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## Project Overview

- A 10-mile, 30 in High-density polyethylene (HDPE) potable water transmission line (WTL) in Caldwell County will be designed with the goal of meeting the growing demand in the area. The project is designed to deliver 11.5 million gallons per day (MGD) and incorporates elevated and groundwater storage tanks along with pump stations.

## Constraints and Standards

- Route Selection**
  - Minimize disruptions to cemeteries, private property, and sensitive habitats
  - Prioritize existing right-of-way use to limit new land acquisition
- Pipe Material Selection**
  - Consider corrosion resistance and mechanical strength
  - Evaluate long-term maintenance and lifecycle costs
- Installation Methods**
  - Use open-cut trenching in rural, less developed areas for cost-effectiveness
  - Employ horizontal directional drilling (HDD) and microtunneling in urban or sensitive zones
- Geotechnical Conditions**
  - Soil conditions
  - Buoyancy evaluations
- Hydraulic Constraints**
  - Evaluate fluid velocity
  - Used Hazen-Williams equations to estimate friction losses
- Environmental Impact**
  - Mitigate soil erosion and water pollution with BMPs (e.g., silt fences, sediment basins)
  - Protect endangered species and restore habitats post-construction
- Regulatory Compliance**
  - Align with TCEQ and EPA standards (e.g., TAC 290, ANSI/NSF 61)
  - Referred to City of Lockhart Construction Standards (2020) and City of Austin's Utilities Criteria Manual (2025)

## Route Selection



### Previous Alternative

Route: Delta

Material: 24" HDPE

Capacity: 11.5 MGD

Velocity: 5.66 fps

### Chosen Alternative

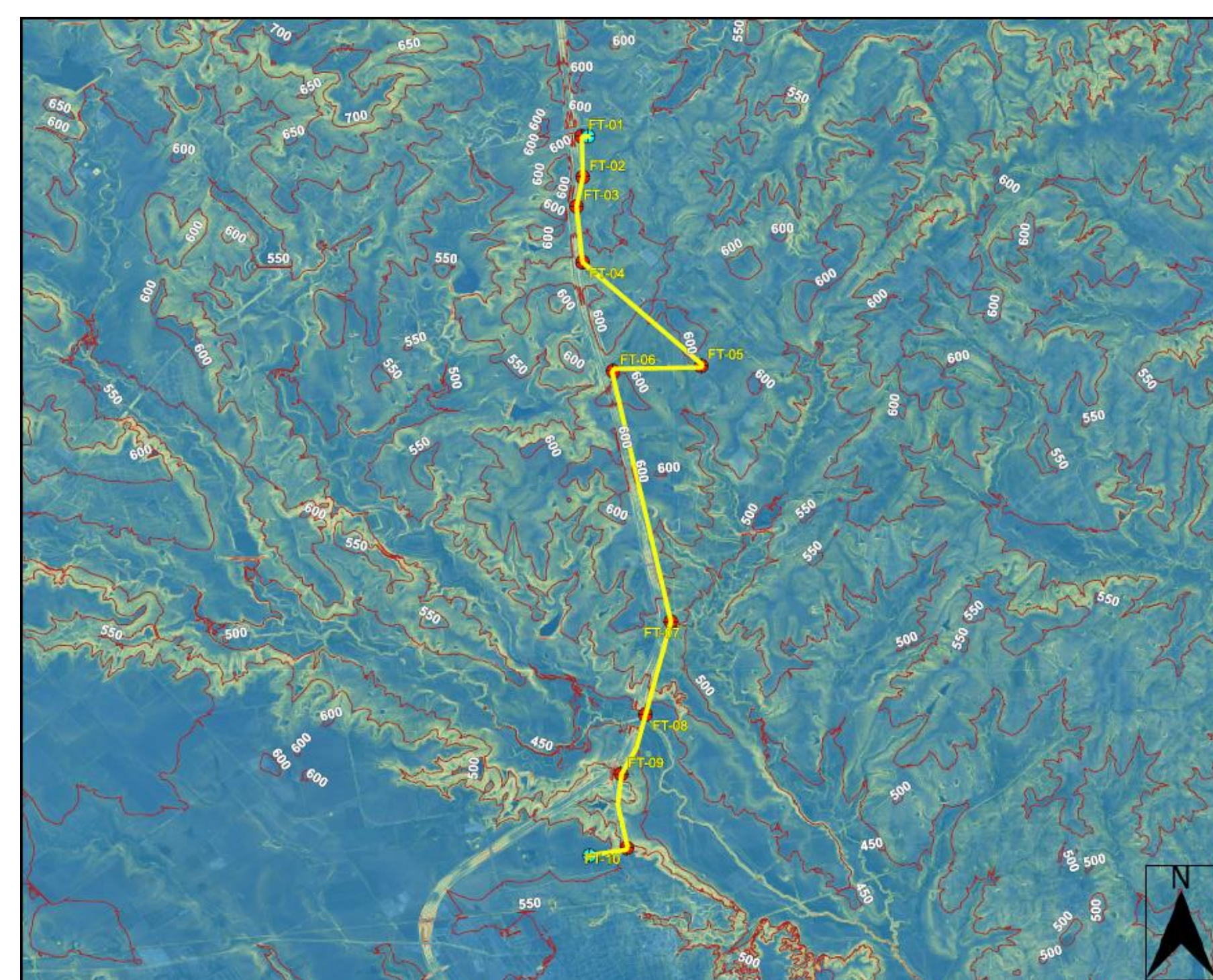
Route: Delta

Material: 30" HDPE

Capacity: 11.5 MGD

Velocity: 3.63 fps

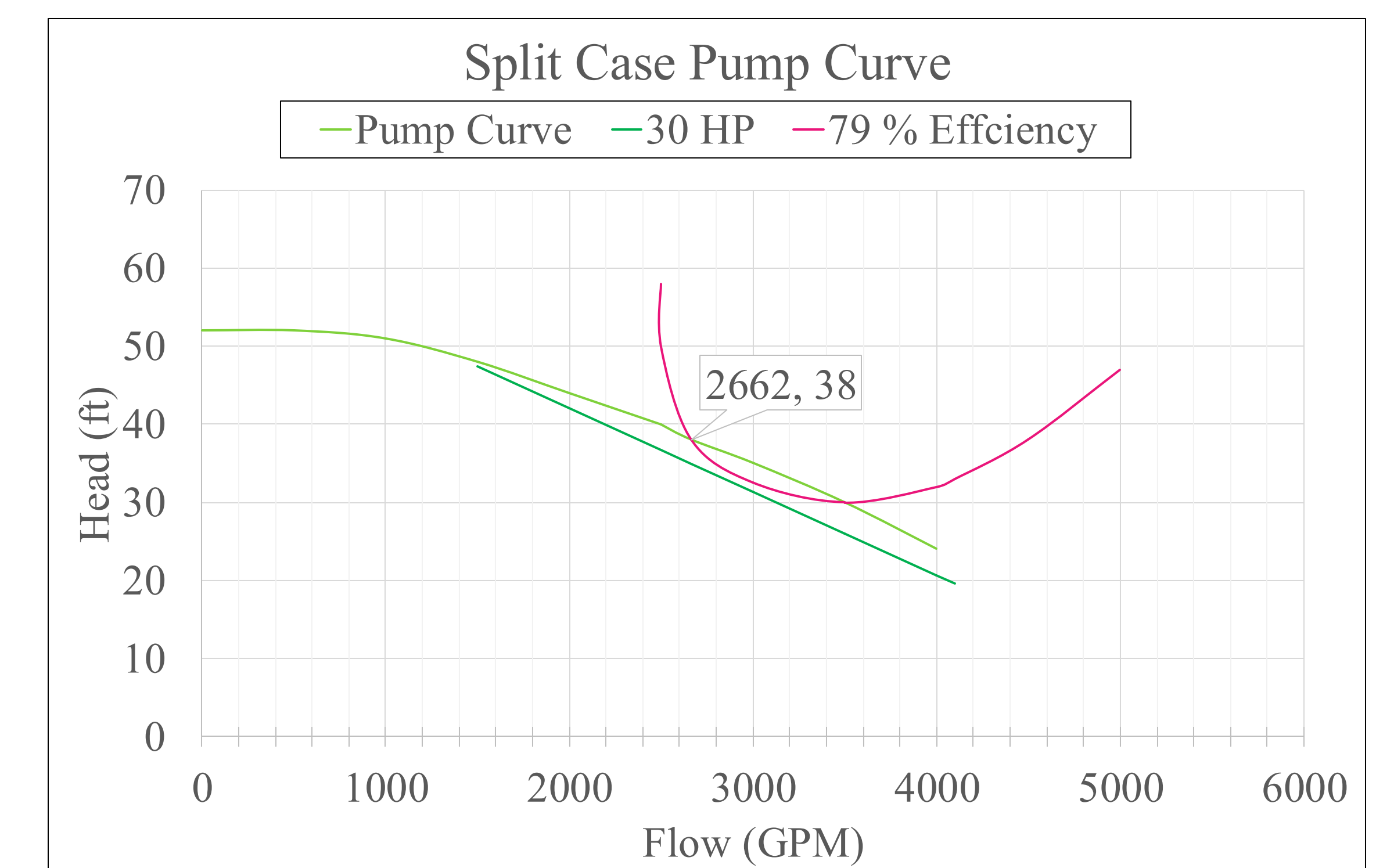
## Route Delta – Slope Analysis Map



## Cost Analysis

Capital Cost Analysis - HDPE		
Item	Description	Cost
1	Reports	\$12,000
2	Site Investigations	\$1,002,700
3	Soil Laboratory Investigation	\$170,100
4	Engineering and Technical Expenses	\$179,500
5	Labor and Machinery	\$2,670,000
6	Material and Installation	\$75,770,000
7	Contingency	10%
<b>Total Cost</b>		<b>\$79,800,000</b>
<b>Total Cost w/ Contingency</b>		<b>\$87,800,000</b>

## Booster Pump Station



- Three Pump Parallel Configuration
- 34 HP Pumps
- 2,662 GPM thru each pump