

BUILDING A WORLD OF DIFFERENCE

May 9, 2014

OLD AND NEW JOINED AT THE HIP

TWO WATER SYSTEMS, TWO CONCRETE RESERVOIRS, MULTIPLE APPLICATIONS

TAYLOR STOCKTON, P.E.* PROJECT ENGINEER, BLACK & VEATCH

DAVID PROCK, P.E. , CWRE** DEPUTY PROJECT DIRECTOR, LOTWP

* REGISTERED IN OR ** REGISTERED IN OR & WA



Lake Oswego • Tigard
Water Partnership
sharing water • connecting communities



BLACK & VEATCH
Building a world of difference.®

A photograph of a large, ornate dome with a central skylight, overlaid with a white crosshair and text. The dome's surface is covered in a complex, repeating geometric pattern of squares and rectangles, creating a grid-like structure. The central skylight is a bright, circular opening that illuminates the surrounding area. The text "See partnerships" is positioned in the upper left quadrant, and "Strengthen with focus" is in the upper right quadrant. A white crosshair is centered on the skylight, with a vertical line extending downwards and a horizontal line extending to the left.

See
partnerships

Strengthen with
focus

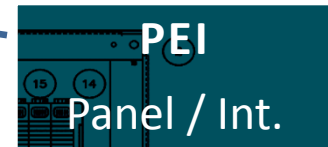


**Lake Oswego · Tigard
Water Partnership**
sharing water · connecting communities

**Program
Management Team**



Design Prime
Mechanical, Electrical,
Instrumentation/Controls



OVERVIEW

BACKGROUND



QUESTIONS



BACKGROUND



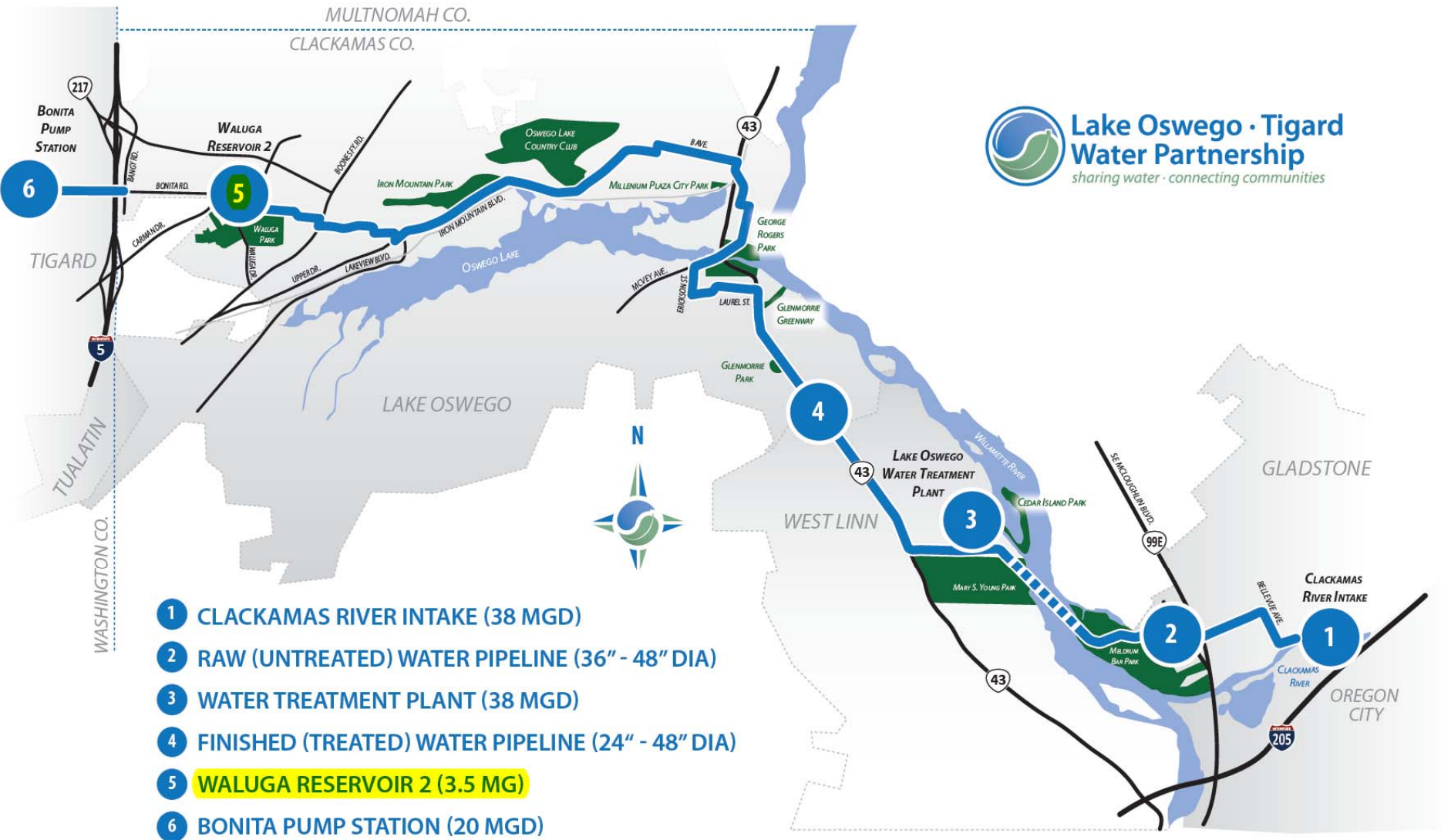
Population: 55,000
Connections: 22,000
ADD: 6.4 mgd
PDD: 13 mgd
King City, Durham, TWD

Population: 37,000
Connections: 13,000
ADD: 6 mgd
PDD: 14 mgd
Serve 5 wholesale customers

Tigard
Water Service Area

Lake Oswego
Water Service Area

Potential Water Service Areas



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



SITE BOUNDARY

EXISTING WR1

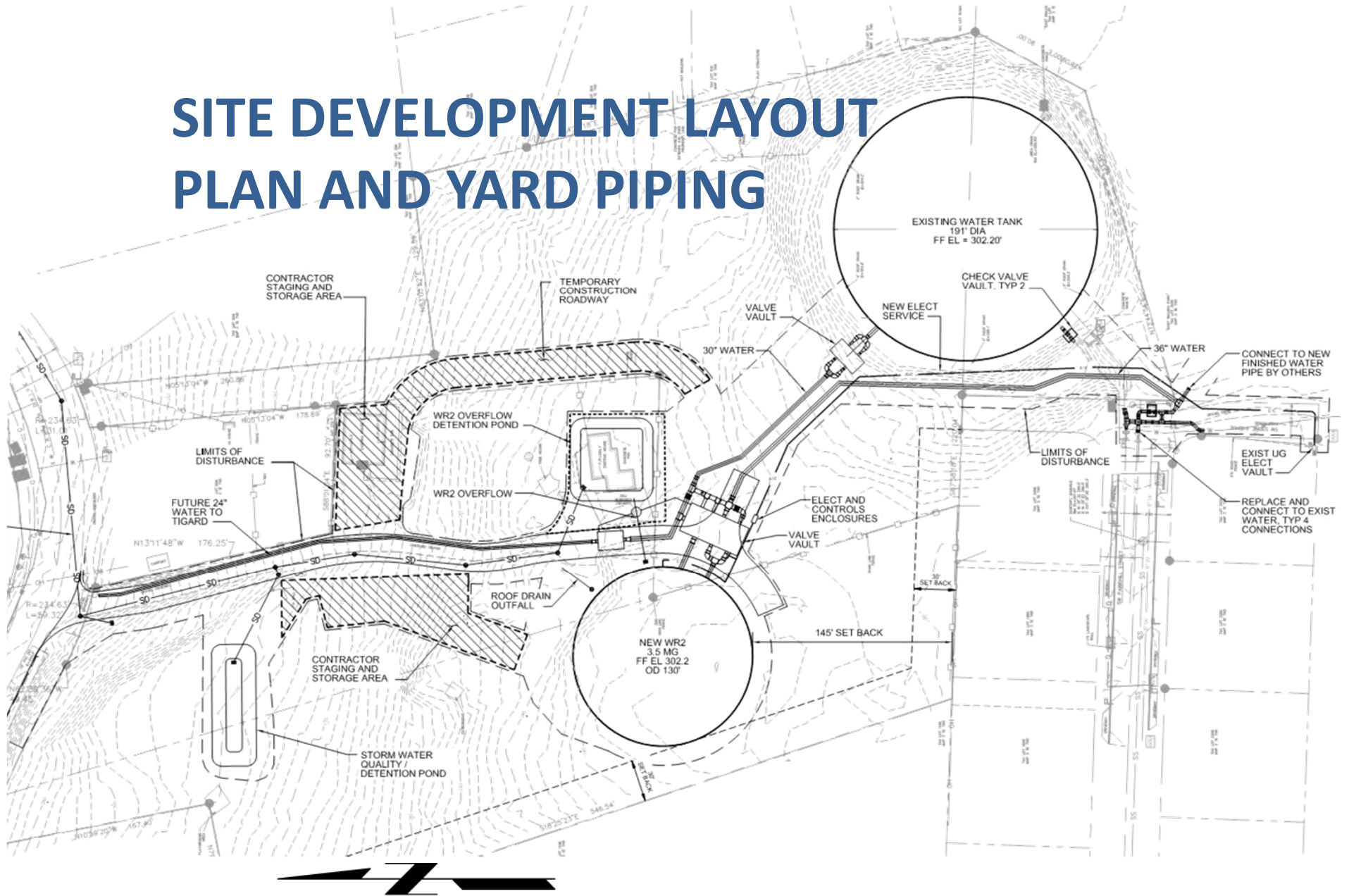
SW Parkhill St.

Manchester Dr.



GREENWORKS

SITE DEVELOPMENT LAYOUT PLAN AND YARD PIPING



FOUR PARTNERSHIPS



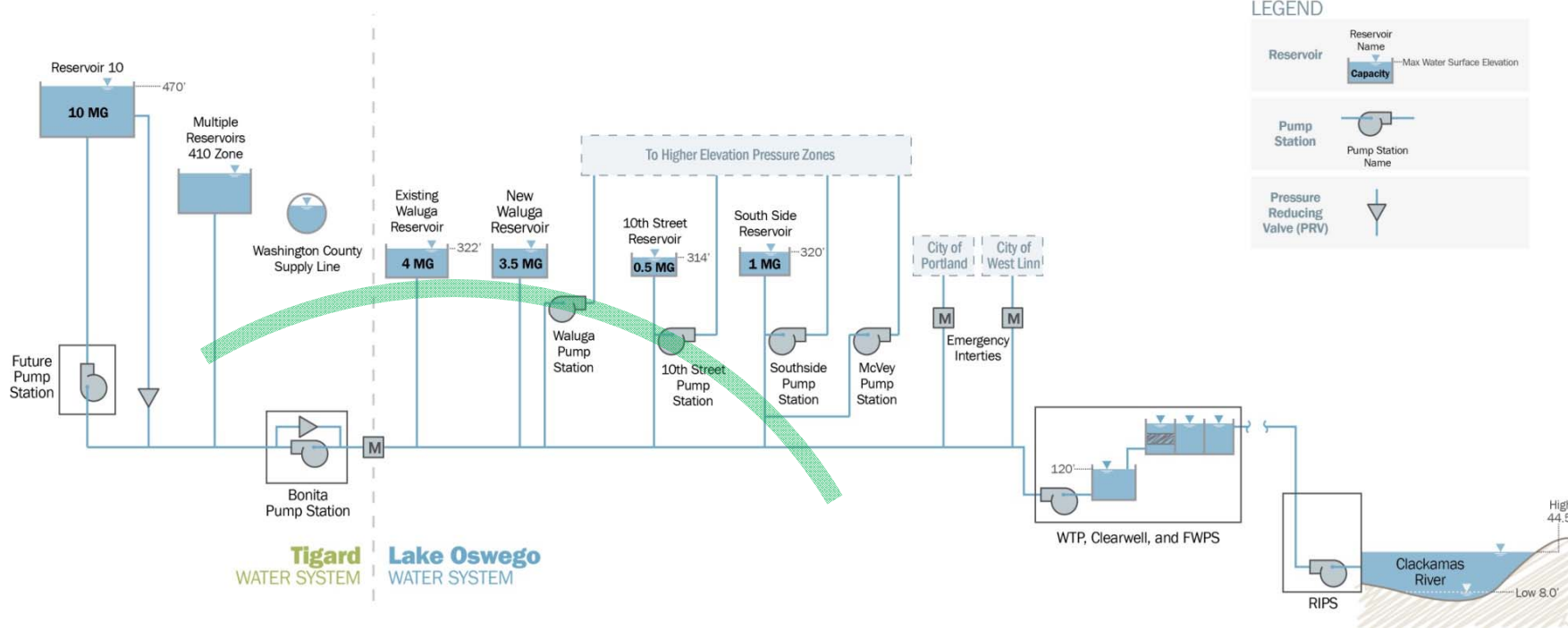
1. WATER

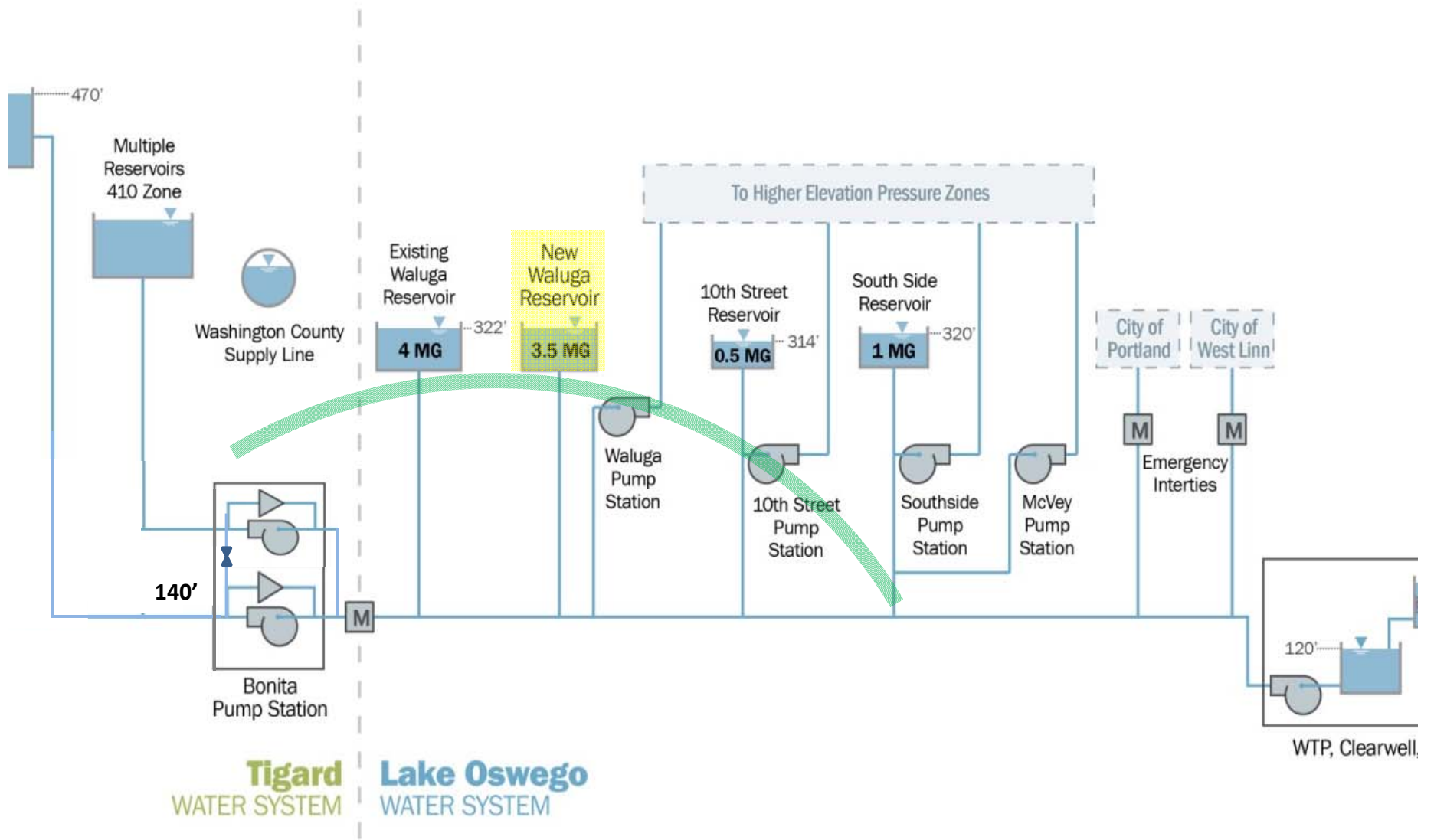
KEEP IT SIMPLE

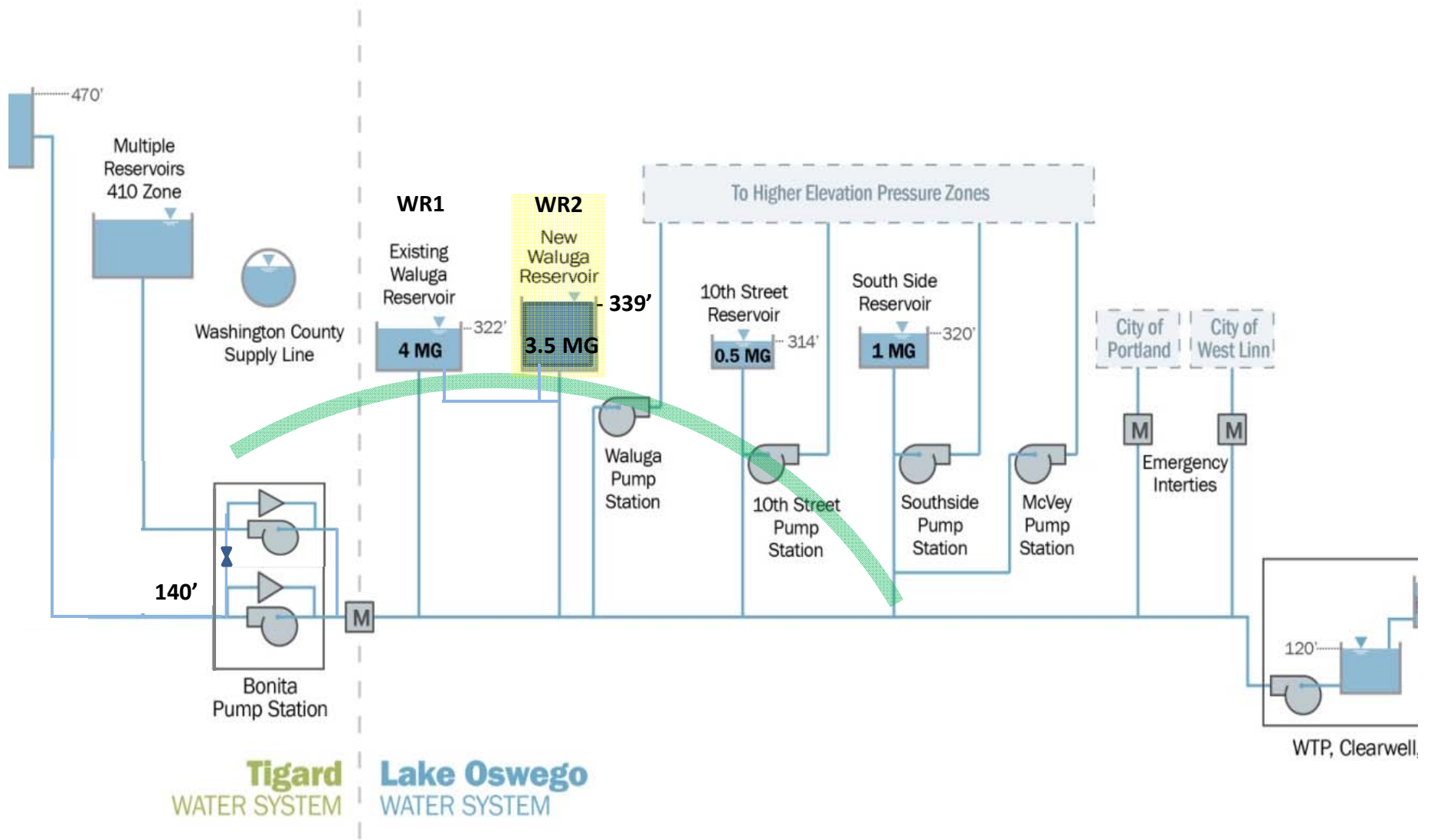




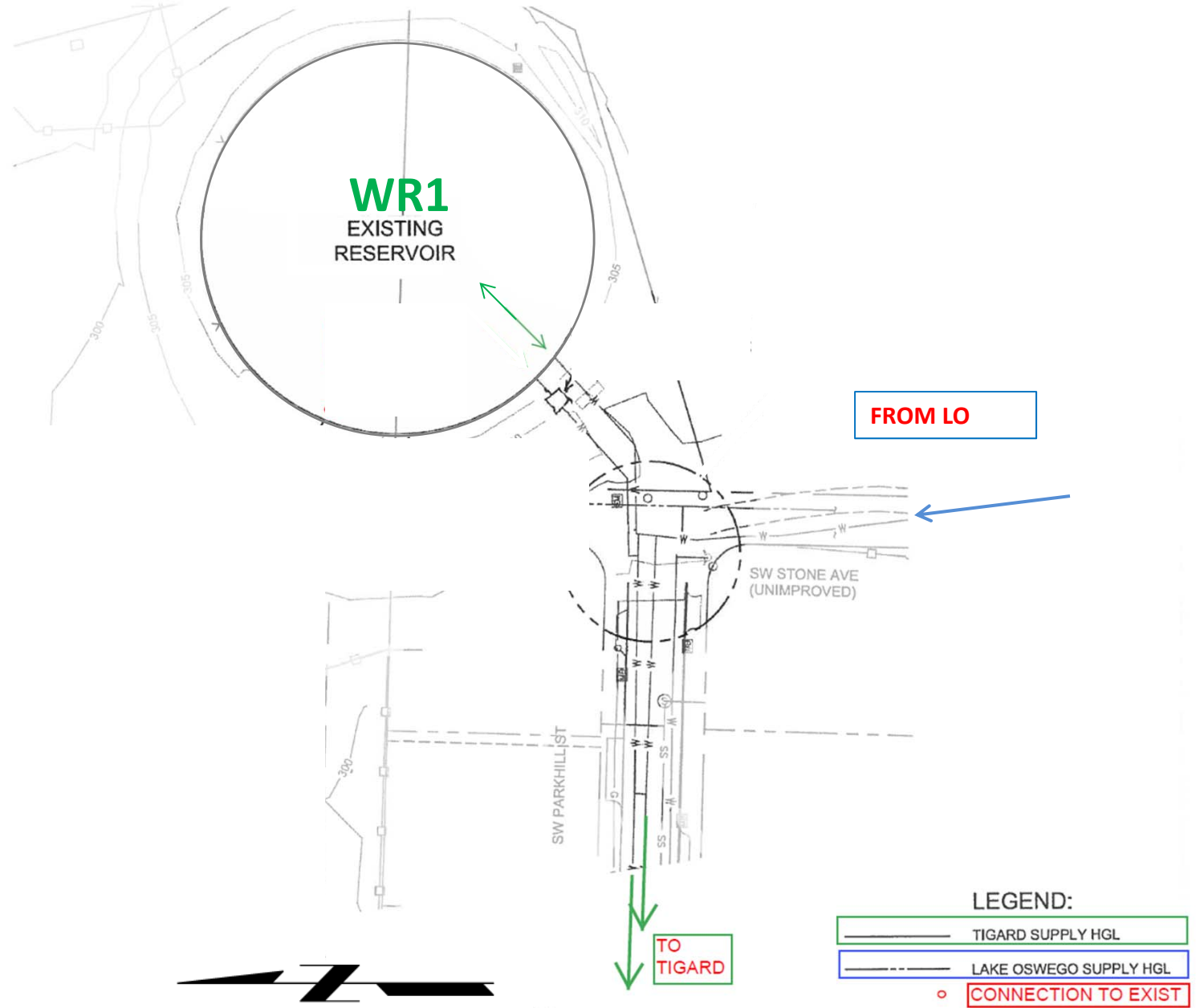
HYDRAULIC OVERVIEW







EXISTING (WR1) OPERATION



NEW PIPE PENETRATION

WR1
EXISTING
RESERVOIR

**WR1 MIXING
MANIFOLD**

CHECK VALVE
VAULTS

TO/FROM LO

SW STONE AVE
(UNIMPROVED)

SW PARKHILL ST

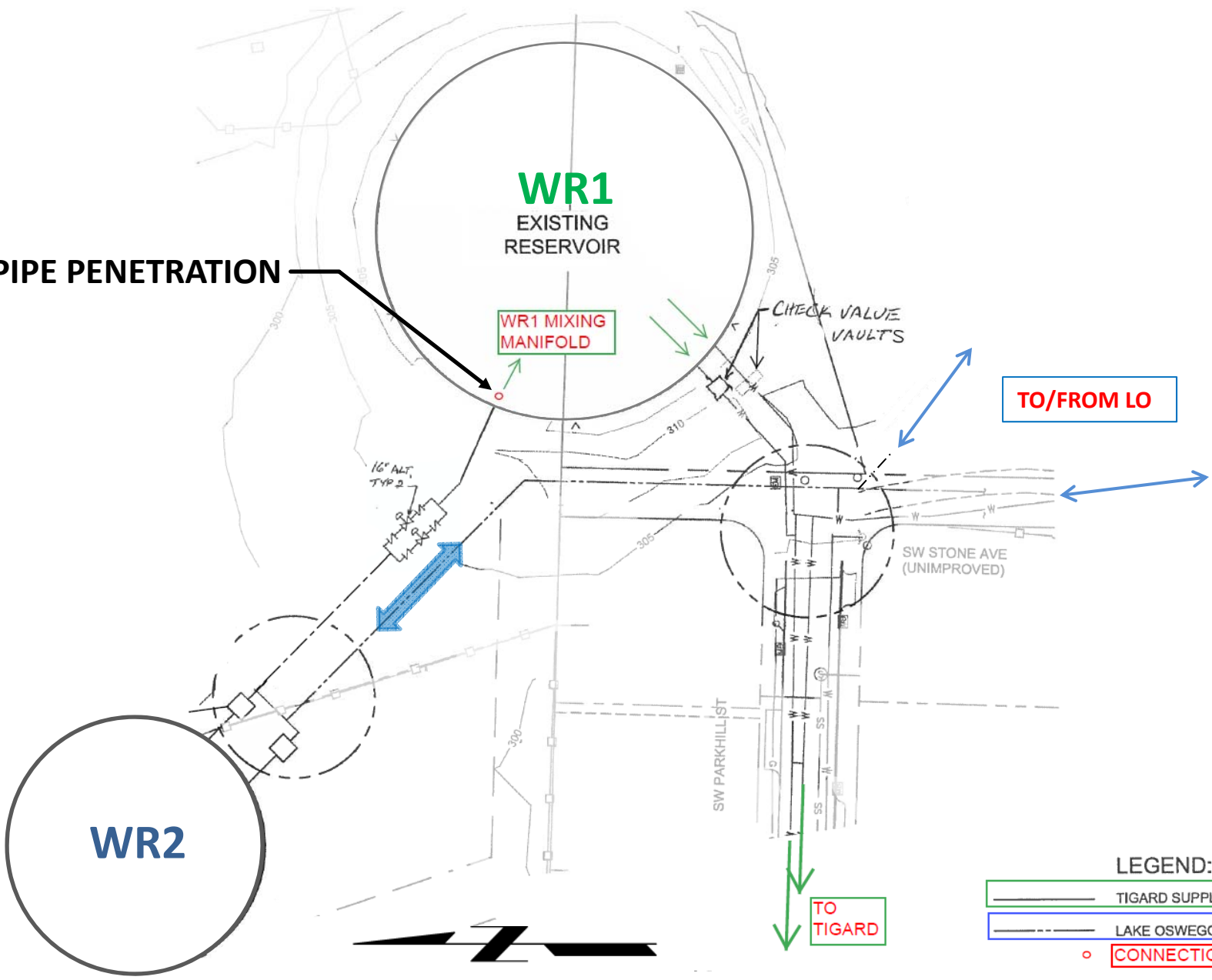
WR2

**TO
TIGARD**

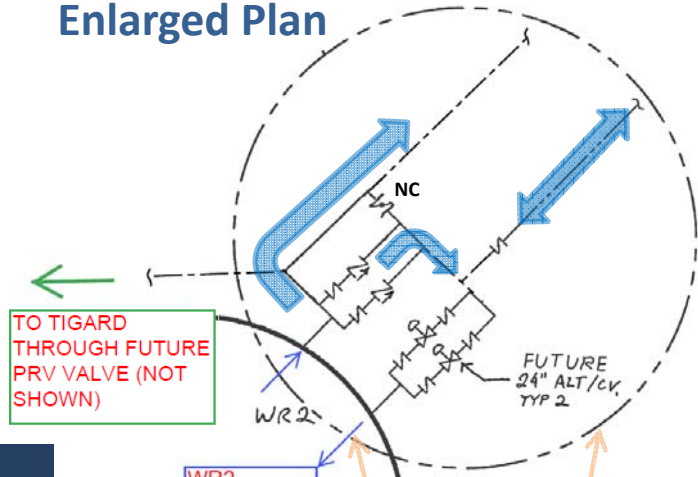
LEGEND:

- TIGARD SUPPLY HGL
- LAKE OSWEGO SUPPLY HGL
- CONNECTION TO EXIST

NORMAL OPERATION

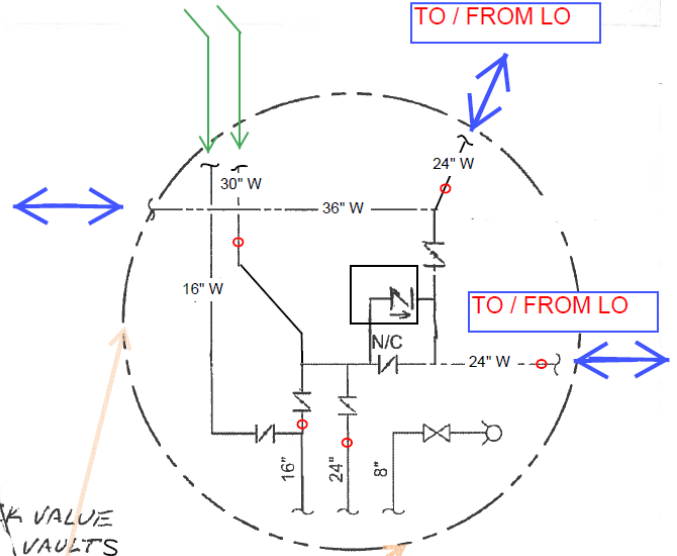


WR2 Vault Enlarged Plan



WR1 EXISTING RESERVOIR

WR1 MIXING MANIFOLD



Intertie Enlarged Plan

NORMAL OPERATION (ENLARGED)

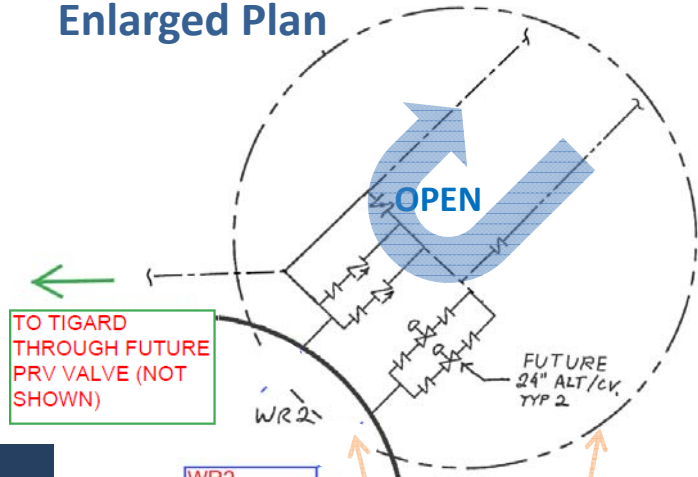


TO TIGARD

LEGEND:

- TIGARD SUPPLY HGL
- LAKE OSWEGO SUPPLY HGL
- o CONNECTION TO EXIST

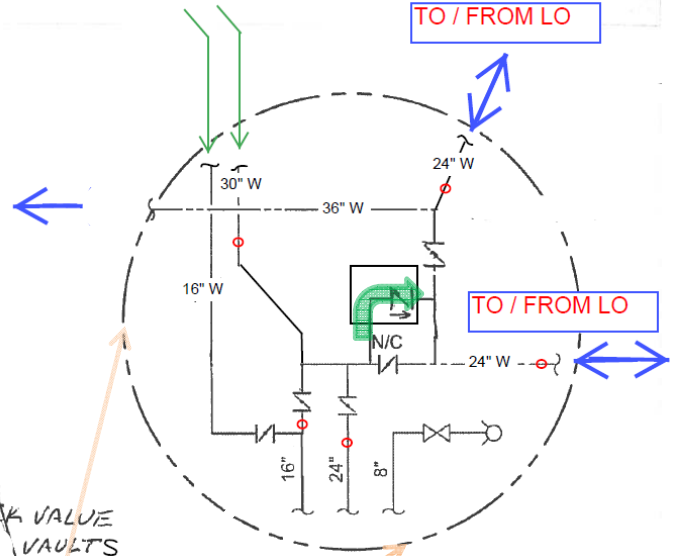
WR2 Vault Enlarged Plan



WR2 MIXING MANIFOLD

WR1 EXISTING RESERVOIR

WR1 MIXING MANIFOLD



Intertie Enlarged Plan

WR2 OUT OF SERVICE



TO TIGARD

LEGEND:

	TIGARD SUPPLY HGL
	LAKE OSWEGO SUPPLY HGL
	CONNECTION TO EXIST

SW STONE AVE (UNIMPROVED)

SW PARKHILL ST

CHECK VALVE VAULTS

16\"/>

FUTURE 24\"/>

OPEN

WR2

TO / FROM LO

TO / FROM LO

←

↔

↗

↔

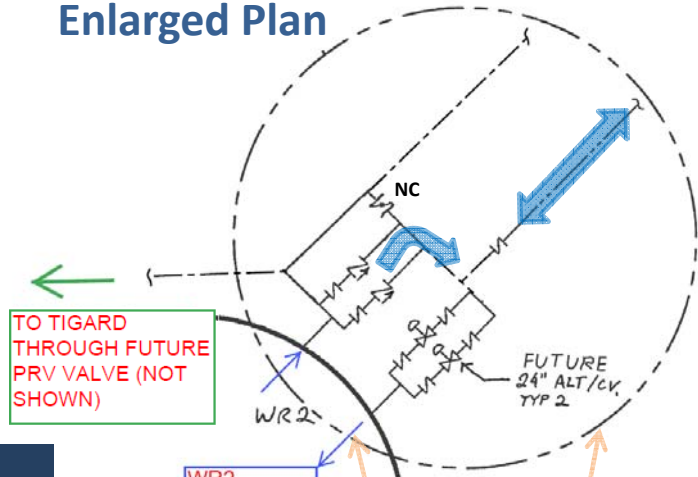
LEGEND:

TIGARD SUPPLY HGL

LAKE OSWEGO SUPPLY HGL

CONNECTION TO EXIST

WR2 Vault Enlarged Plan



TO TIGARD THROUGH FUTURE PRV VALVE (NOT SHOWN)

WR2 MIXING MANIFOLD

WR1 EXISTING RESERVOIR

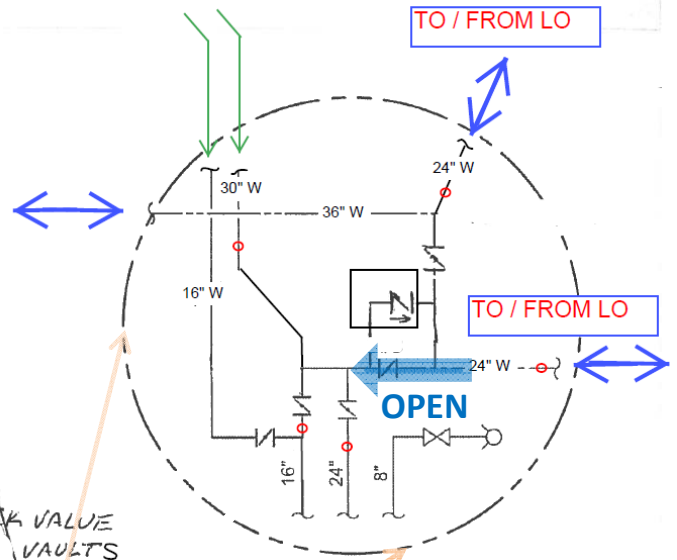
WR1 MIXING MANIFOLD

WR1 OUT OF SERVICE

WR2



Intertie Enlarged Plan



TO / FROM LO

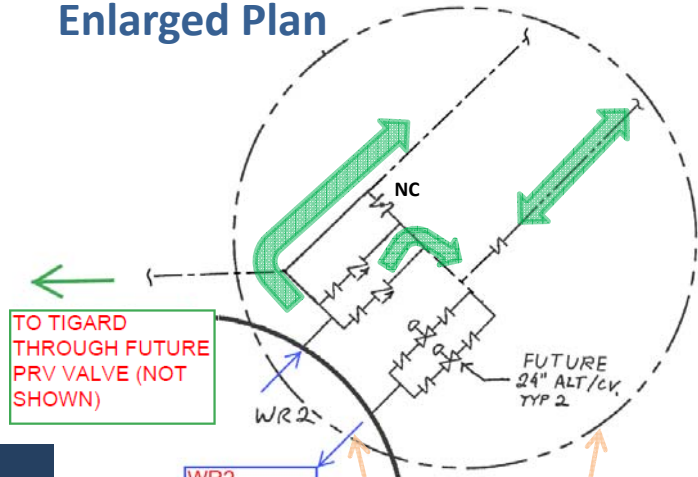
TO / FROM LO

TO TIGARD

LEGEND:

- TIGARD SUPPLY HGL
- LAKE OSWEGO SUPPLY HGL
- CONNECTION TO EXIST

WR2 Vault Enlarged Plan



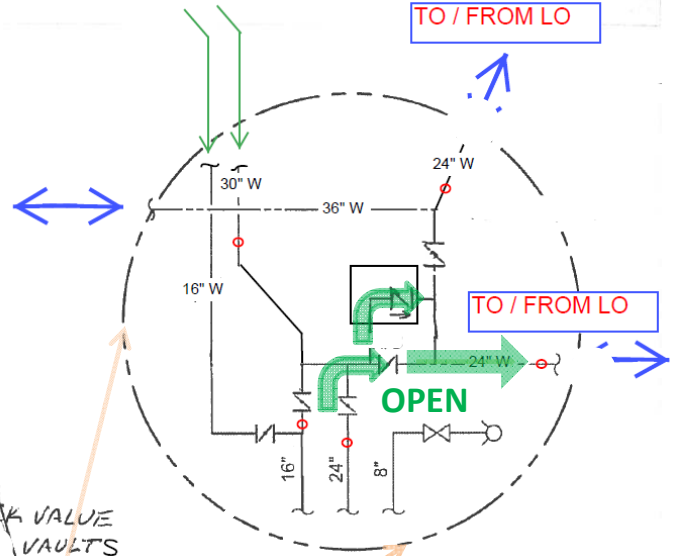
WR2 MIXING MANIFOLD

WR1 EXISTING RESERVOIR

WR1 MIXING MANIFOLD

TO TIGARD

Intertie Enlarged Plan



SUPPLY FROM TIGARD

WR2

SW STONE AVE (UNIMPROVED)

SW PARKHILL ST

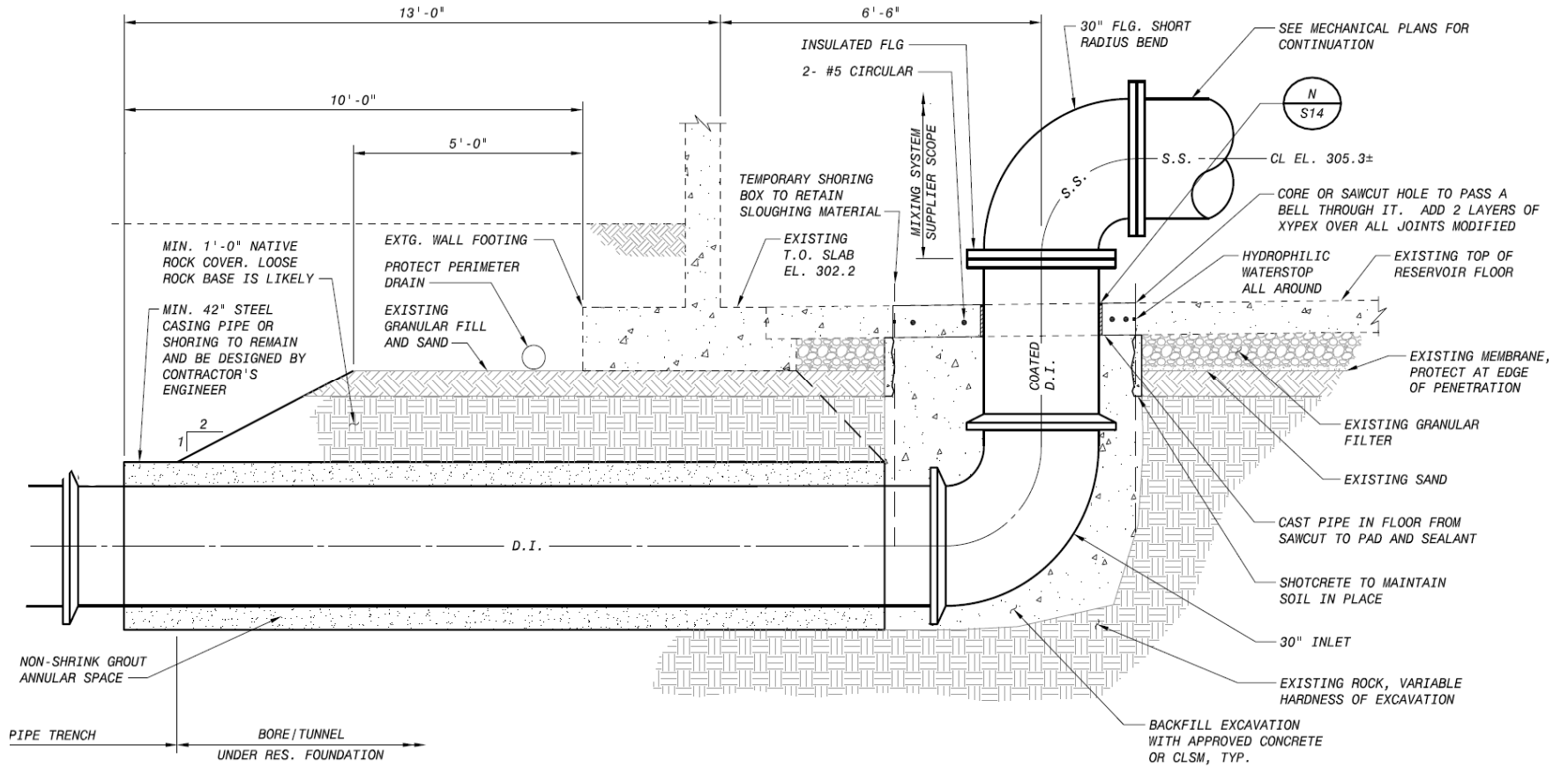
LEGEND:

- TIGARD SUPPLY HGL
- LAKE OSWEGO SUPPLY HGL
- o CONNECTION TO EXIST





WR1 NEW PIPE PENETRATION



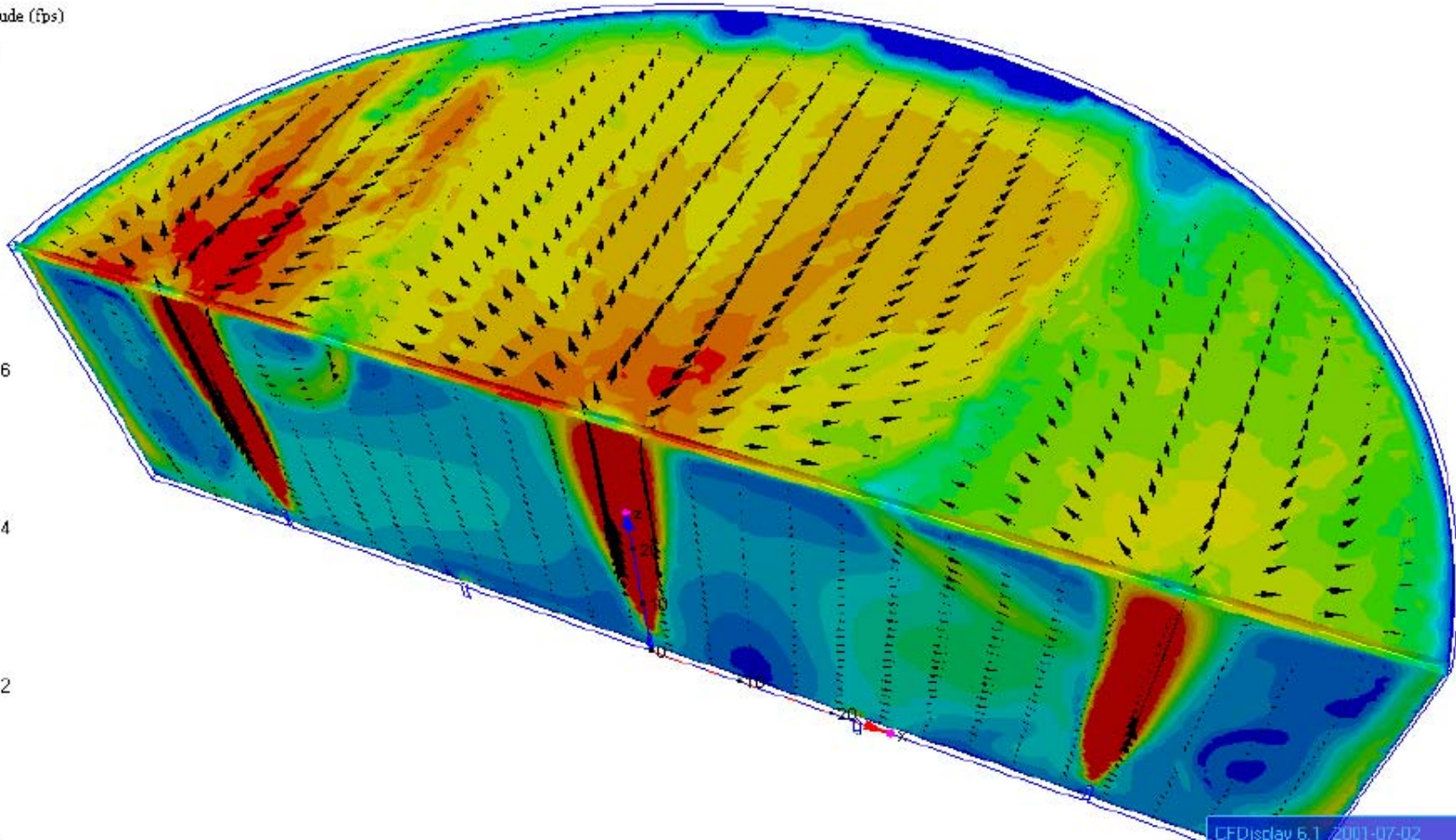


MIXING MANIFOLD WITH VARIABLE ORIFICE
DUCKBILL VALVES

WATER AGE AND MIXING

- MAKING THE ASSUMPTION TRUE
- CONFIGURATION COUNTS
- VELOCITY IS VALUABLE
 - ENERGY FOR MIXING
 - MOMENTUM TO REACH THE TOP

Velocity Magnitude (fps)



Tideflex
Technologies
A Division of Red Valve Company, Inc.

CFDisplay 6.1 2001-07-02
Velocity Magnitude
SMN =0.000e+000 SMX =2.236e+001
Velocity Vector
VMN =-0.000e+000 VMX =-2.236e+001

2. REGULATORS

UNLOCK
IMPROVEMENTS





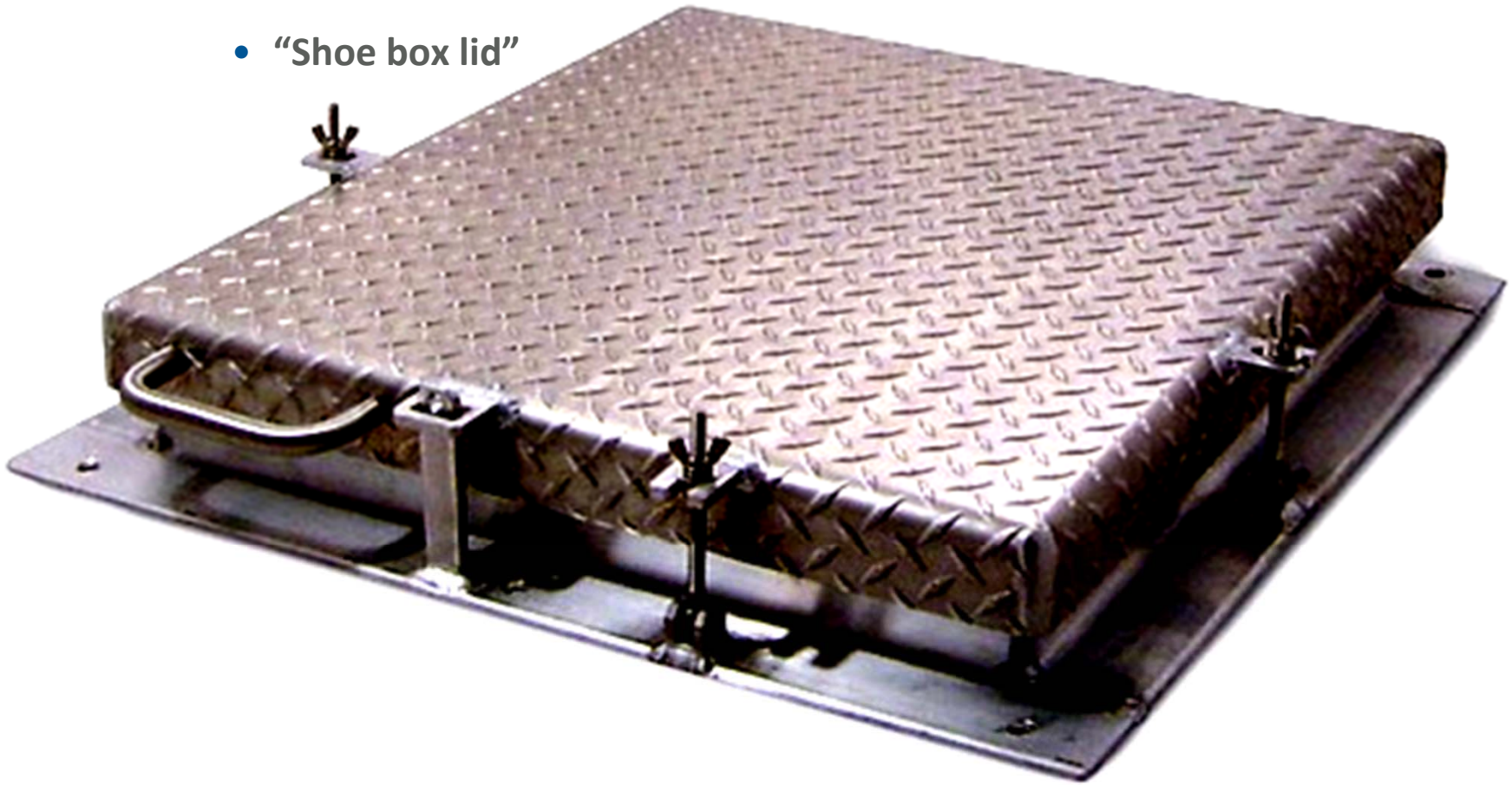
ROOF ACCESS HATCH

- Typical installation: curb, drained floor door
- Oregon Health Authority (OHA): drainage, deterrence



Light Solutions:

- “Shoe box lid”

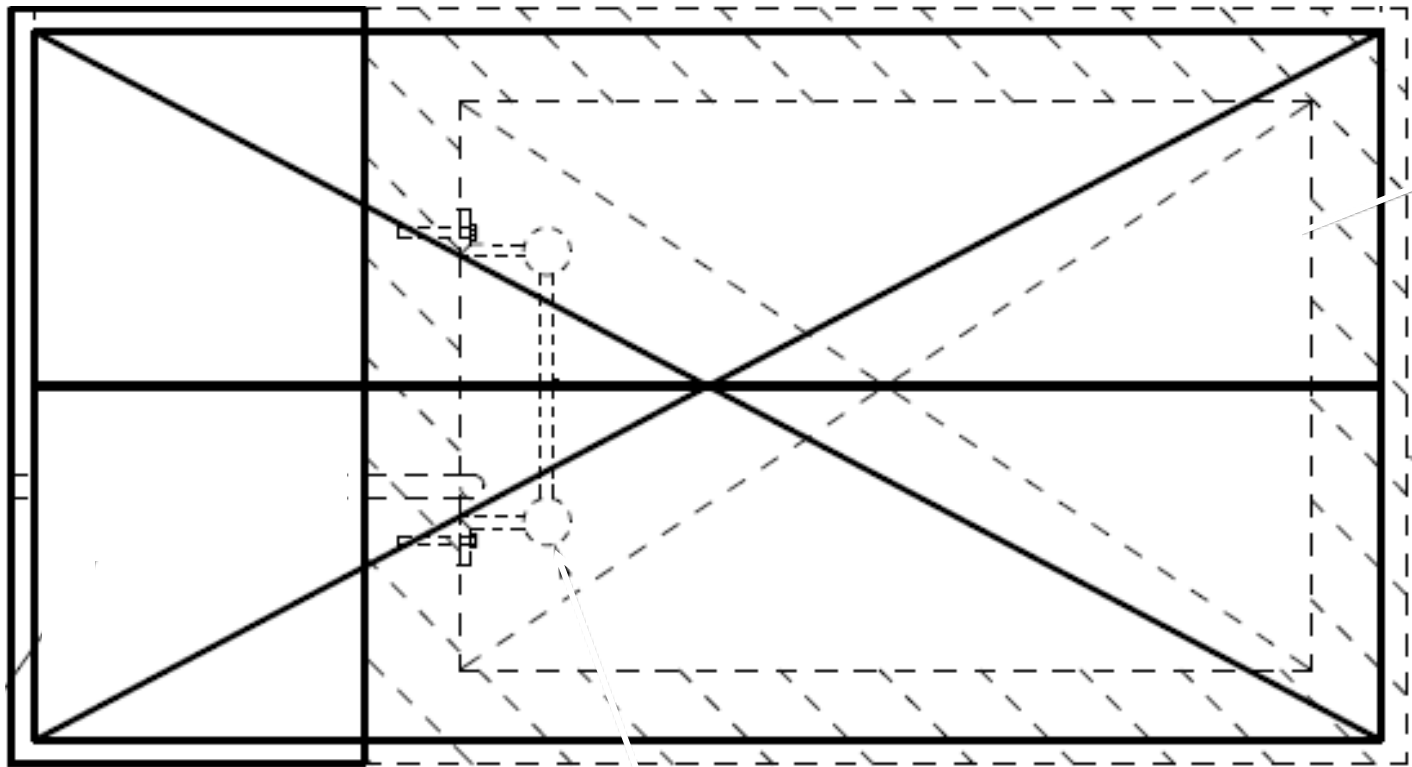


www.versahatch.com/water

Light Solutions:

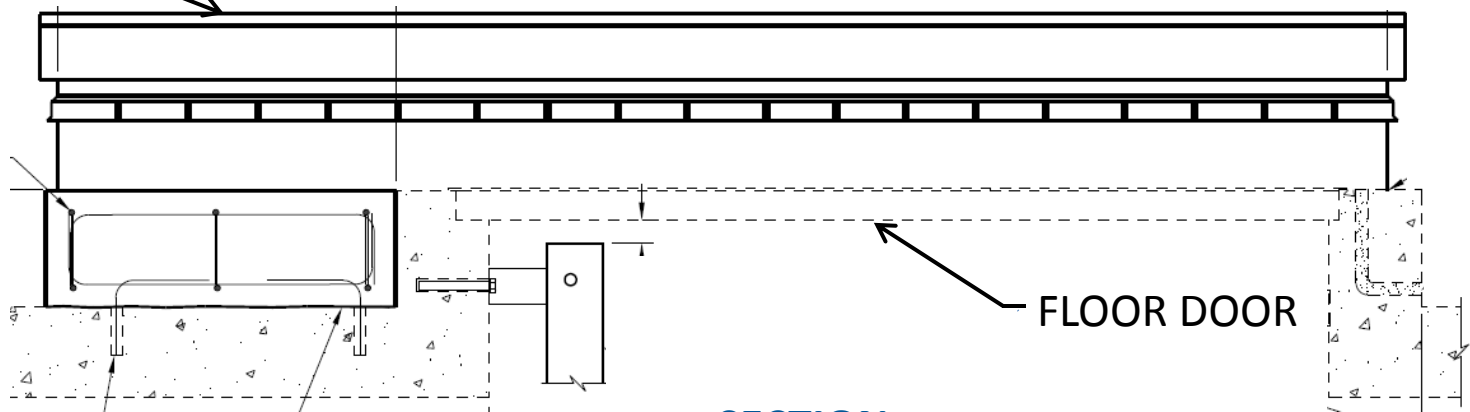
- Roof scuttle





ROOF SCUTTLE

PLAN



FLOOR DOOR

SECTION



3. NEIGHBORS

MAKE IT OURS





OUTREACH APPROACH

- Early Contact
- Neighborhood Meetings
- Face to Face
- Individual Meetings with Property Owners
- Shared Understanding of Project Needs vs Neighborhood Needs





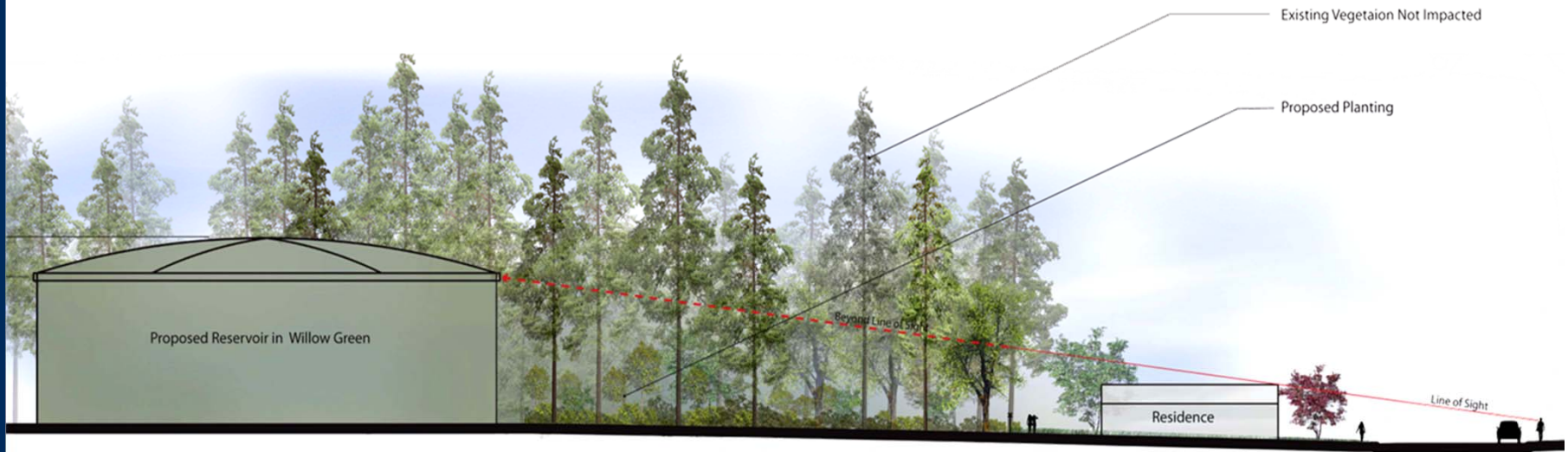
Waluga Reservoir GNP Meeting on 9/29/11

GOOD NEIGHBOR PLAN

- Five meetings from Sept. 2011 to May 2012
- 8 to 30 participants at each meeting
- Good faith effort and commitment by all parties to ensure the Partnership facilities will be compatible with surroundings



DESIGN CHALLENGE





SITE BOUNDARY

EXISTING WR1

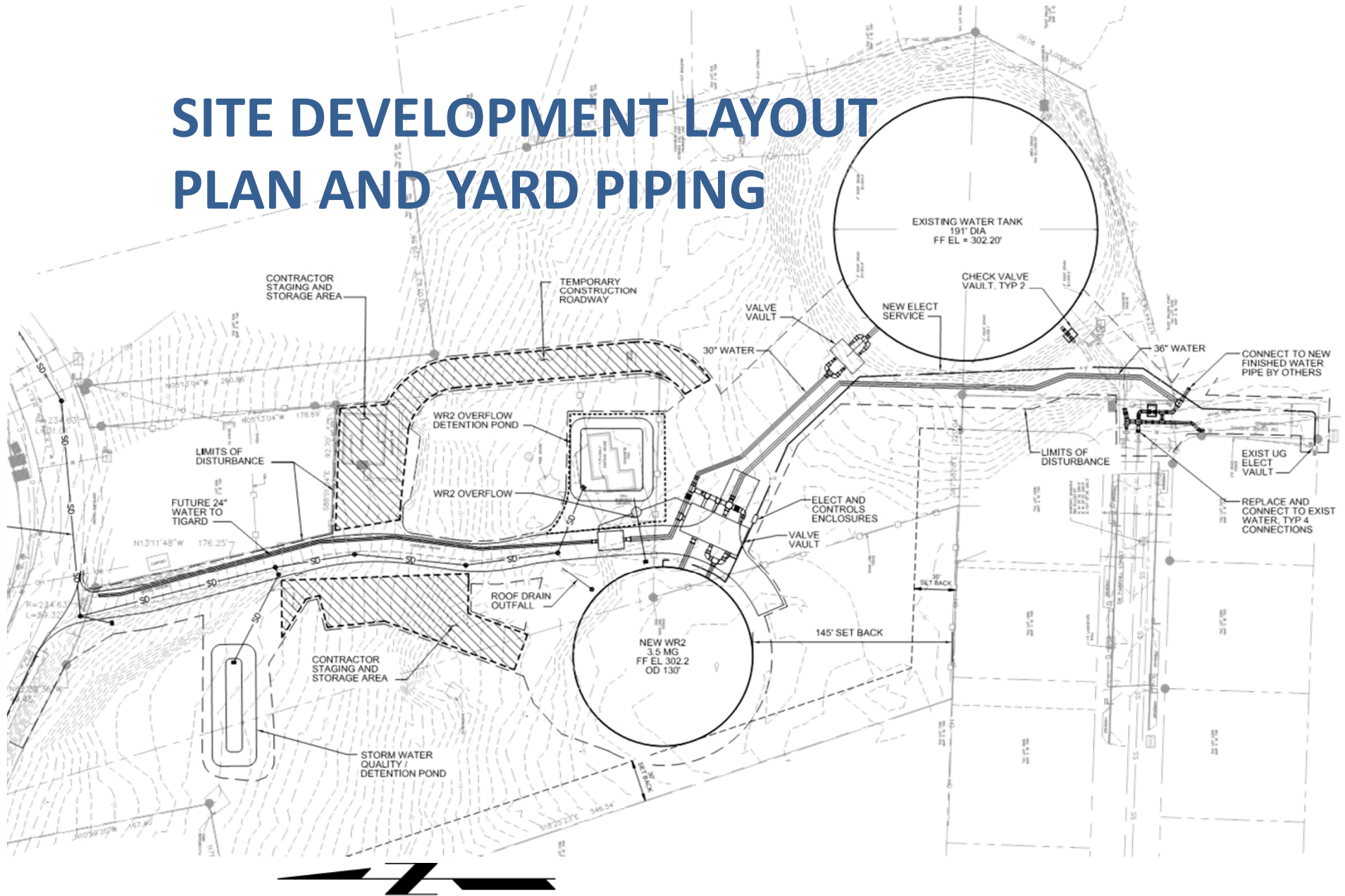
SW Parkhill St.

Manchester Dr.



GREENWORKS

SITE DEVELOPMENT LAYOUT PLAN AND YARD PIPING

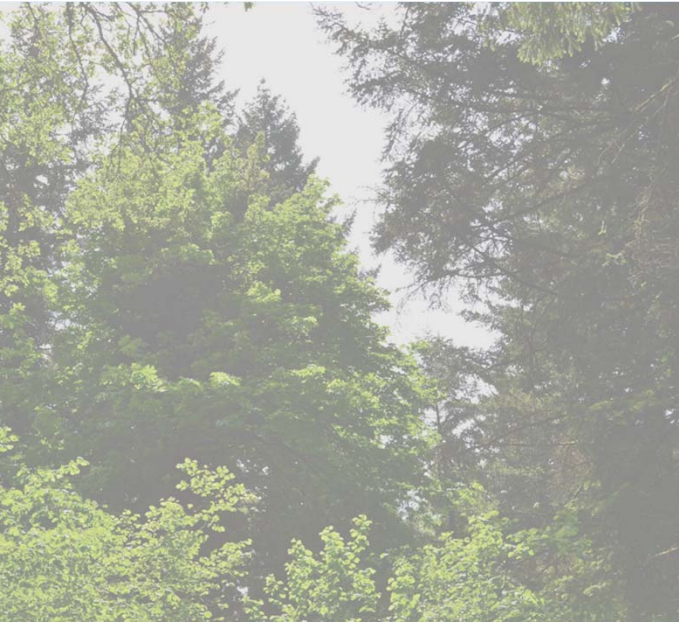
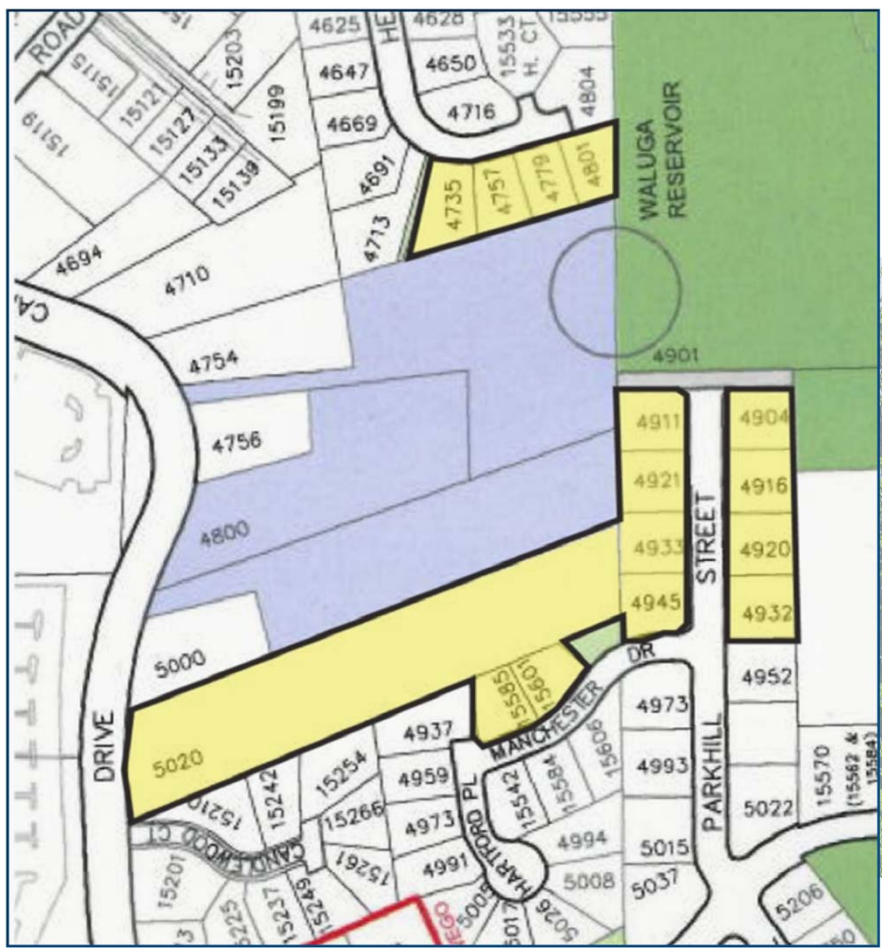




VIEW 2



BACKYARD VISITS





MANNERS DURING CONSTRUCTION

Good Neighbor Plan Incorporation:

- Meet the Contractor Meeting
- Employee Badge System
- Resident Notifications of Activities
- Hot Line Number for Program Contact
- Program Website for Project Updates
- Staff Contact Person





4. CUSTOMER

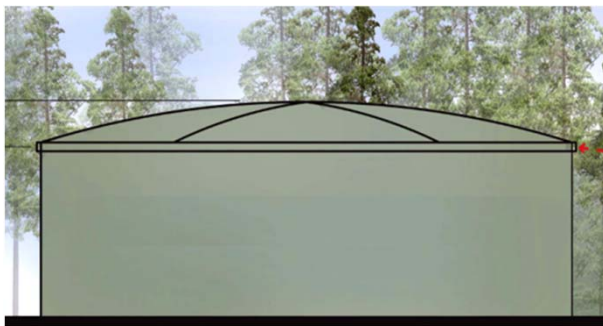
BUY WHAT IS RIGHT





ALTERNATIVE CONCRETE TANK TYPES

AWWA tank type	Horizontal pre-stressing method?	Who can do the pre-stressing?
D110 Type 1	Circumferential strands	DN Tanks (formerly DYK)
D115	Internal Tendons	Any contractor with experience on tendon tanks or bridges



Competition is a healthy thing





SUMMARY







See
partnerships

Strengthen with
focus

**Focus on
relationships
across time**

QUESTIONS ?

Taylor Stockton stocktont@bv.com

David Prock dprock@ci.oswego.or.us



**Lake Oswego · Tigard
Water Partnership**

sharing water · connecting communities



lotigardwater.org · 503-697-6502





Building a **world** of difference.®

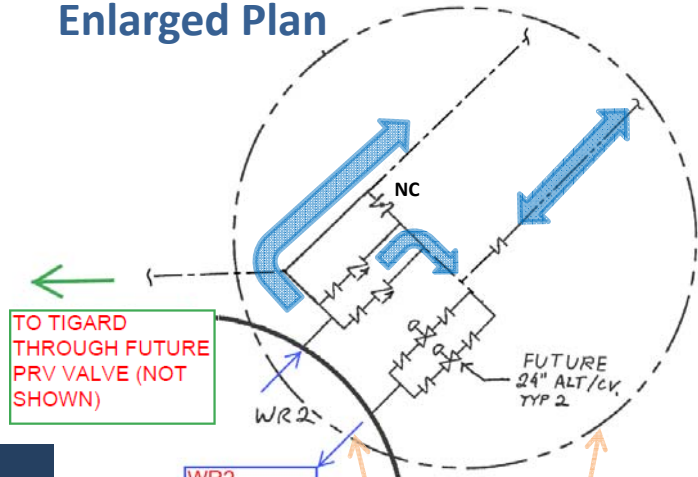
Together



BLACK & VEATCH

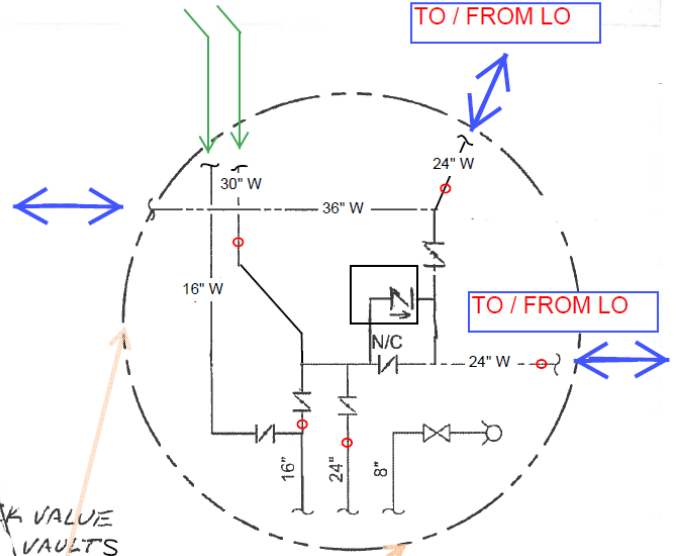
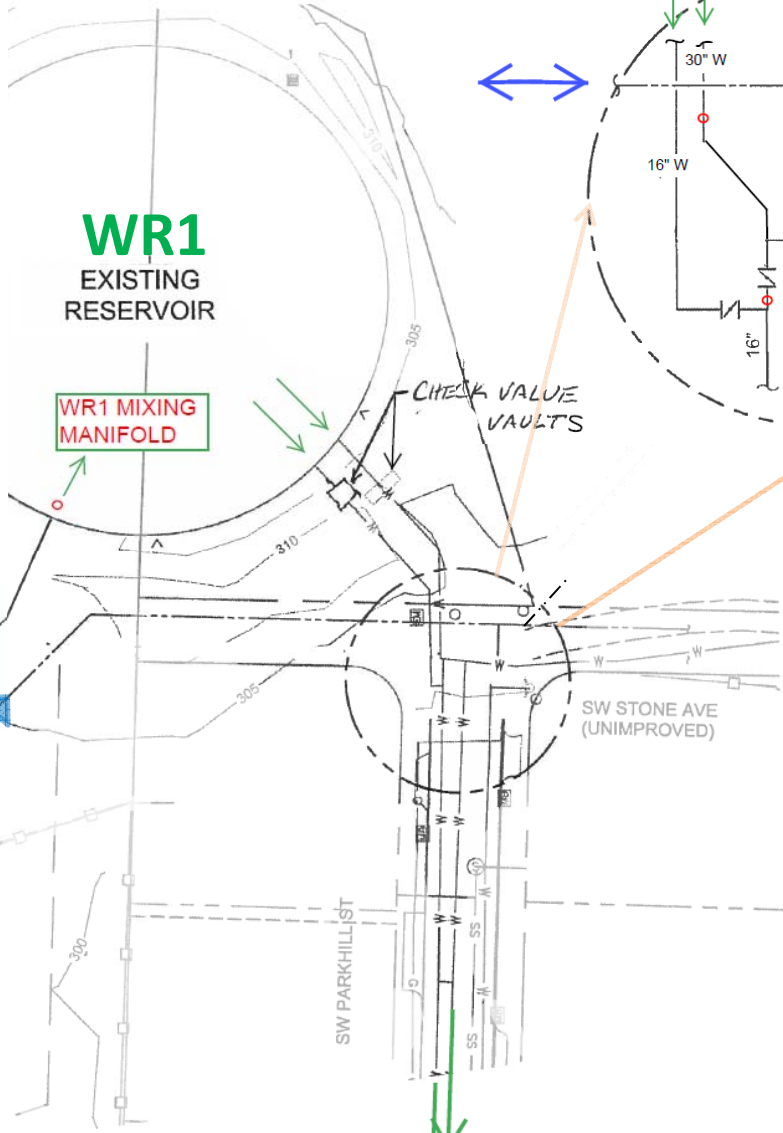
www.bv.com

WR2 Vault Enlarged Plan



WR1 EXISTING RESERVOIR

WR1 MIXING MANIFOLD



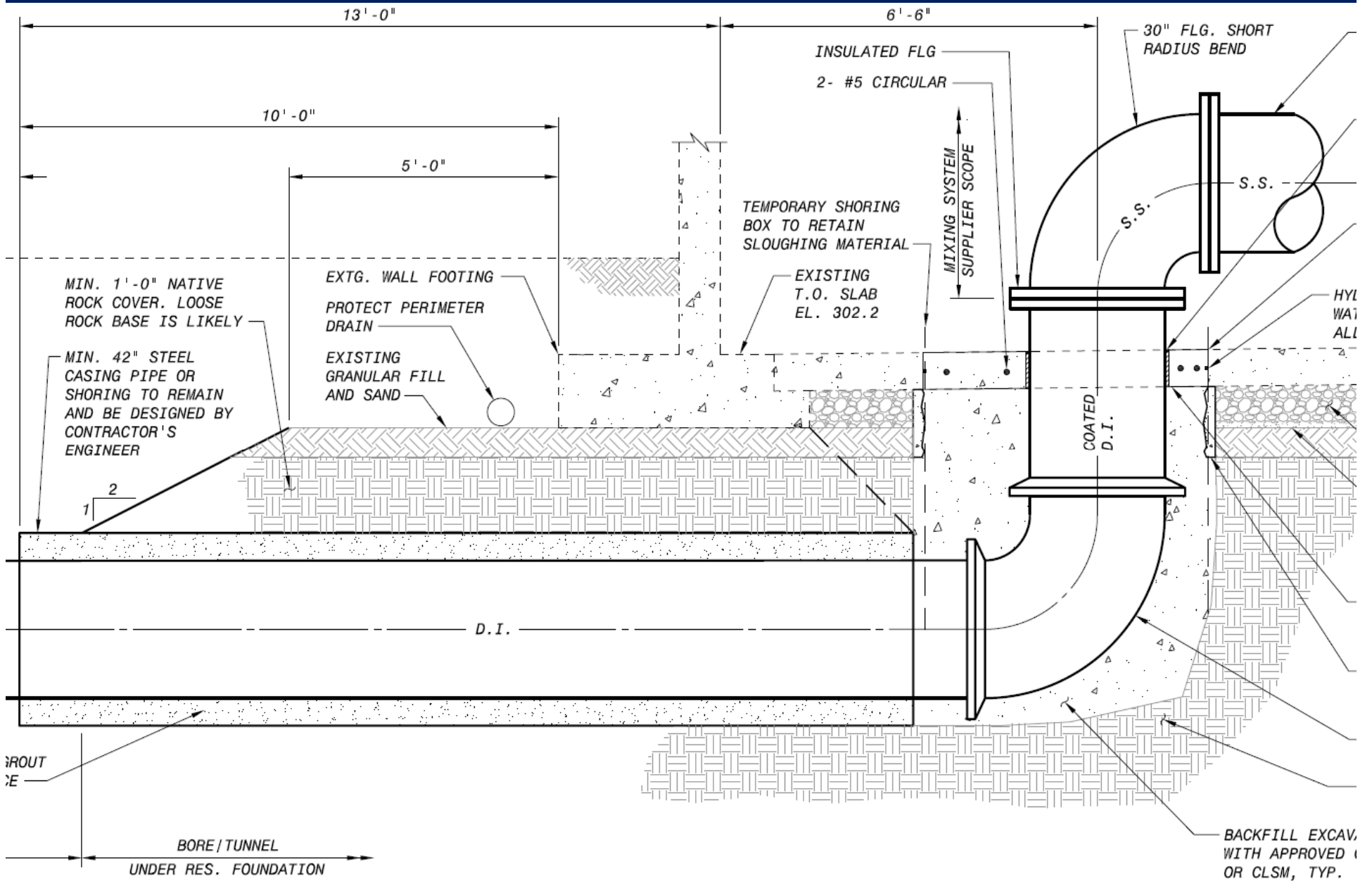
Intertie Enlarged Plan

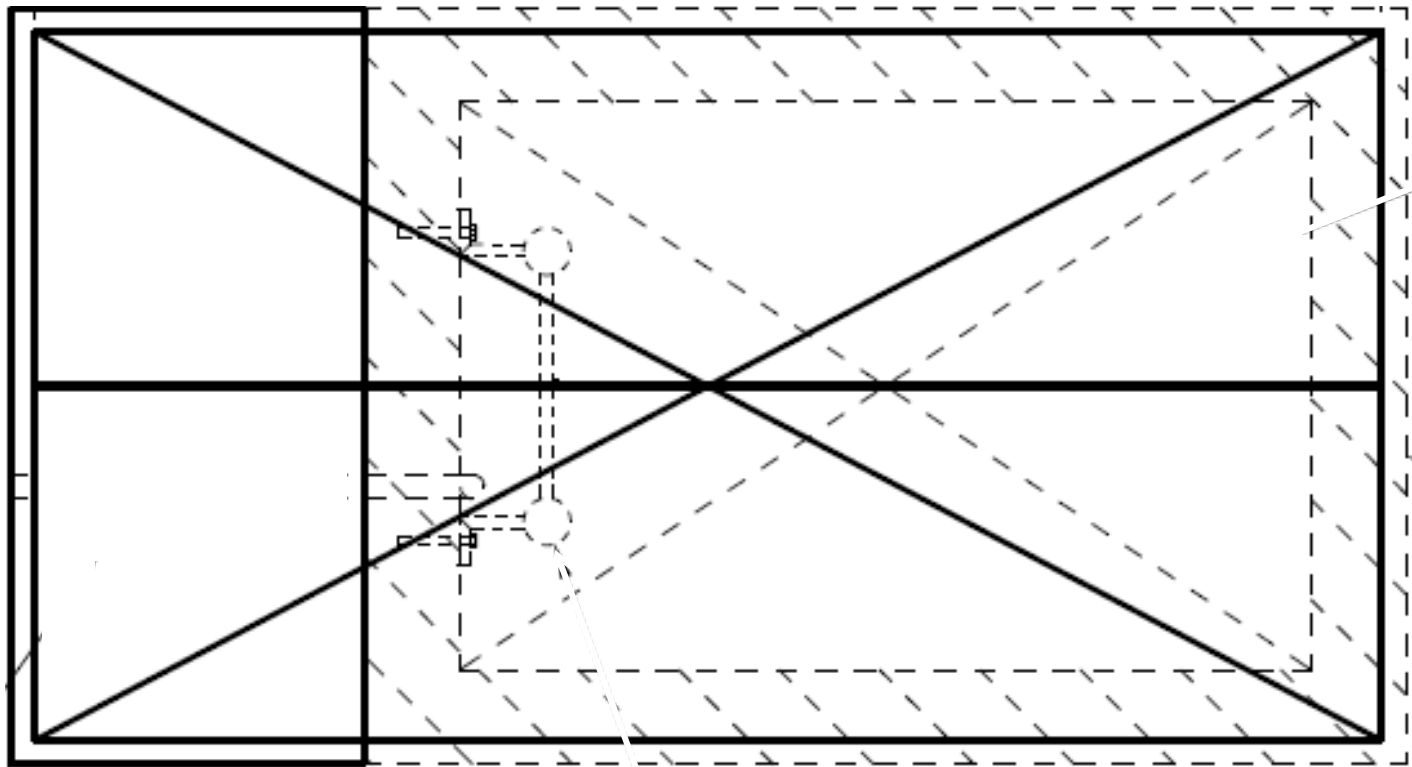
NORMAL OPERATION (ENLARGED)

WR2

LEGEND:

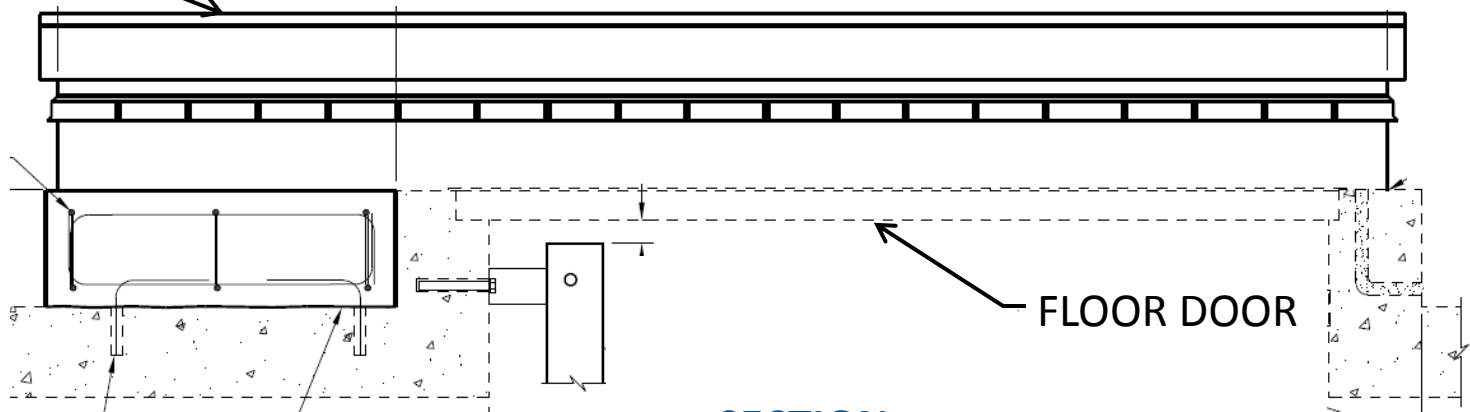
- TIGARD SUPPLY HGL
- LAKE OSWEGO SUPPLY HGL
- o CONNECTION TO EXIST





PLAN

ROOF SCUTTLE



FLOOR DOOR

SECTION

BONITA PUMP STATION

May 2014 to July 2015

WALUGA RESERVOIR

May 2014 to June 2015

