City of Fort Worth Water Department

TEEA 2016 Winner: Innovative Operations/Management

New technology spurs environmental and economic benefits.

Beneath the streets and along the Trinity River that weaves through Fort Worth lies a 262-mile matrix of large-diameter sanitary-sewer pipes—"interceptors"—feeding into a single wastewater treatment plant that serves the growing metropolis. The monitoring and maintenance of this critical infrastructure falls under the responsibility of the Fort Worth Water Department and the contractors it relies on to inspect, maintain, repair, and plan for replacement, to keep water flowing across the city.

Keeping track of the integrity of this complex web of underground pipes can be a daunting task. Catastrophic failures and collapses of large-diameter sewer pipes are not only a financial burden, but an environmental concern as well. During the previous 10 years, the City of Fort Worth relied on age, records of operations, and other activities to assess the health of their interceptors. Inspections and improvements were limited to costly bypasses and extensive cleaning to facilitate the inspections via remote cameras. This maintenance was expensive and laborious and had its shortcomings—most notably, its inability to accurately assess the severity of pipe degradation.

To get a better picture, personnel needed a better lens. A promising technology would incorporate HDTV with both sonar and laser technology to derive a better picture of the health of each leg of the system, and could inspect the interceptors in almost half the time of previous inspection protocols. Data collected was then compiled to score the inspected pipe based on remaining useful life.

In its first three years, the City of Fort Worth's Interceptor Condition Assessment Program (ICAP) has inspected 49 percent of interceptors with this new technology and has allowed the city to better prioritize replacement and repair. A primary goal of the program is to prevent the environmental threat of collapses. ICAP estimates it has prevented an estimated 59 percent fewer sewage overflows

since its inception, significantly reducing environmental impacts. The financial benefit has been outstanding as well. Traditionally, maintenance was scheduled from manhole to manhole; however, the specificity of information provided by ICAP allowed Fort Worth to focus only on those segments that needed repair, saving millions of dollars in unnecessary replacement. Additionally, the program allows Fort Worth to schedule pipe cleaning strategically based on lines with demonstrated restricted flow, at an anticipated saving of more than $15 million over the next 10 years.

Fort Worth’s implementation of ICAP for the entirety of its large-diameter system is the largest-known implementation of this technology in the world. This proactive approach to environmental protection using this technology has served, and will continue to serve, as an innovative model system for cities all around the world.