

Project Overview

- Central Texas is experiencing rapid population growth and urban expansion, placing significant pressure on existing water infrastructure. Communities like Lockhart are seeing rising demand that current systems can no longer sustain. To address this, the proposed Water Transmission Line (WTL) project is designed to deliver 11.5 million gallons per day (MGD) through a 10-mile pipeline. The system will incorporate elevated and groundwater storage tanks along with pump stations to ensure consistent water delivery and pressure across the region. This project represents a strategic investment in sustainable infrastructure, built to meet both current and future water needs. The use of high-density polyethylene (HDPE) pipe provides durability and corrosion resistance, while construction methods such as horizontal directional drilling will minimize environmental impact. Together, these design choices enhance long-term reliability, reduce maintenance costs, and ensure that the growing communities of Caldwell County have access to safe, clean water well into the future.

Design Considerations

- 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
- 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) Include backflow prevention and cross-connection control
 - Implement a monitoring and compliance plan for ongoing oversight

Route Selection - Delta



Design Selection

Chosen Alternative

Route: Delta

Material: High-density polyethylene (HDPE)

Capacity: 11.5 MGD

Velocity: 5.66 fps

Considered Alternative

Route: Echo

Material: Ductile Iron (DI)

Capacity: 11.5 MGD

Velocity: 5.66 fps

Sustainability

Selected Category	Applicable	Submitted	Percentage
Quality of Life	140	57	41%
Leadership	166	74	45%
Resource Allocation	160	58	36%
Natural World	160	31	19%
Climate and Resilience	190	91	48%
Total	816	311	38%

Cost Analysis

Capital Cost Analysis - HDPE		
Item	Description	Cost
1	Reports	\$12,000
2	Site Investigations	\$12,700
3	Soil Laboratory Investigation	\$10,800
4	Engineering and Technical Expenses	\$52,000
5	Labor and Machinery	\$2,670,000
6	Material and Installation	\$75,770,000
7	Contingency	10%
Total Cost		\$78,530,000
Total Cost w/ Contingency		\$86,430,000

Capital Cost Analysis - DI		
Item	Description	Cost
1	Reports	\$12,000
2	Site Investigations	\$12,700
3	Soil Laboratory Investigation	\$10,800
4	Engineering and Technical Expenses	\$52,000
5	Labor and Machinery	\$2,670,000
6	Material and Installation	\$71,600,000
7	Contingency	10%
Total Cost		\$74,400,000
Total Cost w/ Contingency		\$81,800,000

Life Cycle Cost Analysis

Life Cycle Cost Analysis		
Item	Description	Cost
1	Initial Cost	\$86,430,000
2	Annual Maintenance Cost	\$200,000
3	Abandonment Cost	\$15,600,000
4	Salvage Value	\$0.00
5	Analysis Period	100
Total Cost		\$122,030,000

- Initial Cost:** \$86,430,000
- Annual Maintenance:** \$200,000
- Abandonment Cost:** \$15,600,000
- Salvage Value:** \$0
- Analysis Period:** 100 years
- NPV:** \$93,560,000
 - 3% Discount

Meet the Team



(Diego – Left, Darrell – Middle Left, Sam – Middle Right, Ana – Right)