



Above: Construction of the water treatment plant at the selected site within the Mosholu Golf Course in the Bronx is in progress. Once completed, all but two acres will be returned as a public golf course.

At right: MRCE is consulting on tunnel face stability in rock among other issues during construction.



Croton Water Treatment Plant

Bronx, NY

Following years of environmental studies NYC Department of Transportation decided to construct a new 290 million- gallon-per-day Water Treatment Plant to provide filtration and disinfection of the Croton System water supplied to New York City through the New Croton Aqueduct. The construction was also accompanied by the rehabilitation of several facilities associated with the water supply system and the construction of connecting tunnels. Three sites were considered in the final studies. Mueser Rutledge Consulting Engineers (MRCE) assisted in the subsurface investigations, laboratory testing programs, and foundation design for those three locations.

The most challenging subsurface conditions were encountered at a site on marginal land along the northeast side of the Harlem River in the Bronx, NY. The presence of liquefiable sands, soft organic deposits, and deep decomposed rock presented several challenges to the foundation design. MRCE performed liquefaction analyses and investigation of lateral spreading potential at the site's waterfront. MRCE assisted the design team in the evaluation of ground improvement methods needed to reduce the risk of liquefaction induced problems and in the selection of adequate foundation systems. MRCE also provided the team with design alternatives for the waterfront structures. MRCE provided review of foundation and geotechnical issues on the other two sites, as well, and assisted in the selection of the final site. MRCE's recommendations included seismic pressures on foundations, rock excavation feasibility recommendations, and other foundation-related recommendations.

At present, the construction of the water treatment plant at the selected site within the Mosholu Golf Course in the Bronx is in progress. The construction requires a deep excavation through the overlying till and extending in excess of 50 feet below the rock surface. The scale of the excavation is very large by New York standards (11 acres). MRCE has been providing assistance to the design team in responding to field issues. That assistance has included a review of the contractor's excavation support systems, waterproofing details, rock excavation face stability based on field visits and rock mapping, tunnel face stability in rock, foundation subgrade quality, and rock bolting issues.