

2025 PNWS-AWWA Spring Conference

I love it when a plan
comes together! PDB
Delivery for Tigard's
Reservoir 18 and Pump
Station

Matt Hickey, PE | Consor

Ross Horton, PE | City of Tigard

Tim Janesofsky | Emery and Sons



Teamwork = Project Success



Project Team



**Emery & Sons
Construction, Inc.**
General Contractors
Underground Specialists



Kennedy Jenks

Subconsultants

Peterson Structural Engineers

R&W

PEI

GRI

AKS

Greenworks

Morgan Walen

Subcontractors

Marion Construction

Holstrom Electrical

NW Wetland Restoration

Kodiak

Presentation Outline

01 Introductions

02 Project Background

03 Project Description

04 Why Progressive Design Build?

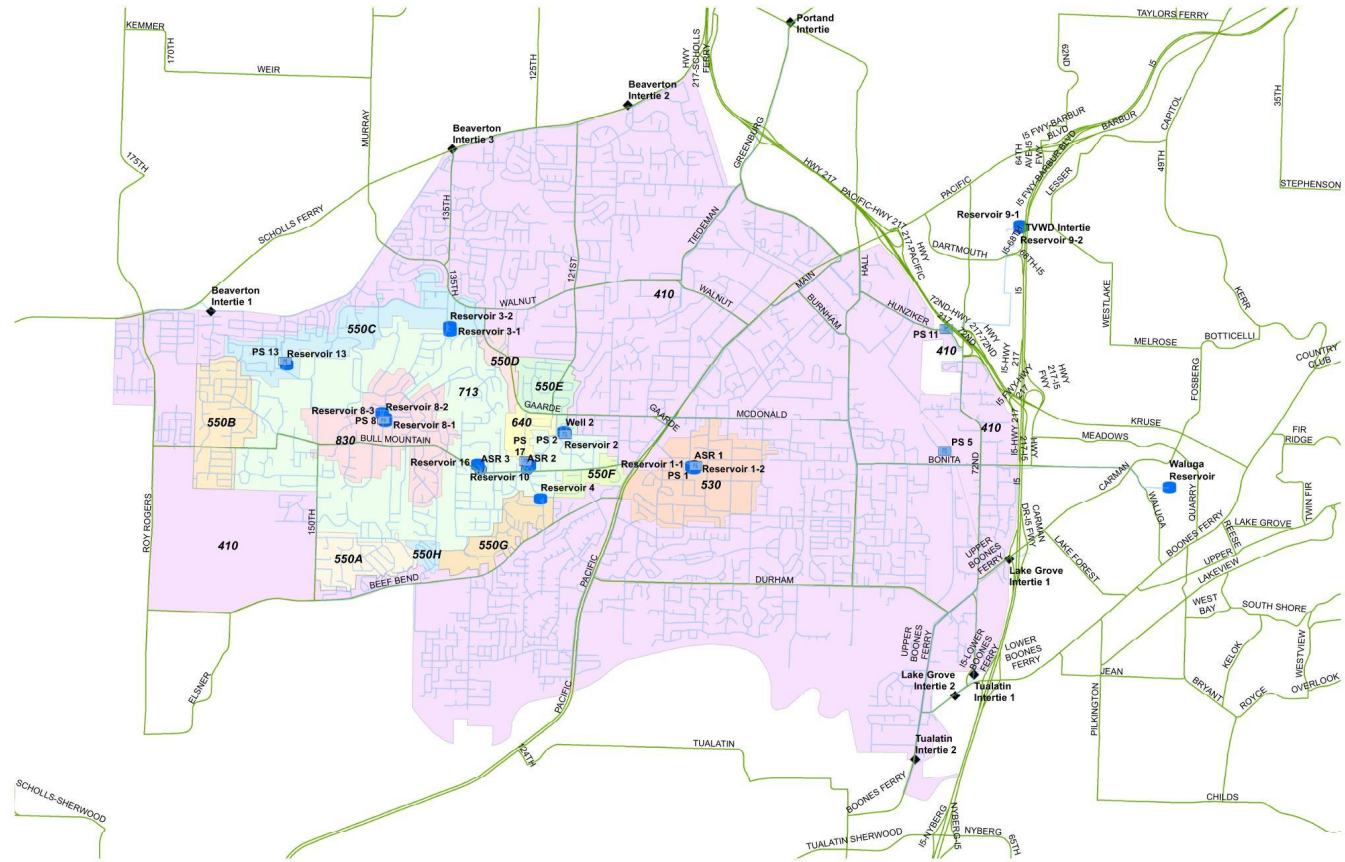
05 PDB Process

06 Project Challenges



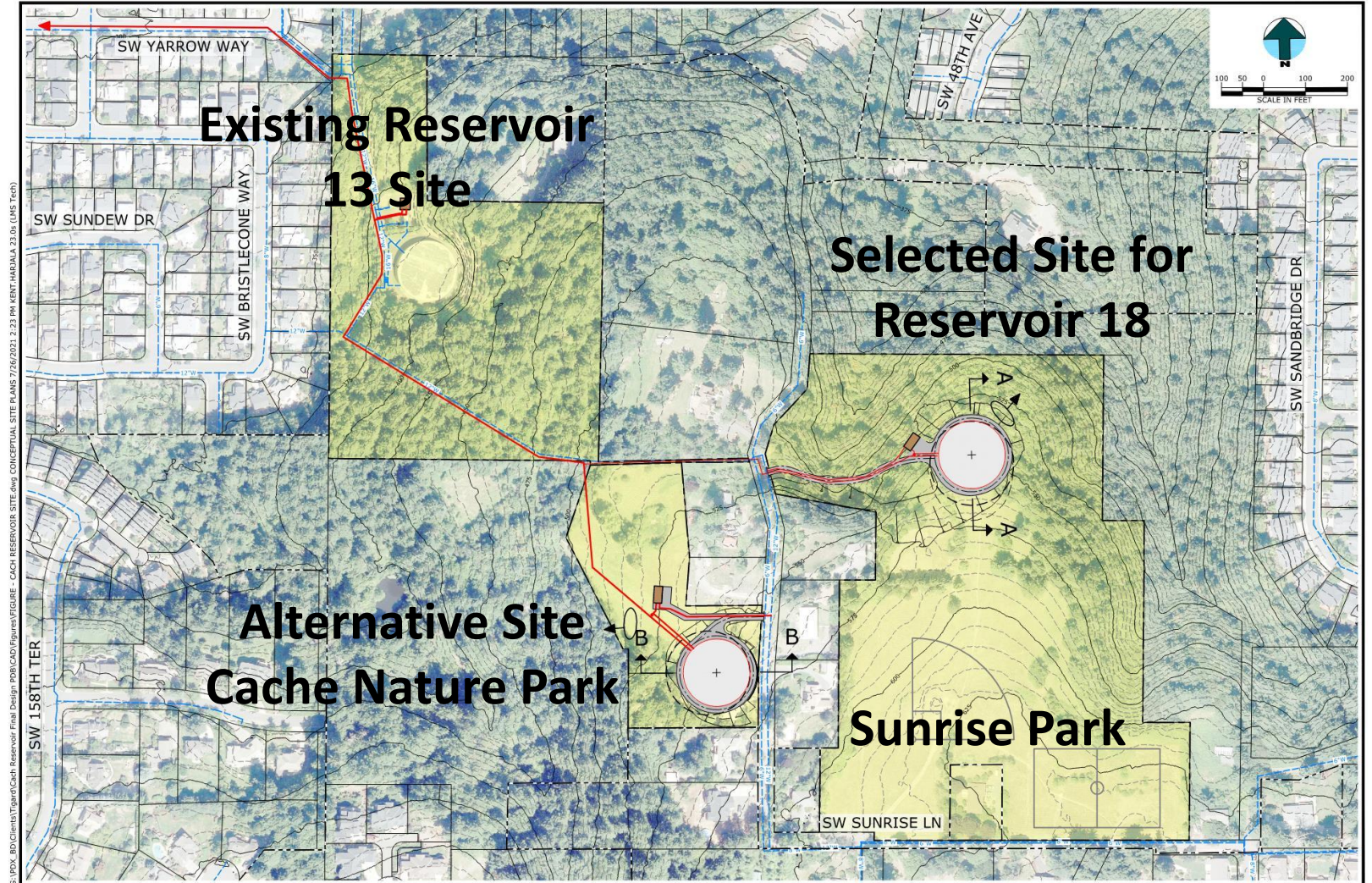
Project Background/Purpose

- Increased Demands Based on Rapid Growth in the Western Portion of the City
- 3.0 to 4.5 MG Reservoir Planned to Supply the 560' Zone
- Planning included a PS to pump from existing 410' PZ Reservoir to the 560' and 713' PZ reservoirs.
- Located in an existing park area at the top of Bull Mountain.



Project Description

- Utilize existing City owned property
- 4.5 MG Prestressed Concrete Reservoir
- Site layout for future ASR
- Two Zone PS at existing Reservoir 13 Site
- Transmission Mains between reservoir sites
- Off-site transmission piping to improve flow to 410' Res
- Park Improvements and trail system
- SCADA System Upgrades



Project Goals

- Mitigate Impacts to Neighborhood
- Meeting Schedule Milestones
- Providing a smooth, transparent design, costing, and construction process
- Providing a resilient system with a maximum life span



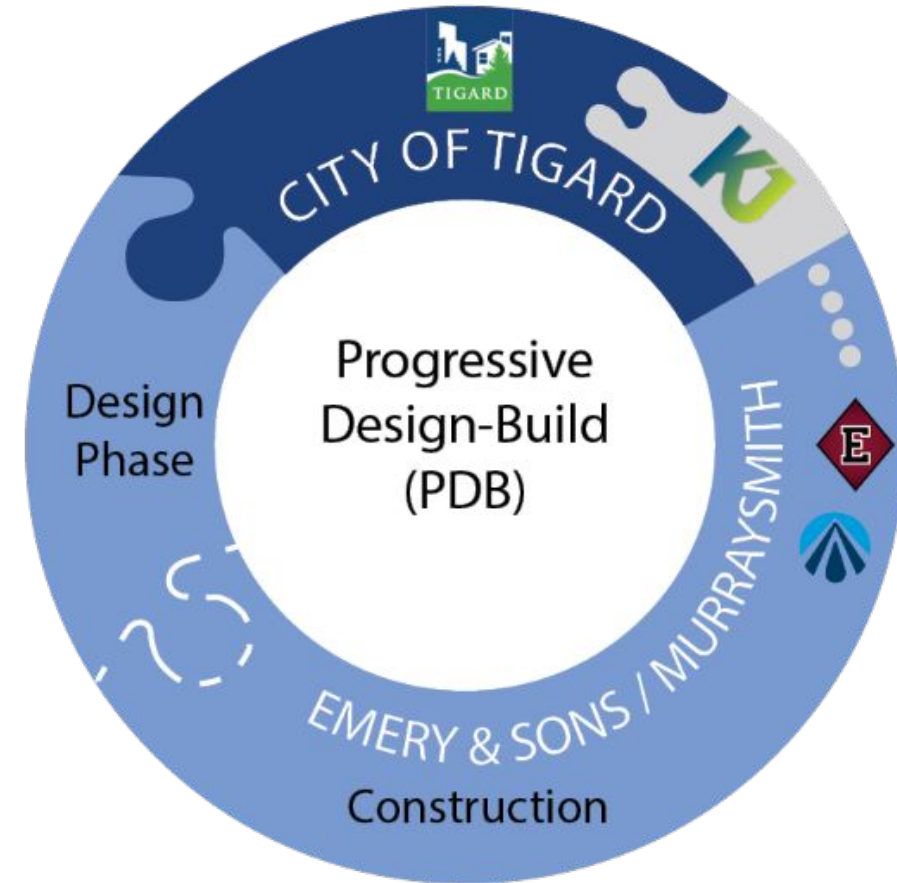
Why Progressive Design Build

- Complexity and size of the project
- City short on resources (Needed Right Teaming Partners)
- Single point of contact
- Collaborative process
 - Help manage risks with input from Contractor
 - Promote innovation and creativity with Contractor input
- Optimize project schedule
 - Early decisions/Tank Siting and PS Type
 - Material lead time concerns (Pumps, Etc.)
- Tailor Decisions to Meet Project Goals
 - Keeping spoils on site



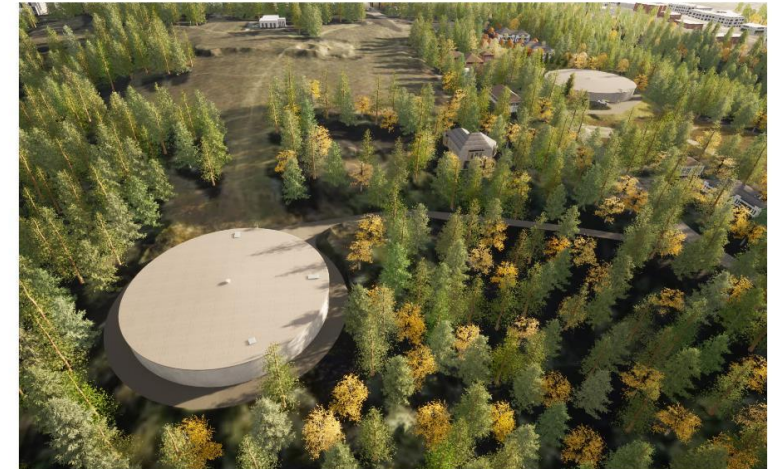
Process for PDB Delivery Process Approval

- Owner's Representative/Advisor (Kennedy Jenks) brought on early in project
- Outline project goals & preliminary design with all city staff (PW operations, Engineering, Contracting)
- Address ORS/City rules, evaluate traditional and alternative delivery methods, select preferred delivery method, prepare Alternative Delivery Report
- Develop findings to present to City Council
- Council Approval of Alternative Delivery



PDB Team Selection Process

- Informational meeting
 - Teams meetings – informal meetings to connect with possible teams
 - Worked to get several teams to select from
- Proposal including Scope and Phase 1 Fee
- Interview
- Selection
- Scoping, negotiations and contracting



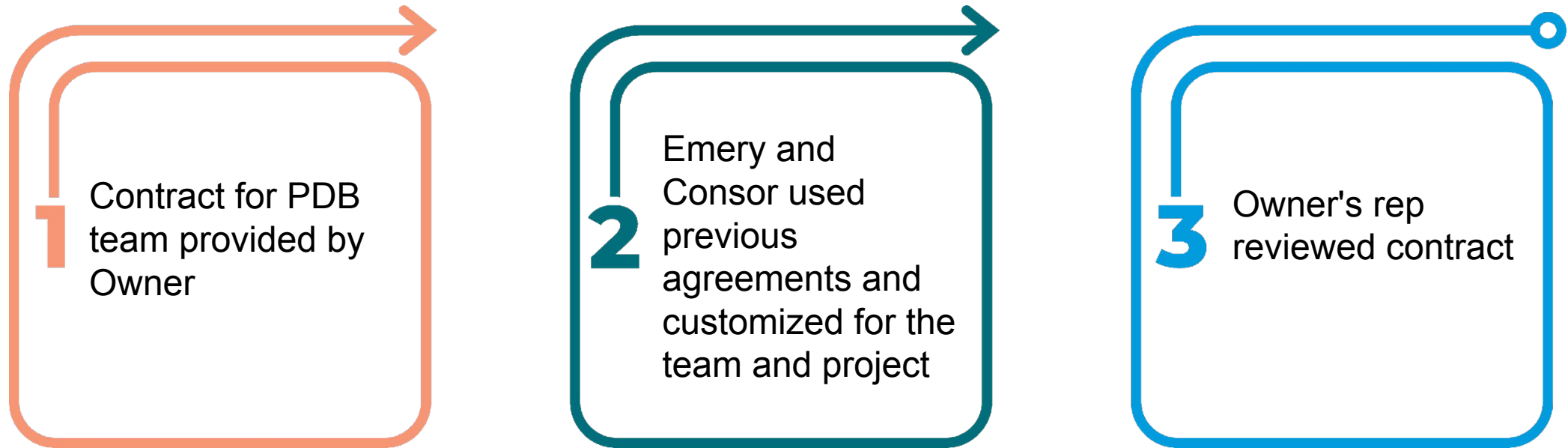
PROPOSAL FOR THE CITY OF TIGARD

Reservoir 18 & Pump Station
Progressive Design-Build Services
RFP 2021-16

October 12, 2021



Contracting



PDB Process Overview

Key Aspects

- Select contractor and designer together
- One contract between Owner and PDB Team
- Two Phased Approach
- Potential for Owner to "Off Ramp"

Benefits

- Collaborative
- May reduce overall schedule
- Helps manage risk relative to constructability
- Transparency
- Ability to track cost savings and uses this to cover extra work
- Unified Voice (Political and Public Interactions)
- Owner more say in quality of materials – benefits asset management

**Phase 1
Predesign**

GMP

**Phase 2 Final
Design**

Phase 2 Construction



PDB Process Overview

Challenges

- Establishing and Understanding roles
- Potential for compressed schedule during design
- Designers contract references Contractor's contract
- Potential risk of "off ramping"

PDB Process Pre-Design (Phase 1)

Design Team Activities/Perspective

- Consor led pre-design phase (PDR through 60%)
- Emery managed overall schedule and budget
- Alternative Analysis (Reservoir Site and PS Type)
- Hydraulic Analysis
- Changed reservoir size from 3 MG to 4.5 MG
- Permitting (Land Use, ERC and Environmental)
- Cost Certainty
- Compressed Schedule



PDB Process Pre-Design (Phase 1)

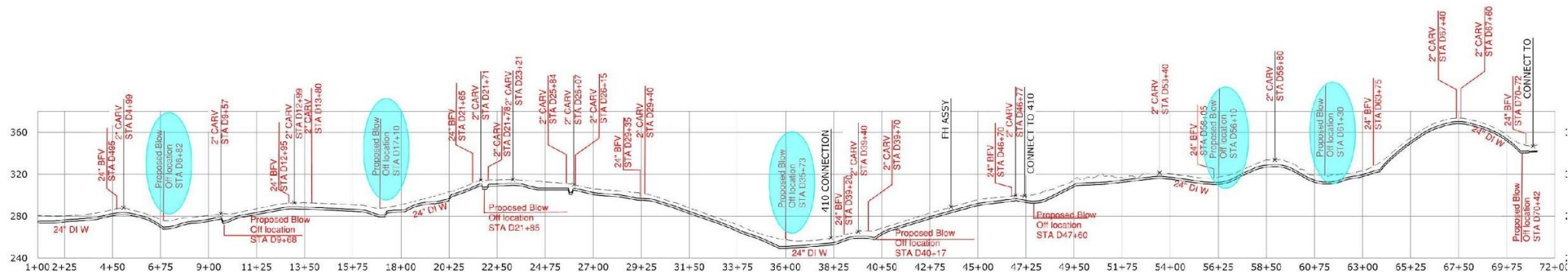
Contractor Activities/Perspective

- Same Team, Same Goals for the project, project first attitude
- Making Sure Milestones are met
- 1200 C Permit delays was a concern
- Met with neighbors to get temporary construction easements
- PDB vs CM/GC and DBB
 - ✓ Better Collaboration
 - ✓ One Contract

Final Design and Construction – Phase 2

Design Team Activities

- Following GMP Negotiations
- Developed 90% and Final Designs
- Added 7,000 LF of pipeline to design (0% to Final) maintained design schedule
- Continued Permitting Work
 - ✓ 1200C Permit was a Challenge



PROFILE ALIGNMENT D
SCALE: 1"=225' HORIZ, 1"=40' VERT

24-inch PZ 410 Water Main Profile – 7,000 LF

Final Design and Construction – Phase 2

Contractor Activities

- GMP Development after 60% Design – Open Book Approach
- Updated Schedule
- Bid key elements
 - Reservoir
 - Electrical
 - Bids for pumps
- Design of additional Off-Site Piping after 60% -- maintained schedule
- Cost Escalation and Material Lead Time Concerns
 - Pipe cost escalation
 - Brought pipe supplier during design to get prices locked and confirm delivery date
 - Saved \$180k and kept things on schedule

Construction – Phase 2

Budgetary Challenges

- Budgeted \$32M
- Original Estimate \$21M
- Added pipe and increased reservoir size
- GMP \$28M
- Savings to the GMP

Schedule Challenges

- Permitting delays
- Added piping
- Larger reservoir
- Initial schedule on-line in Summer 2024
– actual reservoir on-line late summer 2024
- Impacts from the pandemic
- May not have worked with DBB Approach



Project Challenges

- Compressed Schedule
- Initial Reservoir Siting
- Permitting
- Adding Major Pipeline Improvement Designs at 60%
- Working in a Park



Lessons Learned

- Contracting
- Construction Observation Roles
- GMP Development
- PDB learning curve



Take Aways

- Process can promote excellent collaboration
- Process can expedite the schedule
- Cost savings can be realized
- Creative solutions during design and bidding project elements can be realized
- Detailed scheduling and tracking is critical
- Right Contracting and Definition of Roles is Critical
- Right Team is Important!





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Q&A

Thank You



Site Constraints



Two-Zone Pump Station – Maintaining Operations During Construction



Pipe on Steep Slopes – Constructability Review



24-inch Pipe Installation – Utility Conflicts

