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Title: Receive a report on use of innovative technology for operation and maintenance of the wastewater collection system.

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Attachments: 1. Exhibit 1 Council QuickCam QuikLok Presentation

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Agenda Information Sheet

DEPARTMENT: Utility Administration

CM/ ACM: Howard Martin

Date: August 9, 2016

SUBJECT

Receive a report on use of innovative technology for operation and maintenance of the wastewater collection system.

BACKGROUND

The Wastewater Collections department uses closed circuit TV inspection (CCTV) to investigate the condition of the existing sewer lines to make decisions on whether to use point repairs (removal and replacement of a bad section of the existing sewer line) or totally replace an existing sewer line. CCTV is very time consuming and expensive, but the most reliable means of making these sewer line rehabilitation decisions.

There are 522 miles of existing sewer lines in the collection system. When placed end to end the sewer line will extend from Denton to north of Kansas City. Not all sewer lines need to be CCTVed as they may have been recently constructed and/or have not exhibited maintenance issues. But which lines should be CCTVed? To help answer that question and make the best use of operations dollars the Collections department uses several computer models for sewer system asset management as listed below;

- ESRI GIS
- Cityworks CMMS
- WERF SCRAPS Model
- InfoWorks Sewer Model
- InfoMaster Sewer Model

Using these models a priority ranking of all the sewer lines was developed and then a CCTV priority ranking was established. This allowed spreading out of the CCTV effort over many years based on the priority ranking of the sewer lines.

However, in July of 2014, EPA established several requirements that the Denton Collection department has to meet. One of these requirements is the CCTV of 100% of the clay pipe sewer lines in the collection system by the end of 2015. This requirement using the regular CCTV equipment could not be met unless the city hired several CCTV contractors at great cost to do this work. The Collections department made the decision to use a flushing truck nozzle mounted camera to CCTV the sewer lines as the lines were being cleaned. This is a high speed CCTV operation compared to the regular CCTV inspection. This is a new technology not commonly used at this time. The department bought two cameras for this operation and set the goal of completing the EPA mandate. Staff is happy to report that all of the clay tile sewer lines were CCTVed ahead of the end of year deadline.

The cost per foot of nozzle mounted camera came in at 19 cents per foot compared to \$1.33 per foot for normal CCTV operation. For 283,866 feet of clay tile line the CCTV cost savings amounted to \$323,607.

Once a sewer line is CCTVed, the analysis of the video determines whether a point repair is sufficient or the whole line needs to be replaced. For doing a point repair, the current practice is to open cut the pavement or dirt on top of the sewer line and dig out the backfill to get to the part of the sewer line that is damaged. Then, that section is removed and replaced with a new pipe section. This operation requires rerouting of traffic or closure of street, movement of large construction equipment to the site and laborious work to complete the point repair. There are many pipes in the city in inaccessible locations where the open cut is not even feasible. To alleviate the traffic issues, find a way to do point repairs in inaccessible areas, and to reduce cost of point repairs, staff investigated remote point repair technologies. Based on the analysis staff adopted the Quick Lock method of doing remote point repairs and proceeded to purchase the equipment, the first city to do so in Texas as well as generally the southwest of the country. To date staff has done 124 point repairs with this technology, saving numerous hours of lane closures. The cost savings with this method average \$800 per point repair. As such, \$99,200 was saved with the remote point repairs compared to the open cut method.

To date, total cost savings using the above technologies amount to \$422,807.

Staff will show actual videos of these two innovative technologies and provide more detail in the presentation.

PRIOR ACTION/REVIEW (Council, Boards, Commissions)

PUB: Presented to PUB on January 11, 2016.

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: Organizational Excellence

Related Goal: 1.5 Utilize technology to enhance efficiency and productivity

EXHIBITS

1. QuickCam QuickLok Presentation

Respectfully submitted:
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