

# South Redmond Water Facilities:

Using Alternative Delivery to Fast-Track Critical Infrastructure to Serve a New Pressure Zone

**Presented by:**

Dennis Galinato, PE

Design PM, Principal Engineer, Murraysmith

Mike Caccavano, PE

City Engineer, City of Redmond

Brian Vinson,

Construction Project Manager,

Emery & Sons Construction Group

***murraysmith***



# Agenda



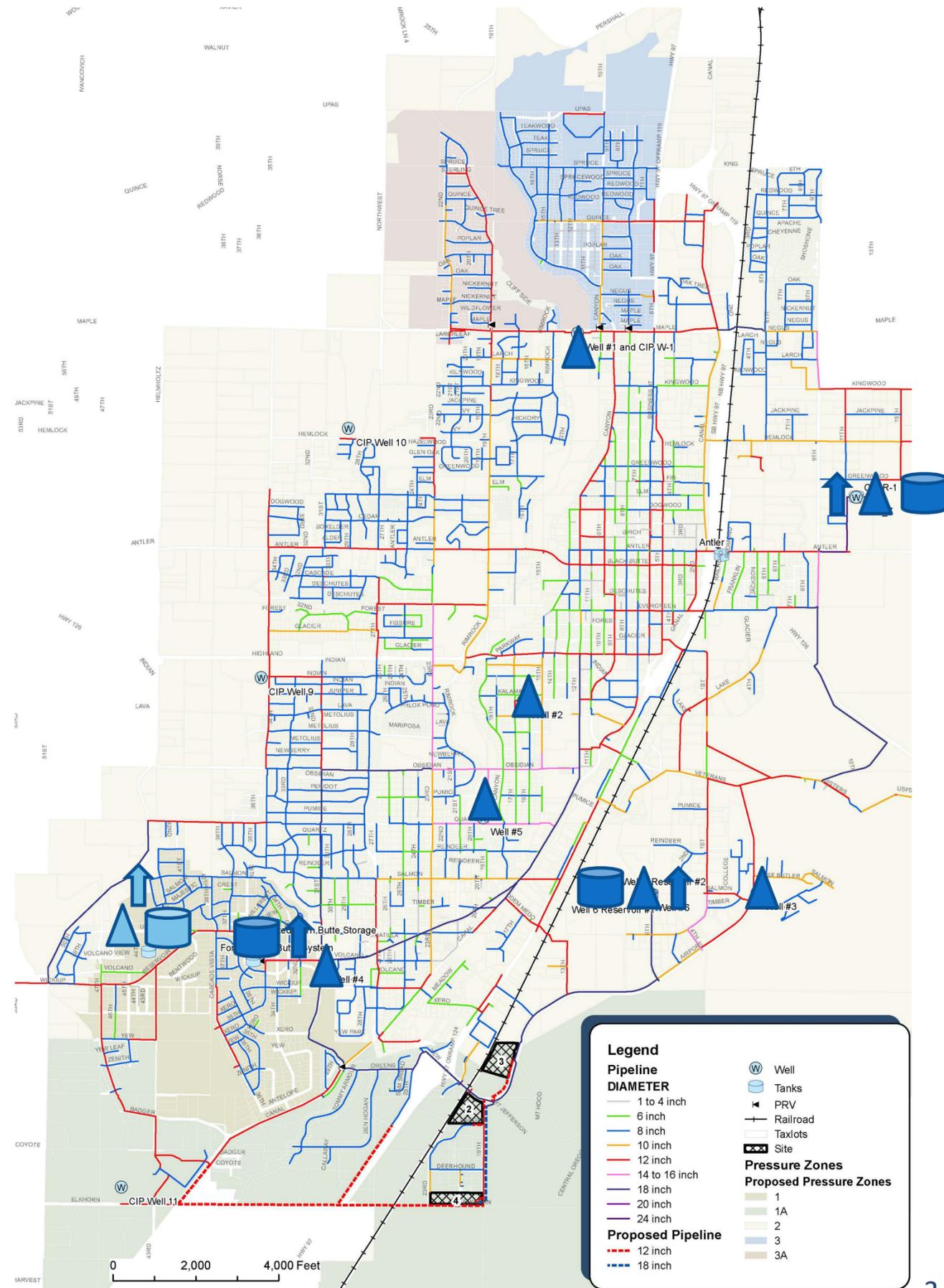
- 01 Background on Redmond's Water System
- 02 Design Considerations
- 03 CM/GC Process
- 04 Takeaways
- 05 Q&A

# Overview of Supply, Storage, and Distribution

01

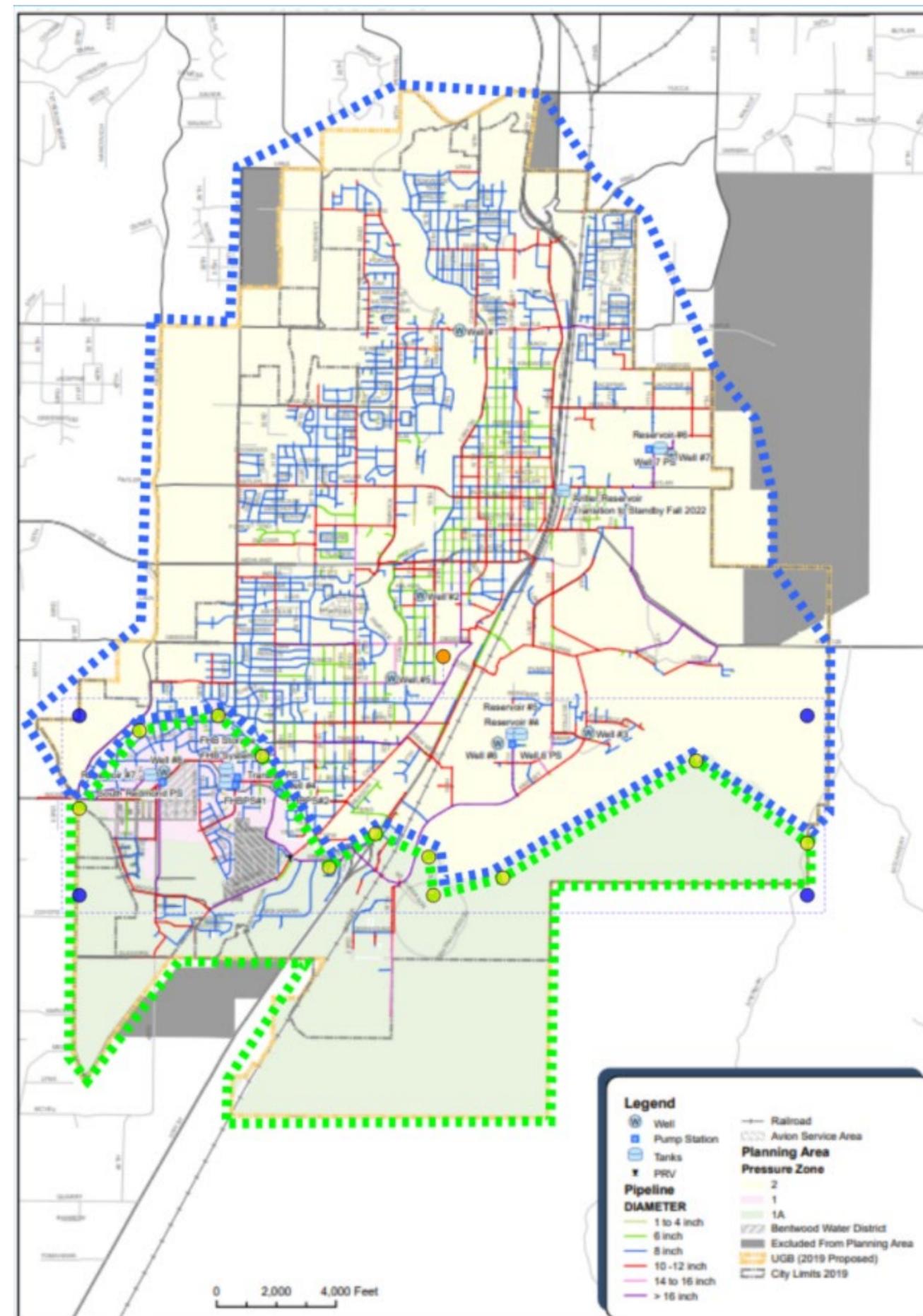
- 7 Wells
- 5 Reservoirs
- 3 Booster Pump Stations

Background on  
Water System



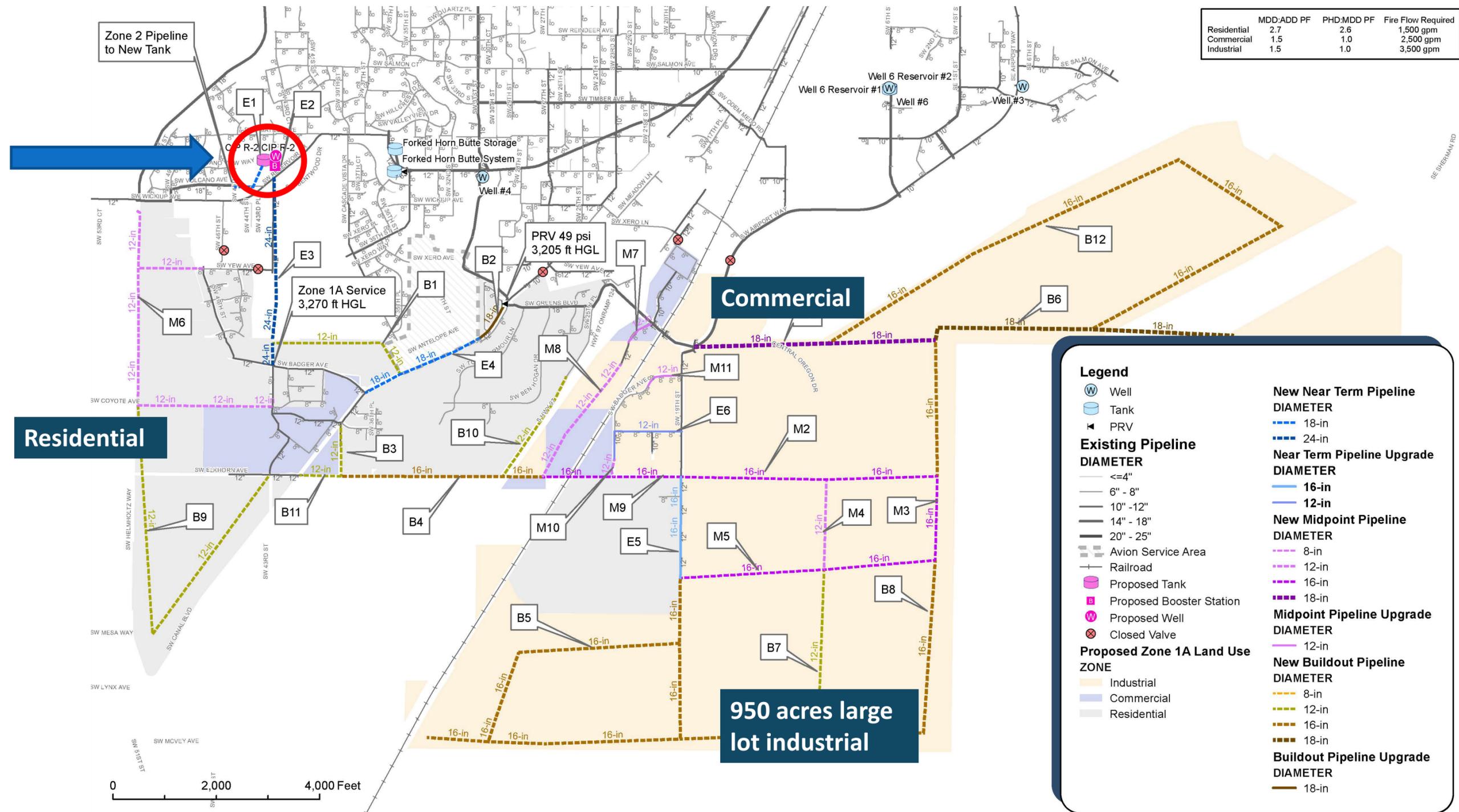
# Overview of Pressure Zones

- PZ 1 includes higher elevations
- PZ 2 includes most of the city



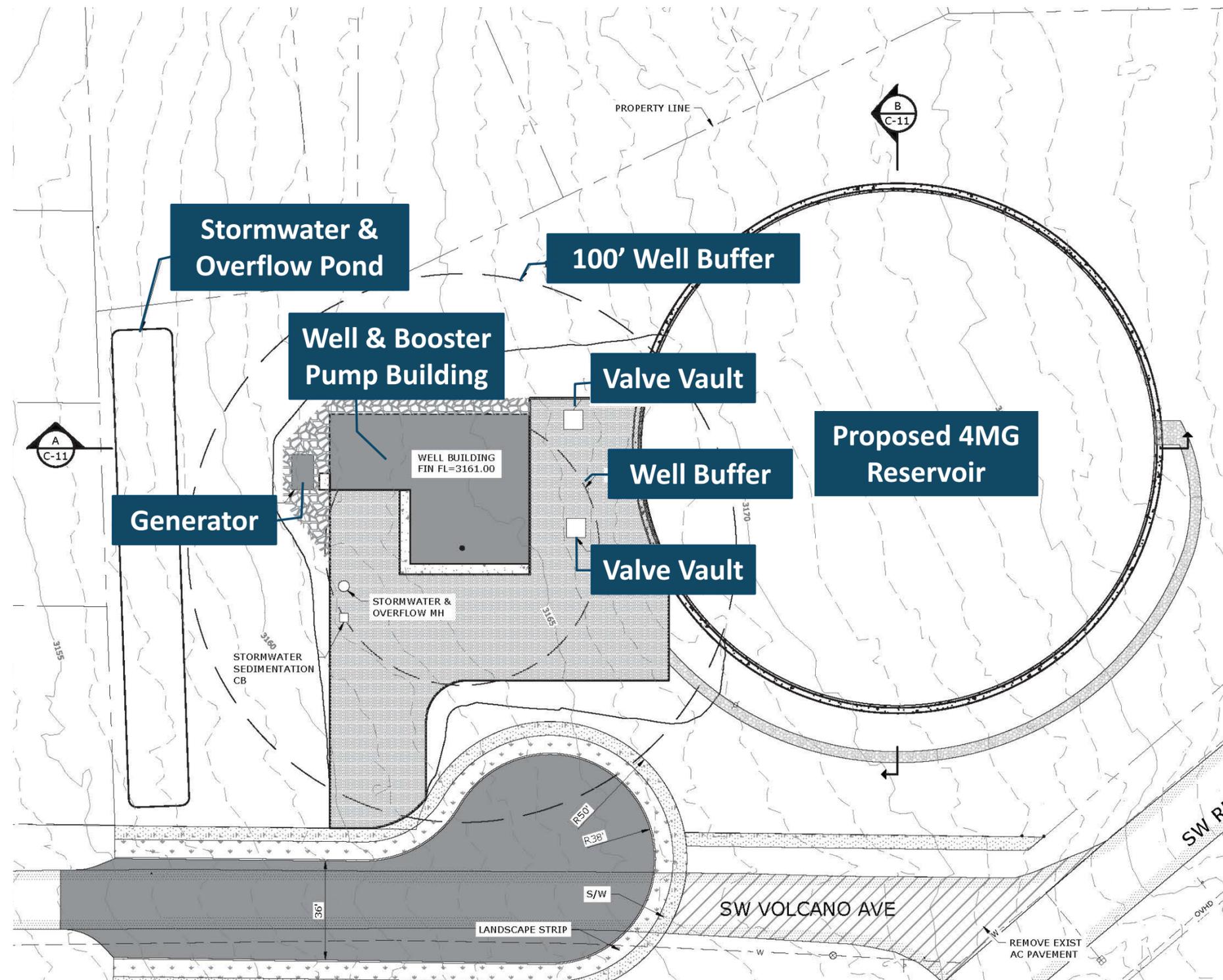
# Master Plan CIP

## Background on Water System



# Facility that Solves Multiple Problems

- **Well 9** - 3,500 gpm water supply for Main Pressure Zone and reservoir
- **4MG AWWA Type 1 D110 Pre-Stressed Concrete Reservoir** - Storage for Main Pressure Zone and Booster Pumps for Pressure Zone 1A
- **Pressure Zone 1A Booster Pumps** - 7,600 gpm capacity
- **Zone Interconnectivity**
- **Other Facility Features** - Emergency generators, chlorine gas disinfection



# Facility Features



# Site Aesthetics





# CM/GC Delivery - What and Why?

- ***Construction Manager/General Contractor (CM/GC)***
  - Contractor brought on board during design phase
  - Qualifications based selection
- ***City's reasons for selecting CM/GC***
  - Immediate need for facility
  - Ability to choose most qualified contractor
  - Owner/engineer/contractor partnership
  - City's prior experience with CM/GC

## Keys to a Successful CM/GC Process



- ✓ Solicit for the CM/GC contractor at the ***right time*** (no earlier than 30% or later than 60% design)
- ✓ Base on ***design assistance, schedule, cost, and risk*** factors
- ✓ Make the ***solicitation specific*** (no boilerplate RFP)

# Responding to Project Challenges



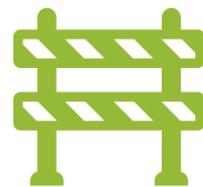
## Tight construction timeline

- Urgent need for additional system capacity
- Winter work restrictions



## Subcontractor selection

- Ability to manage specification requirements
- Proper equipment
- Ability to manage schedule



## Construction conditions

- 30,000 CY rock excavation and differential backfill
- Small working area (working with adjacent property owner)
- Winter construction work conditions
- Long lead time for certain equipment
- Well testing and water disposal
- COVID

# CM/GC Advantages

- ✓ Ability to drive design decisions
- ✓ Constructability input from contractor on design
- ✓ Early schedule/sequencing and addressing site challenges
- ✓ Specific value engineering
- ✓ Cost control by collaborating between all parties to solve issues/challenges
- ✓ Flexibility for ongoing design changes and construction methods
- ✓ Early work packages and material procurement to help with schedule constraint
- ✓ History working together – ***Redmond, Murraysmith, and Emery & Sons have worked together on a similar project***

# Early Construction Packages



## Process

- Define the goals and objectives of early work (schedule, cost, risk, etc.)
- Advance design elements based on early work/materials recommendations
- Move through review and approval process for early work amendments
- Complete GMP reconciliation



## Recommended packages

- Well drilling (schedule)
- Earthwork (schedule and cost)
- Construction of reservoir slab (schedule and cost)
- Procurement of long lead time materials (schedule and cost)

# Value Engineering

- Reducing material haul off by using adjacent property owner's land for stockpile and staging
- Using rock crushed on-site for backfill
- Discharging the well testing water to the canal through an existing 18-inch waterline
- Eliminating the FLEX-TENDS in favor of long sleeve connections at the reservoir
- Reducing the drain rock section under the reservoir from 24 to 12 inches
- Eliminating the drain rock envelope around the tank perimeter
- Replacing the proprietary inlet mixing system with a custom-built system
- Refining concrete specifications for cold weather construction
- Optimizing design/layout of site piping fittings and valves
- Reducing the reservoir outlet from 30 to 24 inches and changing to a check valve
- Swapping in-building generators for outdoor generator enclosures
- Using controlled density fill rather than bentonite for the trench cutoff wall
- Reducing the scope of the site fencing

# Construction Status



# Lessons Learned and Benefits of CM/GC



- ***Invaluable*** close coordination between design and construction teams
- Master planning and alternatives analysis ***prior to final design***
- CM/GC contractor brought on at the ***right time***
- ***Strategic procurement*** of materials and subcontractors
- Realistic ***schedule expectations*** and understanding of ***critical milestones*** and ***completion implications***
- ***Contingency plans*** for the “what ifs?” (like a pandemic)



Q&A

***murraysmith***



**Thank you!**