

2021 MS4 Annual Report Meeting

June 1, 2022



Presenters:

Pinar Balci, PhD, Assistant Commissioner

Sara Lupson, Program Manager

Bureau of Environmental Planning and Analysis

Department of Environmental Protection





Agenda

- Stormwater in NYC
- MS4 Permit/Stormwater Management Program
- 2021 MS4 Annual Report
- Stakeholder Feedback

Stormwater in NYC

Pinar Balci

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ANALYSIS, ASSISTANT COMMISSIONER





STORMWATER IN NYC

More than 70% of NYC is impervious area

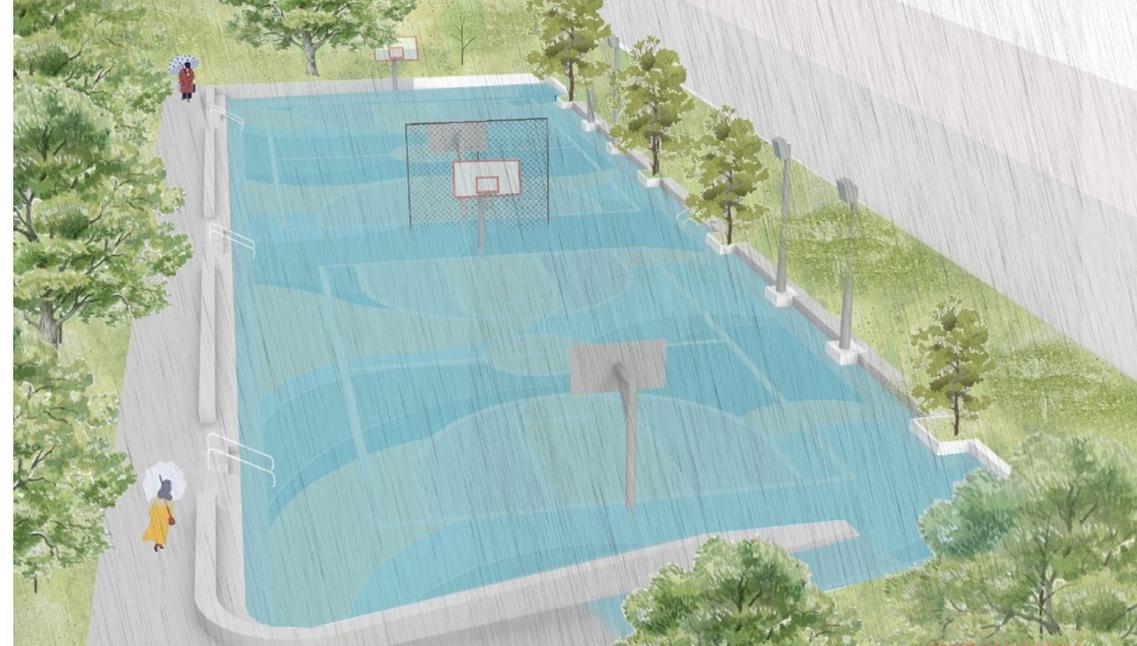
Stormwater runoff can cause:

- Localized flooding
- Water quality issues

STORMWATER IN NYC

Stormwater-related Programs

- Cloudburst Pilot Projects, Southeast Queens, & Rockaway Median Project
- Long Term Control Plans
- Tibbetts Brook Daylighting and Van Cortlandt Lake Improvements
- Green Infrastructure Program
- MS4 Stormwater Management Program



Rendering of Cloudburst Infrastructure

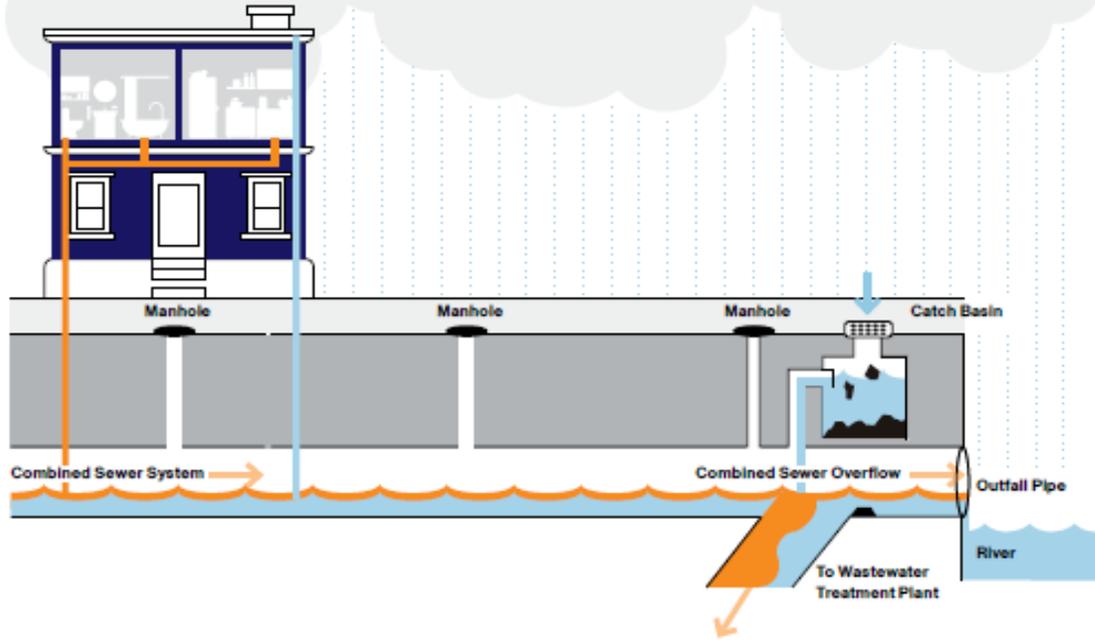
MS4 Permit/ Stormwater Management Program

Sara Lupson

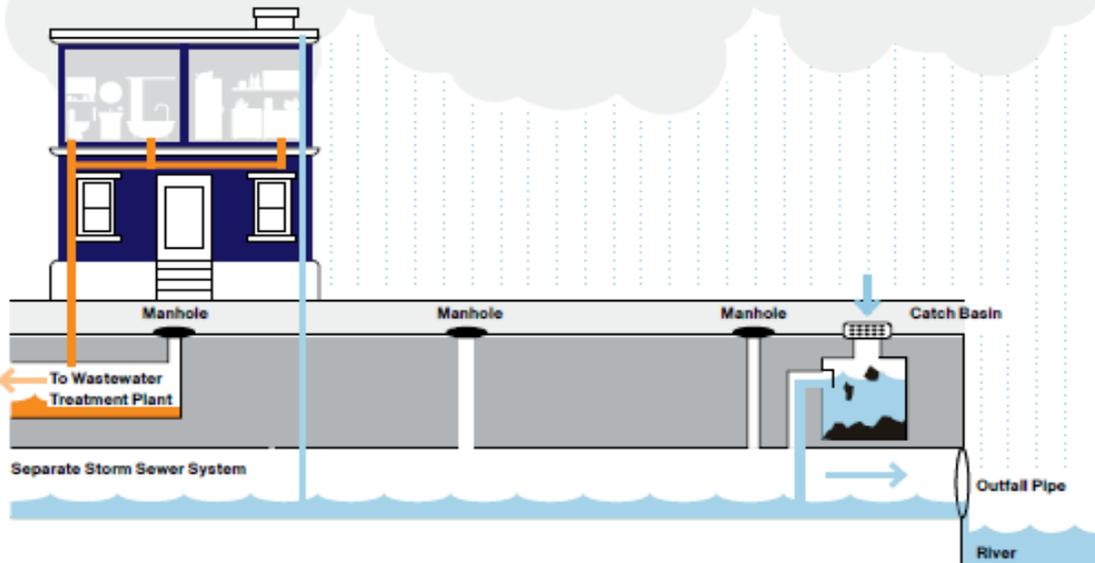
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ANALYSIS, PROGRAM MANAGER



Combined Sewer System



Municipal Separate Storm Sewer System



STORMWATER IN NYC

New York City has two types of sewer systems:

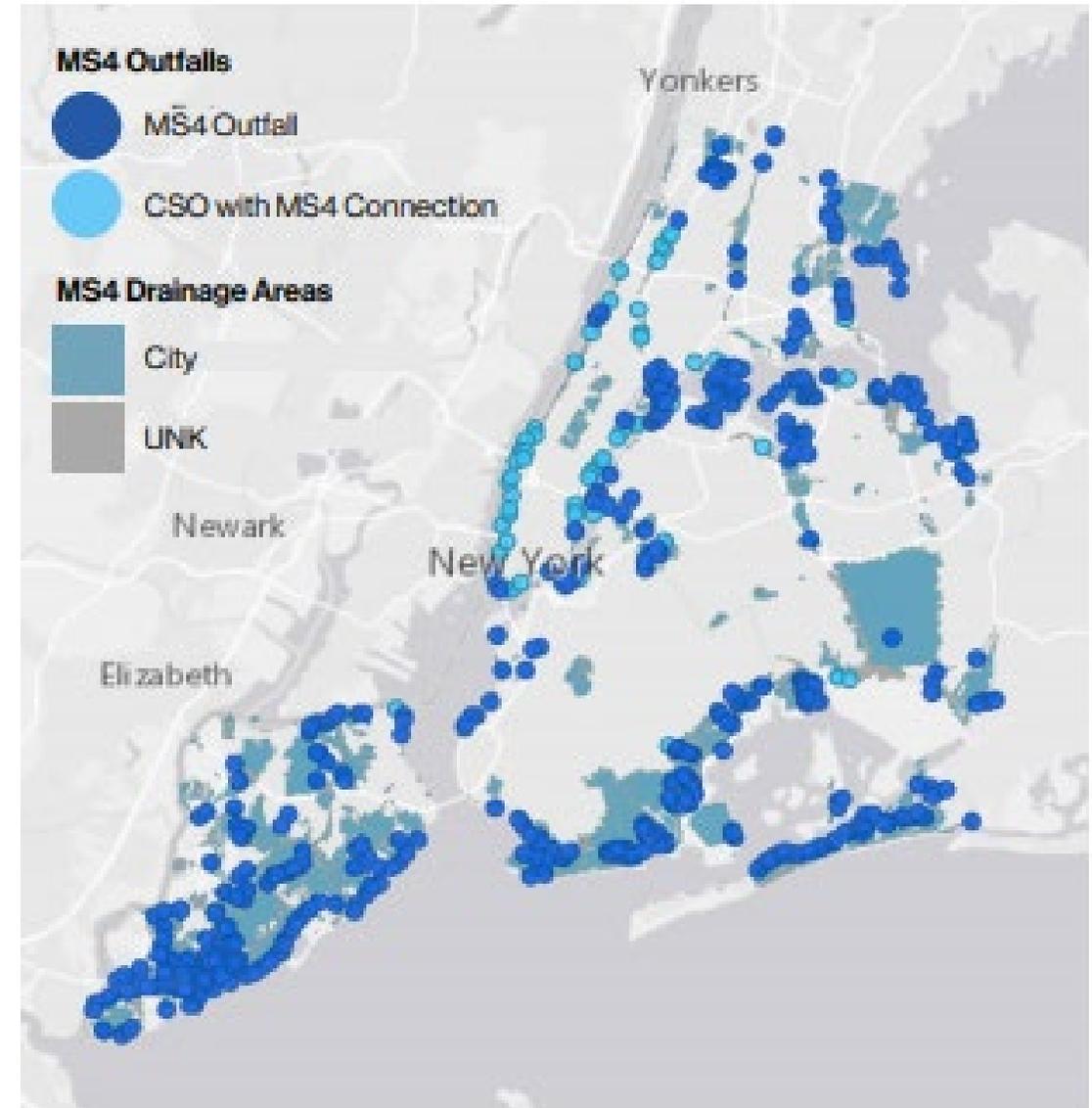
- **Combined Sewer System** – both wastewater and stormwater are carried by a single pipe to a wastewater resource recovery facility (WRRF).
- **Municipal Separate Storm Sewer System (MS4)**- wastewater is carried by one pipe to the WRRF and stormwater is carried by a separate pipe directly to local waterbodies.

STORMWATER IN NYC

An estimated 30 - 40% of NYC is served by the City's MS4

The MS4 serves much of:

- Staten Island
- South Brooklyn
- Southeast Queens
- City-owned parks





MS4 Permit

- **Issued By:** New York State Department of Environmental Conservation (NYSDEC) as part of the NYS Pollutant Discharge Elimination System (SPDES).
- **Permit Requirement:** develop a Stormwater Management Program (SWMP).
 - NYC submitted SWMP Plan to NYSDEC on August 1, 2018.
 - NYSDEC approved SWMP Plan on March 14, 2019.
- **Effective Date:** August 1, 2015
- **Duration:** renewal every 5 years
- **Renewal:** Draft MS4 Permit issued January 2022

MS4 Permit

- There are **14 City agencies** with responsibilities under the MS4 Permit
- **DEP coordinates** SWMP Implementation and MS4 Permit Compliance on behalf of NYC

Agencies with MS4 Permit Obligations

Department of Citywide Administrative Services (DCAS)
Department of City Planning (DCP)
Department of Design and Construction (DDC)
Department of Environmental Protection (DEP)
Department of Buildings (DOB)
Department of Correction (DOC)
Department of Education (DOE)
Department of Health and Mental Hygiene (DOHMH)
Department of Transportation (DOT)
Department of Parks and Recreation (DPR)
Department of Sanitation (DSNY)
Fire Department (FDNY)
Police Department (NYPD)
Small Business Services (SBS)

Collaborating Agencies

NYC Law Department (LAW)
Economic Development Corporation (EDC)
Mayor's Office of Management and Budget (OMB)
Mayor's Office of Climate and Environmental Justice (MOCEJ)

Stormwater Management Program (SWMP) Plan

**Chapter 1:
Legal
Authority and
Program
Administration**

**Chapter 2:
Public
Education and
Outreach**

**Chapter 3:
Public
Involvement
and
Participation**

**Chapter 4:
Mapping**

**Chapter 5:
Illicit
Discharge
Detection and
Elimination**

**Chapter 6:
Construction
and Post-
Construction**

**Chapter 7:
Pollution
Prevention/
Good
Housekeeping**

**Chapter 8:
Industrial and
Commercial
Stormwater
Sources**

**Chapter 9:
Control of
Floatable and
Settleable Trash
and Debris**

**Chapter 10:
Monitoring and
Assessment
Program**

**Chapter 11:
Special
Conditions for
Impaired Waters**

**Chapter 12:
Recordkeeping
and Reporting**

<https://www1.nyc.gov/assets/dep/downloads/pdf/water/stormwater/ms4/nyc-swmp-plan-full.pdf>

NYC Stormwater Management Program



2021 MS4 Annual Report



NYC

Municipal Separate Storm
Sewer Systems of New York City
SPDES Number: NY-028789

2021 MS4 Annual Report

- **Read the draft report:**
<https://www1.nyc.gov/site/dep/water/municipal-separate-storm-sewer-system.page>
- **Submit comments on the report:**
MS4@dep.nyc.gov
- **Comments due:** July 1, 2022

Public Education and Outreach/Public Involvement and Participation

In 2021 the City:

- Held over **1,500** events
- Reached more than **40,000** participants
- Distributed approximately **2 million** materials
- Held or participated in 5 public meetings with over **450** stakeholders





SAFE Disposal Events

Safe Disposal events provide a designated location for New Yorkers to dispose of waste, including harmful household products. In 2021, the City:

- distributed over **2 million mailers**
- held **5 events** covering all NYC boroughs
- collected more than **557 tons of materials**.

HOW DO THE CITY'S SEWER SYSTEMS

IMPACT OUR LOCAL WATERWAYS?

Do alligators really live in New York City's sewers?

My name is Terrence Brock... and I am the head of the Engineering Survey Unit. For several years I've been the head of the Engineering Survey Unit of DEP's Field Operations Division for more than twenty years. In all that time I've never seen an alligator in the sewers. That's an urban myth. But I have seen water snakes, frogs, mice and other creatures. In my job monitoring the City's sewers, I search the TV feeds of cameras that send me photos and hydraulic conditions on line. Inspecting the sewers is hard work, but it's the only way to find anything that's broken and prepare areas in need of repair.

FACT: New York City's sewer system is the largest in the world. It's made up of 7,400 miles of sewer pipes. It's the only way to find anything that's broken and prepare areas in need of repair.

New York City's 7,400 miles of sewers... can be found in all different shapes and sizes, from the big old sections of pipe you see here. Some of the older pipes are made of cast iron or clay, and the largest ones, near John F. Kennedy Airport in Queens, are shaped like massive, thick-walled, concrete pipes. Today's sewers are made from a variety of materials, like concrete, tile, brick, and even steel. In some of the older parts of Lower Manhattan, today's sewers are made from old-fashioned cast-iron pipes. They all perform the same essential function: transporting wastewater to treatment plants.

KEEP OUR NEIGHBORHOODS AND WATERWAYS CLEAN

HELP PREVENT CLOGGING THE SEWERS

PREVENT SEWER OVERFLOW DURING WET WEATHER

Your actions can help protect our waterways!
Open each disk to learn more.

The Visitor Center at Newtown Creek – Sewer Exhibit

The Visitor Center at Newtown Creek includes exhibits that explain the City's water cycle.

In 2021 the City added an interactive component to an existing exhibit to provide information on:

- Water conservation
- Litter reduction
- Proper disposal of grease and other waste



Urban Park Rangers and Weekend, Pop-up, and Custom Adventures

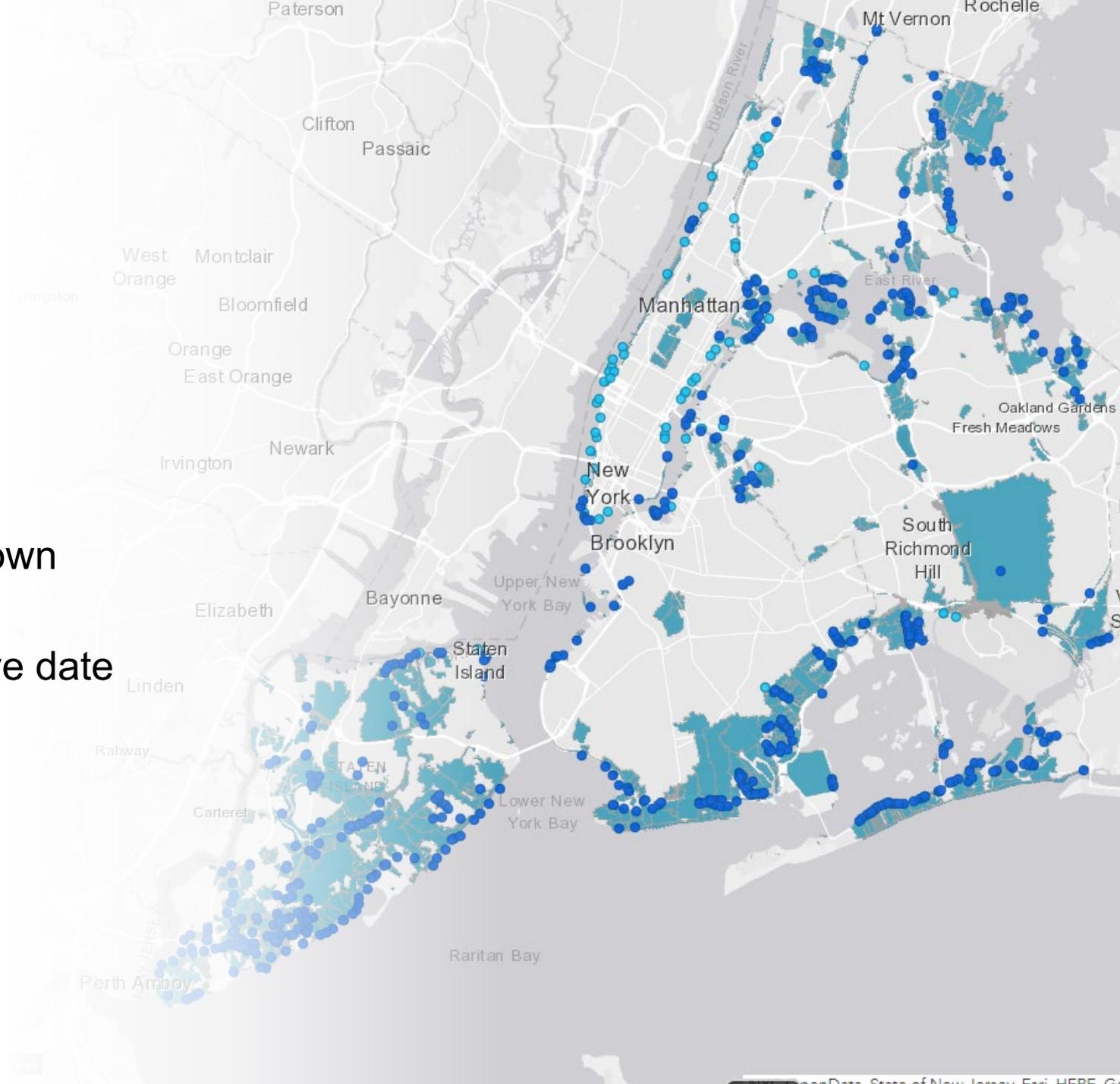
[The Urban Park Rangers](#) have helped New Yorkers and visitors of all ages to discover and explore NYC's natural world through environmental education, outdoor recreation, wildlife management, and active conservation.

In 2021, the Urban Park Rangers:

- Held over 700 events focused on ecology, stormwater, and waterbodies
- Reached nearly 10,000 participants

Mapping

- View the MS4 Map: www.nyc.gov/dep/ms4map
- Last Update: August 1, 2020
- Includes: 764 outfalls (98% of known MS4 outfalls)
- Next update: 5 years from effective date of Renewed MS4 Permit



Illicit Discharge Detection and Elimination

In 2021 the City:

- Detected 935 illicit discharges citywide
- Eliminated 927 illicit discharges citywide
- Inventoried approximately 9% of MS4 outfalls
- Repaired a leaky sanitary sewer near Oakland Lake, eliminating illicit discharge to Alley Creek
- Completed Alley Creek drone pilot project
- Completed sample collection for the Microbial Source Tracking (MST) study





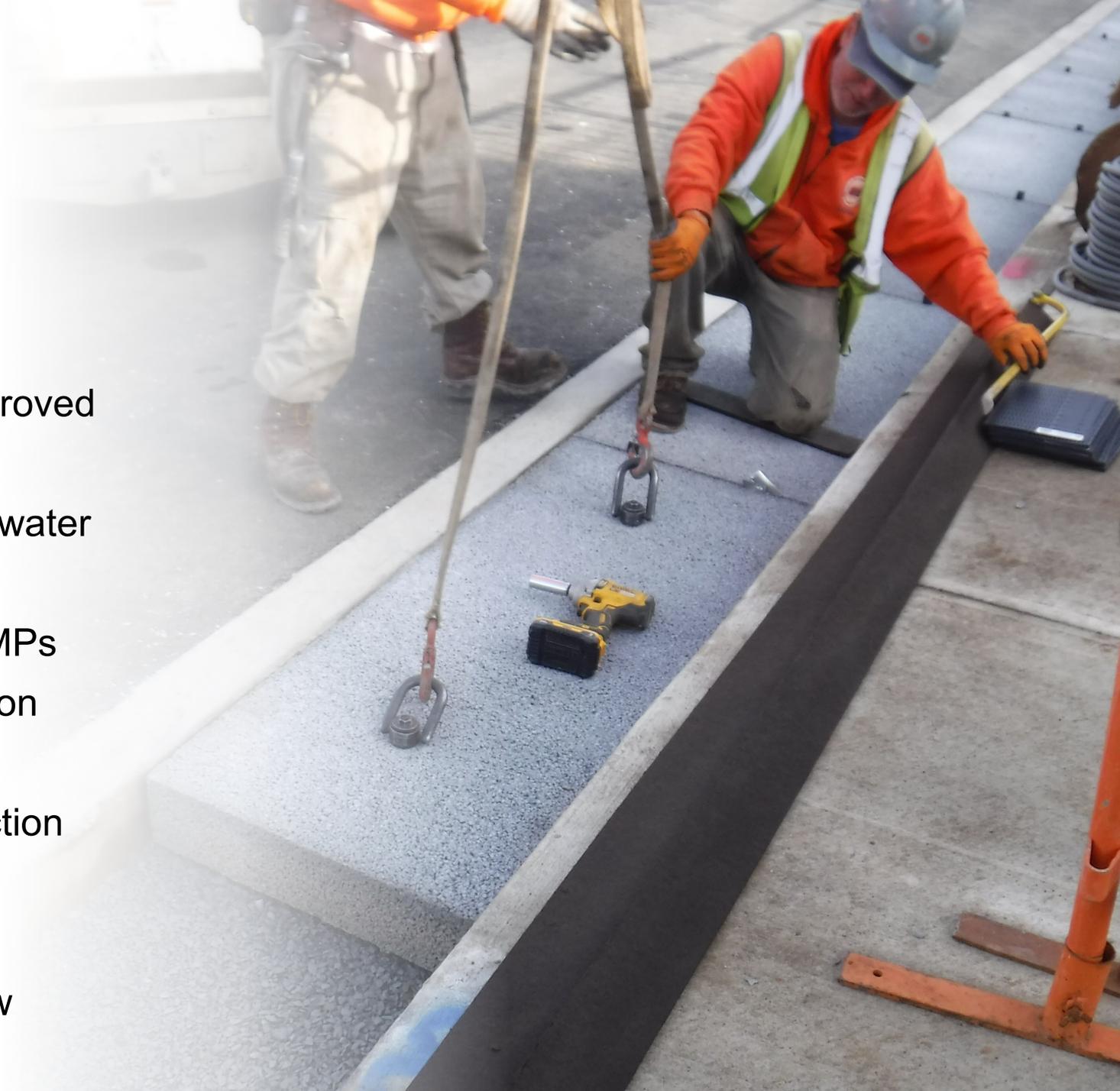
Microbial Source Tracking Study in Alley Creek

- Developed in partnership with the US Geological Survey (USGS) and NYSDEC
- Objective to identify relative host contribution of pathogens to Alley Creek
- Collected samples from Aug 2020 to June 2021 for fecal indicator bacteria, host-specific genetic markers, pharmaceuticals, etc.
- USGS expects the final report will be available to the public in summer 2022

Construction/Post-Construction

In 2021 the City:

- Reviewed 128 SWPPPs and approved 58
 - 42 with post-construction stormwater management practices (SMPs)
 - 16 without post-construction SMPs
- Issued 20 Stormwater Construction Permits
- Inspected 97% of active construction sites at least once
- Published a proposed Unified Stormwater Rule for public review



Primary Goal: Retention

Secondary Goal: Vegetated

Vegetated Retention

- Bioretention
- Rain garden
- Stormwater planter
- Green roof
- Tree planting / preservation
- Dry basin
- Grass filter strip
- Vegetated swale
- Other dual function systems with retention capability

Vegetated Treatment

- Bioretention
- Stormwater planter
- Constructed wetland
- Other dual function systems with treatment capability

Non-vegetated Retention

- Dry well
- Stormwater gallery
- Stone trench
- Porous pavement
- Synthetic turf field
- Other dual function systems with retention capability

Non-vegetated Treatment

- Porous pavement
- Synthetic turf field
- Sand filter
- Organic filter
- Wet basin / pond
- Other dual function systems with treatment capability

Capture & Reuse

- Rain tank
- Cistern



Unified Stormwater Rule

The USWR unifies several stormwater-related goals/rules across city and state agencies.

- **Expands Stormwater Permitting Program** to include:
 - projects draining to combined sewer system
 - projects disturbing 20,000 square feet or more of soil
 - projects creating 5,000 square feet or more of new impervious area
 - roadway maintenance that involves 20,000 square feet or more
 - **Prioritizes the use of vegetated retention** to meet water quality requirements



Environmental
Protection

APPENDIX* NEW YORK CITY STORMWATER MANUAL

*The New York City Stormwater Manual is an appendix to Chapter 19.1 of Title 15 of the Rules of the City of New York published as final on February 15, 2022

Unified Stormwater Rule

The USWR was the result of extensive stakeholder outreach and engagement.

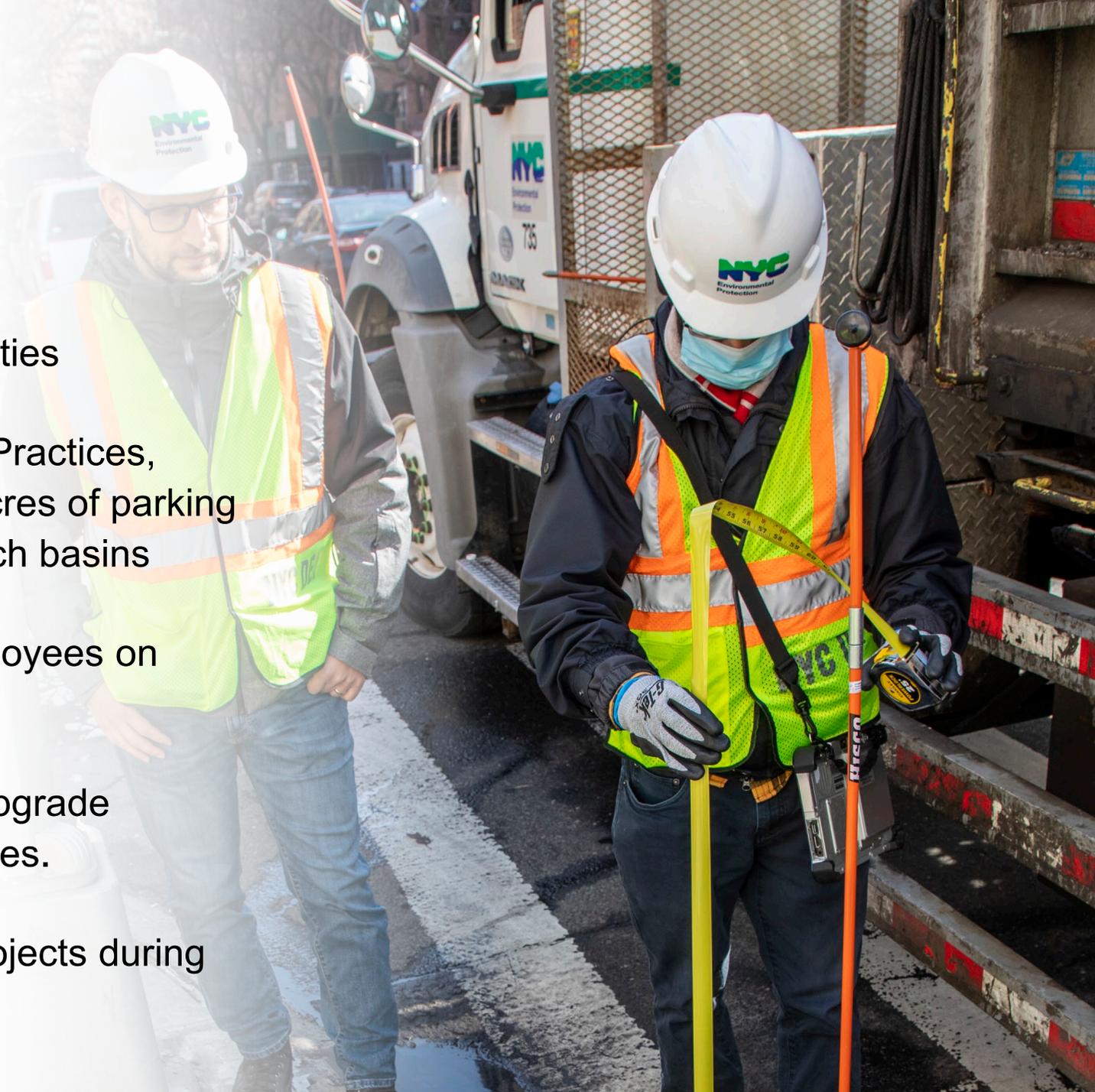
- In 2021, DEP held 15 stakeholder meetings on the USWR with the public, the state, developers, and other City agencies.
- DEP published proposed rules on December 10, 2021

The USWR went into effect February 15, 2022

PP/GH

In 2021 the City:

- Assessed over 100 municipal facilities
- Implemented Stormwater Control Practices, including sweeping over 47,000 acres of parking lot and inspecting over 12,400 catch basins
- Trained over 7,000 municipal employees on PP/GH.
- Evaluated 18 planned municipal upgrade projects for potential GI opportunities.
- Completed construction of 8 GI projects during planned municipal upgrades.



Industrial/Commercial

In 2021 the City:

- Inspected 32 permitted facilities
- Assessed 77 unpermitted facilities
 - 33 unpermitted facilities were identified for referral to NYSDEC for SPDES coverage (MSGP coverage including possible “no exposure” waiver or an individual SPDES permit).

Since the start of the Program,
1,067 unpermitted facilities
have been assessed.



Control of Floatable and Settleable Trash and Debris

In 2021 the City:

- Swept more than 544,000 miles of street
- Inspected over 12,400 catch basins
- Cleaned over 6,000 catch basins
- Launched new programs to keep NYC clean
- Began the Floatables Loading Rate Study





City Cleanup Corp

The City created the City Cleanup Corps, which hired workers for beautification projects throughout NYC.

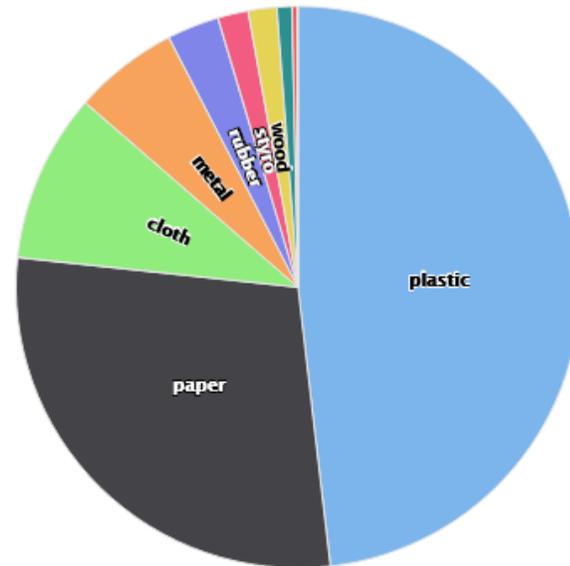
In 2021, the City Cleanup Corps:

- hand-swept over 70,000 blocks
- removed more than 1,000,000 bags of trash
- cleaned over 40,000 rain gardens
- stenciled 9,000 catch basins
- painted nearly 18,000 fire hydrants



Loading Rate Study

Type of materials collected by volume



- Weekly sampling from May through November 2021
- By volume, plastic is the most prevalent type of material discharging from catch basins into sewers.
- Volume of material collected related to preceding precipitation
- Data analysis is on-going

Monitoring and Assessment of Controls

In 2021 the City:

- Collected a total of 14 sets samples

In 2022 the City:

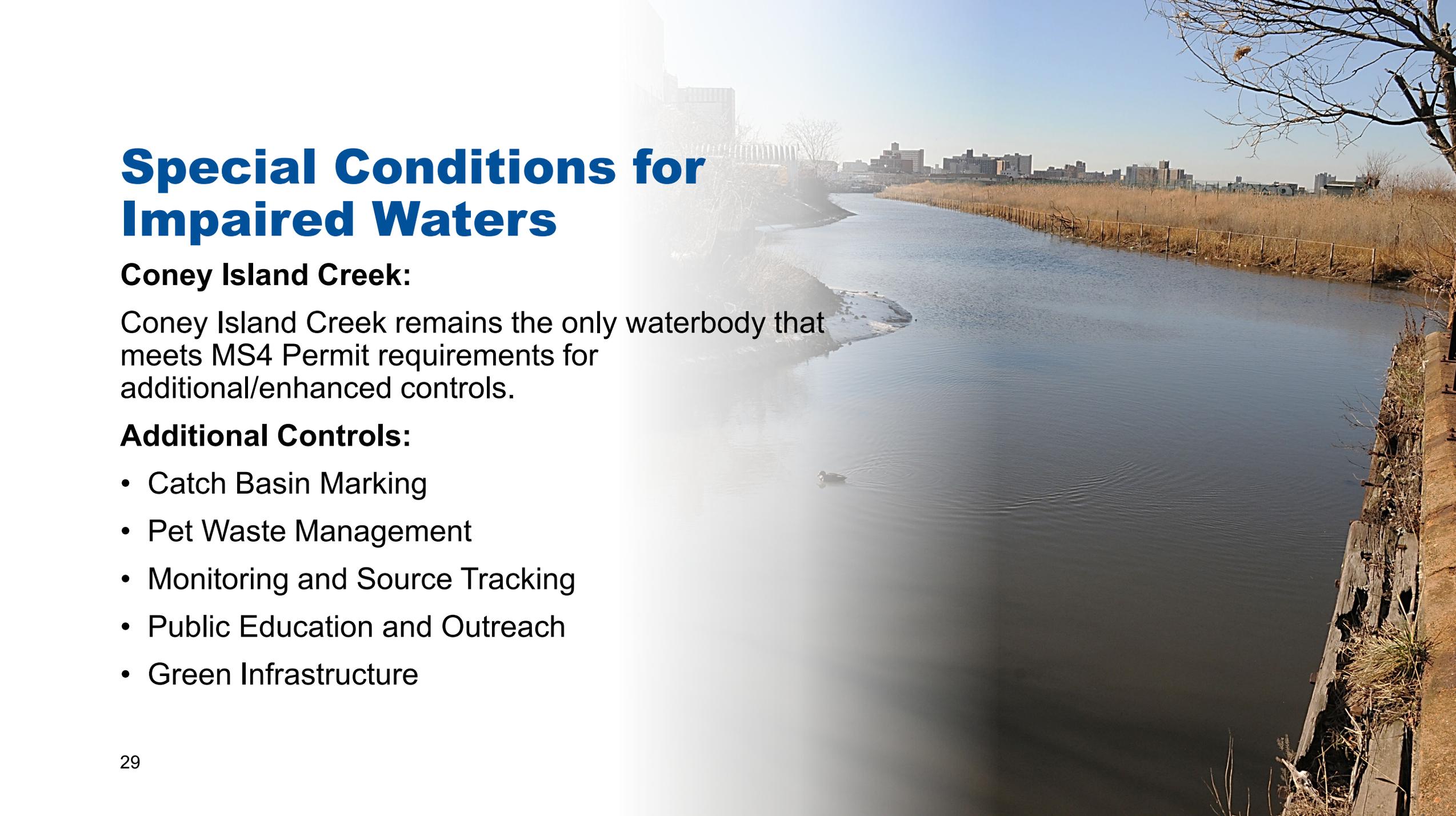
- Will continue tracking the weather to identify qualifying storm events

Number of Samples Collected by Outfall

Outfall	Borough	Land Use	Total Samples 2019	Total Samples 2020	Total Samples 2021
HP-640	Bronx	Mixed	3	3	2
HP-627	Bronx	Open Space	3	2	3
TI-604	Queens	Highway	3	2	2
TI-633	Queens	High-Density Residential	3	3	1
TI-658	Queens	Low-Density Residential	3	3	2
NCQ-632	Queens	Industrial	3	3	2
OH-607†	Brooklyn	Industrial	1	0	0
OB-722	Staten Island	Low-Density Residential	3	2	2
Total			22	18	14

† OH-607 is no longer an active monitoring location and the City will not collect flow data from this site. See the 2020 MS4 Annual Report for further detail.

Special Conditions for Impaired Waters



Coney Island Creek:

Coney Island Creek remains the only waterbody that meets MS4 Permit requirements for additional/enhanced controls.

Additional Controls:

- Catch Basin Marking
- Pet Waste Management
- Monitoring and Source Tracking
- Public Education and Outreach
- Green Infrastructure



Harbor Protectors Program

DEP launched Harbor Protectors Program in **Coney Island** with more than 100 participants.

Harbor Protectors sign up to support stormwater management by:

- Clearing catch basin grates
- Stenciling catch basins
- Caring for rain gardens
- Participating in shoreline cleanups

[Become a Harbor Protector!](#)

Q & A



For more information, visit: nyc.gov/dep/ms4

If you have any general questions, please contact the MS4 Team at MS4@dep.nyc.gov

Stormwater Permitting Group:
StormwaterPermits@dep.nyc.gov

