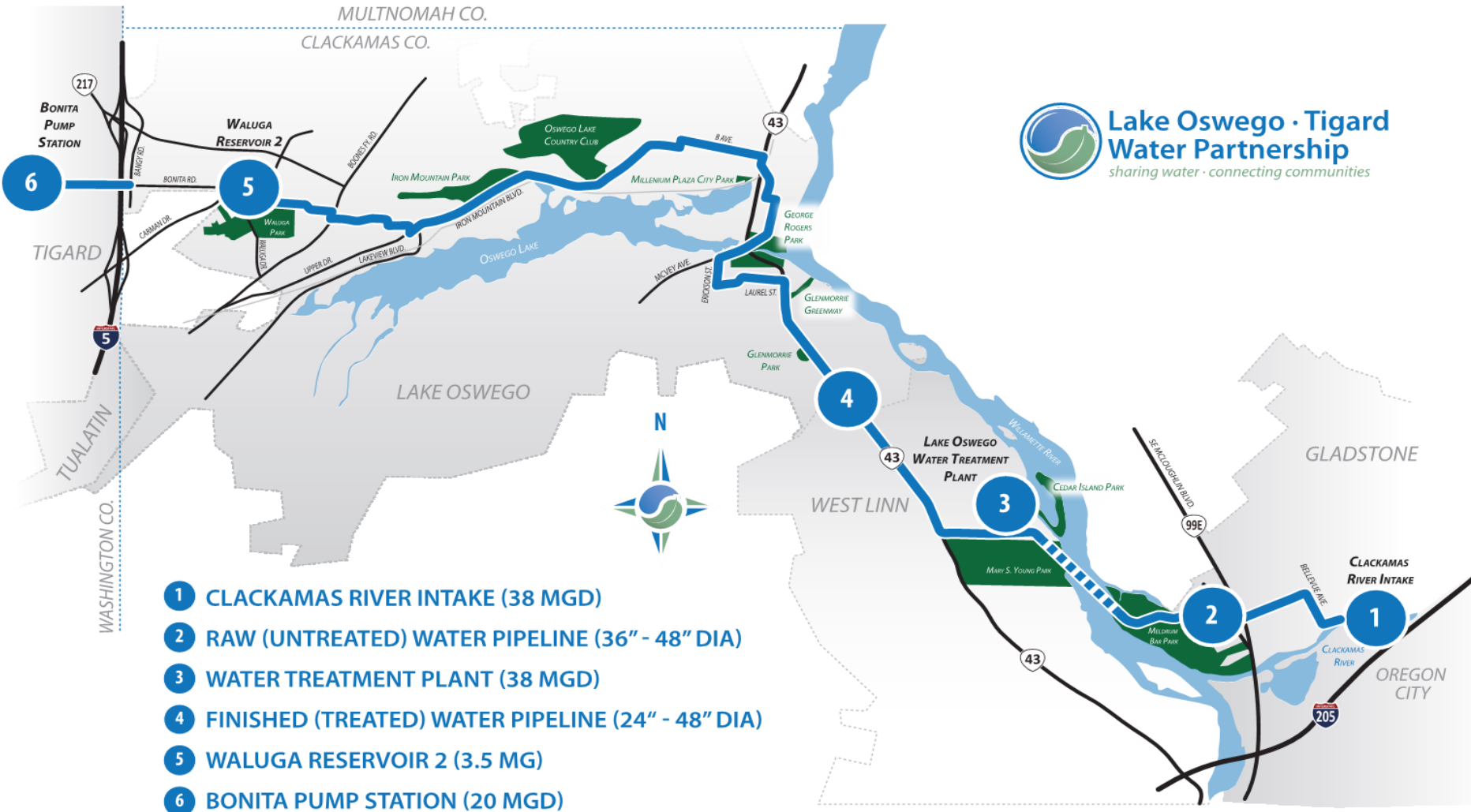
2012-2013 Design Phase

- \$240M - \$250M program due to:
 - Construction contingency
 - Extended permit schedule
 - Extensive RWP alt. analysis
 - Compact WTP design
 - Seismic design (piles/dual welds)
 - More construction contracts/longer durations
 - Land use mitigation costs \$\$\$
- Despite ↑ \$\$ - Cities issue bonds



New water supply system elements

All facilities online by July 2016



Concepts to Completion – River Intake Pump Station



Concepts to Completion - Pipelines



Concepts to Completion - Bonita Pump Station

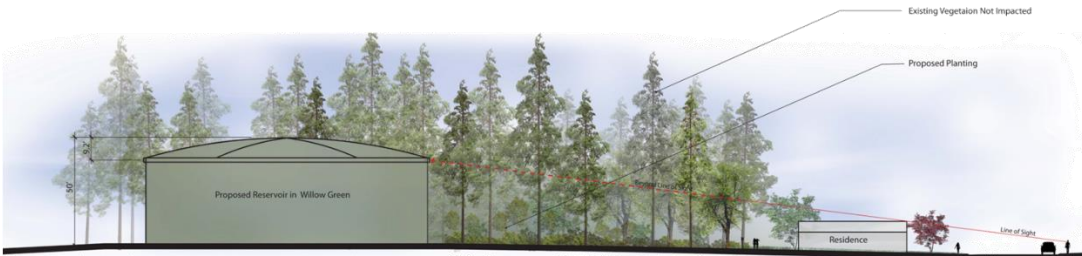
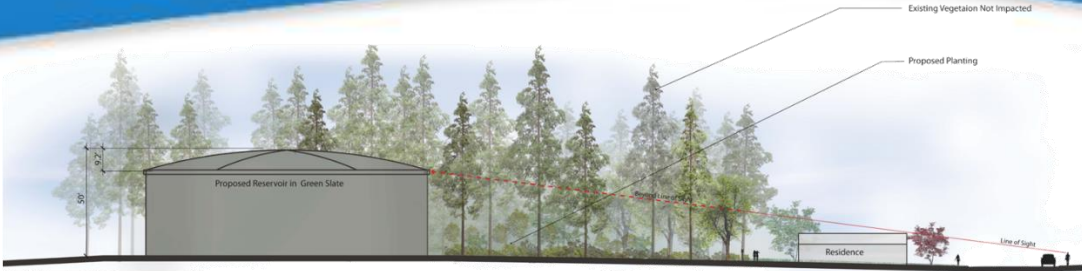


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Concepts to Completion – 38 mgd WTP



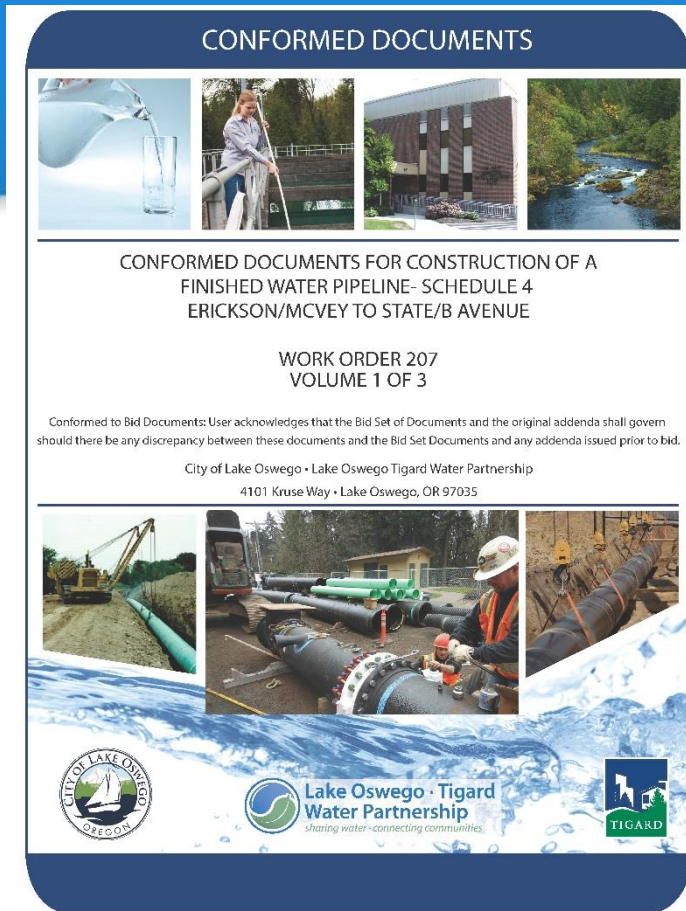
Concepts to Completion – Waluga Reservoir



Program Retrospective (2006 – 2016)

2013-2016: Construction Phase

- \$254M program (\$225M spent):
 - 10.5 miles of pipe installed
 - RIPS, WR2, BPS operational
 - 32 mgd WTP ready by 7/1/16.
 - No contractor claims
- Capacity allocation: 20/18 (LO/Tigard)
- Cost allocation: 38%/62% (LO/Tigard)
- Focus turning to governance and Ops





Teamwork Pays Off!



Questions?

www.lotigardwater.org



**Lake Oswego · Tigard
Water Partnership**
sharing water · connecting communities

- Construction Activities >
- About the Project >
- Meetings and Committees >
- Materials Library >
- Contractor Information
- Contact Us

Project Hotline:
(503) 697-6502

Stay Informed!

- Join our email list (*opens new window*)
- Facebook
- RSS Updates
- En Español

Tweets by @LOTWater

LOTigardWater 3h

What is this Project?

This project increases system capacity to deliver high-quality drinking water from the Clackamas River to the communities of Lake Oswego and Tigard. Together these two communities can secure long-term access to clean, safe water for less than it would cost them to do it alone. [Learn more...](#)

Project News

Night construction on Bonita Road begins next week


Friday - April 3, 2015

Tigard Pipeline and Bonita Pump Station Construction Update


These construction updates will now include **all work in Tigard for the project.**

Keep reading for specific information on each location:

- Bonita Road Pipeline
- Bonita Pump Station
- Milton Court



Electrical and HVAC systems



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