Supplemental CSO Team

Meeting No. 4
Long-Term Control Plan Permit Compliance

City of Elizabeth and
Joint Meeting of Essex & Union Counties (JMEUC)

June 5, 2018 – 1:00 pm
Peterstown Community Center
408 Palmer Street, Elizabeth, NJ 07202

Meeting Agenda

- Prior meeting recap
- Upcoming submittal schedule
- Group survey – water quality concerns and responsibilities
- System Characterization Report
- Baseline Compliance Monitoring Program Report
- Consideration of Sensitive Areas Information
- Group survey – CSO control approaches and financial burdens
- Public Participation Process
- Alternatives Evaluation – Quick Look Ahead
- Next meeting

Meeting No. 3 Refresher

Material covered in prior meeting (1/29/2018):

- Public involvement activities
- Sensitive areas consideration
- Characterization and modeling updates
- NJ CSO Group coordination
- Green Infrastructure Basics

Upcoming Submissions

Reports with July 1, 2018 deadline:

1

System Characterization Reports

- Separate reports for Elizabeth and Joint Meeting
- Coordinated and joint certifications

2

Baseline Compliance Monitoring Program Report

- NJ CSO Group joint effort, draft results under review

3

Consideration of Sensitive Areas Information

- NJ CSO Group joint effort, draft results under review

4

Public Participation Process Report

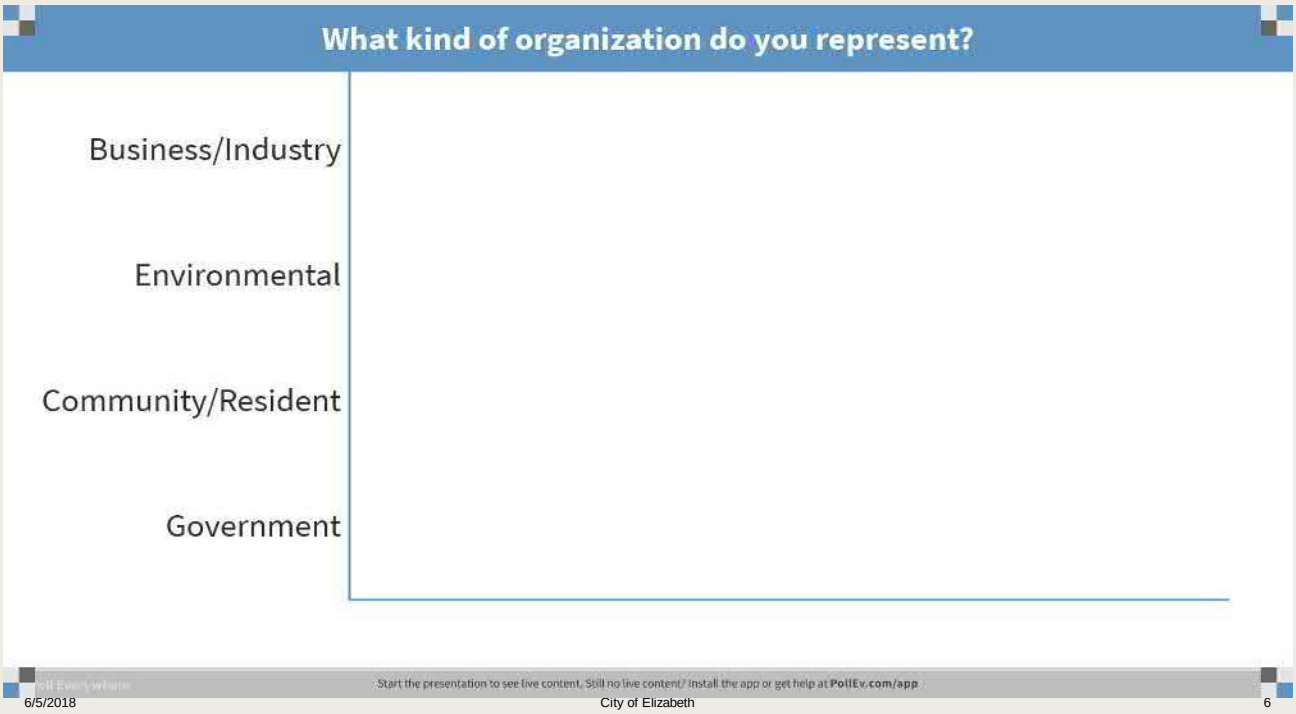
- Joint effort of Elizabeth and Joint Meeting

Interactive Surveys

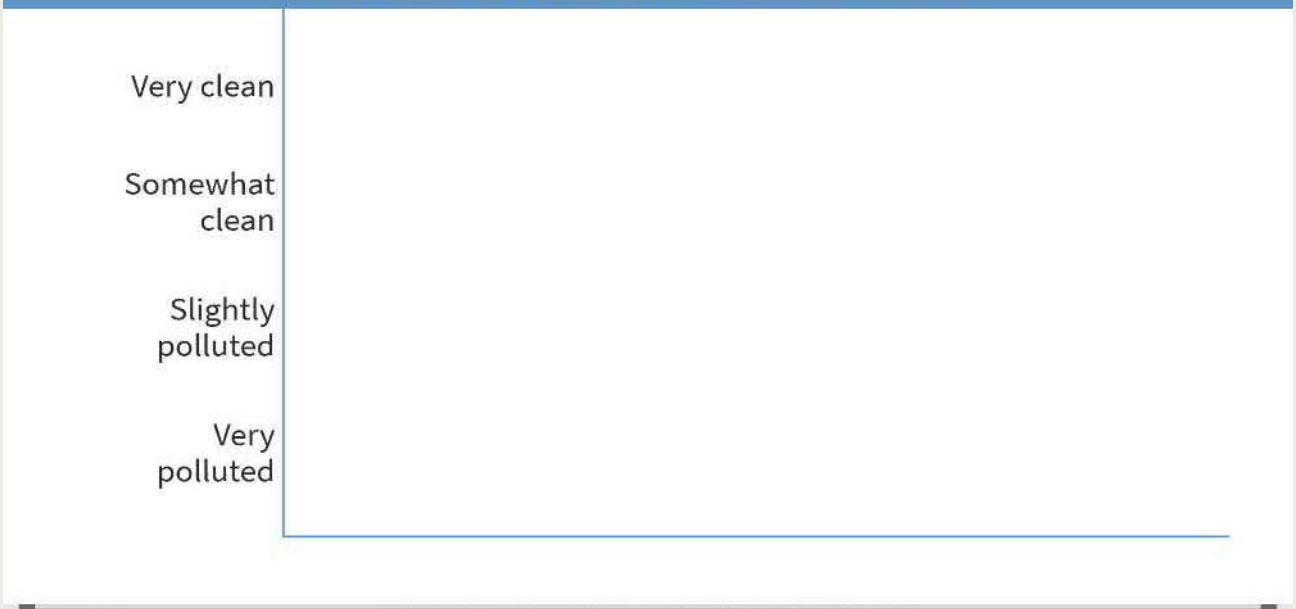
We would like to obtain your feedback on items such as:

- Who you are / who you are representing
- Water pollution sources, issues, and concerns
- Public engagement methods
- Priorities for CSO alternatives
- Financing CSO controls

Please go to www.pollev.com/mottmac355 on your smartphone



How clean do you think the Elizabeth River is?

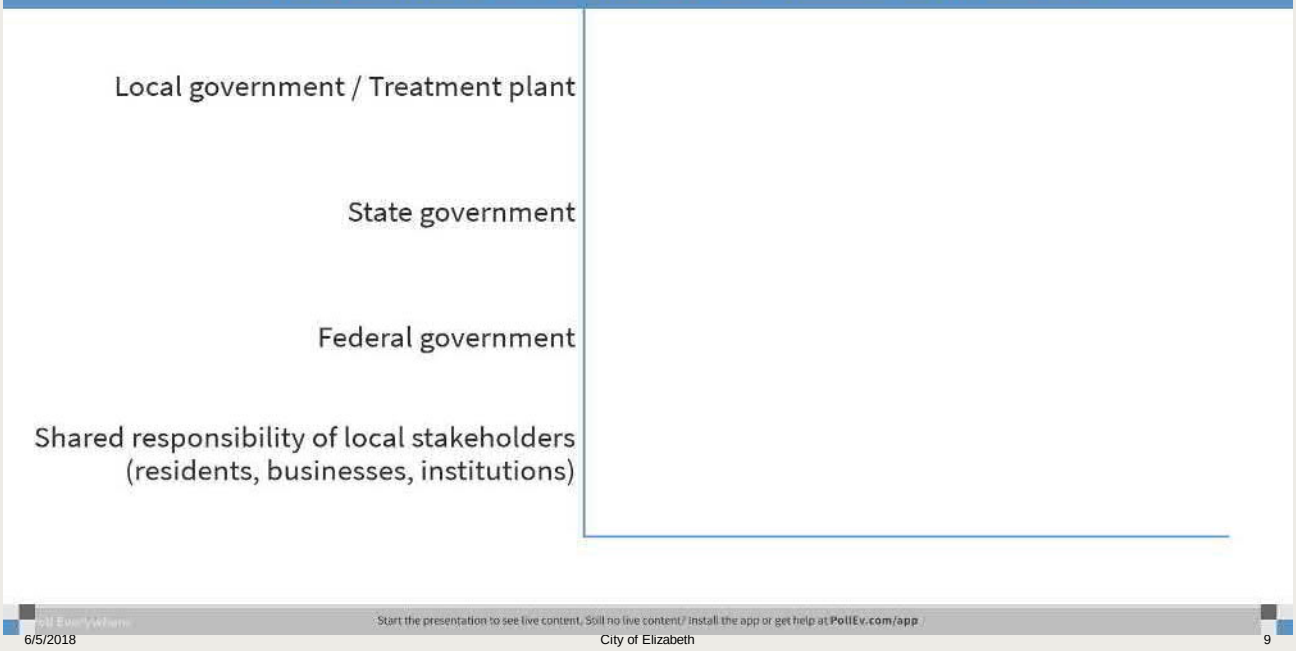


Poll Everywhere — Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is the main cause of pollution in local waterways?

Poll Everywhere — Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

Whose responsibility is it to protect local waters from pollution?



System Characterization Update – Report Organization

1. Introduction
2. Sewer system description
3. Hydraulic monitoring
4. Wastewater quality monitoring
5. Collection system model
6. Receiving water quality monitoring
7. Consideration of sensitive areas
8. Characterization of system performance – typical year simulation

Sewer System Description

Combined Sewer System

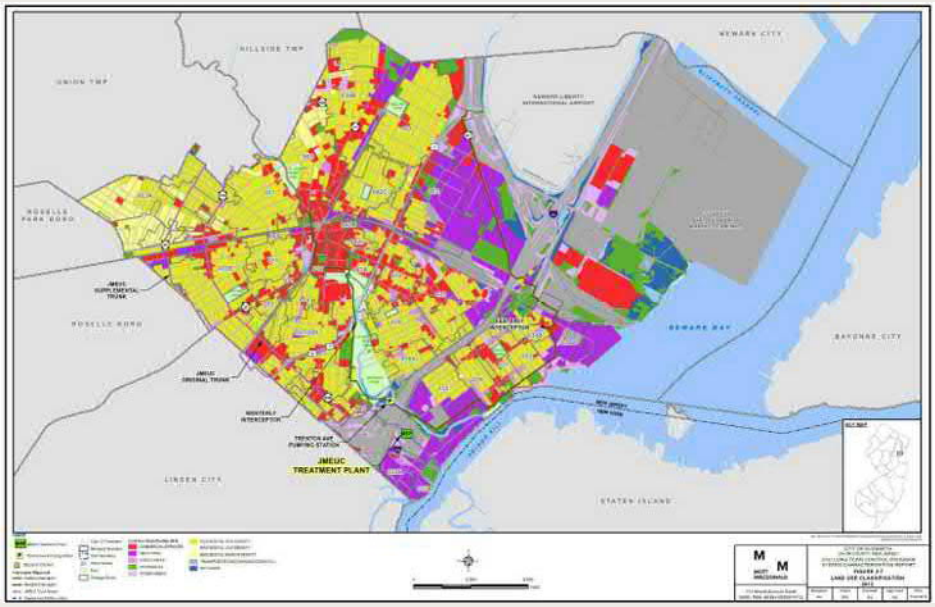
- Combined and separate sewer areas
- Hydraulically connected system
- Receiving waters
- Facilities inventory and descriptions
- Outfall and regulator control structure details
- Significant Indirect Users
- CSO drainage basins
- Facility assessments

Sewer System Description

Combined Sewer System

- 29 CSO Outfalls
- 36 CSO Sub-basins, varying from 3 to 439 acres each
- 38 regulators and diversion chambers
- 166 miles of combined sewers, with 6,400 manholes & 3,300 inlets
- Complex network of interconnections
- 14.7 Mgal/day average flow, Trenton Ave PS
- Roselle Park storm sewer connection

Updated Land Use Analysis – 2012 NJDEP GIS Data



Land use overall CSO area – 3,832 acres

- 52.2% high-density resid.
- 8.2% med-density resid.
- 17.3% commercial
- 11.6% industrial
- 3.5% open areas
- 3.3% transportation
- 3.9% other uses

61.8% impervious cover

Little change from 2007

Hydraulic Monitoring

Continuous monitoring: 8/22/15 – 12/21/15 (4 months)

- 40 flow meters
  - 14 dry weather lines
  - 10 overflow lines
  - 6 along E. Interceptor
  - 5 along W. Interceptor
  - 4 storm sewers
- 2 tide gauges
- 14 tide gate monitors
- 2 groundwater level monitors
- 3 rain gauges

Hydraulic Monitoring – Rainfall Events

Storm	Start Date	End Date	Start Time	End Time	Depth (In)	Duration (Hrs)	Max Intensity (In/Hr)
1	9/9/2015	9/9/2015	15:40	18:30	0.11	2.83	0.22
2	9/10/2015	9/10/2015	3:05	23:45	0.99	20.67	0.26
3	9/29/2015	9/30/2015	23:00	8:45	1.39	9.75	0.76
4	10/2/2015	10/3/2015	4:30	10:00	1.91	29.50	0.31
5	10/9/2015	10/9/2015	17:25	22:50	0.32	5.42	0.25
6	10/28/2015	10/29/2015	10:25	9:15	1.65	22.83	0.55
7	11/10/2015	11/11/2015	8:30	7:15	0.57	22.75	0.12
8	11/19/2015	11/20/2015	13:35	9:30	1.00	19.92	0.29
9	12/1/2015	12/2/2015	1:35	23:30	0.60	45.92	0.07
10	12/17/2015	12/17/2015	11:15	22:30	1.15	11.25	0.35

Total 10 storms

- Durations varying from 2.8 to 46 hours
- Intensities varying from 0.07 to 0.76 inches/hour

Categorized as:

- Low duration, low intensity (2)
- Low duration, high intensity (2)
- High duration, low intensity (5, some close to the cutoff line)
- High duration, high intensity (1)

Various periods of dry weather flow data

Wastewater Quality Monitoring

- 7 sampling locations
- 3 event sampling surveys
  - Rainfall events > 0.5”
  - Dry weather samples day before
  - Wet weather sampling intervals: 30 mins, 1 hr, 2 hr, 4 hr and 8 hr
- 3 pathogen parameters
  - E. coli at 2 sites
  - Fecal coliform and enterococcus at 7 sites

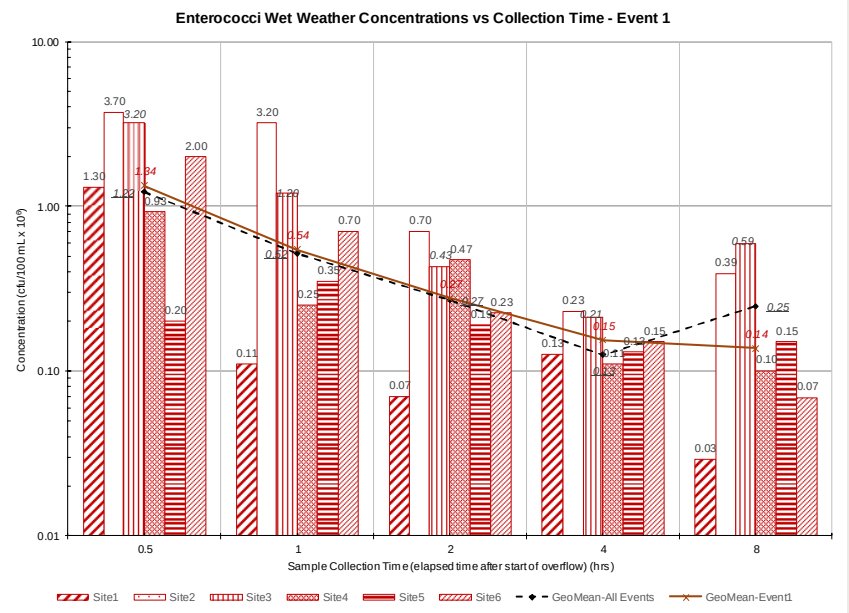
Dry Weather Pathogen Concentration Averages and Ranges by Sample Site, All Events

Parameter / Statistic	Concentrations in cfu/100 mL x 10^6							
Site No.	1	2	3	4	5	6	7	
Drainage Area	003A	022A	026A	028A	029A	034A	042A	All Sites
E. Coli								
Geometric Mean	2.08	3.34	NA	NA	NA	NA	NA	2.64
Minimum	1.40	1.70	NA	NA	NA	NA	NA	1.40
Maximum	3.20	5.00	NA	NA	NA	NA	NA	5.00
Fecal Coliform								
Geometric Mean	2.52	3.08	5.65	3.56	3.90	4.67	4.13	3.82
Minimum	2.20	2.40	4.20	3.40	3.00	1.10	3.20	1.10
Maximum	2.90	4.20	7.80	3.70	6.20	32.00	5.80	32.0
Enterococci								
Geometric Mean	1.41	1.23	2.22	2.25	1.40	1.92	0.86	0.89
Minimum	0.70	0.57	1.00	1.50	1.07	0.64	0.54	0.54
Maximum	2.00	2.20	5.00	3.60	1.70	5.50	1.30	5.5

Wet Weather Pathogen Concentration Averages and Ranges by Sample Site, All Events and Sample Times

Site No.	1	2	3	4	5	6	7	
Drainage Area	003A	022A	026A	028A	029A	034A	042A	All Sites
All Events								
E. Coli								
Geometric Mean	0.29	0.88	NA	NA	NA	NA	NA	0.50
Minimum	0.07	0.17	NA	NA	NA	NA	NA	0.07
Maximum	2.30	11.00	NA	NA	NA	NA	NA	11.00
Fecal Coliform								
Geometric Mean	0.46	1.57	2.45	0.65	0.36	0.47	1.98	0.87
Minimum	0.04	0.20	0.22	0.08	0.05	0.09	0.26	0.04
Maximum	9.30	66.00	108.00	4.10	1.80	2.40	38.00	108.00
Enterococci								
Geometric Mean	0.18	0.70	0.76	0.30	0.23	0.29	0.39	0.36
Minimum	0.03	0.06	0.07	0.03	0.04	0.02	0.03	0.02
Maximum	1.30	6.20	4.20	2.40	1.30	0.90	2.00	6.20

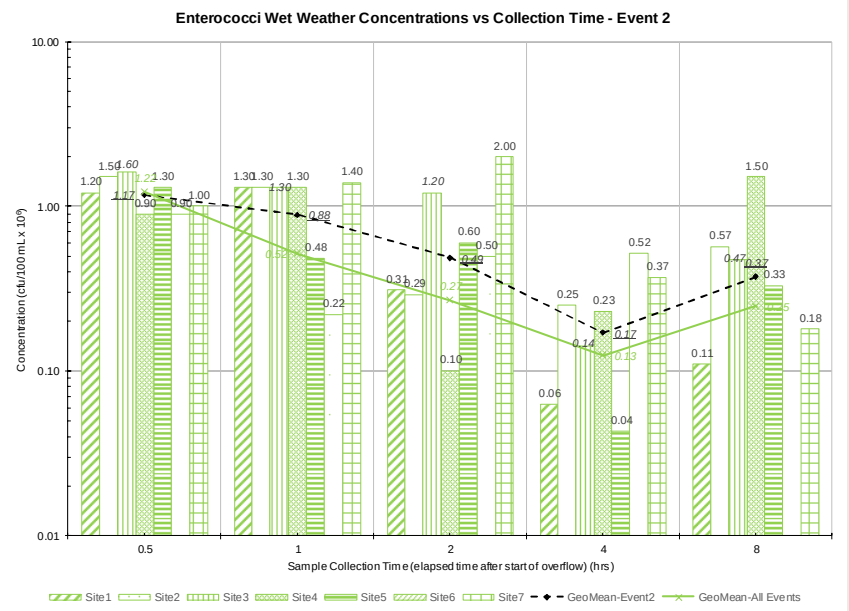
Wastewater Quality Monitoring



Pathogen Data

- Highly variable, but consistent with typical ranges.
- Average overflow content lower than dry weather.
- During storm, pathogens may stay high or increase during initial overflow period (first flush)
- Decreases during course of storm, with dilution
- Increases at end of overflow event.

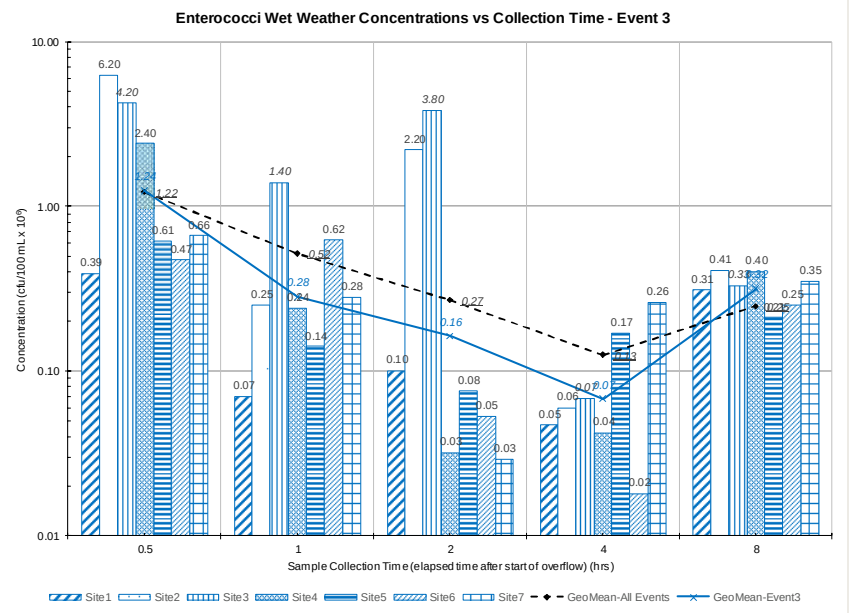
Wastewater Quality Monitoring



Pathogen Data

- Highly variable, but consistent with typical ranges.
- Average overflow content lower than dry weather.
- During storm, pathogens may stay high or increase during initial overflow period (first flush)
- Decreases during course of storm, with dilution
- Increases at end of overflow event.

Wastewater Quality Monitoring

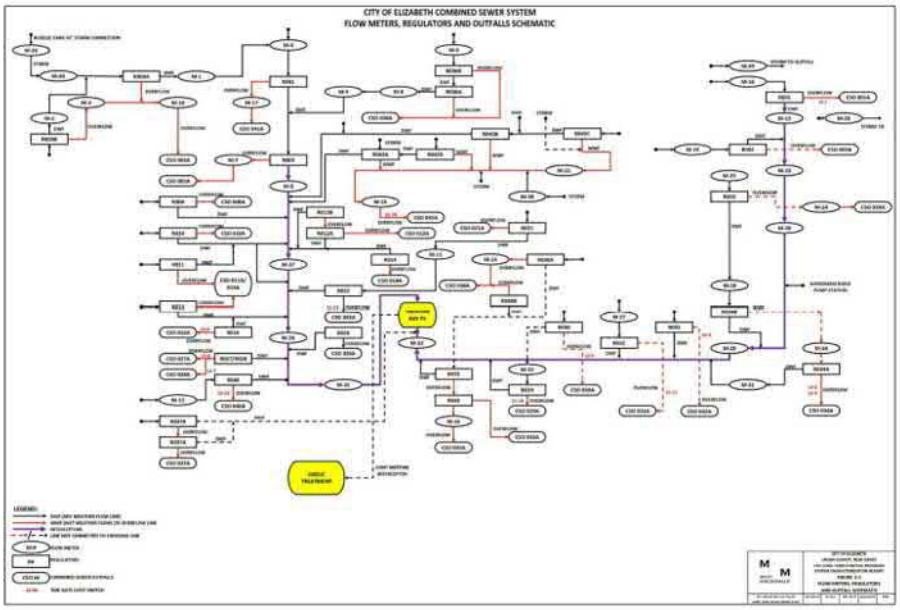


Pathogen Data

- Highly variable, but consistent with typical ranges.
- Average overflow content lower than dry weather.
- During storm, pathogens may stay high or increase during initial overflow period (first flush)
- Decreases during course of storm, with dilution
- Increases at end of overflow event.

Collection System Modeling

- Computer model with extensive coverage of physical system
- Model geometry and representation based on existing system
- Complex network of interconnections represented



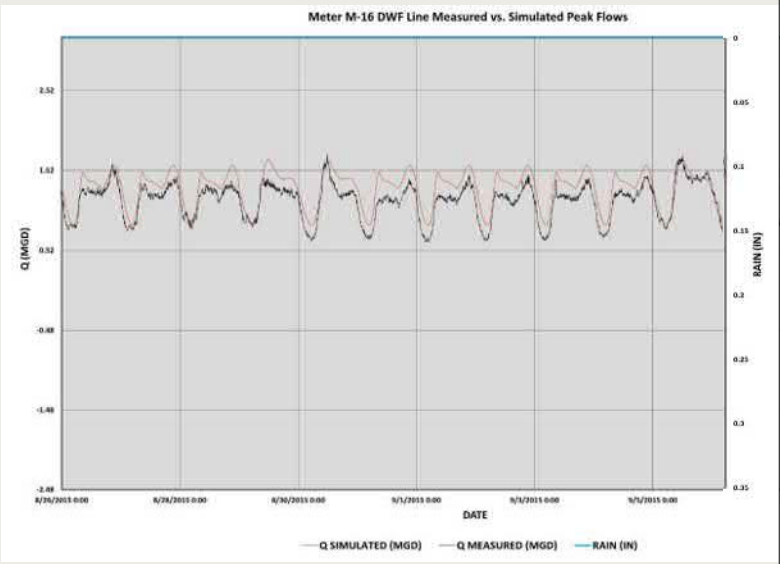
Collection System Modeling

Calibration and validation storm selection

- 4 calibration storms (#5, 6, 8 & 10)
- 2 validation storms (#3 & 4)

Dry weather flow (DWF) analysis

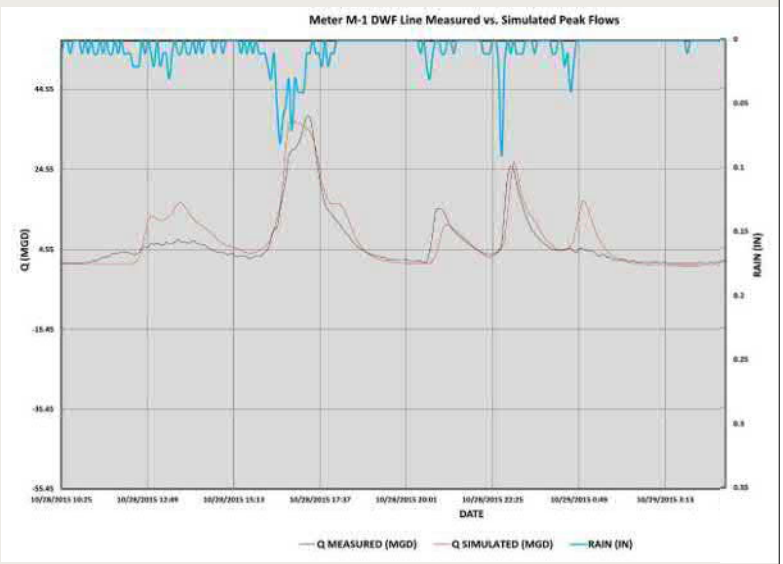
- Flow component estimation for each meter with DWF
  - Segregate dry weather weekday and weekend flows and diurnal peak factors
  - Population analysis for flow generation
  - Groundwater infiltration analysis
  - Correlate model calculations with monitoring data



Collection System Modeling

Wet weather flow (WWF) analysis

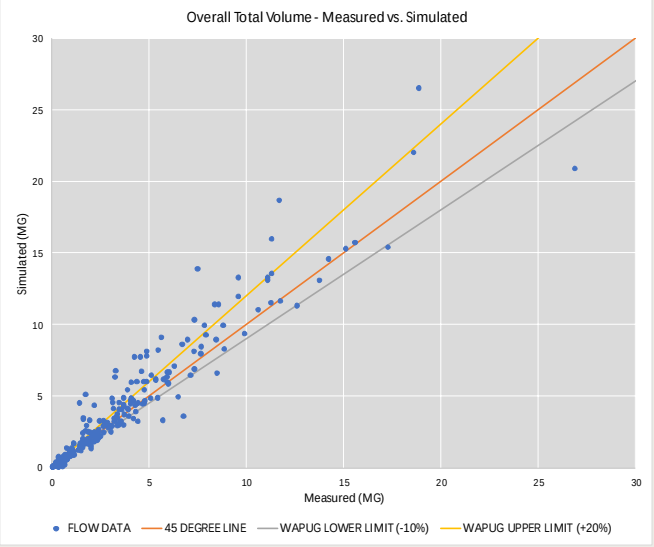
- For tributary area to each meter,
  - Estimated runoff generation characteristics, i.e., impervious area, initial abstraction and runoff coefficients
  - Generated peak flows and used coefficients as calibration parameters
- WWF calibration to accurately reflect system wet weather response relative to timing and hydrograph shape
- Similar analysis for validation storms to confirm fit

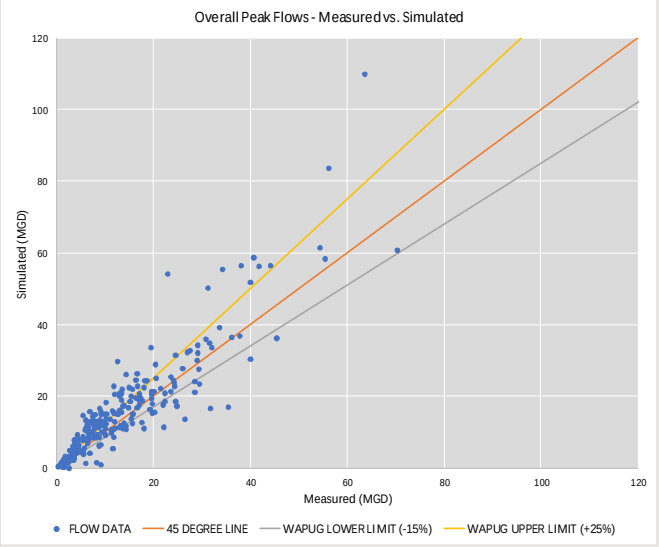


Collection System Modeling

Goodness-of-fit plots for WWF calibration results

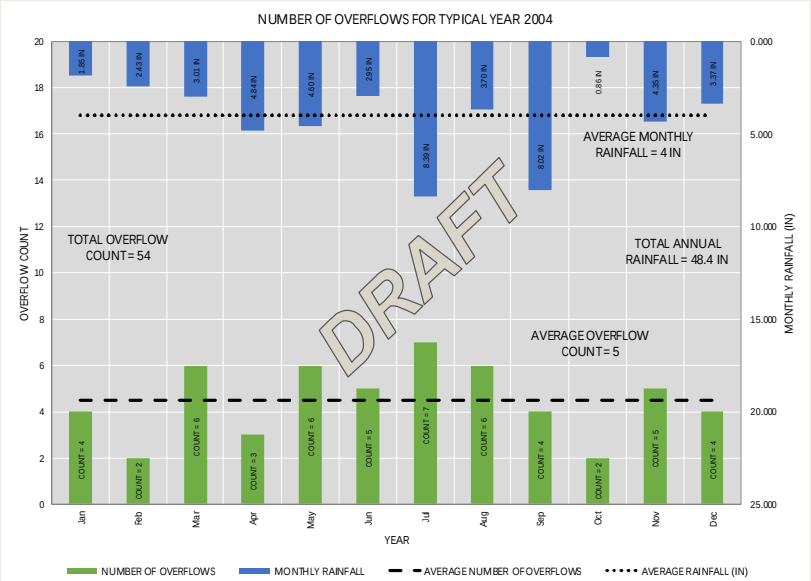
All storms and meters for monitoring period (400 data points)





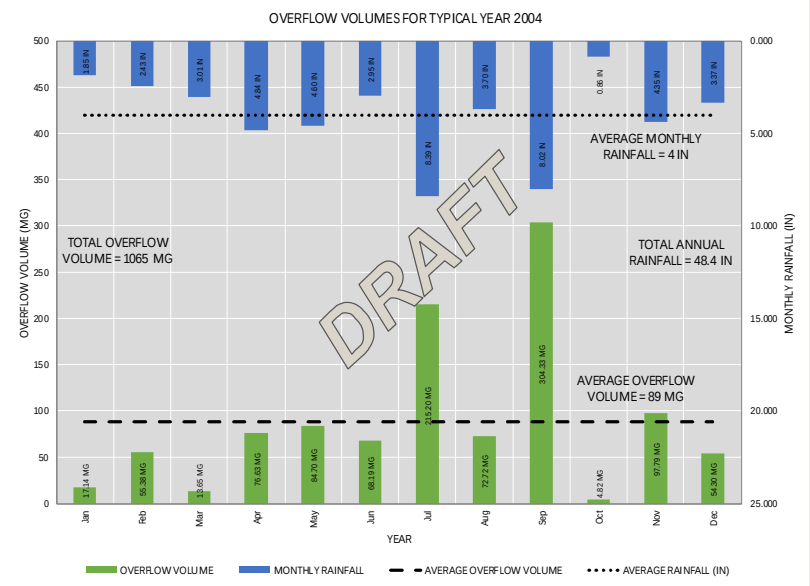
System Performance for Typical Year Rainfall Record

- Typical year to represent expected rainfall conditions to assess CSO controls on “system-wide, annual average basis”
- NJ CSO Group collaboration **2004** was selected & NJDEP accepted.
- Draft results from model simulations with 2004 rainfall record for CSO frequency, volume, and duration



System Performance for Typical Year Rainfall Record

- Draft results from existing system conditions model with 2004 rainfall record
  - Total annual rainfall = 48.4”
  - Total CSO frequency = 54/yr (preliminary)
  - Total CSO volume = 1,065 Mgal/yr (preliminary)
  - Average CSO Duration = 7 hours/overflow

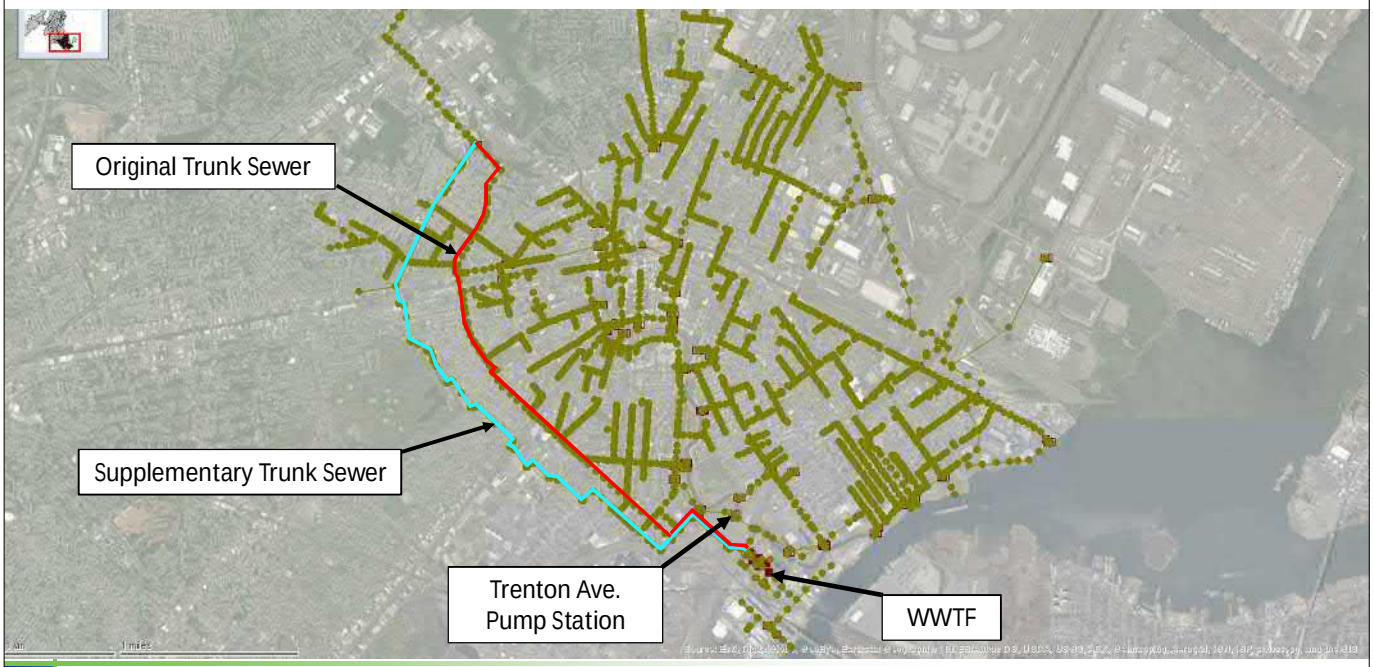


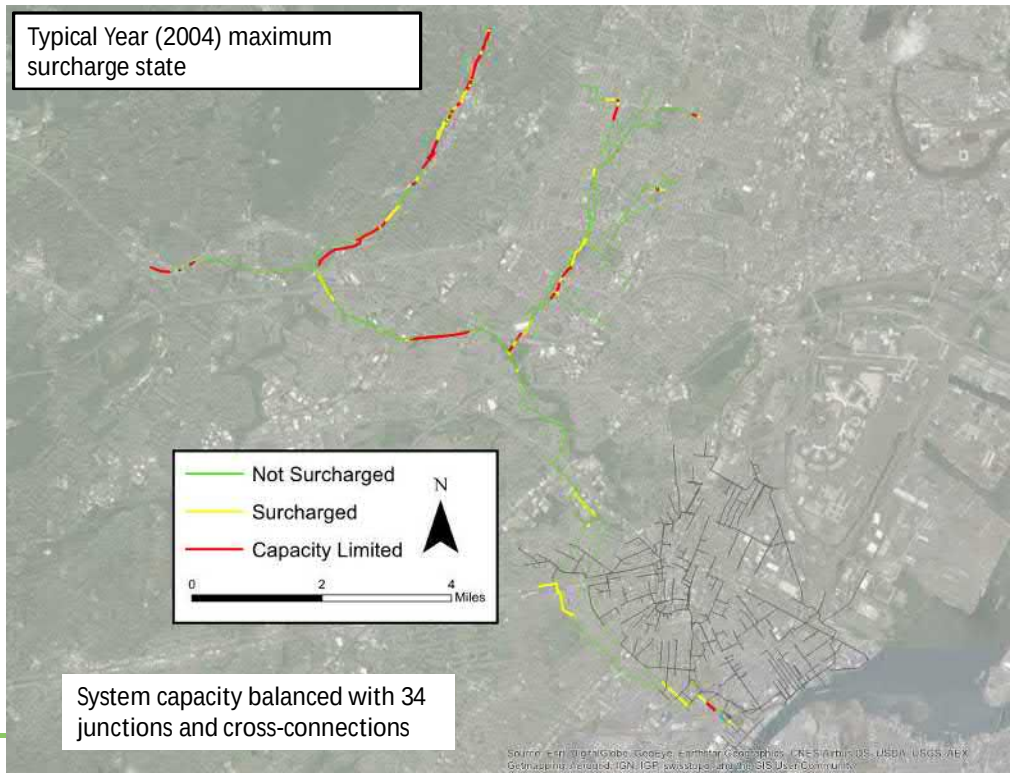
System Characterization Report Outline – JMEUC

Section	
1 Introduction	
2 Description of Combined and Separate Sewer Systems and Treatment Facilities	
3 Receiving Waterbodies	
4 Sewer System Monitoring and Modeling	
5 Receiving Waterbody Monitoring and Modeling	
6 Rainfall Analysis and Typical Hydrologic Record	
7 Characterization of System Performance – JMEUC Sewer System	
8 Characterization of System Performance – Wastewater Treatment Plant	
9 Institutional Arrangements	
10 Conclusions	

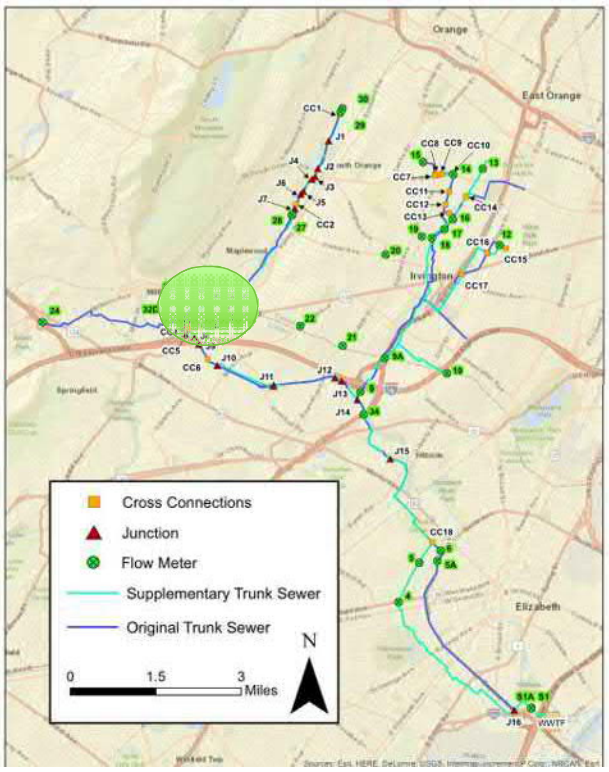
Merged Model Network

Merged Model Network

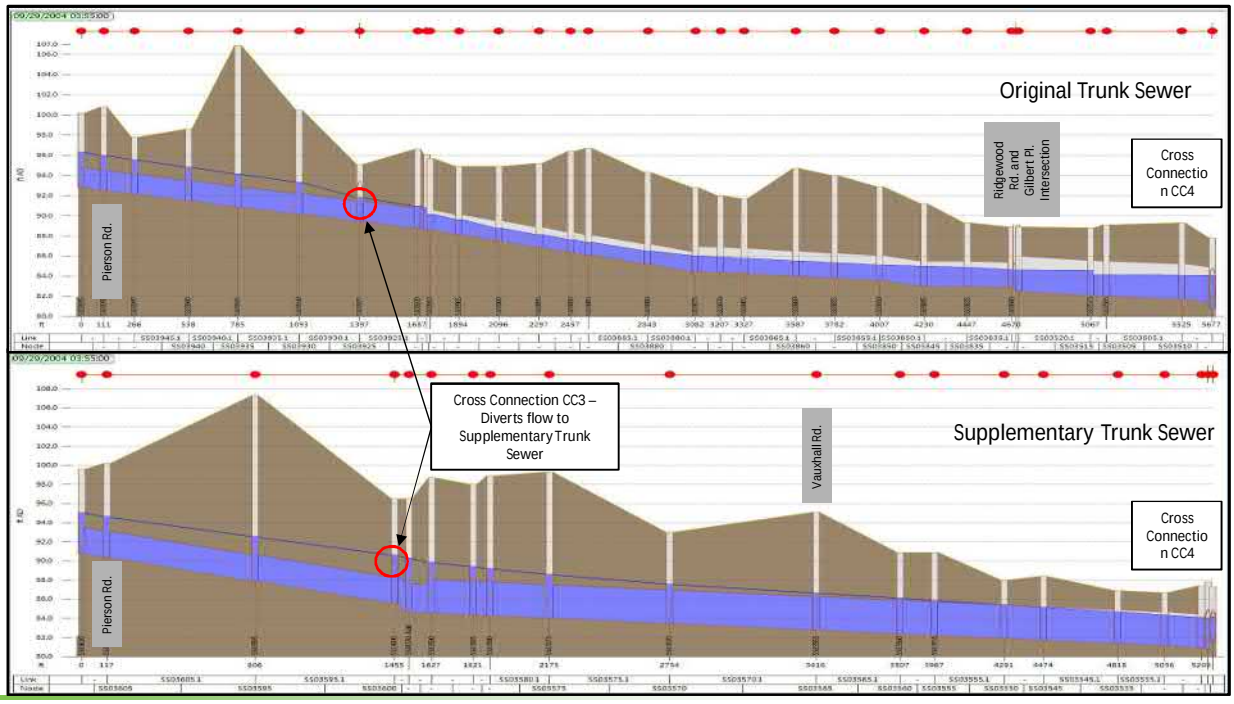




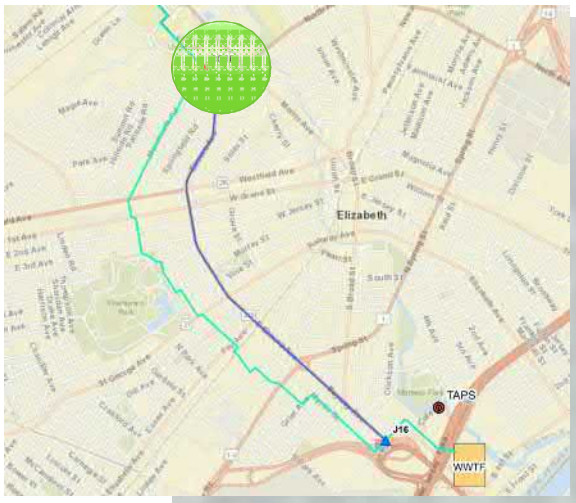
Junctions and Cross-Connections in JMEUC System

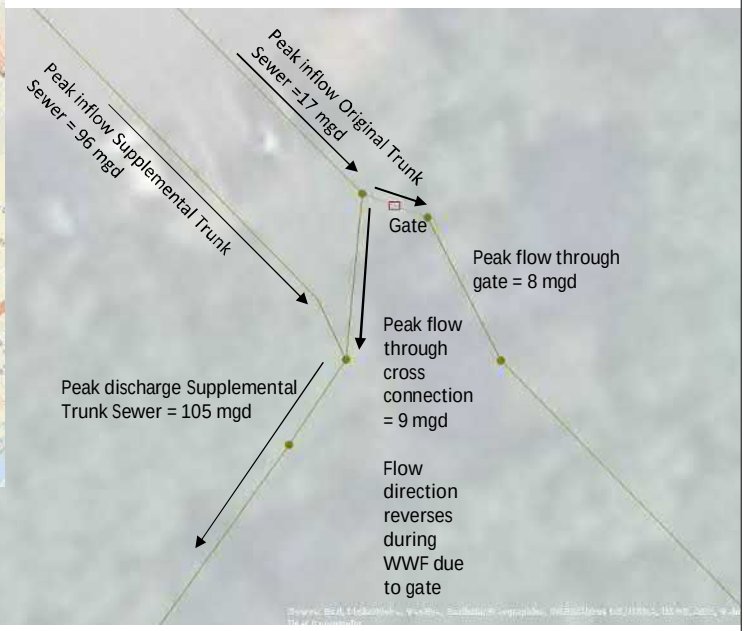


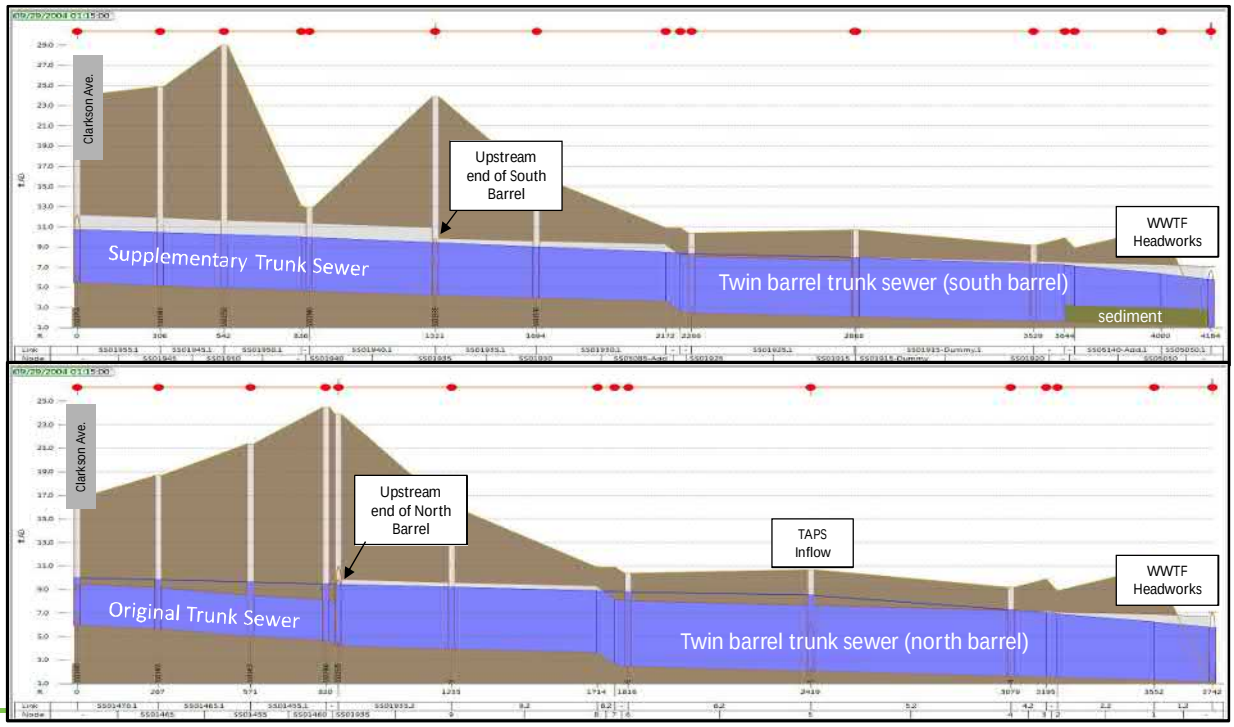
Profile 5



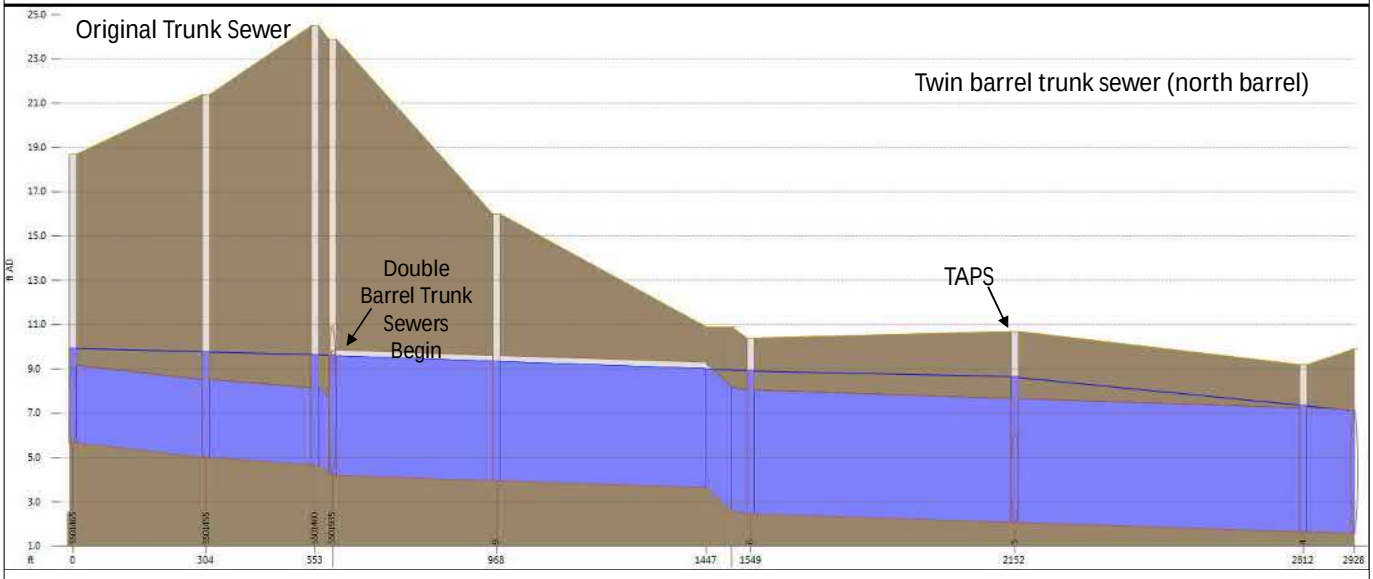
Kean University Cross Connection – 2/6/2004 Event



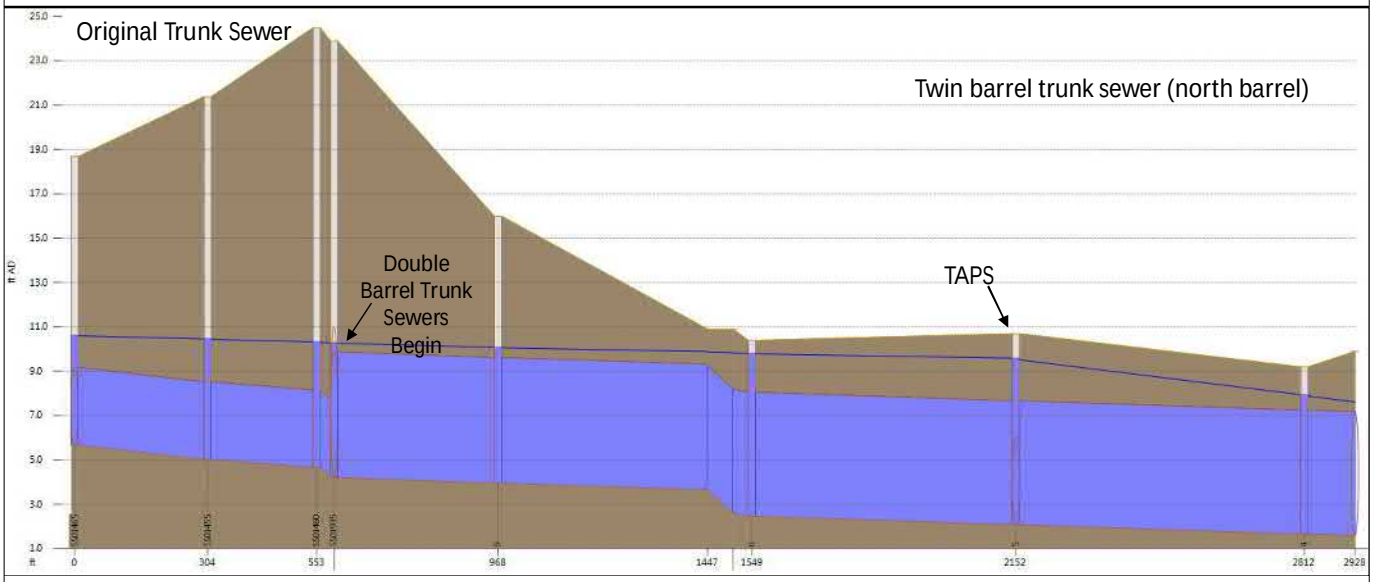




36 mgd Peak Inflow From TAPS – 2/6/2004 Event



55 mgd Peak Inflow From TAPS – 2/6/2004 Event



Baseline Compliance Monitoring Program (CMP) Report

- NJ CSO Group collaboration
- Field sampling and testing for existing ambient pathogen water quality conditions
- Data input for pathogen water quality model for the receiving waters

Baseline Sampling

Twice a month in May and June; weekly in July, August, and September; and monthly from October through April

Source Sampling

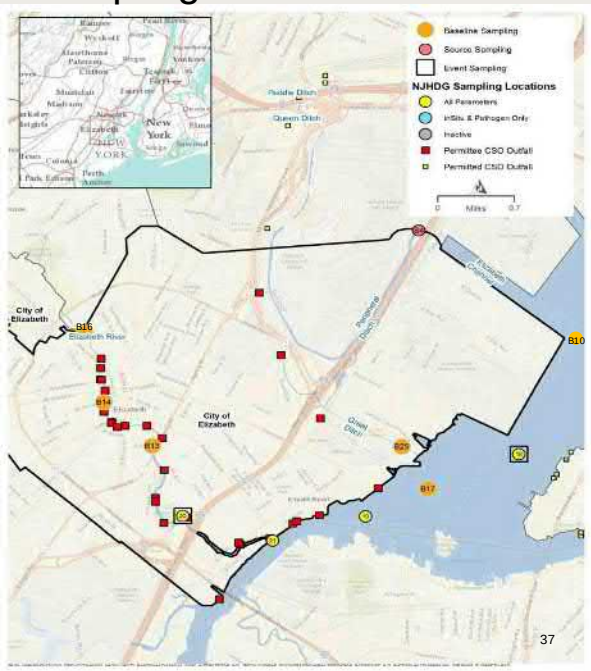
Establish non-CSO loadings at major influent streams, coincided with Baseline Sampling

Event Sampling

Coincided with rainfall to capture three discrete wet-weather events (>0.5")

Baseline CMP Report - Elizabeth Area Sampling Locations

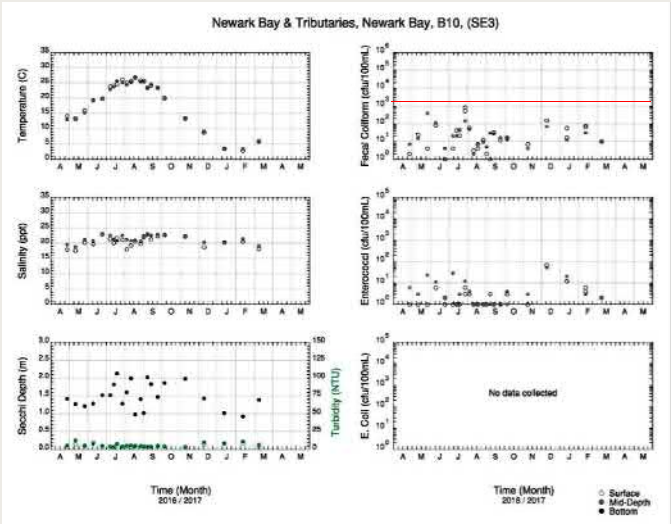
Station No.	Waterbody	Sampling Category	Surface WQS Class
B10	Newark Bay	Baseline	SE3
18	Newark Bay	NJHDG & Event	SE3
B17	Newark Bay	Baseline	SE3
19	Newark Bay	NJHDG	SE3
21	Arthur Kill	NJHDG	SE3
B16	Elizabeth River	Baseline	FW2-NT
B14	Elizabeth River	Baseline	FW2-NT
B13	Elizabeth River	Baseline	SE3
20	Elizabeth River	NJHDG & Event	SE3
S4	Peripheral Ditch	Source	SE3
B25	Great Ditch Outlet	Baseline	SE3



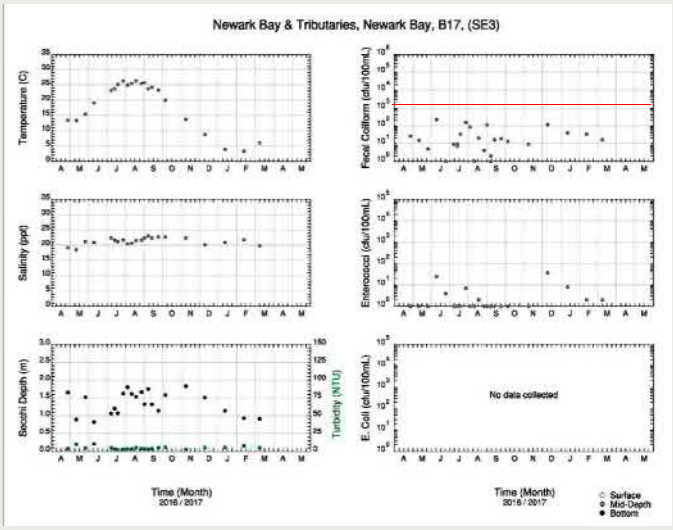
Baseline CMP Report – Data Results, Newark Bay (SE3)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3 (shown with red line)

Station B10 (upstream)



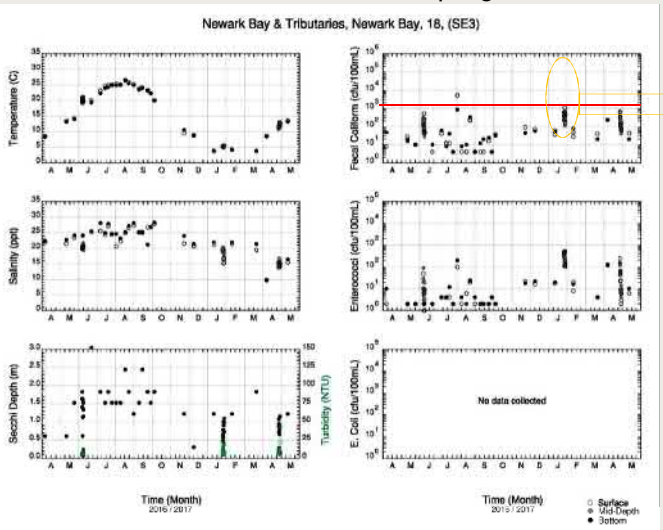
Station B17 (downstream)



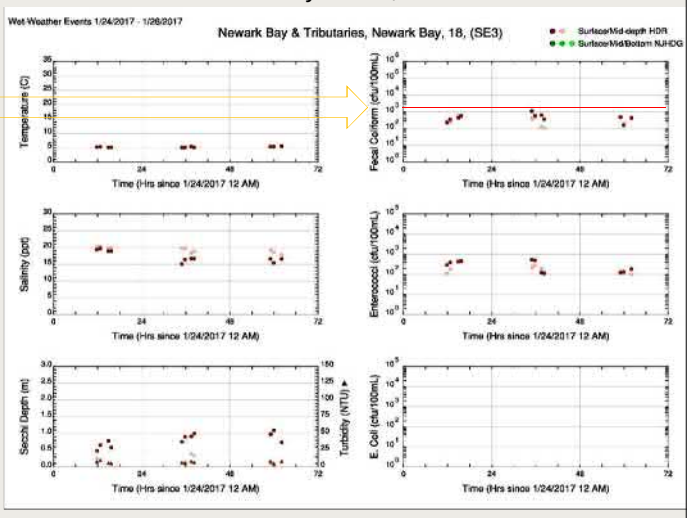
Baseline CMP Report – Newark Bay, Station 18 (SE3) (b/w B10 & B17)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3 (shown with red line)

Routine and Event Sampling



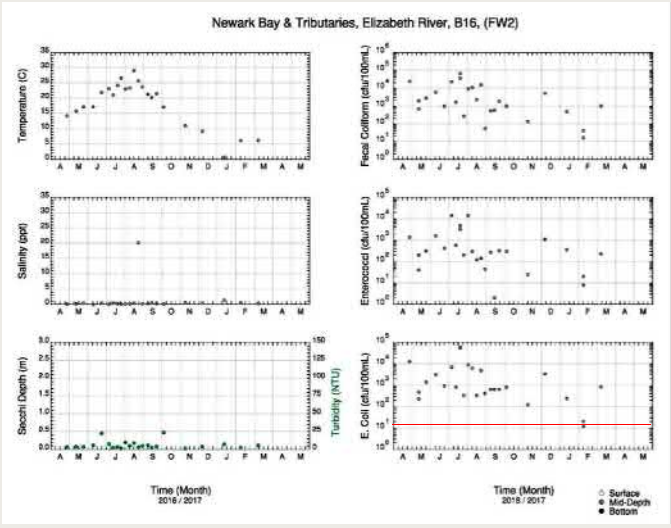
Wet Weather Sampling
January 24-26, 2017



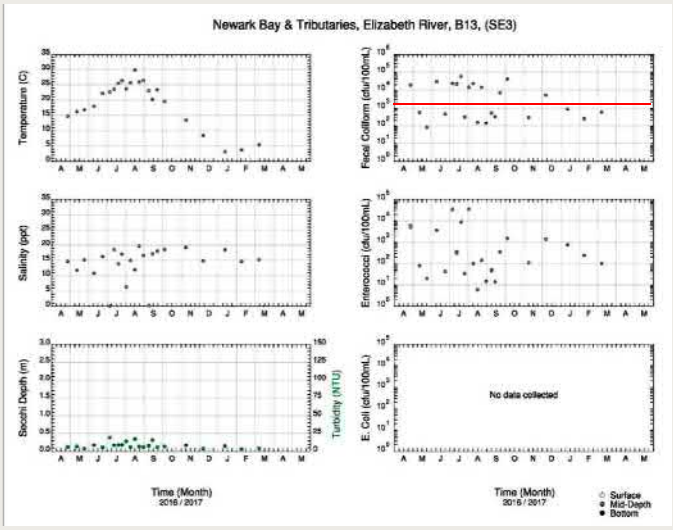
Baseline CMP Report – Data Results, Elizabeth River

WQS: Geo. Mean, E. coli < 126 cfu/100 mL for FW2, coliform < 1,500 cfu/100 mL for SE3

Station B16 (FW2, u/s near city limits)



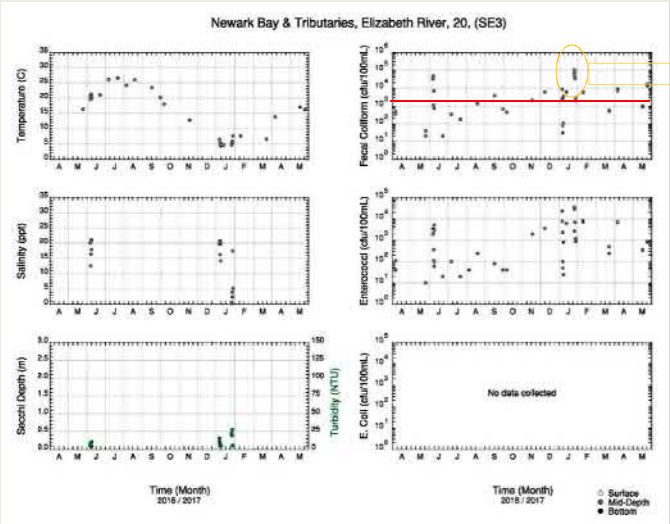
Station B13 (SE3, d/s of B16)



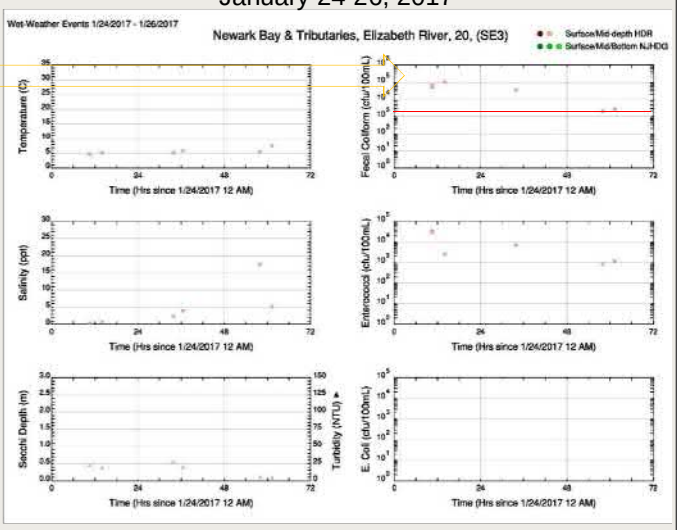
Baseline CMP Report –Elizabeth River (SE3) Station 20 (d/s B13)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3

Routine and Event Sampling



Wet Weather Sampling
January 24-26, 2017



Baseline CMP Report –Findings

- Data sufficient for calibrating and validating Pathogen Water Quality Model
- Program not intended for assessing attainment of pathogen WQS (insufficient data points per month)

General observations:

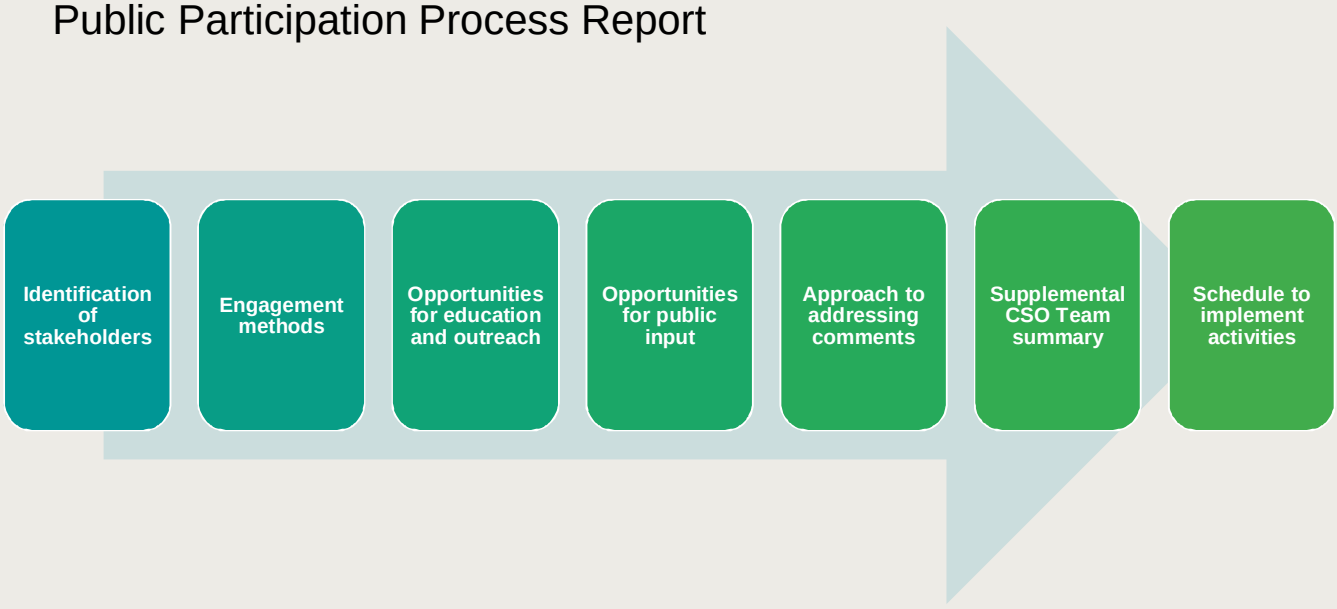
- Newark Bay, Arthur Kill & Kill Van Kull may meet existing pathogen WQS for SE3 waters
- Smaller waterbodies, like Elizabeth, Rahway, Saddle, and Second River, unlikely to meet attainment
- Source sampling of tributary streams without CSOs have high bacteria loads. High background and other pathogen load sources.
- Elizabeth R. bacteria values entering city are very high, not meeting WQS and non CSO impacted
- Elizabeth R. bacteria values u/s and d/s of CSO outfalls are similar
- Wet weather event data fall at upper end of observed values. Influence of general wet weather bacteria sources.

Consideration of Sensitive Areas Information

- Are sensitive areas present and require highest priority for CSO control?
- Draft report under review

Criteria	Present?
Outstanding National Resource Waters	**None**
National Marine Sanctuaries	**None**
Waters with threatened or endangered species and their habitat	Sturgeon (federally listed endangered and state endangered) identified but not critically dependent on the water. Impact from CSO discharge likely insignificant given life cycle, migration behavior, waterway use, and impacts from other pollution sources and environmental threats. **No sensitivity for higher priority.**
Waters with primary contact recreation	Fishing at Slater Park and Waterfront Memorial Park, and jet skiing through Arthur Kill have been observed but occasional and unusual use. No bathing beaches or access to channelized parts of river. **No sensitivity for higher priority.**
Public drinking water intakes or their designated protection areas	**None**
Shellfish beds	**None**

Public Participation Process Report



Public Involvement Activities

Public outreach and education event – Future City Environmental Day 4/27/2018

Opportunities for public engagement on CSO Long-Term Control Plan

Prior Meeting Comments

- Provide info on pending construction projects
- Send info to Elizabeth Chamber of Commerce for membership distribution
- Distribute info at Peterstown Community Center nature center and Phil Rizzuto Park outdoor pavilion
- Post info on City's social media pages
- Consult environmental planning commission and master planners

Public Involvement Activities (cont.)

Community Interface Assistance

Any feedback from your groups on the CSO issues?

What info do Team members need to facilitate public input?

What other resources are available?

Input on sewer system issues to be addressed

Areas of flooding

Sewer backups

Sewer infrastructure age & deterioration

Sewer bills

What is the most effective way to engage with the public for CSO awareness?

- Mail / bill stuffers
- Community events
- Displays at public buildings
- Website / social media
- News media
- Facility tours

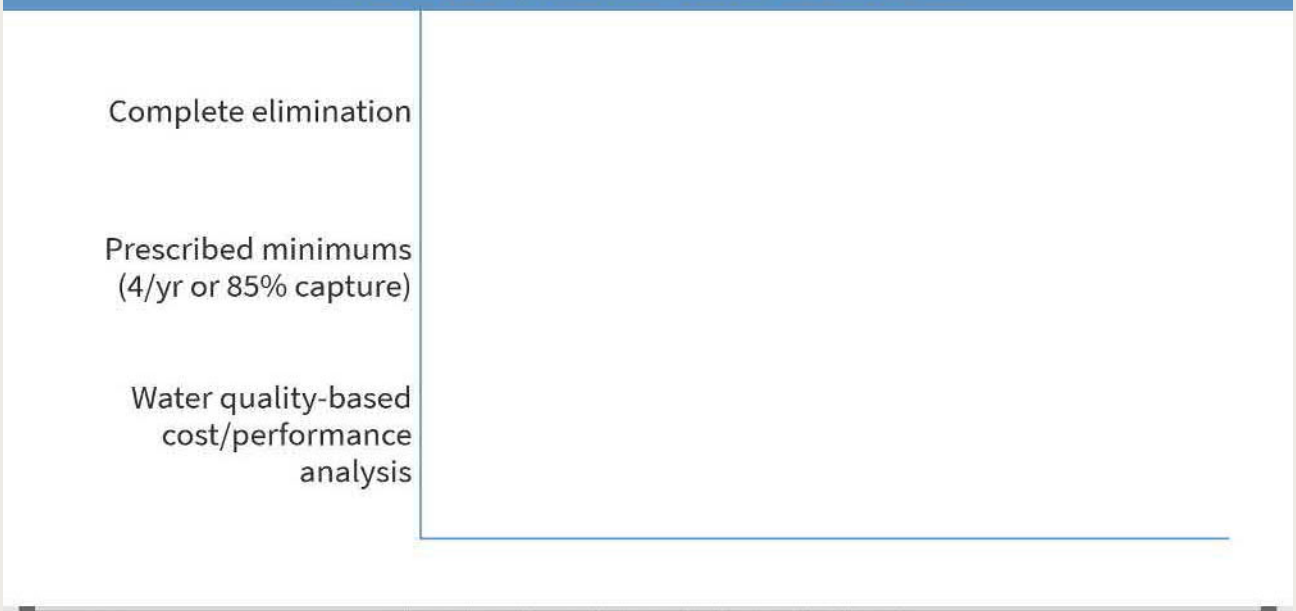
Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is the most important criteria in developing CSO controls?

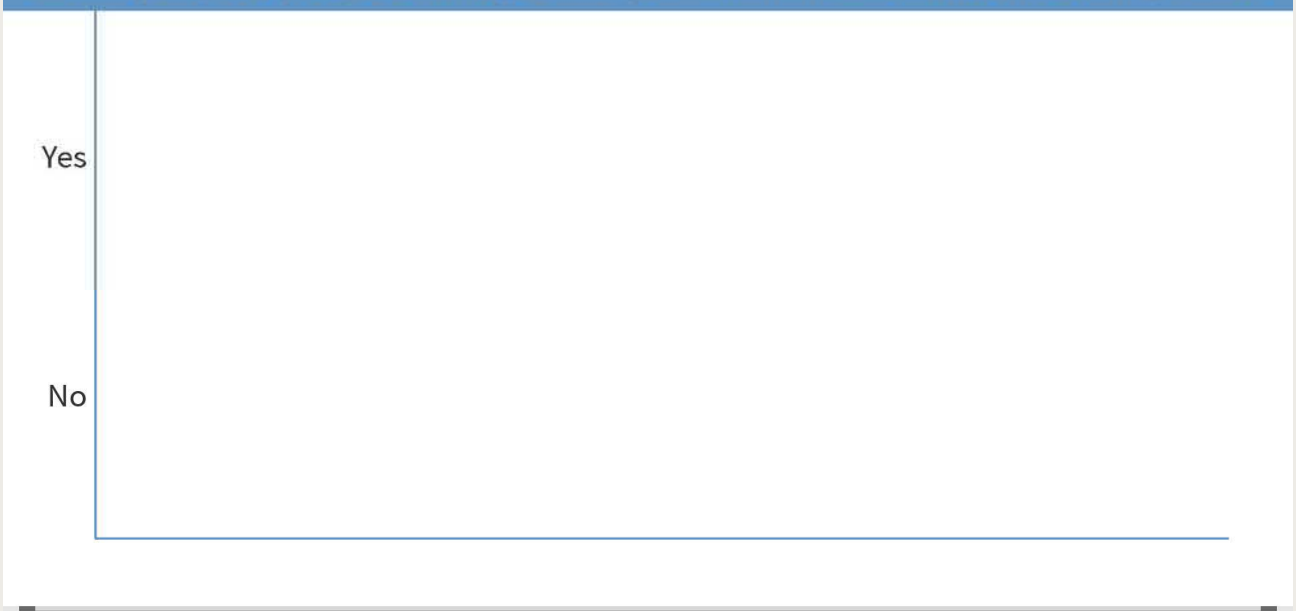
- Make waterway healthier for fish/wildlife
- Make waterway more usable by people
- Reduce overflows
- Keep rates as low as possible
- Green infrastructure / community spaces

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is your preferred level of CSO control?



Would you/your group be willing to add green elements at home, like a rain garden?

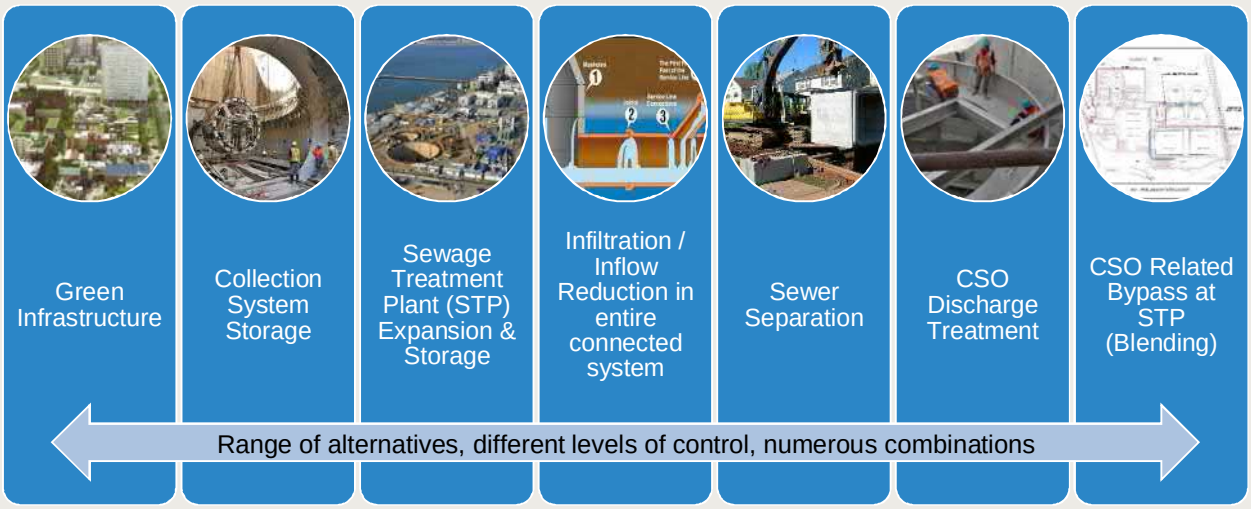


Alternatives Evaluation – Quick Look Ahead

National CSO Situation

- LTCPs for other CSO areas have largely been completed already – especially for larger systems, often under federal consent decrees
- LTCPs have produced huge (multi-billion $) CSO programs in many large, older cities – affordability is a major element of these LTCPs
- CSO programs are typically 4-5 year planning efforts (LTCP), followed by 20+ year implementation schedules
- CSO discharges are being reduced, eliminated or controlled by:
  - Separating combined sewers into storm and sanitary lines
  - Capturing CSOs in large storage tanks or tunnels for later treatment at the WWTP
  - Treating CSOs at or near the point of discharge with special high-rate treatment processes
  - Reducing the rate of stormwater runoff using green infrastructure facilities to capture stormwater before it enters the sewer
  - Control structures and adjustments to improve capture in existing sewers

Alternatives Evaluation – Quick Look Ahead



Alternatives Evaluation – Quick Look Ahead

Examples from other communities, green infrastructure

New York City

Philadelphia

Omaha, NE

Various Others

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, conveyance and storage tunnels

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, CSO storage basins

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, High-Rate CSO Treatment Facility

Next Meeting

- Early September (?)
- Agenda:
  - Results of member survey
  - Evaluation of Alternatives Analysis
    - Alternative categories for Elizabeth-JMEUC LTCP
    - Modeling the performance of different alternatives
    - Preliminary cost analyses

Questions?

Thank you

City of Elizabeth and
Joint Meeting of Essex & Union Counties (JMEUC)

Supplemental CSO Team

Meeting No. 4
Long-Term Control Plan Permit Compliance

C. Representative Press Releases, Public Announcements, and Flyers

This page left intentionally blank for pagination.

What's Going On Under Your Streets?

Follow Your Flush!

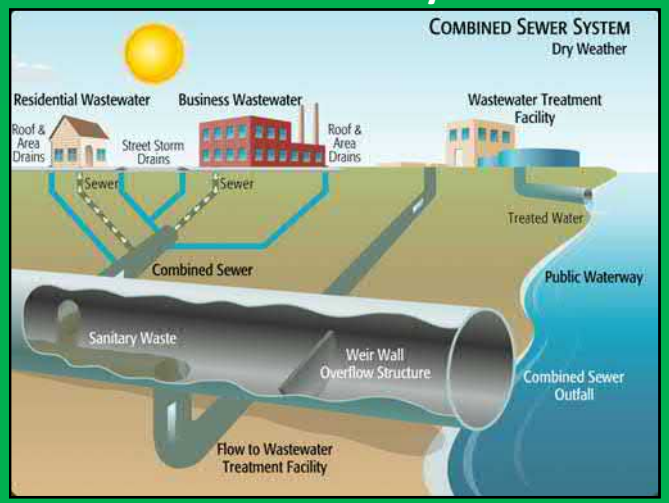
Source: SD1

1. Wet Weather Event (Rainfall)
2. Wastewater from your home (toilets, sinks, shower drains)
3. Combined Sewer Network = Sanitary + Storm Water
4. JMEUC Wastewater Treatment Plant
5. Combined Sewer Overflow (CSO) to Arthur Kill

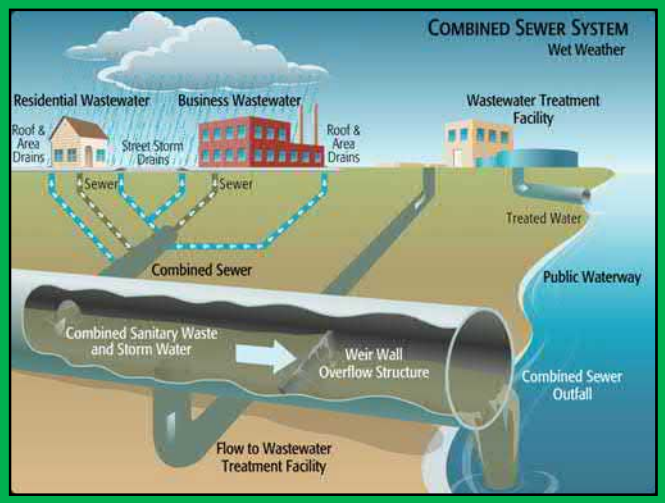
What is a Combined Sewer?

Most of Elizabeth's sewers are **combined sewers**, which means that they carry both sanitary sewage and stormwater in one piping system. When it rains, to prevent flooding at storm drains and in basements, the sewers fill up and release excess flow to nearby water bodies, called **Combined Sewer Overflows (CSOs)**. Elizabeth has **29 locations** where CSOs discharge, called **CSO outfalls**. During wet weather, untreated wastewater can be discharged to receiving streams including contaminants such as pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics and floatable matter. **Nets** along the outfalls catch floatables as a control measure. The City of Elizabeth is working with the New Jersey Department of Environmental Protection (NJDEP) and the US Environmental Protection Agency (EPA) to reduce the number of CSO events that take place every year to improve **water quality** in Elizabeth's receiving streams.

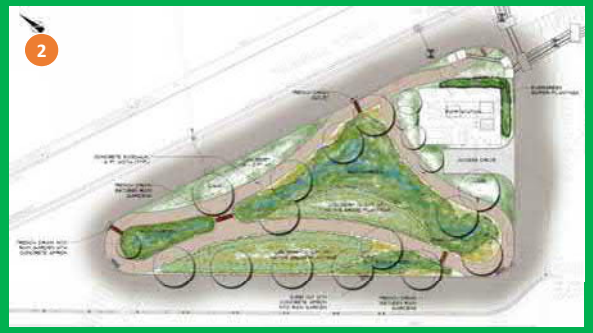
When it's dry…



When it's wet…

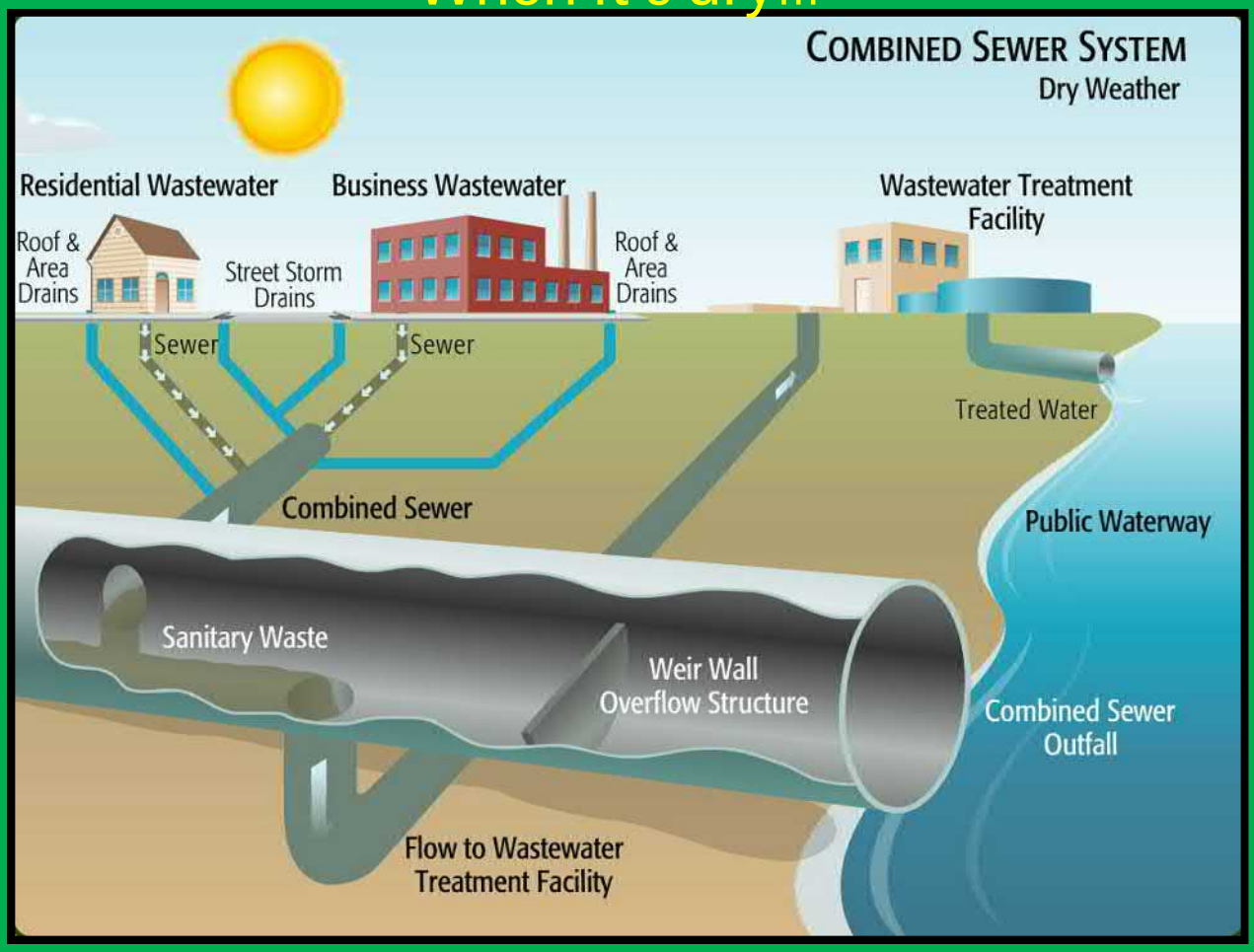


The City of Elizabeth,
Keeping Your Community Green & Clean

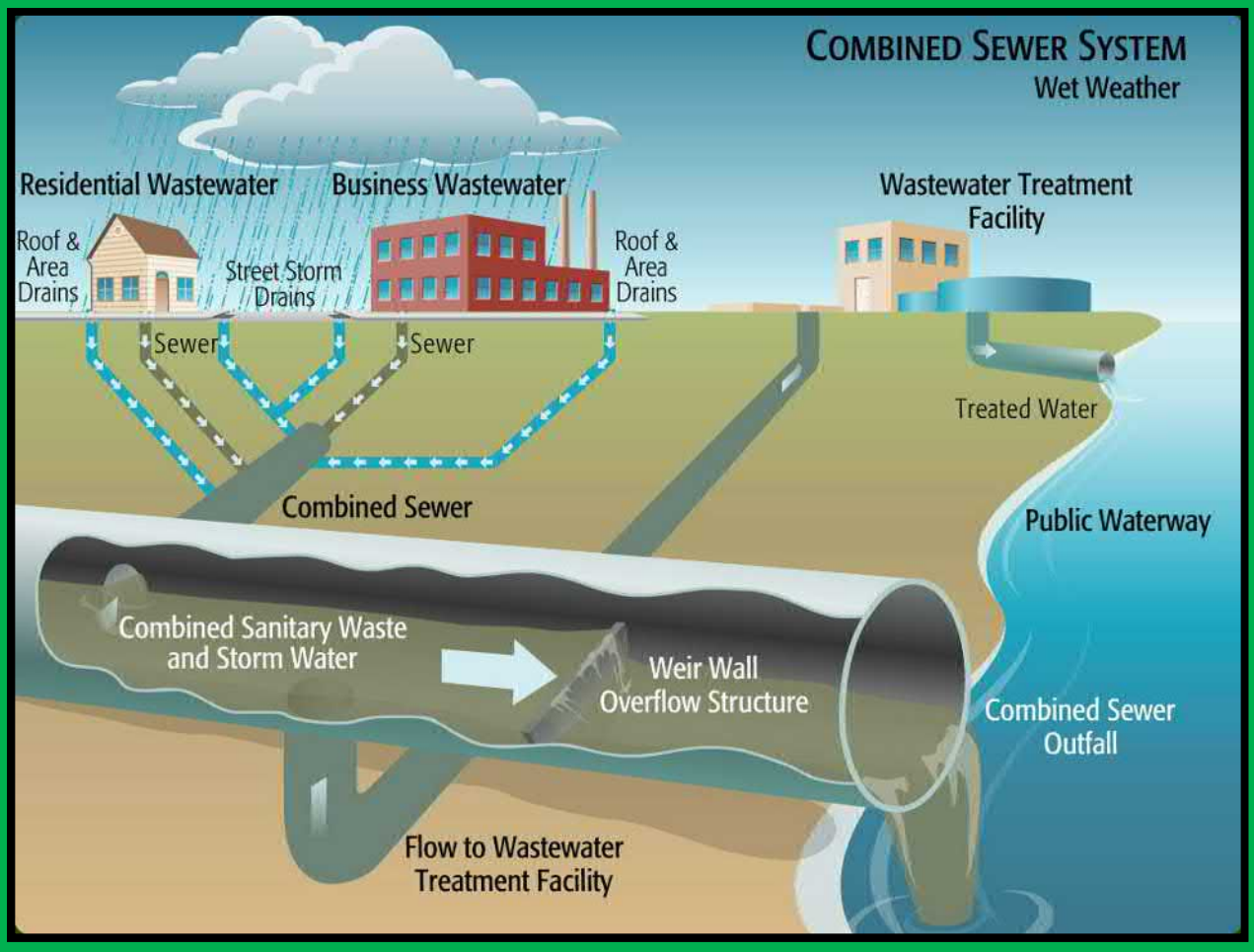


1. Trumbull Street Green Infrastructure (under construction)
2. Trumbull Street Green Infrastructure (architectural rendering)
3. Solids/Floatables Control Facilities – netting frame being lowered
4. Verona Gebhardt Pumping Station – box culvert
5. Levee along Elizabeth River
6. Headwall for Elizabeth River Levee
7. Verona Gebhardt Pumping Station – precast concrete structure

When it's dry...



When it's wet...



Soak Up the Rain with Green Infrastructure

www.epa.gov/soakuptherain

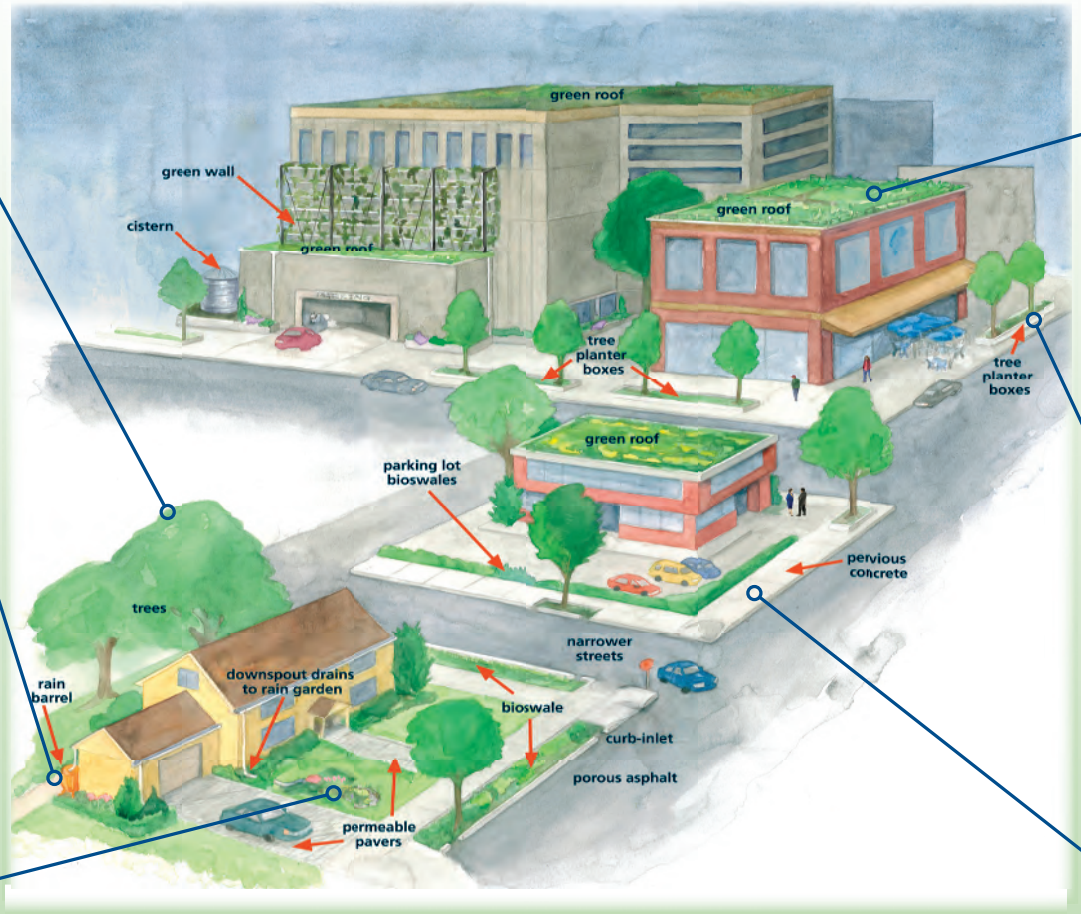
EPA United States Environmental Protection Agency

soak up the rain
created by U.S. EPA

Tree Canopy

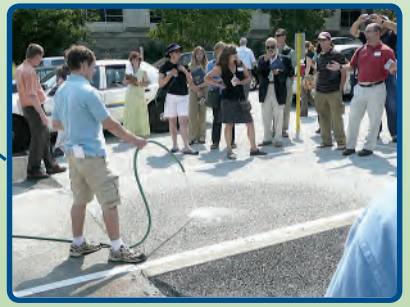
Rain Barrel

Rain Garden



Green Roof

Tree Planter Box



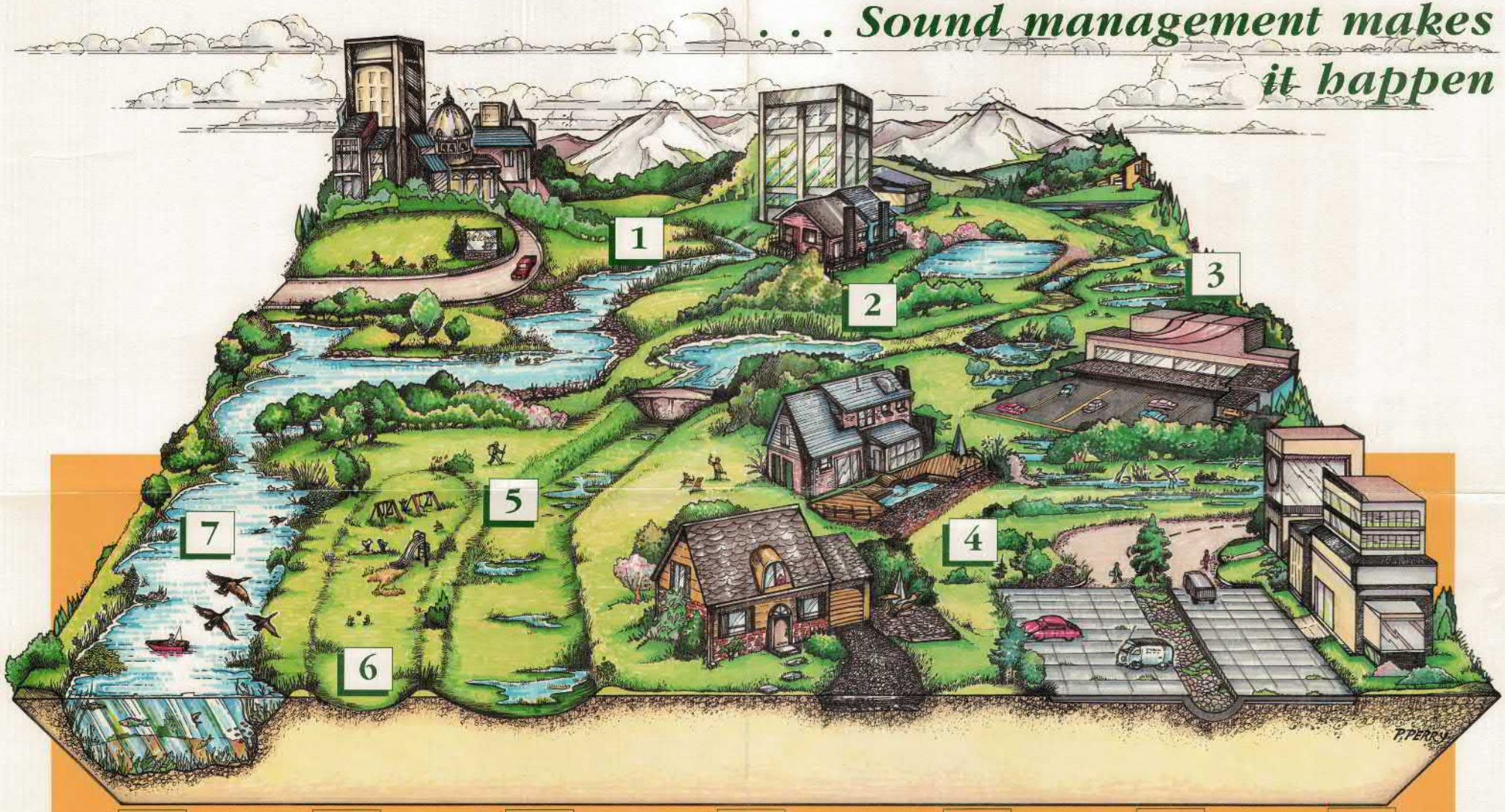
Pervious Concrete

Learn more. Take Action.

Poster created by U.S. EPA Office of Wetlands, Oceans and Watersheds.

URBAN WATER QUALITY

. . . Sound management makes it happen



1

Stabilizing stream banks — by planting vegetation and/or placing large stones along banks — helps control erosion and prevent downstream problems with water quality, aquatic habitat, and sedimentation.

2

Carefully designed stormwater retention ponds remove urban pollutants. Some pollutants can settle to the bottom of the ponds; others can be filtered through aquatic plants.

3

Urban pollutants — such as those that collect on paved areas — can be removed by establishing wetlands between the receiving water and the source of the runoff. Wetlands also provide habitat for waterfowl, marsh birds, and other wildlife.

4

Porous materials (pervious surfaces) — patio blocks, wood decking, porous pavement, and gravel — are better for the environment than non-porous materials (impervious surfaces). They allow some of the water to filter into the ground rather than all of the water to flow over the surface(s), washing pollutants into nearby waterbodies.

5

Grassed swales are useful in combination with other management measures for filtering out pollutants. They only have a limited effect when used alone.

6

Low areas can be used to temporarily store stormwater slow water velocity and help remove pollutants through settling and infiltration. These areas can be used for recreation during dry periods.

7

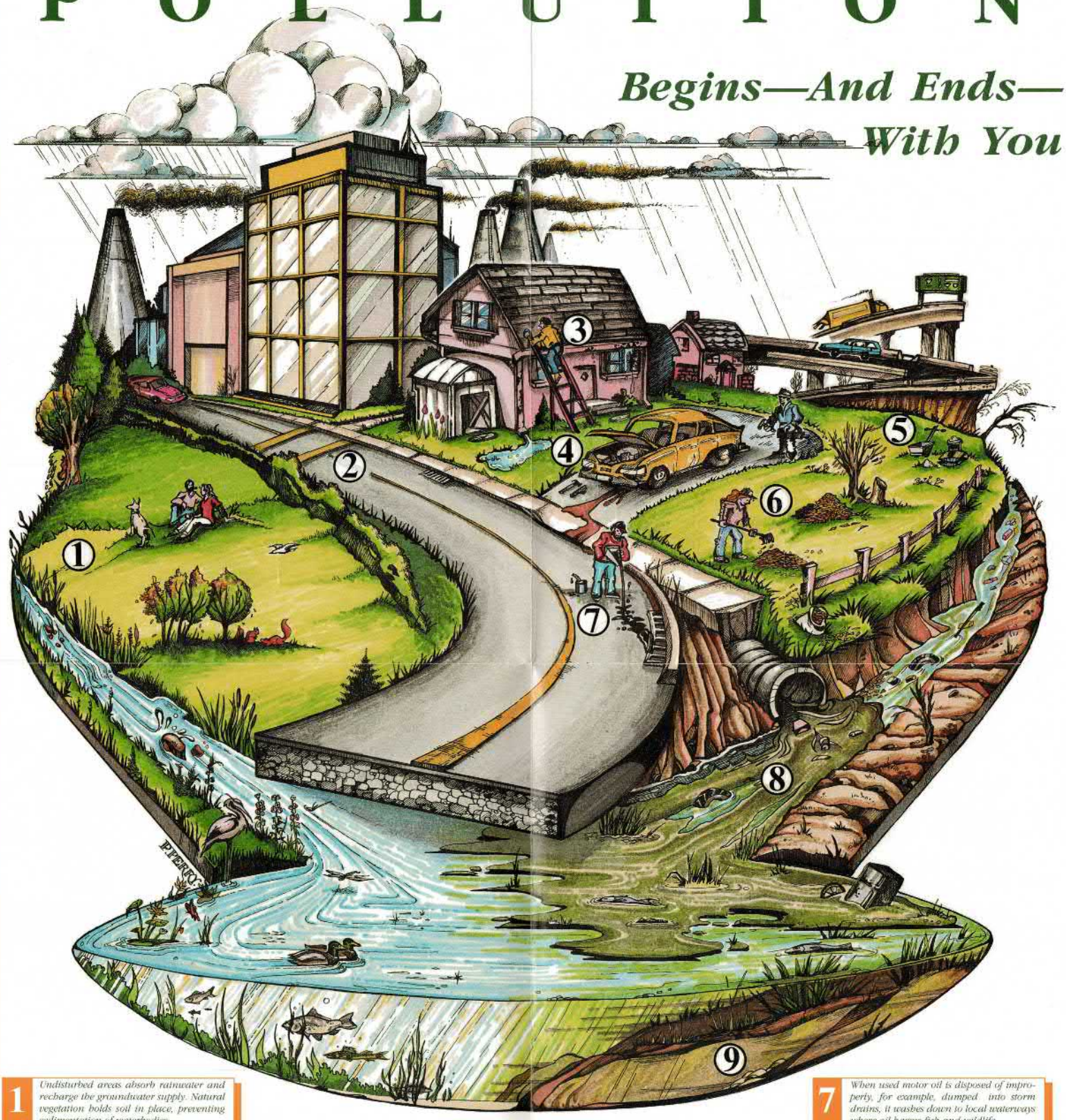
Urban runoff management measures all work together to prevent contaminants from entering waterbodies and thereby protect water quality and aquatic ecology.

For copies of this poster or more products, contact:
www.enviroscapes.com • learn@enviroscapes.com

EPA TERRENE INSTITUTE

POLLUTION

Begins—And Ends—With You



Everyday Water Quality Problems

1. *Undisturbed areas absorb rainwater and recharge the groundwater supply. Natural vegetation holds soil in place, preventing sedimentation of waterbodies.*

2. *Paving an area prevents absorption of rainwater, increasing the potential for flooding and erosion of soil into waterbodies.*

3. *Zinc from aging pipes, gutters, and metal roofs leaches into rainwater and enters the environment, where it may harm aquatic life.*

4. *Asbestos and copper—both potential pollutants—leach into runoff from car and truck brake linings and worn pipes and fittings.*

5. *Lawn and garden fertilizers enter runoff and increase nutrient levels (nitrogen and phosphorus) in waterbodies. Excessive nutrients stimulate algae and aquatic weed growth, choking waterways and robbing fish of oxygen.*

6. *Waste from leaf and grass clippings, garbage, animal droppings, and other organic debris pollutes runoff. The decaying organics deplete oxygen levels in water and affect fish.*

7. *When used motor oil is disposed of improperly, for example, dumped into storm drains, it washes down to local waterways where oil harms fish and wildlife.*

8. *Trash thrown directly into lakes, streams, and wetlands is unsightly, may hurt aquatic life and may pollute the water as it decays.*

9. *Sediment accumulates in waterbodies from soil erosion and destroys feeding grounds for aquatic life, clogs fish gills, blocks light transmission, and increases water temperatures.*

For copies of this poster or more products, contact:
www.enviroscapes.com • learn@enviroscapes.com

EPA TERRENE INSTITUTE

US Army Corps of Engineers®
New York District

MEDIA ADVISORY

Media Invited to Join School Students as they celebrate Estuary Day
Great opportunity to showcase Students and Agencies committed to a greener future

CONTACTS:

Elizabeth River/Arthur Kill Watershed Association
Michelle Doran-McBean
(908) 230-9126

U.S. Army Corps of Engineers
New York District
Public Affairs Office
(917) 790-8007

City of Elizabeth, N.J.
Mayor's Office
(908) 820-4170

ELIZABETH, N.J. (October 6, 2017) - Estuary Day is an annual daylong event that involves hundreds of science students from area schools and the mentorship from various participants from the City of Elizabeth, Federal and State agencies, and environmental organization.

The event's focus about the importance of the estuary, environment, and science education.

In its' 17th year, the event is sponsored by the Elizabeth River/ Arthur Kill Watershed Association.

Details follows:

When: October 6, 2017
Time: 9 a.m. to 2 p.m.
Welcoming Ceremony: 11:30 a.m. in the Blueway Room
Where: Peterstown Community Center
Address: 418 Palmer Street, Elizabeth, N.J. (Map attached)

Students will be grouped by their respective schools and join participants, partners and supporters as they interact in a classroom environment. Event participants include the City of Elizabeth mayor's office, U.S. Army Corps of Engineers, U.S. Coast Guard, Kean University, New York/New Jersey Baykeeper, Office of U.S. Sen. Robert Menendez, Office of Rep. Albio Sires (NJ-13), Infineum, Phillips 66, and Veolia.

[MORE]

2-2-2 Estuary Day

"From the beginning, Elizabeth Estuary Day has been a significant ongoing partnership of federal, regional, state and city leadership to collaborate and develop ongoing estuarian education for our local science students. This unique educational process required constant cooperation and thinking long term. Through a sustaining partnership, collaboration and respectful cooperation we are proactively impacting on our future estuarian stewards", said Michelle Doran McBean, Future City Inc. CEO and event sponsor. "*The Partners provide new knowledge and exposure for our students to then realize how special our city's location within the NY/NJ Harbor. Given the present and pending challenges of climate change impacting locally- the knowledge gained at Elizabeth Estuary. E-Day is very important to our students and city."*

"Our City of Elizabeth is situated within a world class estuary- The New York/New Jersey Harbor Estuary.," said Mayor J. Christian Bollwage. *"For the past 17 years, we have worked cooperatively to expose, inform, and educate our students to what our estuary is and why our estuary is so important to our city and region. We hope their educational commitment will encourage our students to become leaders in the Science Technology Engineering Mathematic fields."*

"The Army Corps is excited to participate in Estuary Day and to once again work with our partners to make this event a great success," said Joseph Seebode, the Army Corps' New York District Deputy District Engineer. *"We are looking forward to educating our future leaders, the students and to highlight the importance of our estuaries and environmental education."*

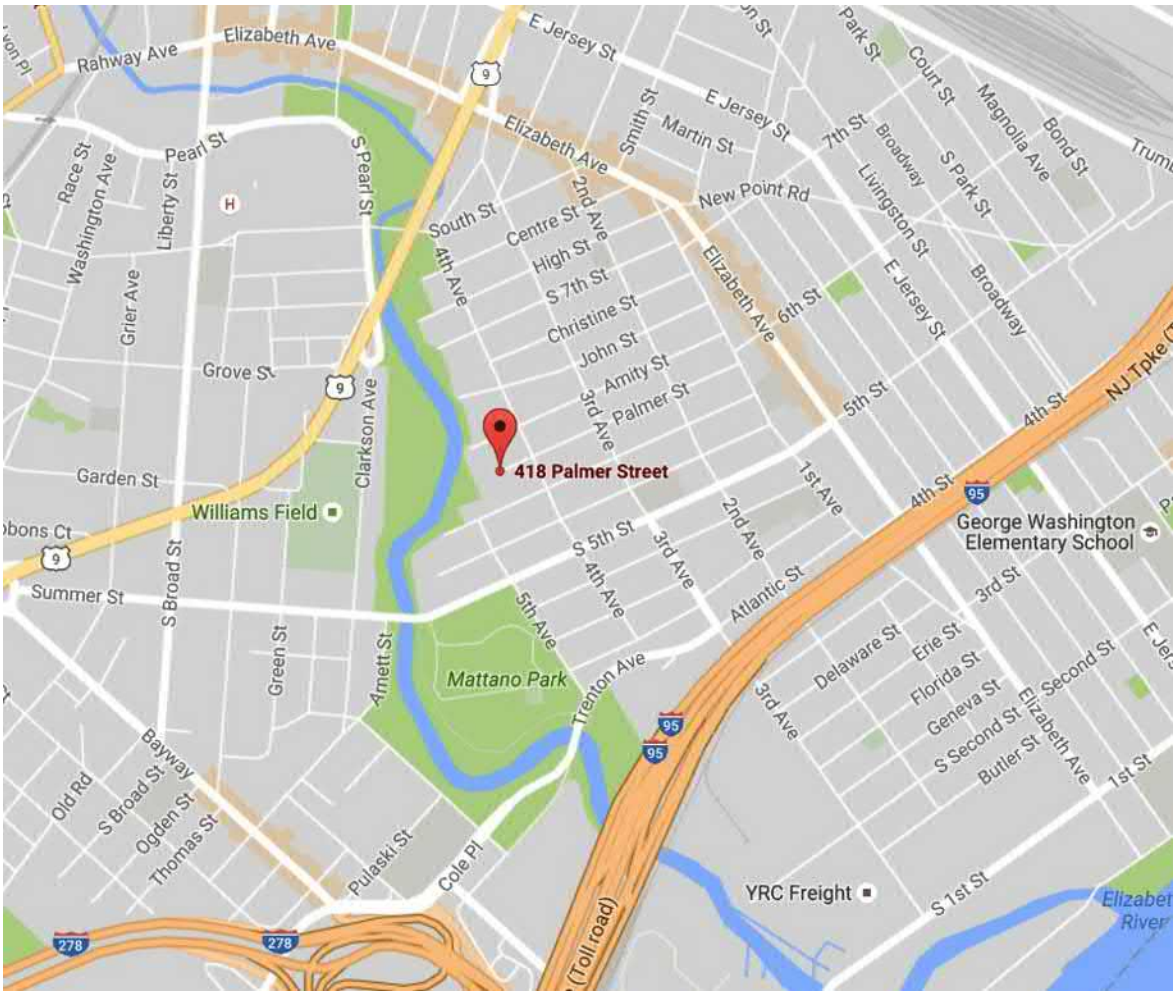
- School officials and the event sponsor have signed student waiver-releases authorizing the news media to record, photograph and interview students.
- Please park your vehicle in the lot adjacent to the Peterstown Center, and sign in at the check in table in the auditorium.

In addition to the media contacts, the following personnel are available to speak about this event:

- Tim Hillmann, Office of U.S. Sen. Robert Menendez, Phone: (973) 645-3030
- Erica Daughtry Office of U.S. Rep. Albio Sires, Phone: (201) 222-2828
- Debbie Mans NY/NJ Baykeeper, Phone (973) 641-4565
- For questions about the venue please contact the sponsor at (908) 230-9126.

www.futurecityinc.org

Disrection/Map>



www.futurecityinc.org

City Council

Overview
Our Mayor
Press Releases
Council Members
Council Meeting Dates & Minutes
Council Agenda
Planning Board Agenda
Zoning Board of Adjustment
Licenses & Forms
Ward Maps
Vital Statistics
Departments
Notices
Partnerships
Ordinances
2016 Master Plan

Useful Links

Board of Education
City Codes

MAYOR BOLLWAGE ANNOUNCES FLOOD REDUCTION AND GREEN IMPROVEMENTS FOR TRUMBULL STREET

FOR IMMEDIATE RELEASE
Contact: Kelly Martins
908-820-4124
Public Information Office

MAYOR BOLLWAGE ANNOUNCES FLOOD REDUCTION AND GREEN IMPROVEMENTS FOR TRUMBULL STREET

ELIZABETH, NJ - May 31, 2017 – Mayor J. Christian Bollwage, along with the support of Fifth Ward Councilman William Gallman, Jr., announced today that on or about Monday, June 5, 2017, the City of Elizabeth will begin construction on a new stormwater control system and an improved streetscape at Trumbull Street and Sixth Street.

"This project will remove an abandoned, deteriorating building; help reduce flooding in the area as well as provide the community with a new rain garden and green space," said Mayor J. Christian Bollwage. "We appreciate our residents' patience during the construction and look forward to the social and economic benefits this initiative will bring to the Fifth Ward neighborhoods."

Throughout the years, area residents, businesses and motorists have been impacted by chronic street flooding, which has caused traffic disruptions and access restrictions at this intersection. Like other urban areas in the United States, the City has a combined sewer system, which means that the municipal wastewater and rain water share the same pipe. In dry weather, sewage is conveyed to the wastewater treatment plant. In heavy rainfall, however, these pipes can become full and it is necessary to divert the excess flow directly to the waterway.

Therefore, as part of its continuing efforts to reduce these combined sewer overflows (CSOs), the City will be tearing down the existing, abandoned building and will be installing a 1-million-gallon tank under the triangular land parcel formed by Trumbull Street, Sixth Street and Bond Street. This effort will capture and temporarily store storm runoff from the surrounding drainage area. The system will include a pumping station and an above-ground control building to monitor and release the water at a controlled rate when levels in the combined sewer have subsided.

The land above the storage tank has been designed to incorporate green infrastructure elements, with rain garden plantings and walking paths that will absorb and infiltrate excess rain water at the site. Attractive landscape features will also be created to beautify the neighborhood.

The project is being funded in part through a green infrastructure principal forgiveness loan and other financial assistance from the NJ Department of Environmental Protection and Environmental Infrastructure Trust. It is expected to be completed by Summer 2018.

--30--

About

- Welcome
- Founding of Elizabeth
- Elizabeth Timeline
- City Seal
- Facts
- Contact Information

City Hall

- Overview
- Our Mayor
- Council Members
- Council Meeting Dates & Minutes
- Council Agenda
- Planning Board Agenda
- Licenses & Forms
- Vital Statistics
- Ward Maps
- Departments
- Board of Education
- City Code of Ordinances
- Notices
- Partnerships

Community

- Hazard Mitigation Plan
- Living In Elizabeth
- Elizabeth Home Improvement Program
- Neighborhoods
- Elizabeth Lead Coalition
- Events
- Block Watch Meetings
- Neighborhood Connections
- Photo Gallery
- City of Elizabeth YouTube Channel
- Our City Newsletter
- Vacant/Foreclosing Property Registration Ordinance
- Safe Home Community Safety Tips

Business

- Overview
- Economic Development
- HOPE VI
- Midtown Pedestrian Plaza
- Urban Enterprise Zone
- Licenses and Forms
- Public Notices
- RFQs
- RFPs
- Ordinances
- Department of Labor
- Purchase and Property
- Chamber of Commerce

Attractions

- Parks & Recreation
- Shopping
- Midtown & More
- Hotels
- Shop, Play & Stay, At 13A
- Festivals & Events
- Events
- Map
- Libraries
- Elizabeth Avenue
- Tour de Elizabeth

Services

- Youth Services
- Safe Haven
- Fire Department
- Municipal Court
- Municipal Court: Forms and Useful Links
- City Ordinance-Payable Violations
- The S.O.A.R. Program
- Building Future Leaders
- Office on Aging
- PSE&G
- 2017 Garbage and Recycling Brochure
- Elizabeth Municipal ID Program
  - EMID Application - English

WHEN IT RAINS IT DRAINS

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

EPA United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

THE YEAR OF CLEAN WATER
Celebrating a Recommitment

Internet Address (URL) • HTTP://www.epa.gov
Recycled/Recyclable • Printed With Vegetable
Oil Based Inks on 100% Postconsumer,
Process Chlorine Free Recycled Paper

After the Storm

A Citizen's Guide to Understanding Stormwater

WHEN IT RAINS IT DRAINS

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.

- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

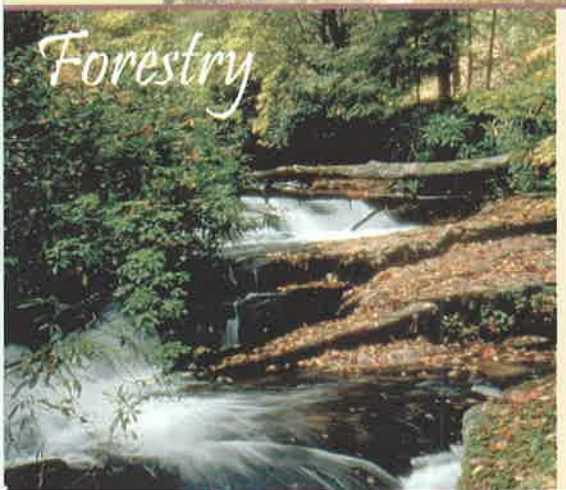
- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

Construction

Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

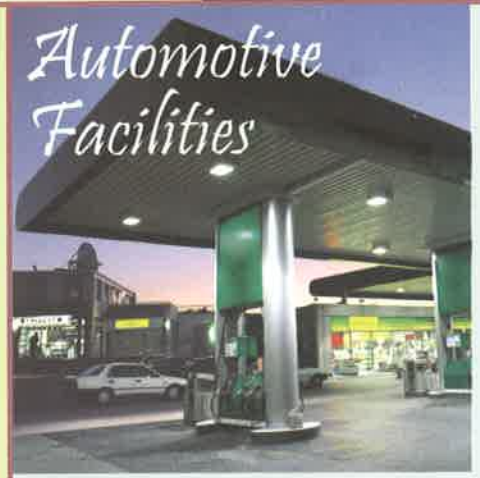
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

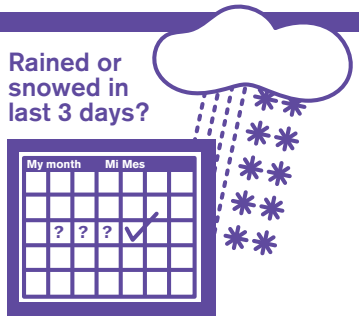
- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

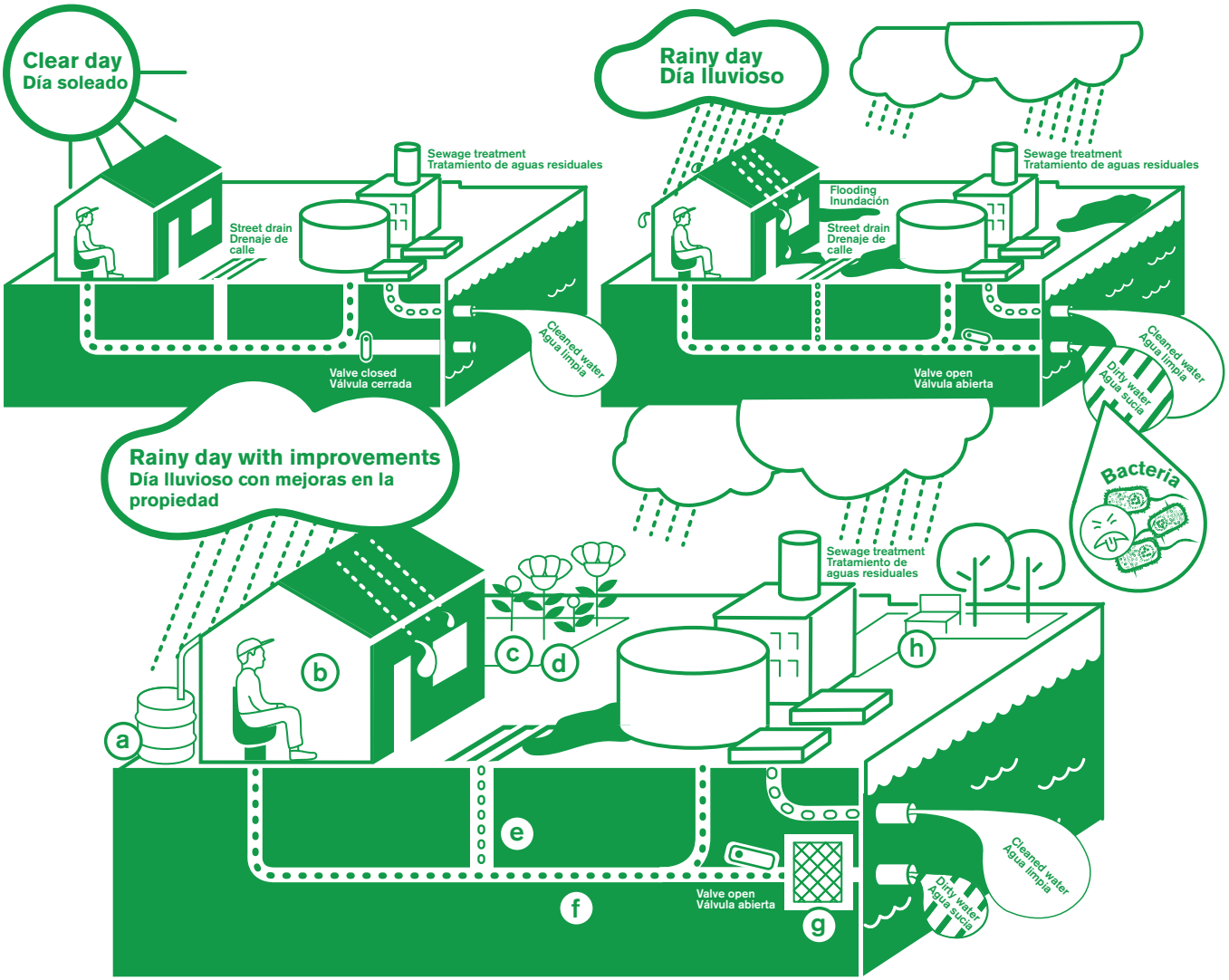


Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.





To control sewer overflows, you can do things like:
Para controlar los desbordamientos de alcantarillado, puede hacer cosas como:

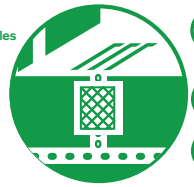
a Rain barrel
Contenedores de aguas pluviales

b Use less water
Usa menos agua

c Rain garden
Jardines sustentables

d Pavement removal
Eliminación del pavimento

Cities & utilities can & are doing things like:
Las ciudades, companias de utilidades, y servicios públicos pueden y están haciendo cosas como:

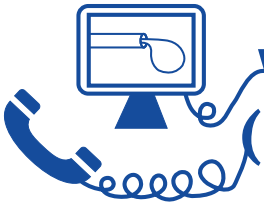


e Separate storm & sanitary sewage
Separar los alcantarillados pluviales de los alcantarillados sanitarios

f Replace old pipes
Reemplazar tuberias viejas

g Install screening chamber
Instalar un tamiz o cribado para la eliminación de sólidos

h Build parks
Construir parques



www.nj.gov/dep/dwq/cso.htm
(MUA/Township (xxx)-xxx-xxxx)

CLEAN WATERWAYS
Healthy Neighborhoods

Controlling CSO's with Sewer Seperation

Like many other cities, the older portions of the sewer system carries both sewage and stormwater in a combined sewer system. During storms, a combined sewer system can be overwhelmed,and sewage and stormwater can overflow into our local waterways. This overflow is called combined sewer overflow (CSO). CSOs release pollutants and can be harmful to the environment.

Sewer separation is the conversion of a combined sewer system into two independent systems, sanitary and stormwater.

Sewer separation can be a disruptive, costly, and difficult undertaking. This process typically involves the disconnection of all sources of sanitary sewage flow from the existing sewer lateral leaving buildings, and the construction of a new sanitary-only sewer.

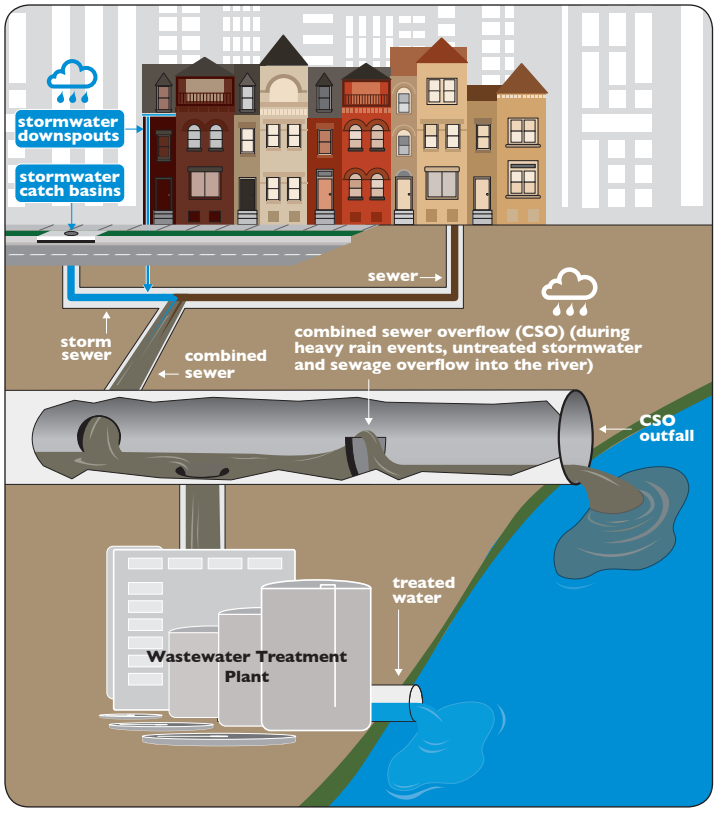
The new sanitary sewers convey sanitary sewage only to the sewage treatment plant. Complete sewer separation results in the elimination of all CSO events.

Although sewage is no longer discharged to the waterways with the new separated sewage system, polluted urban stormwater discharging into waterways may increase. This can be significant during early parts of a storm event, which may contain the highest pollutant concentrations.

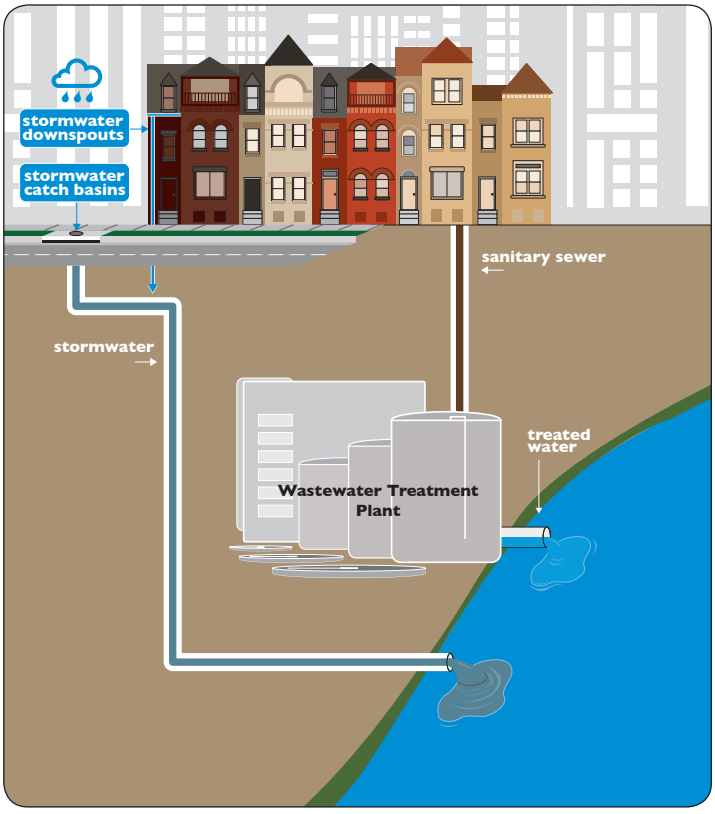
Alternately, green infrastructure practices can slow down, clean, and, in some cases reduce, stormwater runoff.

For more information, on combined sewer overflow management and its impacts, visit:
www3.epa.gov/npdes/pubs/sepa.pdf

combined sewer overflow (CSO) system



separated sewer system



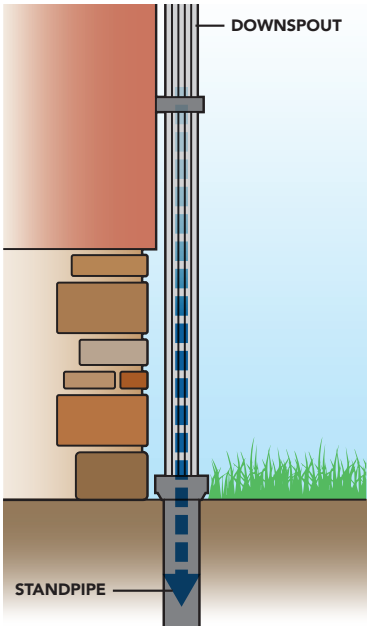
For more information contact: cleanwaters@cleanwaters.com / 555-555-5555

CLEAN WATERWAYS
Healthy Neighborhoods

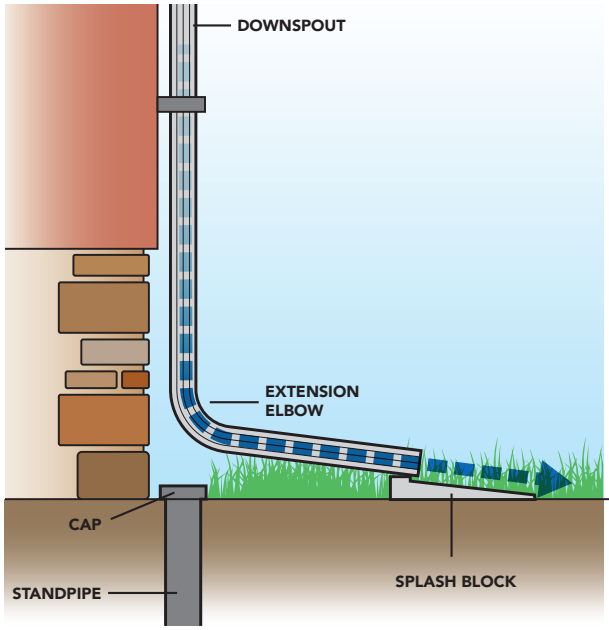
Downspout Disconnection

You can reduce combined sewer overflow (CSO) and help clean the waterways by disconnecting your downspout!

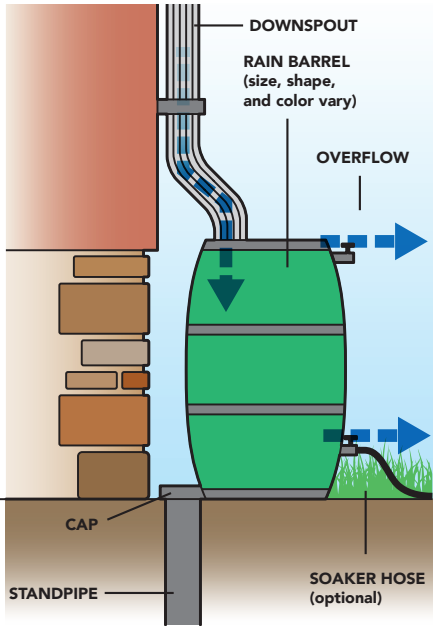
Like many other cities, the older portions of the sewer system carries both sewage and stormwater in a combined sewer system. During storms, a combined sewer system can be overwhelmed,and sewage and stormwater can overflow into our local waterways. This overflow is called combined sewer overflow (CSO). CSOs release pollutants and can be harmful to the environment. **Downspouts connected to the combined sewer system add to the CSO problem.**



Downspout Connected to the Sewer System – Downspouts connected directly to the combined sewer system contribute to CSOs.

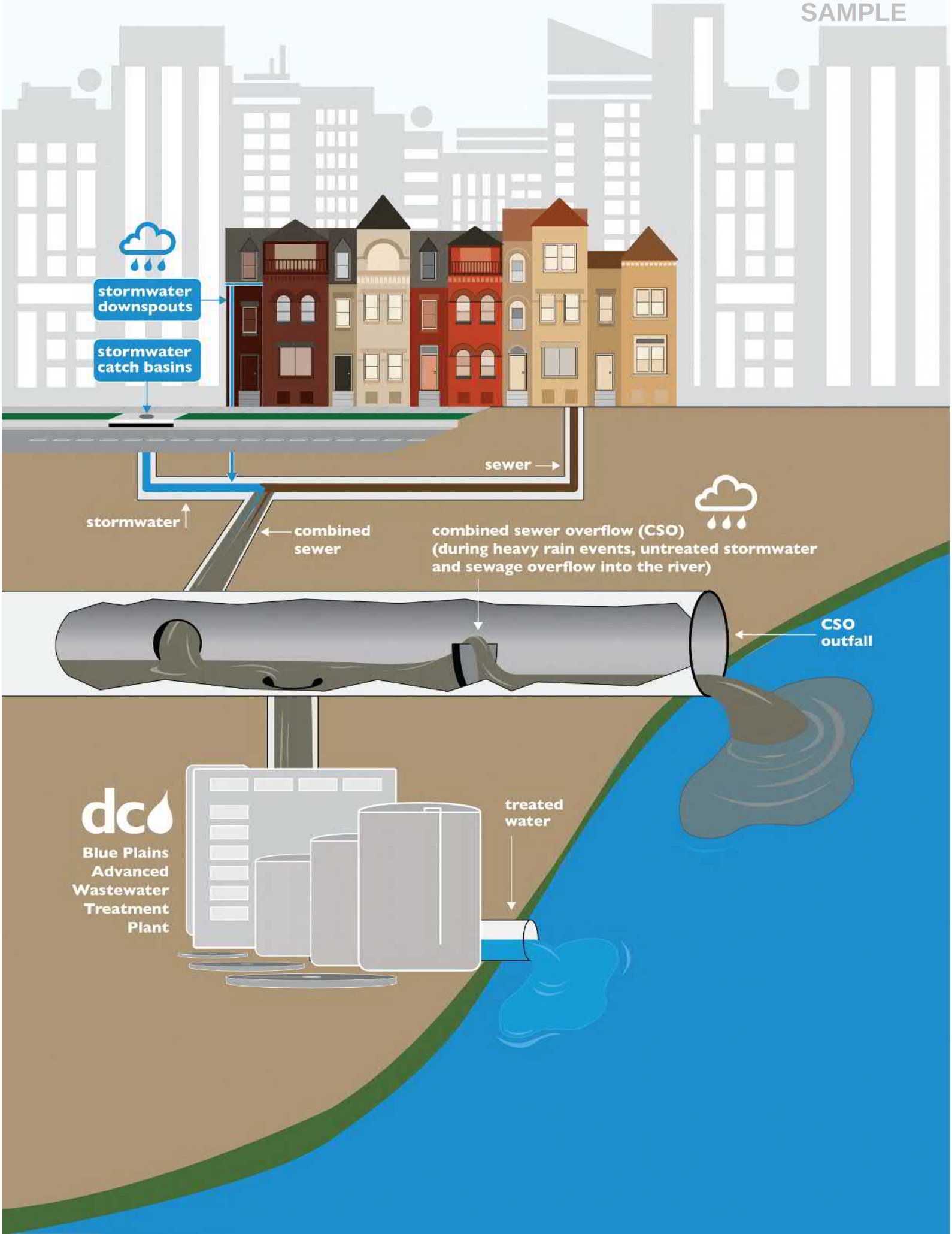


Downspout Disconnected from the Sewer System – Downspout disconnection reduces CSOs. The process involves cutting the downspout, attaching an elbow and extension to direct the water to an adjacent pervious area, and capping the standpipe.



Downspout Connected to the Rain Barrel – Downspouts can be connected to a rain barrel so that stormwater is collected and stored for non-potable uses (i.e., exterior washing, gardening).

For more information contact: cleanwaters@cleanwaters.com / 555-555-5555


stormwater downspouts
stormwater catch basins
sewer
stormwater
combined sewer
combined sewer overflow (CSO)
(during heavy rain events, untreated stormwater and sewage overflow into the river)
CSO outfall
dc
Blue Plains Advanced Wastewater Treatment Plant
treated water

TIPS TO RELIEVE THE SEWER SYSTEM WHEN IT'S RAINING

WHAT CAN YOU DO?

IN YOUR HOME & COMMUNITY

When it's raining you should avoid releasing more water into your drains because there's already a lot of rainwater flowing into the sewer system.

GREEN INFRASTRUCTURE (GI)

HAVE YOU HEARD OF GREEN INFRASTRUCTURE?

GI is a common alternative to absorb storm water instead of having it running to underground sewage. Here are some examples:

BIOSWALE

This oversized tree pit is filled with plants, sand, gravel, and engineered soil, which are specifically designed to absorb water. Inlets divert rainwater from the street into the bioswale instead of the storm drain.

RAIN GARDEN

A garden specially designed to absorb stormwater run-off from roads, parking lots, and sidewalks

RAIN BARREL

This container captures up to 50 gallons of stormwater runoff which would otherwise flow into the sewer. This water is not drinkable, but can be used for watering or washing outdoors.

POROUS PAVEMENT

This permeable surface allows stormwater to pass back into the ground instead of running off into storm drains. Surfaces like this also protect trees by accommodating root growth.