

Under Pressure

Delivering on a Small Footprint and Critical Schedule for the Cascade Groundwater Alliance.

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Overview

Groundwater Development Project: Rockwood - Package 3

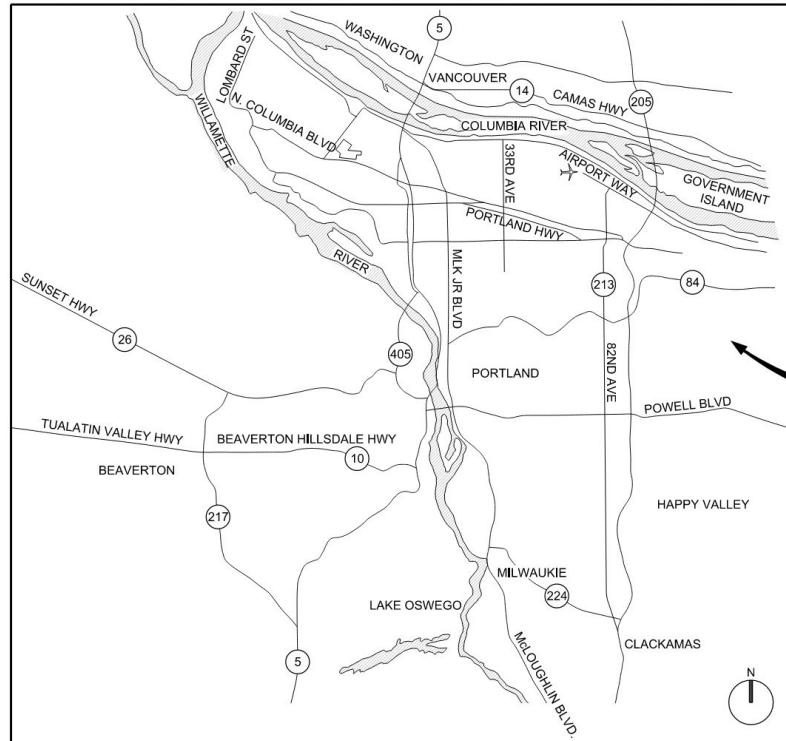
In August 2022, the Rockwood Water People's Utility District (RWPUD) and Jacobs started the design of a groundwater treatment facility located in the center of a residential neighborhood.

- **Program Overview and Existing Site**
- **Design Challenges** – Design Challenges and Implemented Solutions
- **Construction** – Sequencing and Coordination

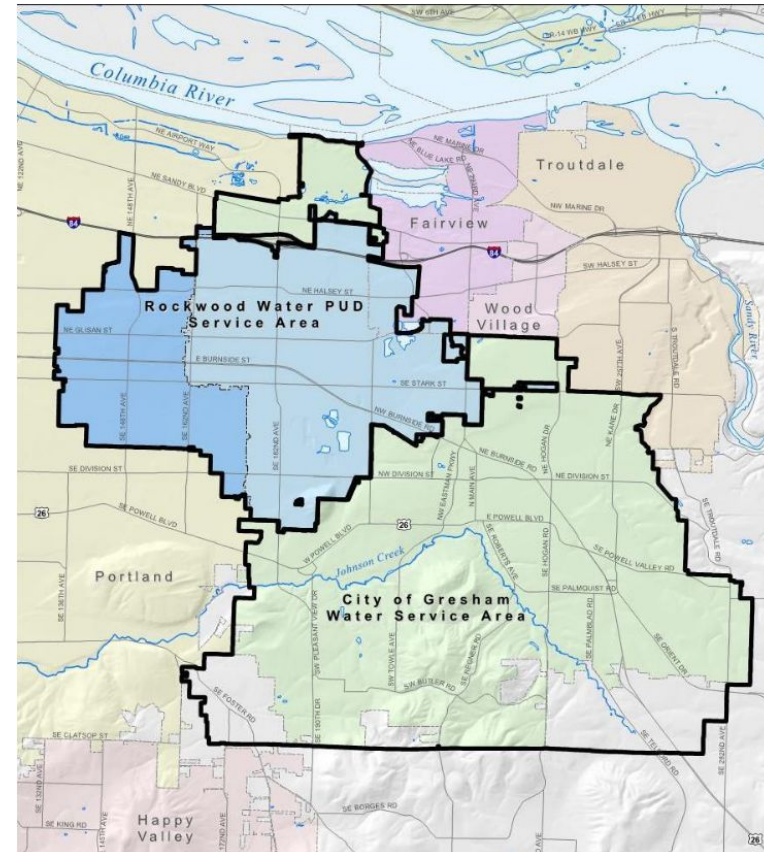
Program Overview



Rockwood Water People's Utility District (RWPUD)



PROJECT
LOCATION
311 NE 141ST AVE
PORTLAND, OR 97230

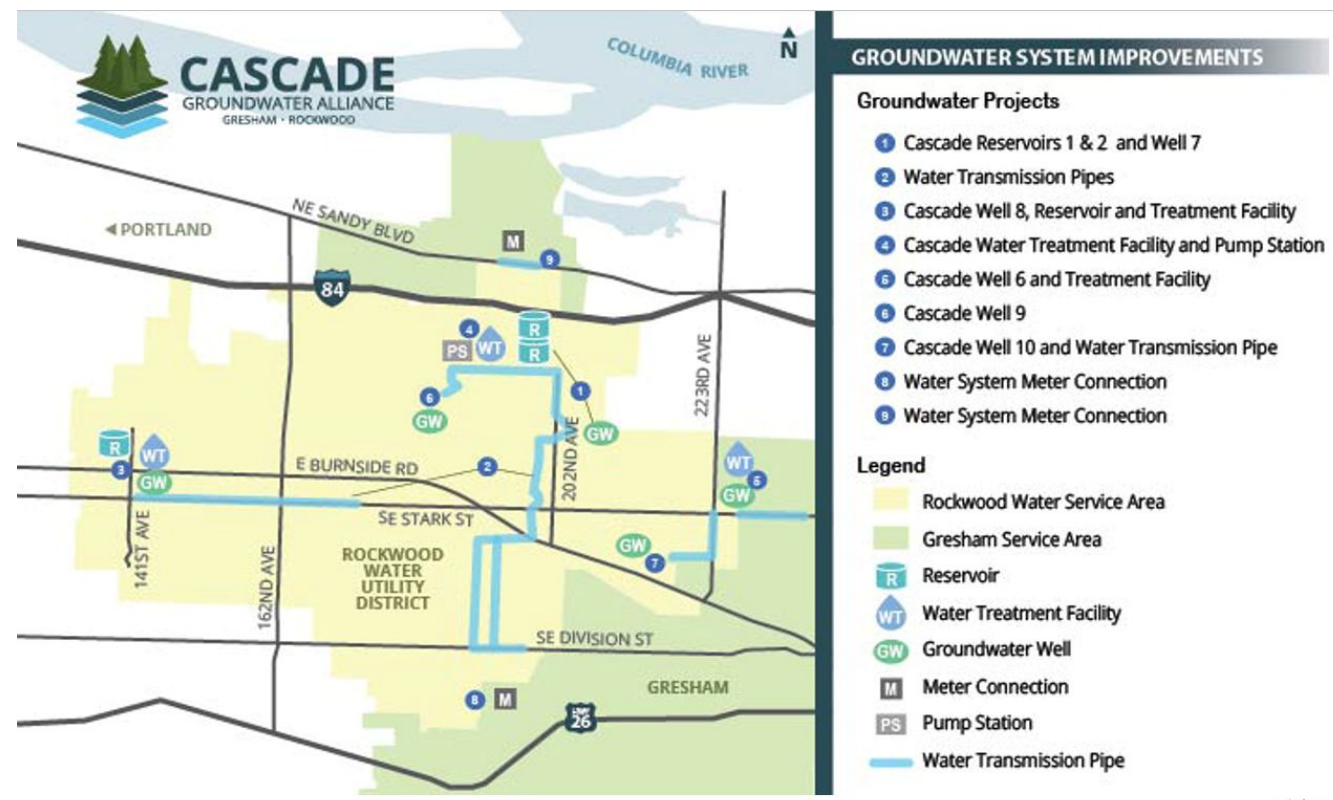
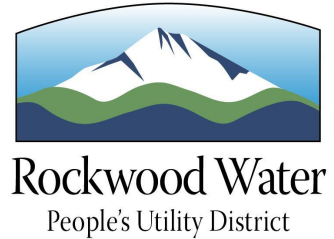


Rockwood Water PUD

- 1925 – Became a water district and drilled first well

Cascade Groundwater Alliance

- Glendoveer Pressure Zone
 - Primarily fed by the Glendoveer Pump Station.



Package 3 Site - 141st Pump Station

- Currently provides supplementary flow and fire flow to the Glendoveer Pressure Zone.
 - 2.5 MG Storage Tank
 - Pump Station
 - Design Capacity:
 - (2x) 150 gpm
 - (1x) 300 gpm
 - (1x) 700 gpm
 - (1x) 2000 gpm – fire flow
 - Cascade Well 8
 - Drilled 2022
 - 4.3 MGD max capacity
 - 1200 ft BGS



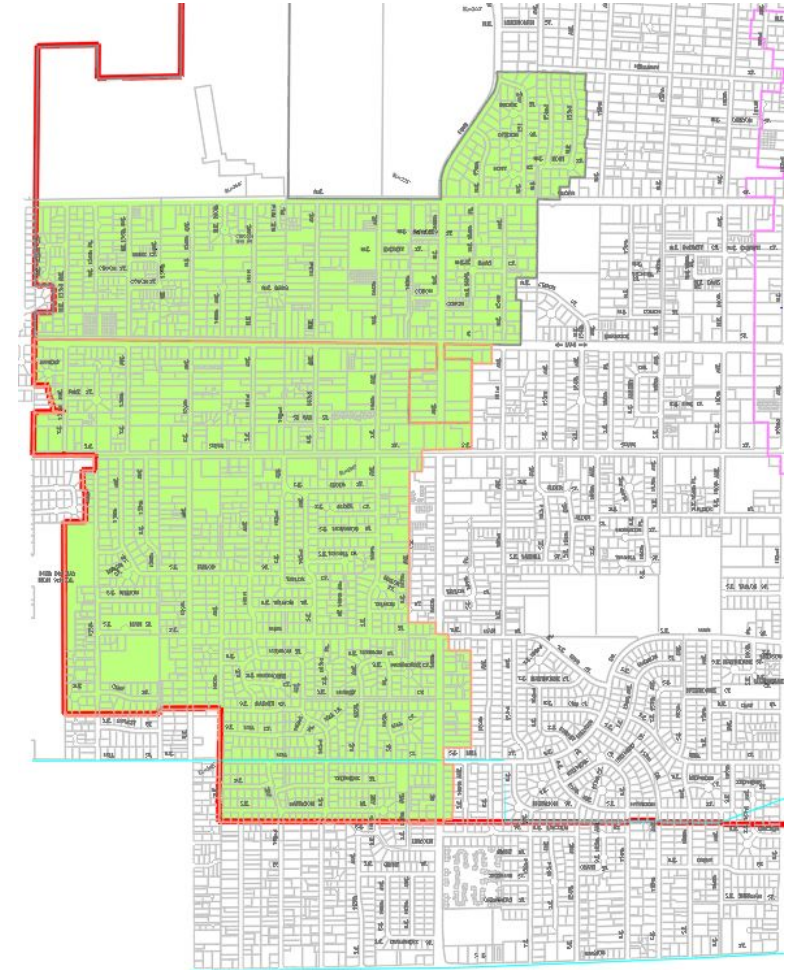
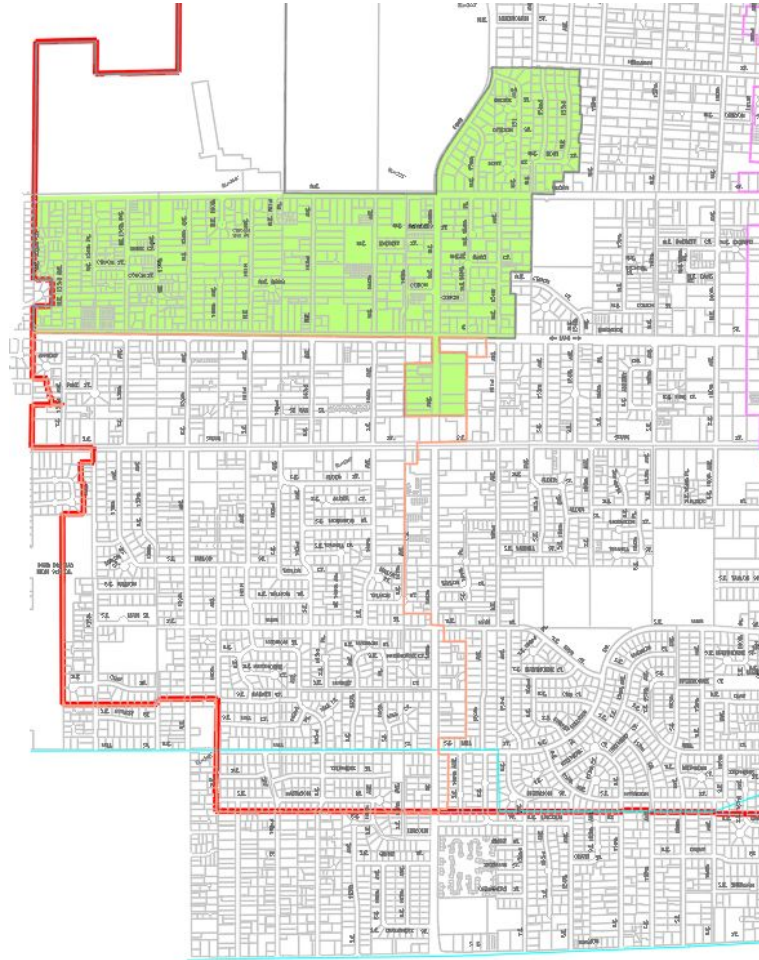
Groundwater Development Project - Package 3

Design Challenges

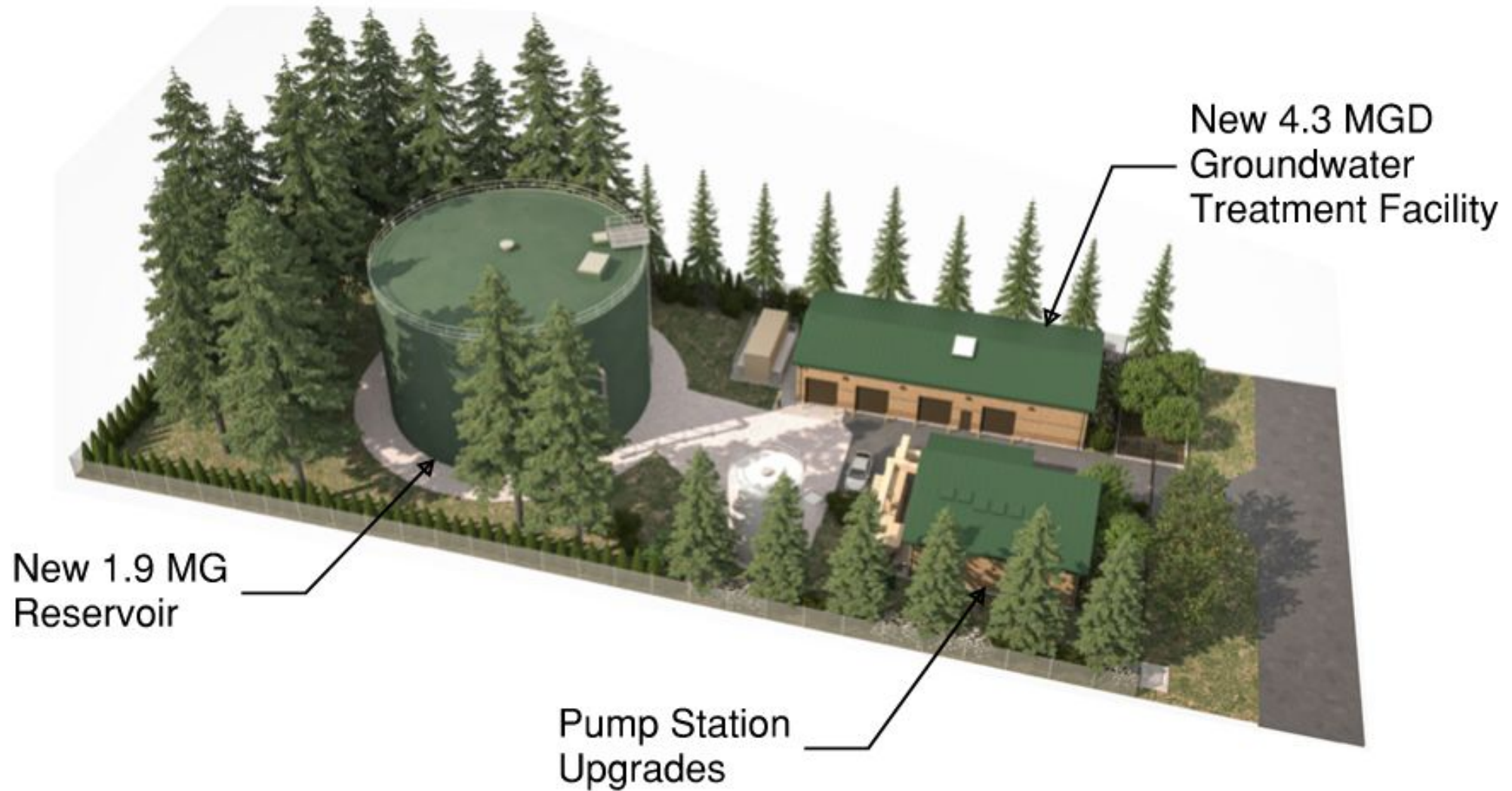


Package 3 - Expanded Pressure Zone

- Demand:
 - 270 to 810 gpm
- Number of meters
 - 830 to 2400

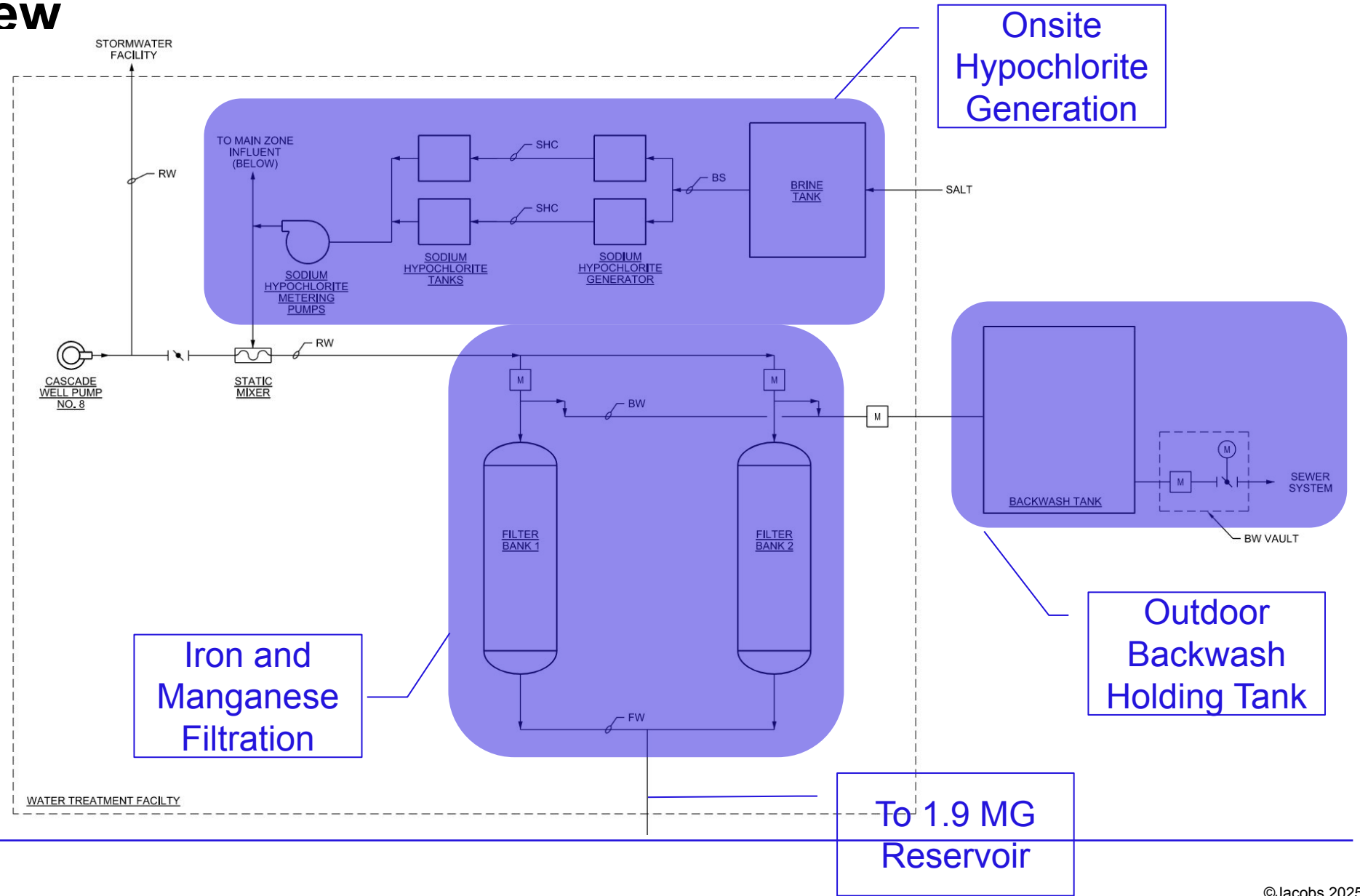


Package 3 – Project Goals



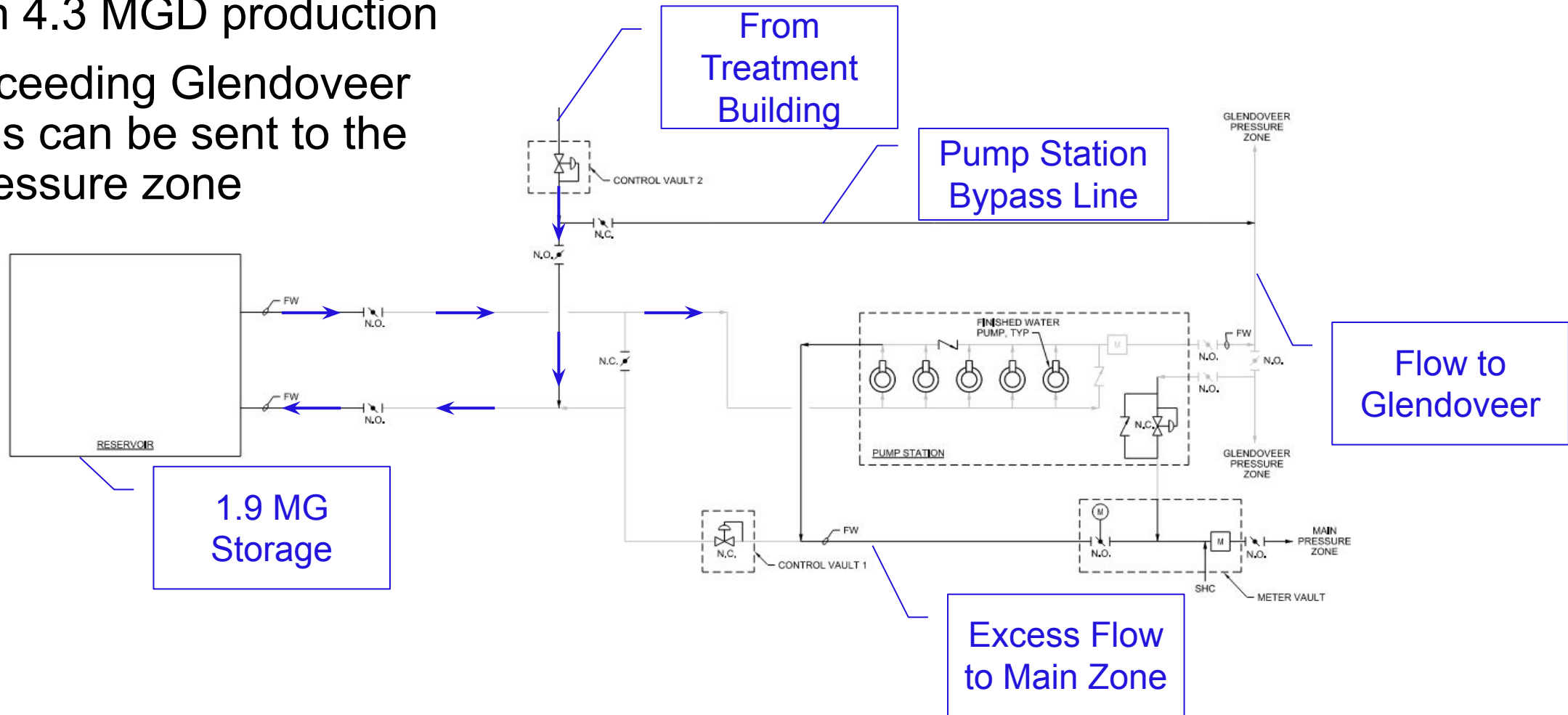
Process Overview

■ 4.3 MGD



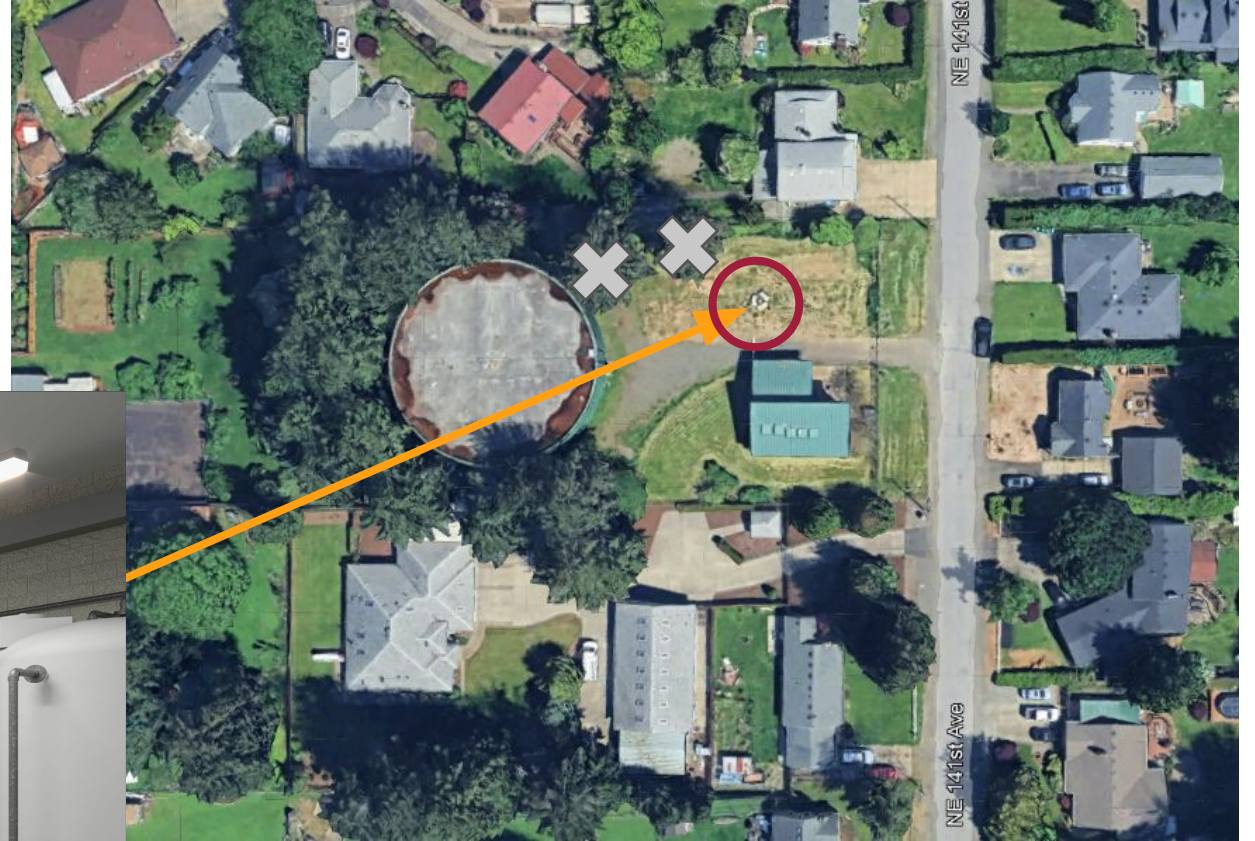
Distribution Overview

- Maintain 4.3 MGD production
- Flow exceeding Glendoveer demands can be sent to the Main pressure zone



Water Treatment Facility Layout Limitations

- Constraints
 - Property offset – 15 ft
 - Well location
 - Driveway – crane access for well pump
 - Tree Protection



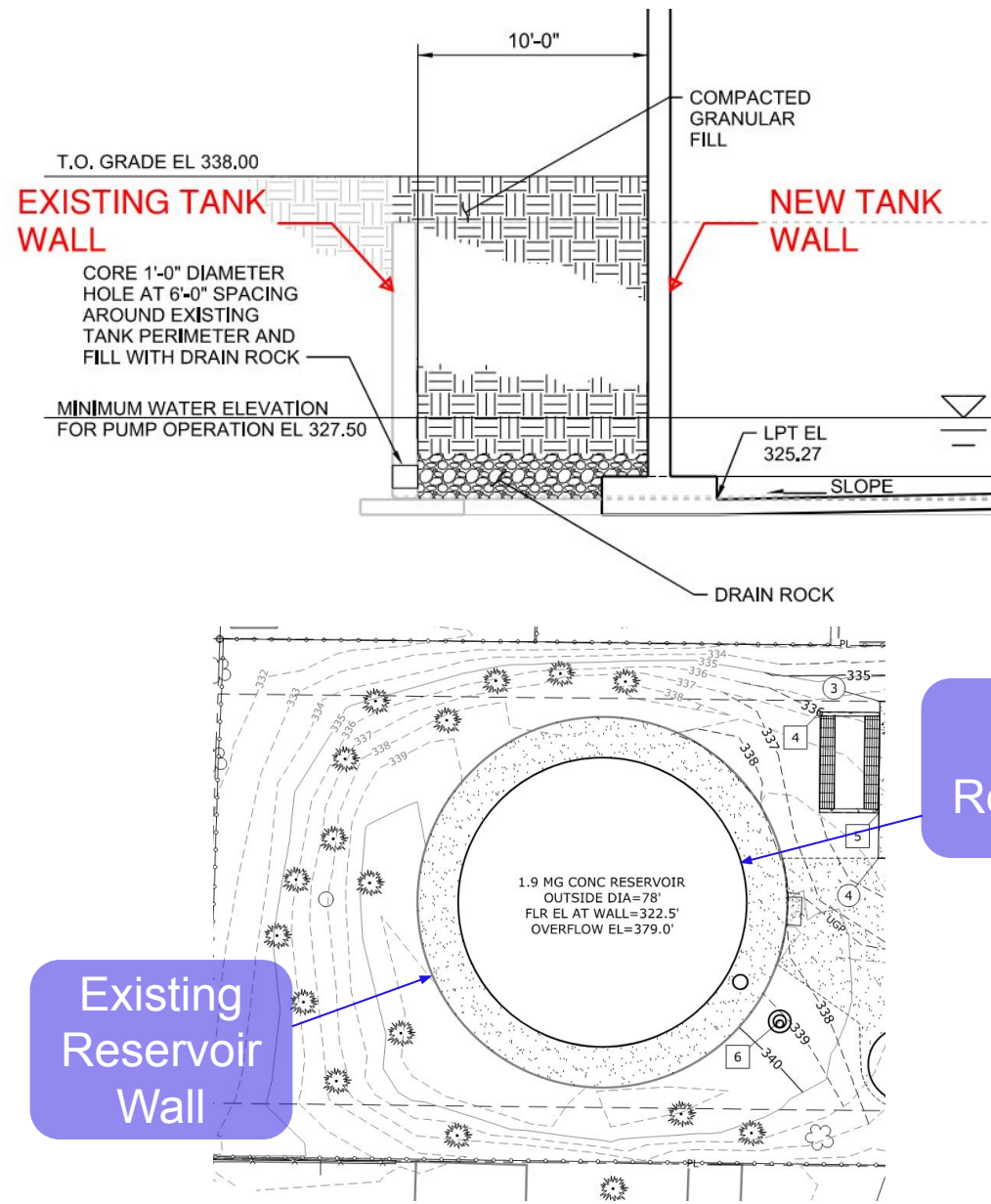
Storage Reservoir

- Existing Reservoir
 - 2.5 MG Capacity
 - Original Construction - 1967
- How much volume can we get?
 - Construction – prestressing requires 10 feet around the tank
 - Tree Protection – protect root zones
 - City height limitations – 50 ft above grade



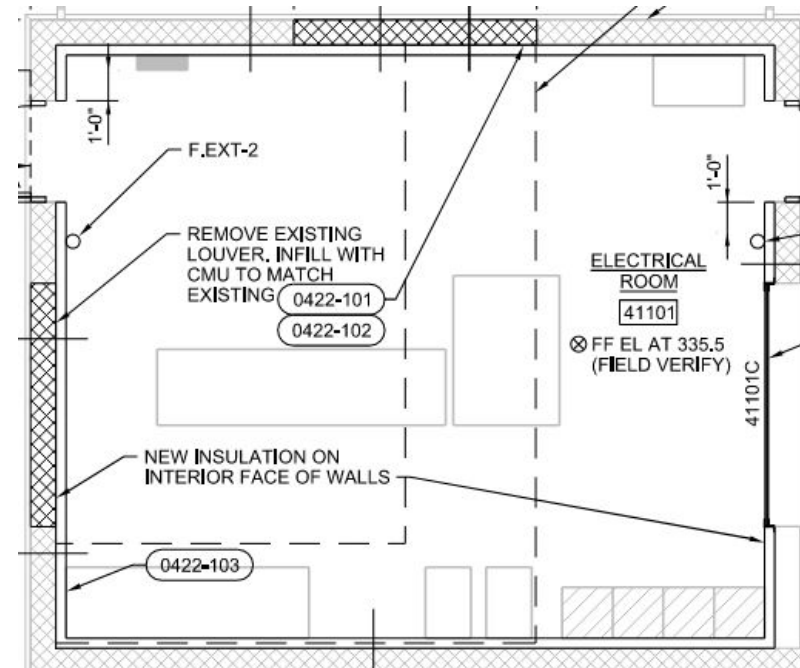
Storage Reservoir

- Tank constructed inside of existing tank.
 - Use existing tank as retaining wall.
 - Movement monitoring.
- Design Capacity:
 - 1.9 Million Gallons



Pump Station

- Existing Generator – Add another generator or increase capacity?
 - 800 HP requires large stand-alone generator
 - Both options require space!



Sound Attenuation

- City of Portland Sound Requirements

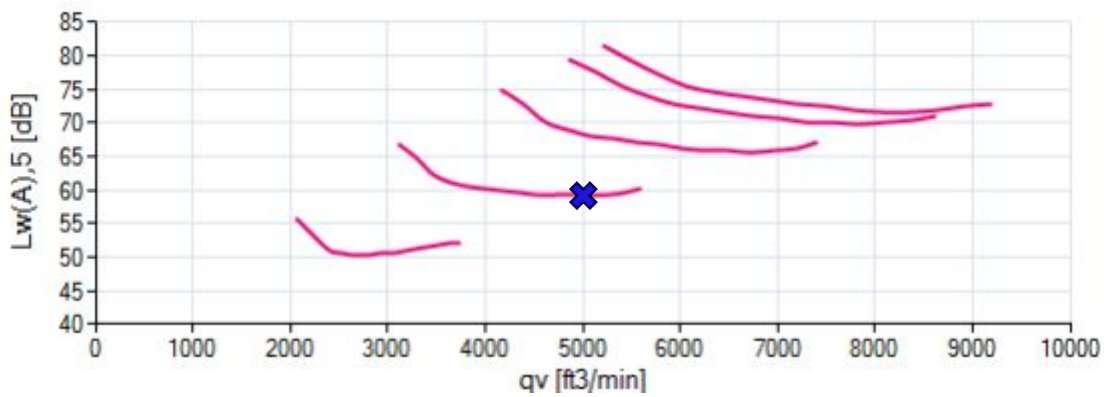
PERMISSIBLE SOUND LEVELS

(7:00 a.m.-10:00 p.m., otherwise minus five dBA)

Zone Categories of Source	Zone Categories of Receiver (measured at property line)			
	Residential	Open Space	Commercial/ Mixed Use	Industrial
-				
Residential	55	55	60	65
Open Space	55	55	60	65
Commercial/ Mixed Use	60	60	70	70
Industrial	65	65	70	75

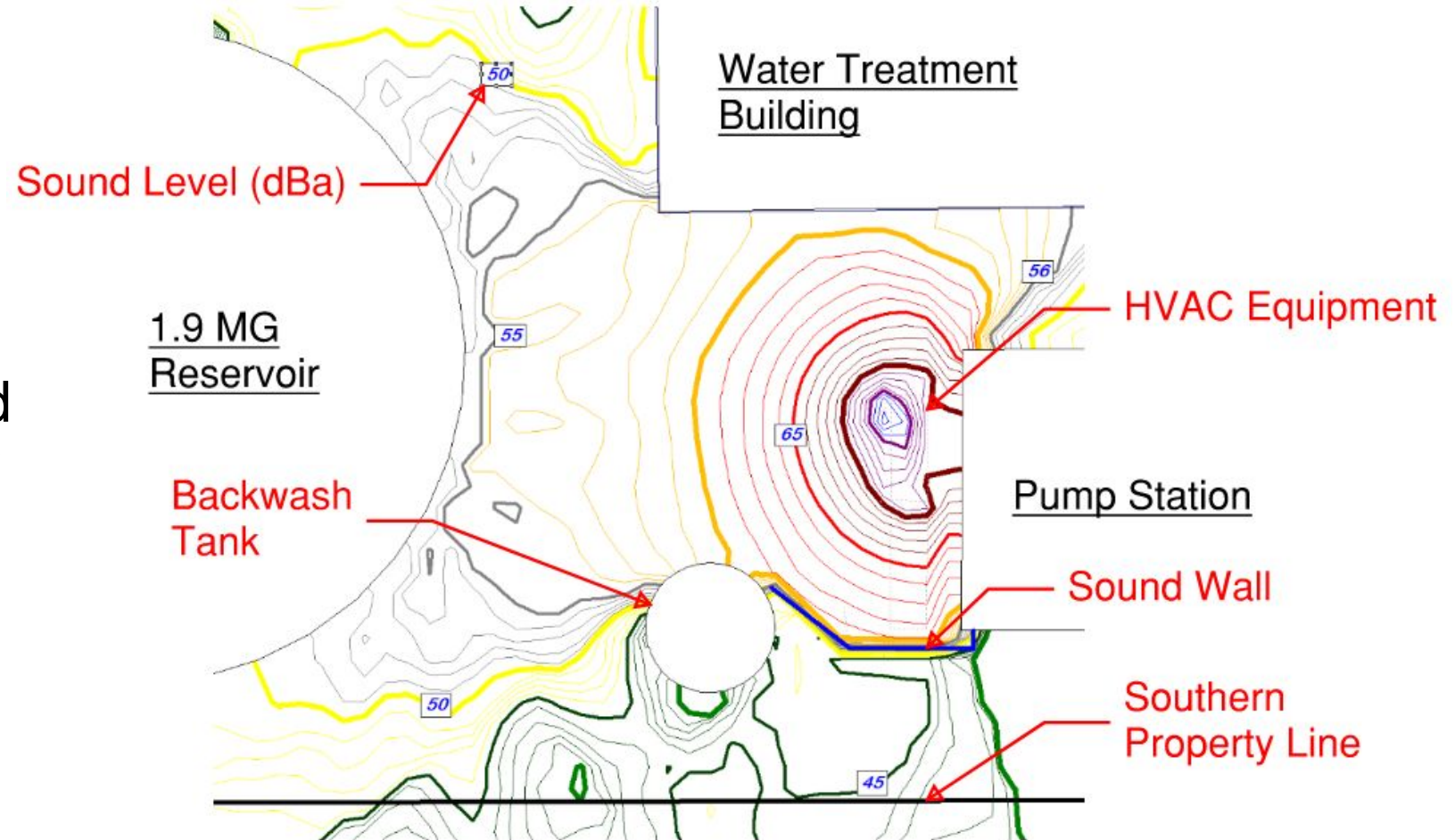
- HVAC Equipment Data

Acoustics



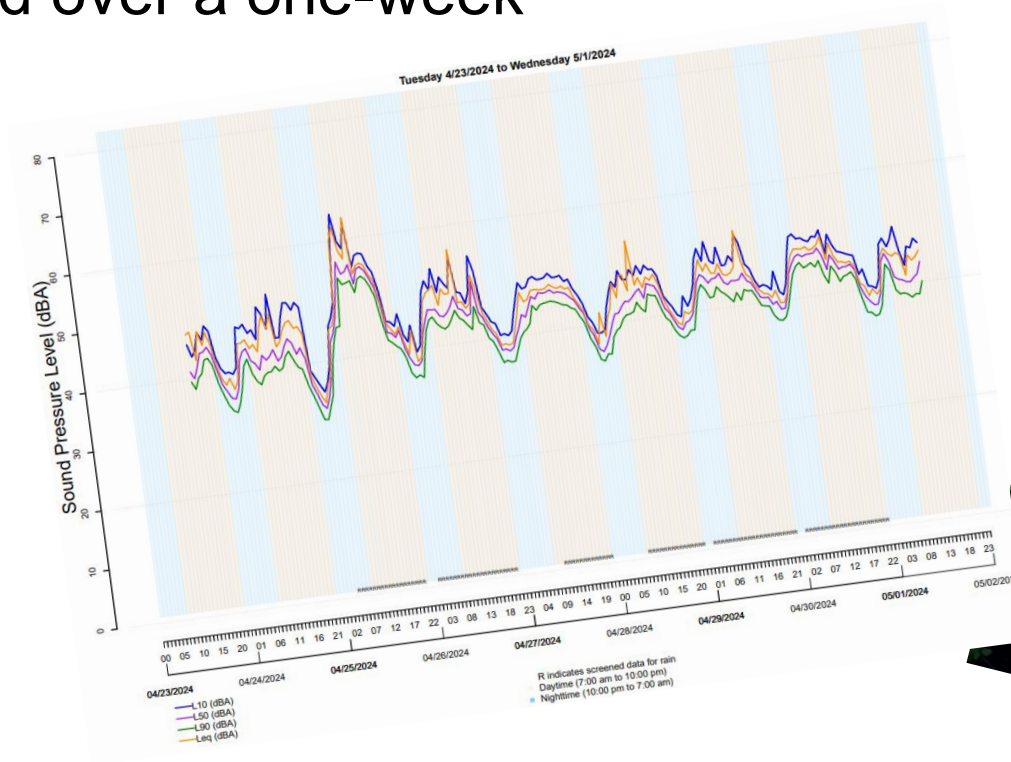
Evaluating Sound Levels

- Model Inputs:
 - Sound source
 - Obstruction dimensions
 - Obstruction materials
- Backup Generator excluded from requirement as it is for emergency use.

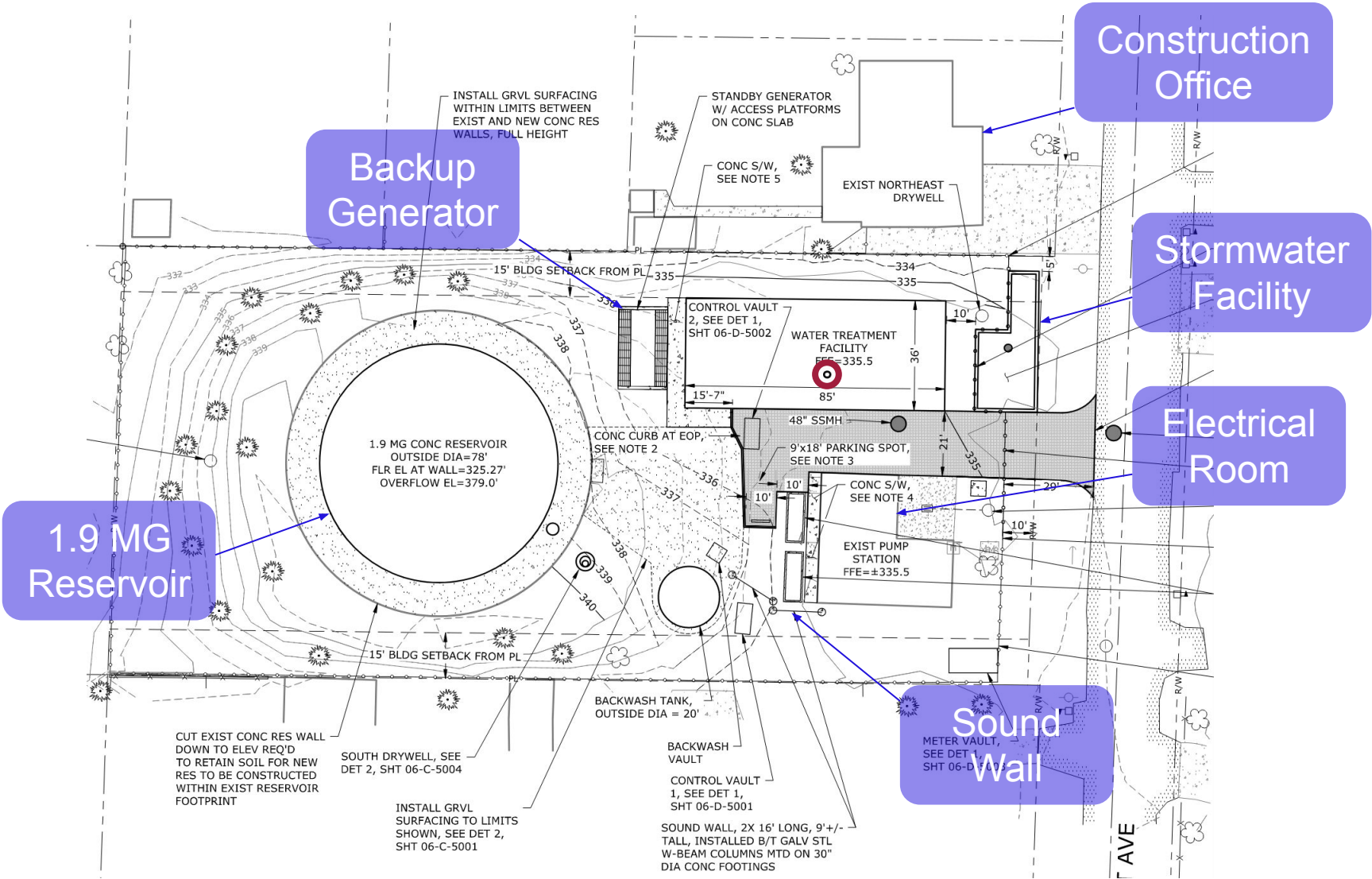


Background Sound Survey

- Goal: Determine baseline sound levels for future comparison.
- Sound data collected over a one-week period

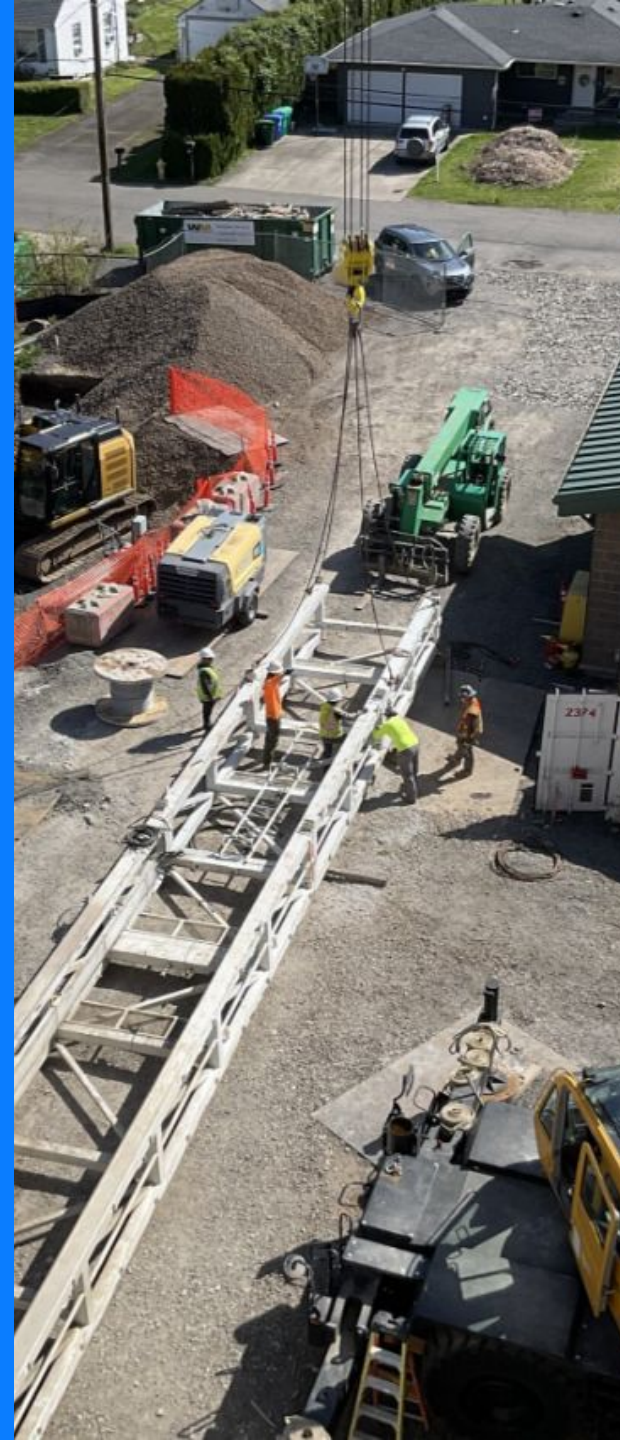


Final Site Layout



Construction

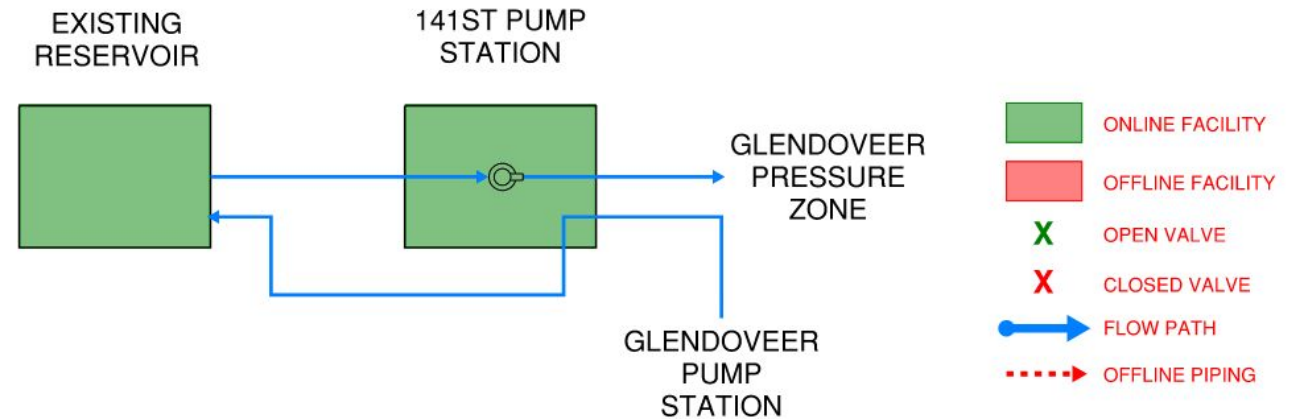
Developing a sequence to fit the site



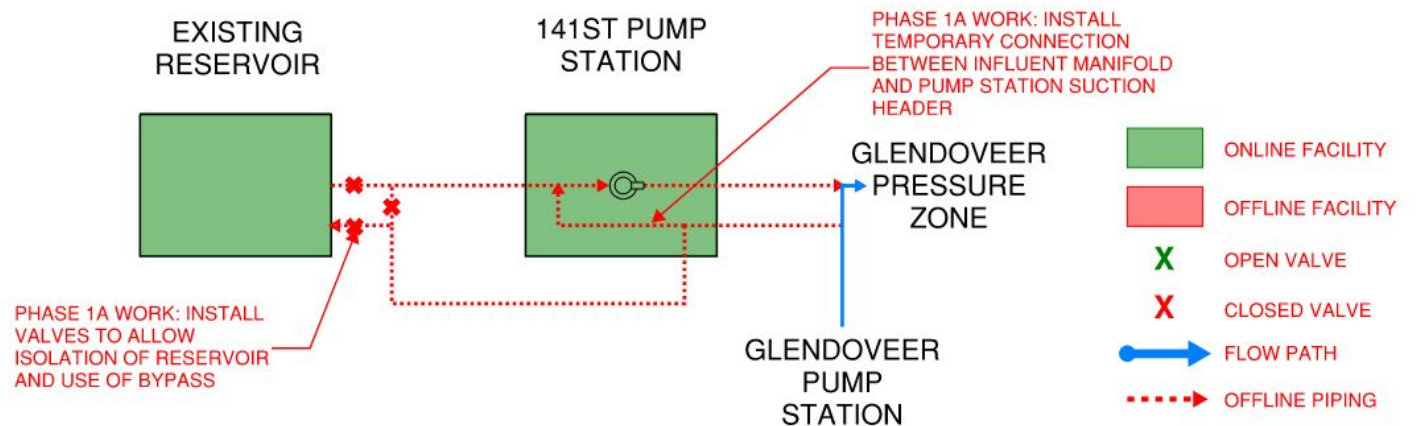
Project Schedule – Construction Sequence

- Physical Limitations
 - Site Access
 - Laydown Area
- Fire Flow
 - Operating Existing Facilities

Historic Operation



Phase 1A



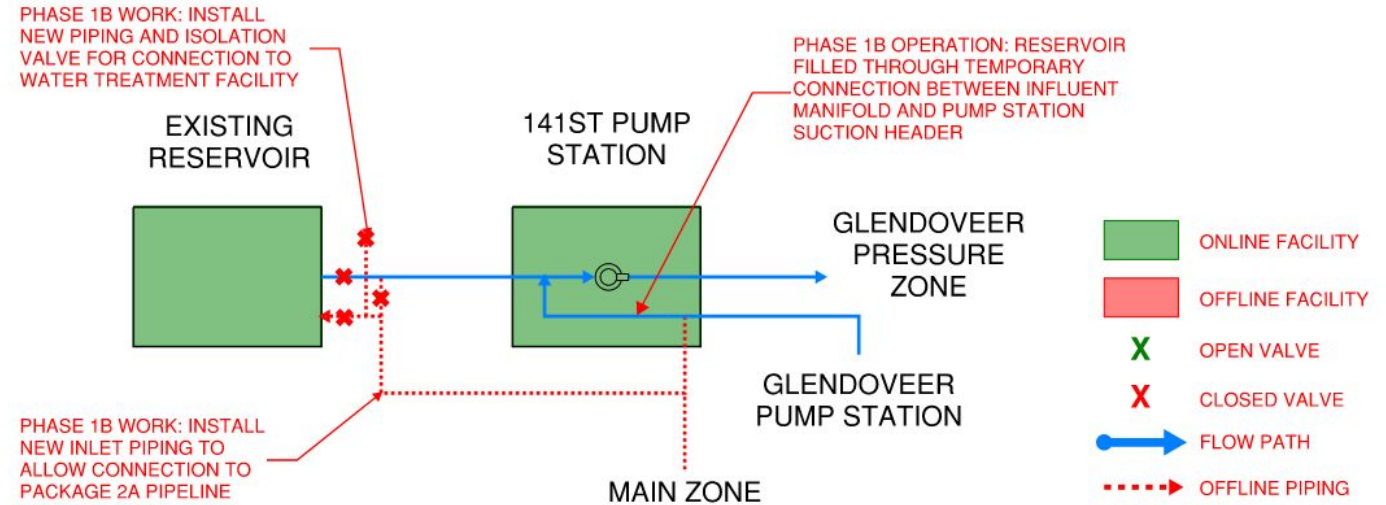
Phase 1 - Tank Isolation



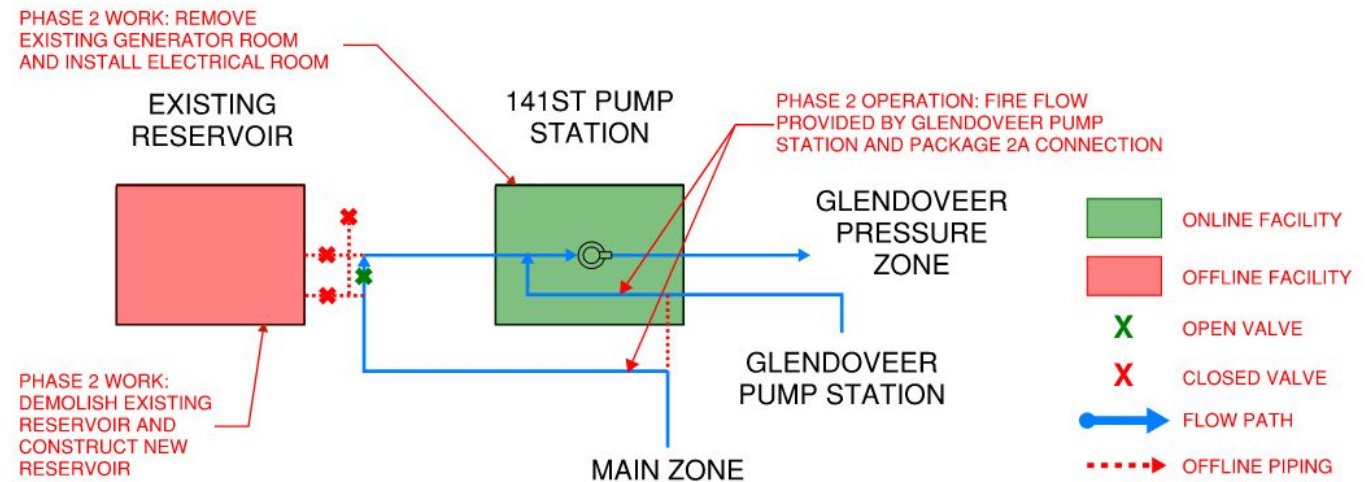
Project Schedule

- Phase 1
 - Yard piping modifications to isolate the reservoir
- Phase 2
 - Reservoir replacement

Phase 1B



Phase 2



Construction – Reservoir Demolition

- Key considerations:
 - Neighborhood Impacts
 - Tree Protection

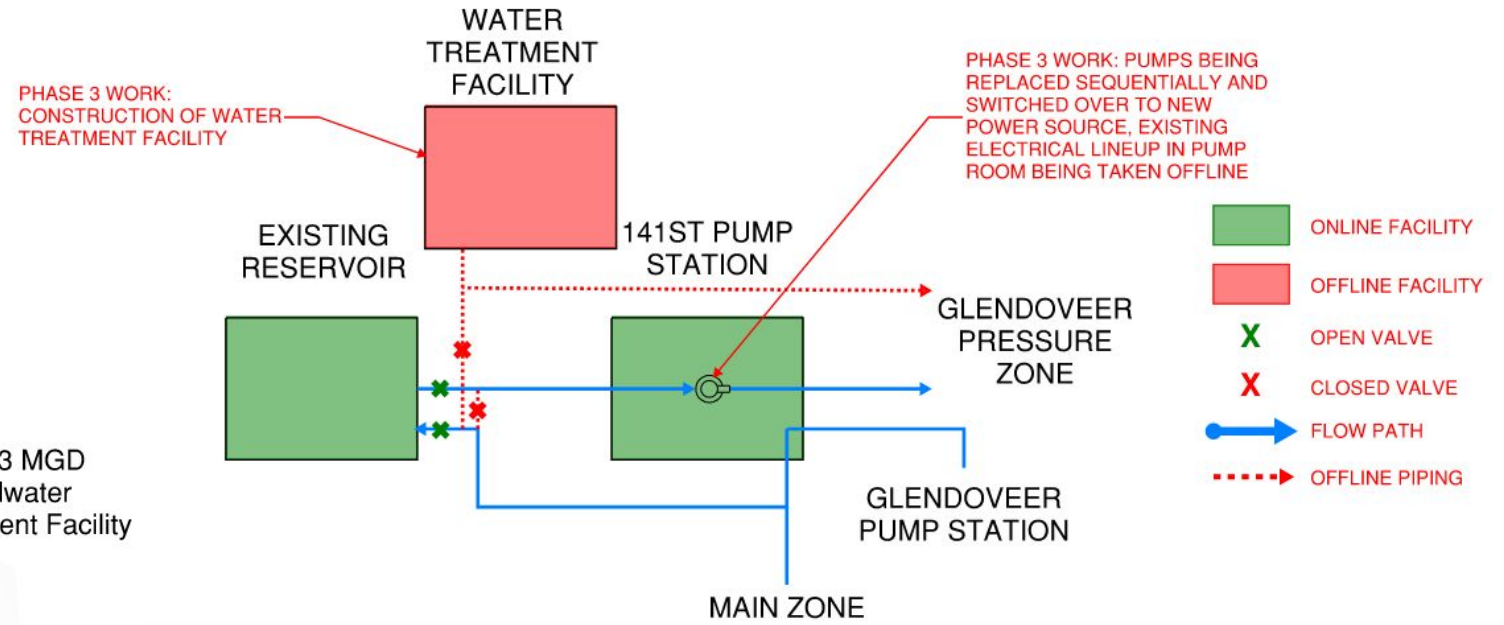
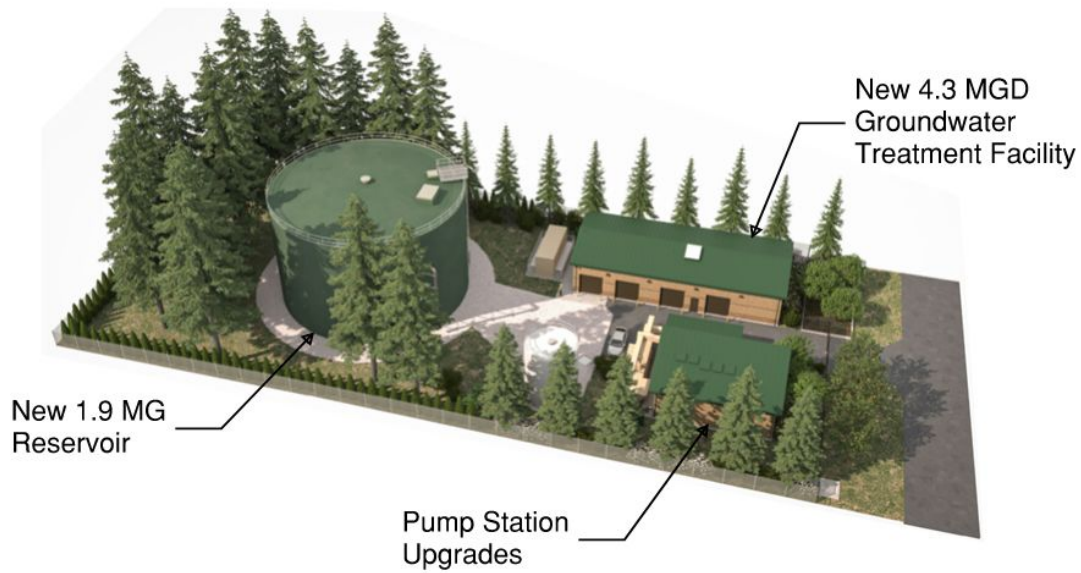


Construction



Project Schedule – Construction Sequence

- Next steps
- Electrical Sequencing
 - Switching to new power feed
 - New Backup Generator
 - Long Lead Items



Construction Progress – April 2025



Conclusions

- Great to have partners that can help work to find alternatives.
- Developing a feasible and plausible approach to construction, reviewed closely with operators and contractor, helps in getting everyone on the same page.
- Increased level of coordination during construction is key - balance schedule, site access, and facility operations.
- Always keep neighbors in mind. Proactive communication. Listen to their feedback to keep schedule moving forward.

Acknowledgments

- **RWPUD Staff**

- Jeremy Hudson
- Jay Breen

- **Jacobs Design Team**

- Robert White/Process Mech & SDC Lead
- Pat Van Duser/Project Manager
- Larry Moran/Construction Manager
- Many others on the design team!

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- Justin Ford
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- Randy Stead
- Jordan Stead

- **Emery & Sons (Contractor)**

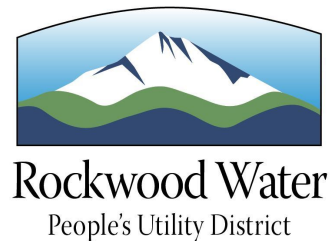
- **AKS (Arborist)**

Thank You! Questions?

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Jacobs

Challenging today.
Reinventing tomorrow.