

Uptown Park CSO Treatment

Compressed Media Filter and UV Disinfection Facility



CASE STUDY

Columbus, GA

Uptown Park CSO Treatment

48 MGD Permitted Capacity

Operation Since 1995

National Demonstration Facility

In 1990, the Columbus Water Works of Columbus, GA, implemented water quality monitoring, pilot studies, and designs to control its combined sewer overflow (CSO) discharges to meet in-stream water quality standards in the Chattahoochee River.

The Uptown Park facility was a national CSO demonstration project funded by a \$20 million United States Environmental Protection Agency (USEPA) grant to evaluate various full-scale treatment technologies. The WWETCO principals designed and managed construction of these facilities. Subsequently, WWETCO operated and

tested the facilities for five years. The technologies included flow control and screening, vortex solids separation, air flotation, chemical precipitation, compressed media filtration, and various chemical and non-chemical UV disinfection.

This facility was awarded the USEPA's National Wastewater Management Excellence Award for CSO Control in 2001 and has been highlighted as a success story in numerous EPA workshops and technical papers. The program included technology performance testing and instream watershed monitoring to establish a TMDL framework for wet weather pollution issues.

The program was peer-reviewed by a team of experts coordinated by the Water Environment Research Foundation. The USEPA Office of Research and Development provided quality assurance oversight. The program used the "demonstration approach" of the CSO policy and was able to determine that the controls implemented resulted in CSOs that "do not cause or have reasonable potential to contribute" to an exceedance of the in-stream water quality standards. The current National Pollutant Discharge Elimination System (NPDES) Permit includes operation, monitoring and reporting without numeric limits.

Awarded the USEPA's National Wastewater Management Excellence Award for CSO Control in 2001.

Peer reviewed by the Water Environment Research Foundation.

Quality assurance oversight by the USEPA Office of Research and Development



Uptown Park

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Demonstration Facility Components and Filter Testing Results

The flow path through the facility includes 1.5-inch coarse screening, vortex heavy solids and debris removal, compressed media filtration and UV disinfection for the most frequent CSO events. It also includes chemical disinfection for the larger events up to the “knee of the curve” rainfall size. Influent total suspended solids (TSS) to the filter ranged from over 500 mg/L down to less than 100 mg/L TSS. The removal of TSS from the combined vortex and filtration are 80 to 90%. The filter removal was about 70% TSS. The filter design uses a vertical compression mechanism that had to be uncompressed in order to treat high solids loading from the CSO’s. As a result, smaller particles would exit the filter. The filter also resulted in high volumes of water (18% wastage) to effect backwashing.

The New Generation

Subsequent to this 5-year, full-scale applied research study, WWETCO developed two new unique technologies for control and treatment of wet-weather pollution:

1. WWETCO FlexFlow™
2. WWETCO FlexFilter™

The WWETCO FlexFlow uses a hydrostatic water level against a bladder to attenuate the stormwater hydrograph and divert flow to or around a treatment process.

The WWETCO FlexFilter also uses a hydrostatic water level to optimize the benefits offered by the synthetic fiber media. The FlexFilter uses lateral compression against a bladder containing the fiber media to create a conical shaped porosity gradient that segregates the large from the small particles in the direction of the flow. This passive flow path allows for the high-rate capture of high solids loading typical of CSO flush conditions without clogging the filter. The high compression at the filter outlet results in the removal of the smaller particles that can make up the majority of the pollutant loads. The WWETCO FlexFilter also employs a backwash method that minimizes backwash waste volumes by using low head air to accomplish the media scrubbing while lifting the backwash water to waste.



New Media

The FlexFilter uses lateral compression against a bladder containing the fiber media to create a conical shaped porosity gradient that segregate the large from the small particles ... capture of high solids loading typical of CSO flush conditions without clogging.

Uptown Park Installation

