AWWA-PNWS

Redundancy & Reliability of Water Supply Solved with Trenchless Approach for the City of Pocatello, Idaho

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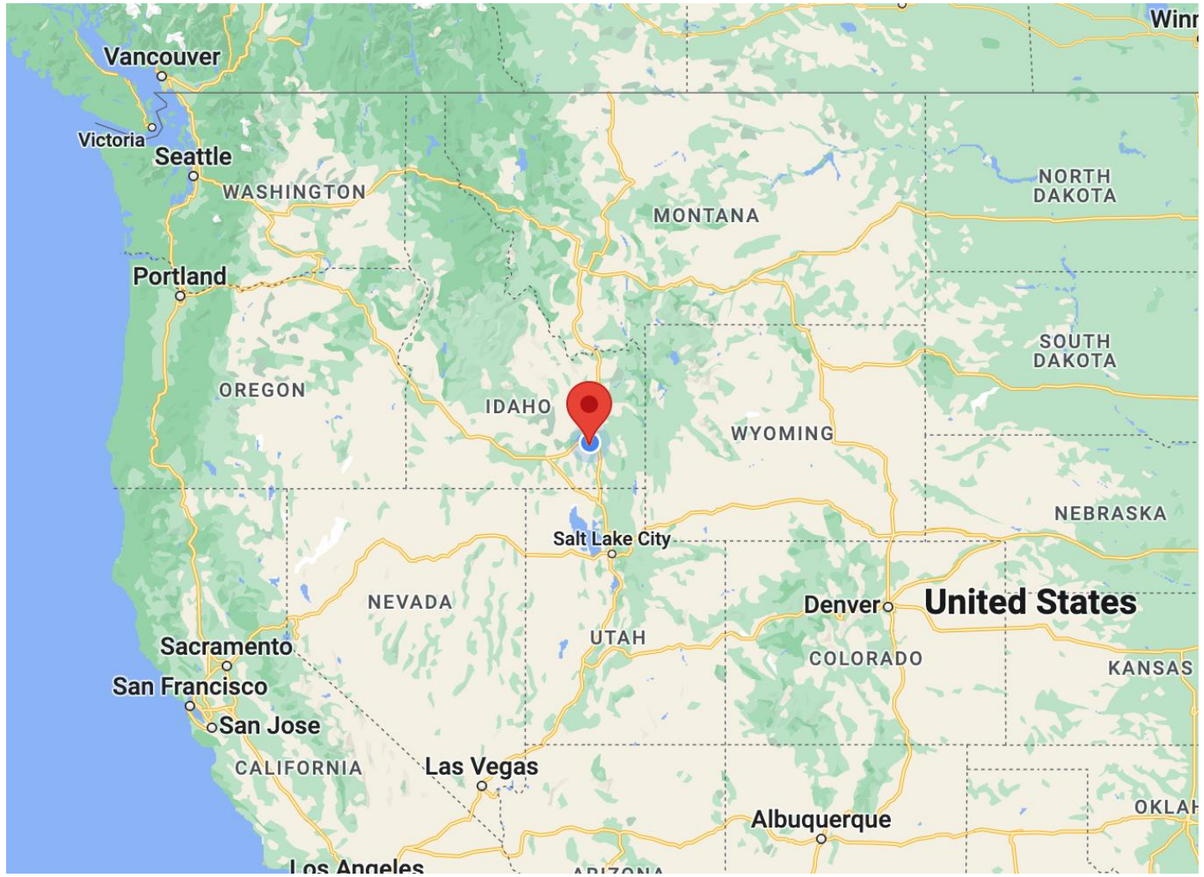
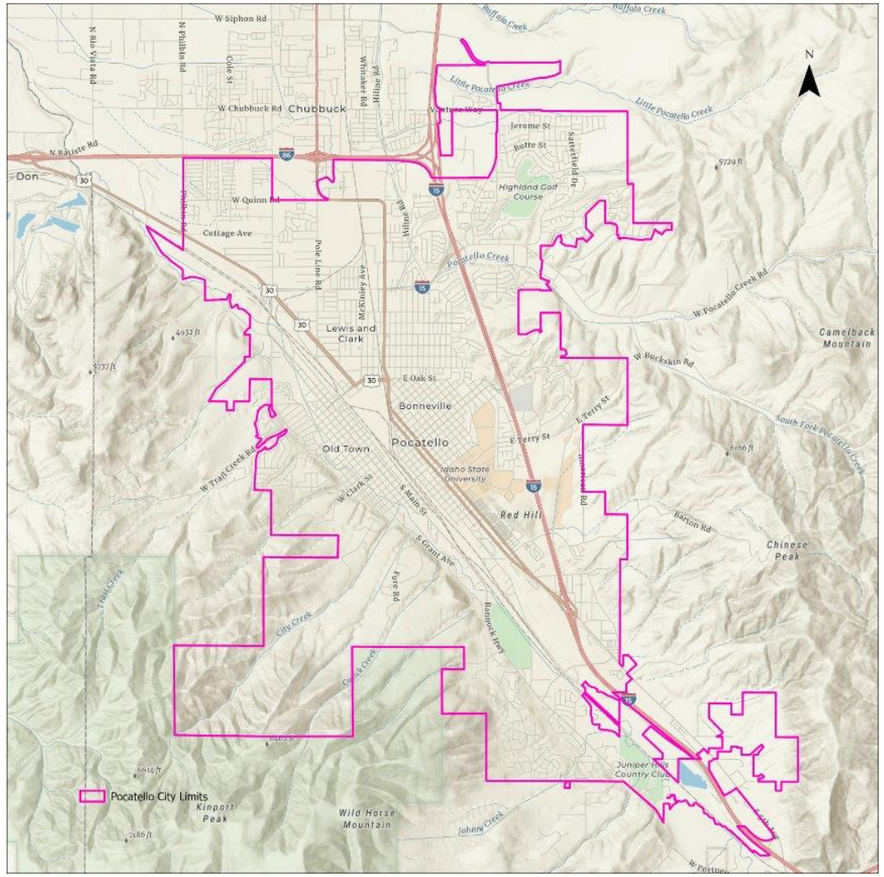
consor

Outline

- Background
- Project Planning
- Alternatives Analysis
- Design
- Construction
- Lessons learned

Vicinity Map

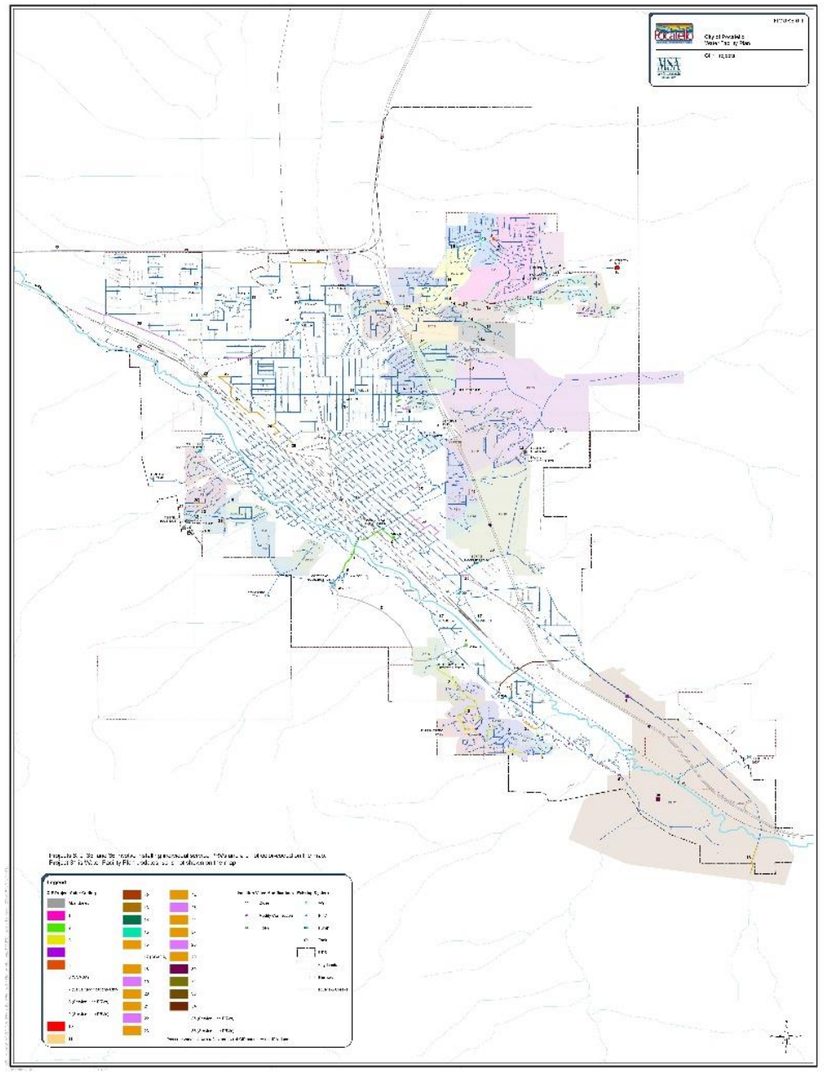


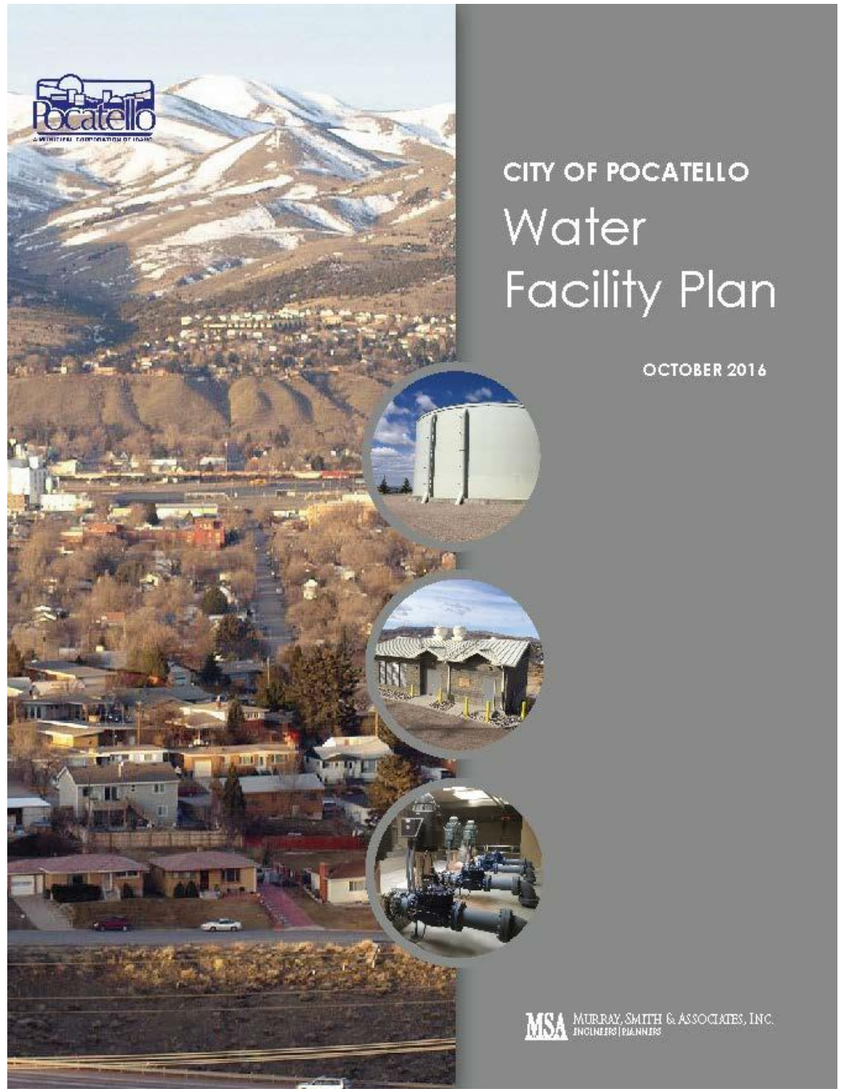


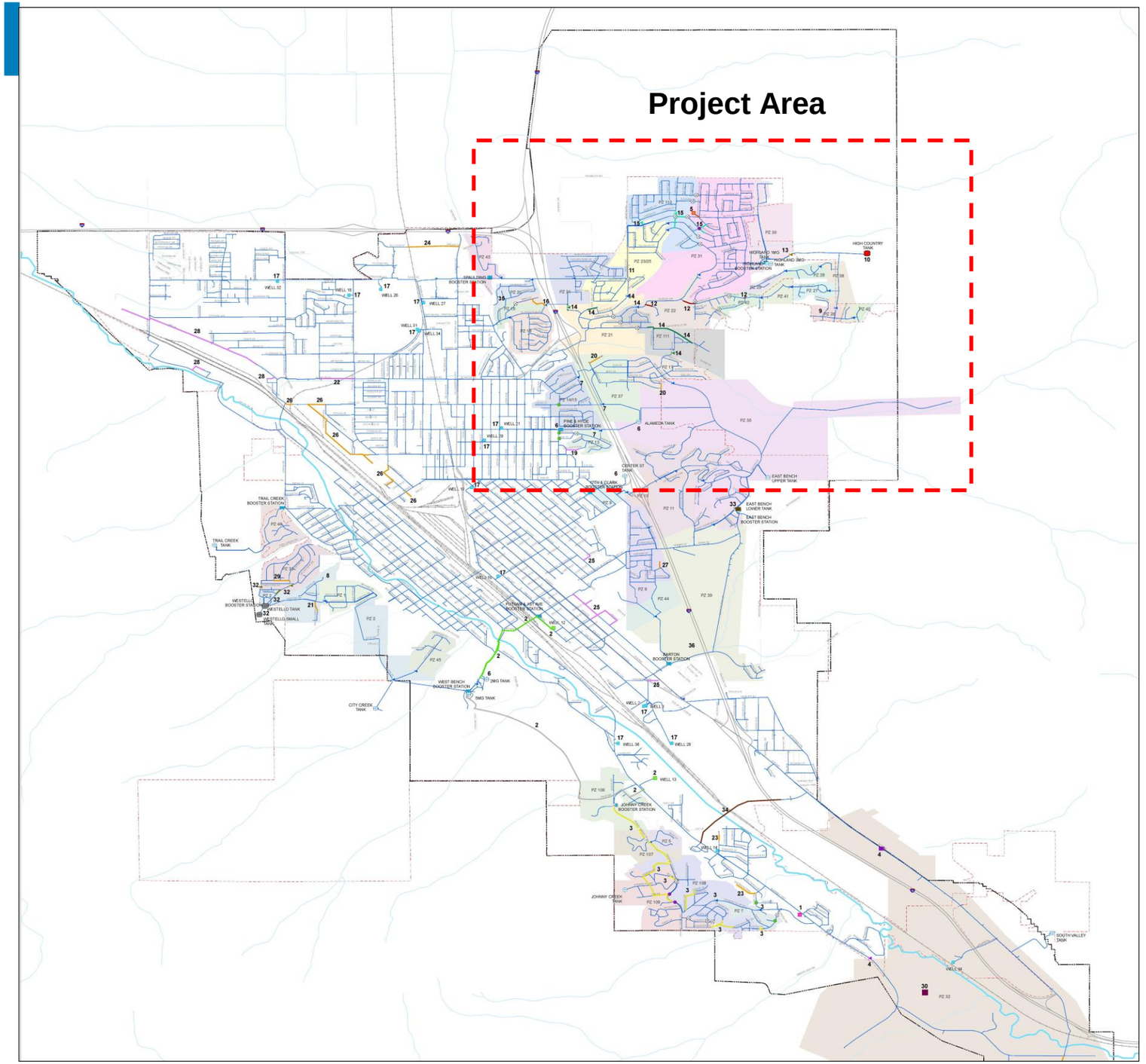
Background

- Water service area has significant elevation changes from 4,405' - 5,290'
- 18,207 customer accounts
- Supplies over 4.5 billion gallons of water per year
- 280 miles of water pipe
- 49 pressure zones
- 20 water supply wells
- 16 storage tanks
- 12 booster stations
- 56 pressure reducing valves

Project Planning






Project Area

Alternatives Analysis

New development planning in 2018 increased the concerns regarding water system redundancy and capacity to serve future growth.

Consor investigated alternatives to address the water supply deficiencies identified in the 2018 Water Facility Plan amendment:

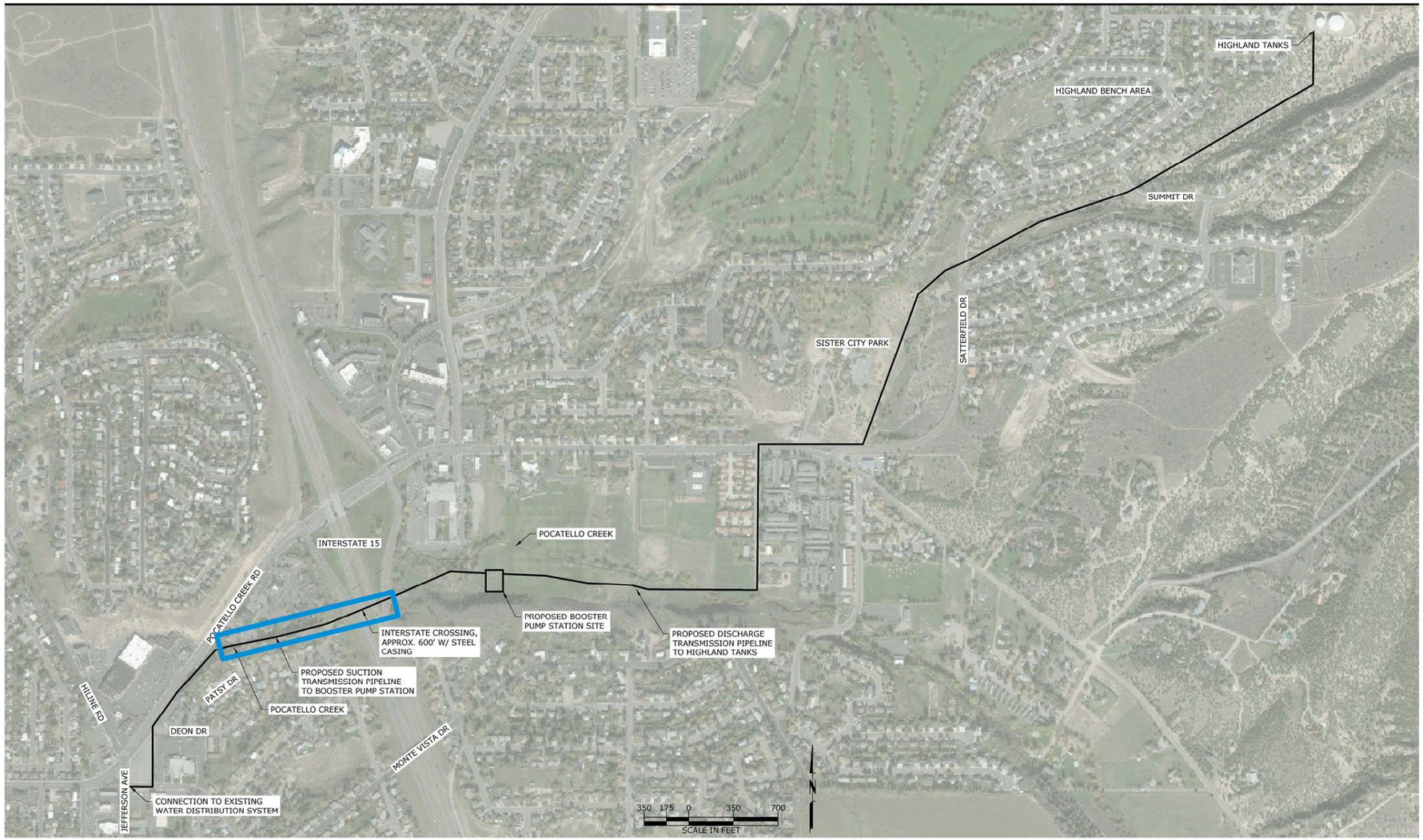
- New well at existing Well Site 45. Would require treatment of TDS, Sulfate and Chloride.
- New or retrofitted Main Zone Well (also requiring treatment)
- Expansion of Spaulding Transmission Main
- New Booster Station

Due to various challenges with a new/retrofitted well source and the City desires to provide a redundancy for the existing Spaulding Pump Station, a new booster station was recommended.

Project Overview

Project Overview – Auger Bores

Project Overview – 1,800 LF HDD Crossing



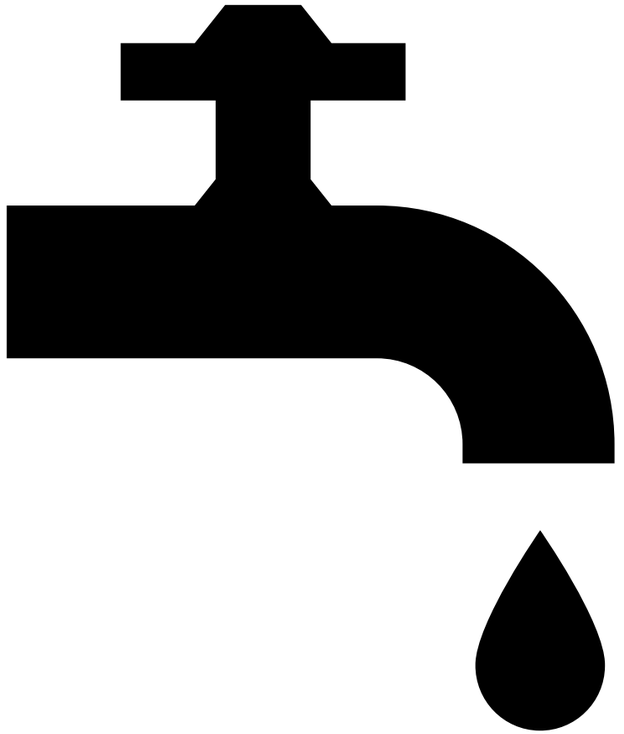
Pipeline Design

Suction Line

- 24 Diameter DIP, open cut construction and 1 auger bore
- 30" HDPE DR 13.5, HDD and open cut construction

Discharge Line

- 24 Diameter DIP, open cut construction
- 30" HDPE DR varies, 3 auger bores
- Construction on varied to steep slopes



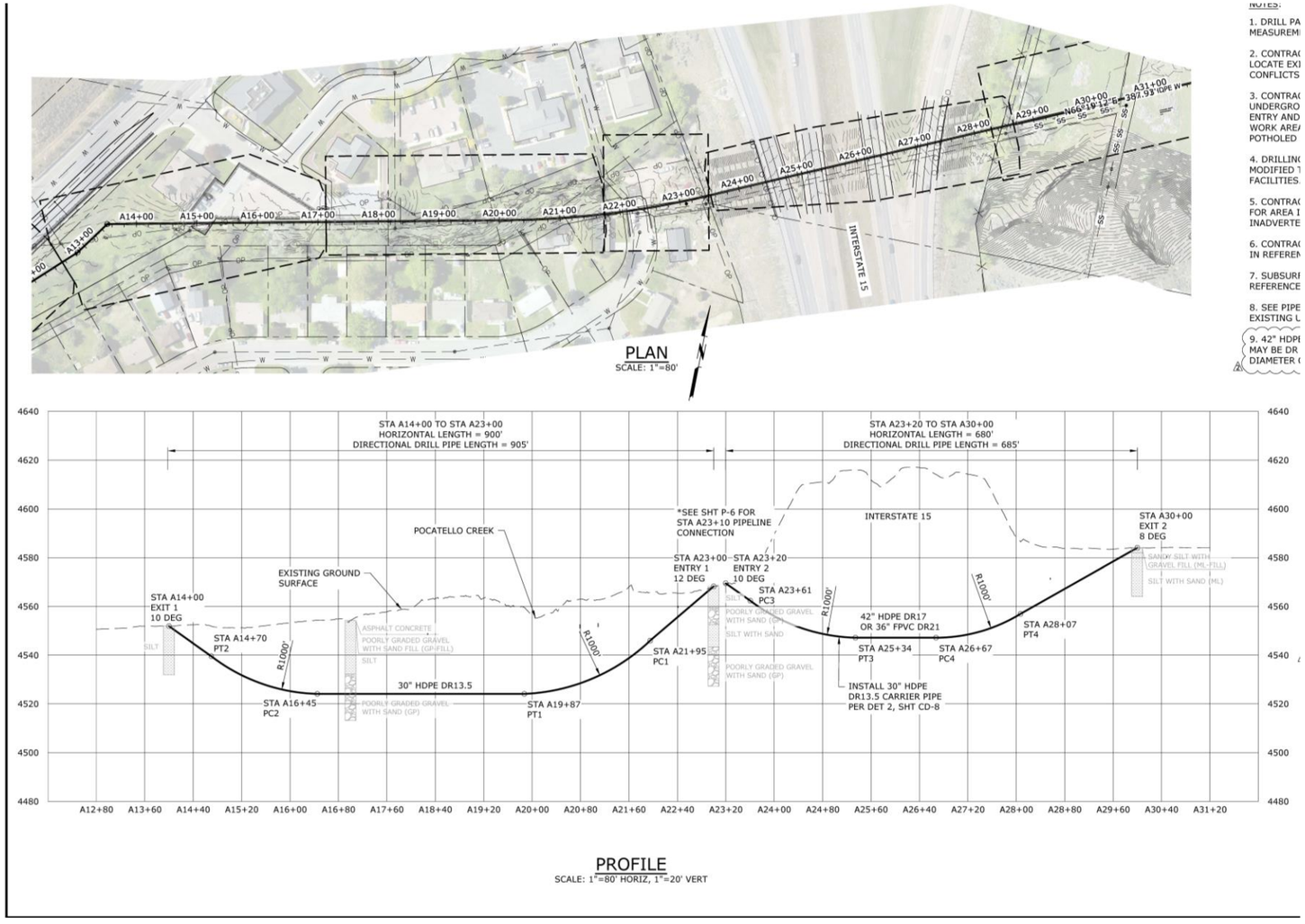
Auger Bore Construction

Pipeline Construction

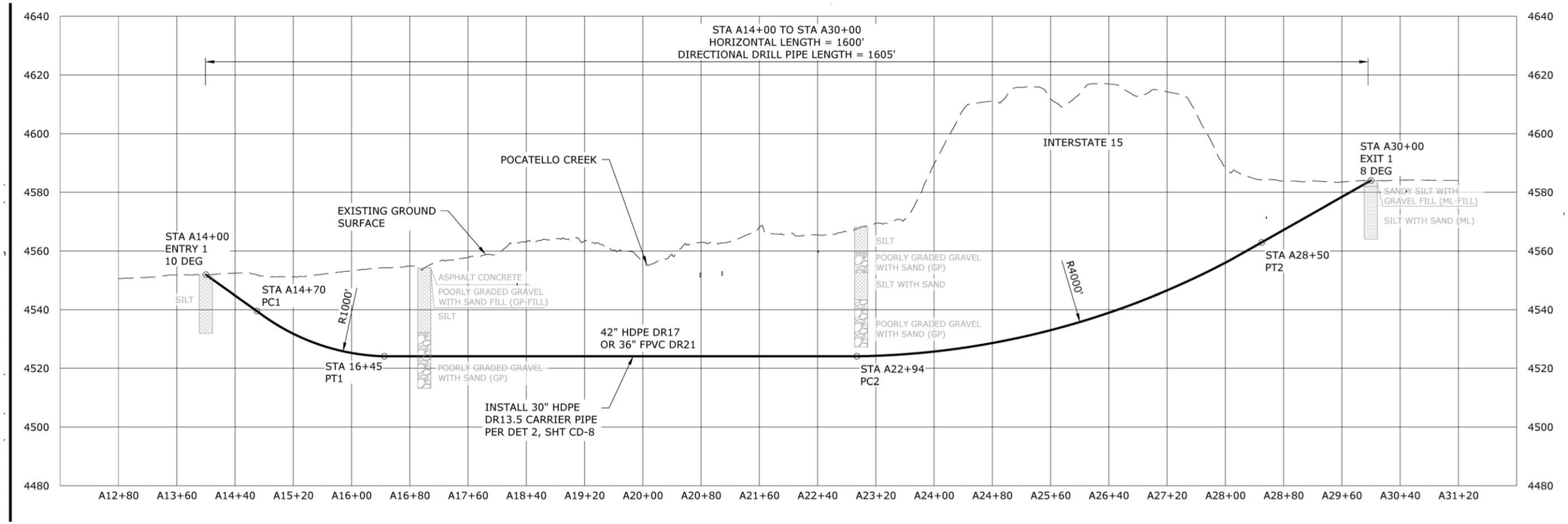
HDD Design Challenges

- Crossing needed for both Pocatello Creek and I-15
- ITD crossing length at limit of auger bore limitations (both length and diameter)
- Pocatello Creek crossing almost parallel with creek in restricted corridor adjacent to existing buildings and utilities
- Casing required by ITD for I-15 crossing, but not required for Pocatello Creek
- Approximately 80' depth under I-15
- Ultimately two alternative profiles provided for contractor to bid
- HDPE and CPVC allowed for casing
- Tight tolerances at each end of crossing

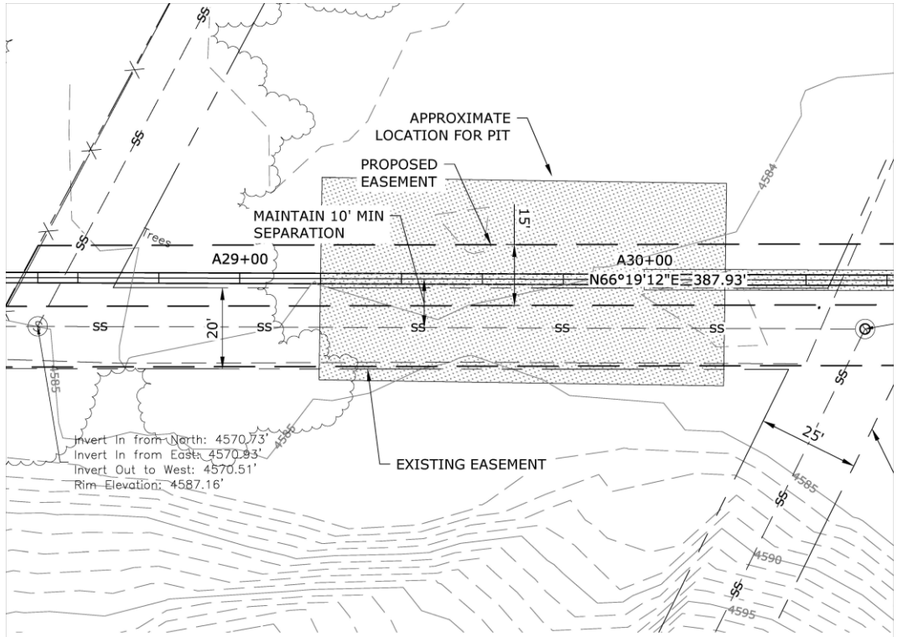
HDD Alternative 1

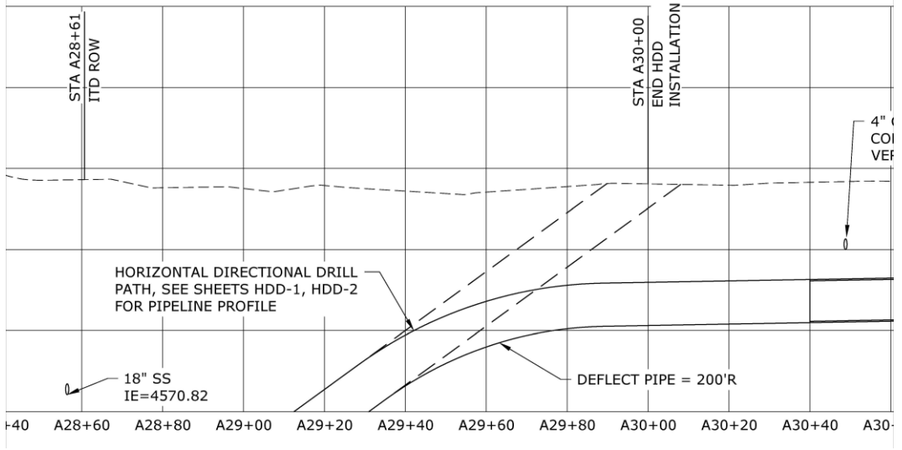


HDD Alternative 2

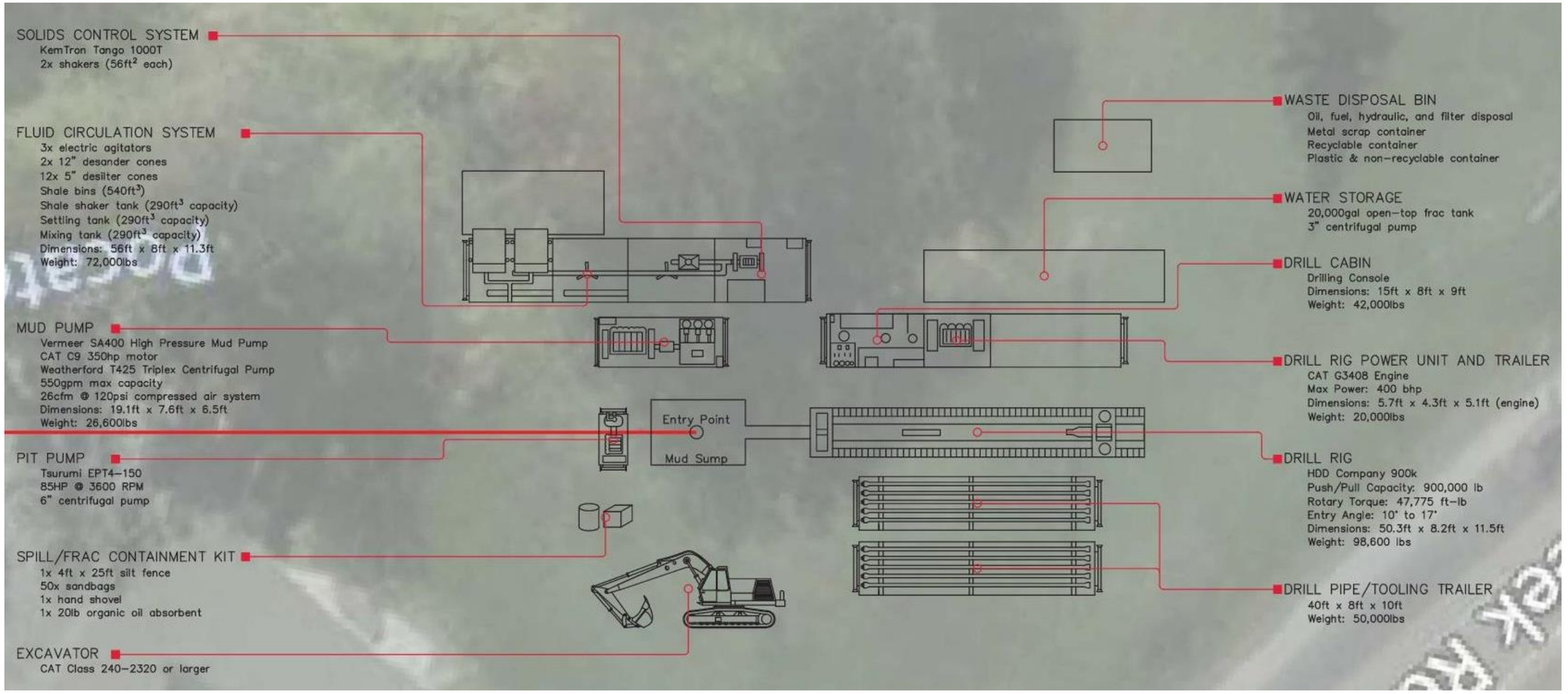


HDD Tolerances





HDD Construction Photos



HDD Construction Photos

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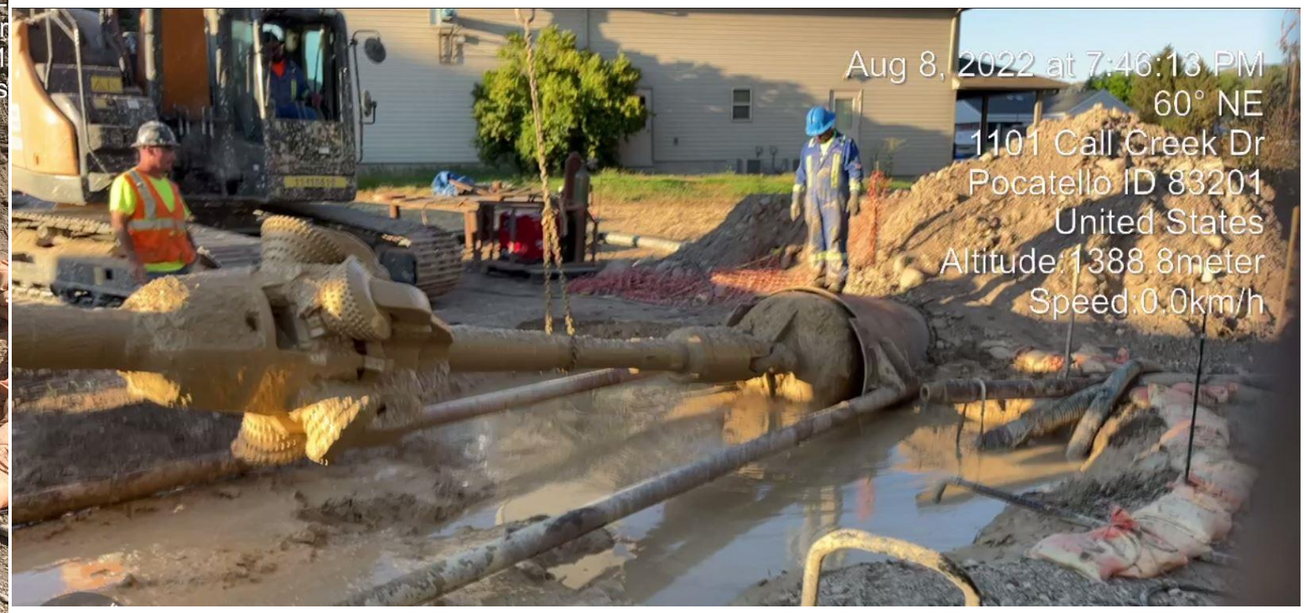


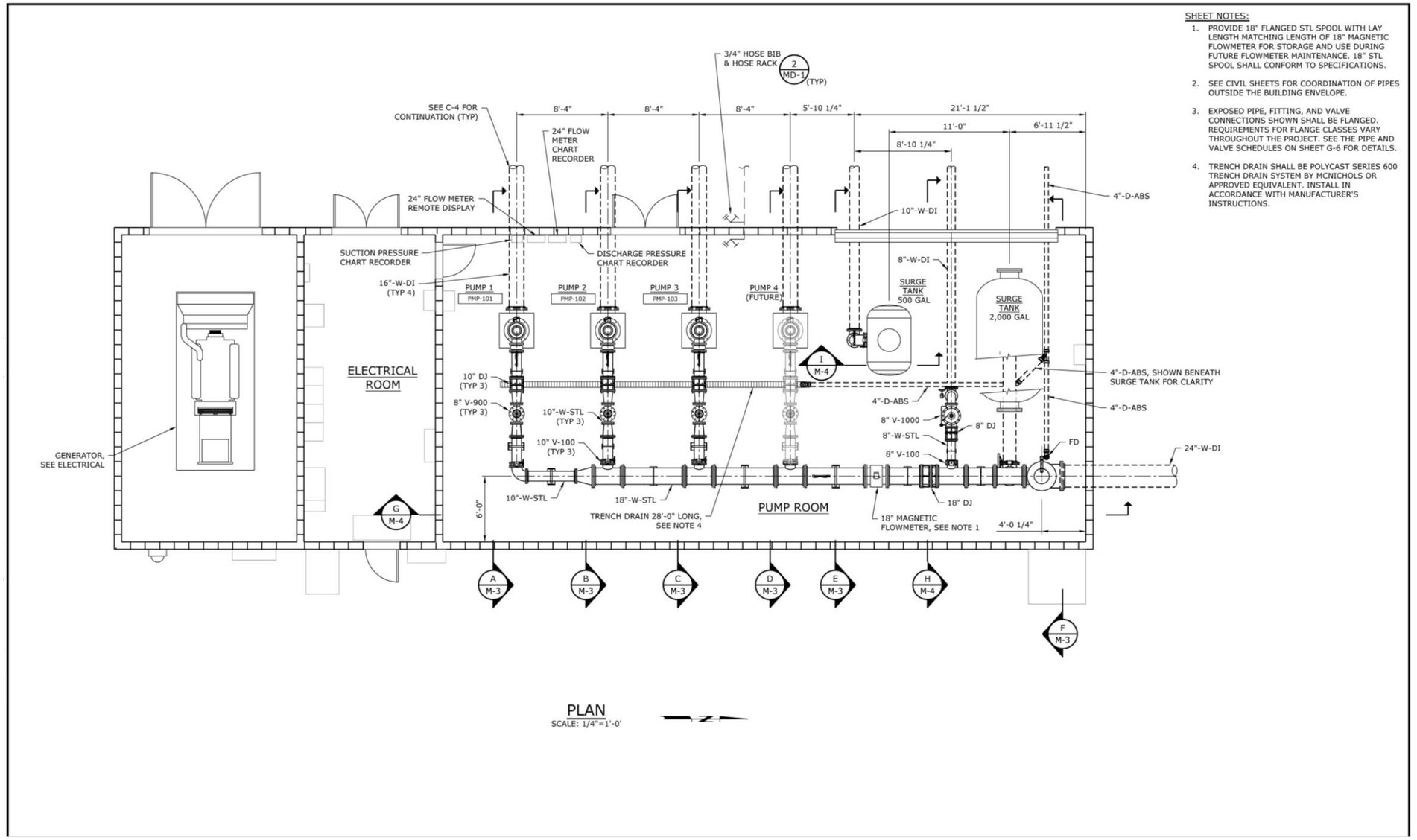

Network: Aug 8, 2022 at 10:09:41 AM MDT
Local: Aug 8, 2022 at 10:09:41 AM MDT
N 42° 53' 44.348", W 112° 26' 0.965"
21° N
I-15 N
Pocatello ID 83201
United States
N
E
W
S


Aug 8, 2022 at 7:40:00 PM
52° NE
1101 Call Creek Dr
Pocatello ID 83201
United States
Altitude:1390.9meter
Speed:0.0km/h
N
E
S
W

Booster Station

- 3 250-hp vertical turbine pumps with space for 4th pump
- 230 psi operating pressure
- 250 psi anticipated surge pressure
- 5,800 gpm firm capacity
- 500-gallon inlet and 2,000-gallon outlet surge tanks
- High pressure blowoff
- 500 kw Generator

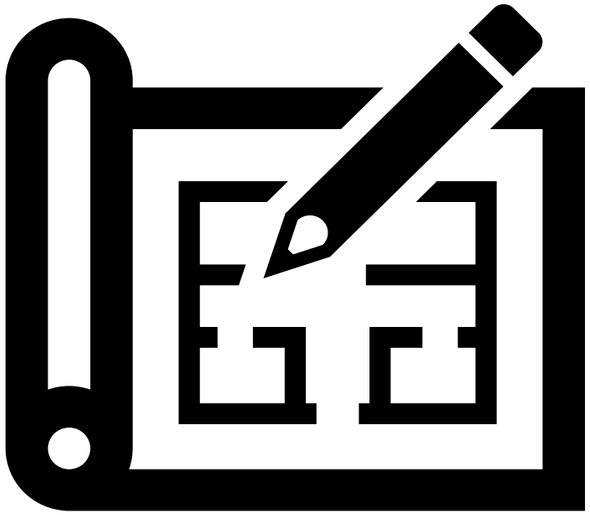
Booster Station



Booster Station

Lessons Learned

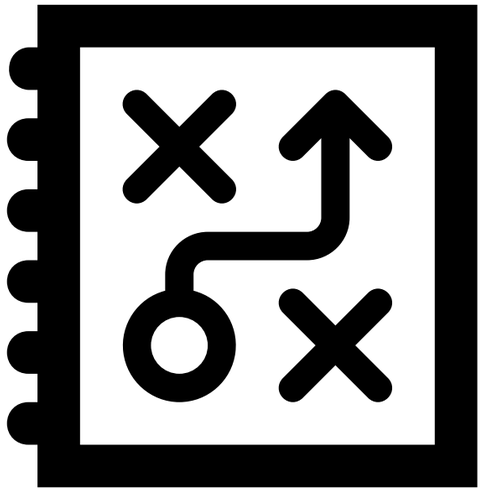
Importance of water system planning to serve future needs



Lessons Learned

No plan survives first contact with the enemy! Need to have the ability to adjust design concepts based on field conditions and alternative analysis

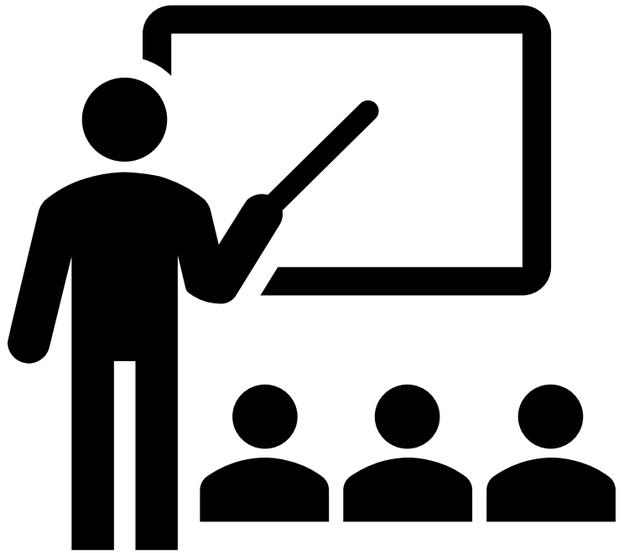
1. Well project to high pressure booster station and 2 ½ miles of piping
2. Multiple options for booster station location and pipeline alignment
3. Material selection during peak of supply chain challenges



Lessons Learned

Construction lessons learned...too many cover in this presentation!

1. Contractor with high staff turnover
2. Material and equipment lead time
3. Testing and startup



Construction complete! Final cost 1.5% over $12M bid

THANK YOU