

Supplemental CSO Team – Session 2

# PVSC Service Area North Bergen Service Area Long Term Control Plan

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January 10, 2017

# Agenda

- Introduction
  - Supplemental CSO Team Roster
  - Overview of the SharePoint Site
- Recap of the October 5<sup>th</sup>, 2016 Supplemental CSO Team Meeting
- History of Combined Sewers in the Passaic Valley Sewerage Commission District
- **NJDEP - New Jersey CSO Permits**
- Permit Responsibilities
- Highlights from CSO LTCPs from Elsewhere in the U.S.
- Branding of LTCP Program
- Other Issues
- Adjourn





# Introduction



# Supplemental CSO Team Members

Member	Organization	Member	Organization
Matt Dorans	Bayonne Chamber of Commerce	Sandra Meola	Paterson Smart
Ben Costanza	Bayonne Chamber of Commerce	Ruben Gomez	City of Paterson Economic Development
David P. Donnelly	Jersey City Redevelopment Agency	Sheri Ferreira	Greater Paterson Chamber of Commerce
Nicole Miller	Newark DIG	Betty Jane Boros	New Jersey Business & Industrial Association
Molly Greenberg	Ironbound Community Corporation	Debbie Mans	NY/NJ Baykeeper
Robin Dougherty	Newark Greater Conservancy/Newark Business Partnership	Meiyin Wu, Ph.D	Montclair State University - Passaic River Institute
Jorge Santos	Newark Community Economic Development Corporation	Christopher C. Obropta, Ph.D	Rutgers University - Cooperative Extension Water Resources
Christopher Pianese	Township of North Bergen	Captain Bill Sheehan	Hackensack Riverkeeper
Janet Castro	Hudson Regional Health Commission Town of North Bergen	Harvey Morginstin	Passaic River Boat Club & Passaic River Superfund CAG
Thomas Stampe	North Bergen "Sustainable Jersey" group	Laurie Howard	Passaic River Coalition
Nancy Kontos	Bunker Hill Special Improvement District	Ben Delisle	Passaic River Rowing Association
Sara K. Schultzer,	Jersey City Environmental Commission		



# What is the Supplemental CSO Team?

- Informal Working Group
- Liaison Between General Public and Decision Makers for Permittee(s)
- Not Expected to be Experts in CSOs or Engineering



# Supplemental CSO Team SharePoint Site

SharePoint

BROWSE PAGE



Greeley SharePoint

## CSO Long Term Control Plan Supplemental CSO Team

Home

- Documents
- Recent
- Image Library
- Task Management
- Team Calendar
- Site Contents
- Site Content
  - Documents
  - Site Assets
  - Style Library
  - Image Library
  - Site Pages
  - Task Management
  - Team Calendar



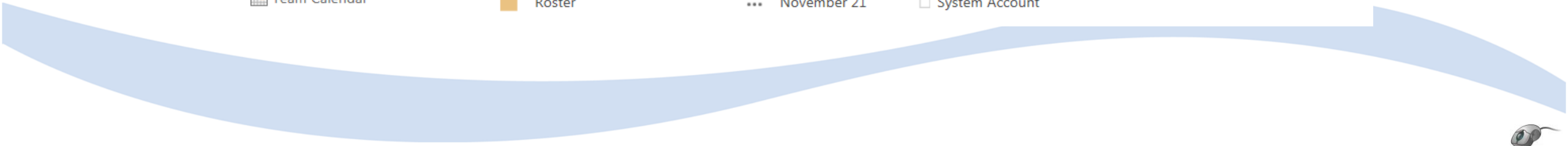
Welcome to the CSO Long Term Control Plan Supplemental CSO Team SharePoint page.

<--- Select "Documents" on the left to view project files.

### Documents

+ new document or drag files here

✓	📄	Name	Modified	Modified By
	📁	Meetings	... November 21	<input type="checkbox"/> System Account
	📁	MEG	... Tuesday at 2:27 PM	<input type="checkbox"/> tdupuis
	📁	NJDES Permits	... Tuesday at 1:49 PM	<input type="checkbox"/> tdupuis
	📁	NJPDES Permit Deliverables	... November 21	<input type="checkbox"/> System Account
	📁	Roster	... November 21	<input type="checkbox"/> System Account



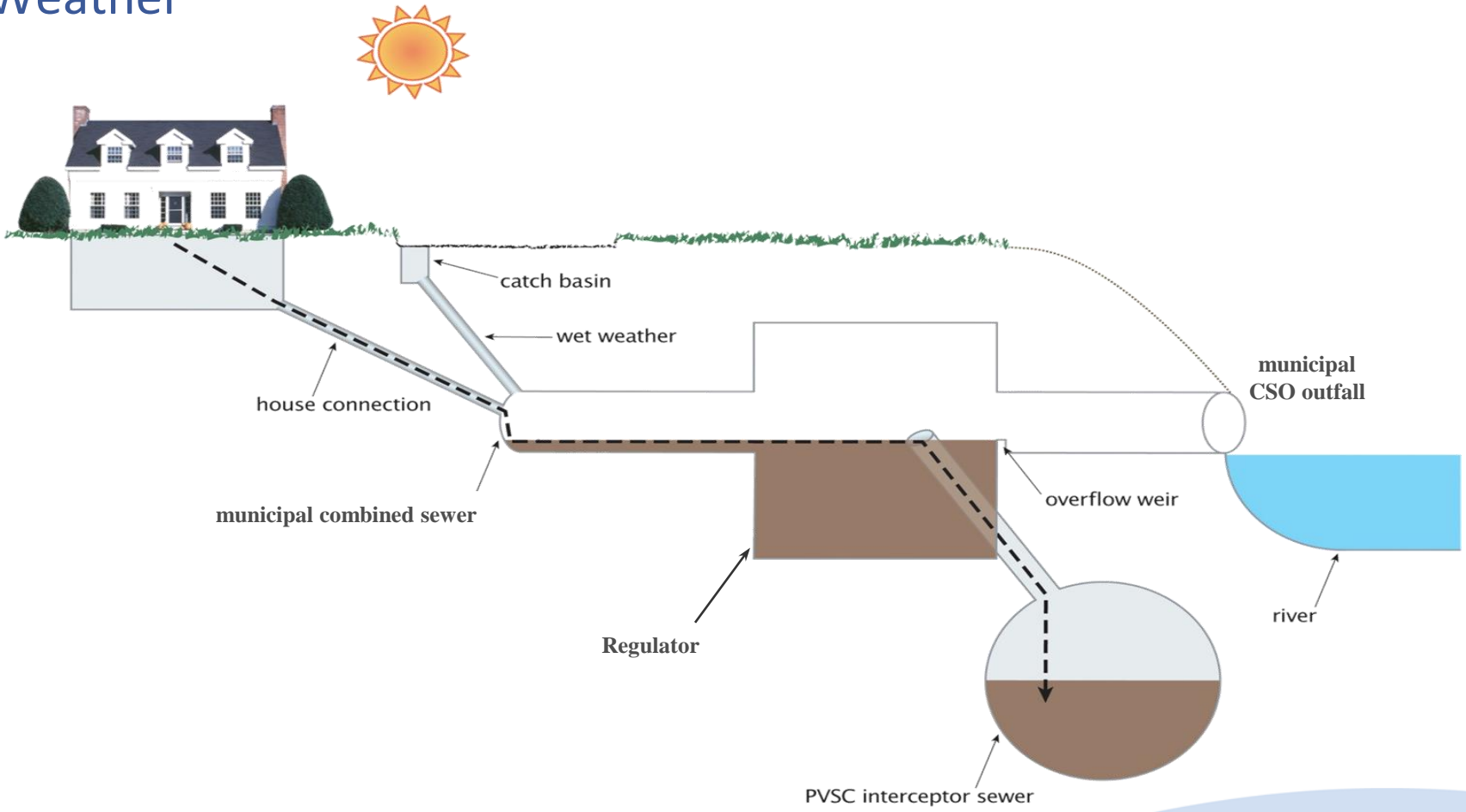


# Prior Meeting Recap



# What is a CSO?

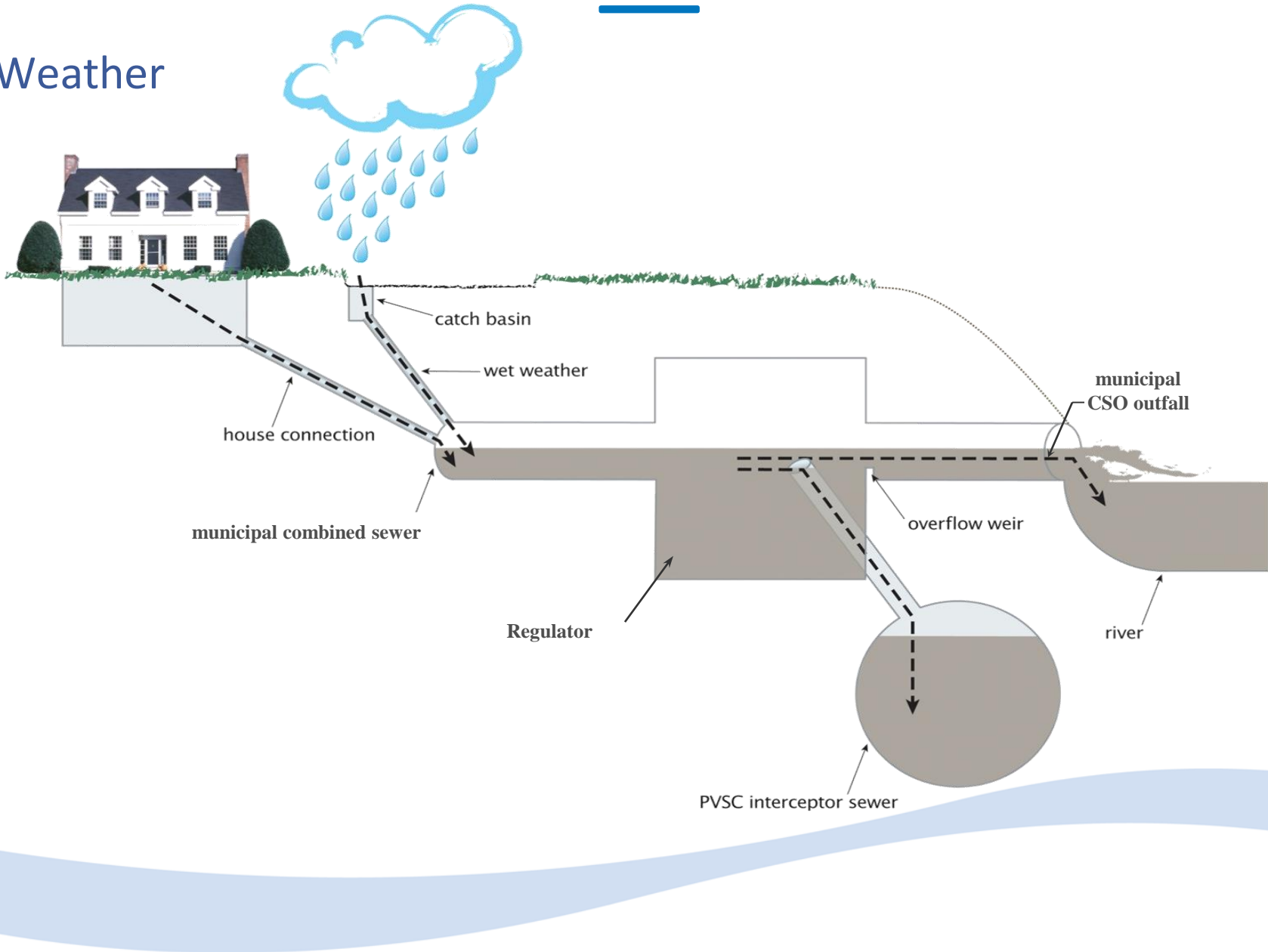
Dry Weather





# What is a CSO?

## Wet Weather



# Why are We Concerned about CSOs?

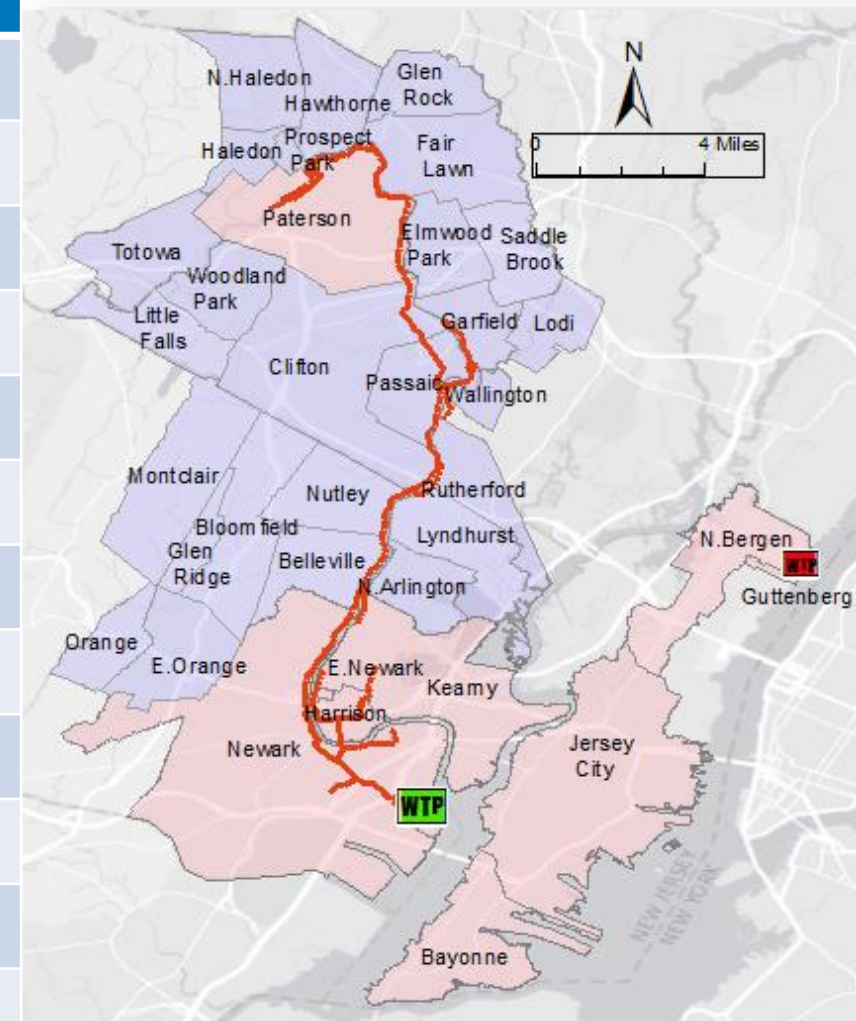
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- CSOs Discharge Untreated Wastewater During Wet Weather
- CSO Discharges Contain:
  - Disease Causing Organisms in Waterbodies, Measured as Enterococcus, Fecal Coliform, and E.Coli
    - Cause of Intestinal Illness in Recreational Users of Waterbodies
      - Swimmers
      - Boaters
      - Waders



# Permittees

Permittee	Municipality	WWTP	CSOs
Bayonne MUA	Bayonne	PVSC	30
Borough of East Newark	East Newark		1
Town of Harrison	Harrison		7
Jersey City MUA	Jersey City		21
Town of Kearny	Kearny		5
City of Newark	Newark		18
North Bergen MUA	North Bergen		7
City of Paterson	Paterson		23
PVSC	-		0
Town of Guttenberg	Guttenberg		Woodcliff
North Bergen MUA*	North Bergen	1	
	Total		114



\* North Bergen MUA conveys flows to both PVSC and Woodcliff WWTPs




# What Can be Done to Reduce CSOs?

- Optimize Operations for Delivering Flow to Wastewater Treatment Plant
- Upgrade Treatment Facilities to Treat More Wet Weather Flow
  - Wet Weather Flow is Typically Orders of Magnitude Greater Than Dry Weather Flow
  - Requires Additional Conveyance Capacity as Well (Pipes)
- Provide Storage for Excess Volume Until Conveyance and Plant Capacity Recovers
  - Tanks and Tunnels
  - Source Controls/Green Infrastructure
- Provide Satellite Treatment Facilities
- Reduce Flows Getting to Collection System
  - Separate Sewers
  - Source Controls/Green Infrastructure
- **ALL SIGNIFICANT CAPITAL PROJECTS**

# Long Term Control Plan Requirements

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1. Monitoring and Modeling
  2. Public Participation (Supplemental CSO Team)
  3. Consideration of Sensitive Areas
  4. Evaluation of Alternatives
  5. Cost/Performance Considerations
  6. Operational Plan
  7. Maximizing Treatment at the Existing STP
  8. Implementation Schedule
  9. Compliance Monitoring Program
- 



# Overview of Progress To Date (Current Permit)

- Advisory/Warning Signs Posted Near Outfalls
- CSO Notification System (<http://njcso.hdrgateway.com>)
- CSO Monthly Discharge Monitoring Reporting (DMRs)
- Work Plans/QAPPs Submitted to NJDEP
  - Baseline Compliance Monitoring Plan/QAP – Approved
  - System Characterization and Landside Modeling QAPP – Approved
  - Other Existing System Characterization Documents - Approved
- Monthly Meetings Amongst the Permittees
- Evaluation of Previous Models and Further Model Development
- Completed Flow Monitoring Program
- Actively Performing Water Quality Monitoring and Model Development





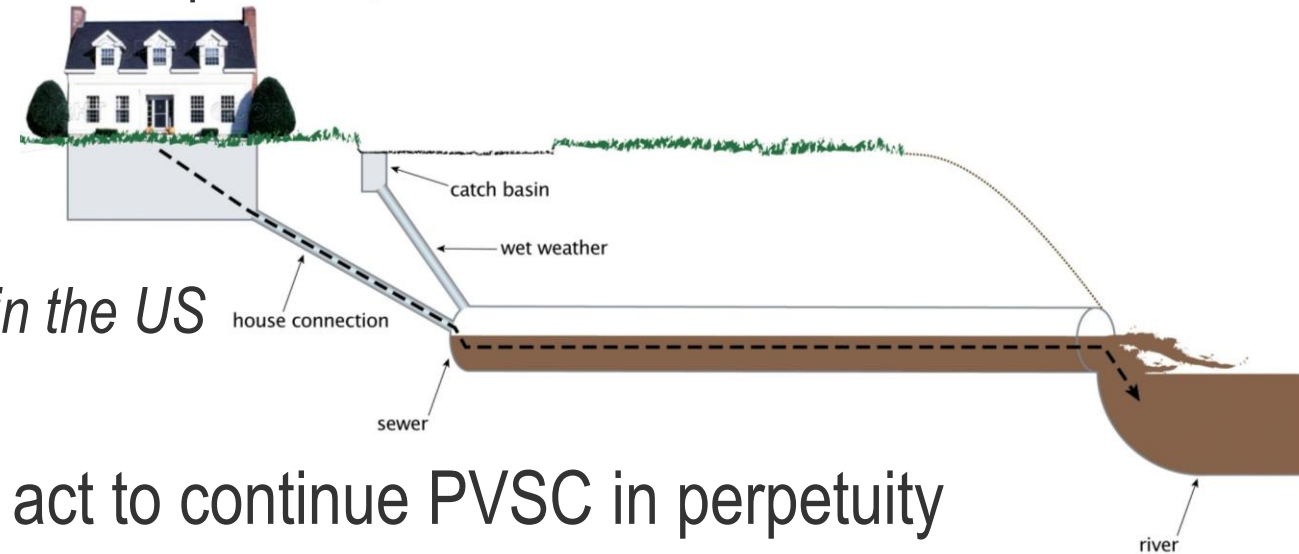
# History of Combined Sewers in the Passaic Valley Sewerage Commission District



# Evolution of the Combined Sewer System

- Mid to Late 1800's – Conduits constructed in large cities to transport both sewage and drainage to the river
  - The Passaic River and Newark Bay become open sewers
- 1896 – Passaic Valley Sewerage Commission created by the Governor of New Jersey
  - *2<sup>nd</sup> oldest environmental commission in the US*
  - *EPA created in 1973*
- 1902 – NJ State Legislature passes act to continue PVSC in perpetuity
 

*“...for the purpose of relieving the streams and rivers therein from pollution and to provide a plan for the prevention thereof...”*
- August 1909 – Nereid Boat Club in Rutherford terminates future annual regattas in the Passaic River due to health risks from pollution





# Evolution of the Combined Sewer System

- 1911 – First Municipalities Contract for Treatment

<u>Combined</u>	<u>Separate</u>	
East Newark	Belleville	North Arlington
Harrison	Clifton	Nutley
Kearny	East Rutherford	Passaic
Newark	Garfield	Rutherford
Paterson	Lyndhurst	Wallington

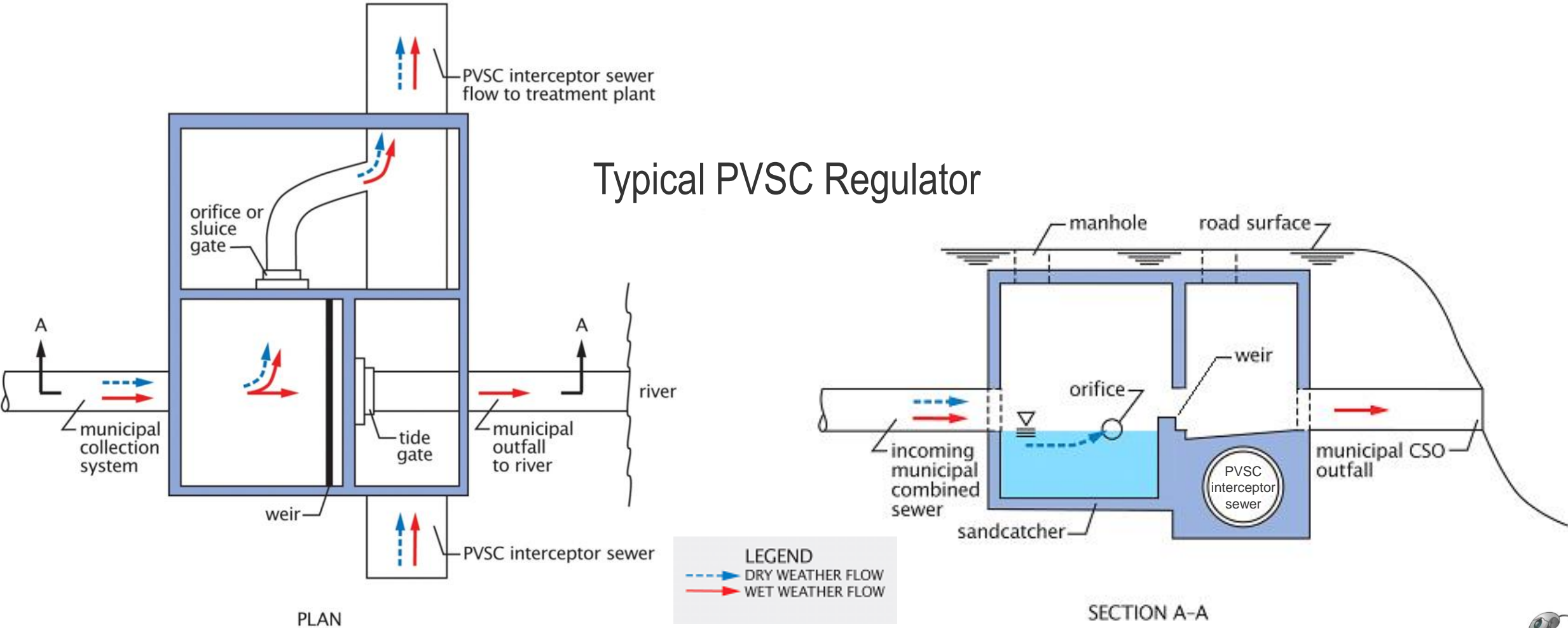
- 1912 to 1924 – Treatment facilities and over 23 miles of interceptor sewers constructed
  - Primary treatment of approximately 150 MGD
- 1981 – Secondary treatment began  
*(without primary settling)*
- 1985 – Primary clarifiers online



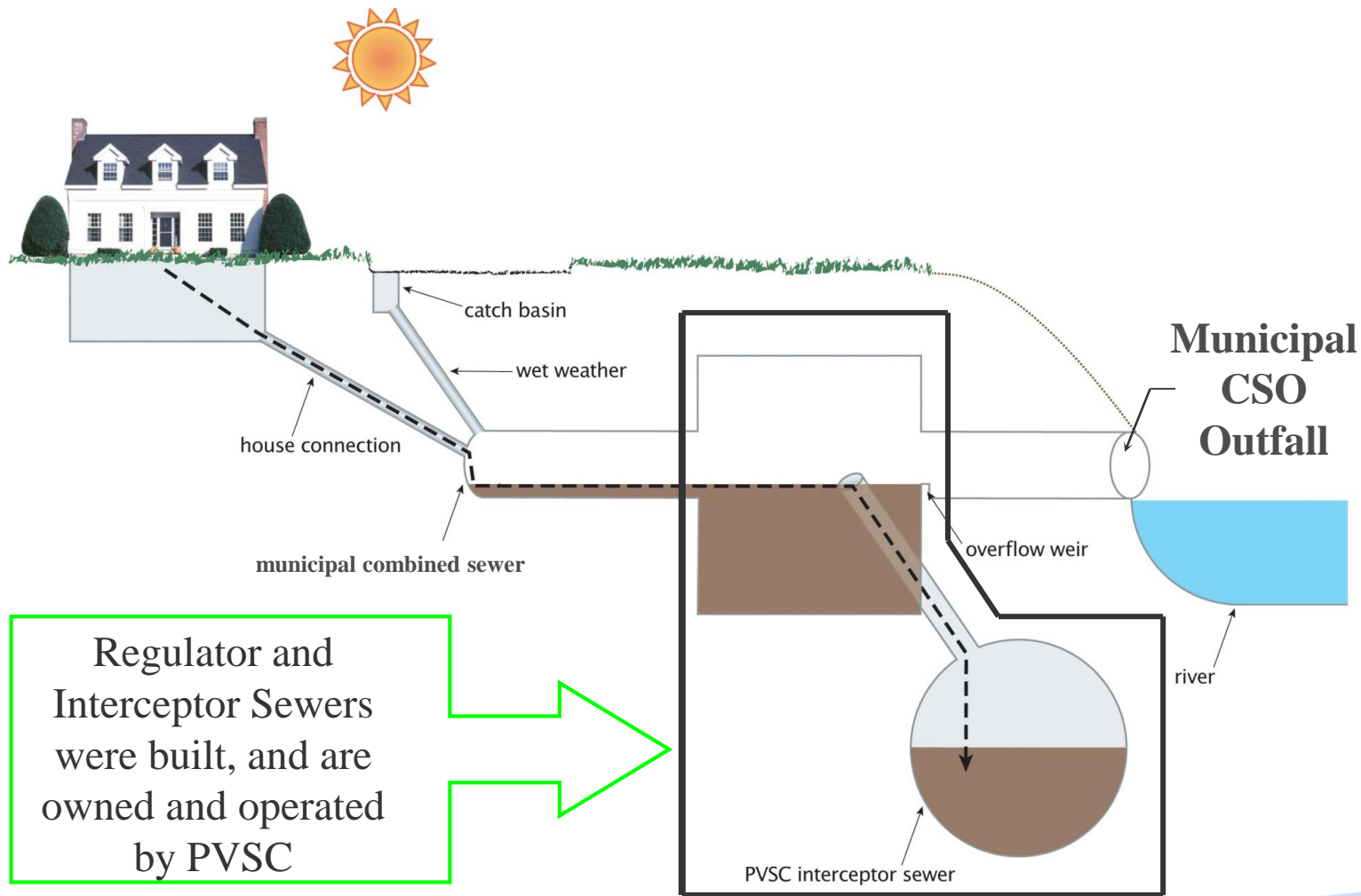
PVSC Interceptor Construction, 1920s

# Regulation of Flow for Combined Sewer Systems

- PVSC Regulator Facilities Constructed as Part of the Interceptor Sewer Regulate and Limit Wet Weather Flows to the Capacity of the Interceptor Sewer and Sewage Treatment Plant



# Operation and Ownership of Combined Sewer Systems





# NJDEP Presentation NJ CSO Permits



# Combined Sewer Overflows

## Supplemental CSO Team

January 10, 2017

**Susan Rosenwinkel, CSO Program**

**Bureau of Surface Water Permitting, NJDEP**

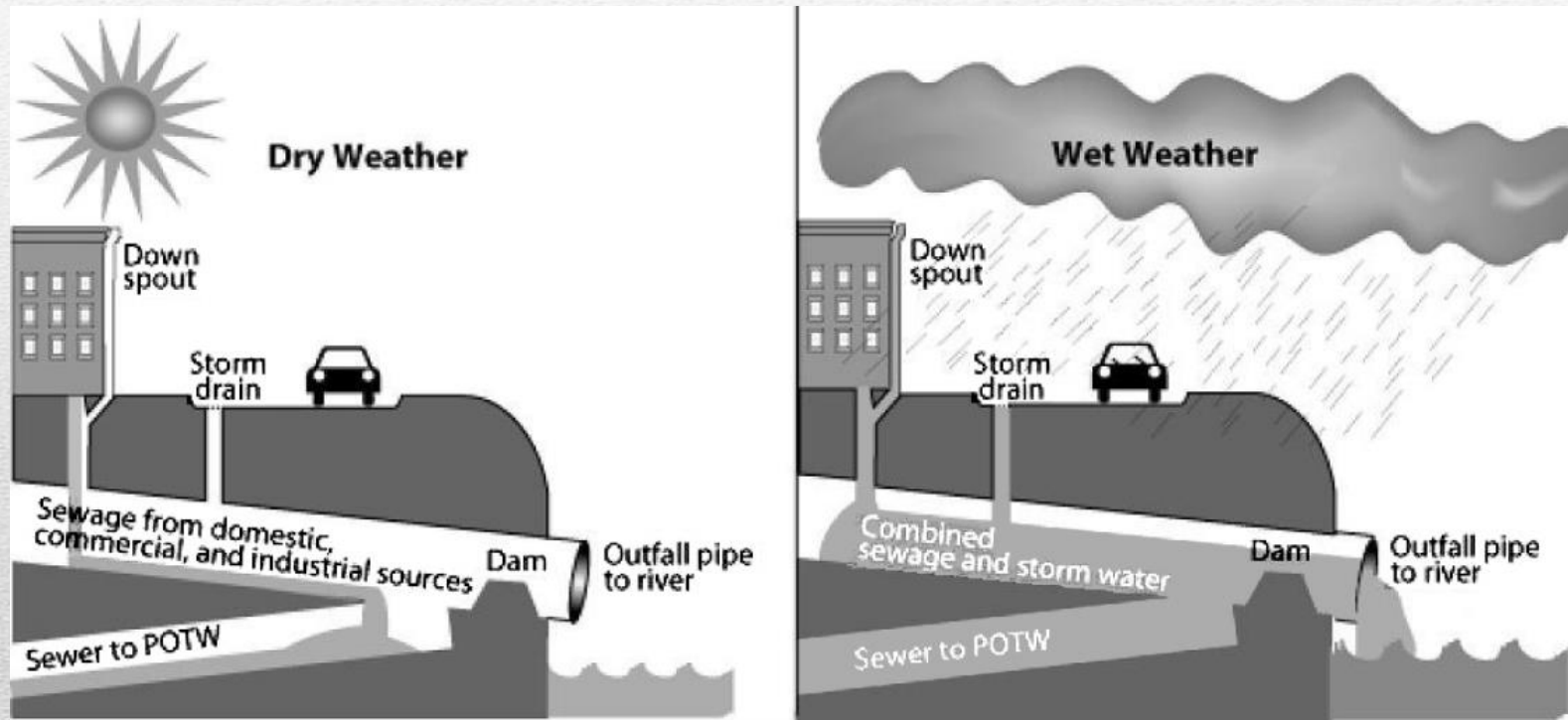
[Susan.rosenwinkel@dep.nj.gov](mailto:Susan.rosenwinkel@dep.nj.gov)

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# Presentation Overview

- Combined Sewer Overflow (CSO) Basics
  - Where are CSOs located?
  - What has been accomplished thus far?
  - What does the NJPDES CSO Permit require?
  - Questions
-

# What is a Combined Sewer Overflow (CSO)?



# Combined Sewer Systems

- Combined Sewer Systems are remnants of our country's early infrastructure.
- They are outdated and in need of repair.



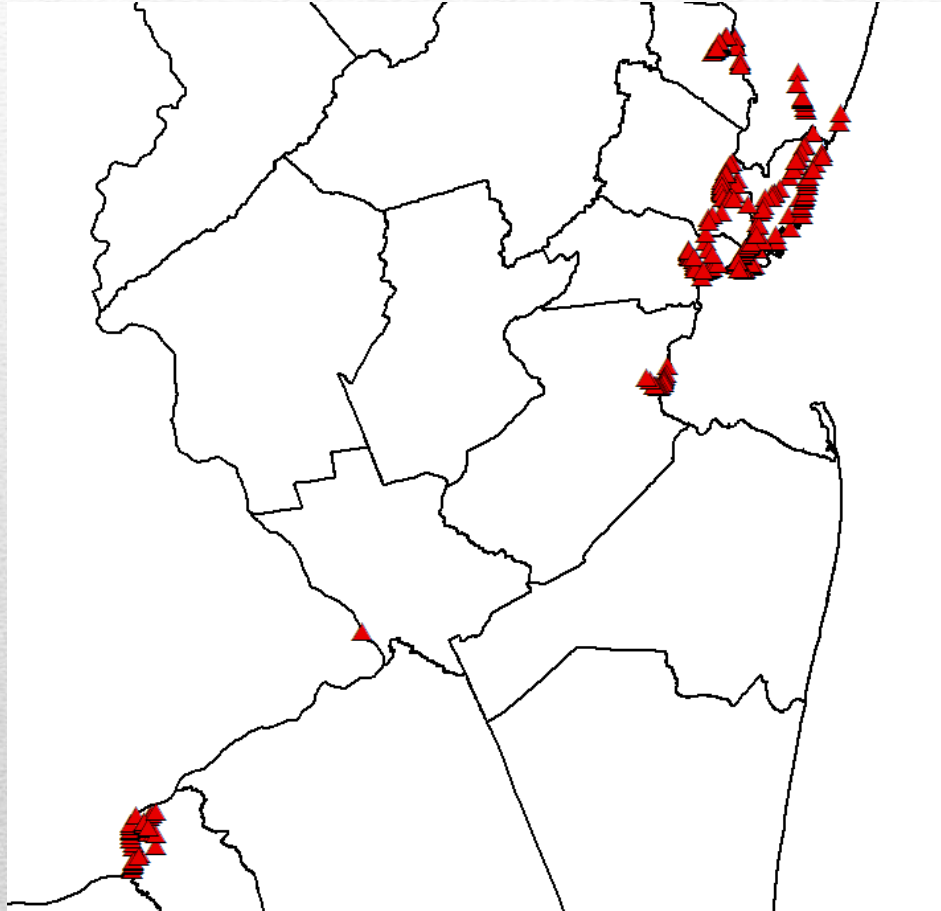


# CSOs in the US

- 772 communities
- 9350 outfalls
- 850 billion gallons discharged per year



# How Many are there in NJ?



- 21 communities
- 210 permitted outfalls
- 9 POTWs

Northeast: 179 outfalls,  
7 communities and 7  
POTWs

Camden County: 30  
outfalls, 2 communities and  
1 POTW

Trenton: 1 outfall,  
1 community and 1 POTW

# Progress Thus Far

- Solids/floatables controls at most outfalls
  - 2847 yd<sup>3</sup> removed from 7/15 to 6/16.
- \$1.5 Billion in funding
- Elimination of 64 outfalls



## ...However

- About 23 billion gallons of raw sewage is still discharged per year.

# What Makes NJ Different?

- **Nationally permittees own the entire Combined Sewer System. Generally, this is not true in NJ.**
    - For example, the **collection system** is owned by the township, the **regulators and CSO outfalls** are owned by the local municipal utilities authority and the **POTW and its outfall(s)** are owned by a regional utility authority.
  - **EPA wrote consent decrees. NJ wrote permits.**
    - 25 CSO NJPDES permits effective July 1, 2015
    - Individual permits were issued instead of General permits
    - Allows for greater flexibility
    - Goal: Reduce or eliminate CSO discharges
-

# A New Day!

July 1, 2015

- 25 Individual NJPDES CSO Permits were issued which require an ambitious schedule with cascading permit requirements.
  - The permit is front loaded where many of the requirements have been satisfied.
  - Remaining requirements include LTCP dates.
-



# A New and Different Approach to Permits


- Permits were issued by hydraulically connected system to ensure a more cohesive long term control plan.
  - All nine systems chose to **work together** to develop a long term control plan.
  - Permits build off the previous general permits but require submission of a robust long term control plan.
-

# NJDEP CSOs Online

<http://www.nj.gov/dep/dwq/cso.htm>

Governor Chris Christie · Lt. Governor Kim Guadagno  
NJ Home | Services A to Z | Departments/Agencies | FAQs  
Search

 STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF WATER QUALITY 



DWQ Home   CSO Topics ▾   Individual Permits ▾   NJDEP Home | NJDEP Online

**CSO Home**  
CSO Basics  
For Permittees ▶  
Community Collaboration  
FAQs  
Training and Events  
Join Our Email List  
Contact Us

### Combined Sewer Overflow

The Department is committed to working with Combined Sewer Overflow (CSO) permittees and CSO communities to reduce or eliminate CSOs. The Department will assist permittees in meeting their permit obligations by providing technical assistance, guidance, and training.

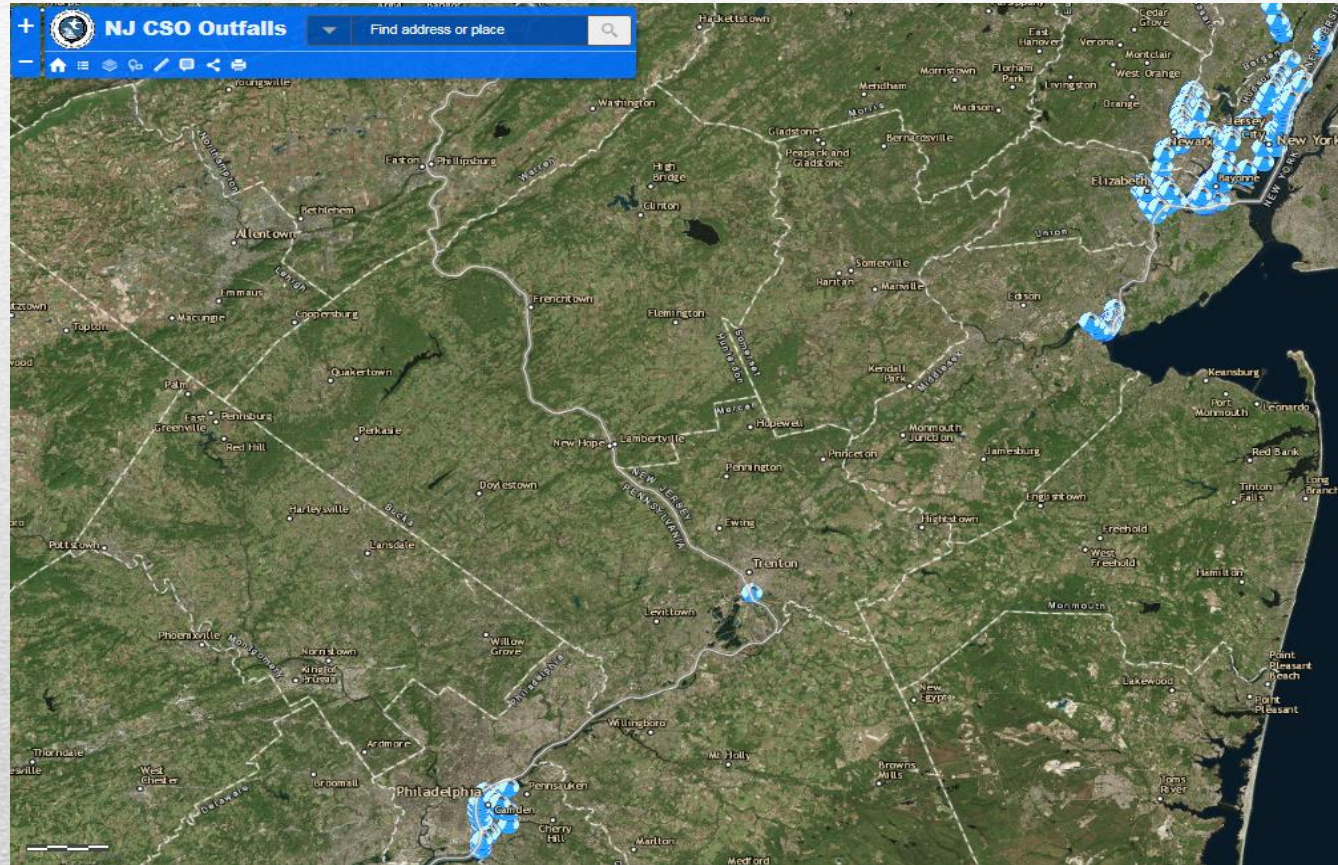
The individual CSO permits, effective on July 1, 2015, encourage permittee and [community collaboration](#) on the planning and development of projects that will provide urban redevelopment opportunities, improve water quality, beautify neighborhoods, and improve the overall quality of life in our urban communities.

### Featured Topics

- ▶ [CSO Outfall Interactive Map](#)
- ▶ [Forming and Utilizing Your Supplemental CSO Team](#)
- ▶ [New Funding Options Available for CSOs Under the NIEIFP](#)
- ▶ [Ensuring Cleaner Urban Waterways, by Dan Kennedy, Asst. Commissioner, Water Resources Management, NJDEP](#)

# CSO Outfall Interactive Map

<http://www.nj.gov/dep/dwq/cso-basics.htm>





# CSO Permits – Two Components

- **Nine Minimum Controls (NMC)**
    - Simple, low cost measures
    - Compliance required by January 1997
    - Mostly carried forward but with some enhancements
  - **Long Term Control Plan (LTCP)**
    - Dictates a path to achieve the goal
    - Goal is to reduce or eliminate CSO discharges - water quality and technology
    - Due June 2020
    - Substantially new requirements
-

# Nine Minimum Controls (NMC)

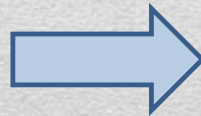
- Proper operation and maintenance
  - Maximize use of collection system for storage
  - Review of pretreatment requirements
  - Maximize flow to POTW for treatment
  - Elimination of discharges during dry weather (SSO)
  - **Control of solids/floatables**
  - Pollution prevention
  - **Public notification**
  - Monitoring of impacts and efficacy of controls
-

# Outfall Signs

- Northeast



- Camden



- N Hudson



# Solids Floatables Statewide

- 97.1% of permitted CSO outfalls have solids floatable removal
- From July 2015 thru June 2016, solids floatable capture totaled 2,847 yd<sup>3</sup>



# Public Notification - NHSA

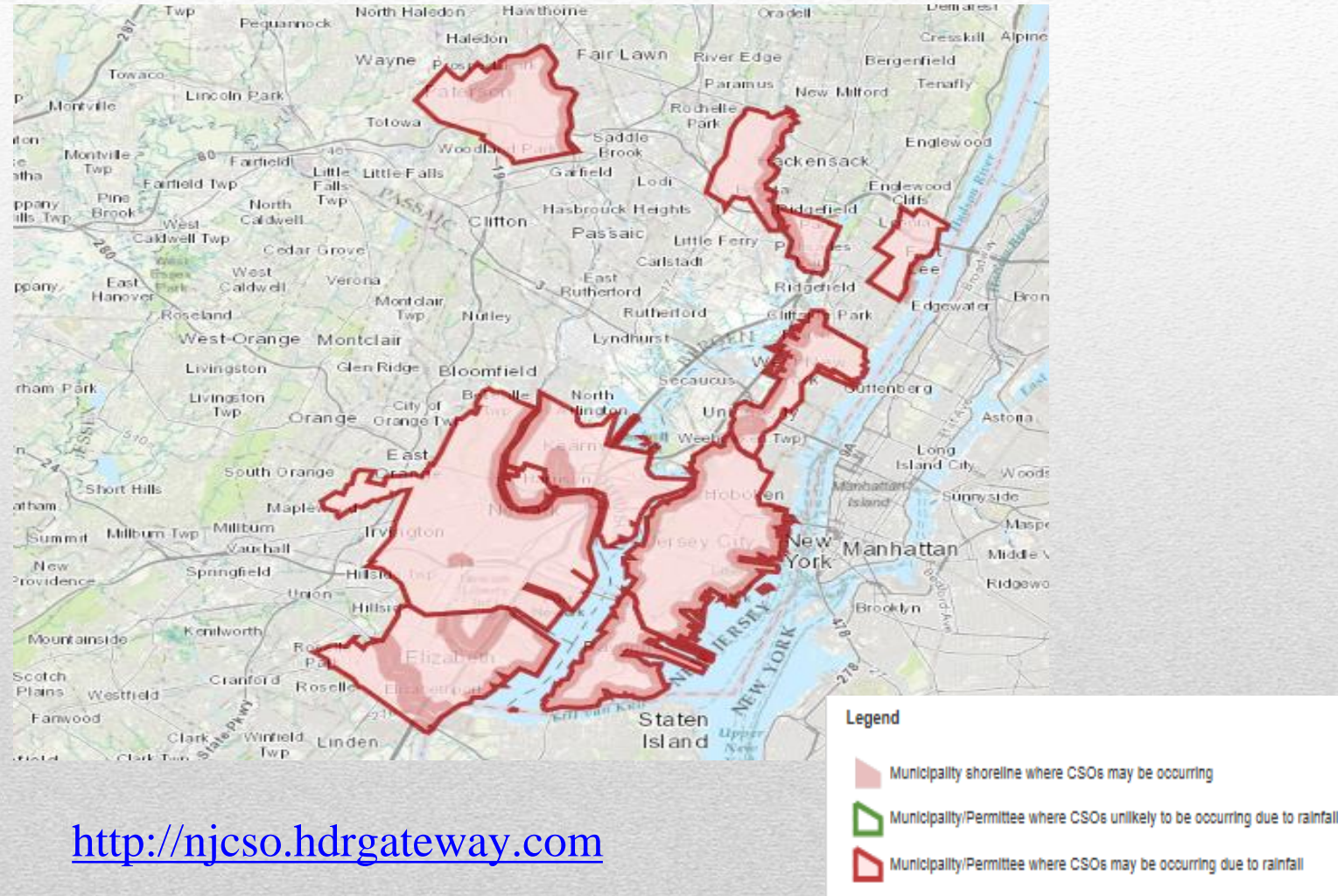


11/29/16; 4:57 PM

<http://www.nhudsonsa.com/Public/waterbody.html>

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# Public Notification - Northeast

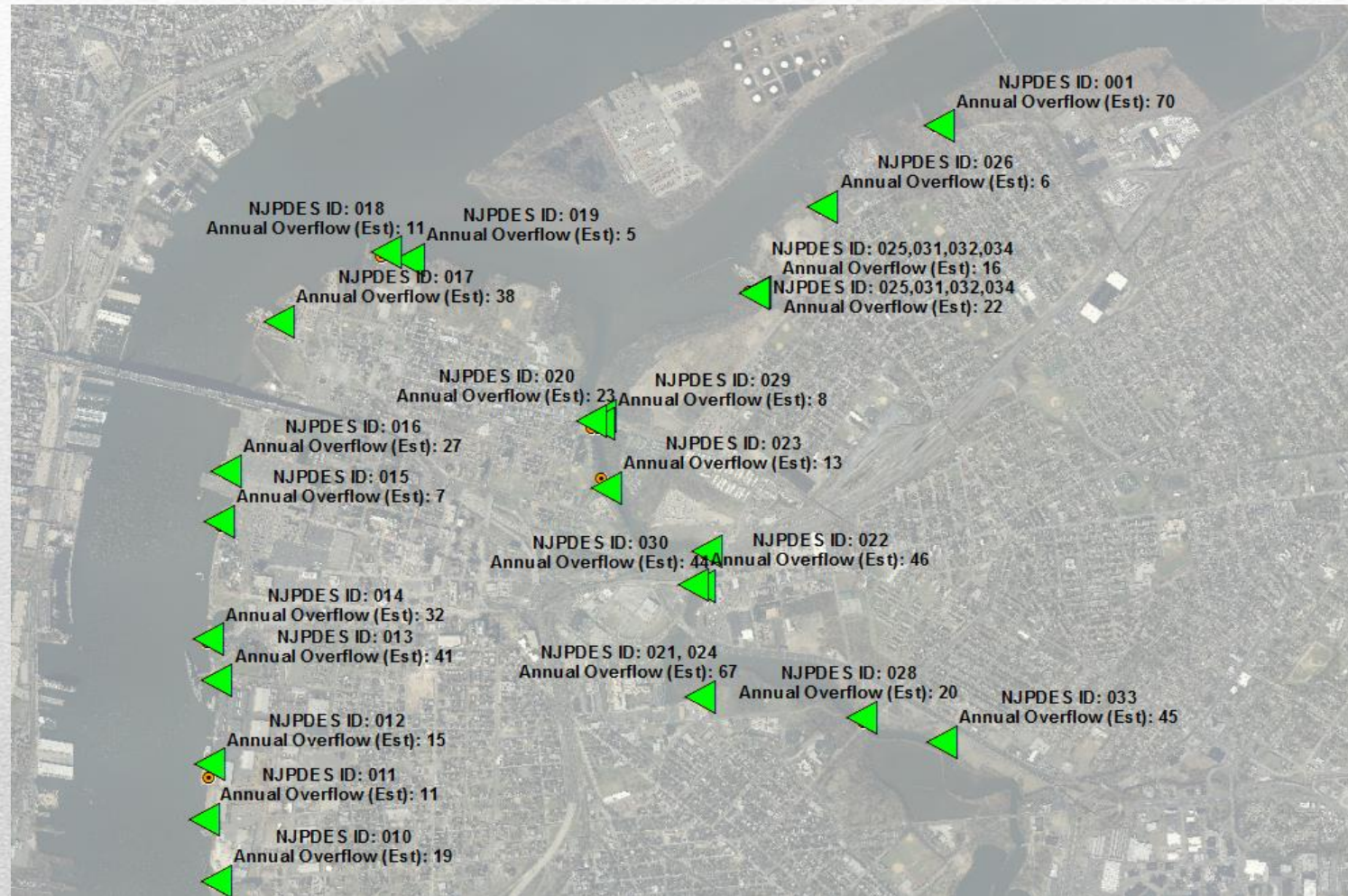


<http://njcso.hdrgateway.com>

# Long Term Control Plan (LTCP)

- **Characterization, monitoring and modeling (System Characterization)**
  - Public participation
  - Consideration of sensitive areas
  - **Evaluation of CSO control approach and alternatives**
  - Cost/performance considerations
  - Operational Plan
  - Maximization of treatment at the POTW
  - **Implementation schedule**
  - Monitoring to demonstrate compliance with Water Quality Standards
-

# Step 1 - System Characterization *Learn the System*





## Step 2 - Evaluation of Alternatives *Study the Options*

- **7 Strategies Required to Be Evaluated**
  - Green Infrastructure
  - Sewer Separation
  - Increased Storage
  - POTW Expansion
  - Inflow/Infiltration Reduction
  - Treatment at the CSO outfall
  - Bypass of POTW Secondary Treatment
- **Alternatives analysis must include reasonable assessment of cost and performance**



## Step 3 - Implementation Schedule *Do it!*



- Establishes a path via projects and schedules
  - Cost is considered for options and timeframe
  - NJDEP must approve and will incorporate the schedule (LTCP) into the next permit(s)
-

# Supplemental CSO Team

## Permit Requirement

As per NJPDES CSO Permit Part IV.G.2:

“The permittee shall invite members of the affected/interested public to establish a Supplemental CSO Team to work with the permittee’s assigned staff ...and to work as an informal work group as a liason between the general public and the decision makers for the permittee...”

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# Goals of Supplemental CSO Team

- CSO Supplemental Teams are required to meet periodically to share information and provide input to the planning process
  - Work as a liaison between the general public and decision makers.
  - Provide input for consideration in the evaluation of CSO control alternatives.
-

# Questions?

Thank you for your attention.

Susan Rosenwinkel, CSO Program  
Jennifer Feltis, Water Resources Management  
New Jersey Department of Environmental Protection

[Susan.rosenwinkel@dep.nj.gov](mailto:Susan.rosenwinkel@dep.nj.gov)

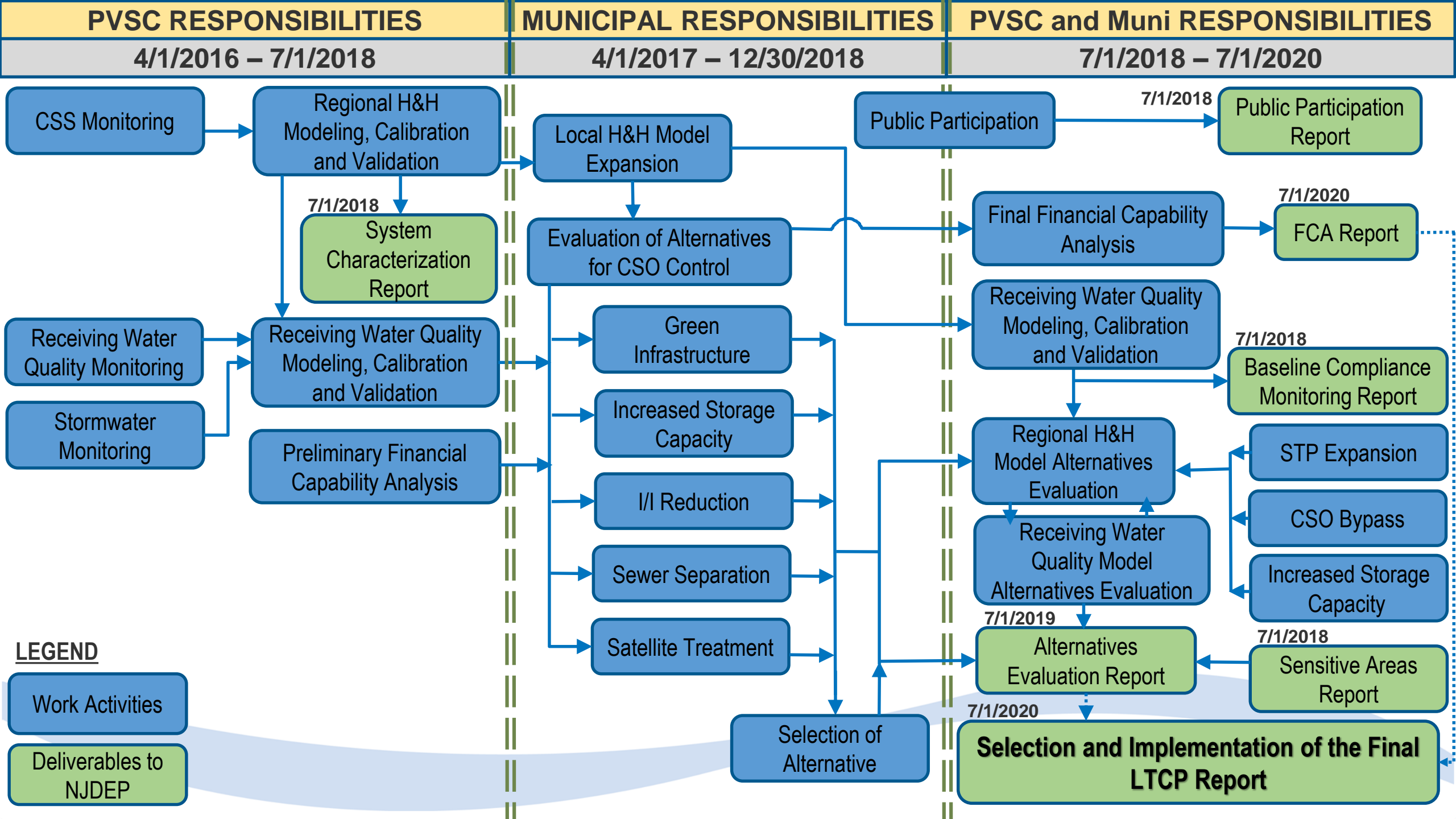
[Jennifer.feltis@dep.nj.gov](mailto:Jennifer.feltis@dep.nj.gov)

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# Permit Responsibilities





# 59-Month Program Schedule and Milestones

 **Permit Effective Date**  
July 1<sup>st</sup>, 2015

**We Are Here**



January 1, 2016

- ✓ Coordinates of pumps, regulators, and outfalls
- ✓ System Characterization Work Plan
- ✓ Baseline Compliance Monitoring Program Work Plan

July 1, 2016

- ✓ Map of Combined and Separate Sewer Areas

July 1, 2018

- System Characterization Report
- Public Participation Process Report
- Compliance Monitoring Program Report
- Consideration of Sensitive Areas Plan

July 1, 2019

- Development and Evaluation of Alternatives Report

June 1, 2020

- Selection and Implementation of Alternatives Report in the Final LTCP

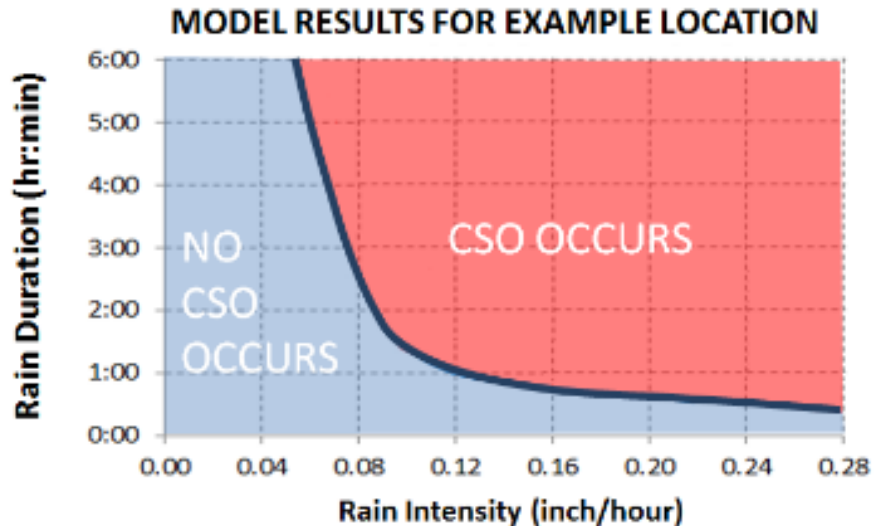
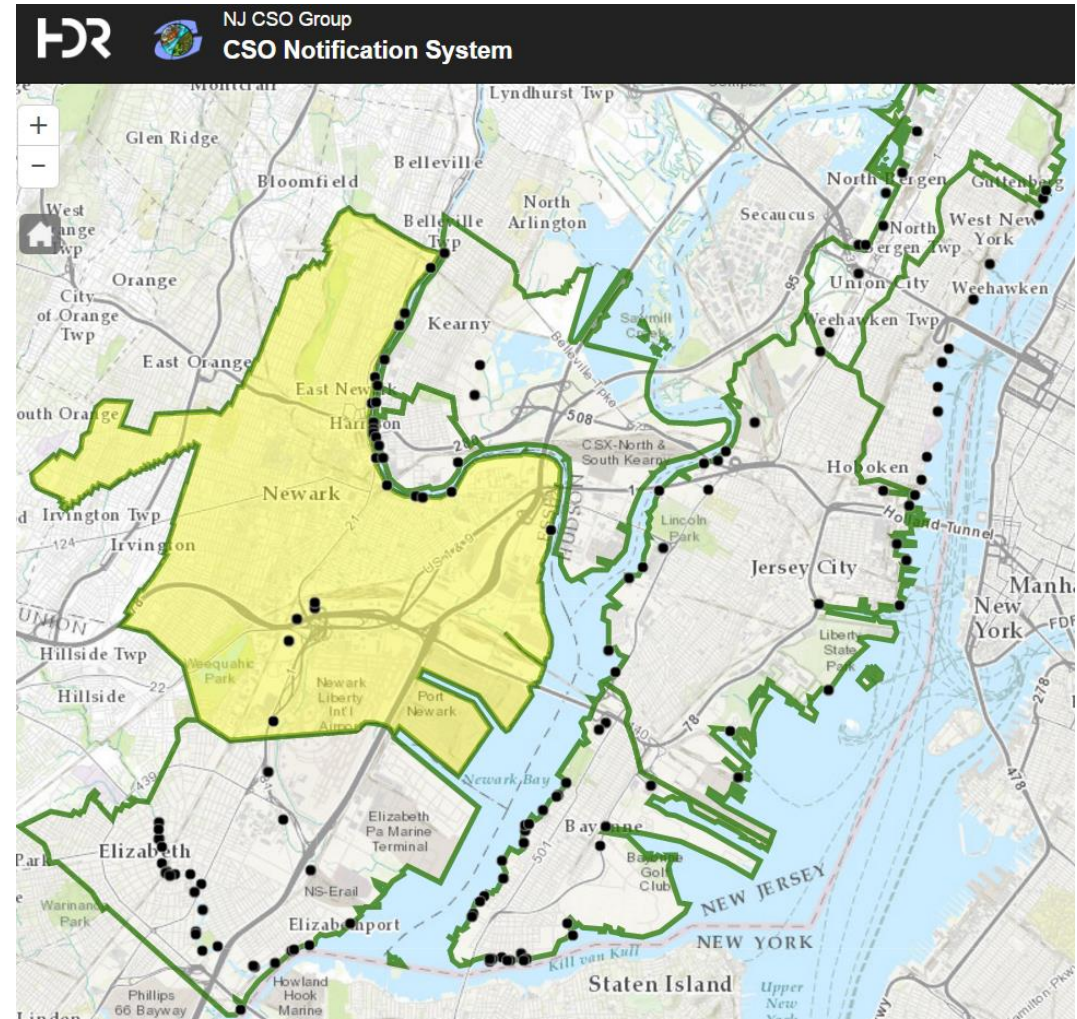
 Permit Due Date





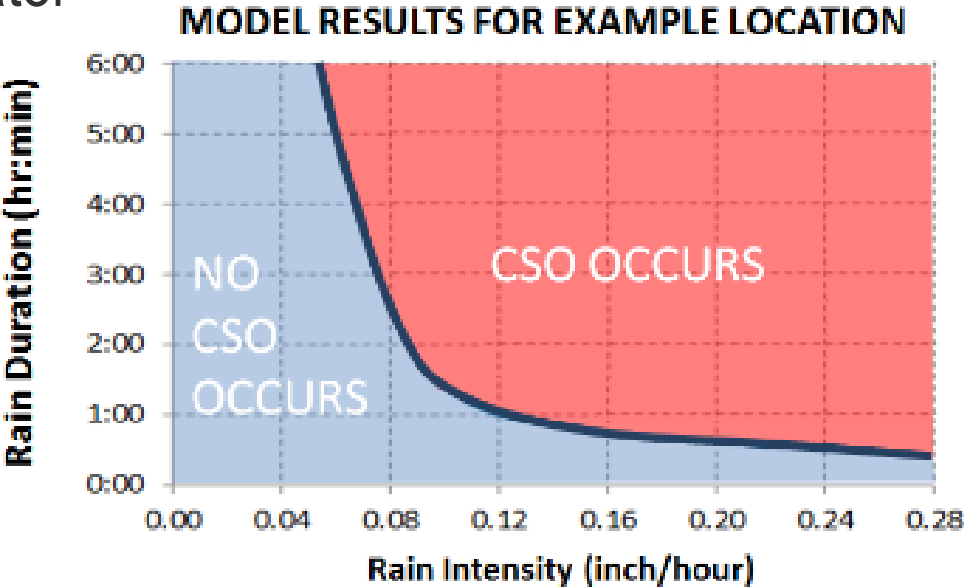
# CSO Notification System

- Public notification system
- <http://njcso.hdrgateway.com/>
- A predictive system, not a monitoring system
- Utilizes model derived rating curves to predict overflow events at each outfall location



# How The CSO Notification System Works

- Sewer collection system models were used develop an understanding of what rainfall conditions do and don't cause CSOs at a particular regulator
- Rule curves were established to predict overflow events at each outfall location
- Rainfall over each regulator's drainage area is measured and compared to thresholds on the rule curve to determine whether a CSO is **LIKELY** to be occurring at that regulator



- What About Snow?
  - When ground is frozen, less water can infiltrate into the soil and more runoff can be generated, which can lead to CSOs. As a result, cold-weather responses to rainfall and snow melt can be complicated and difficult to predict.
  - The CSO Notification System assumes that frozen precipitation behaves like rainfall. This means the website may predict CSOs that may not be occurring. In addition, the CSO Notification System does not indicate when CSOs may be triggered by snow melt. The public is advised to consider that CSOs may occur during periods of substantial snow melt.





## Highlights from CSO LTCPs from Elsewhere in the U.S.



# New York City

[www.nyc.gov/html/dep/html/cso\\_long\\_term\\_control\\_plan/index.shtml](http://www.nyc.gov/html/dep/html/cso_long_term_control_plan/index.shtml)

- State of New York Department of Environmental Conservation Consent Order
  - \$200,000 Civil Penalty
- City-Wide LTCP and 10 Waterbody Specific LTCPs
- Hybrid Grey-Green Approach
  - Grey \$2.7 Billion (1995 – 2030)
  - Green \$1.5 Billion (2012 – 2030)

Impervious Surface Control by GI	
Year	Target
2015	1.5%
2020	4%
2025	7%
2030	10%



*Right-of-Way Bioswale*

# Philadelphia

(<http://www.phillywatersheds.org>)

- Green City, Clean Waters
- Pennsylvania Department of Environmental Protection Consent Order
- USEPA Administrative Order for Compliance and Consent
- 25 Year Plan to Reduce Stormwater Pollution to Waterways by 85%
- 34% of Combined Sewer Area Controlled by Green Infrastructure
- \$1.2 Billion



*Stormwater Planter at Columbus Square*



# Northeast Ohio Regional Sewer District

<http://www.neorsd.org/cso.php>

- USEPA and Ohio EPA Consent Decree
  - \$600,000 Civil Penalty
- 25 Year Plan
- Reduce Overflows from 4.5 Billion Gallons to 500 Million Gallons
- Primarily a Gray Infrastructure Approach
  - \$3 Billion, including \$42 Million for Green
- Tunnels
  - 7 Tunnels
  - 2 to 5 Miles Each



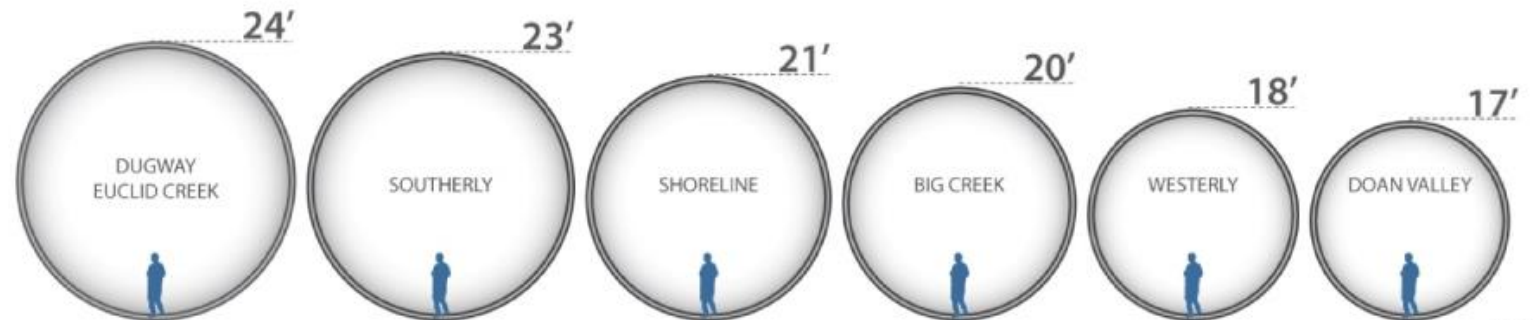
a clean water program of the **Northeast Ohio Regional Sewer District**

## How big will the tunnels be?

Our 25-year program to reduce Lake Erie pollution includes seven huge tunnel projects. Here are their finished diameters:



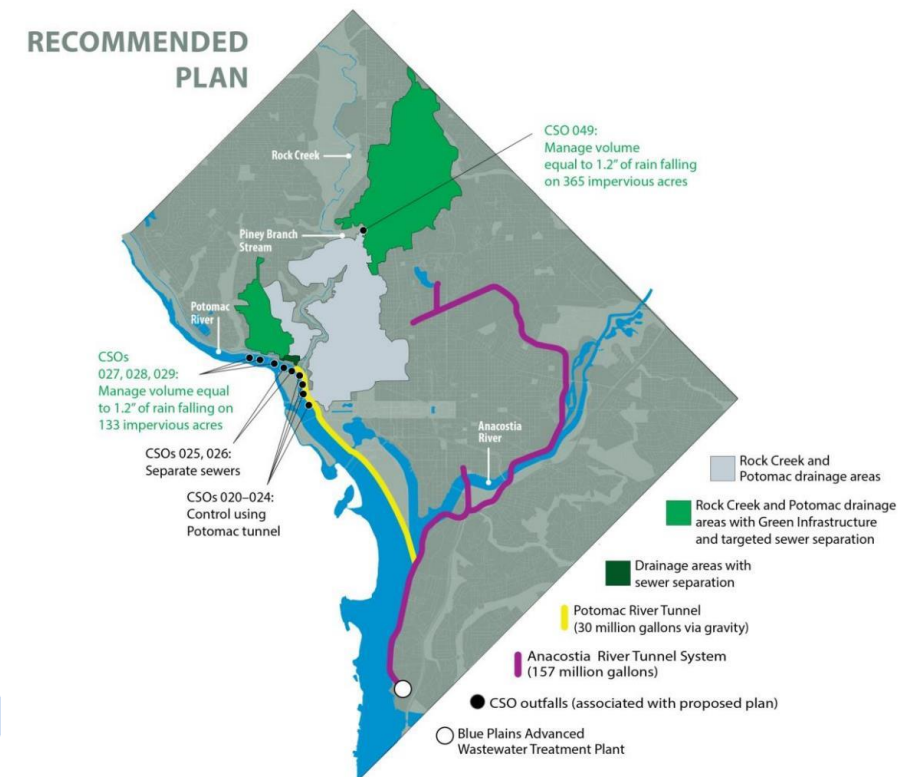
@neorsd  
#neorsdECT  
[neorsd.org/cleanlake](http://neorsd.org/cleanlake)



# District of Columbia

(<https://www.dewater.com>)

- 12,478 Acres Served by Combined Sewers
- 60 CSO Outfalls (Prior to LTCP)
- Long Term Control Plan (2002)
  - Plan to Reduce Overflows from 3.2 Billion to 138 Million Gallons per Year
  - Anacostia River, Potomac River, and Rock Creek Storage Tunnels (~13 Miles)
- Civil Penalty Settlement (2003)
  - \$250,000 Civil Penalty
  - \$1.7 million for Supplemental Environmental Projects
  - \$300,000 for Green Roof Demonstration Projects
- USEPA Consent Decree (2005)
  - No Additional Penalty
  - 20 Year Implementation Schedule
- Amended USEPA Consent Decree (2015)
  - Extends to a 25 Year Plan
  - 500 Impervious Acres Managed by Green Infrastructure to Eliminate One Tunnel and Reduce Another Tunnel Segment
  - Process to Evaluate GI After First Project in Each Sewershed
    - Either Continue with Green or Go Back to Gray
- \$2.6 Billion Dollars



# District of Columbia







# Branding of LTCP Program



# Branding Tagline Concepts

- 1. Cleaner Water, Greener Communities
- 2. Clean Water, Green Future
- 3. WaterSmart: Green Solutions for Cleaner Rivers
- 4. WaterSmart: Cleaner River, Greener Communities
- 5. Clean Water Project
- 6. Cleaner River, Healthier Neighborhoods
- 7. NJ Clean Rivers Project
- 8. Keep it Clean, Keep it Green
- 9. Cleaner River, Greener Future
- 10. Clean is Green
- 11. Green Jersey
- 12. Clean Waters
- 13. Jersey Clean Waterways
- 14. Garden State Clean Waters



# Branding Logo Concepts

1



2



3



4



5



# Branding Logo Concepts

6



7



8



9



10



11



12



PVSC LOGO OPTIONS - Color Scheme A



PVSC LOGO OPTIONS - Color Scheme B



# Next Steps



# Tasks/Action Items for Supplemental CSO Team

- Explore the SharePoint Site
- Provide Comments on Branding and Logo Concepts





# Questions and Final Discussion