

# SUGARLAND CONTINUES SURFACE WATER SYSTEM EXPANSION WITH FUSIBLE PVC® PIPE

*Horizontal Directional Drilling Utilized for Levy Crossing*

## Overview

Sugar Land, Texas, located just southwest of Houston, Texas, is a major suburb that has experienced massive growth over the past 10 years. As the city has expanded, so has its need for infrastructure expansion and investment, resulting in significant financial allocation to the city's water and wastewater systems.

Sugar Land has recognized the advantages and need to comply with new groundwater reduction requirements and has been a regional leader in reducing groundwater usage and moving to surface water as its source water. The city turned to the local engineering community to assist in planning and developing the necessary system upgrades for the conversion.

Major groundwater pump stations would need to be converted to surface water re-pump stations, and new surface water transmission mains would be installed from surface water take points to the pump stations for distribution. To date, Sugar Land has retrofitted three groundwater pump stations for surface water and designed and installed well over 10 miles of new surface water transmission mains.



Insertion pit for the HDD

## Pipeline Details and Project Summary

<b>Project:</b>	30-inch/20-inch Surface Water Transmission Line from Stubout at First Colony Water Plant No. 1 to Riverstone Water Plant
<b>Location:</b>	Sugar Land, Texas
<b>Length and Pipe Size:</b>	690 LF 20-inch DR 18 Fusible PVC® pipe
<b>Pressure:</b>	150 psi for 2 hours
<b>Installation:</b>	Horizontal directional drilling
<b>Owner:</b>	City of Sugar Land
<b>Engineer/ HDD Design:</b>	Lockwood, Andrews & Newnam, Inc – Shelly Serres, P.E.
<b>Contractor:</b>	Harper Brothers Construction

The latest new transmission main was installed between the First Colony Water Plant and the Riverstone Water Plant. Lockwood, Andrews and Newnam, Inc. (LAN) was selected as the engineering firm responsible for the planning, design and construction of the new pipeline. The project consisted of approximately 6,500 feet of 30-inch and 20,200 feet of 20-inch transmission main connecting the two water plants. The alignment included multiple challenging trenchless crossings, one of which was a crossing of a levy belonging to Fort Bend County Levy Improvement District 17 located on the 20-inch portion of the alignment. Horizontal directional drilling (HDD) was selected as the most cost-effective installation method and Fusible PVC® pipe was selected as the pipe material for this crossing. Fusible PVC® pipe provides a gasketless PVC pipe that maintains material consistency with the rest of the pipeline and utilizes standard ductile iron connections to transition in and out of the HDD.

The project was bid in October 2016 with construction proceeding the following spring. Harper Brothers Construction was awarded the contract, and Online Directional Boring was the drilling sub-contractor that executed the levy crossing. They mobilized in April 2017 and used a Vermeer 60x90 HDD drilling rig for the installation of the 20-inch DR 18 Fusible PVC® pipe. The HDD installation was completed in late April 2017, and the overall project was completed in January 2018.

“Underground Solutions was great to work with during design and construction of this project.”

*Shelley Serres, P.E.,  
Senior Associate, Senior Project Manager  
Lockwood, Andrews & Newnam, Inc.*



Underground Solutions, Inc. provides infrastructure technologies for water, wastewater and power cable conduit applications. Underground Solutions' Fusible PVC® pipe products, including Fusible C-900® pipe and FPVC® pipe, utilize patented technology to produce a fused monolithic, fully-restrained, gasket-free, leak-free piping system ideal for trenchless (horizontal directional drilling, pipe bursting and sliplining) or conventional "open-cut" installations and are available in 4-inch to 36-inch diameters. The combination of standard fittings and lower weight with higher flow for a given pressure class versus other thermoplastic pipes ensures that Fusible PVC® pipe brings greater economy to most pipeline projects.



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