



Seeing Purple: Final Design of the City of Beaverton's Non-potable Water System for Municipal Irrigation

April 29, 2022

PNWS AWWA Conference – Tacoma, WA



BEAVERTON PURPLE PIPE

Connecting the right water with the right uses.



Topics

1. Overview of Purple Pipe Program
2. Working with stakeholders
3. Design drivers and operations
4. Lessons learned and closing



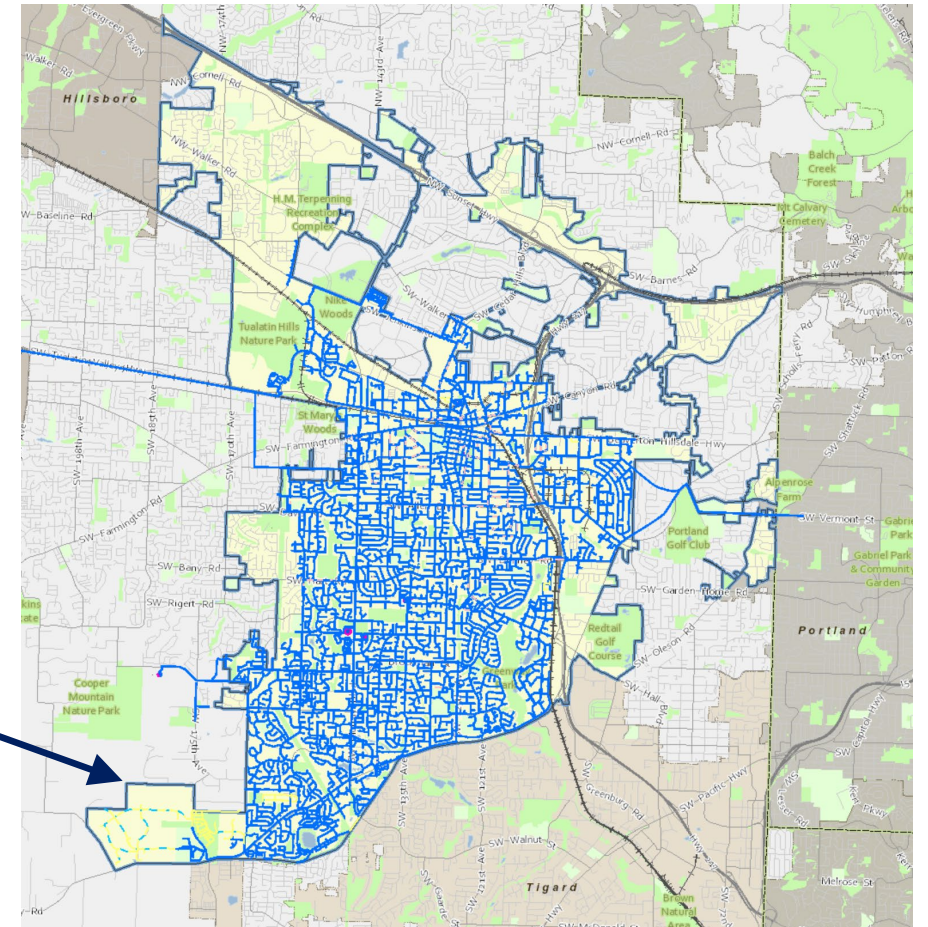
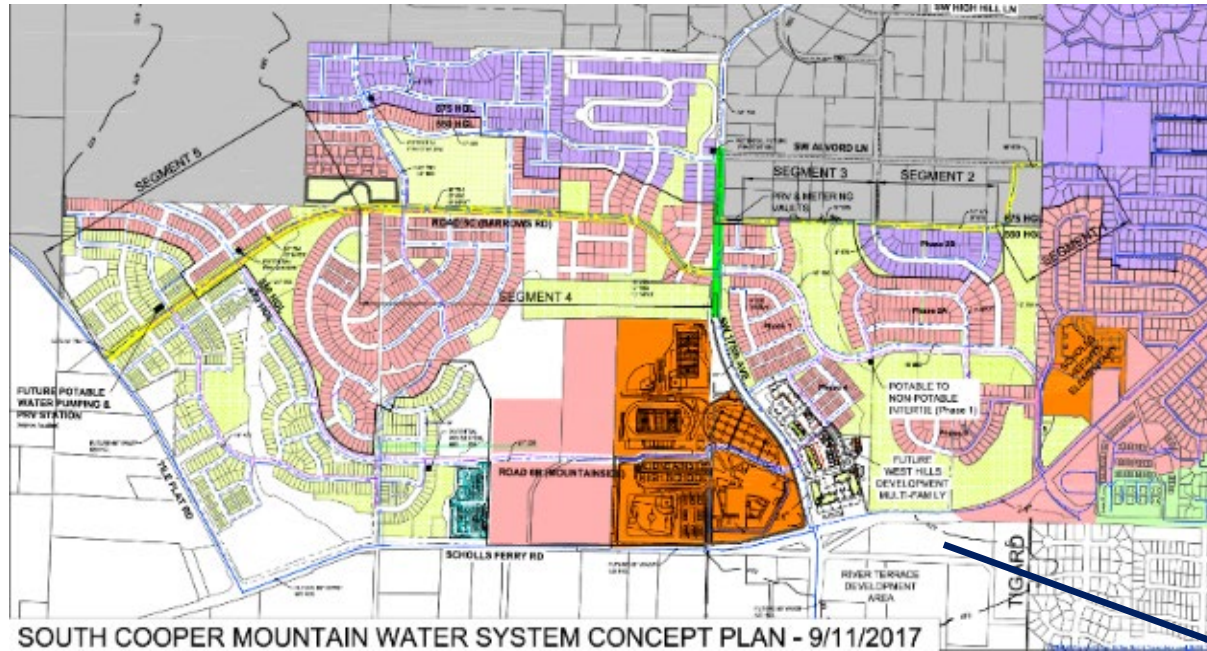
Overview: Goals of Purple Pipe Program

- Use non-potable water to irrigate community green spaces in the South Cooper Mountain area of Beaverton and provide stream recharging.
- City's goals:
 - Create a sustainable and reliable source of water
 - Be environmentally responsible and conserve natural resources
 - Be financially responsible



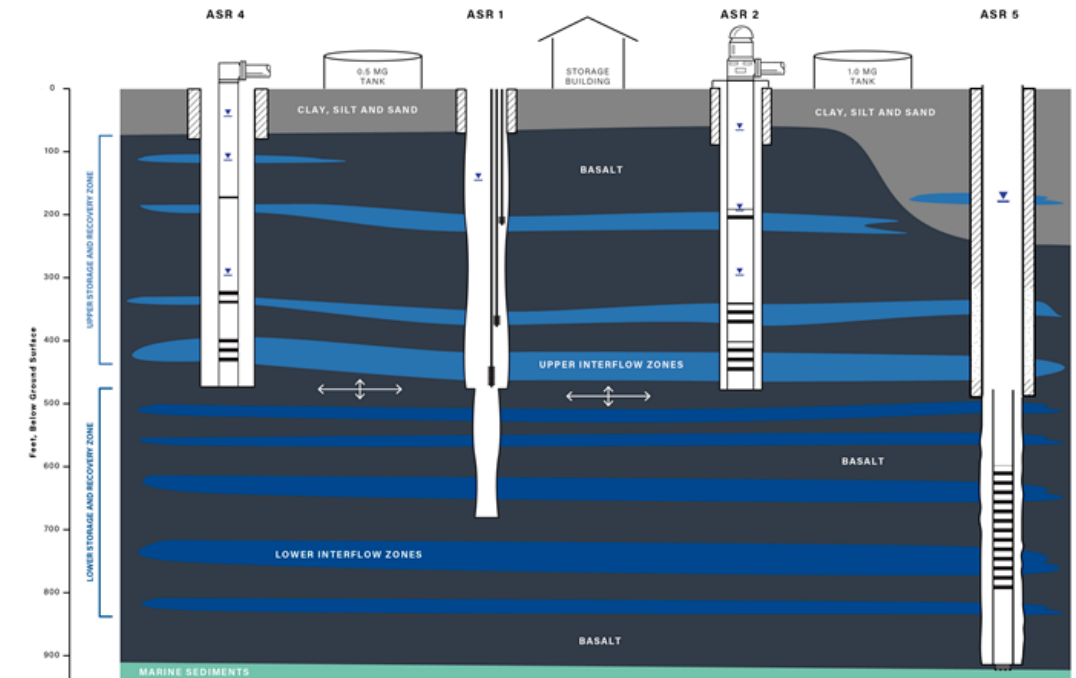
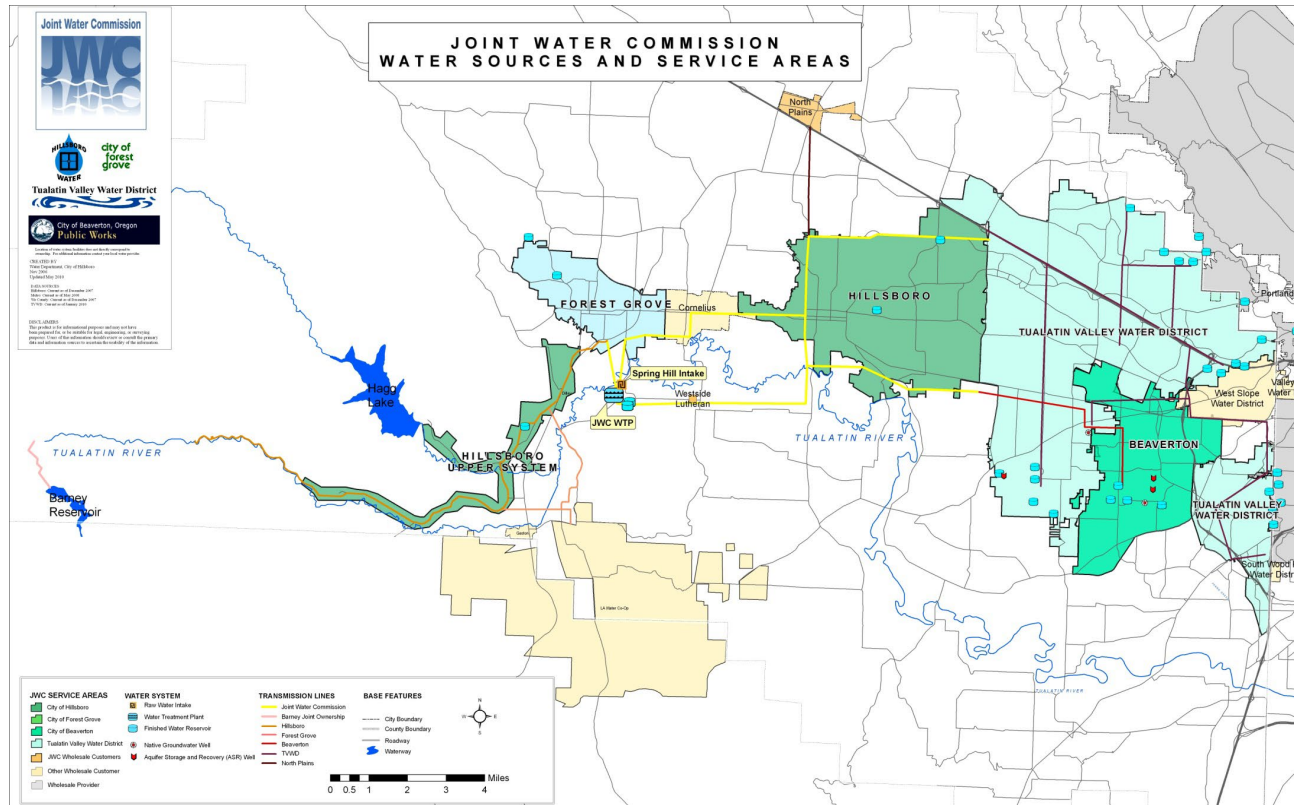
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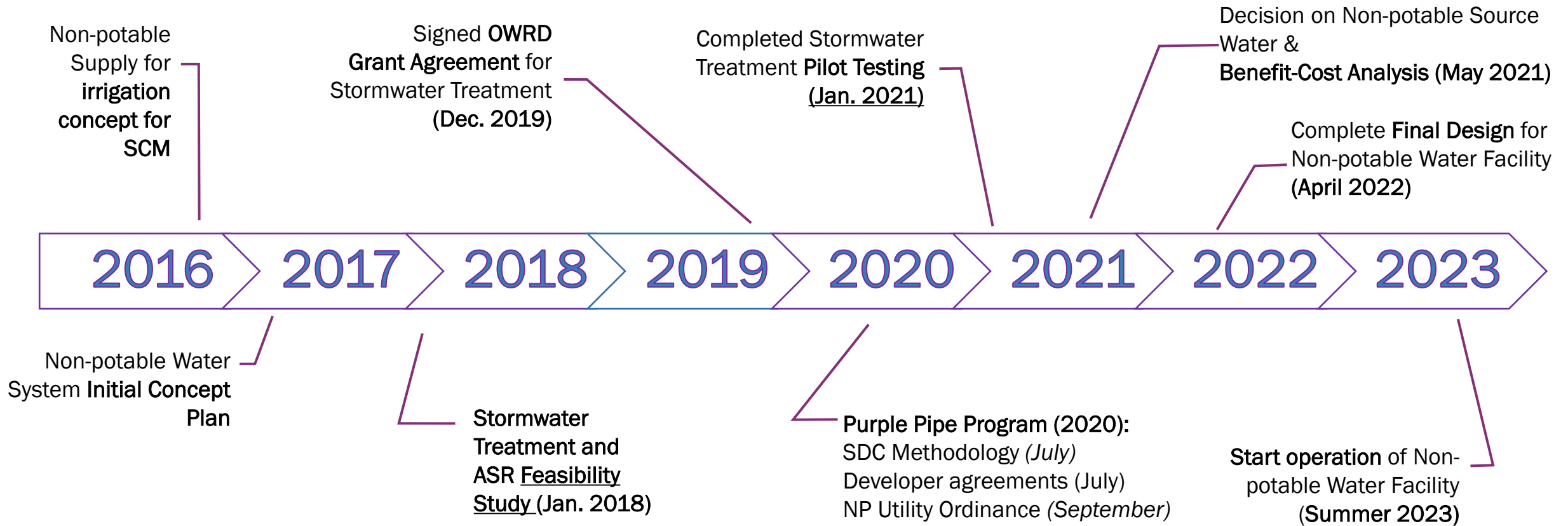


JWC Water Supply System: 75% of summer water

Aquifer Storage and Recovery (ASR): 25% summer water



Beaverton Purple Pipe Implementation Timeline



Benefits Key to City Council and Stakeholder Support

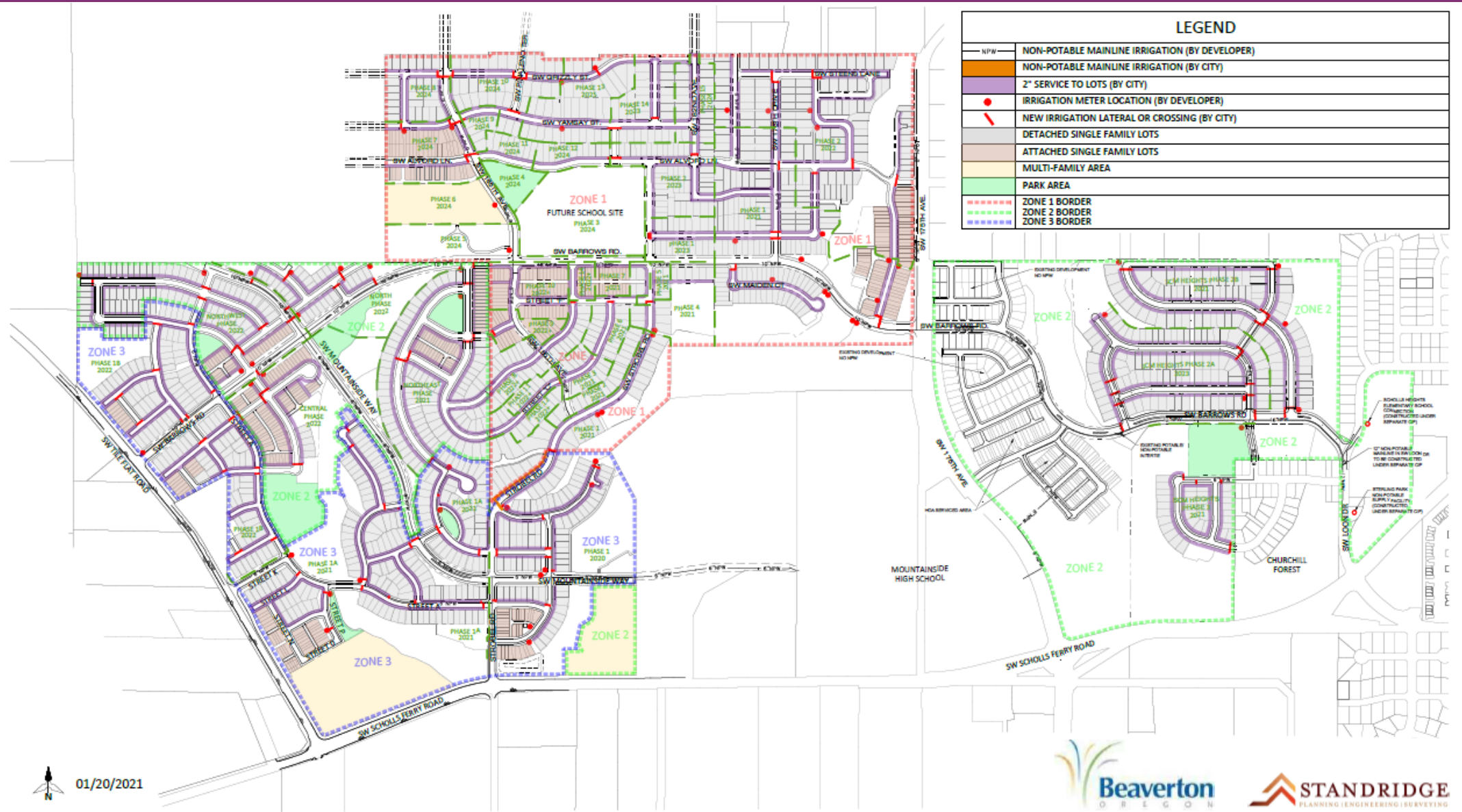
- Component of City's Climate Action Plan
- Puts available water to use that would otherwise be a waste
- Reduces stormwater flow into the storm system
- Provides summer streamflow benefits (for habitat and fish)
- Reduces unnecessary use of chlorinated, fluoridated drinking water for irrigation



Maintaining City Council Support

- System Development Charge Methodology (Jul. 2020)
- SDC Impact Reductions (Aug. 2020)
- Non-potable Water Utility Ordinance (Sep. 2020)
- Contracts to design purple pipe distribution system (Oct. 2020)
- Approve stormwater treatment source (May 2021)
- Developer construction contract agreements (first phases) (Sep-Nov. 2021)
- Portions funded by EPA (WIFIA) and OWRD grant
- *Council elections and transitions, changes with staff (including PWD)*

Collaborating with the Development Community

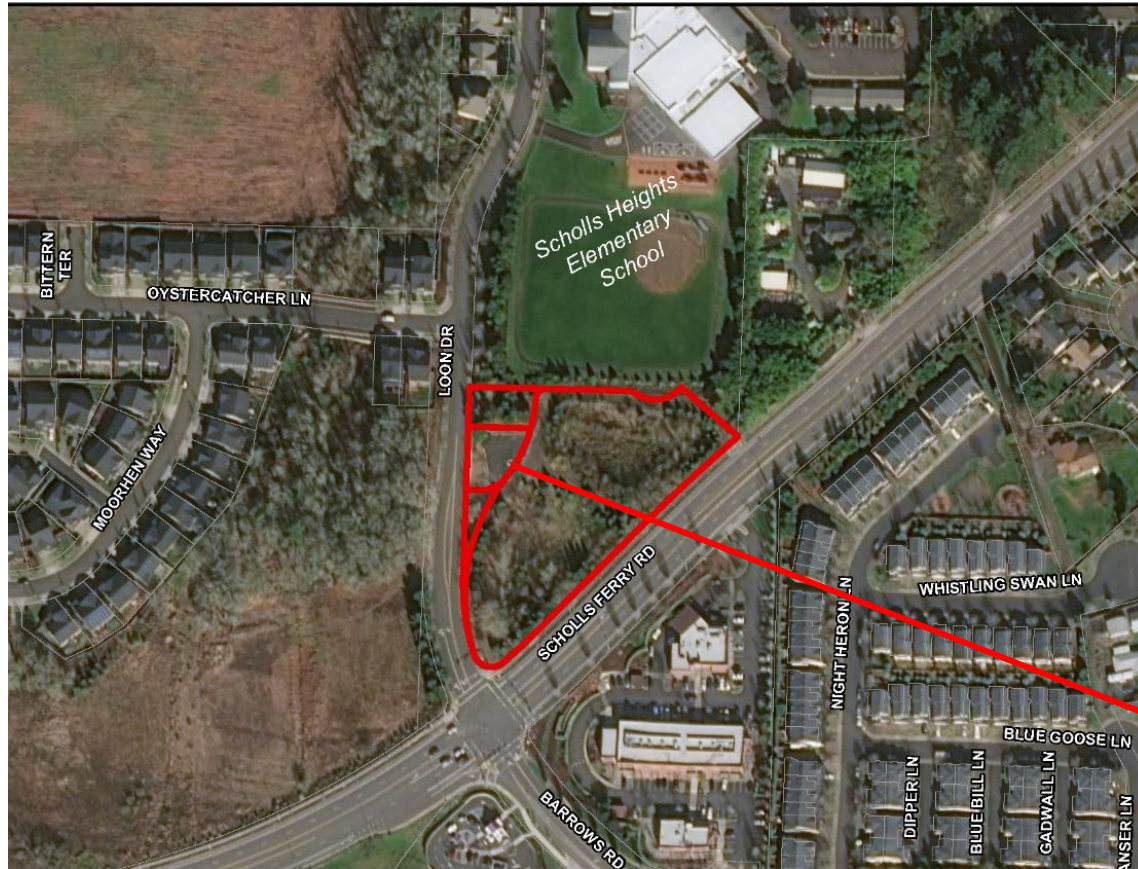


Source of Water for Purple Pipe Program

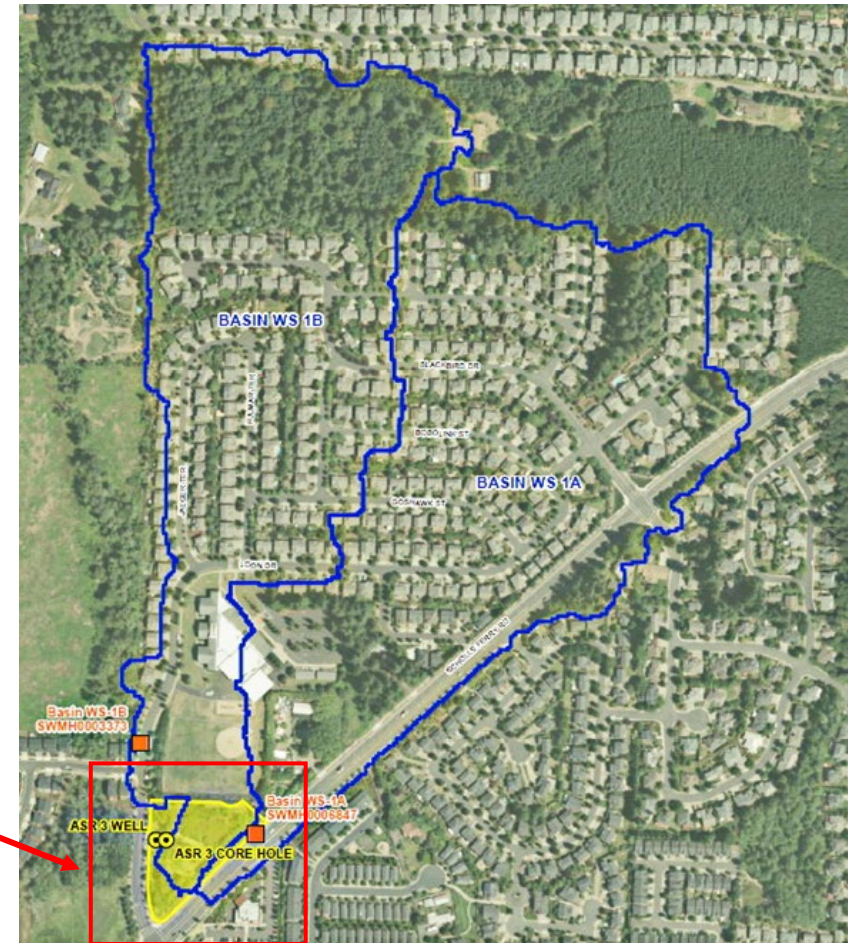
- The Beaverton Purple Pipe will carry non-potable water:
 - **Groundwater** from an aquifer.
 - **Stormwater** that will be collected, treated and stored inside the aquifer.
- The system will NOT carry:
 - “Recycled” water (treated effluent) or graywater.



Sterling Park Non-potable Water Facility Source Water



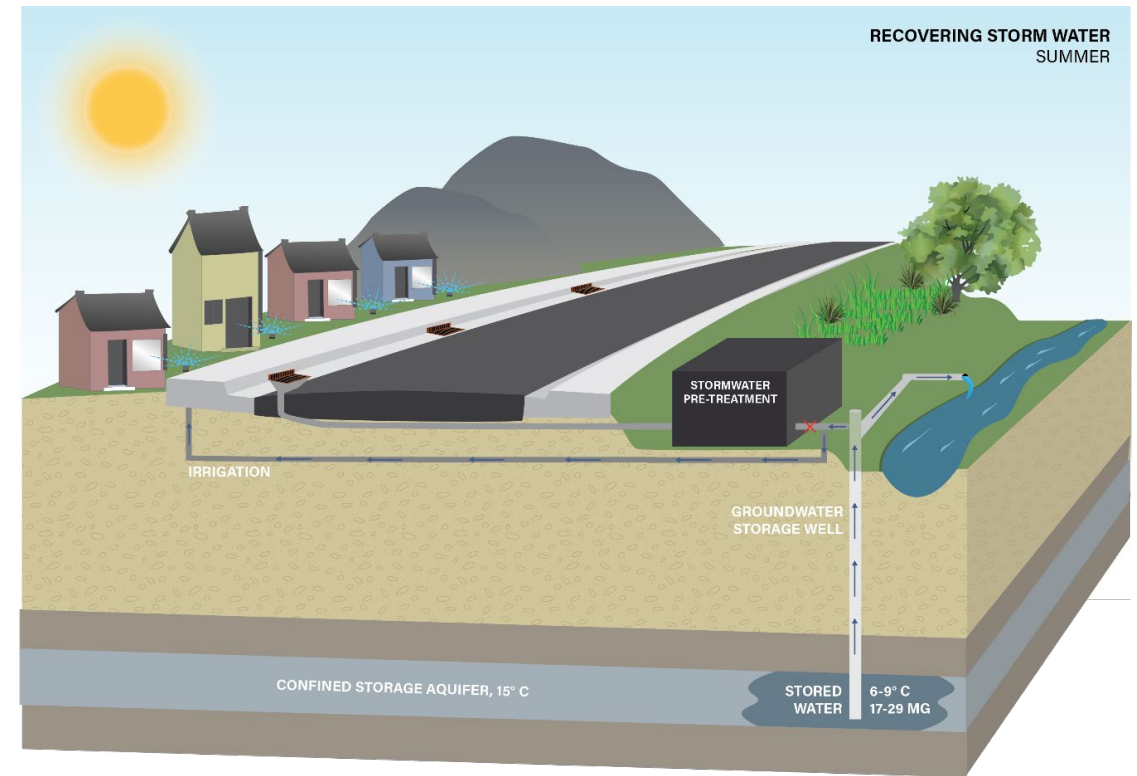
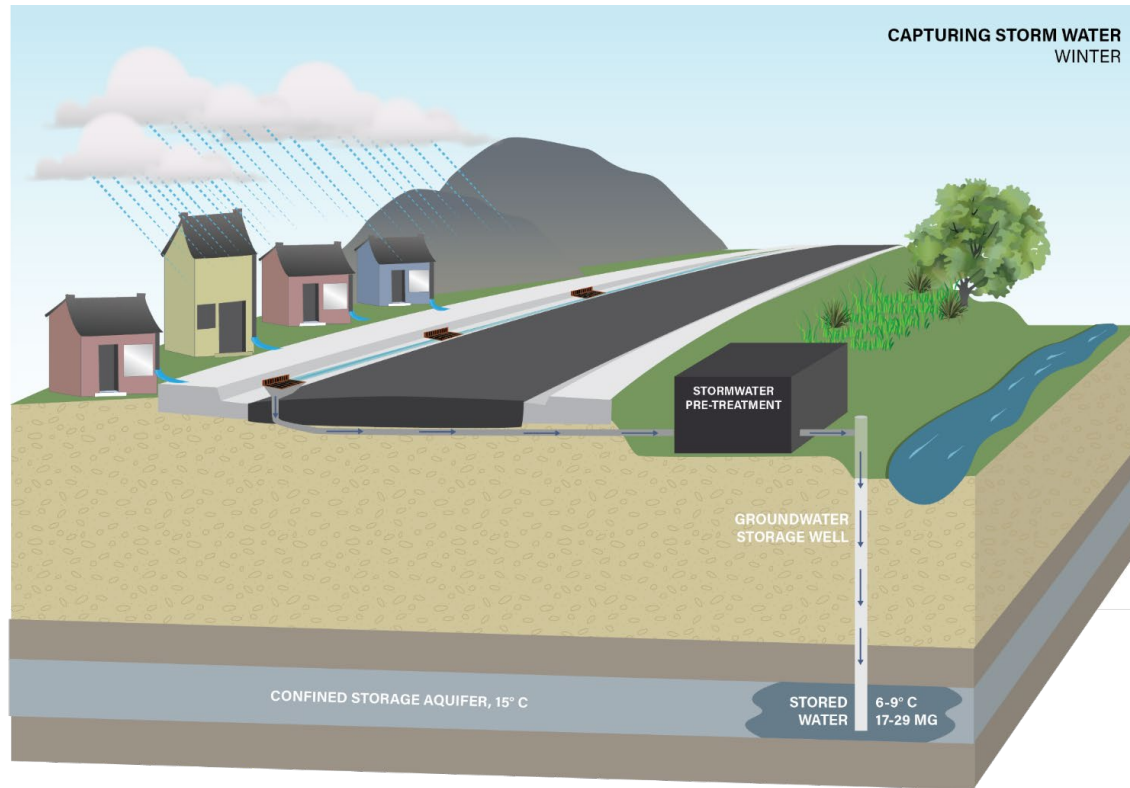
ASR 3/3A (Native Ground Water)



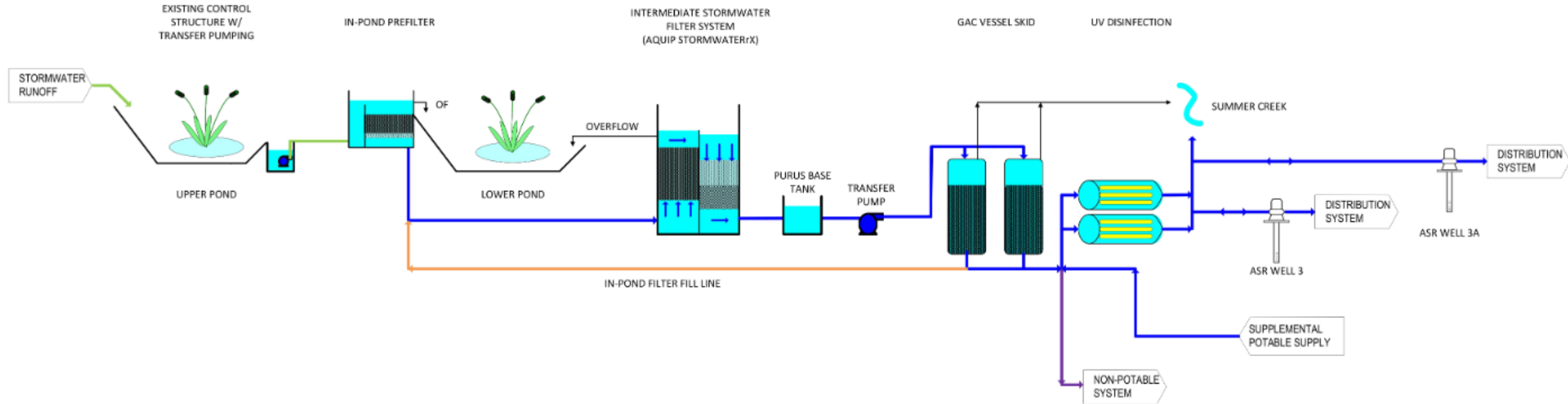
Treated Storm Water

Stormwater to Augment Non-potable Supply

- Conducted feasibility study (2016-2017) and pilot testing (2020-2021)
- Completing design and permitting (limited license for aquifer recharge and recovery) in 2022



Sterling Park Stormwater Treatment Process Flow



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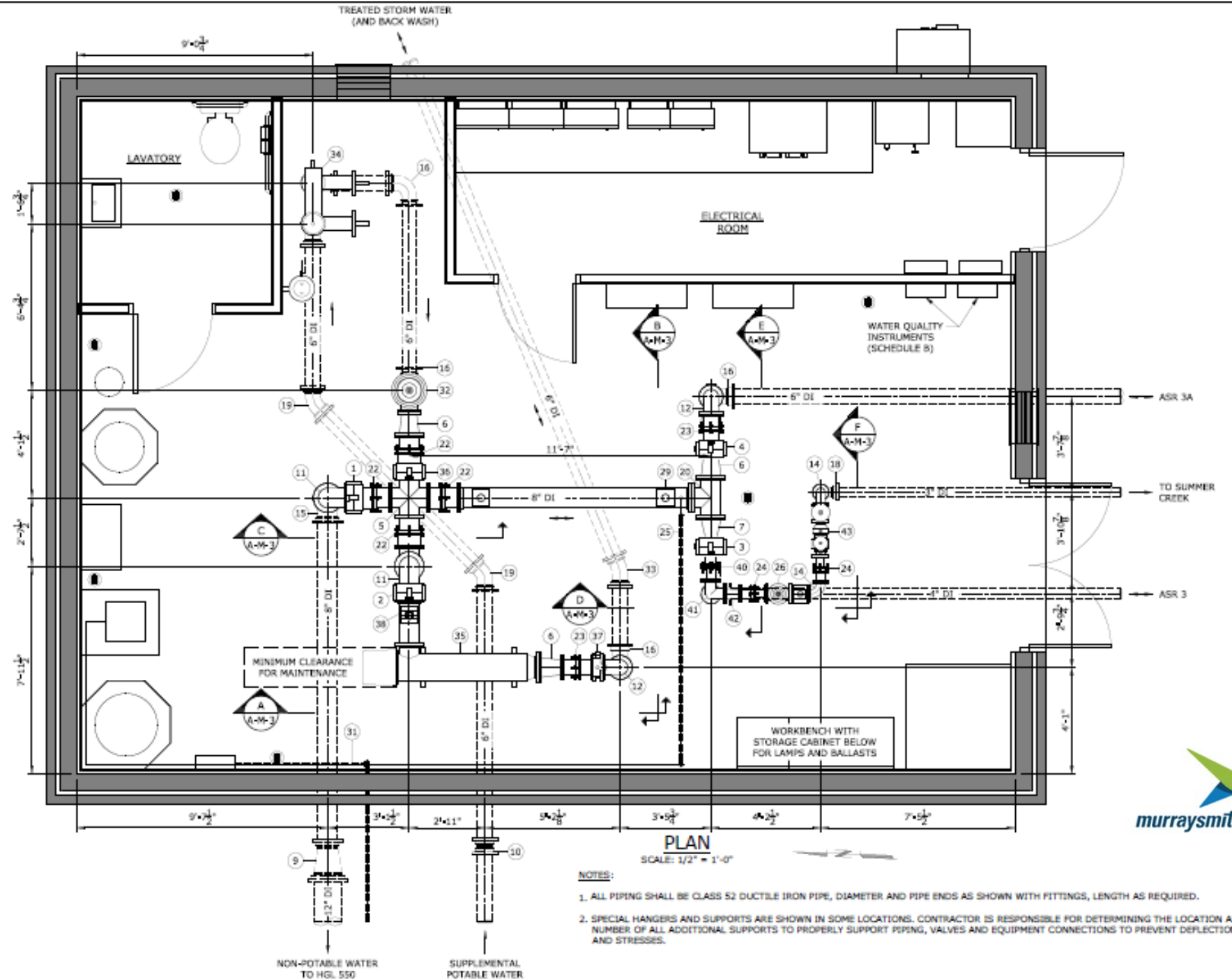
Original Sterling Park Conditions (with Stormwater Ponds and ASR 3 Test Well)



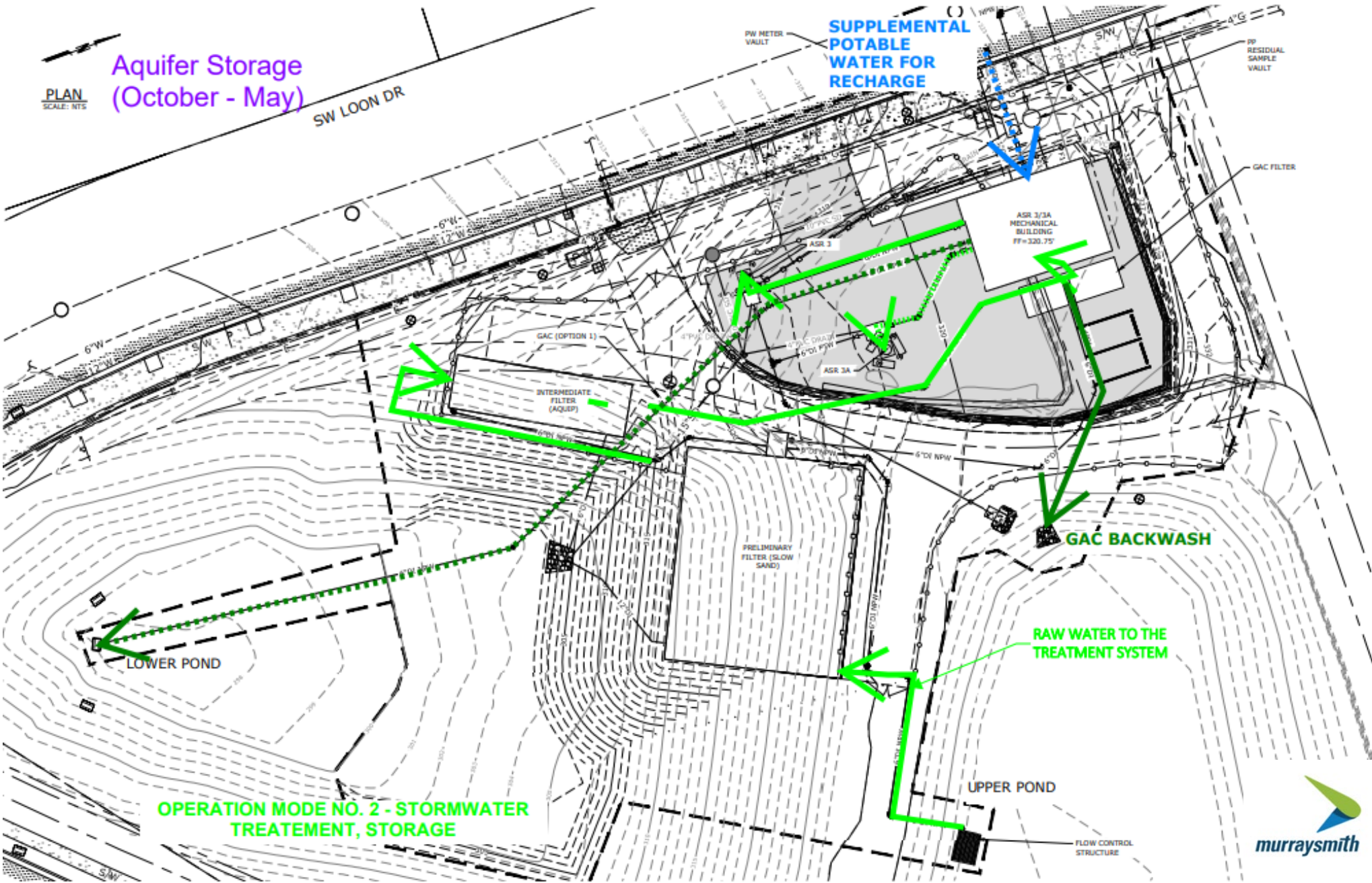
Rendering of Sterling Park ASR 3 Pump Station and Stormwater Treatment Facility



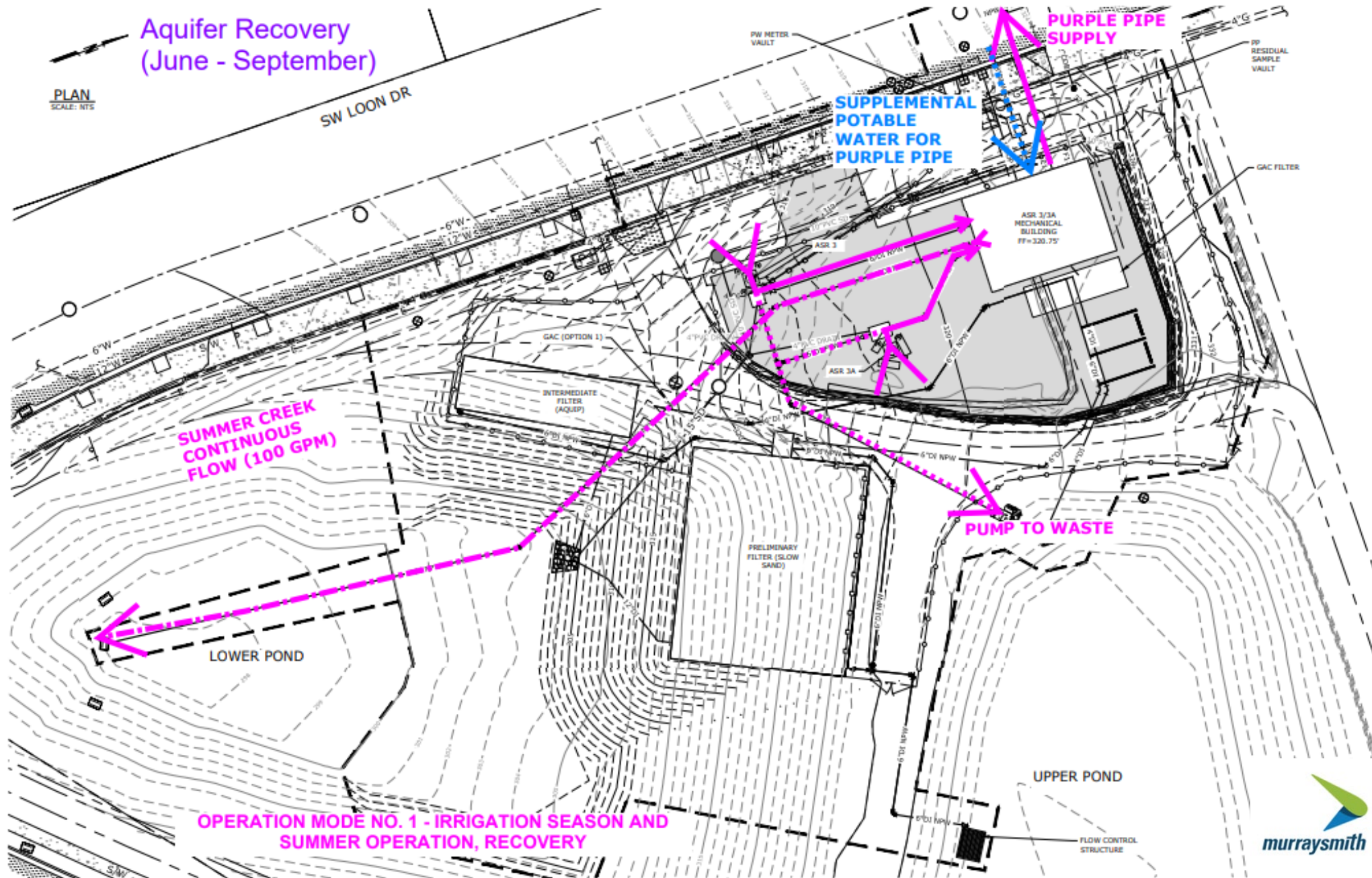
ASR 3 Pump Station Layout



Operations:
Stormwater
Treatment &
Storage



Operations: Recovery for irrigation and stream discharge



O&M at Sterling Park ASR 3 Pump Station and Stormwater Treatment Facility

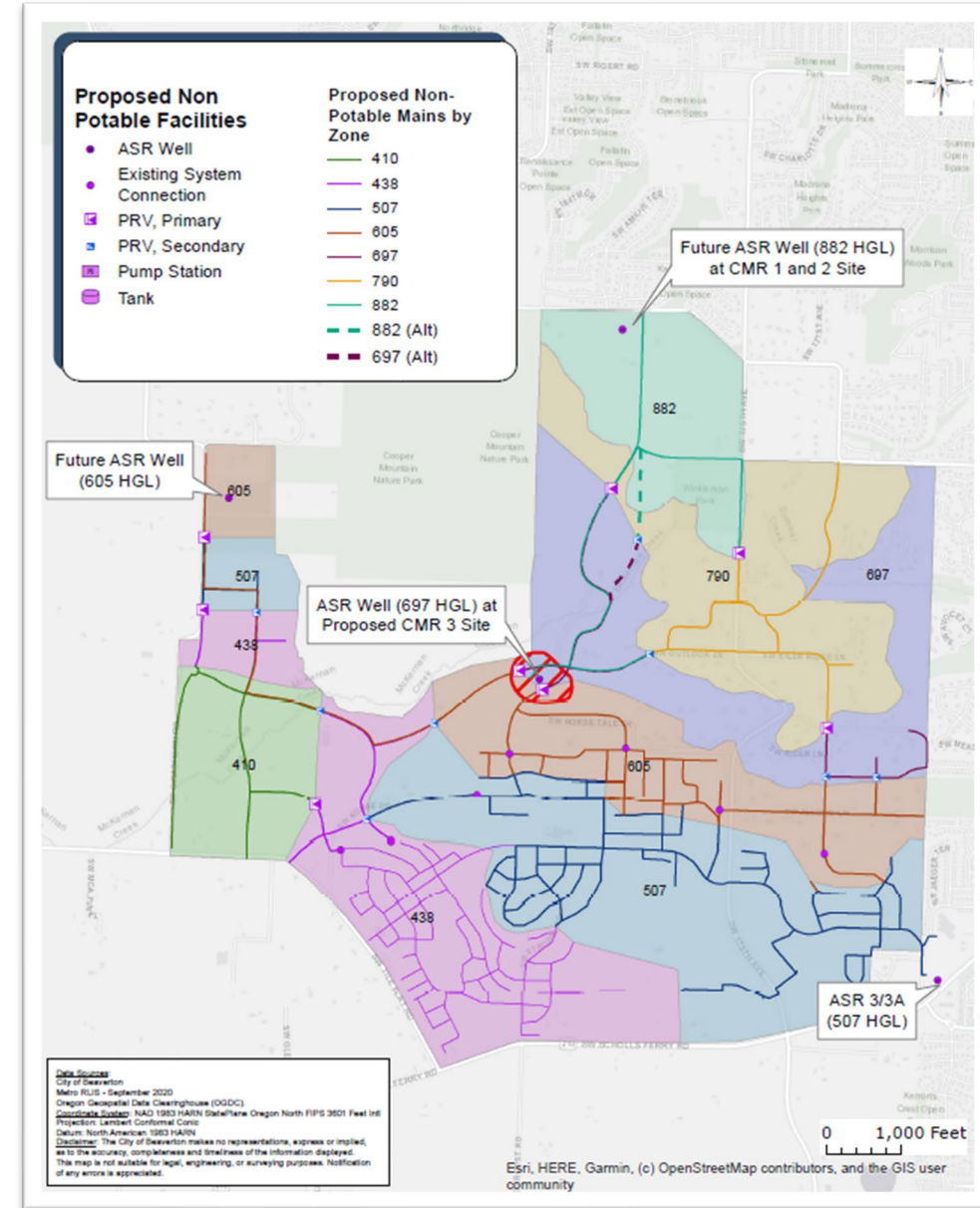
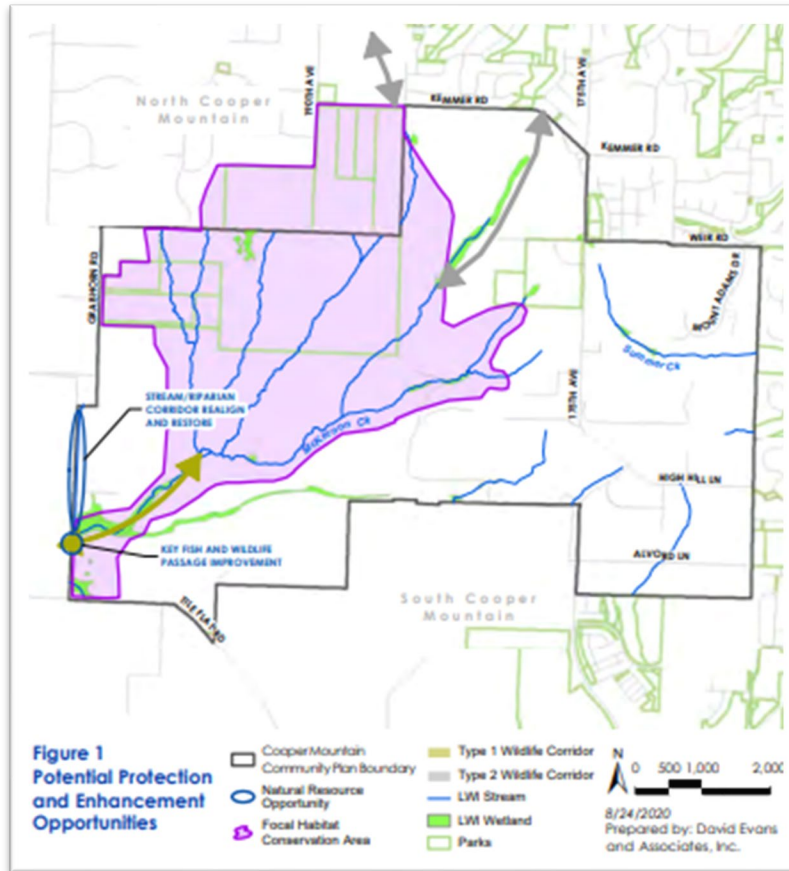


Key Lessons

- Find the right opportunity – the benefit-cost can be site-specific
- Master plan – and try to stay ahead
- Engage development community and stakeholders early and often
- Committed champion with the backing of a diverse team
- Develop a sound funding plan
 - Leverage grants and loans
- Be flexible and plan for change



Beaverton's Opportunity: Expansion into Cooper Mountain



Opportunities for the Water Industry

Beaverton's “proof of concept” will help utilities and water industry:

- Build on lessons learned
- Establish permitting framework
- Improve on treatment technologies
- Criteria to find the right site/project and its scalability
- Leverage stormwater reuse for funding opportunities





Questions?

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