



West Area Combined Sewer Overflow Tunnel Storage and Treatment Projects

What is a Combined Sewer System?

Combined sewers are single pipes built many years ago to carry wastewater and stormwater from homes and businesses. Under dry conditions, wastewater from homes and businesses flows through combined sewers to water reclamation centers for treatment and eventual discharge into a water body.

What is the problem?

A 19-square-mile area of Atlanta around Downtown is served by a combined sewer system. Combined sewers were used in the late 1800s until the mid-1900s in many major metropolitan areas but are no longer constructed.

When it rains, stormwater flows into the combined sewers, creating "combined flow." The combined sewers convey combined flow to the water reclamation centers for treatment. To protect the water reclamation centers from flooding during heavy rain, regulators redirect the combined flow to a CSO treatment facility. These facilities treat the combined flows through screening and disinfection prior to discharge into a river or stream. During larger storms, flow can exceed the capacity of the CSO facility, producing overflows into rivers and streams.

Atlanta is under a federal court order to bring the combined sewer system into compliance with federal and state water quality laws by mid-2007. The court order, or Consent Decree, required the City to develop a plan for achieving compliance by the deadline.

Combined Sewer System Improvement Plan

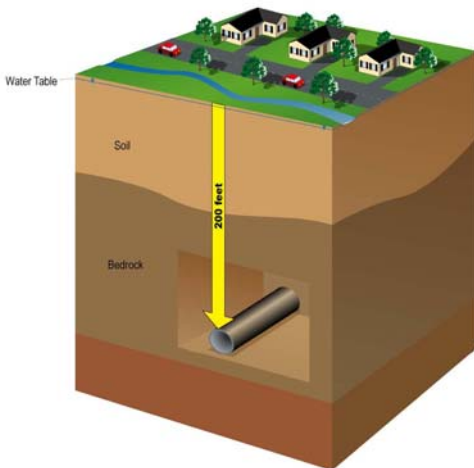
The United States Environmental Protection Agency and the Georgia Environmental Protection Division have approved the City's plan to eliminate water quality violations from combined sewer overflows. This plan involves construction of a tunnel, separation of the combined sewers in selected areas and upgrades to existing facilities.

- A deep-rock storage tunnel and treatment system will be constructed to capture the combined stormwater and sewage flow for conveyance to two CSO treatment facilities where the pollutants will be removed before discharge to the Chattahoochee River and Intrenchment Creek. Overflows will be reduced from 60-80 per year to an average of only four per year. The remaining overflows will be screened and disinfected before discharge to receiving streams.

- The Greensferry and McDaniel CSO basins and the Stockade sub-basin (Custer CSO Basin) will be separated. This will increase the city's total separated area from 85% to approximately 90% and reduce combined sewer overflows in these basins, thereby eliminating two CSO facilities and one regulator.

West Area CSO Tunnel and Dedicated CSO Treatment Plant

The new West Area deep storage CSO tunnel ("West Area Tunnel") will be constructed deep below the ground's surface in bedrock similar to the rock that comprises Stone Mountain. The West Area Tunnel will capture, convey and store CSOs from the Clear Creek, Tanyard and North Avenue CSO facilities. The West Area Tunnel will be approximately 8.5 miles long with a 26-foot finished diameter sized to store at least 177 million gallons of overflow from a storm. When the rainfall is over, the overflow will be conveyed to a dedicated CSO treatment plant for pollutant removal and disinfection before discharge to receiving waters.



A new 85-million-gallon per day (mgd) dewatering pump station will be constructed at the end of the tunnel at the R.M. Clayton Water Reclamation Center (WRC) to lift the stored flow from the tunnel for treatment at the new dedicated CSO treatment plant. The pump station will be sized to allow a full tunnel to be emptied within a two-day period.

The new CSO treatment plant will be constructed on the site of the decommissioned steam plant next to the existing R.M. Clayton WRC. The plant's treatment processes will include screening, solids removal with vortex separators, high-rate filtration to remove suspended solids and disinfection by sodium hypochlorite to destroy viruses and bacteria. Sodium bisulfite dechlorination will be provided to remove chlorine for protection of aquatic life. The treated overflow is then discharged into the Chattahoochee River.

The number of overflows from the West Area CSOs will be reduced from an annual average of 80+ to an annual average of four per year at the three remaining CSO facilities.

Authorized CSO Improvement Plan

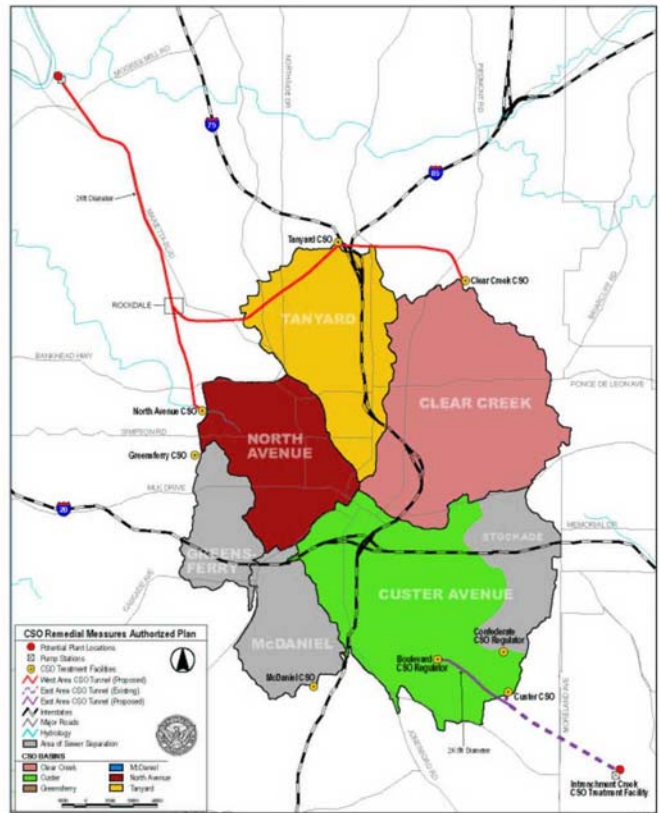


Figure 2
Proposed Refinement to Authorized Plan
Separate McDaniel, Greensferry, and Stockade

What Homeowners Might Experience During Tunnel Construction

Construction has begun on the West Area Tunnel project. Most of the tunnel will be routed within public rights-of-way and will not directly affect private property.

Experience has shown that deep rock tunnel construction has little effect on above-ground structures and minimal environmental and community impact. In contrast, construction of conventional open-cut sewer options typically requires clear-cutting large parcels of land and crossing streets and arterials, resulting in torn-up pavement and disruption to traffic for months at a time. Open-cut construction also has a greater environmental impact on sensitive streams and results in tree loss along the alignment.

The tunnel option restricts open-cut construction to the pump station and construction shaft sites, and the intake sites. This limits the amount of land required for construction and also limits the effects of construction activity. While surface streams can be affected during tunnel construction, the problems usually are temporary and are resolved once the tunnel is lined.

The West Area Tunnel is being excavated by a Tunnel Boring Machine (TBM). The TBM, which is lowered in sections and assembled at the bottom of a construction shaft, chips off sections of bedrock via the continuous rotation of a series of steel cutting tools (cutters) mounted on a large-diameter, circular, welded steel cutter head. The machine body of a TBM, which can be as long as 50 feet, is mounted behind the cutter head. It contains the drive motors and other electrical, mechanical and hydraulic equipment that provide the necessary thrust and torque, which is transmitted to the cutters through the cutter head. The TBM replaces conventional drilling and blasting technology and allows tunnel workers to excavate at more than twice the rate previously attained in water tunnel construction through drilling and blasting. Another important advantage to using the TBM is that, as it bores into the rock, there is less damage at the point of excavation and no noise at the surface to disturb surrounding communities.



Tunnel Shaft Construction

Some blasting will be necessary to penetrate the bedrock and allow the shafts to be constructed. While detailed information will be provided to residents prior to the beginning of any blasting activity, you should know that:

- Blasting is done because it is the most cost-effective way to fracture rock. However, dynamite is rarely used today for blasting; instead, blasting compounds have been developed that are much more reliable and easily controlled.
- Prior to any blasting activity, pre-blast surveys will be taken of homes within the “zone of influence,” and post-blast surveys will be taken to ensure that no structural damage has occurred.
- Blasting experts have determined the level at which blasting can be done to prevent damage to homes. During blasting, seismographs measure ground vibrations to ensure this level is not exceeded. Vibrations may be felt during blasting, but it should be noted that everyday occurrences in our homes — such as doors slamming, children running in the house, running up-

and downstairs, and pounding nails, as well as outside temperatures, wind, humidity and soil moisture changes — produce strains greater those produced by legal blasting.

If You Have Additional Questions...

Please contact the Clean Water Atlanta help line at 404-529-9211 if you have any further questions about the West Area Tunnel construction or other projects under the Clean Water Atlanta initiative.



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