Utility Implements Technology Innovation to Control I/I and Optimize Capital Spending ROI A Case Study

A NJ Utility has implemented Focused Electrode Leak Location (FELL, ASTM F2550-18) technology to precisely locate and quantify inflow and infiltration (I/I) to improve its collection system integrity, and simultaneously maximizing treatment facility capacity by reducing influent flows. Using FELL in a comprehensive, system wide investigation allows the Utility to determine the severity of defects throughout individual sub-basins and across the entire collection system, and thus the ability to more accurately prioritize its available capital funds than by relying on legacy closed-circuit television (CCTV) technology. Initial field demonstration work conducted by the Utility in 2018 documented a substantial number of defects in recently rehabilitated reinforced concrete (RCP) pipelines that contributed to significant I/I, and for which CCTV techniques had not previously identified.

The Utility's initial findings of liner defects in recently rehabilitated RCP pipelines are consistent with numerous other and similar field investigations of RCP and other non-metallic gravity pipelines from around the country, and internationally. Completed case studies conducted over the past seven years have documented that legacy CCTV inspection can significantly under-report or altogether miss pipeline defects. A significant advantage of FELL technology is its unbiased, unambiguous, and real-time reporting of pipeline defects. Results generated which adhere to ASTM F2550-18 offer utility Owners the benefit of locating defects to within 3/8 to 1/16 of an inch, and quantifying the defect infiltration rates which are reported in gallons per minute (gpm).

The new FELL investigation program was chosen by the Utility as an essential tool to justify that capital expenditures for its wastewater collection system and storm water system are made in an orderly manner, define and justify the required investments by the Utility, and monetize savings that will be generated for its ratepayers' benefit. Moreover, the new FELL equipment purchased by the Utility is also being used for quality assurance/quality control to verify water tightness on all newly-rehabilitated gravity sewer pipes. This allows the Utility to confirm contract conformance prior to Contractor demobilization and to process pay applications.

Audience participants will learn how FELL technology is conducted in the field, how results are generated and reported, and how the resulting data sets are used to establish capital spending priorities. The presentation will offer examples of how utility Owners can structure contract documents to ensure the rehabilitation work is completed in a manner that protects its capital investments, and results will be shown of savings realized by the Utility by implementing its FELL inspection program.