



Legislation Details (With Text)

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Title: Receive a presentation of the “Electromagnetic Inspection and Visual Assessment Report” for the Lake Lewisville Water Treatment Plant 30 inch untreated water transmission pipeline inspection and condition assessment

Sponsors:

Indexes:

Code sections:

Attachments: 1. Exhibit 1 - Electromagnetic Inspection and Visual Assessment Report, 2. Exhibit 2 - CIP Detail Sheet, 3. Exhibit 3 - Presentation

Date	Ver.	Action By	Action	Result
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Agenda Information Sheet

DEPARTMENT: Water Production

CM/ ACM: Mario Canizares ACM

Date: October 9, 2017

SUBJECT

Receive a presentation of the “Electromagnetic Inspection and Visual Assessment Report” for the Lake Lewisville Water Treatment Plant 30 inch untreated water transmission pipeline inspection and condition assessment

BACKGROUND

Pure Technologies U.S. Inc., was selected to assess the condition of the 30” untreated water transmission pipeline using the multi-sensor inspection vehicle with electromagnetics (EM) and high definition digital pan-tilt-zoom camera (CCTV) system marketed under the trade name PureRobotics. The tool used CCTV in addition to the electromagnetics sensors, Laser profiling, Lidar with 3D reporting capabilities for assessing the structural integrity of the pipeline. Pure Technologies started the inspection of the 8.62 mile long pipeline on February 21st, 2017 and completed the work on March 2nd, 2017 except a section of the pipe due to some equipment malfunction. They re-mobilized and completed the inspection of that section of the pipe on May 23rd, 2017.

The Lake Lewisville Water Treatment Plant, (LLWTP) currently represents approximately 60% of the City’s water supply system. The LLWTP is located on Spencer Road and is supplied with untreated water from a pumping station located on the Hickory Creek arm of Lake Lewisville. The untreated water transmission pipeline system was built in phases with a 27 inch Bar Wrapped Pipe (BWP) pipeline constructed within a 30 foot wide water pipeline and electric power line easement in 1956-57 and a 30 inch (BWP) pipeline constructed

with a Union Pacific Railroad right of way in 1975.

The 30 inch water line was installed in native soil instead of specified bedding material and revealed deteriorated condition in some pipe sections during the I-35E widening project in April, 2015. Due to the installation concern, deteriorated pipe sections and the competing use of the Rail/Trail corridor, staff recommended performing a pipeline condition assessment for the 30 inch untreated water transmission pipeline which was included in the capital improvement plan for fiscal year 2016. The 27 inch raw water pipeline was properly embedded in sand as specified has experienced less failures than the 30 inch pipe line. Due to relatively better condition of the 27 inch pipeline, the staff recommended assessing this pipe condition within the next five (5) years and included the project in the capital improvement plan for fiscal year 2020.

The inspection spanned a total of 1,319 pipe sections, covering a cumulative distance of 8.62 miles (45,504 ft.). Of these pipe sections, two (2) pipe sections were identified with an electromagnetic signature representative of five (5) broken bar wraps. Ten (10) pipe sections were identified to have anomalous signals likely caused by a change in the pipe cylinder and categorized based on the cylinder anomalies electromagnetic signature observed in the collected data. Four (4) of these ten (10) pipe sections with anomalous signals were categorized to have Type 1 cylinder anomalies indicating a loss of the metal wall thickness, three (3) pipe sections were categorized to have Type 2 cylinder anomalies indicating pipe deformation and three (3) pipe sections were categorized to have feature-like cylinder anomalies indicating undocumented features.

Visual CCTV assessment found additional eleven (11) pipe sections exhibiting visual deficiencies such as internal cracking, liner and joint spalling, carbonate staining and discoloration. Longitudinal cracking was noted at several locations in the pipe; along the invert, the crown, and the spring-lines. A few pipe sections had a combination of longitudinal cracking at these locations. Several pipes exhibited circumferential cracking; a few pipes had multiple cracks, and there were a few sections where the circumferential cracking intersected the longitudinal cracks. Areas of carbonate staining and liner discoloration was typical throughout. An accumulation of suspected biological growth was detected at the invert of a few gate valves.

Pure Technologies U.S. Inc., provided recommendations for the short and long-term management of the pipeline in the condition assessment report (Exhibit 1) including immediate repair/replacement of the pipe sections with broken bar wraps. The report also recommended to further investigate Type 1 and Type 2 cylinder anomalies, internal cracks, liner and joint spalling and repair them as needed.

PRIOR ACTION REVIEW (Council, Boards, Commissions)

November 7, 2016 PUB approval of a “Professional Service Agreement” with Pure Technologies U.S., Inc. to perform pipe condition assessment of the Lake Lewisville 30 inch untreated water transmission pipeline; authorizing the expenditure of funds in an amount not-to-exceed \$592,740.

December 6, 2016 City Council approval of the “Professional Service Agreement” with Pure Technologies U.S. Inc. and associated cost of \$592,740.

FISCAL INFORMATION

A total of \$4,000,000 is included in the capital improvement plan for fiscal year 2018 (Exhibit 2) for the design and construction work related to the rehabilitation of the 30” untreated water transmission pipeline.

SCHEDULE

The design and repair work to rehabilitate the 30 inch untreated water transmission pipeline is schedule to start in November, 2017 and complete by June, 2019.

STRATEGIC PLAN RELATIONSHIP

The City of Denton's Strategic Plan is an action-oriented road map that will help the City achieve its vision. The foundation for the plan is the five long-term Key Focus Areas (KFA): Organizational Excellence; Public Infrastructure; Economic Development; Safe, Livable, and Family-Friendly Community; and Sustainability and Environmental Stewardship. While individual items may support multiple KFAs, this specific City Council agenda item contributes most directly to the following KFA and goal:

Related Key Focus Area: Public Infrastructure

Related Goal: 2.3 Promote superior utility services and facilities

EXHIBITS

1. Electromagnetic Inspection and Visual Assessment Report
2. CIP Detail Sheet
3. Presentation

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