



**TUALATIN VALLEY**  
WATER DISTRICT

# Board Work Session Minutes

June 6, 2023

## WORK SESSION – 6:03 PM

### CALL TO ORDER

Commissioners Present: Jim Duggan, PE; Carl Fisher; Elliot Lisac; Todd Sanders, Jim Doane, PE

Staff Present: Tom Hickmann, Chief Executive Officer; Paul Matthews, Chief Financial Officer; Joelle Bennett, PE, Water Supply Program Assistant Director; Clark Balfour, General Counsel; Andrew Carlstrom, Customer Service Manager; Andrea Watson, Communications and Public Affairs Supervisor; Peter Boone, Chief Operating Officer; Kylie Bayer, Human Resources Director; Sam Kaufmann, District Recorder

### ANNOUNCEMENTS

Tom Hickmann described his recent conversations with the West Slope Water District (WSWD). Mr. Hickmann mentioned the WSWD Board asked their General Manager to reach out to him to begin preliminary discussions on a potential merger.

Tom Hickmann asked the board if they are interested in returning to a hybrid Board meeting format and requested the removal of outdated furniture from the Board room. The Board was OK with the removal of the outdated furniture but agreed there were some technical issues with the hybrid meeting format that need to be addressed.

The board agreed to cancel the July 4 work session.

### DISCUSSION ITEMS

A. Monthly Billing and Advanced Metering Infrastructure Staff Report – Andrew Carlstrom

Andrew Carlstrom presented his report on Monthly Billing and Advanced Metering Infrastructure.

B. Update to the District's Financial Management Policies Staff Report – Paul Matthews

Paul Matthews presented his update on the district's financial management policies.

C. Willamette Water Supply System Commission Update. Staff Report – Joelle Bennett, P.E.

Joelle Bennett presented the Willamette Water Supply System Commission Update.

## ADJOURNMENT

There being no further business, President Sanders adjourned the meeting at 7:49 p.m.

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Todd Sanders, President

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Jim Doane, Secretary



# BE SURE TO MUTE AND UNMUTE

Please remember to unmute whenever you are speaking and mute yourself when you are done during the work session this evening.

# PROPOSED BOARD ROOM CONFIGURATION

## Updates for In Person Board Meetings

### Goals:

- Provide the Board with the best possible audio and visual experience
- Streamline set up process and better use the multi-purpose space
- Meet Oregon State participation requirements (Hybrid access)

### Proposed Changes:

- Orient the Board to face the big screen
- Use multi-use tables with covers instead of old wooden desks

# PROPOSED LAYOUT

Public Seating

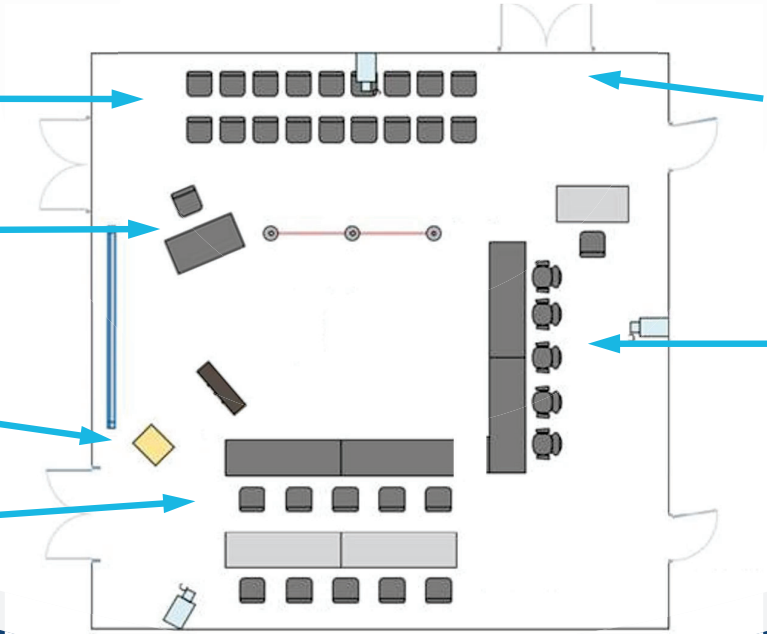
Testimonial Table

Presenter Podium

Staff Seating

Public Entrance

Board Seating



# ENTRY AND BOARD VIEW



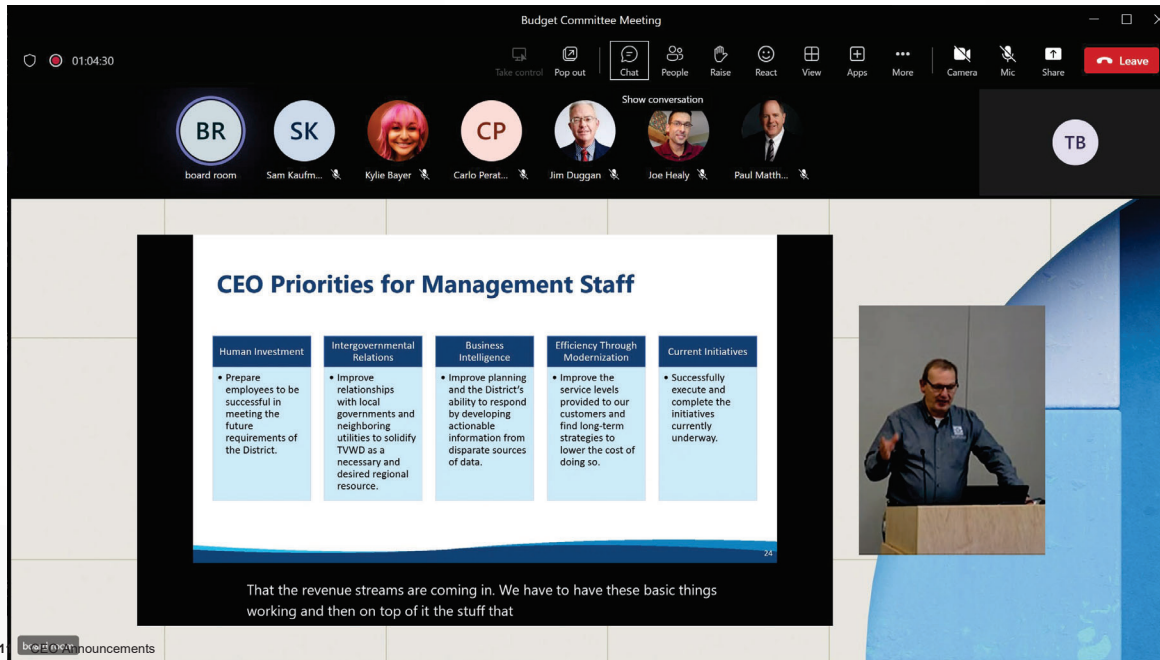
# BOARD SEATING



# PUBLIC AND TESTIMONIAL SEATING



# ONLINE PARTICIPANT VIEW



## JULY 4 WORK SESSION

Due to the Fourth of July holiday, staff recommend canceling the July 4<sup>th</sup> work session.

# BOARD COMMUNICATIONS LOG

There was one update to the Board Communications Log this month. Notes from the April 10<sup>th</sup> Finance Committee meeting were transmitted to Commissioners.

## Discussion Items





# Modernization: CIS, Monthly Billing, Advanced Metering Infrastructure (AMI)

*June 6, 2023 Board Work Session*

Andrew Carlstrom  
TVWD Customer Service Manager



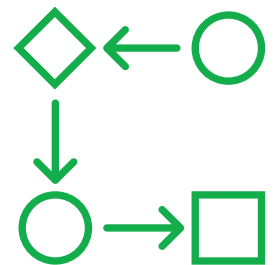
## CIS, Monthly Billing



## Customer Information System (CIS) Update

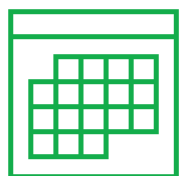
- **Underway: Now**
  - CIS “normalization” – continued operational adaptation to CIS
  - Ongoing operations governance\*, “Phase 2” prioritization
  - Resumption of collections activities underway

\*TVWD has transitioned to ongoing operations governance with partner Clean Water Services and vendor Open International (required by CIS contract). Three Teams: Executive, Oversight, Service Delivery.



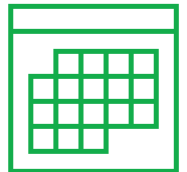
## Monthly Billing

- **Current State – TVWD + Joint TVWD/CWS Residential Customers**
  - Bimonthly reading + billing
- **Rate Advisory Committee Recommendation**
  - Monthly billing recommended by first RAC (2017)
  - TVWD deferred until new CIS implemented
  - TVWD, CWS determined to keep out of CIS go-live scope
- **Monthly Billing Considerations**
  - Range of monthly billing approaches to achieve;
  - Interim versus long-term solutions
  - TVWD, CWS assessed options, determined to implement an initial monthly billing pilot now, led by TVWD project manager
  - Longer-term: AMI will provide consumption data monthly billing
  - Pilot work will contribute to roadmap for scaling monthly billing



## Monthly Billing Pilot

- **Address affordability**
  - Provide pilot project customers monthly billing frequency, a recommendation of the first Rate Advisory Committee
- **Critical contribution in development of roadmap for scaling monthly billing to all TVWD/CWS residential customers**
  - With meter data from Advanced Metering Infrastructure
- **Key elements for residential monthly billing pilot project**
  - Define > Plan > Execute (current phase) > Close
  - Discrete pilot area – within current reading/billing cycle (570 customers)
  - Selection included criteria of <50% median income (ARPA qualified)
  - Operational cutover in August 2023
  - First bills generated September 2023



## Advanced Metering Infrastructure (AMI)



## Advanced Metering Infrastructure (AMI)

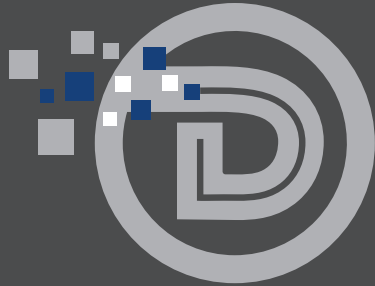
- **Priority District Initiative for 2023 – 2025 Biennium**
  - Included in approved TVWD budget as recommended by Budget Committee
  - Large capital project with significant customer and operational impacts
  - Project is component of TVWD’s meter-to-cash modernization
  - Like CIS, will rely on both external expertise and internal staff engagement
  - Projected implementation timeline to include 2023 -2025 and 2025-2027 biennia
  - Initiative will rely on TVWD funding, federal grant, CWS contribution



## Advanced Metering Infrastructure (AMI)

- **AMI Phases**
  - Business case (current phase)
  - Procurements
  - Start up
  - Proof of concept
  - Installation and deployment
- **Presentation at June 6 Work Session**
  - TVWD consultant for AMI design phase, Diameter Services
  - Consultant also working with Portland Water Bureau on City AMI project





TVWD

## Board Work Session

Design and Implementation Support For  
the District's Advanced Metering  
Infrastructure Project

Diameter Services  
Committee of the Whole  
June 6, 2023

## Background

### Introduction:



Steve Carper  
Conservation  
Technician / Project Manager



Joel Carty,  
President &  
Principal Consultant



### Goals of the Project:

- Tualatin Valley Water District (TVWD/District) plans to implement Advanced Metering Infrastructure (AMI) Project as part of its long-term goal of water supply reliability and efficient water management.

### Background:

- ~60,000 water meters
- Currently Read manually
- Residential customer billed bi-monthly
- Commercial customers are billed monthly

### Purpose:

- Communicate the benefits and costs of Implementing AMI across all water customers

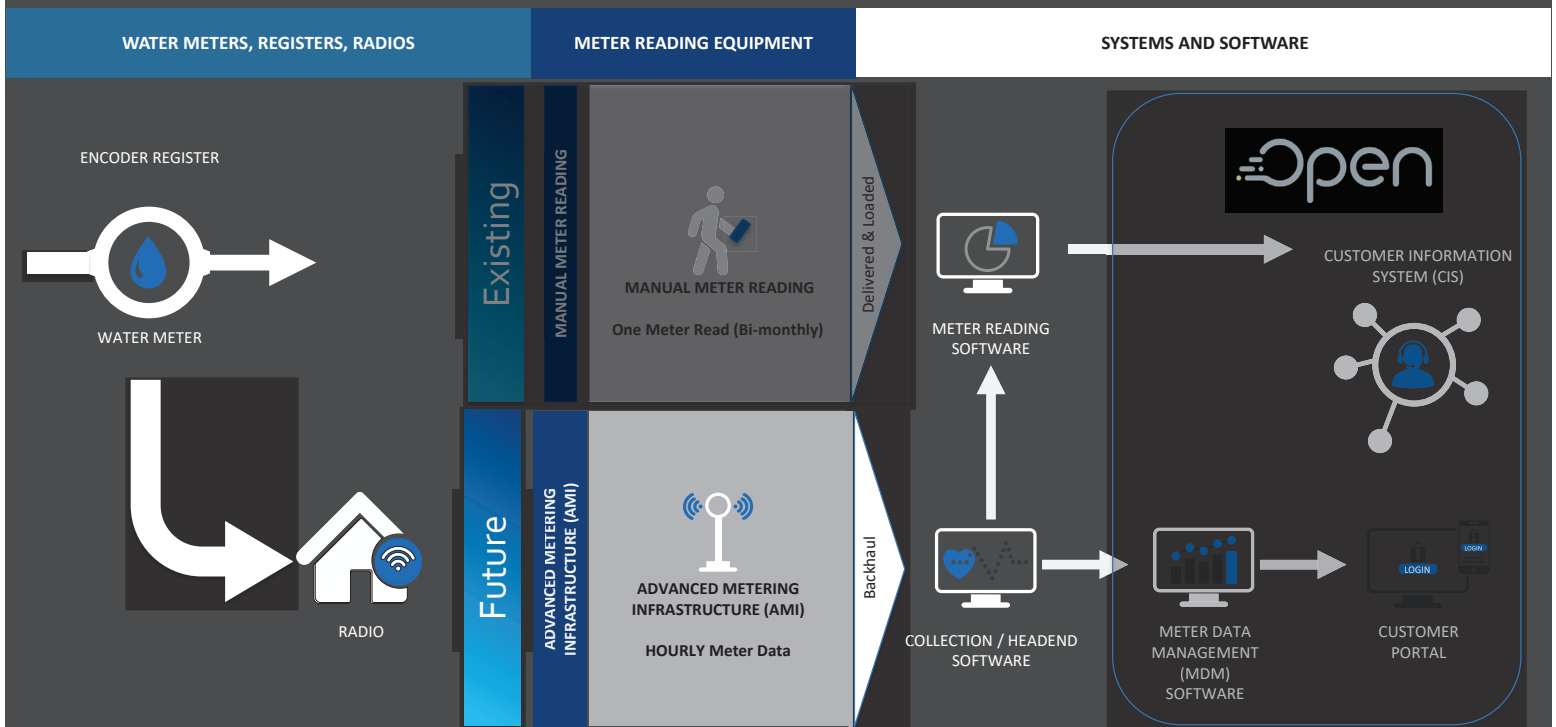


## Recommendations :

- Implementation of an Advanced Metering Technology (AMI) and Water Meter Replacement Project at a cost of ~ \$26,312,000
  - Funding the project through EPA grants, Clean Water Agency, and TVWD rate payers.
- Implement the project over an accelerated schedule (36 months implementation) to maximize economies of scale, deliver consistent customer service levels, avoid technology changes over time and achieve the business drivers identified.



## Technology Overview

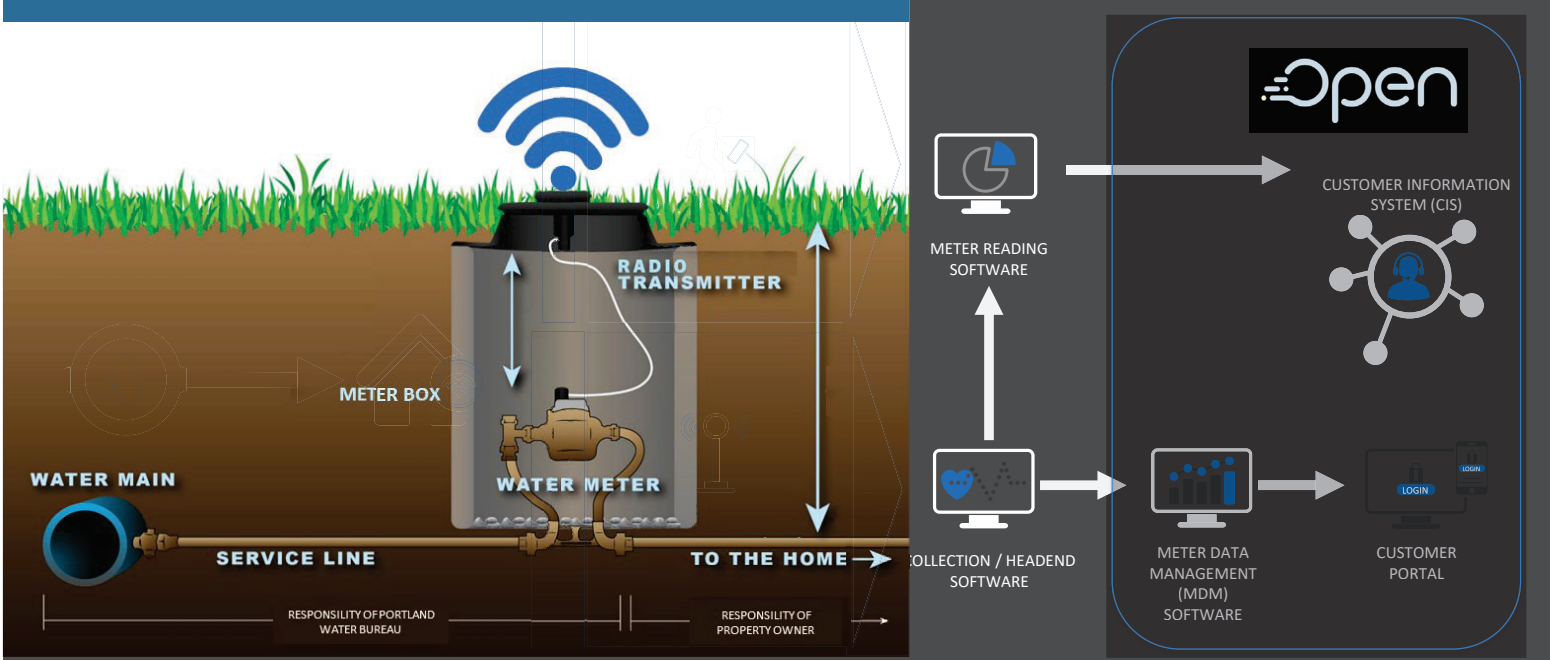


# Technology Overview

WATER METERS, REGISTERS, RADIOS

METER READING EQUIPMENT

SYSTEMS AND SOFTWARE

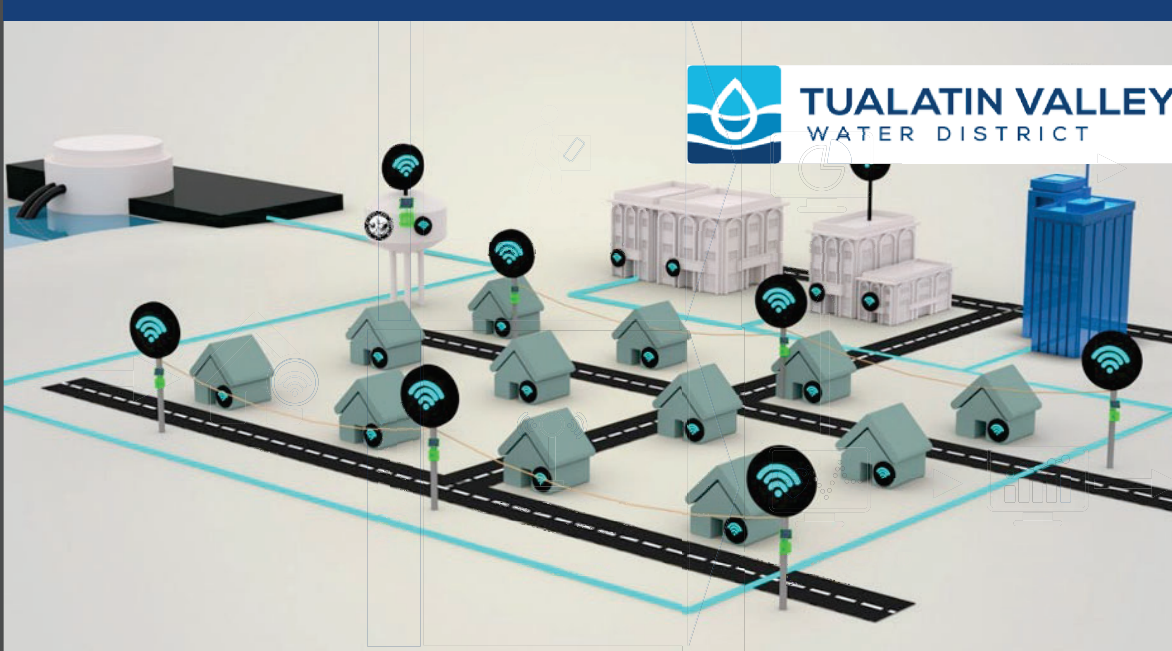


# Technology Overview

WATER METERS, REGISTERS, RADIOS

METER READING EQUIPMENT

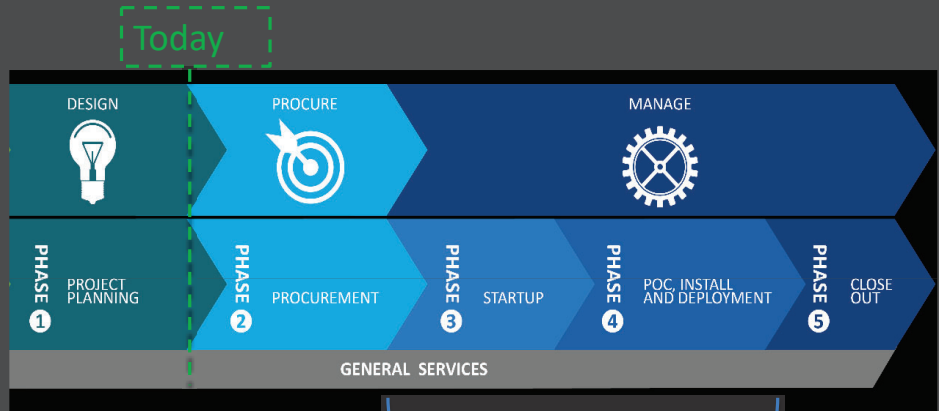
SYSTEMS AND SOFTWARE



## Phase 1

Provides the Right Foundation for the Next Project Phases

- Proven Approach
- End of Phase 1
- 14 tasks complete
- Solid Foundation



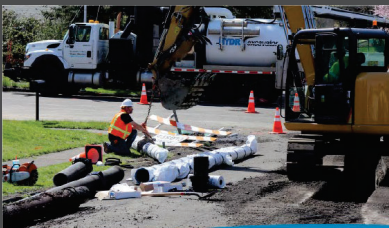
Bureau of Reclamation:  
Funding Required to  
Implementation in 36 months



## AMI Project Aligns with TVWD Strategic Plan

AMI supports:

1. TVWD's five major adopted themes
2. Four of Six TVWD Initiatives



**Adopted Budget**  
2021-2023



1850 SW 17th Ave., Beaverton, OR 97003  
Phone: (503) 948-3000  
@TVWDnews  
www.TVWD.org

### Major Themes

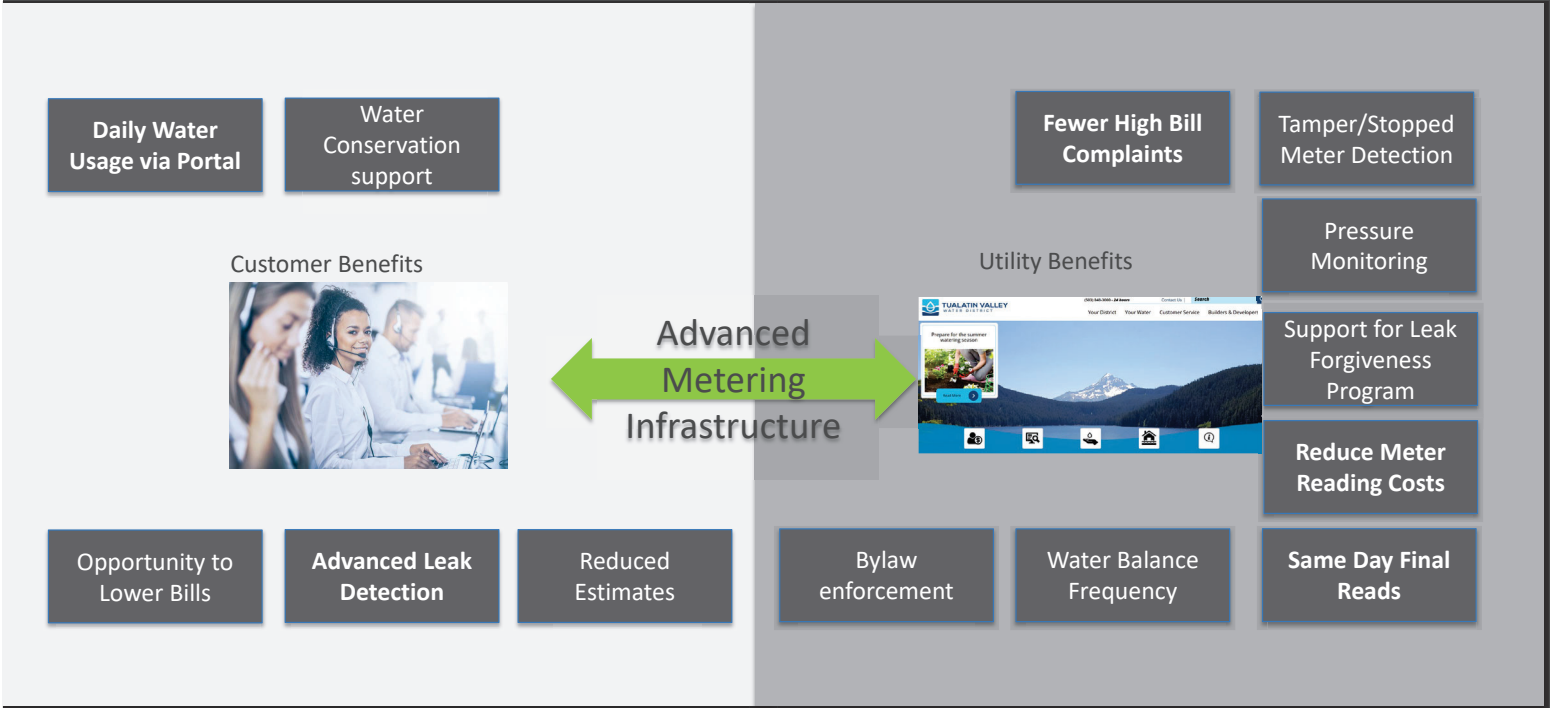
1. Human Investment
2. Intergovernmental Relations
3. Business Intelligence
4. Efficiency through modernization
5. Current Initiatives

### Initiative

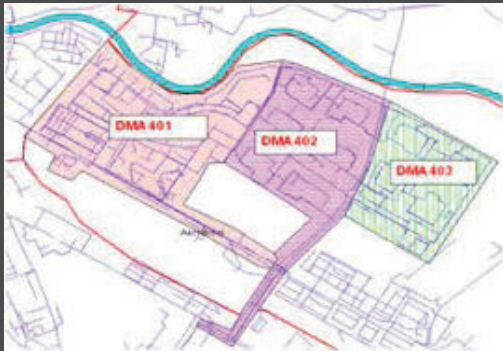
- Initiative 1: Mission, Vision, and Values
- Initiative 2: Classification and Compensation Study
- Initiative 3: Governmental Affairs
- Initiative 4: Business Decisions Data
- Initiative 5: Modernization
- Initiative 6: Complete Existing Initiatives



# The Project Benefits both the Utility and the Customer



# AMI Benefits Distribution System Management



- An Advanced Metering Infrastructure Enables:
  - Enhanced hydraulic modelling capabilities
  - Proper Sizing of Infrastructure by understanding Consumption Demand
  - A better understanding of Distribution System Leaks
  - Backflow Detection
  - Collection of Pressure Data





## Customers Benefit with Better Data



- Leak avoidance / Leak Forgiveness mitigation
  - Tap Drip Saves 382 Gallons per period of \$5
  - Medium sized tap leak would be cost 3800 gallon or \$500 per bill period. See the video
  - Leaky toilet (small leak) = 1,800 gallons bi-monthly whereas a large leak can use 240,000 gallons bi-monthly
- Early detection through leak notifications



## Customers Benefit with Better Data



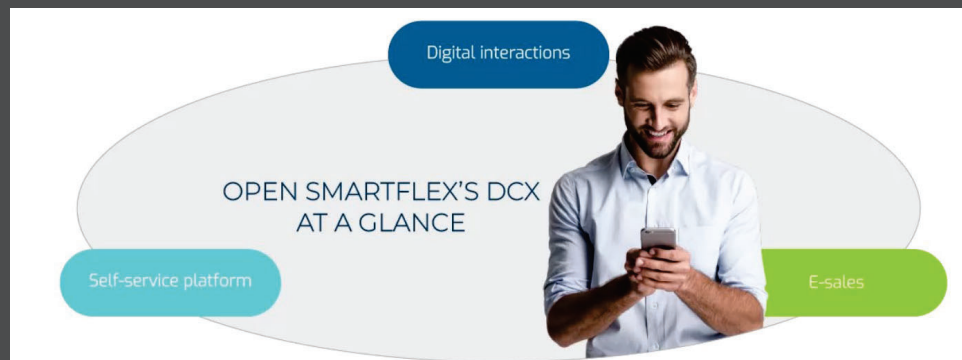
- Leak avoidance / Leak Forgiveness mitigation
  - Leaky toilet (small leak) = Toilet is left running



- Result: 22,344 Gallons per month resulting in \$568 / billing period



## Customers Benefit with Better Data



- Better data to answer customer inquiries / provide data via portal
- Proactive Notifications – i.e. High Consumption
- Daily collection of data enables District to implement monthly billing
- Fewer Estimated Water Bills



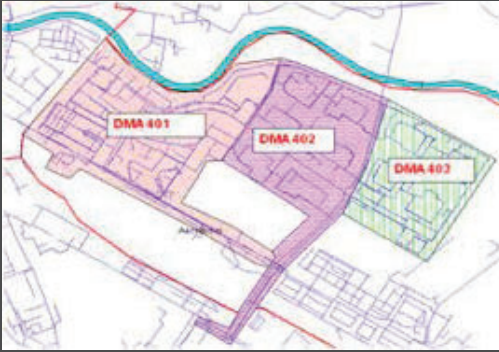
## Conservation Initiatives Benefit from Implementation of AMI



- Data enables the Effectiveness of Conservation Programs to be Measured
  - Allows a targeted approach to both conservation messages and incentives
- By-Law Enforcement (Watering Ban Enforcement)
- Reduced non-revenue water reduces burden on water plan (chemicals and energy)
- Reducing vehicle usage reduces GHG emissions
  - No driving to collect meter reads
  - Elimination of truck rolls to ensure water remains off



# AMI Provides Benefit to Clean Water Services



- Sewage usage charge is volumetric
  - Improved Reading and Accuracy directly impacts CWS' revenue
- Granular data enables better Capital planning of treatment facilities
- Comparing Consumption data with Sanitary Sewer Flow gives indication of Inflows and Infiltration
  - Limiting I&I benefits treatment capacity requirements and energy usage



## Capital Cost Summary

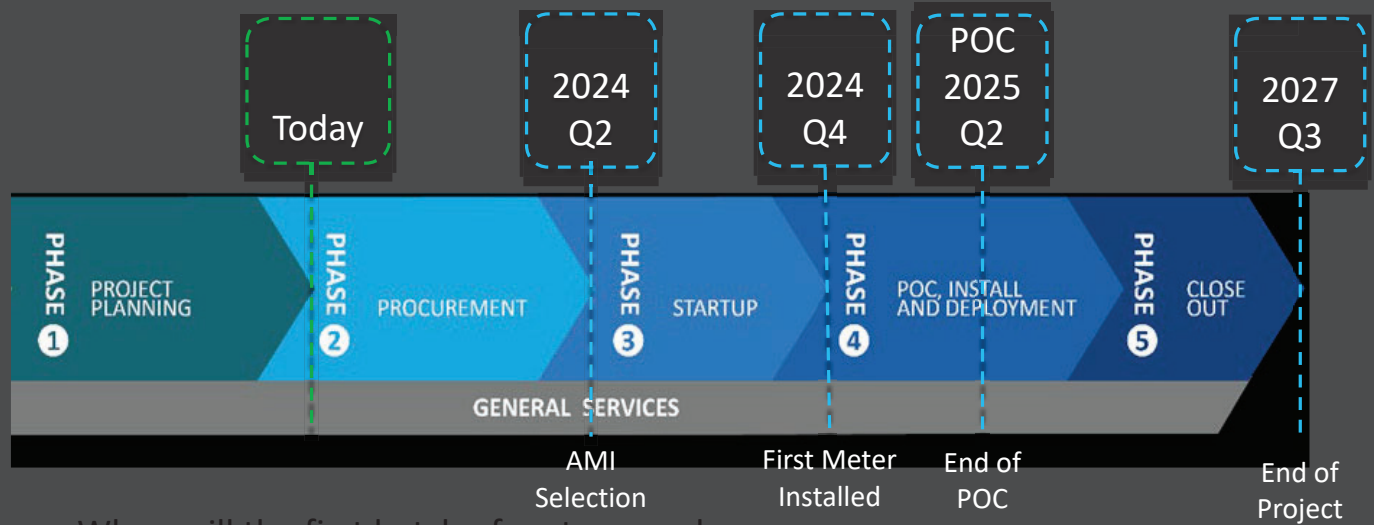
### AMI project costs

- Several interdependent elements exist in an AMI project
- Technology options will be open and selected during procurement
- Budget is higher to allow for contingency and inflationary pressures

Assumption	Project Estimate
Installation	\$9,258,700
Meter Supply	\$5,589,069
AMI Supply	\$6,574,187
(Internal) Project Support	\$1,273,235
Project Support – Consulting	\$2,901,450
Contingency 0.1	\$715,380
<b>Total</b>	<b>\$26,312,021.00</b>



# Project Timeline and Customer Communications

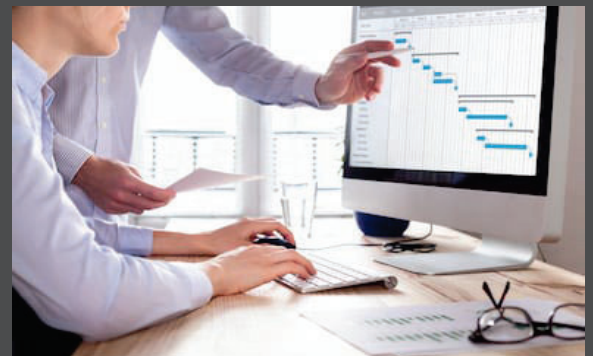


When will the first batch of meters send signal?



## Next Steps

- June 21<sup>st</sup>, 2023 – TVWD Board – Budget Adoption
- July 1, 2023– Procurement Begins
- Regular Board Updates
- Q3-Q4 2027 – Project Complete





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Conservation Technician /  
Project Manager  
Tualatin Valley Water District  
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Mobile: 503.848.3064

Joel Carty  
Principal Consultant  
Diameter Services  
Email: [jcarty@diameterservices.com](mailto:jcarty@diameterservices.com)  
Mobile: 416.305.3409



# Update to District's Financial Management Policies

*Board Work Session*

Paul Matthews, Chief Financial Officer

June 6, 2023

## Overview of Presentation

### Tonight's Presentation

- Purpose of the District's Financial Management Policies
- Proposed New Policies
- Proposed Updates to Existing Policies
- Next steps

## Proposed Changes

### New Policies

- Accepting Grants
- Entering into Leases
- Reporting of Other Commitments and Impairments
- Disclosing Financial Information
- Recording of Time
- Administering Procurement Cards

### Updates to Existing Policies

- Debt

## Purpose of the District's Financial Management Policies

### GFOA's Best Practices

1. Institutionalize good financial management practices.
2. Clarify and crystallize strategic intent for financial management.
3. Define boundaries.
4. Support good bond ratings and thereby reduce the cost of borrowing.
5. Promote long-term and strategic thinking.
6. Manage risks to financial condition.
7. Comply with established public management best practices.

## Grants

### Purpose/Objective

- Ensure compliance is planned from the onset
- Facilitate compliance with *Uniform Guidance*
- Provide point of coordination to facilitate successful acquisition of grants

### Key Requirements

- Pre-application approval process
- Ongoing grant award management/reporting process
- Post-grant closeout requirements
- CFO to issue *Grant Administration Manual* to implement policy objectives

## Leases

### Purpose/Objective

- Ensure compliance with Government Accounting Standards Board requirements
- Assist staff in recognizing leases and other commitments
- Provide specific requirements to ensure the District's business needs are met

### Key Requirements

- Evaluation of contracts, agreements, and other commitments in advance to determine impact on the District's lease reporting requirements
- Provide method of determining the applicable interest rate to be used in valuing leases
- Provide method of determining materiality for leases
- Requires the Chief Financial Officer to issue and maintain a *Lease Accounting Manual*

## Reporting Other Commitments and Impairments

### Purpose/Objective

- Ensure compliance with Government Accounting Standards Board requirements
- Assist staff in recognizing leases and other commitments
- Provide specific requirements to ensure the District's business needs are met
- Comply with requirements of the District's *Continuing Disclosure Certificate for the Water Revenue Bonds, Series 2023*

### Key Requirements

- Requires the reporting of other commitments and/or impairments to the Chief Financial Officer



## Disclosing Financial Information

### Purpose/Objective

- Reduce the risk that inaccurate financial information is disseminated to the public
- Increase the consistency of the financial information disseminated to the public
- Addresses concerns of publicly offered debt

### Key Requirements

- Centralizes the approval of the release of financial information with the District's Chief Financial Officer
- Included as part of the District's overall *Financial Reporting* policies

## Recording of Time

### Purpose/Objective

- Provide consistency in time reporting for the various District needs
- Allows employees to better understand how their time reporting impacts the District's other activities
- Improves likely compliance requirements for future grants, with *Uniform Guidance*, and the District's *Indirect Cost Allocation Plan*

### Key Requirements

- Provides general requirements on how and when to record time
- Includes attestation requirements
- Identifies internal review and approval requirements

## Procurement Cards

### Purpose/Objective

- Provide standards for the administration of the District's Procurement Card program
- Delineate responsibilities of the Procurement Card Administrator, cardholder, and supervisors
- Establish accounting standards for purchases

### Key Requirements

- Provides administrative requirements for the District's Procurement Card program
- Ensures cardholders and supervisors have adequate information to manage their responsibilities for the District's Procurement Card system.
- Aligns District's policies with the state and federal rules, regulations, and laws

## Update to Debt Policies

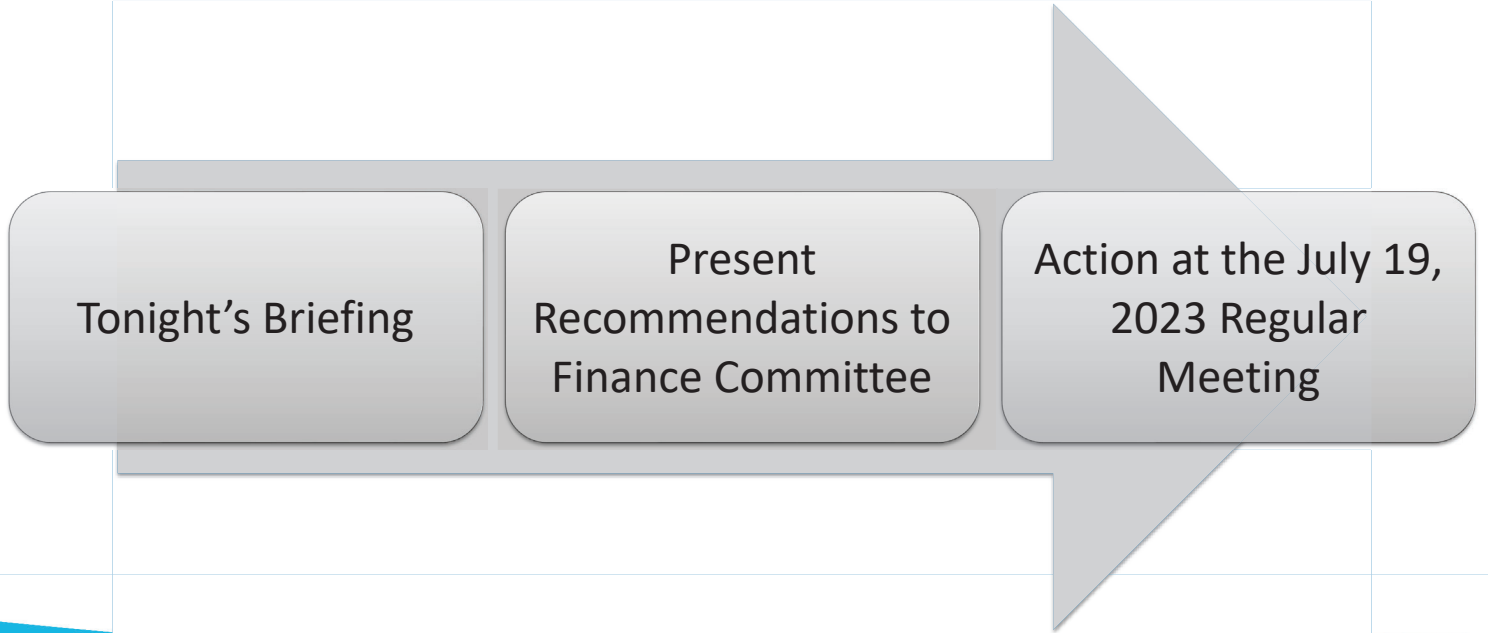
### Purpose/Objective

- Provide guidance on the issuance, structure, and management of the District's short-term and long-term debt
- Ensures the District's activities related to debt are consistent with its ability to repay
- Aligns the District's financial obligations with existing legal, economic, financial and market conditions

### Key Requirements

- No new requirements
- Clarification on the retention of a *Rebate Service Provider*
- Update existing requirements to modernize the policies

## Proposed Next Steps



## Questions and Answers

*Update to District's Financial Management Policies*

Board Work Session

June 6, 2023

# Willamette Water Supply System Commission Update

TVWD Board Work Session  
June 6, 2023

## Outline



# REVIEW JUNE WWSS COMMISSION BOARD MEETING AGENDA

## Willamette Water Supply System Commission June 1, 2023 Board Meeting Agenda

1. Executive Session
2. General Manager's Report
3. Public Comment
4. Consent Agenda
  - A. Approve the April 6, 2023 meeting minutes
  - B. Adopt the FY2023-24 WWSS Board Meeting Schedule
5. Business Agenda
  - A. Approve WWSP Program and Construction Management Services FY 2024 Annual Work Plan
  - B. Adopt PLM\_1.0 Wilsonville Ground Lease Amendment 2
6. Information Items
  - A. The next Regular Board Meeting scheduled on August 3, 2023

# REVIEW APPROVALS AND PROCUREMENTS FORECAST

Approvals and Procurement Forecast for April – August 2023

## Program Baseline or Related Plans

Description	Program Director	WWSS Management Committee	WWSS Commission Board
Natural Hazard Mitigation Plan	N/A	1/19/2023	4/6/2023

## Approvals and Procurement Forecast for April – August 2023

# Real Estate

Description	Program Director	WWSS Management Committee	WWSS Commission Board
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## Approvals and Procurement Forecast for April – August 2023

# IGAs, MOUs, Permit Commitments

### City of Sherwood

- DCS\_1.0 Broadband Services IGA (April)

### City of Wilsonville

- Ground Lease for Raw Water Pipeline, Amendment No. 2 (June)

## Approvals and Procurement Forecast for April – August 2023

# Contracts

Title	Goal	Value	Key Dates
--	--	--	--

## Approvals and Procurement Forecast for April – August 2023

# Contract Amendments and Change Orders\*

Title	Goal	Value	Key Dates
Permitting Services Contract	System-wide permitting services for the next year	\$783k	WWSS Board Approval: 4/6/2023
WWSP Program and Construction Management Services FY 2024 Annual Work Plan	Approve scope, staffing, and fee for program and construction management services for FY 2024	\$23.2M	WWSS Board Approval: 6/1/2023

\*having values higher than the Program Director's authority



## Approvals and Procurement Forecast for April – August 2023

# Local Contract Review Board Rule Exemption

Title	WWSS Management Committee Approval	WWSS Board Informational Item	WWSS Board Consider Approval
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## UPDATE ON WWSP ACTIVITIES

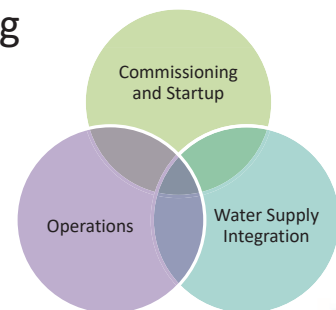
# Key Accomplishments & Focus Areas

- Progressing procurements
  - Executed contract renewal for Permitting with DEA
  - Executed contract amendment with Confluence for Integration Plan Phase 2
  - Developing new task order with Consor for Public Outreach
- Continued operations planning workshops
- Held water supply integration communications workshops
- Project Highlights
  - Completed Tualatin River tunnel – PLM\_4.3
  - Completed 66” waterline installation on PLM\_4.1
  - Completed 48” waterline installation on PLW\_1.2

- Coordinating projects delivery with partners, agencies, and developers
- Constructing projects

Pipelines	PLM_1.3, PLM_4.1, _4.2, _4.3, _4.4, _5.3; PLW_1.2, _1.3; PLW_2.1; MPE/COB_1.1, _1.2, _1.3
Facilities	WTP_1.0; RWF_1.0; RES_1.0

- Progressing planning



Excludes IGAs/MOUs, ROW, and Permits

# Water Supply Integration Communications

- Comms planning - workshop series
  - Established values and goals
  - Collaborated on audience needs
  - Identified how we want to collaborate as Partners
  - Reviewed recommended strategies (approaches, needs, schedule)

## Example:

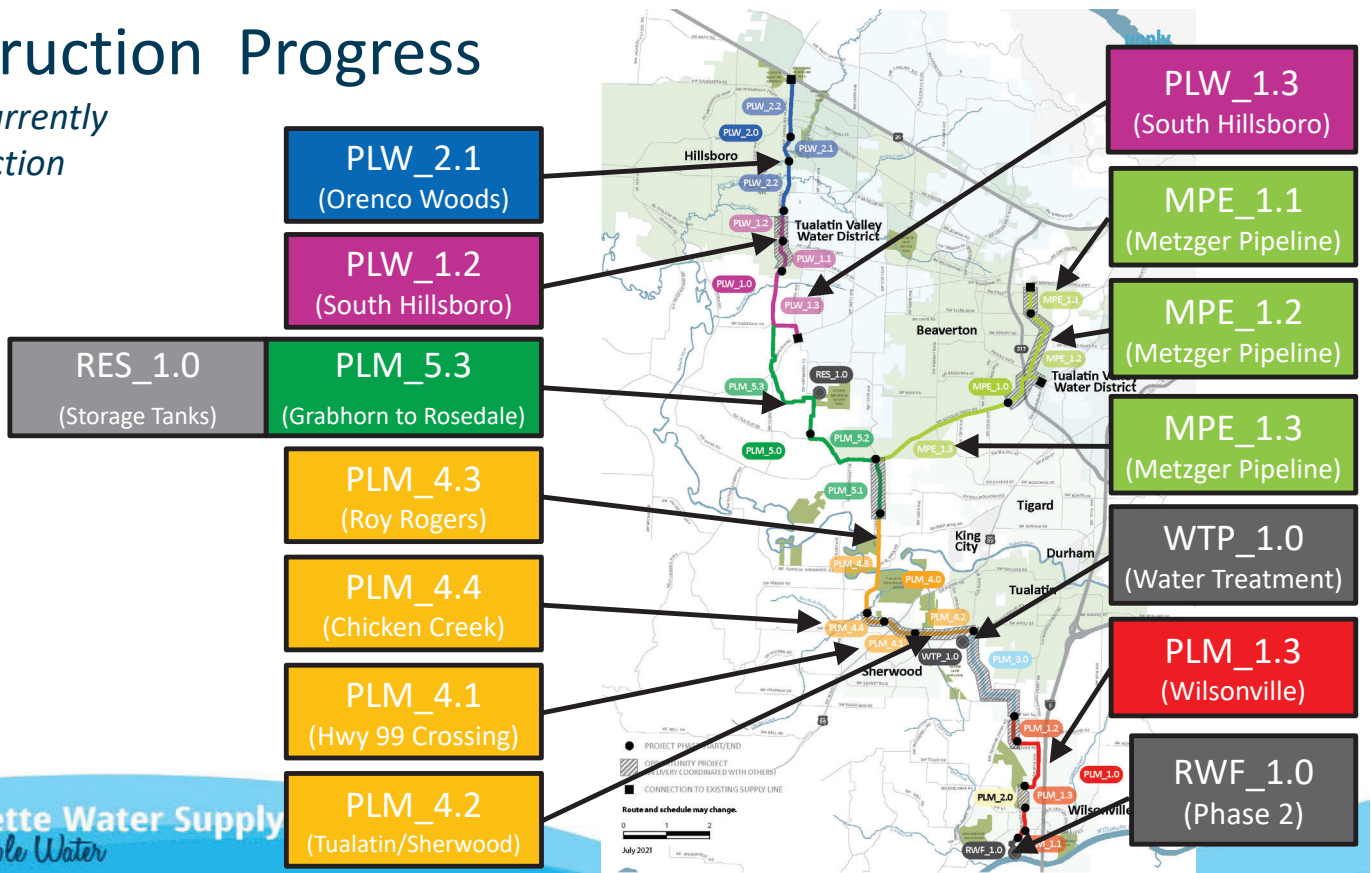
What do we want Sensitive Populations to:



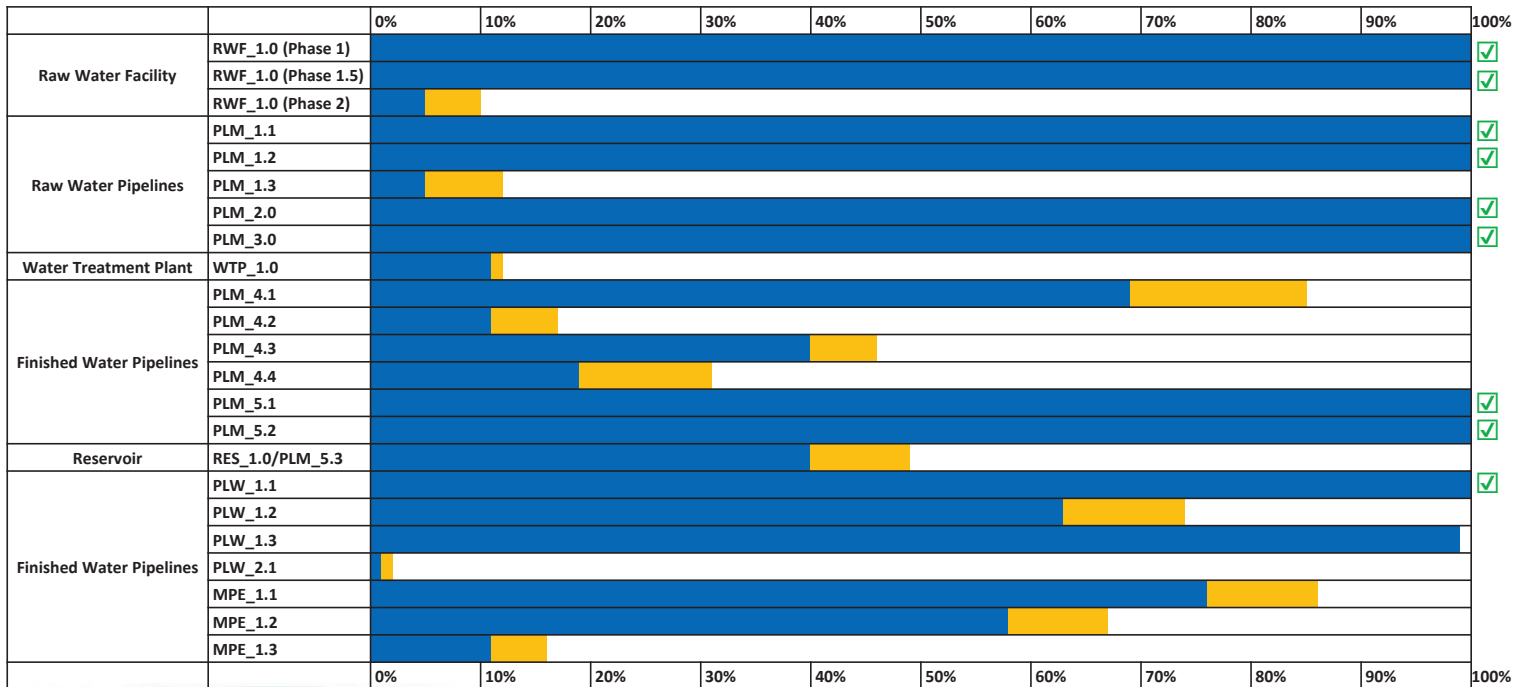
# WWSP CONSTRUCTION UPDATES

## Construction Progress

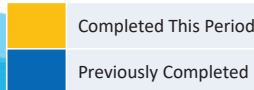
*Projects currently in construction*



# Estimated Construction Physical Percent Complete



Willamette Water Supply  
Our Reliable Water



Estimate is an opinion based on (1) actual costs paid, (2) pay applications in development, and (3) field staff observations. Refer to published reports for fully-vetted information.

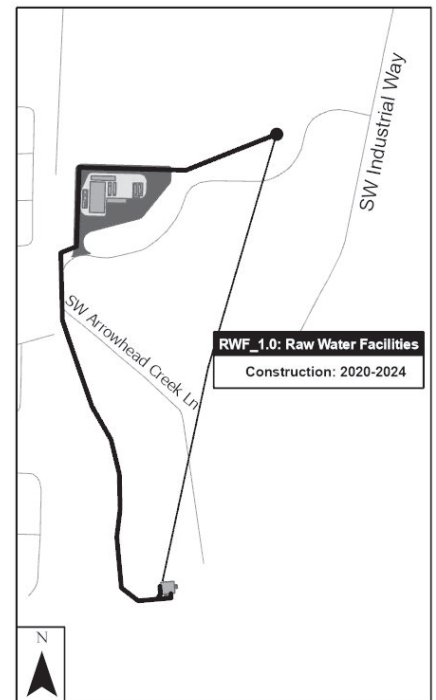
## RWF\_1.0 (GMP-2)

Contractor: Kiewit Infrastructure West Co.

Designer: Black & Veatch

Current and Planned Activities:

- Completed placement of concrete floor slab for the Upper Site Electrical Building (USEB).
- Placed concrete slab for HVAC equipment pad and PGE metering switchgear pad.
- Electrical grounding grid around upper site facilities.
- Constructed concrete masonry unit (CMU)/brick veneer wall architectural mock-up.
- Setting door frames and door opening wood shoring at USEB.
- Preparing to begin CMU wall construction at USEB.



Willamette Water Supply  
Our Reliable Water

# Construction Photos – RWF\_GMP-2.0

Lower Site:  
Work Complete



Willamette Water Supply  
*Our Reliable Water*

# Construction Photos – RWF\_GMP-2.0

Upper Site: Under-slab  
electrical conduit  
encasement at  
transformer slab, USEB  
slab, and HVAC  
equipment slab.



Willamette Water Supply  
*Our Reliable Water*

# Construction Photos – RWF\_GMP-2.0

Upper Site: Setting door bucks at USEB roll-up door openings

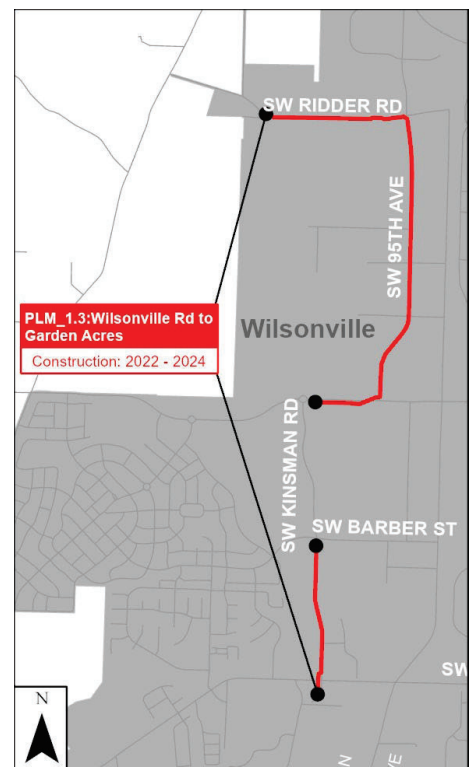


## PLM\_1.3

Contractor: Moore Excavation Inc.  
Designer: HDR

### Current and Planned Activities:

- Tunnel under Wilsonville Road more than 50% complete.
- 66" open cut waterline proceeding on 95<sup>th</sup> Avenue – More than 800 LF (6%) installed.
- Maintaining traffic control and driveway access on 95<sup>th</sup> Avenue.



# Construction Photos - PLM\_1.3

Tunneling operation at  
Wilsonville Road



Willamette Water Supply  
*Our Reliable Water*

# Construction Photos - PLM\_1.3

66-inch pipe installation on  
95<sup>th</sup> Avenue



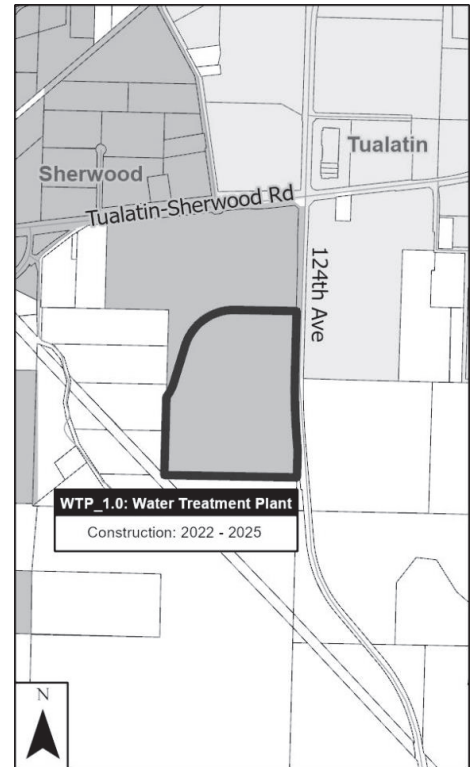
Willamette Water Supply  
*Our Reliable Water*

# WTP\_1.0

Contractor: Sundt Construction, Inc.  
Designer: CDM Smith

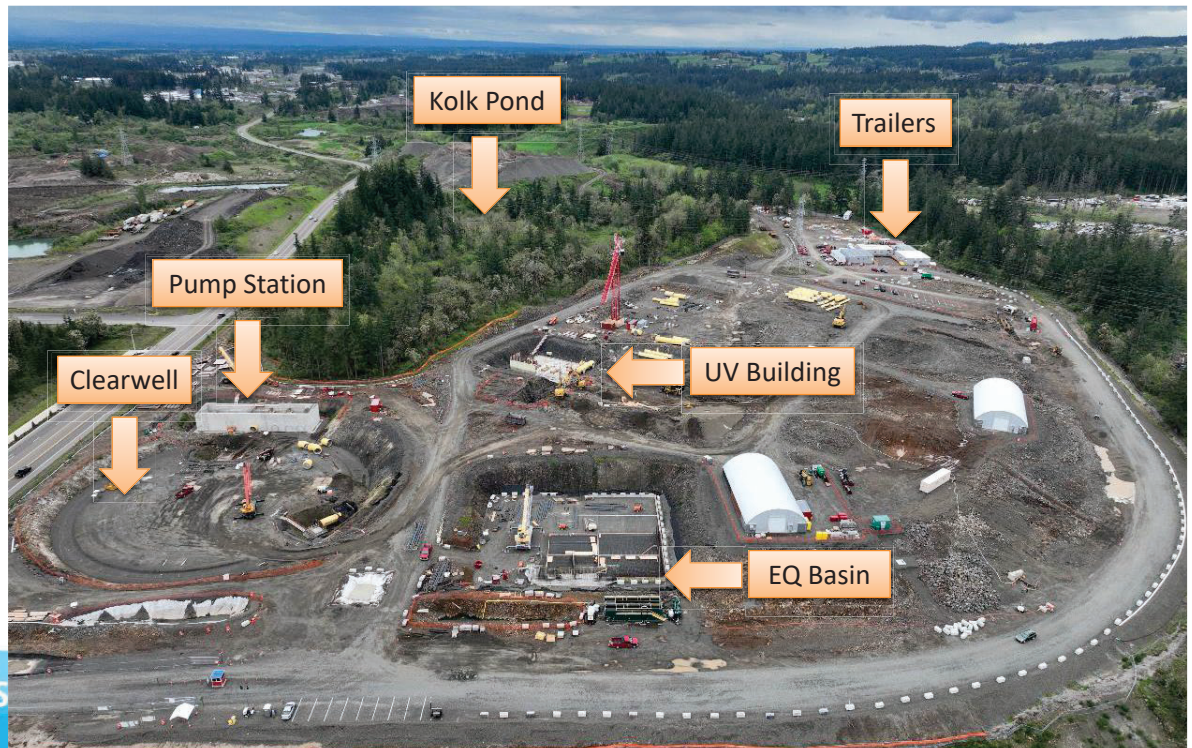
## Current and Planned Activities:

- Constructing electrical duct banks along Ice Age Road.
- Began installing large diameter steel process piping.
- Completed slab and began wall concrete placements at Area 30 (UV building).
- Yard piping and sump concrete at Area 35 (Clearwell).
- Placed first concrete placed at Area 37 (EQ Basin).
- Continued wall concrete placements at Area 53 (Finished Water Pump Station).



## Construction Photos - WTP\_1.0

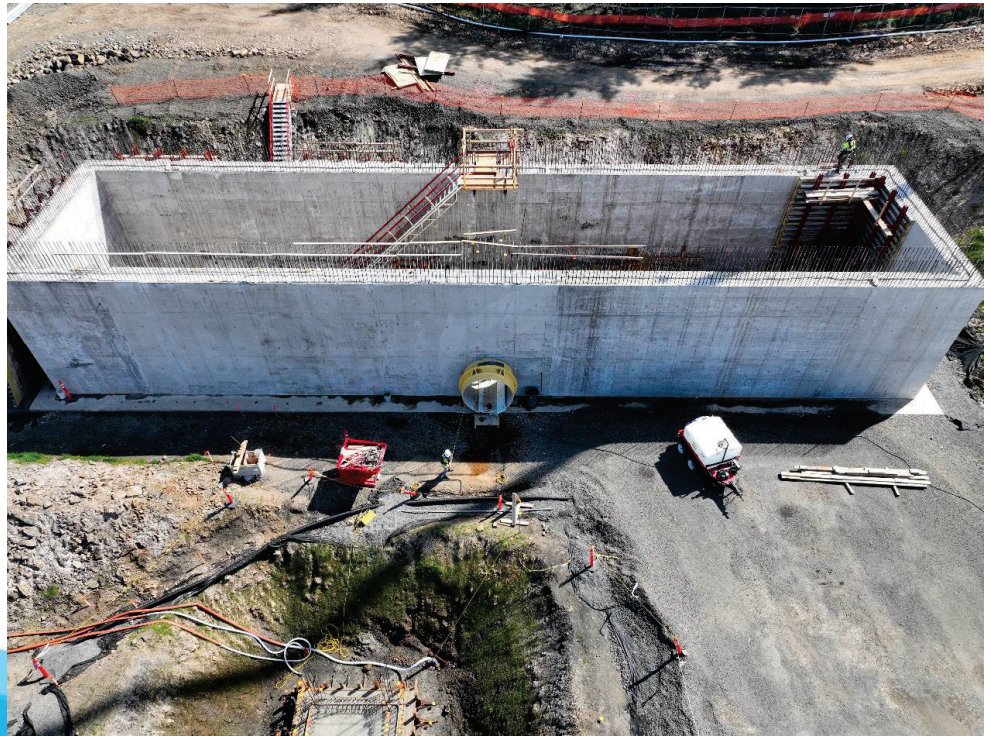
WTP site  
looking south





# Construction Photos - WTP\_1.0

Finished Water Pump Station



# Construction Photos - WTP\_1.0

84-inch yard pipe at FWPS

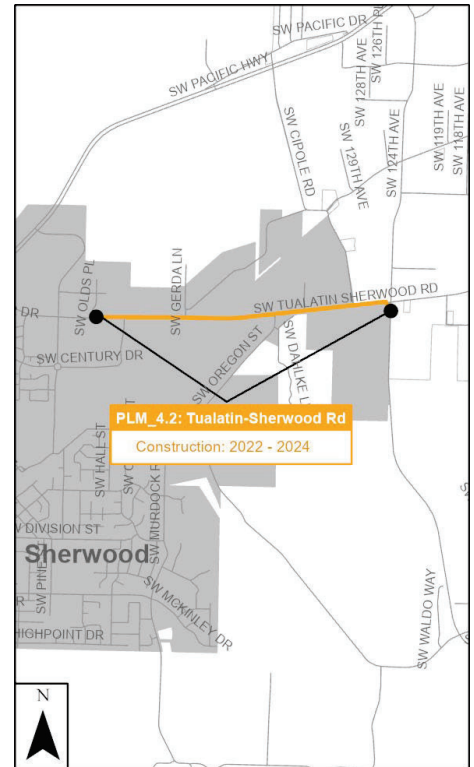


# PLM\_4.2

Partner: Washington County  
Contractor: Kerr/Emery JV  
Designer: Brown & Caldwell

## Current and Planned Activities:

- Road widening along South side of Tualatin-Sherwood Road.
- Installing curbs and sidewalk.
- Base paving to start soon on current stage of work.
- WWSP submittals.
- WWSP work scheduled to start July/August.

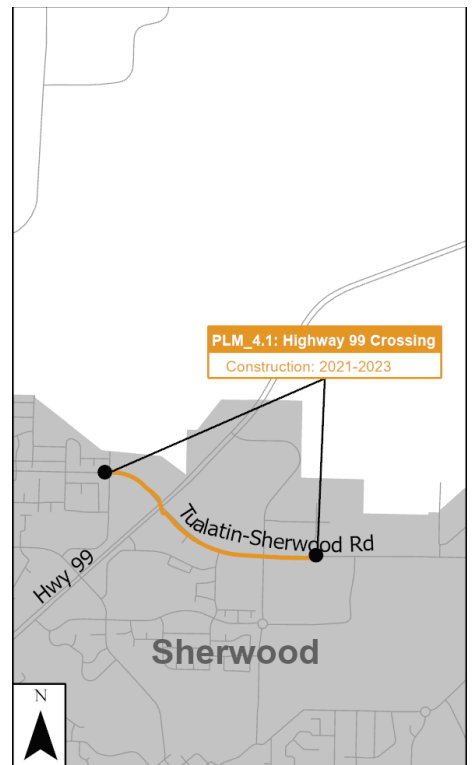


# PLM\_4.1

Partner: Washington County  
Contractor: Moore Excavation Inc.  
Designer: Brown & Caldwell

## Current and Planned Activities:

- 66" waterline installation is complete.
- Working on appurtenance piping and vaults.
- Installing the cathodic protection system.
- Continue road widening along the south side of Tualatin-Sherwood Road.

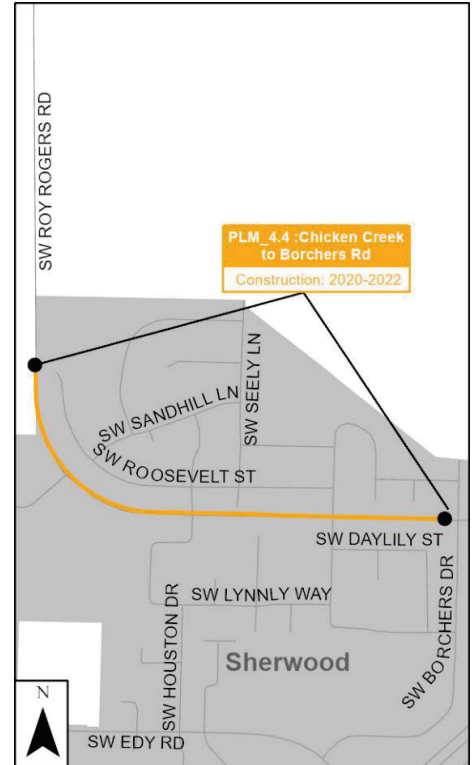


# PLM\_4.4

Partner: Washington County  
Contractor: Tapani Inc.  
Designer: Brown & Caldwell

## Current and Planned Activities:

- Traffic has been shifted to the south side of Roy Rogers Road.
- 66" waterline installation began near Chicken Creek and is moving east.



## Construction Photos – PLM\_4.4

Beginning of 66" waterline. Starting just south of Chicken Creek.

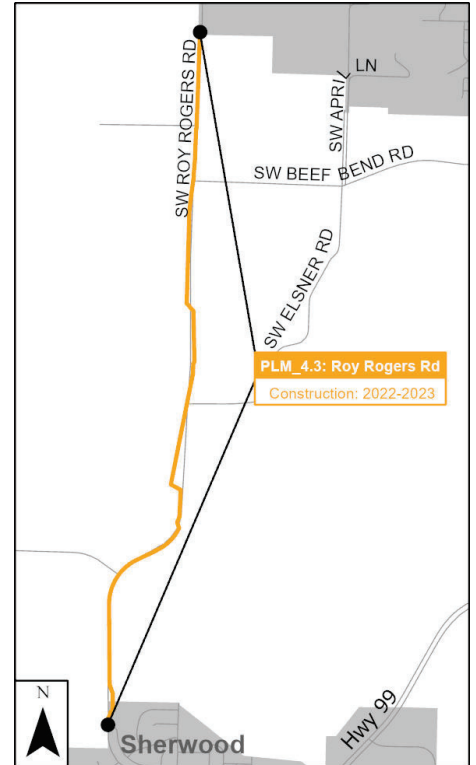


# PLM\_4.3

Contractor: Tapani Inc.  
Designer: Brown & Caldwell

## Current and Planned Activities:

- Microtunneling: Tualatin River Crossing – tunnel completed and preparing to install 66” carrier pipe.
- Chicken Creek Crossing shafts starting this month.
- Pipe alignment restoration, CARV and cathodic protection activities ongoing.



## Construction Photos – PLM\_4.3

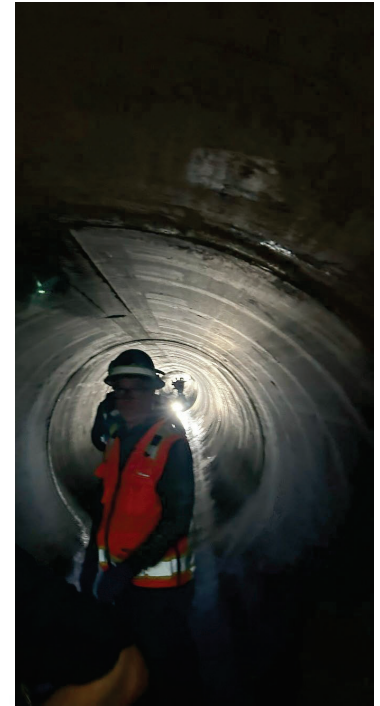
Microtunnel boring machine entering the reception shaft on the north side of the Tualatin River



# Construction Photos – PLM\_4.3



Preparing to walk inside the tunnel (30 feet below the Tualatin River)

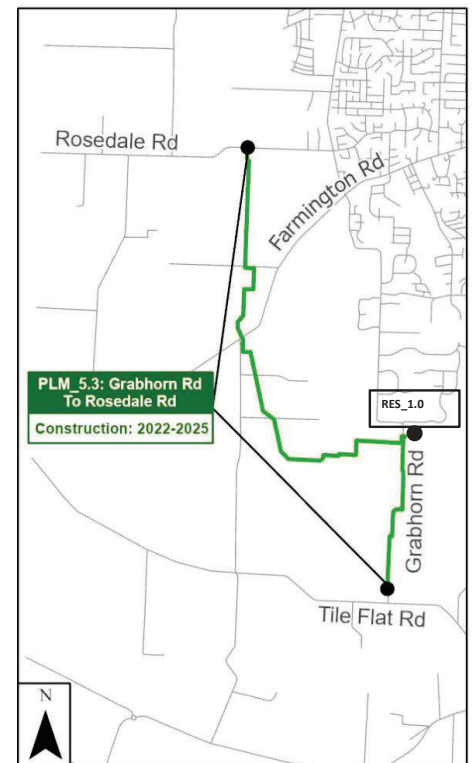


## RES\_1.0 / PLM\_5.3

Contractor: Hoffman-Fowler JV  
Designer: Black & Veatch / Jacobs

### Current and Planned Activities:

- RES\_1.0
  - Installation of 66” and 42” yard piping.
  - Reservoir concrete footings, underdrain pipe, drain rock and vapor barrier.
  - Began reservoir slab concrete placements.
  - Continue rebar and wall forms at East Valve Vault and Flowmeter Vault.
- PLM\_5.3
  - Continue installation of 66” waterline – approximately 14,850 LF (74%) installed.
  - Continue installation of 66” BFV, CARV vaults, manways, trench cut-off walls and cathodic protection systems.



# Construction Photos – RES\_1.0

RES\_1.0 66-inch inlet and outlet waterline



# Construction Photos – RES\_1.0

Section 1 – Reservoir floor rebar



## Construction Photos – RES\_1.0

Section 1 – Reservoir  
floor pour



## Construction Photos – PLM\_5.3

66" waterline  
installation in  
Grabhorn Road

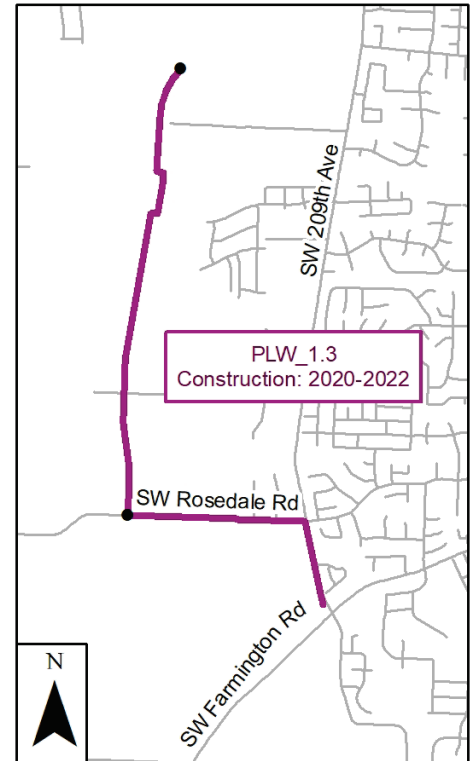


# PLW\_1.3

Contractor: Tapani, Inc.  
Designer: Kennedy/Jenks

## Current and Planned Activities:

- Punchlist
- Closeout

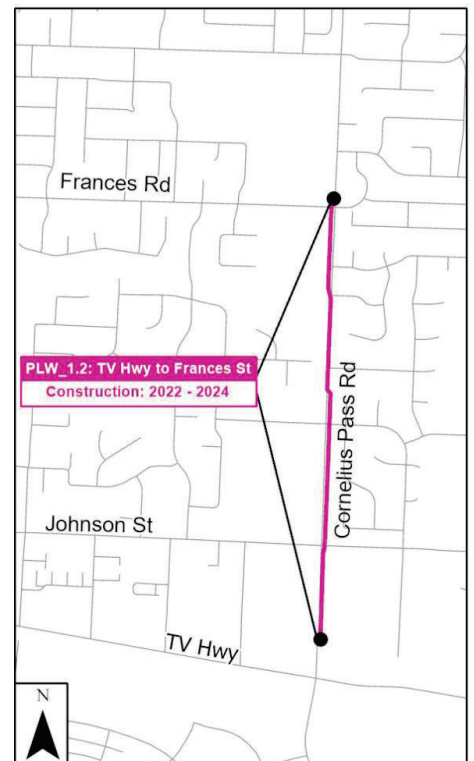


# PLW\_1.2

Partner: Washington County  
Contractor: Tapani, Inc.  
Designer: Kennedy/Jenks

## Current and Planned Activities:

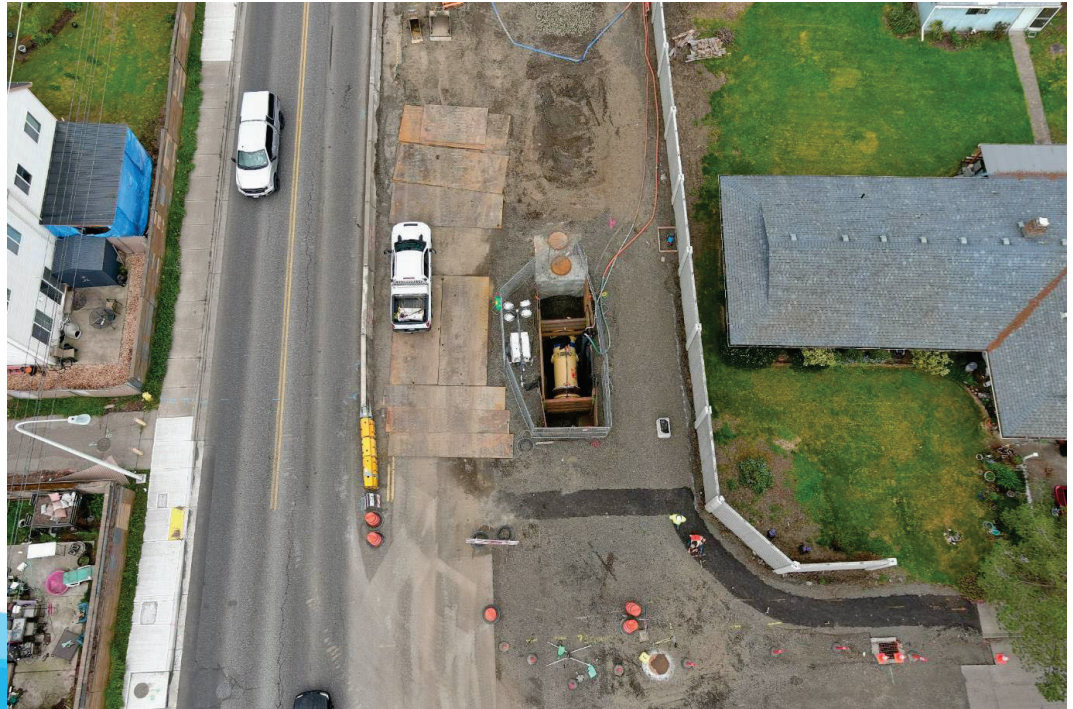
- 48" WWSP waterline appurtenances.
- 48" WWSP waterline pressure testing and disinfection.
- Reedville Park turnout vaults installation will begin in the summer.
- Cornelius Pass Road curb and gutter placements.
- Cornelius Pass Road sidewalk placements.





# Construction Photos – PLW\_1.2

Excavation for 48” butterfly valve and harness coupling

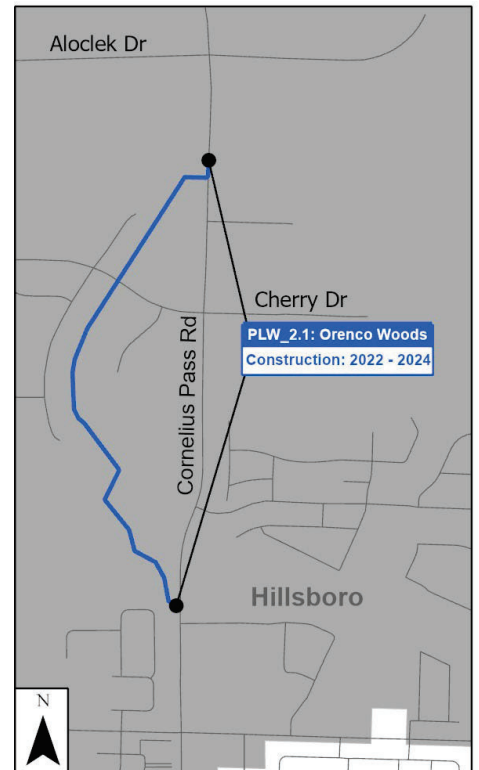


## PLW\_2.1

Contractor: Moore Excavation, Inc.  
Designer: Kennedy/Jenks

### Current and Planned Activities:

- Potholing has been completed for utility conflicts/crossings.
- Staging area mobilization.
- Submittals.



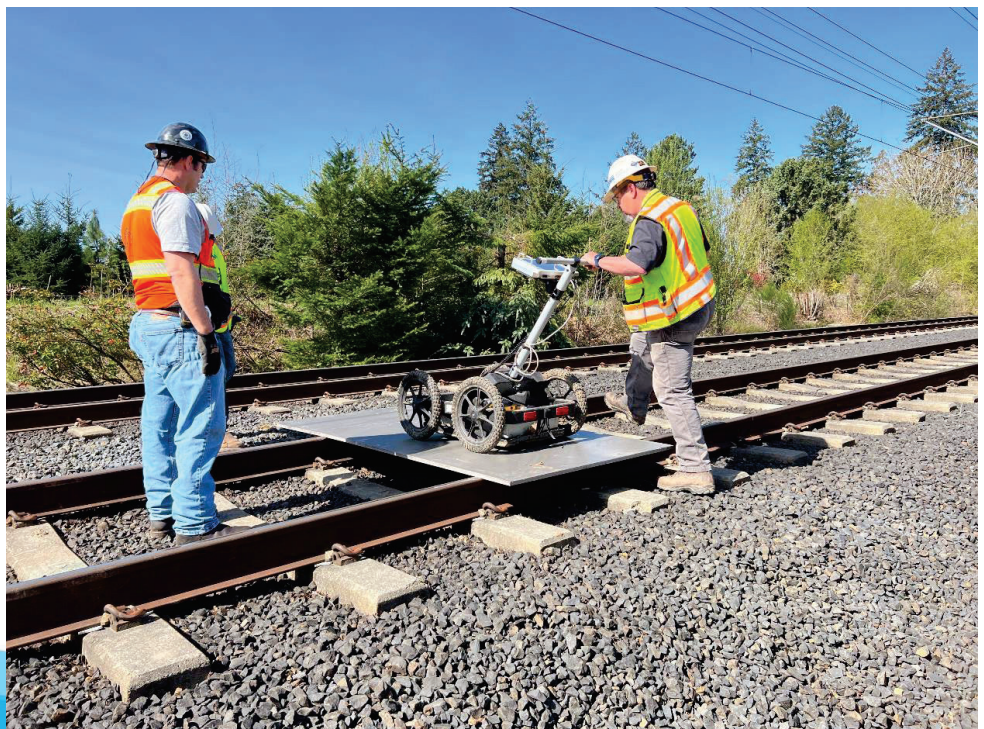
## Construction Photos – PLW\_2.1

Potholing utilities  
on southern  
alignment on  
Cornelius Pass  
Road



## Construction Photos – PLW\_2.1

Ground penetrating  
radar (GPR) over TriMet  
ductbank trenchless  
crossing.

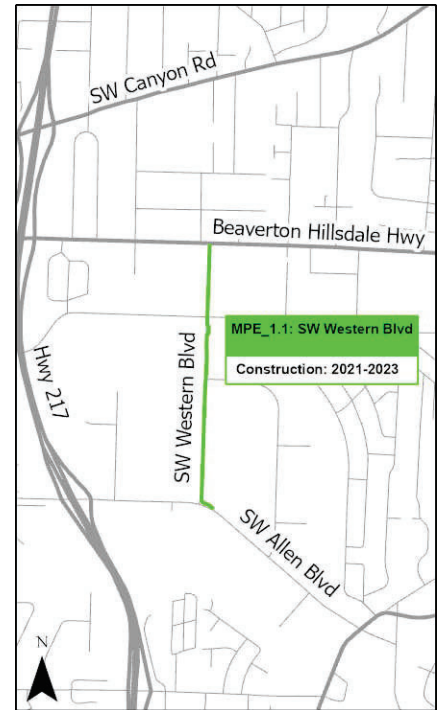


# MPE\_1.1

Partner: City of Beaverton  
Contractor: Moore Excavation Inc.  
Designer: Brown & Caldwell

## Current and Planned Activities:

- 48" WWSP waterline pressure testing complete.
- 48" WWSP waterline disinfection.
- WWSP cathodic protection system and flow meter vault startup and commissioning.
- Sidewalks, curb and gutter, and road grading.
- Street lighting and traffic signal poles on Western Avenue.



## Construction Photos – MPE\_1.1

30" WWSP flow meter vault  
final bolt torque and fit up



# Construction Photos – MPE\_1.1

New road construction and landscaping on Western Avenue



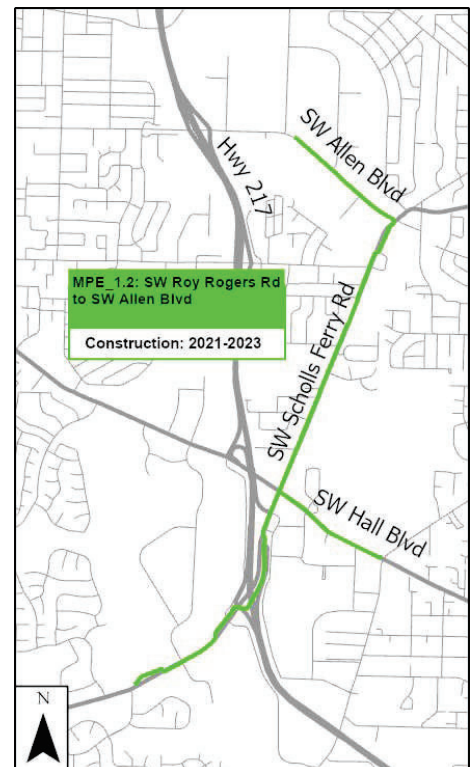
Willamette Water Supply  
*Our Reliable Water*

## MPE\_1.2

Contractor: Emery & Sons  
Designer: Brown & Caldwell

Current and Planned Activities:

- 16” City of Beaverton waterline open cut installation on Scholls Ferry Road and Allen Blvd.
- 48” waterline on Scholls Ferry Road near Nimbus Road and appurtenances (nights).
- PFC building walls and structural.
- Paving restoration – Cascade and part of Scholls Ferry Road (near the mall).



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## Construction Photos – MPE\_1.2

48" waterline installation  
(night work) on Scholls  
Ferry Road



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## Construction Photos – MPE\_1.2

PFC Facility



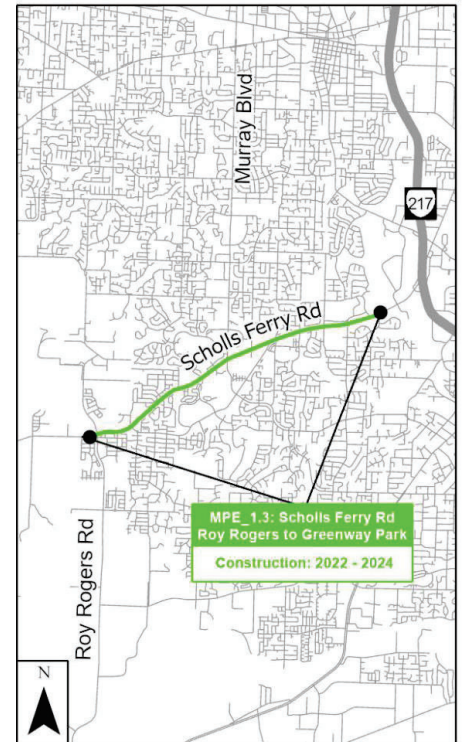
Willamette Water Supply  
*Our Reliable Water*

# MPE\_1.3

Contractor: Emery & Sons  
Designer: Brown & Caldwell

## Current and Planned Activities:

- 48” waterline installation on Scholls Ferry Road headed west near 121<sup>st</sup> Avenue (night work).
- PGE relocation at Conestoga Road.
- Turnout vault at Roy Rogers Road – concrete formwork and rebar.



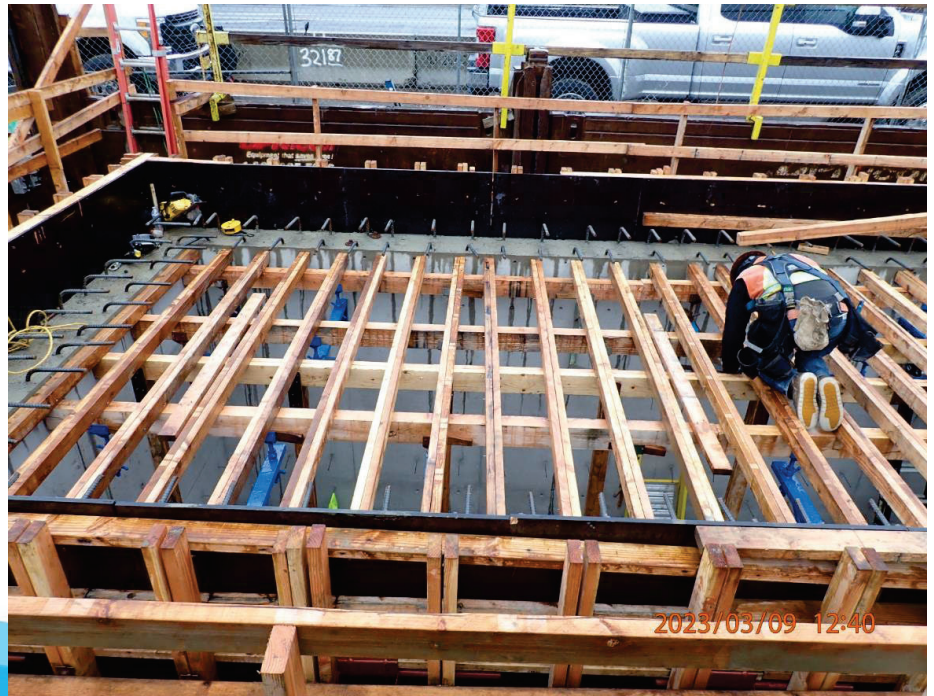
## Construction Photos – MPE\_1.3

Saw cutting trench for 48” waterline on Scholls Ferry Road



# Construction Photos – MPE\_1.3

Concrete formwork for Roy Rogers Road turnout vault.



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## QUESTIONS?

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