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## **SUPER SANITARY SEWER SOLUTIONS: SOLVING COMPLICATED SANITARY SEWER PROBLEMS WITH INNOVATIVE FIELDWORK AND COMPUTER SOFTWARE**

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**ABSTRACT:** CDM and the City of Columbus (City) are performing a comprehensive infiltration and inflow (I/I) remediation project in a 5000-acre mixed residential/commercial area with historical basement backup problems. This plan will identify and quantify public and private sources of I/I, and provide conceptual designs to reduce I/I and reduce basement backups.

The Livingston-James I/I Study utilized innovative equipment, software, hardware and field techniques to clean, inspect, understand and evaluate the entire system to identify and solve sewer-related problems. Some of the specific tasks included:

- Cleaning, inspecting and condition-coding of over 750,000 linear feet of 8" to 66" sewers
- Storing and linking digital information with external hard drives and DVDs
- Creating a single GIS-linked database of over 3000 pipes using NASSCO PACP format
- Using query tools and GIS to create maps that summarize the types, locations and correlations of sewer defects
- Flow monitoring at 30 locations for understanding the sewer system and calibrating the SWMM models
- Modeling the sewer system with SWMM using RTK Analysis and Radar Rainfall
- Investigating private-sources of I/I using rainfall simulations, dye testing, CCTV cameras, owner interviews and lateral inspections
- Performing wet-weather quick response investigations with CCTV to understand surface flooding and I/I
- Prioritizing sewers for immediate repairs, rehabilitation, root control program, FOG programs, more frequent maintenance & inspection and replacement
- Using a 3D viewing environment to compare HGL and basement elevations to identify water-in-basement occurrences (WIBs) caused by mainline hydraulic capacity issues