



Mayor Kasim Reed

West Area Combined Sewer System Workshop

Atlanta Memorial Park TAG



Kishia L. Powell, Commissioner
Department of Watershed Management
November 8, 2016





Agenda

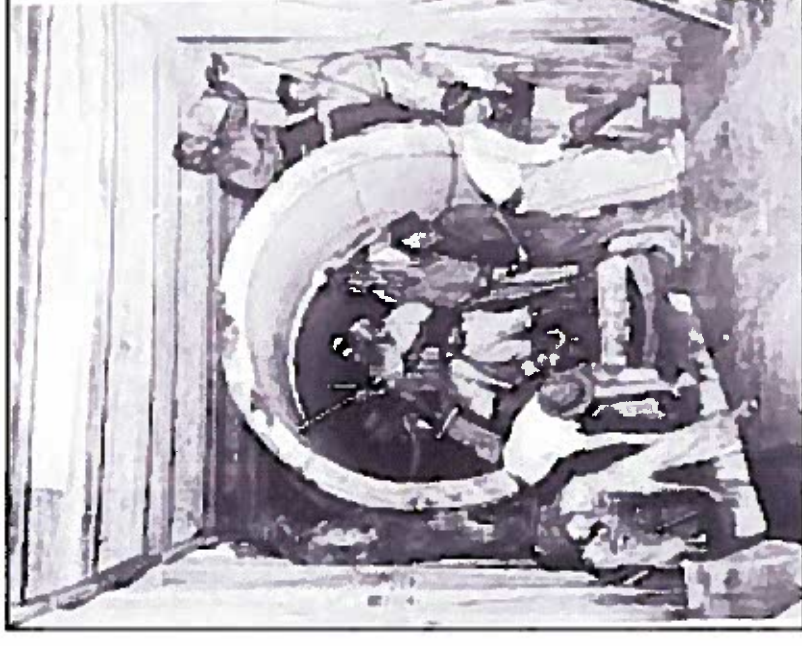
- I. Introductions
- II. What is a Combined Sewer System?
- III. Atlanta's Combined Sewer System
- IV. What is a NPDES Permit?
- V. Key Terms & Definitions
- VI. Combined Sewage Control Facilities (CSCF) NPDES Permits Overview
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- VIII. Combined Sewage Control Facilities Operations Overview
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- X. Optimized Operation of West Area Tunnel
- XI. Benefits of West Area Storage/Treatment Facilities
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What is a Combined Sewer System?

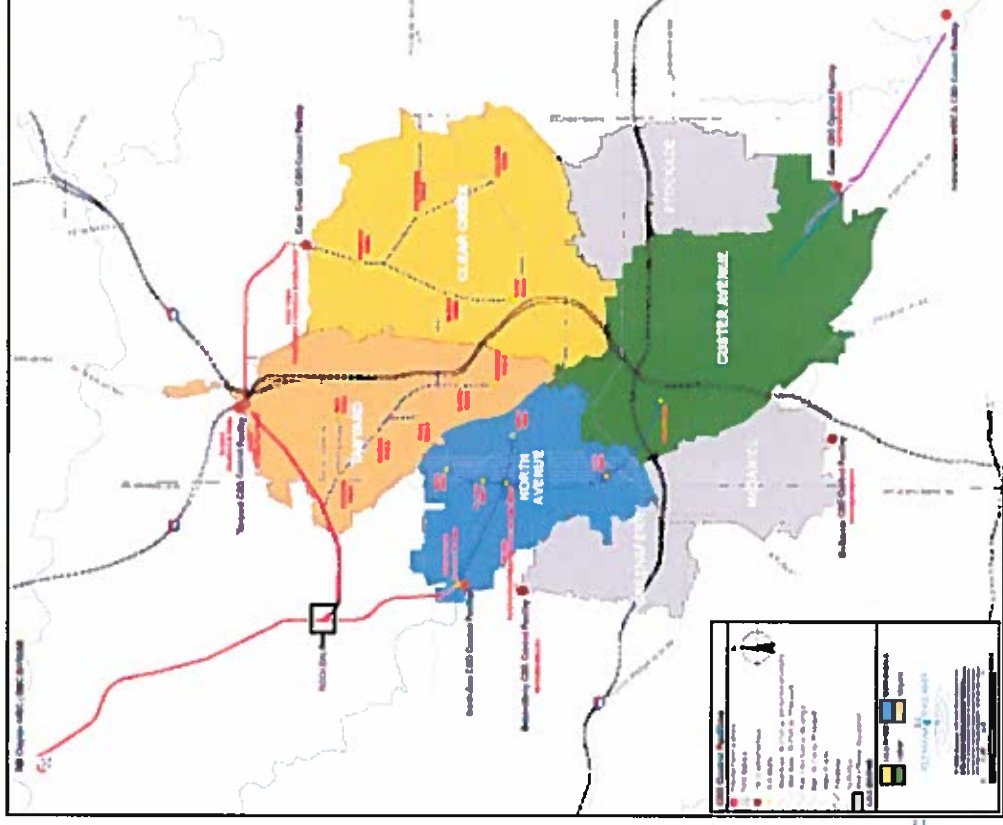
- In a combined system, a single large sewer pipe carries both sanitary and [stormwater](#) to a water reclamation center (WRC) for treatment.
- Combined sewers were built from the late-1800s until the mid-1900's in many major metropolitan cities. The practice has since largely been discontinued.
- Other major cities with combined sewer systems include: Chicago, San Francisco, DC, Boston, etc.
- During heavy rains, storm flows often exceed the capacity of the combined sewer pipe. Atlanta sewer system was upgraded so that combined flow was diverted to one of the seven original [CSO](#) control facilities.
- When the rains exceeded the treatment capacity of the [CSO control facilities](#), screened and disinfected flows were discharged to a nearby stream or creek.





Atlanta's Combined Sewer System

- Under the CSO Consent Decree, the City fully separated two (2) full CSO combined sewer basins (Greensferry and McDaniel) completely and one (1) sub-basin Stockade (located in the Custer Combined Sewer CSO Basin)
- Completed separation projects increased the city's total separated area from 85% to 90% and eliminated two (2) CSO Combined Sewer System Control facilities (Greensferry and McDaniel) and one (1) CSO regulator (Confederate Ave.)
- Sewer basins currently served by the combined sewer system include:
 - Intrachment Creek Basin (in the easterly portion of the City)
 - Proctor Creek and Peachtree Creek Basins (in the westerly portion of the City)





What is a NPDES Permit?

EPA's Definition:

The Clean Water Act prohibits anybody from discharging "pollutants" through a "point source" into a "water of the United States" unless they have an NPDES permit. The permit contains limits on what you can discharge, monitor, reporting requirements, and other provisions to ensure that the discharge does not hurt water quality or people's health. In essence, the permit translates general requirements of the Clean Water Act into specific provisions tailored to the operations of each person discharging pollutants.





Key Terms & Definitions

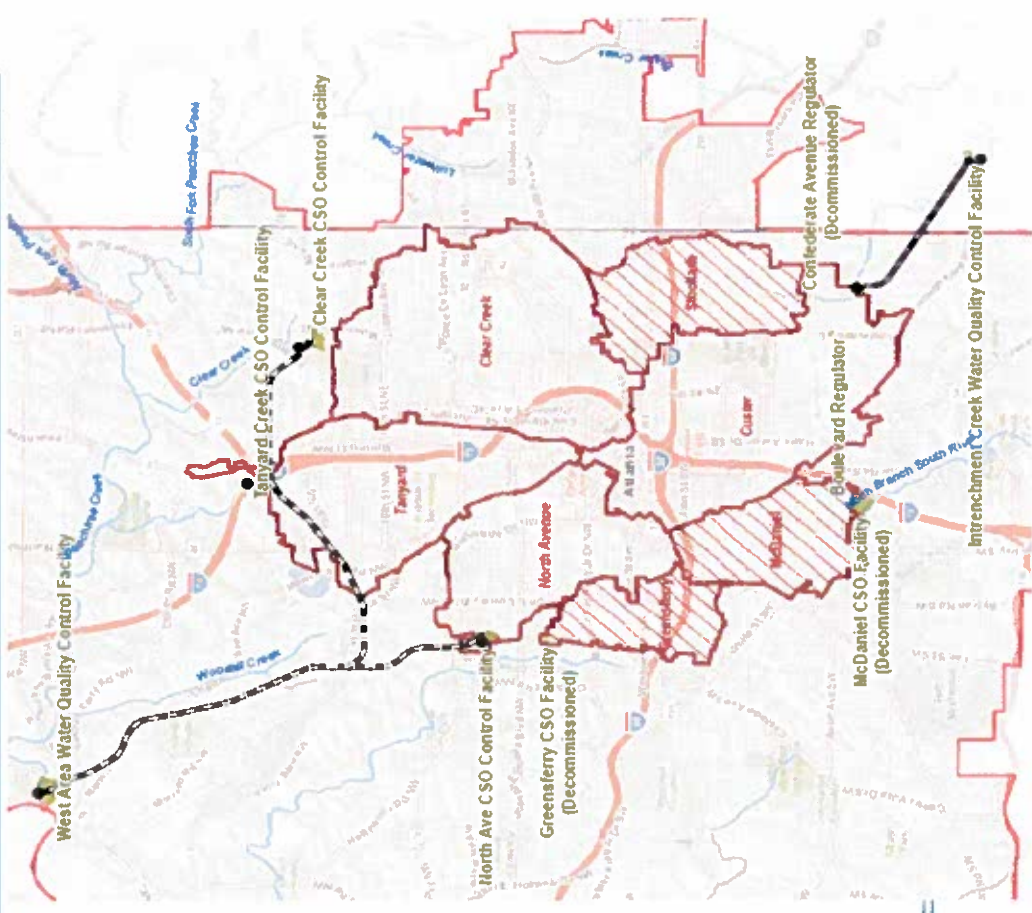
- ✓ **Combined Sewage Overflow (CSO)**: The discharge of combined sewage from a combined sewer system into waters of the State at a point prior to receiving minimum treatment.
- ✓ **Combined Sewer Overflow Event**: The CSOs from a number of points in the combined sewer system during wet weather flow conditions from a single event.
- ✓ **Combined Sewage Control Facility (CSCF)**: A facility designed and constructed to control, treat, and release combined sewage prior to discharge to waters of the State under an NPDES permit.
- ✓ **Discharge Event**: An addition of any pollutant from the combined sewer system to the waters of the State
- ✓ **Discharge Sampling Event**: A discharge event that lasts at least fifty (50) minutes, and which occurs not less than 48-hours since the end of the last such discharge event
- ✓ **Minimum Treatment**: The treatment of combined sewage, as defined in the CSO Control Policy (April 1994) which includes a minimum of primary clarification or equivalent treatment (removal of floatable and settleable solids may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification), solids or floatables disposal, and disinfection of discharge to waters of the State
- ✓ **Permitted Discharge**: The treated effluent that is discharged from the outfall conveyance structure of a CSCF into the waters of the State
- ✓ **Water Quality Control Facility (WQCF)**: A Combined Sewer Control Facility providing additional treatment to remove sediments.





Combined Sewage Control Facilities NPDES Permits Overview

- The City has (2) combined sewage systems that are referred to as the: East Area and the West Area.
- The East Area includes: the East Area (WQCF) and Custer Avenue (CSCF), which operate under NPDES Permit No. GA 00037168
- The East Area WQCF was formerly known as the Intrinmentment Creek WQCF, but was renamed to differentiate this facility from the Intrinmentment WRC which is located on the same property.
- The West Area includes: West Area WQCF, Clear Creek CSCF, North Avenue (Proctor Creek) CSCF, and Tanyard Creek CSCF, which operate under NPDES Permit No. GA 00038644





West Area Facilities NPDES Permit Overview

- **Authorized to Discharge** - only from West Area Combined Sewer System treatment facilities
 - West Area Water Quality Control Facility (WQCF) – discharge to Chattahoochee River
 - Clear Creek Combined Sewage Control Facility (CSCF) – discharge to Clear Creek
 - Tanyard Creek CSCF – discharge to Tanyard Creek
 - North Avenue CSCF – discharge to Proctor Creek
- **Permitted Discharges** – discharges of treated combined sewage from WQCFs and CSCFs. No limit to number and volume of permitted discharges
- **Minimum Required Treatment for Permitted Discharges**
 - Equivalent of primary clarification (removal of floatables and settleable solids)
 - Disinfection and dechlorination

Combined sewer flows remaining after implementation of the nine minimum controls and within the criteria specified at II.C.4.a.i or ii, should receive a minimum of:

- Primary clarification (Removal of floatables and settleable solids may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification.);
- Solids and floatables disposal; and
- Disinfection of effluent, if necessary, to meet WQS, protect designated uses and protect human health, including removal of harmful disinfection chemical residuals, where necessary.





West Area Facilities NPDES Permit Overview (Continued)

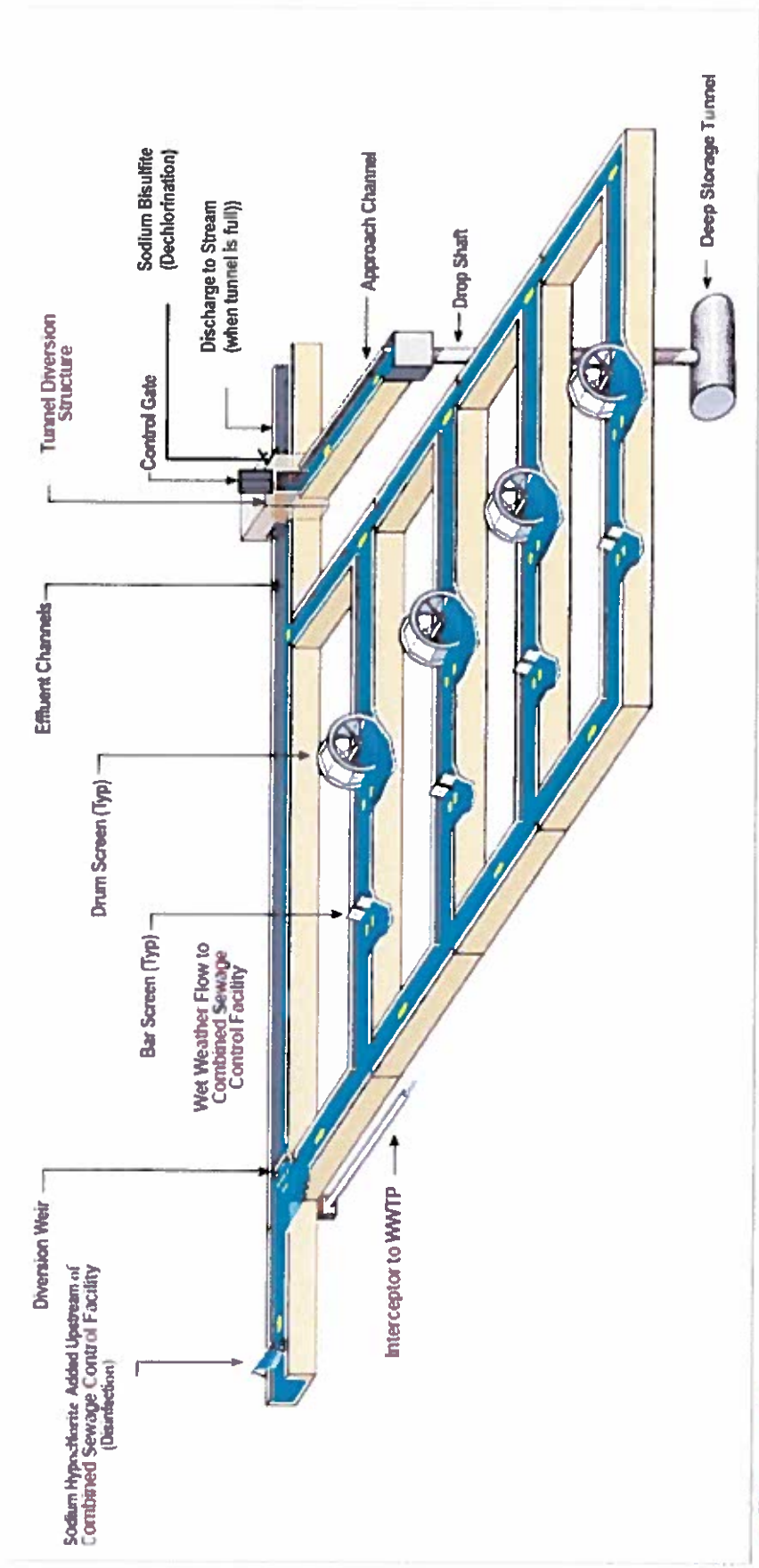
- **Treatment Provided by WQCF and CSCFs**
 - WQCF provides removal of floatables and settleable solids, disinfection and dechlorination
 - Flows exceeding tunnel capacity (minus the captured settleable solids) flow thru the CSCFs, which provide removal of floatables, disinfection and dechlorination
- **Combined Sewage Overflow** – discharge from CSS without receiving minimum treatment
 - Permit limit four (4) overflow events per year over a rolling 3-yr average
 - Overflows from one or more outfalls during a single storm is a single event
 - Overflow events exceeding long-term rolling average are violation of permit
- **Dry Weather Overflows** – discharge from CSS during dry weather conditions (<0.1 inches of precipitation in 24-hr period) – prohibited and violation of permit





Combined Sewage Control Facilities Operations Overview

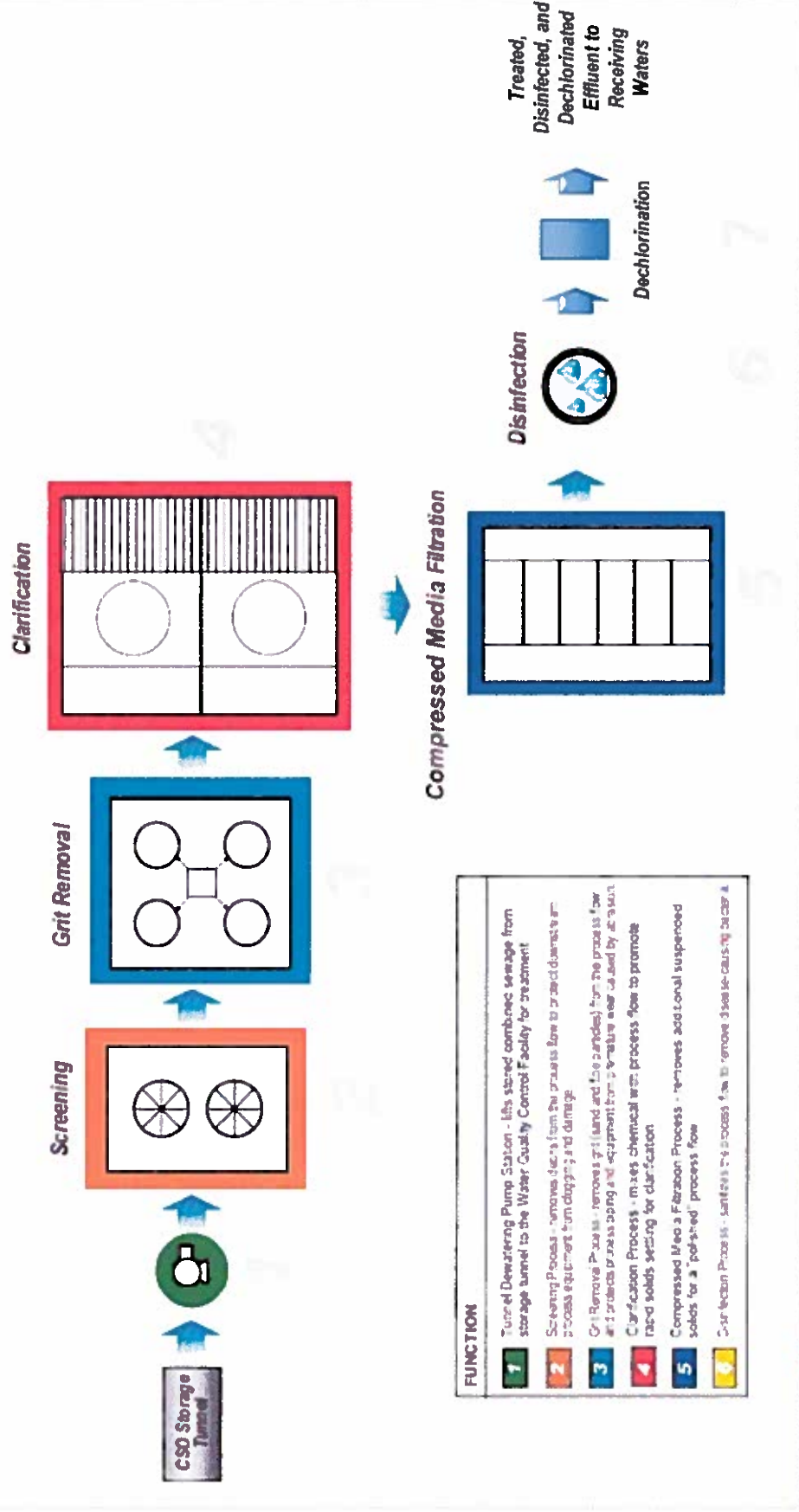
Schematic of Wastewater Treatment Processes at the Combined Sewage Control Facilities (CSCFs)





Water Quality Control Facilities Operations Overview

Schematic of Wastewater Treatment Processes at Water Quality Control Facilities (WQCFs)



FUNCTION	DESCRIPTION
1	Tunnel Dewatering Pump Station - lifts stored combined sewage from storage tunnel to the Water Quality Control Facility for treatment
2	Screening Process - removes debris from the stream to prevent damage to process equipment from clogging and damage
3	Grit Removal Process - removes grit (sand and fine gravel) from the process flow and protects process piping and equipment from excessive wear caused by abrasion
4	Clarification Process - mixes chemical with process flow to promote rapid solids settling for clarification
5	Compressed Media Filtration Process - removes additional suspended solids for a "polished" process flow
6	Disinfection Process - sanitizes the process flow to remove disease-causing bacteria



watershed management



Optimized Operation of West Area Tunnel

- Beginning 2nd Quarter 2016, DWM Operations Team initiated an optimized operational strategy for the West Area Tunnel Storage/Treatment system
 - During storm events, combined sewage flow exceeds capacity of combined sewer system, and begins discharging from the CSCFs locations into the tunnel
 - Small rainfall events are captured within the tunnel and pumped back to the WRC after the event
 - Upon reaching wet weather flow conditions (> 0.1 inches of rain), the WQCF is brought on line in re-circulation mode (no discharge) until disinfection / dechlorination systems achieve permit limits (usually within 2 hours)
 - If small storm event ends within the above period, WQCF is taken off line, and stored flow is pumped back to the WRC
 - If storm event continues – WQCF begins discharging treated flow to Chattahoochee River
 - If storm event continues and as tunnel approaches full level, the 3 CSCFs are brought on line sequentially (Clear Creek, North Avenue, Tanyard Creek)
 - CSCFs activates re-circulation mode (no discharge) until disinfection / dechlorination systems achieve permit limits (usually within 1 hour) – then begin discharging treated flow to local creek

- Strategy is consistent with Permit requirement -- operate WQCFs to reduce the magnitude, frequency and duration of discharges from CSCFs





Benefits of West Area Storage/Treatment Facilities

➤ Conditions Prior to Construction of West Area Tunnel Storage/Treatment

- 60-70 combined sewer overflows per year, to local creeks
- Treatment – removal of floatables, disinfection

➤ Combined Sewer Overflow Events from West Area Combined Sewer System

- CSO Event – overflows from CSS that do not receive required “minimum” treatment
- Permit limits rolling 3-yr average of 4 CSO events per year
- Actual 3-year rolling average of < than 2 CSO events per year





Benefits of West Area Storage/Treatment Facilities (Continued)

- **Number of Permitted Discharge Events to local creeks (2010 – 2015 and after construction of CSCFs)**
 - Annual average about 8.4 discharge events per CSCF per year
 - **85% annual average reduction of discharge events to West Area local creeks**
 - Improved Treatment at CSCFs – equivalent primary treatment (flow exceeding tunnel capacity minus the settleable solids captured by tunnel) flow thru CSCFs, which provide removal of floatables, disinfection and dechlorination

 - **Volume of Permitted Discharge Events from CSCFs to Local Creeks (2010 thru 2015)**
 - Total annual average flow to West Area WQCF and CSCFs – 2.2 Billion Gallons -- represents flow discharged to local creeks prior to new storage/treatment facilities
 - Total annual average flow to West Area CSCFs -- 418 Million Gallons
 - **80% annual average reduction of flow volume to West Area local creeks**
- *Reduced discharge events to West Area Creeks by 85% and volume by 80% With improved treatment***





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THANK YOU



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Q&A



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