In the late 1980s and 1990s the Federal government, through the Clean Water Act, called for the elimination of Sanitary Sewer Overflows (SSOs) and reductions in discharges from Combined Sewer Overflows (CSOs). This initiative affected every wastewater system in the country, including the Metropolitan Sewer District of Greater Cincinnati (MSD), where the age and design of the system contributed to increased scrutiny and enforcement as well as heavy civil penalties for non-compliance. In 1999, while MSD had already begun addressing the elimination of the SSOs and reductions regarding CSOs, costs to the system’s customers were significant factors in entering into negotiations with the Environmental Protection Agency (EPA), the Department of Justice (DOJ) and the State of Ohio to develop an acceptable formal remediation program.

Our Challenge

MSD’s wet weather assets are spread across its 300 square mile service area. The responsibility to minimize wet weather overflows using such decentralized facilities that have such critical dependencies on other wastewater collection and treatment assets, drove MSD to look for an
innovative solution that would enable them to control entire watersheds like operators control a treatment plant.

Our Solution

CH2M leveraged its experience in sensors selection, distributed systems, multi-mode communication and integration of data streams from disparate sources throughout the watershed (remote wet weather storage and treatment facilities; stand-alone flow meters, level sensors, rain and stream gauges) to provide MSD with near real-time visualization of conditions throughout their system and control of critical wet weather functions. The MSD solution includes the following components:

- **Integrated data streams.**
  4 wet weather storage facilities, 2 treatment facilities, 54 flow monitors, 13 level sensors, 1 gauge station.
- **SCADA.** 6,058 tags
- **Cloud Historian and Analytics.** Centralized access to data and use of analytics to turn data into insight
- **GIS Dashboard.** Intuitive navigation and performance reporting
- **Mobile access.** Crews have access to information in the field

Client Benefits

CH2M helped MSD better manage wet weather challenges using real-time data collection and analytics along with cloud technology. This has provided MSD the ability for watershed level coordinated control of facilities and improved operational decisions. MSD also uses it to increase its readiness before a storm hits through better maintenance, and to improve its performance during and after wet weather through predictive and alerting algorithms. Additional benefits from the system include the following:

- Provides operations staff with the ability to view multiple data streams in real time from a single location
- Creates actionable information that staff can easily understand and use as the basis for rapid detection and response
- Allows staff to access key information used to make decisions anytime, anywhere, and on any device
- Streamlines regulatory reporting requirements