

WATER QUALITY & FLOOD MITIGATION



CASE STUDY | NORTH HUDSON SEWERAGE AUTHORITY

BACKGROUND

North Hudson Sewerage Authority (Authority) owns and operates the combined sewer and wastewater treatment system within Hoboken, Weehawken, West New York, and Union City, New Jersey. Like many wastewater systems across the U.S., the Authority faces considerable regulatory and community pressure to address ongoing combined sewer overflows (CSOs) and flooding. With nearly 190,000 customers in one of the most densely-populated urban areas in the U.S., traditional approaches to solving these challenges are not feasible. Due to limited land availability for stormwater runoff storage and a constantly changing environment and watershed, the Authority considered immediate program improvements to advance their goals.



60+

sewer connection permit applications per year



31,000

average persons per square mile of service area



800 million

gallons of wet weather flow treated per year

NEW DEVELOPMENT, NEW RULES

Traditionally, large-scale capital improvement projects to create additional system capacity have been the primary strategy against CSOs. With a dense urban service area and limited right of way, the Authority partnered with the commercial development community to maximize storage and wet weather capture with smart detention. In 2018, the Authority implemented new stormwater design and connection requirements that required automated flow controls on new developments disturbing greater than 10,000 square feet. This rule accelerated the implementation of an integrated network of continuous monitoring and adaptive control sites across the sewershed.

SMART WATERSHED NETWORK MANAGEMENT

Opti's Smart Watershed Network Management (SWNM) uses information sourced from sensors across the watershed and the weather forecast to optimize the performance of individual upstream assets. This is done by controlling timing and rate of flows through stormwater assets (e.g. cisterns, underground vaults, and ponds) to achieve basin management objectives. Data provides timely insights to watershed performance in adjacent digital platforms that enable Planners, Operators, and Maintenance Teams to leverage information about the current status of stormwater assets in their day-to-day work environments. Over time, as many more upstream sites are added, coordinated release and network management will be critical for load management to the wastewater treatment plant.

RESULTS & BENEFITS



ECONOMICAL

95% Savings

Capital expenditure



RESILIENT

75% Flow Reduction

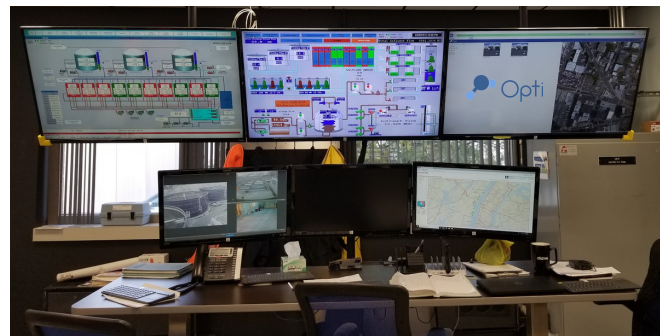
Average Annual Wet Weather Outflow Volume



PEACE OF MIND

Network Insights

SCADA Integration



NHTSA SCADA Room - Operators manage upstream stormwater assets and wastewater treatment systems together.



Optimizing Stormwater Management

PERFORMANCE

Since 2018, Opti has been actively controlling several stormwater assets. Using weather forecasts, inflow models, and real-time data, Opti active controls improve wet weather capture and minimize peak flows to the combined sewer system, thereby mitigating CSOs and flooding. Over the course of two years, Opti-controlled sites fully captured 86% of storms with no outflow, saving capacity at the downstream treatment plant during peak loading times.



The Southwest Park in Hoboken combines passive green space with Opti active controls to meet local stormwater needs. It is New Jersey's first resiliency park with integrated green infrastructure to mitigate flooding.

STORAGE REDUCTION

NHSA's new stormwater regulations put an emphasis on more storage. Meeting peak flow requirements with an undersized system can only be met by integrating active controls or building comparable storage elsewhere. With Opti active controls, a detention tank could be downsized by an estimated 30% and continue to meet NHSA's volume capture requirements. This smaller, more efficient storage approach saves money and space in constrained projects.

ABOUT OPTIRTC, INC.

Opti is the world's largest provider of cloud-based stormwater management. Opti enables communities to continuously improve stormwater management by delivering real-time visibility, adaptively controlling assets, and supporting smart city initiatives. Opti manages over 160 commercial deployments and over 100 million gallons of stormwater storage. Opti's solutions have been approved by regulatory authorities, including the EPA Chesapeake Bay Program and its member states, and the Washington State Department of Ecology TAPE program.

2 Years of Opti

Wet Weather Volume



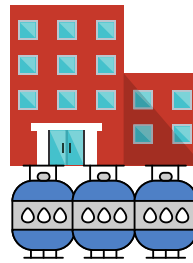
Opti prevented 75% of the stormwater runoff entering the site from reaching the combined sewer during wet weather.

"Opti provides a factor of safety for balancing what we can store with what we can treat downstream."

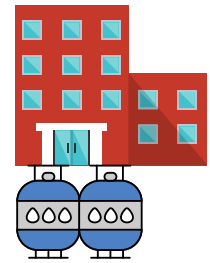
Fred Pocci, P.E.

Authority Engineer

North Hudson Sewerage Authority



Extra storage (new construction)



Optimized existing storage (Opti)



Optimizing Stormwater Management

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