

Comprehensive Flow Monitoring Delivers Savings of \$498 Million and Eliminates Capital Projects

City of Los Angeles, California

ADS Managed Flow Monitoring Eliminates Need for Capital Projects

The City of Los Angeles conducted a multi-season flow monitoring effort covering their entire sewer system tributary flow area using 75 non-contact type flow meters from 2002 until 2006. Placement of the meters was determined by City personnel. A primary driver behind the selection of non-contact type flow metering devices was to minimize (or eliminate) service visits by City staff.

A flow modeling consultant, DHI, was hired in 2006 to prepare and calibrate a comprehensive hydraulic model of the system using the hydraulic modeling software, Mike Urban (Mouse was the predecessor), and calibrate the model for dry weather (typical day) flow conditions. The City and the modeling consultant realized a proper wet weather calibration of their new model was critical since that drives most of the need for capital expansion projects in the sewer system. They realized a more comprehensive set of flow and rainfall data were needed in order to properly characterize RDII from various tributary areas and also to properly understand hydraulic behavior in this complex system comprised of >100 diversions and flow split chambers.

In 2007, DHI was contracted, along with ADS, to provide accurate flow data from 93 additional locations (many of which were used to verify data from previously metered locations) over two consecutive wet seasons. DHI selected the metering locations with the intention of optimizing the accuracy of modeled flows in the primary trunk and interceptor pipes. ADS provided DHI with real time data via IntelliServe and provided finalized flow data, in frequent intervals, via IntelliServe enabling DHI to efficiently calibrate their model to the various wet weather conditions captured.



Downtown Los Angeles, California

The Return on Investment for Los Angeles

An investment of \$4.5 million in a wet weather calibration of their hydraulic model and a recalibration of the dry weather flow conditions resulted in a savings to the City of Los Angeles of \$498 million in capital project eliminations and deferrals. This is a 100 fold return on investment.

Comprehensive flow monitoring is the subdivision of a sewershed into small and uniformly-sized meter basins so that RDII volume and sewer operational capacity are measured at each metering point. The result is that causes are separated from symptoms. If the basin size is small enough, RDII in collection systems can conform to the 80/20 Rule of Pareto's Principle. Application of the Rule says that 80% of the total volume of RDII entering a collection system will enter in just 20% of the system. Therefore, rehabilitation can be performed on a smaller portion of the system saving time and expense.

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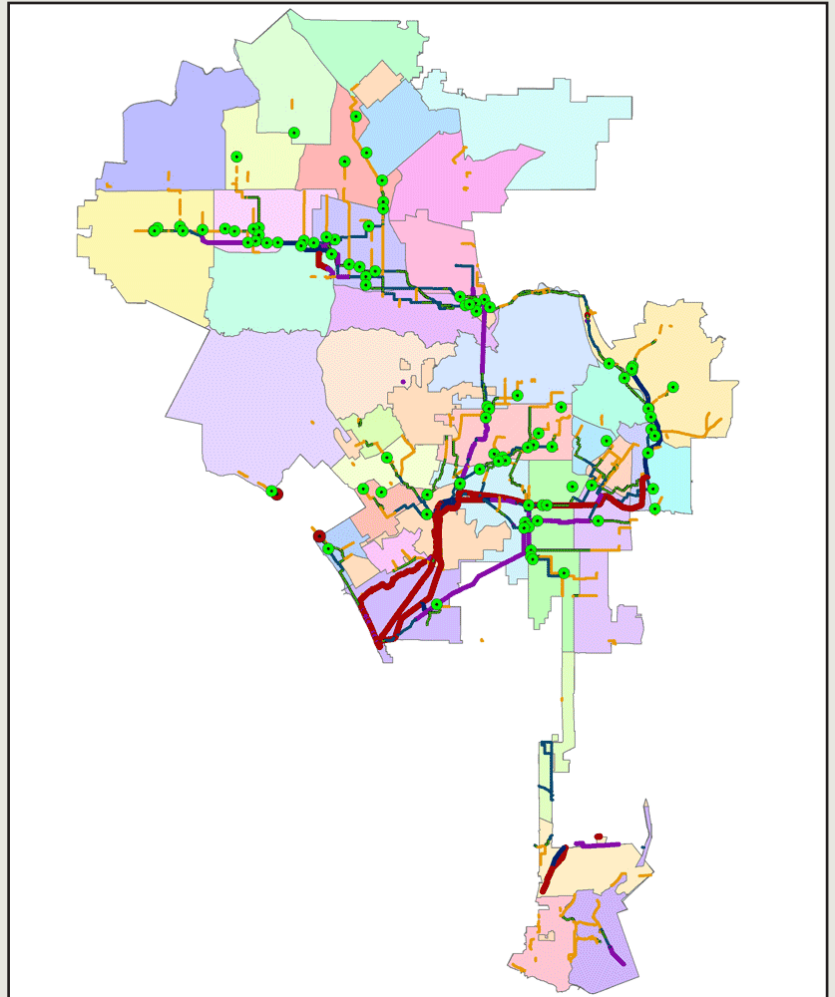
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When final data became available to DHI, they realized much of the data used previously, to calibrate the model for dry weather flows, did not meet the elevated standard of accuracy required by the City. Based on this finding, the City elected to completely re-calibrate the flow model for dry weather flow conditions based exclusively on the flow data provided by ADS. Once the dry and wet weather calibrations were completed, DHI delivered a fully functional complete model to the City engineering staff for use in strategic planning and evaluation of capital projects already in their near and long term schedule.

By mid-2010, the City recognized about \$250 million in capital projects involving various interceptor upgrades and relief projects that could be deferred by up to 20 years or completely eliminated based on the more accurate hydraulic knowledge and characterization of their system. By late 2011, the City engineering team had identified a total of about \$498 million in savings from various additional capital project deferrals with even more expected to be identified in the future.

The total cost of providing accurate updated flow and rainfall data and an accurate and properly calibrated flow model was about \$4.5 million. This constitutes a 100 fold return on investment to the City which was welcomed during a time of economic crisis for the City.

By eliminating much of the previously mischaracterized flow at various key locations throughout the City collections system, the City saved in capital expenses the equivalent of over \$1 million per mgd system wide (taken over a period of 10 to 20 years).



Map showing primary trunk lines, meter locations, and community planning areas for the City of L.A.

Comprehensive Flow Monitoring Reduces Project Costs, Saves Time, and Solves Problems

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