

Rochester New York Pure Waters District Combined Sewer Overflow Abatement Program (CSOAP)

Description:

Rochester Pure Waters District Combined Sewer Overflow Abatement Program (CSOAP) and tunnel system is designed as both a storage facility and conveyance vessel so that delivery of these large volumes of flow can be effectively staged to the Van Lare Wastewater Treatment Facility. Stormwater (runoff from rain and thaws) enters the City's combined system (575 miles of sewers) through 140,000 catch basins on City streets, parking lots and roof connections.

Background:

The CSOAP Tunnel System is designed to relieve Rochester's existing Combined Sewer System which averages 50-90 years in age. This existing sewer system was functionally designed (early 1900's) to discharge excess flows, or combined sewer overflows (CSO's) to local waterways during storm events (approximately 70/year).

Historical Summary:

- System Design - initiated in early 1970's
- Construction start - 1975, first section put into operation - 1977 (Irondequoit Tunnel)
- East Side System - fully operational in 1985
- West Side System - partially operational 1989, fully operational 1993
- Entire System - fully operational since 1993

Total Expense:

- Approximately \$550 million for design and construction
- Funding: 75% Federal, 12.5% State, 12.5% Local

Physical Components of Tunnel System:

- Averages 12-16 feet in diameter and 150 feet deep
- Approximately 30 points of connection (drop shafts) from existing combined sewer system
- Total length - 34 miles
- Total Storage Volume - 175 million gallons
- West Side System connects to East Side via a bridge pipe crossing that also serves as a recreational pedestrian connection of Maplewood and Seneca Parks

Results:

Construction & Operational Accomplishments:

- Phased out 35 overflow sites and nearly 30 small ineffective treatment plants
- Avoided the enormous cost of digging up nearly 600 miles of City streets and replacing the existing combined sewers with a separate sewer system
- Through utilization of the constructed control points the system is functioning as designed and to a significant degree, even more effectively than anticipated
- Since 1993 the system has captured approximately 45 billion gallons of CSO that otherwise would have spilled into local waterways (annual average - 3.75 bil. gals/year)
- Approximately 85% of this captured amount has received full **secondary treatment** (the discharge permit requires **primary treatment** only)
- Remaining 15% of flow receives preliminary treatment and chlorination
- Out of 50-70 events per year, only 1-2 extreme events generate flows that exceed tunnel capability however, only 1/10th of 1% of total captured flows are lost to receiving bodies during these extreme events
- Awards - In 1991 the Monroe County / Rochester Pure Waters District, in national competition with all U.S. cities, received the "**CSO Control Program Excellence Award**" from US EPA

Environmental Accomplishments:

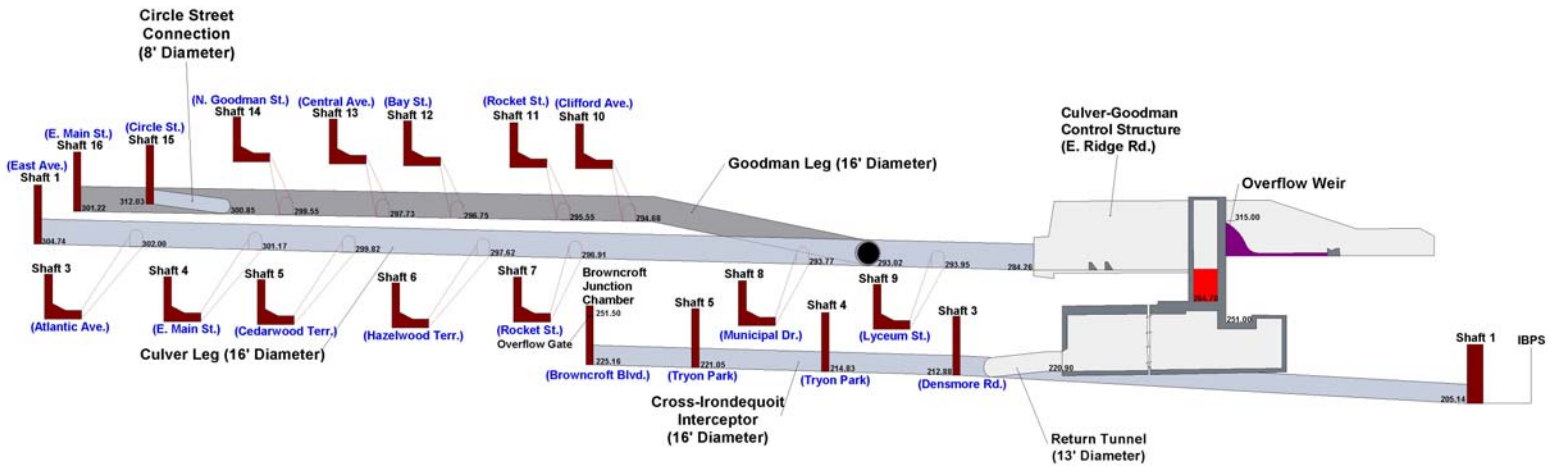
According to monitoring performed by the Monroe County Department of Health in conjunction with the US Geological survey (USGS), water quality of the Genesee River has shown significant improvement over the time frame of the tunnel system becoming operational. Although there are most likely many factors that generated this improvement, the dramatic reduction in fecal coliform, the more than 50% reduction in phosphorous and zinc loadings and the increase in dissolved oxygen appear directly related to the nearly complete elimination of CSO's.

Monroe County Department of Environmental Services CSOAP & Tunnel Operations Contacts:

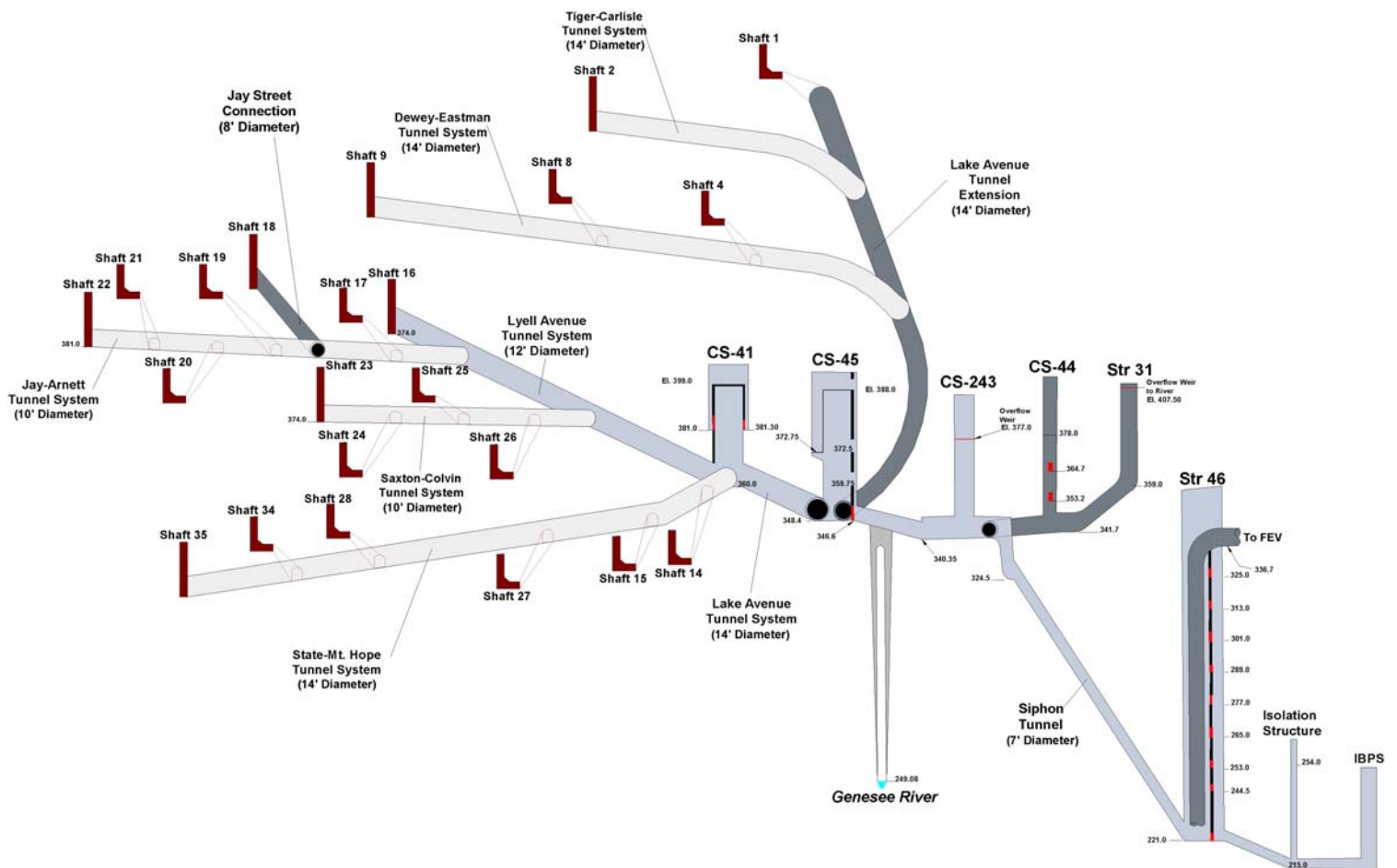
Michael Schifano, telephone: 760-7610 x 7516, email: MSchifano@monroecounty.gov

Bill Putt, telephone: 760-7610 ext 7068, email: BPutt@monroecounty.gov,

East-side Deep Rock Tunnel System



West-side Deep Rock Tunnel System



The CSOAP tunnel system is located in the Rochester Pure Water District



The sewer system operated by Monroe County is spread over four sewer districts seen on the map at left: Northwest (yellow), Gates Chili Ogden (rust), Rochester (green), and Irondequoit Bay (blue).



The head of a boring "mole" (showing its teeth) emerges from a tunnel during construction.