



# **Coney Island Creek Combined Sewer Overflow Long Term Control Plan**

---

Public Meeting #2

**Review of Alternatives**

New York Aquarium  
Education Hall  
April 20, 2016

# Welcome & Introductions

Mikelle Adgate  
Director, Stormwater Management Outreach  
BPA - DEP

## ➤ What is an LTCP?

- The goal of each LTCP is to identify appropriate CSO controls necessary to achieve waterbody specific water quality standards, consistent with the Federal CSO Policy and water quality goals of the CWA.

## ➤ The LTCP process:

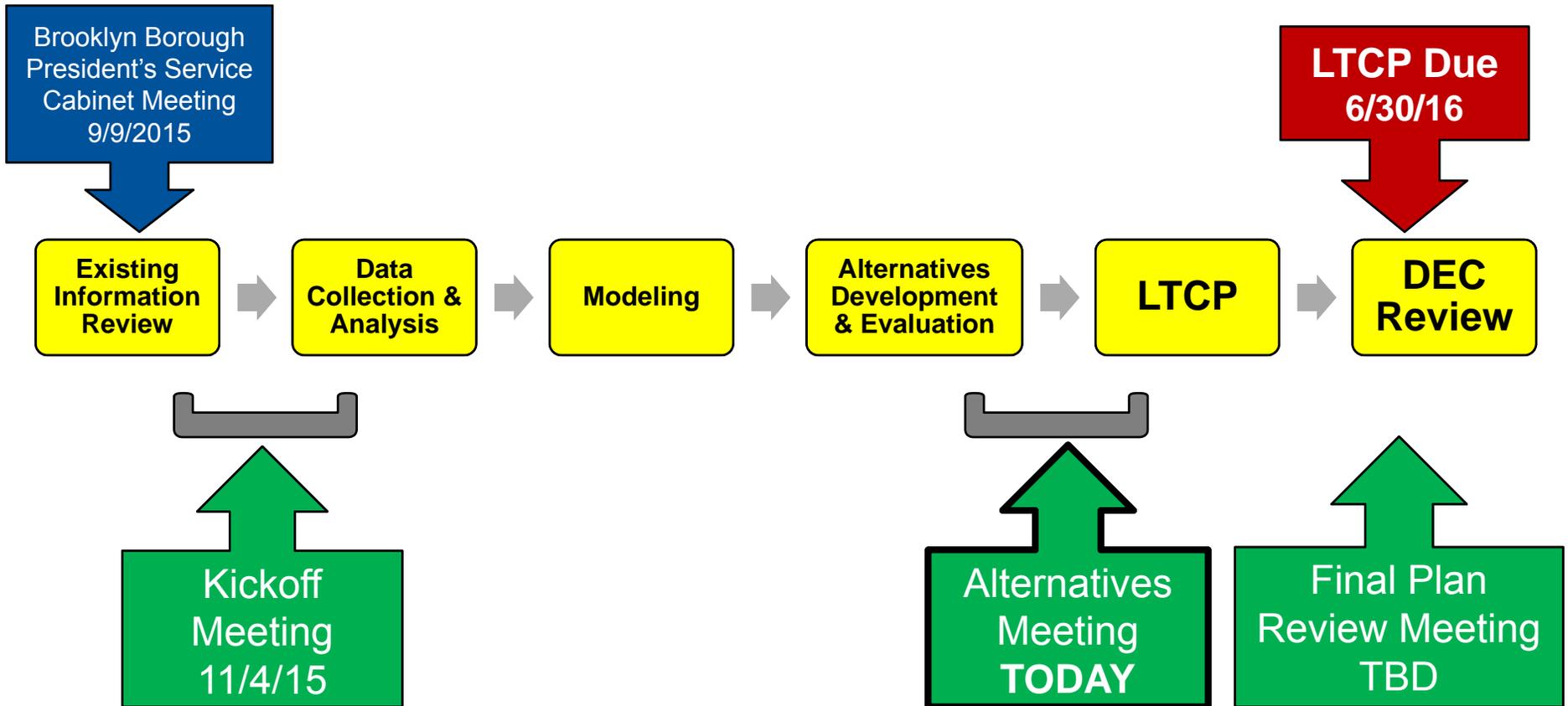
- Build off existing infrastructure investments (i.e. Waterbody/Watershed Plans)
- Assess current waterbody and watershed characteristics
- Identify and analyze **Grey-Green**\* infrastructure balance for different watersheds to meet applicable water quality standards
- Includes a public engagement process

### *Definitions:*

**Grey** = traditional practices such as pipes and sewers

**Green** = sustainable pollution reducing practices that also provide other ecosystem services

# LTCP Process and Public Involvement



**ONGOING PUBLIC/STAKEHOLDER INPUT**

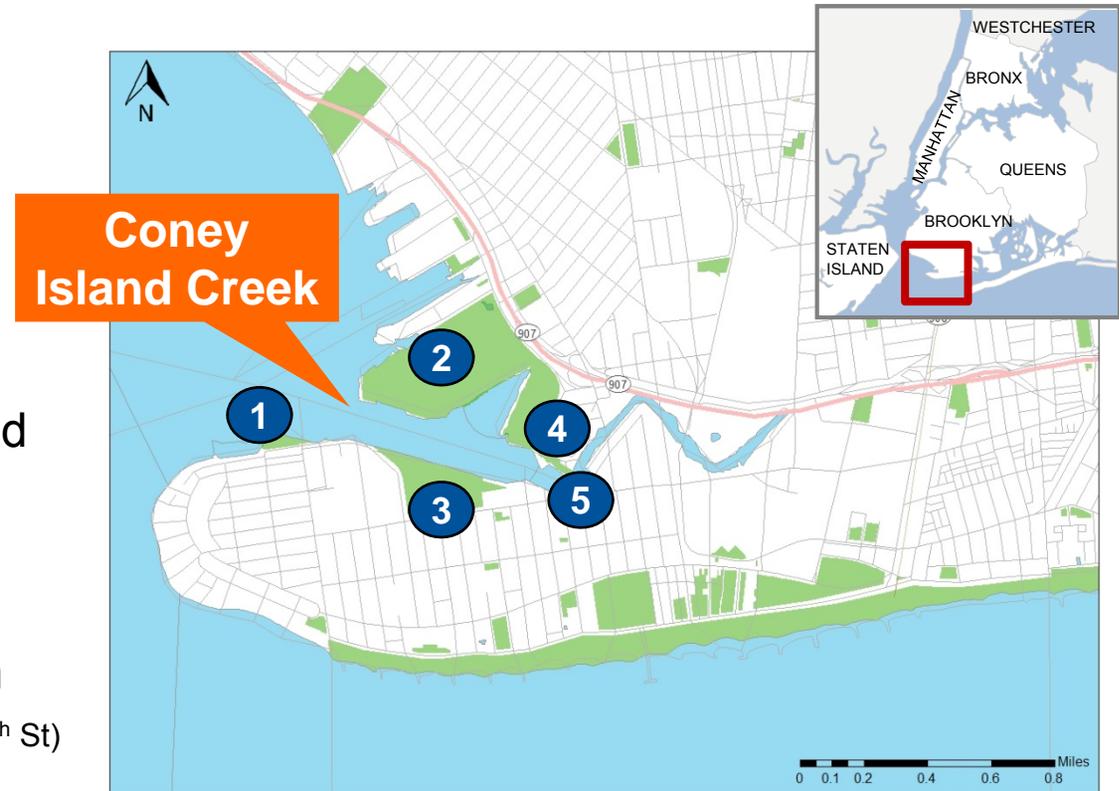
# Coney Island Creek Current Access and Uses

## ➤ Waterfront Public Access

- 1 Coney Island Creek Park
- 2 Calvert Vaux Park
- 3 Kaiser Park
- 4 Home Depot public park and walkway with seating

## ➤ Boat Access

- 5 Private boat dock at Marlen Gas Station (Neptune Ave & W 20<sup>th</sup> St)



1) Coney Island Park



2) Calvert Vaux Park



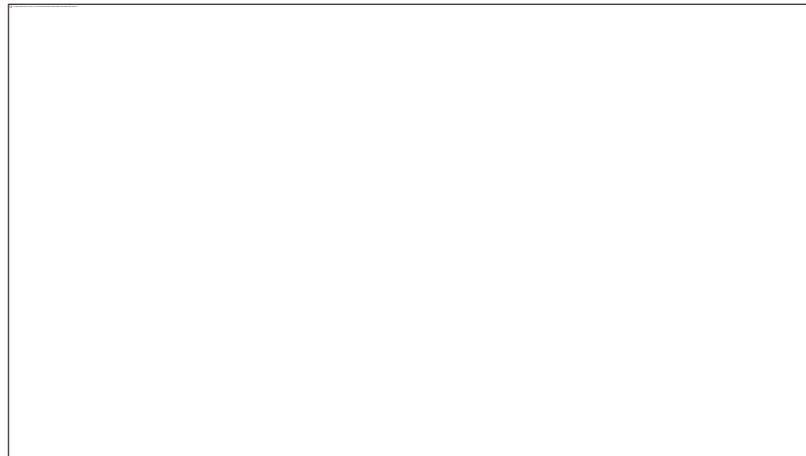
5) Marlen Gas Station  
Private Dock

# Public Comments

Keith Mahoney, P.E.  
BWT-DEP

# Public Comments Received

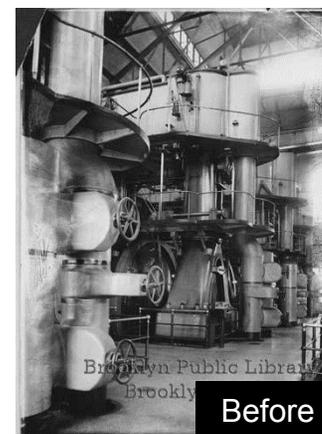
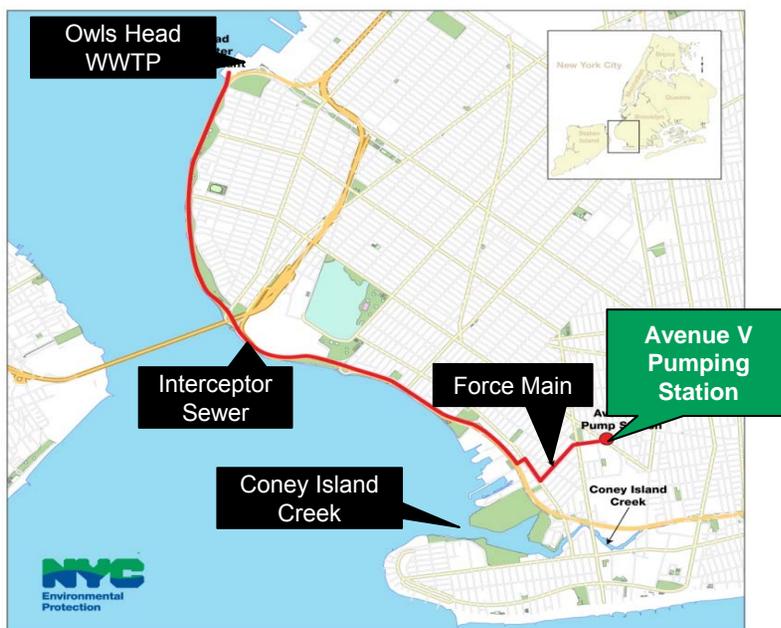
- 1 Evaluate **alternatives** that make the creek safe for fishing and swimming
- 2 Concerns about **legacy industrial contamination** in the creek
- 3 Elimination of **illicit discharges**
- 4 Assessment of **Green Infrastructure** in the vicinity of the creek



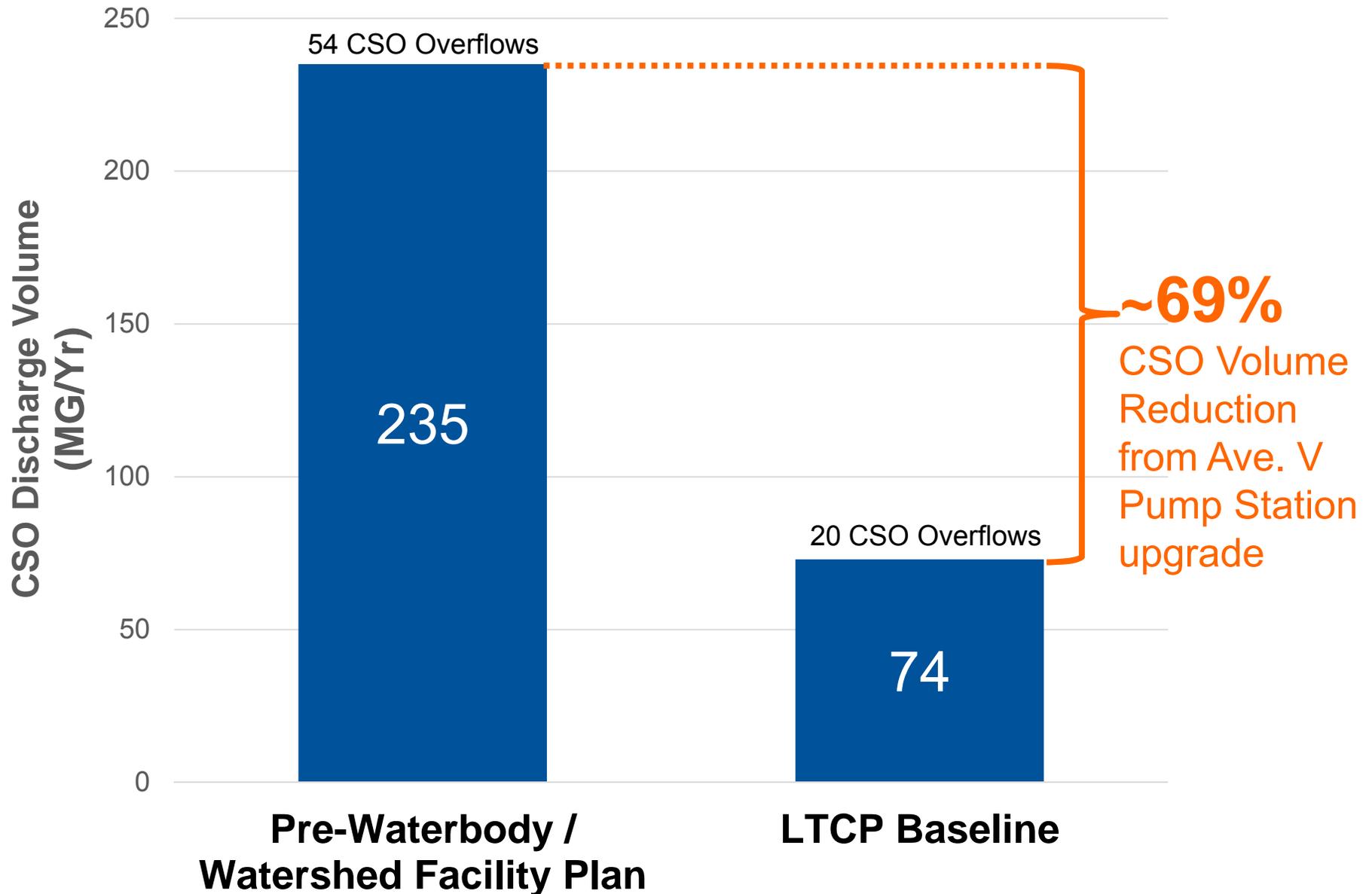
# 1

## Recent Investments: Ave. V Pumping Station

- Upgraded Pump Station from 30 MGD to 80 MGD and constructed new 42" dry weather and 48" wet weather force mains to convey wet weather flows away from Coney Island Creek
- The project was placed into service on October 17, 2014 with a total construction cost of \$196 Million

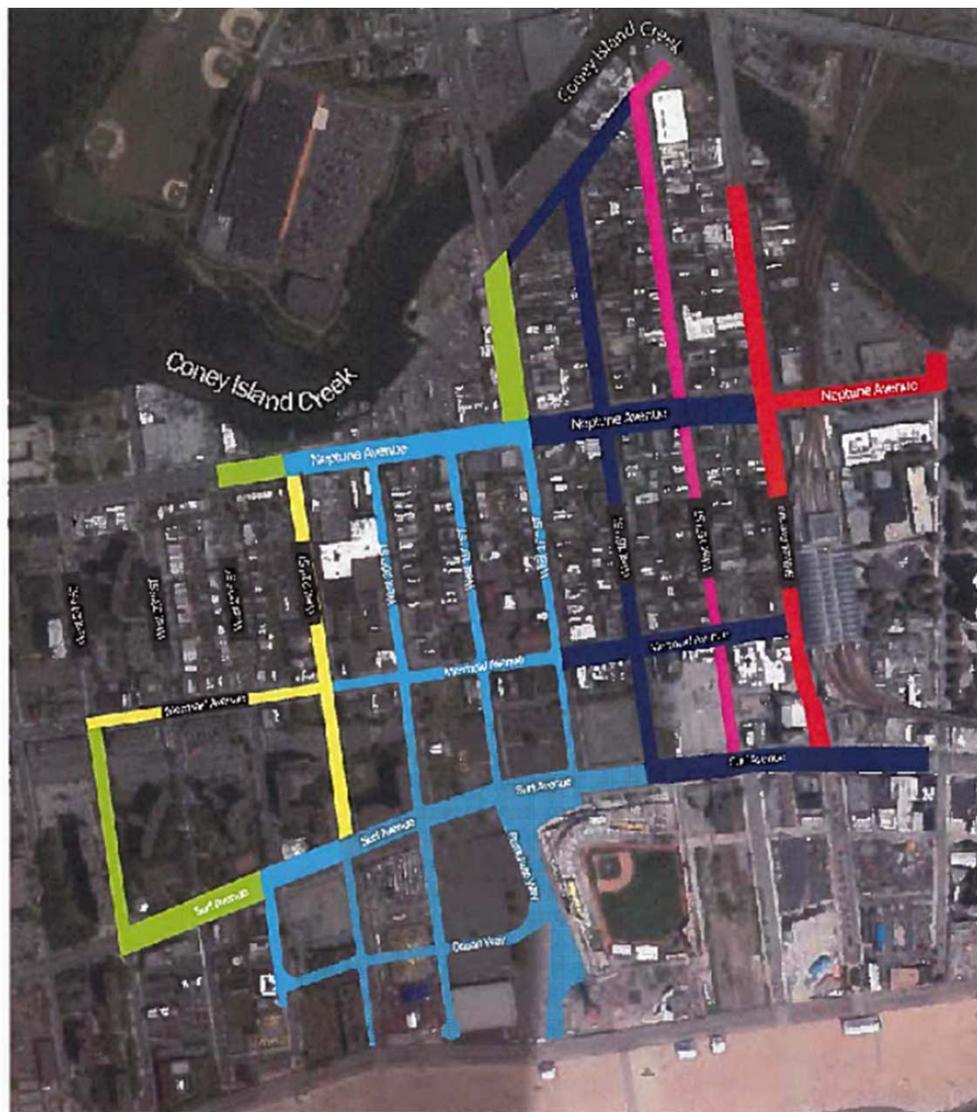


# Modeled CSO Volumes at Outfall OH-021

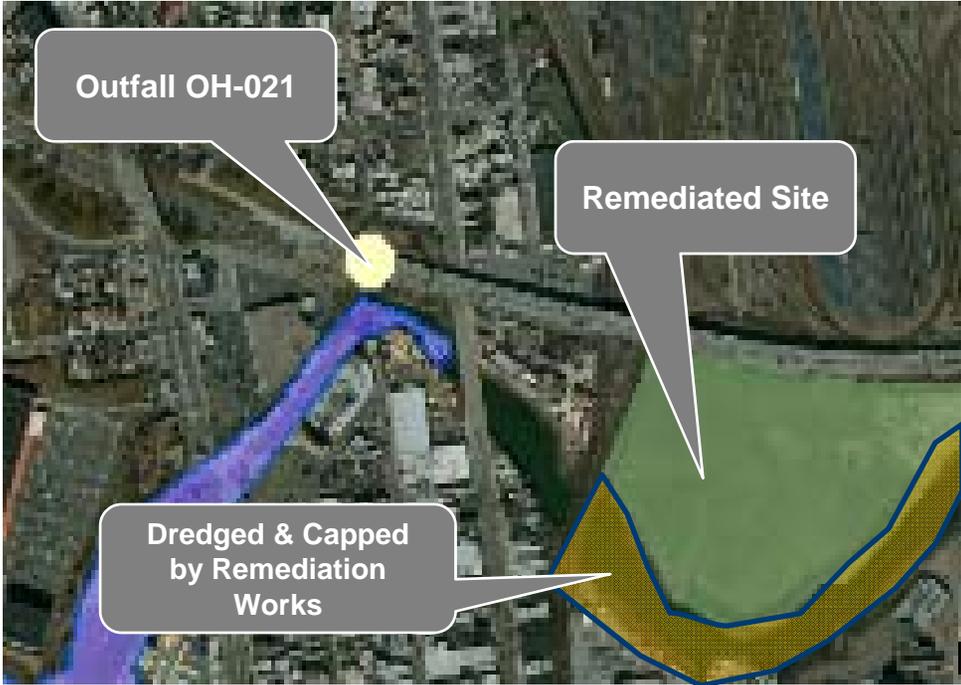


# Ongoing Sewer Construction

- Major ongoing sewer construction associated with DCP up-zoning to support Mayor's initiative for affordable housing
- Cost of this program is estimated at about \$100M
- Anticipated Construction:
  - Start by mid 2017
  - Complete by end of 2019

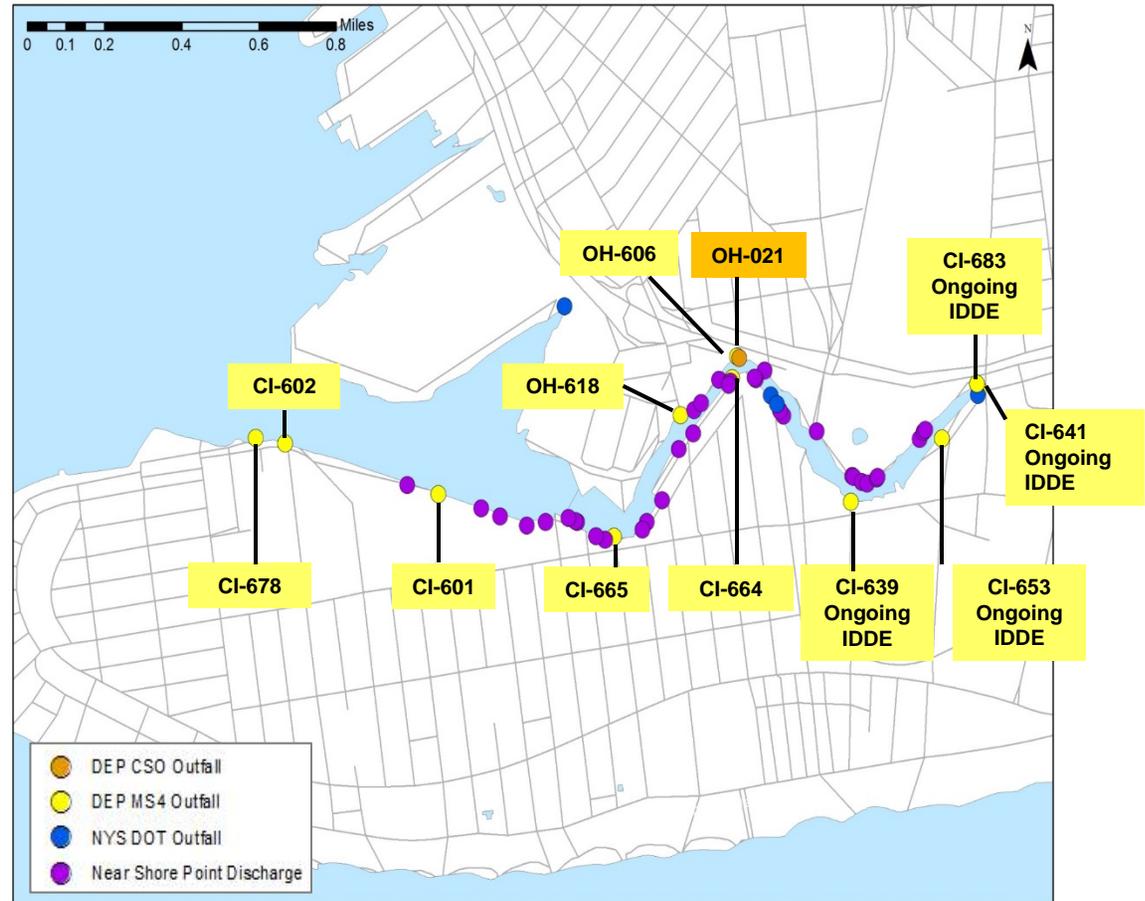


## NYSDEC ROD: Former Brooklyn Borough Gas Works site at the head end of Coney Island Creek and Environmental Dredging

- Contamination started in 1908
  - Release of MGP by-products (e.g. coal tar) has contaminated soil, groundwater and creek
  - Excavate/Cap landside contaminated areas
  - Restore 50' of Creek bank
  - Long-term monitoring is being conducted
- 
- The image is an aerial photograph of an urban area with a creek. Three callout boxes are overlaid on the image. The first box, labeled 'Outfall OH-021', points to a yellow dot on the creek. The second box, labeled 'Remediated Site', points to a green area on the right side of the creek. The third box, labeled 'Dredged & Capped by Remediation Works', points to a yellow area at the bottom of the creek. The creek is highlighted in purple.
- Upstream reach of the creek capped by prior remediation work (2006)
  - Approximately 60,000 cu. Yd. of contaminated sediment were mechanically dredged
  - Following dredging, excavated areas within the creek bed were backfilled and capped to a minimum depth of 3 feet.

# 3 Illicit Discharge Detection & Elimination (IDDE)

- Ongoing program to track-down and abate illicit connections to storm sewers.
- Significant reductions in illicit discharges into this waterbody since IDDE inception but there still appear to be some illicit connections.
- Recent IDDE Activities (as reported to DEC on 1/15/16):
  - 3 Near Shore Point Source outfalls reclassified to DEP MS4 outfalls
  - 2 DEP MS4 outfalls bulk-headed
  - 8 establishments improperly connected to storm sewer draining to CSO outfall OH-021, 7 are now in compliance, last, a private residence is under legal review



- NYC continues to evaluate and implement GI projects beyond those proposed in the LTCPs:
  - Bioswales being installed as part of the NY Rising Project
  - New MS4 right of way design will be piloted as part of the NY Rising Project
  - Ongoing coordination with NYCHA for additional GI projects



Bioswale

# Sampling and Modeling

# Coney Island Creek Drainage Area

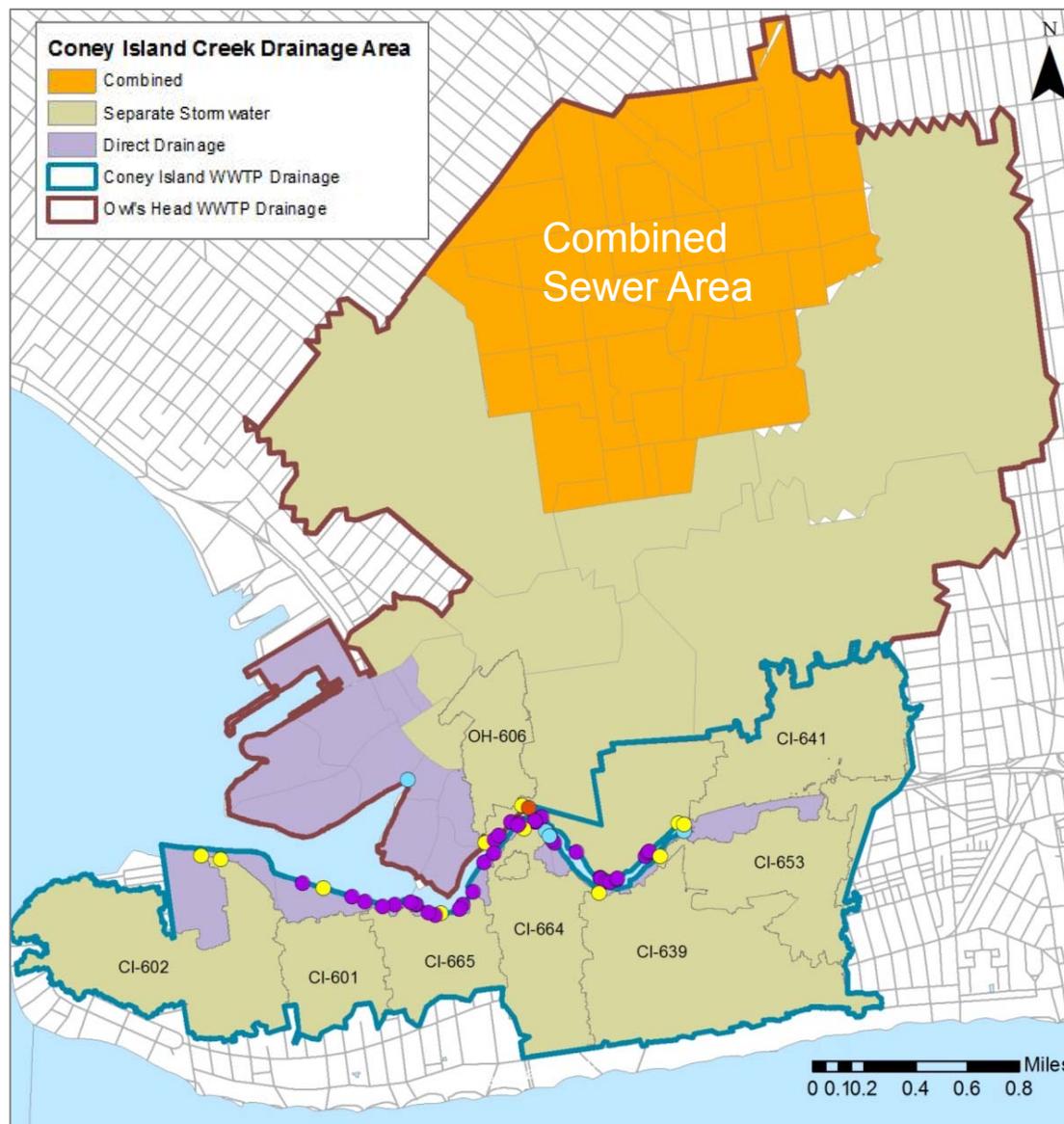
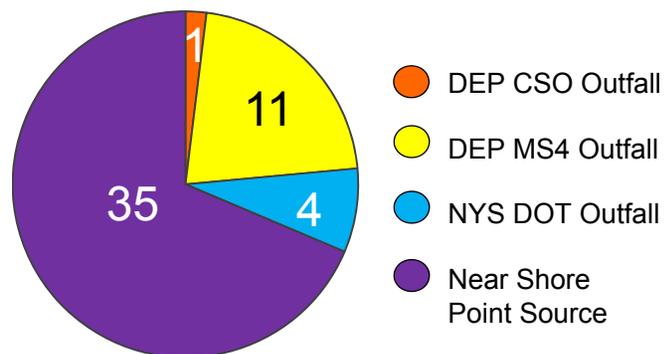
## ➤ Annual Wet-Weather Discharge Volume

(LTCP baseline values based on Calibrated Model for entire drainage area)

- 75 MG CSO (5%)
- 1,405 MG Direct Drainage and Stormwater (95%)

Drainage Area	
Total Acres	3,470
% Served by Combined Sewers	24%

## ➤ Number of Outfalls:



# Water Quality Standards & LTCP Goals

## CLASS I Boating/Fishing

The **best usage** of Class I water is **secondary contact** recreation and fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival. In addition, the water quality shall be suitable for primary contact recreation, although other factors may limit the use for this purpose.

Parameter	Criteria*	Reference
Fecal Coliform*	Monthly Geometric Mean ≤ 200 col/100 mL	• New rulemaking promulgated by DEC on November 14 <sup>th</sup> , 2015
Total Coliform*	Monthly Median ≤ 2,400 col/100 mL 80% ≤ 5,000 col/100 mL	• New rulemaking promulgated by DEC on November 14 <sup>th</sup> , 2015
Dissolved Oxygen	≥ 4.0 mg/L (acute, never less than)	• DEC water quality parameter

\* EPA has also proposed a potential future RWQC for enterococcus: 30 day Rolling GM ≤ 30 col/100 mL.

### ➤ CSO LTCP Goals and Targets:

- Attainment with primary contact pathogen standards during recreational season (May – Oct)
- Time to Recovery of less than 24 hours during the recreational season (Fecal ≤ 1,000 col/100 mL)

# LTCP Landside Sampling

## ▲ CSO Sampling Location

1 location

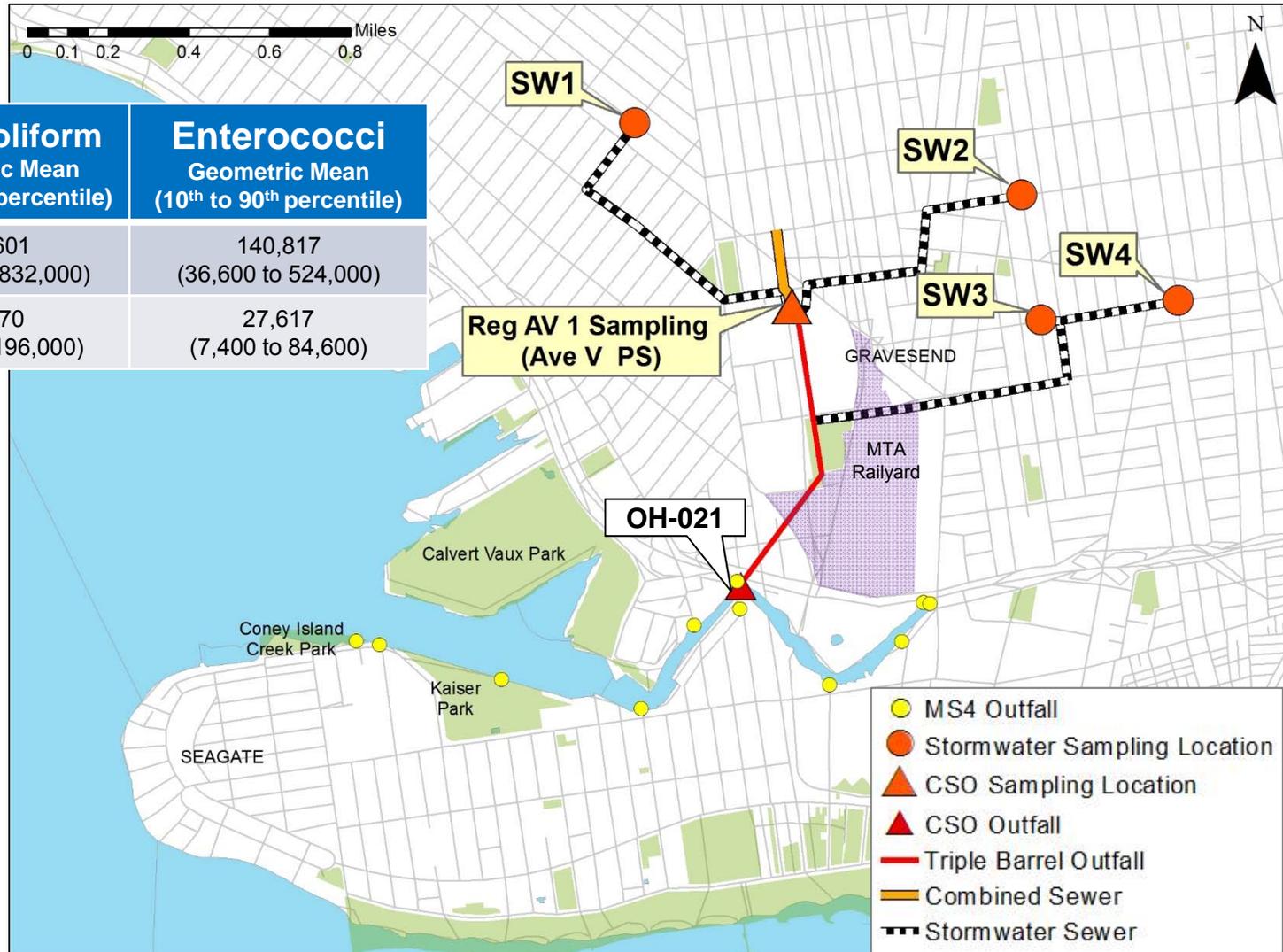
(6/15/15, 6/27/15, 7/15/15, 7/30/15)

## ● Stormwater Sampling Location

4 locations

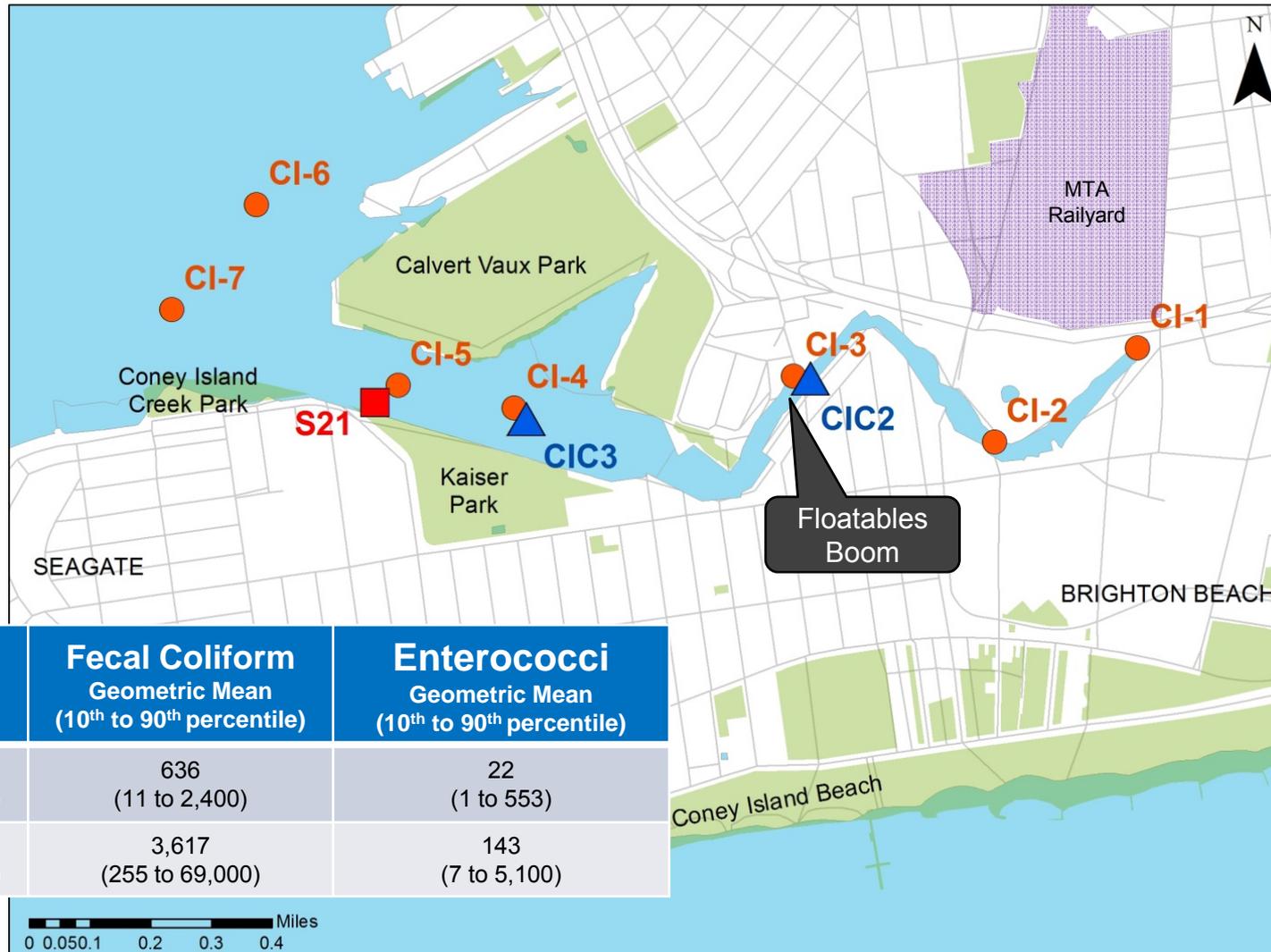
(4/20/15, 6/1/15, 6/16/15, 6/21/15)

Location	Fecal Coliform Geometric Mean (10 <sup>th</sup> to 90 <sup>th</sup> percentile)	Enterococci Geometric Mean (10 <sup>th</sup> to 90 <sup>th</sup> percentile)
<b>CSO</b> (cfu/100 mL)	153,601 (33,700 to 832,000)	140,817 (36,600 to 524,000)
<b>SW</b> (cfu/100 mL)	27,070 (5,080 to 196,000)	27,617 (7,400 to 84,600)



# Receiving Water Sampling

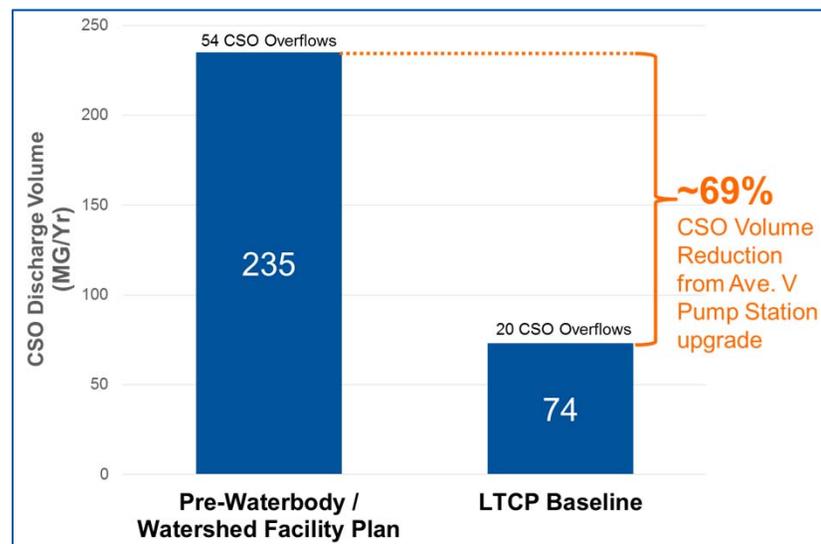
- **LTCP Sampling**  
 7 locations  
 (3/7/2014, 8/1/2014, 10/19/15)
- ▲ **Harbor Survey Monitoring**  
 2 locations  
 (1/1/13 – 8/25/15)
- **Sentinel Monitoring**  
 1 location  
 (3/11/13 – 8/25/15)



Weather Condition	Fecal Coliform Geometric Mean (10 <sup>th</sup> to 90 <sup>th</sup> percentile)	Enterococci Geometric Mean (10 <sup>th</sup> to 90 <sup>th</sup> percentile)
<b>Dry</b> (cfu/100 mL)	636 (11 to 2,400)	22 (1 to 553)
<b>Wet</b> (cfu/100 mL)	3,617 (255 to 69,000)	143 (7 to 5,100)

# LTCP Baseline Assumptions

- Uses LTCP calibrated landside and water quality models
- Assumes committed grey and green infrastructure complete
- Accounts for population projections to CY2040
- Uses JFK Rainfall Records:
  - 2008 for screening analysis
  - 2002-2011 for detailed analysis
- Assumes all illicit discharges are abated



# Fecal Coliform: Projected Attainment

Station	% Attainment for Primary Contact Fecal			
	Annual		Recreational Season	
	Baseline	100 % CSO Control	Baseline	100 % CSO Control
CI-01	58	58	100	100
CI-02	58	58	100	100
CI-03 (CIC2)	75	75	100	100
CI-04 (CIC3)	83	83	100	100
CI-05	83	83	100	100
CI-06	100	100	100	100
CI-07	100	100	100	100

Outfall OH-021

\* Projected attainment with potential future EPA RWQC GM criterion during recreational season is 53% at CI-01 to 100% at CI-07

### Baseline (as used in LTCP Models)

- Assumes no dry weather sources
- Avenue V PS in operation and GI implemented in 1% of combined service area

# Time to Recover: Projected Recovery Times

Station	Time to Recover (hours) to Fecal Target of 1000 cfu/100mL under Aug 14-15, 2008 storm conditions	
	Baseline	100 %CSO Control
CI-01	24	23
CI-02	23	23
CI-03 (CIC2)	20	20
CI-04 (CIC3)	11	9
CI-05	9	8
CI-06	0	0
CI-07	0	0

Outfall OH-021

**Baseline (as used in LTCP Models)**

- Assumes no dry weather sources
- Avenue V PS in operation and GI implemented in 1% of combined service area

# Projected Attainment Summary

- Minimal to no attainment improvement between Baseline and 100% CSO Control Conditions

Parameter	Criteria*	Attainment Achieved?
Fecal Coliform	Monthly Geometric Mean ≤ 200 col/100 mL	 <b>100% attainment ONLY during Recreational Season</b>
Dissolved Oxygen	≥ 4.0 mg/L (acute, never less than)	 <b>YES</b> (90 – 100% attainment)
Time to Recover	≤ 24 hours to target Fecal Coliform of 1000 cfu/100 mL	 <b>YES</b> (0 – 24 hrs)

\*Not projected to fully attain potential future EPA RWQC during recreational season.

# Alternatives Evaluation

# CSO Mitigation Considered in LTCP

INCREASING COMPLEXITY

INCREASING COST

<b>Source Control</b>	Additional Green Infrastructure		<del>High Level Sewer Separation</del>	
<b>System Optimization</b>	<del>Fixed Weir</del>	<del>Parallel Interceptor / Sewer</del>	Bending Weirs Control Gates	Pump Station Optimization
<b>CSO Relocation</b>	Flow Tipping to Other Watersheds	Pumping Station Modification	<del>Flow Tipping with Conduit/Tunnel and Pumping</del>	
<b>Water Quality / Ecological Enhancement</b>	Floatables Control	Environmental Dredging	<del>Mechanical Aeration</del>	Flushing Tunnel
<b>Treatment Satellite:</b>	Outfall Disinfection	<del>Retention Treatment Basin (RTB)</del>		<del>High Rate Clarification (HRC)</del>
<b>Centralized:</b>	<del>WWTP Expansion</del>			
<b>Storage</b>	In-System	Shaft	<del>Tank</del>	Tunnel

■ Completed post Waterbody / Watershed Facility Plan

■ Preliminary evaluations were conducted for these CSO mitigation options

- EPA policy requires LTCP to evaluate 25, 50, 75, and 100% CSO reduction alternatives
- Alternatives proposed to be further evaluated to meet CSO Policy requirements are:
  1. Shaft Storage
  2. Tunnel Storage
- Costs/implementation issues associated with these alternatives are expected to be excessive in relation to benefit in terms of water quality standards attainment.
- The most cost-effective alternative for this waterbody has already been implemented (Avenue V Pump Station Upgrade)

# 1. Vertical Shaft for CSO Retention

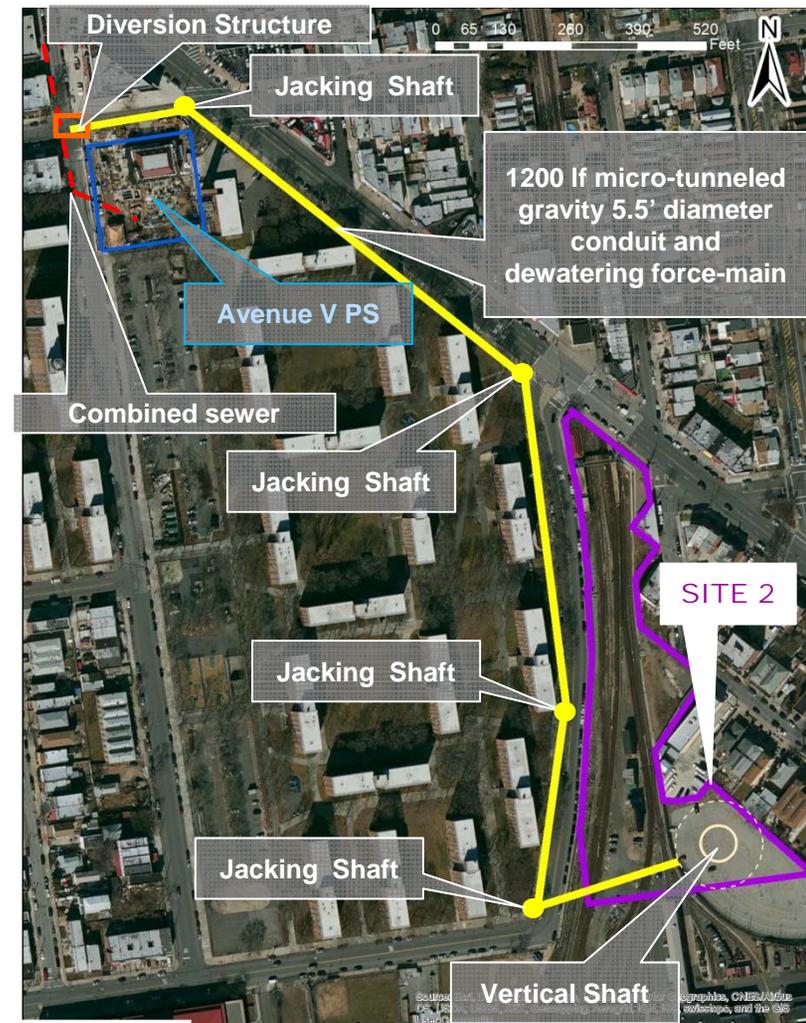
%Capture (Volume)	Capital Cost
25% (1.6 MG)	\$80 Million
50% (4.1 MG)	\$101 Million

## Pros:

- Provides up to 50% CSO capture (higher captures limited by siting constraints)
- Does not impact PS operation during construction

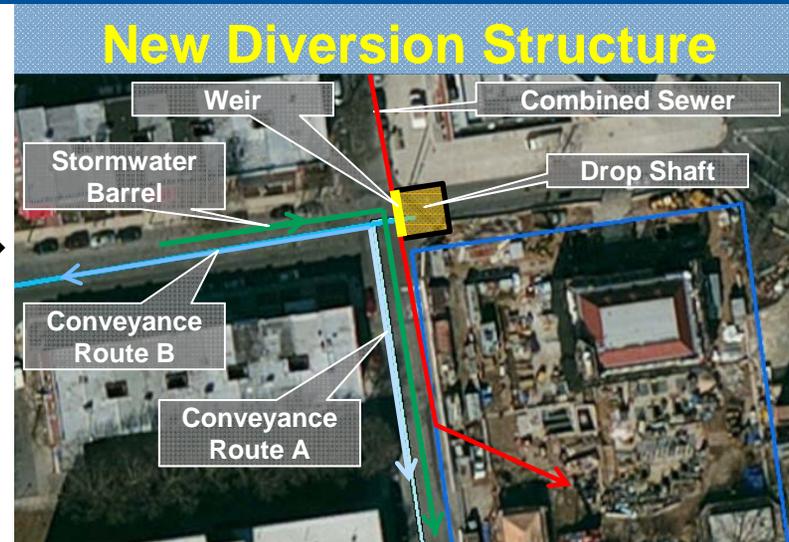
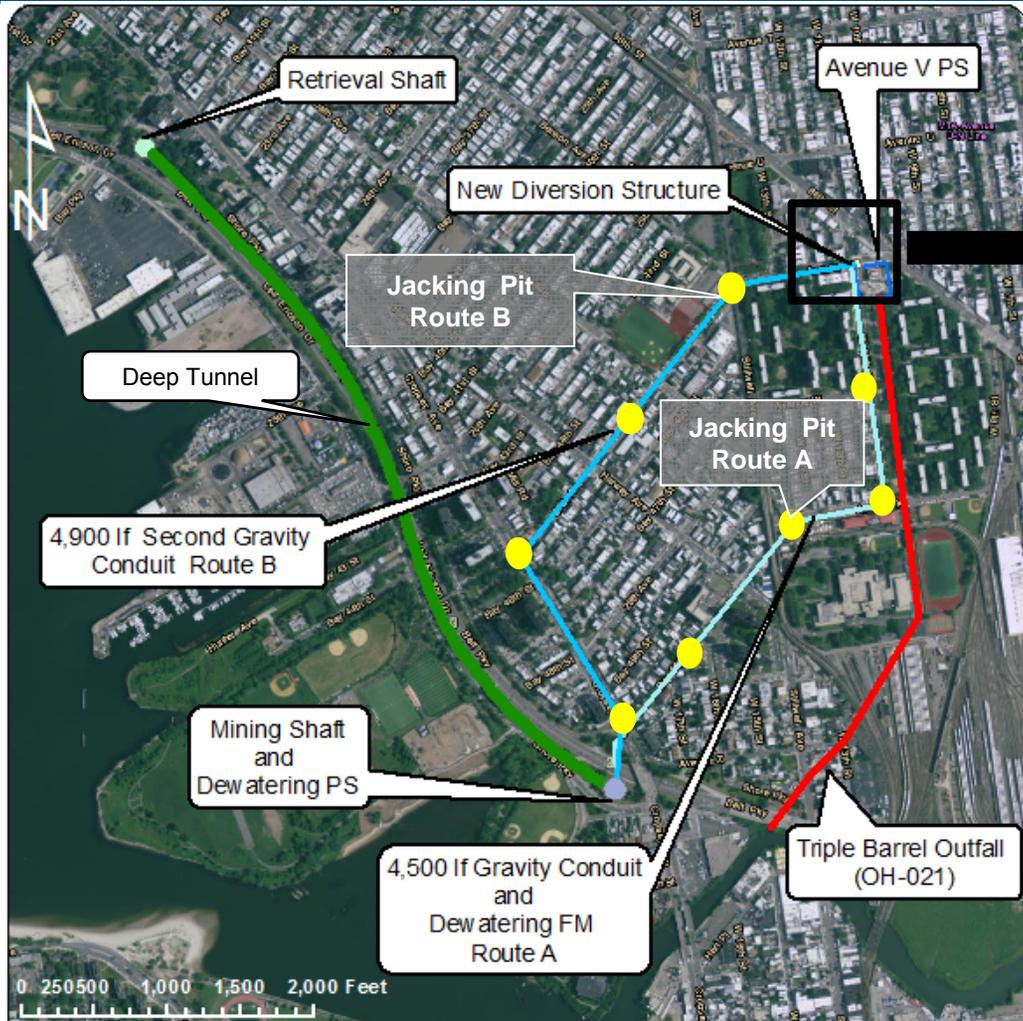
## Cons:

- Requires new upstream diversion structure
- Gravity conveyance micro-tunneling issues
- Temporary and permanent loss of parking
- O&M challenges with deep shaft storage (access, pumping, grit deposition, etc.)



Conveyance conduit alignment: E along Avenue V; then SE along 86<sup>th</sup> St; then S along W 8<sup>th</sup> St.; E under rail tracks.

## 2. Tunnel for CSO Retention



- Two conveyance conduits required with separate routes
- Shared site for mining shaft and dewatering PS

### Pros:

- Provides up to 100% CSO capture
- Does not impact PS operation during construction

### Cons:

- Requires new upstream diversion structure
- Extensive conveyance routing micro-tunneling issues
- Tunnel shafts within Belt Parkway ROW between roadway and access ramps
- O&M challenges with deep tunnel storage (access, pumping, grit deposition, etc.)

%Capture (Volume)	Capital Cost
75% (6.9 MG)	\$144 Million
100% (13.4 MG)	\$205 Million

# Summary of Alternatives

Alternative #	% Capture (Volume)	Remaining CSO Discharge (MG/Y)	Capital Cost	Annual O&M Cost	Total NPV Cost	
1	Vertical Shaft for CSO Retention	25% (1.6 MG)	56	\$80 M	\$0.6 M	\$89 M
		50% (4.1 MG)	37	\$101 M	\$0.6 M	\$111 M
2	Tunnel for CSO Retention	75% (6.9 MG)	19	\$144 M	\$0.7 M	\$154 M
		100% (13.4 MG)	0	\$205 M	\$0.8 M	\$217 M

# Q&A Session

# 30 Minute Breakout Session



---

Topic	Speaker
1 Affordability	Angela Licata
2 Water Quality, Classification, Uses	Keith Mahoney and Lily Lee
3 CSO Control	Jim Mueller
4 Green Infrastructure	Mikelle Adgate

---

- LTCP Submittal to NYSDEC by June 30, 2016
  
- Public Comments will be accepted for Coney Island Creek through **May 20, 2016**
  - There will be subsequent comment periods following the final plan review meeting.
  
- Comments can also be submitted to:
  - New York City DEP at: [ltcp@dep.nyc.gov](mailto:ltcp@dep.nyc.gov)

- Visit the informational tables tonight for handouts and poster boards with detailed information
  
- Go to [www.nyc.gov/dep/ltcp](http://www.nyc.gov/dep/ltcp) to access:
  - LTCP Public Participation Plan
  - Presentation, handouts and poster boards from this meeting
  - Links to Waterbody/Watershed Facility Plans
  - CSO Order including LTCP Goal Statement
  - NYC's Green Infrastructure Plan
  - Green Infrastructure Pilots 2011 and 2012 Monitoring Results
  - NYC Waterbody Advisory Program
  - Upcoming meeting announcements
  - Other LTCP updates