



Flushing Creek Combined Sewer Overflow Long Term Control Plan

Public Kickoff Meeting
P.S. 020 John Bowne
June 11, 2014

Welcome & Introductions

Shane Ojar
DEP

Topic

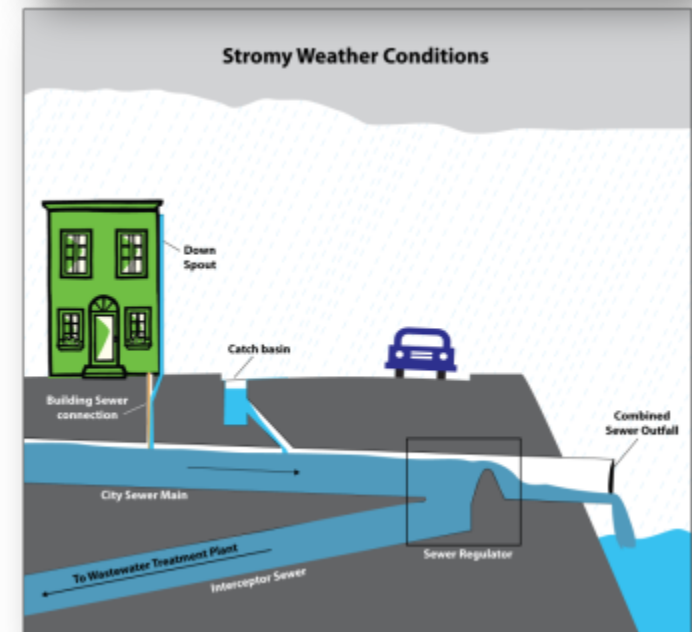
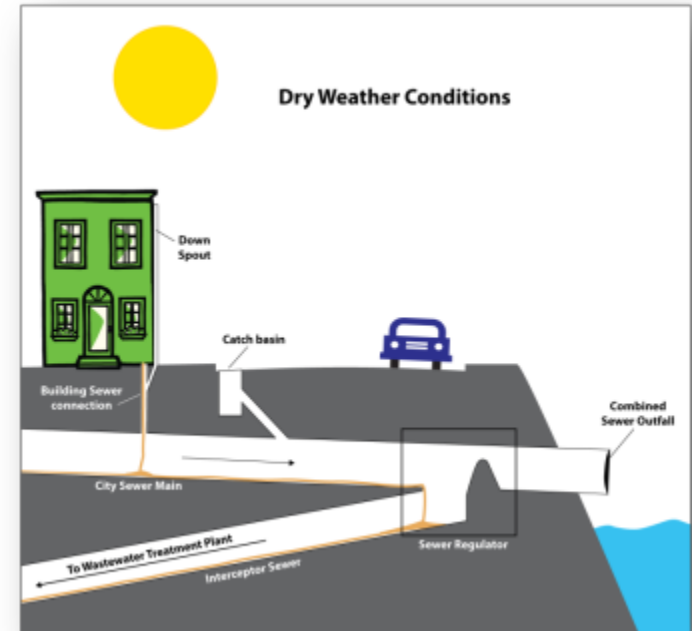
- 1 Welcome and Introductions
 - 2 Long Term Control Plan (LTCP) Process
 - 3 Waterbody & Watershed Characteristics
 - 4 Grey Infrastructure
 - 5 Green Infrastructure
 - 6 LTCP Development
 - 7 Public Participation Plan & Schedule
 - 8 Discussion and Q&A Session
-

1. Provide background and overview of Long Term Control Plan process for Flushing Creek
2. Present Flushing Creek watershed characteristics and status of waterbody improvement projects
3. Obtain public input on existing waterbody uses and future vision for Flushing Creek

What is a Combined Sewer Overflow?

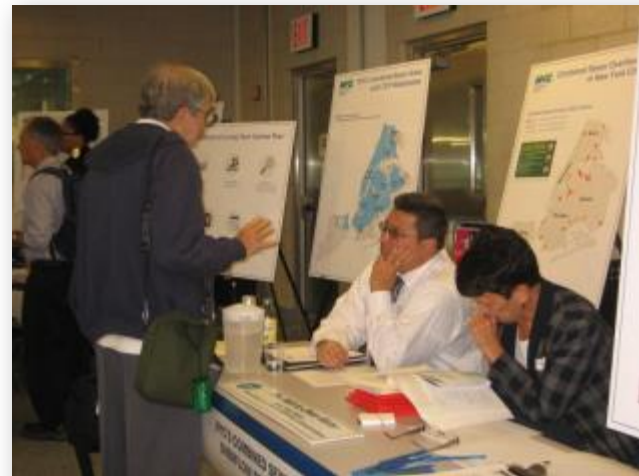
➤ Approximately 60% of NYC's sewer system is combined, which means it is used to **convey both sanitary and storm flows**.

- Heavy rain and snow storms can lead to higher than normal flows in combined sewers
- When flows exceed twice the design capacity of treatment plants, a mix of excess stormwater and untreated wastewater may discharge directly into New York City's waterways
- This is called a combined sewer overflow (CSO). CSOs are a concern because of their potential effect on water quality and recreational uses in local waterways.



DEP wants to hear from **you!**

- How do you and other community members/ stakeholders use Flushing Creek?
- What improvement measures or alternatives you would like DEP to consider and evaluate?
- What is your vision for Flushing Creek?
- How can DEP better involve Flushing Creek stakeholders?
- How much are you willing to pay to improve water quality in Flushing Creek?



LTCP Citywide Kickoff Meeting

Overview of Combined Sewer Overflow Long Term Control Plan Process

Lily Lee, P.E.
DEP

- What is a Long Term Control Plan?
 - Required under NYC SPDES permits in accordance with the Clean Water Act (CWA) and Federal CSO Control Policy; the CSO Consent Order establishes the time frame for submittal of LTCPs.
 - Comprehensive evaluation of long term solutions, to reduce combined sewer overflows and improve water quality in NYC's waterbodies and waterways.

- The Long Term Control Plan Process:
 - Assesses feasibility of attaining current water quality standards and fishable/swimmable goals;
 - Builds off Waterbody/Watershed Facility Plans (WWFPs) which were the first phase of the planning process;
 - Requires robust, targeted public process; and
 - Identifies grey-green* infrastructure balance for different watersheds.

*Green: sustainable pollution reducing practices that also provide other ecosystem benefits.

*Grey: traditional practices such as retention tanks, pipes and sewers.

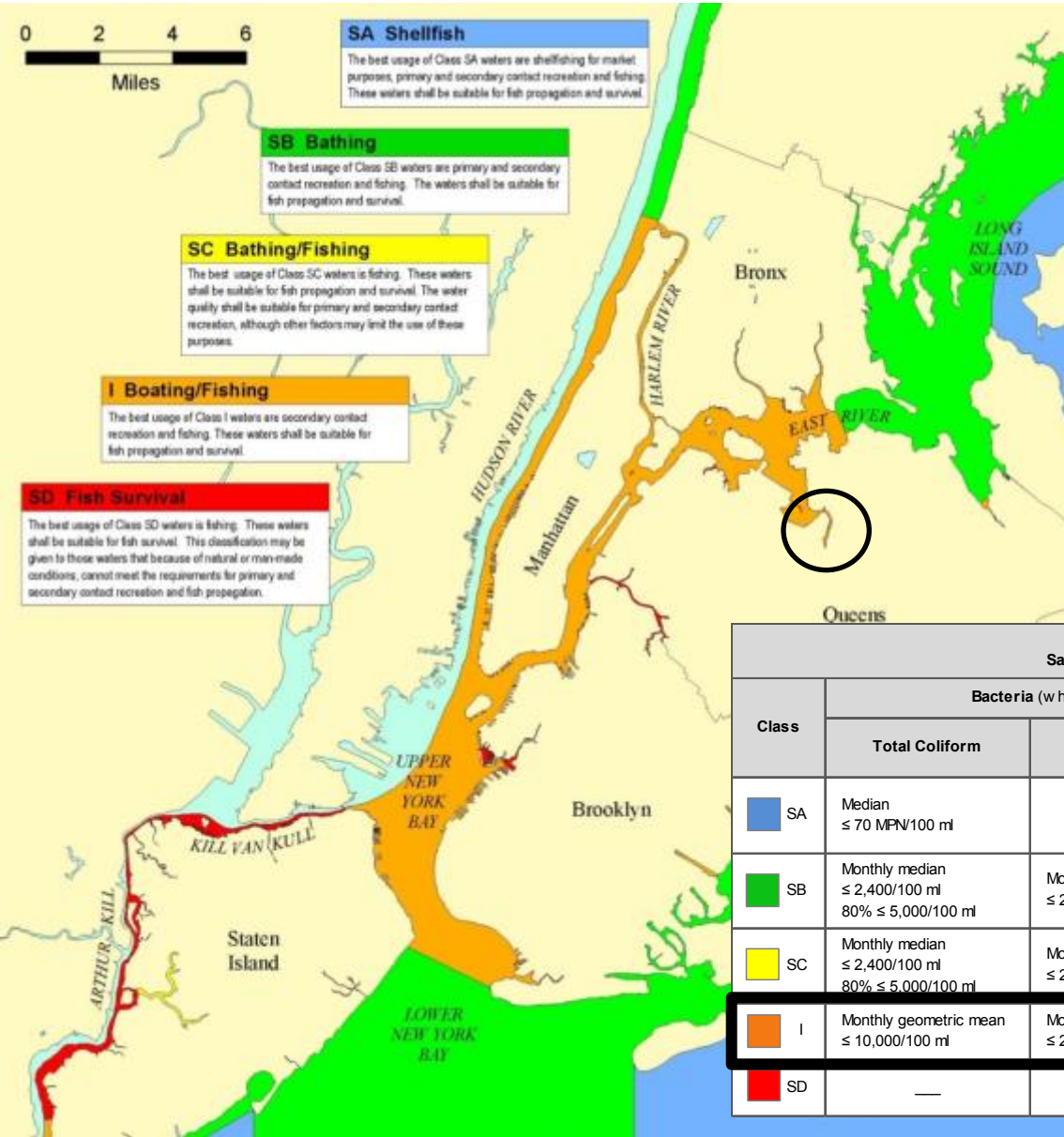
- 1994 Guidance for CSO Long Term Control Plans includes nine elements:
 1. Characterization, Monitoring, Modeling
 2. Public Participation
 3. Sensitive Areas
 4. Evaluation of Alternatives
 5. Cost Performance Considerations
 6. Operational Plan
 7. Maximization of Treatment at Existing Publicly Owned Treatment Plants
 8. Implementation Schedule
 9. Post-construction Monitoring Plan

- 2001 Guidance for Coordinating CSO Long Term Control Planning with Water Quality Standards Review

Waterbody & Watershed Characteristics

Lily Lee, P.E.
DEP

Current Water Quality Standards



- Best Use Designations
- Saline Surface Water Quality Standards
- **Flushing Creek– Class I**
 - DO ≥ 4.0 mg/L (acute, never less than)
 - Fecal Coliform ≤ 2,000 col /100 mL
 - Total Coliform ≤ 10,000 col /100 mL

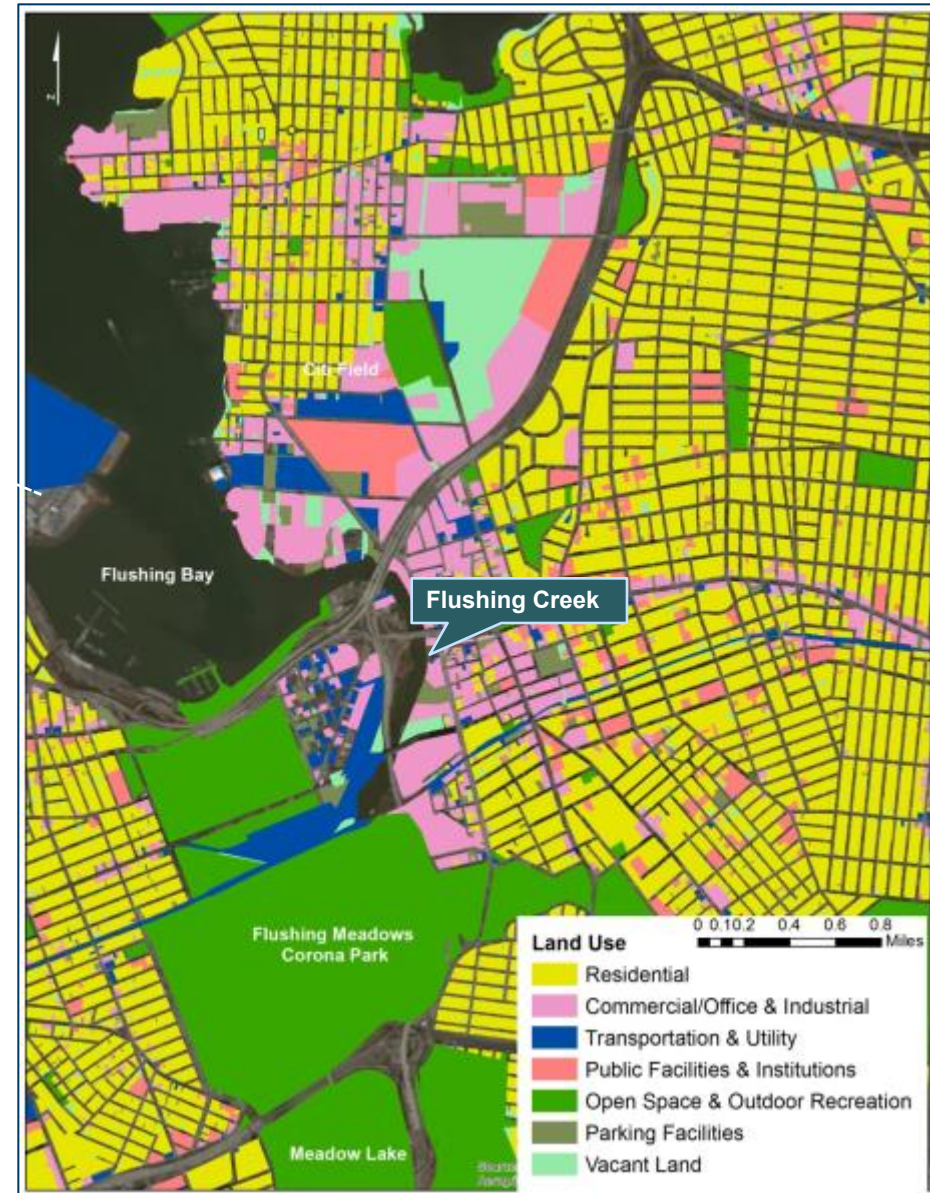
New York State Saline Surface Water Quality Standards				
Class	Bacteria (w when disinfection is practiced)			Dissolved Oxygen
	Total Coliform	Fecal Coliform	Enterococci	
SA	Median ≤ 70 MPN/100 ml	—	Geometric mean ≤ 35/100 ml	$DO_t = \frac{13.0}{2.80 + 1.84e^{-0.16}}$ ≥ 3.0 mg/l (acute, never less than)
SB	Monthly median ≤ 2,400/100 ml 80% ≤ 5,000/100 ml	Monthly geometric mean ≤ 200/100 ml	Geometric mean ≤ 35/100 ml	$DO_t = \frac{13.0}{2.80 + 1.84e^{-0.16}}$ ≥ 3.0 mg/l (acute, never less than)
SC	Monthly median ≤ 2,400/100 ml 80% ≤ 5,000/100 ml	Monthly geometric mean ≤ 200/100 ml	Geometric mean ≤ 35/100 ml	$DO_t = \frac{13.0}{2.80 + 1.84e^{-0.16}}$ ≥ 3.0 mg/l (acute, never less than)
I	Monthly geometric mean ≤ 10,000/100 ml	Monthly geometric mean ≤ 2,000/100 ml	—	≥ 4.0 mg/l (acute, never less than)
SD	—	—	—	≥ 3.0 mg/l (acute, never less than)

DO_t = DO concentration in mg/l between 3.0 – 4.8 mg/l

Flushing Creek Land Characteristics

- Land Use (breakdown for Flushing Creek Watershed):
 - 37% Residential
 - 27% Transportation/Roadways¹
 - 20% Open Space
 - 6% Vacant Space/Misc
 - 5% Public Facilities & Institutions
 - 5% Commercial/Office & Industrial

(1) Not an official land use designation



Flushing Creek Drainage Area

- Flushing Creek is located in north-central Queens and discharges into Flushing Bay.
- Over 500 acres of the watershed tributary drain to fresh water Meadow and Willow Lakes, which are located in Flushing Meadows Corona Park.
- Classified by New York State DEC for secondary contact recreation (Class I) – Boating and Fishing.
- DEP wet weather discharges include:
 - 3 CSO Outfalls - ▲
 - 5 Permitted Stormwater Outfalls - ●

	Drainage Area
Acres	11,016
Served by combined sewers	57%



Flushing Creek Current Uses

➤ Current Water Uses:

- Commercial / Recreational Boating

➤ Current Land Uses:

- Industrial / Residential / Parkland

1) Industrial Area



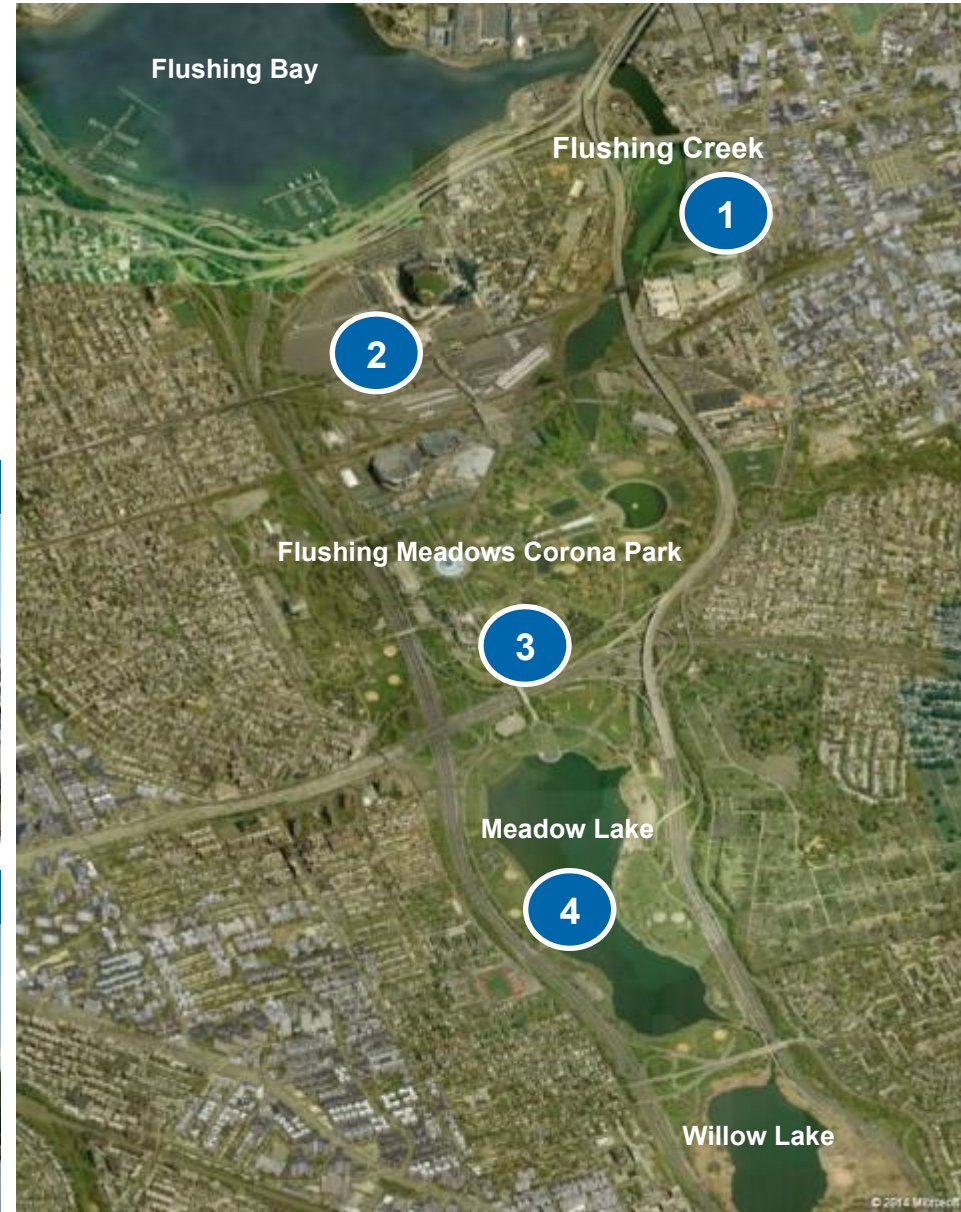
2) Citi Field Arena



3) Flushing Meadows Corona Park



4) Meadow Lake



- November 2013 to May 2014
- Flow data
 - Meadow Lake Discharge
 - FC Tank Discharge
 - TI-010
 - TI-011
- Discharge Water Quality
 - TI-010 (Tank Influent & Discharge)
 - TI-011
- Surface Water Sampling
 - Meadow / Willow Lakes Discharge
 - 5 locations within the creek
 - 2 data sonde locations



Flushing Creek: Water Quality Sampling Results

- November 2013 to May 2014
- Approximately 18 dry weather samples per station
- Approximately 60 wet weather samples per station

Geomean (Average) of Sampling Data

River Station	Enterococci (2012 EPA RWQC Indicator) (#/100ml)			Fecal Coliform (#/ 100ml)		
	Dry	Wet	All	Dry	Wet	All
OW1	32	38	36	130	131	131
OW2	20	99	61	100	433	278
OW3	95	863	497	524	3310	2088
OW4	23	494	232	119	2176	1063
OW5	20	497	223	112	1894	933
OW6	10	221	102	77	910	490

Note: samples collected at one depth for OW1, OW2 and OW3 2012 EPA RWQC indicator

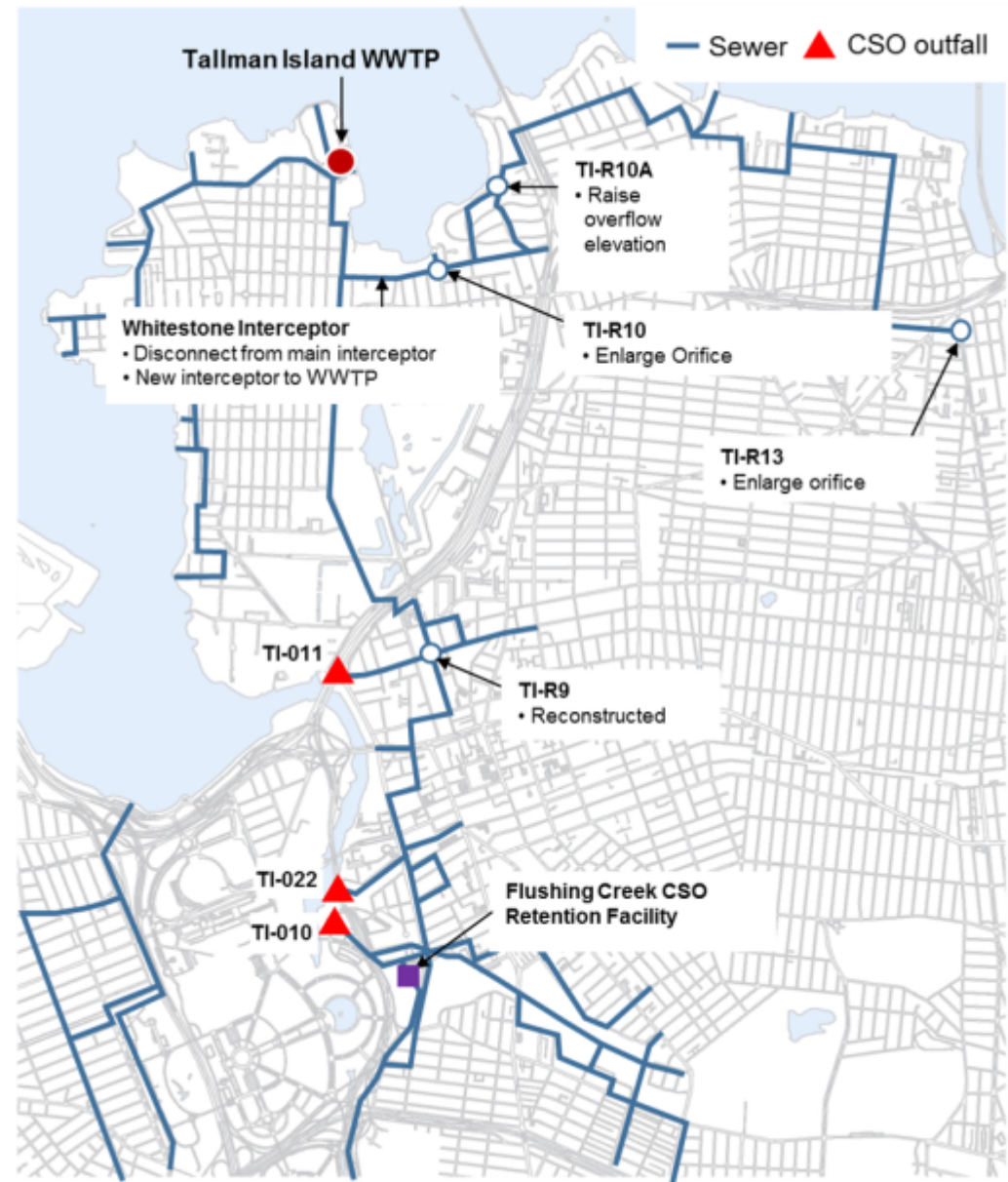


Flushing Creek Current Improvement Projects Grey Infrastructure

Lily Lee, P.E.
DEP

Grey Infrastructure Projects

- Operation of the \$349 Million Flushing Creek CSO Retention Facility
- \$30 Million of Upgrades to Increase Flow Conveyance to Tallman Island WWTP
 - Extend Whitestone Interceptor to TI WWTP
 - TI-R10A Weir Modifications
 - TI-R13 Orifice Modifications
 - TI-R10 Orifice Modifications
 - TI-R9 Regulator Modifications



Flushing Creek CSO Retention Facility

- \$349 million
- 43 MG Storage
 - 28 MG tank storage
 - 15 MG sewers storage
- 40 MGD pump station
- 800 MG annual capture
- Tank became operational in May 2007



Upgrades to Increase Conveyance to TI WWTP

- \$30 million
- Increases conveyance of flow to Tallman Island WWTP
- 20 MG CSO reduction
- To become operational by late summer 2014



Diversion of Whitestone
From Flushing Interceptor
to New Whitestone

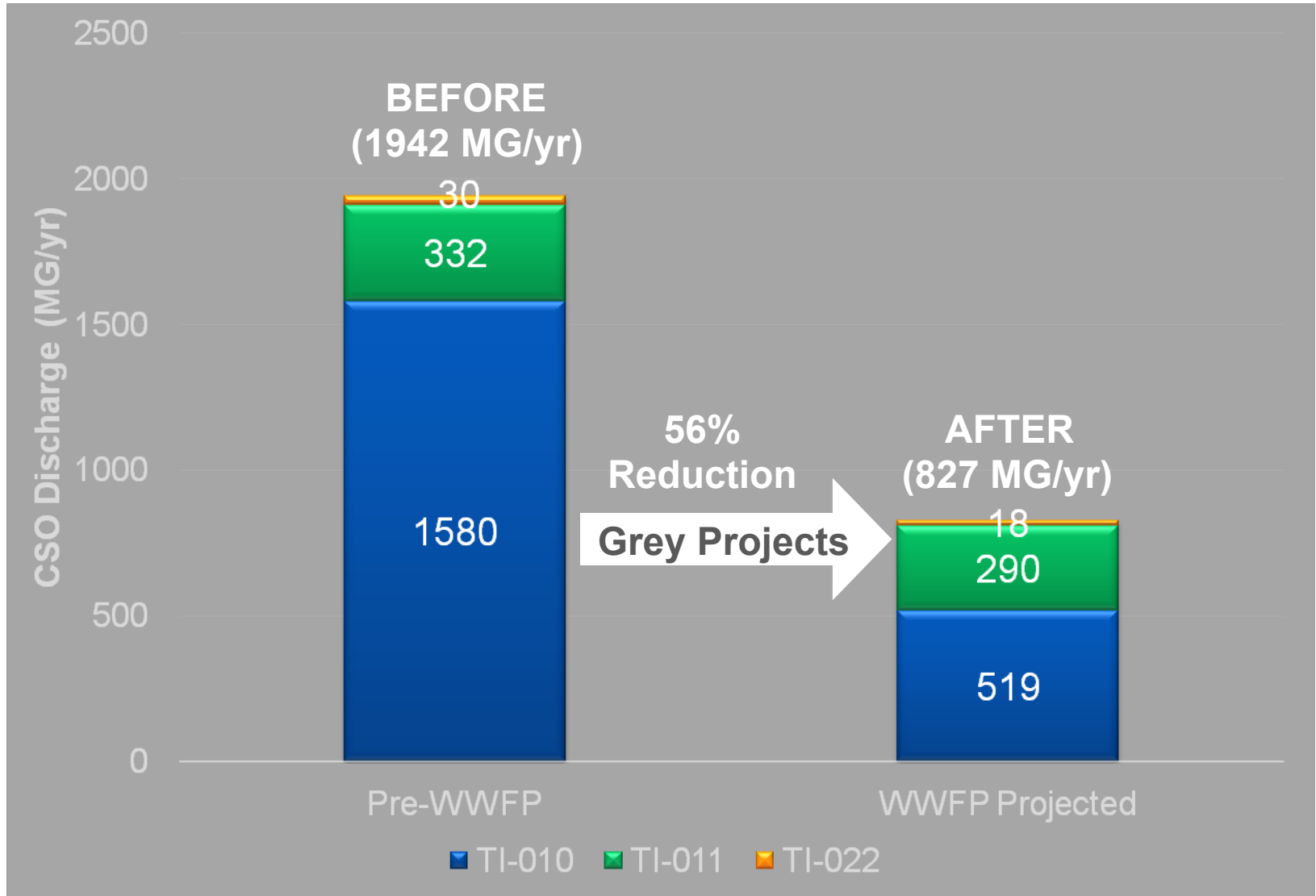


Trenching to Install New
Whitestone Interceptor
Near TI WWTP



New Interceptor Route
Being Restored to Upland /
Wetland

Volume Reduction



Flushing Creek Current Improvement Projects Green Infrastructure

Mikelle Adgate
DEP

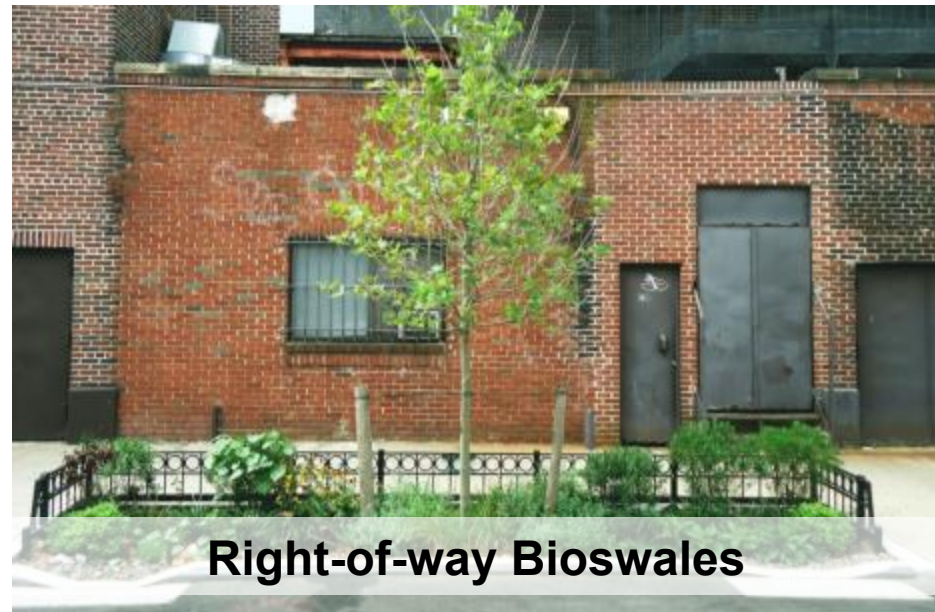
Green infrastructure (GI) practices are designed and constructed to manage stormwater runoff when it rains.



Types of Green Infrastructure



Permeable Pavers



Right-of-way Bioswales



Green Roof



Rain Garden

- 2012 Amended Consent Order with the New York State Department of Environment Conservation ensures GI investments over 20 years to manage CSOs
- DEP has budgeted **\$1.5 billion** for GI to manage 1" of stormwater runoff from 10% of the impervious areas of combined sewer areas by 2030
- DEP will meet this goal through:
 - Right-of-way Area-wide Projects
 - Public Property Retrofits
 - Grant Program for private property owners



GI Projects in the Flushing Creek Drainage Area



4 ROWB in College Point



Queens College Rain Garden/Pavers



Sponge Park



Green Roof at New York Hospital

➤ Area-Wide GI Contracts:

- TI11 and TI22 with DDC
- Design to begin Summer 2014
- Estimated **\$16.5M** for design, construction and construction management

➤ JHS 185Q, Edward Bleecker Jr. High:

- Rain garden and synthetic turf field for “Schoolyards to Playgrounds” project with TPL/SCA/DOE

➤ Flushing Town Hall:

- Rain garden and swales with the Department of Cultural Affairs



Source: Est. D. Aergrid, IGN, IS

- **Green Infrastructure Grant Program:** DEP provides up to 100% reimbursement for the design and construction of selected green infrastructure on private property in combined sewer areas.
- **Green Roof Tax Abatement:** The City provides a one year property tax abatement for private properties that install a green roof. The value is \$5.23 per square foot (up to the lesser of \$200,000 or the building's tax liability) and is available through March 15, 2018.
- **2012 Stormwater Rule:** In 2012 DEP modified the allowable flow rate of stormwater to the City's combined sewer system for new and existing development. Site Connection Proposals may use green infrastructure technologies to meet the new allowable rate.

Flushing Creek LTCP Development

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DEP

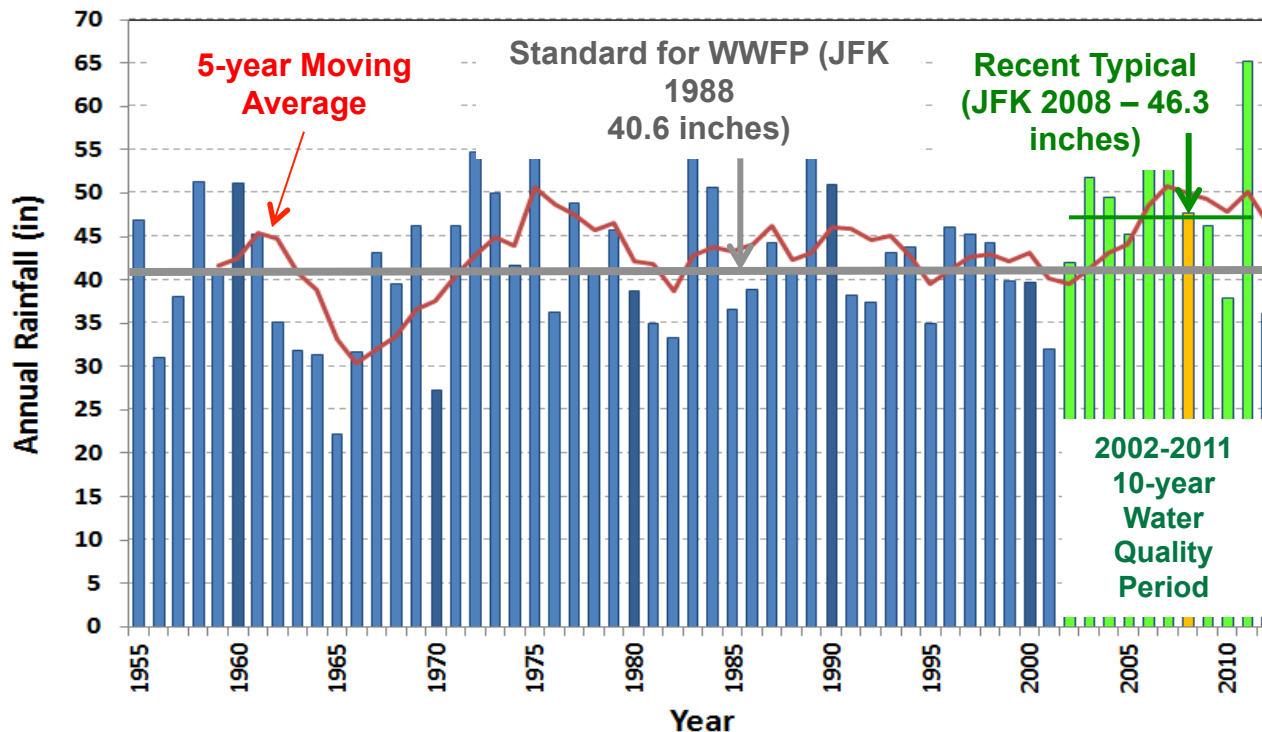
LTCP Submittal December 2014

Task	Schedule					
	Winter 2014	Spring 2014	Summer 2014	Fall 2014	Winter 2015	
Public Participation		★			★	
Waterbody/Watershed Characterization	█					
Define Baseline conditions		█				
Baseline Analysis and Modeling		█	█			
Evaluate Alternatives			█			
Prepare LTCP and Submit to DEC				█ ★		

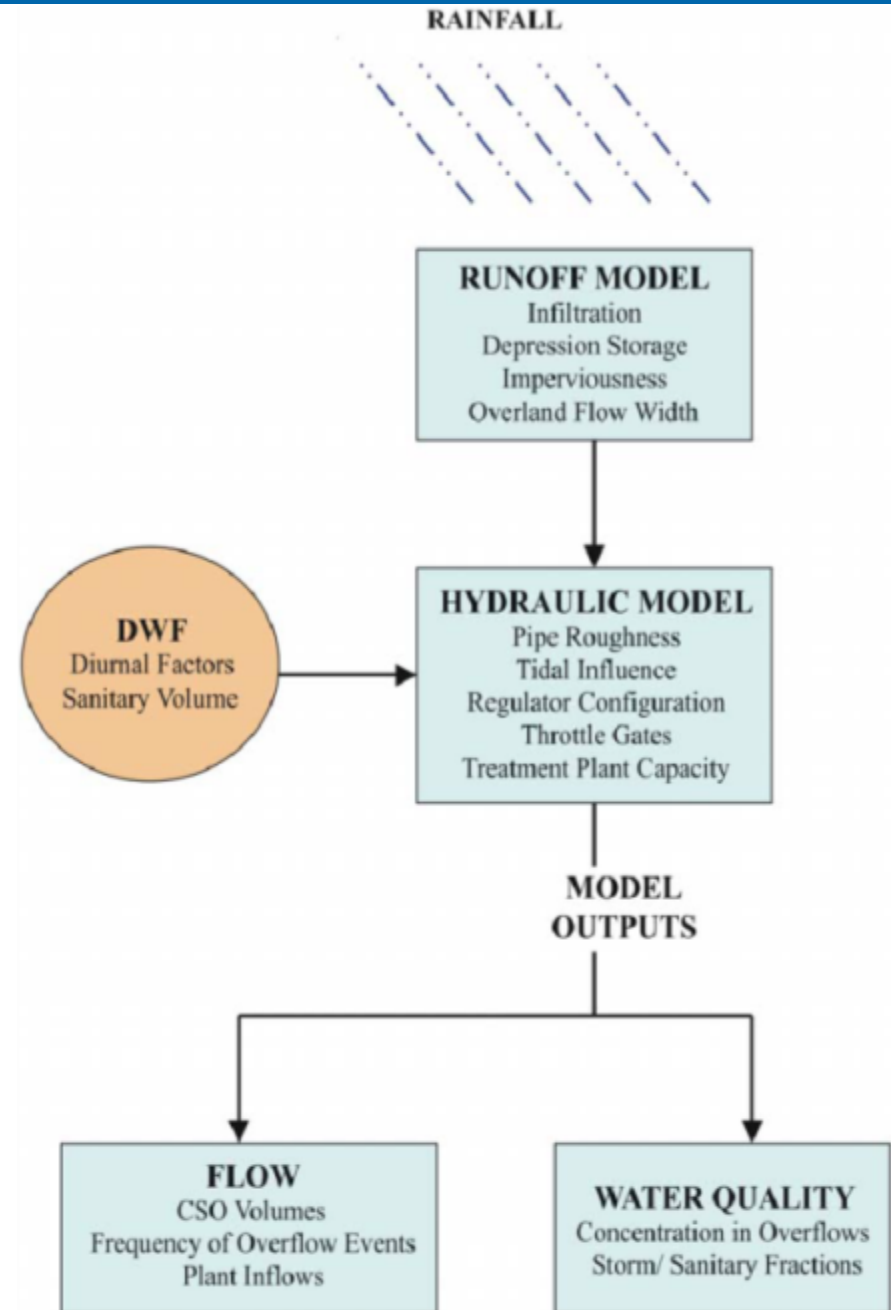
★ Public Participation Meetings

★ LTCP to be submitted to DEC

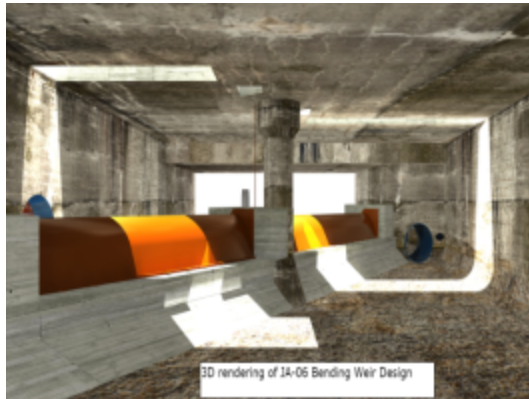
- Will be updating landside and water quality models, as needed, with monitoring data collected from November 2013 through May 2014
- Revised sanitary flows based on 2040 population projections and most recent water usage projections
- Reevaluated rainfall conditions to incorporate recent wet weather events and patterns



- Comprehensive modeling tools are utilized for baseline and alternatives evaluation
- Developed over a period of 6 years and peer-reviewed
 - Landside or watershed model, InfoWorks
 - Receiving hydrodynamic and water quality model, East River Tributaries Model (ERTM)



- Shown below are some examples of CSO controls that will be considered in the LTCP and ranked based on the unique conditions and water quality goals of the specific waterbody



Sewer System Modifications



Green Infrastructure



New Sewer Construction



Pump Station Expansion

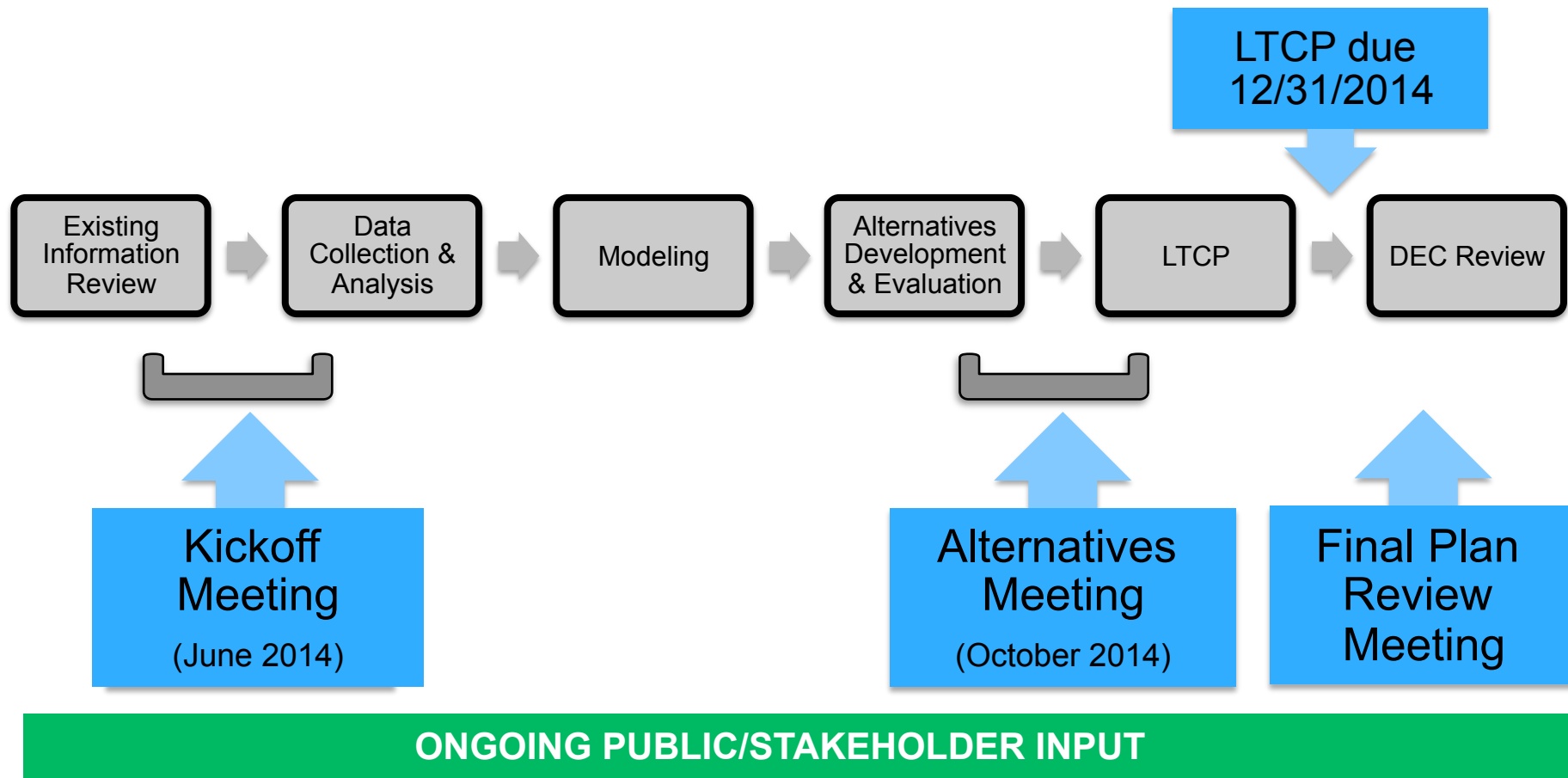
Public Participation

Shane Ojar
DEP

- **Goal:** Raise awareness about, foster understanding of, and encourage input on the development of waterbody specific and citywide LTCPs.

- **Activities:**
 - Annual citywide public meetings rotating across boroughs
 - Presentations at existing forums including Community Boards and community, business, environmental and recreational organizations to provide updates and solicit input
 - Regular briefings for elected officials and their staff
 - Variety of communication tools including program website, social media, advisories and notifications

Public Involvement and LTCP Process



- Flushing Creek LTCP Public Meeting #2, October 2014
 - Objective: Review proposed alternatives and related waterbody uses and revisiting attainments of water quality standards

- Comments can also be submitted to:
 - New York City DEP at: ltcp@dep.nyc.gov

- Visit the informational tables tonight for handouts and poster boards with detailed information

- Go to 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
 - Real-time waterbody advisories
 - Upcoming meeting announcements
 - Other LTCP updates

Discussion and Q&A Session