PROJECT BRIEF

Lexington-Fayette Urban County Government Uses Advanced Level Monitoring to Manage Sewer Overflow Response Plan (SORP)

Stopping Blockages Before They Become SSOs

In 2011, the Lexington-Fayette Urban County Government (LFUCG) in Kentucky finalized the terms of a Consent Decree to address problems with their sanitary sewer system. The Consent Decree outlined two key outcomes: eliminating dry weather sanitary sewer overflows (SSOs) and minimizing the impact of wet weather SSOs. To that end, a requirement of the Consent Decree was to develop a Sewer Overflow Response Plan (SORP) to establish timely and effective means to respond, to clean up, and minimize the impact of all SSOs; report the estimated volume, duration, cause, and impact of all SSOs; and notify the impacted public.

During the first phase of LFUCG's compliance programs, the Operations staff continuously were on call. The trigger for response in the early years of the Consent Decree was rainfall exceeding 0.5-inches over a specified period of time. This required the Operations staff to begin a survey of 301 manholes at risk of overflow or that were known to overflow in the past. Rainfall proved to be a poor indicator of SSOs and the required response was highly labor intensive.

Based on lessons learned from Phase 1, the next phase of LFUCG's compliance programs focused on a different approach. The monitoring list was reduced from 301 to 118 manholes, SORP teams were established, and specific basins were assigned to each SORP team. However, the same rainfall amount was used as a trigger to initiate a survey of at-risk manholes. There was improved efficiency with defined geographic coverage, but rainfall remained a poor indicator of SSOs, and the process still was too labor intensive.

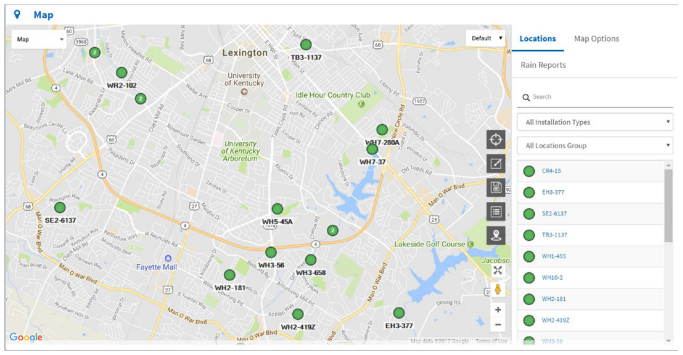
Following Phase 2, ADS introduced the LFUCG Operations staff to advanced level monitoring technology to provide real-time visibility into the system and alarming capabilities to alert the staff. With this new technology in hand, LFUCG reviewed the observed overflow locations from Phase 2, the surveyed manhole data, and the field notes collected by the SORP teams with their modeling consultant. The LFUCG team identified 18 "hot spots" in six sewersheds that were most at- risk for wet weather SSOs. Using the alarming features within the ADS FlowView web-based system, alarms were set at all 18 locations to indicate when levels were two feet above the crown of the pipe (surcharging) and at the manhole rim elevation (overflow is active). Additional alarms were sent when levels returned to normal, including when the overflow was no longer active and the pipes were no longer surcharging. All on-call Operations staff and managers would receive the alarms and had direct access to sewage levels at these 18 locations.

"ADS level monitoring technology has provided real-time visibility into the LFUCG system while reducing labor-intensive wet weather inspections. We are saving over $40,000 annually after switching to a level monitoring system by eliminating unnecessary field operations. In addition to cost savings in our wet weather operations, we have experienced a number of non-economic benefits associated with our alarms system including: better staff safety resulting from fewer wet weather inspections, remote system monitoring capabilities, improved reporting accuracy to regulatory authorities, prevention of dry weather sanitary sewer overflows, gained addition-al data for calibration of sewer hydraulic model, and efficient staff utilization."

Chase Azevedo, P.E. Municipal Engineer Senior
Lexington-Fayette Urban County Government
(April 2018)

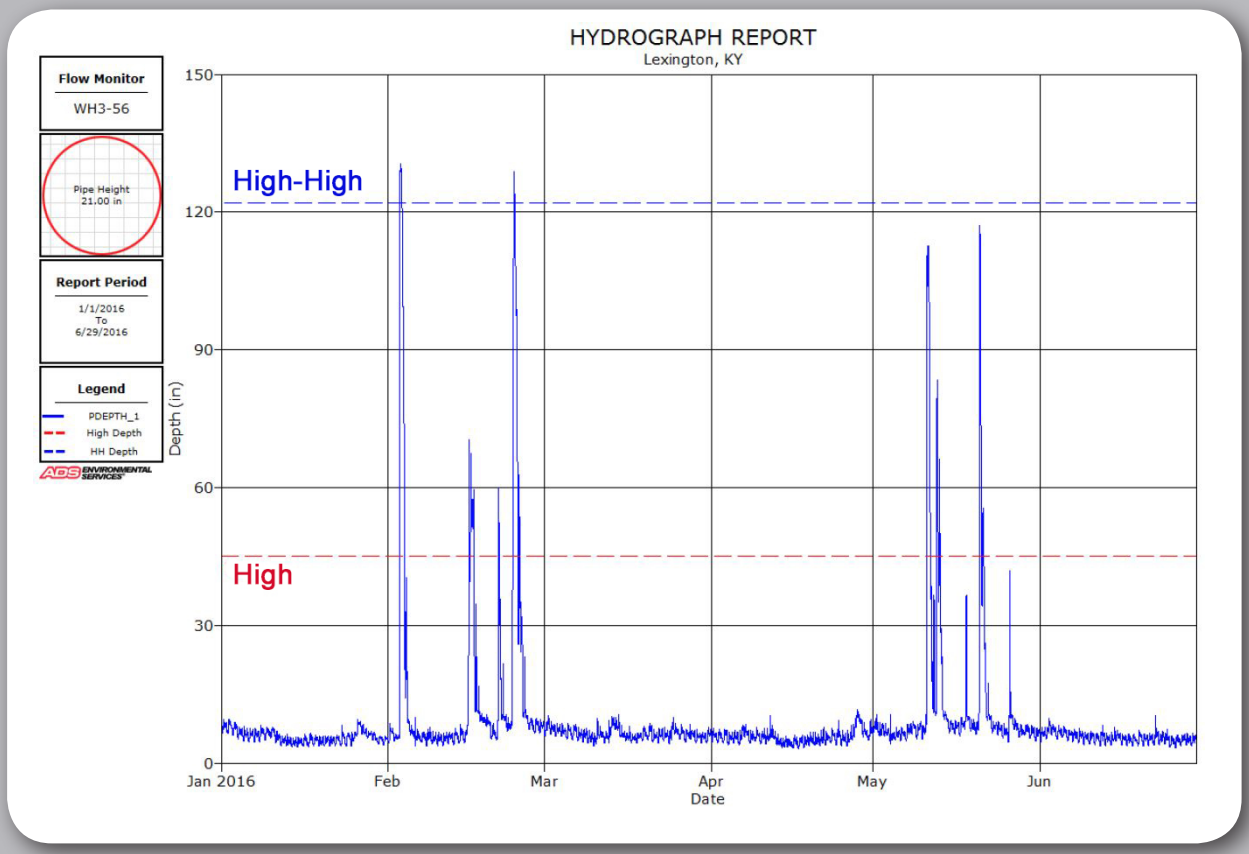
By deploying the new ADS level monitoring technology, LFUCG recognized a significant decrease in labor and equipment cost required for response in the first year. Hours decreased from 3,180 in Phase 2 to 990 in Phase 3, or the equivalent reduction of one person working an entire year, with costs decreasing from $189,000 in Phase 2 to $58,000 in Phase 3. When factoring in the cost of installing and maintaining the ADS level monitoring system, LFUCG realized a first-year return on investment of $43,500.

Cost Effective, Easy-to-use Level Monitor for Overflow Prevention



FlowView software provides one-click access to critical site-specific information

While the ADS level monitoring technology delivered real cost savings to LFUCG, non-economic benefits were also identified. Remote monitoring capabilities provided the on-call staff the opportunity to review data before traveling to a site. Staff safety was improved with fewer site visits and staff utilization increased. Finally, the data supplied from each site provided a permanent record of levels at each location and improved reporting accuracy, which impacts future planning and operational decisions.



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