

Westchester's MS4 Communities on Long Island Sound Upgrade Stormwater Infrastructure to Comply with the Clean Water Act



by Jerry Ciotola and Robert Ferri
of EPA Region 2 Water Compliance Branch

Abstract

Since 2007 EPA initiated, working with NYSDEC and Westchester County DOH MS4 field assessments of every municipality in Westchester County discharging stormwater to the Long Island Sound. EPA's CWA and SDWA inspectors conducted administrative reviews of each municipality's MS4 Permit, inspected all municipal facilities, visited all outfalls, including a good number of catch basins and issued enforcement actions for compliance scheduling. Suspect outfalls were sampled, and EPA established a baseline for significant reduction in pathogens at suspected discharge points.

Regulatory Framework

Section 402 of the Clean Water Act

SPDES General Permit for Stormwater Discharges from
Municipal Separate Storm Sewer Systems (MS4s)

Safe Drinking Water Act

Class V Stormwater Wells

The current MS4 Permit runs through April 30, 2015

All ClassV wells need to be authorized by the Underground Injection Control Program

Goal

Reduce the level of pathogens/floatables to Long Island Sound

- Westchester MS4 Communities on LIS
- North Shore of LI MS4 Communities on LIS

Method

Complete on-site inspections and inventory of all municipal facilities, all outfall structures and a representative sample of catch basins in each MS4 community

Field inspections conducted within the storm system to determine areas where problems are apparent through EPA sampling (including DNA) and dye testing

Set an enforceable schedule to correct problems found

EPA Inspection

At a minimum, teams of two inspectors review the municipalities Storm Water Management Program (SWMP), Illicit Discharge Detection and Elimination Plan (IDDE), to identify storm sewer discharge locations as candidates for sampling for sewage

The inspection was completed for each outfall within the MS4 stormwater shed and a random sampling of catch basins (generally within the light commercial part of town)

We prepared a detailed inspection report which included the all storm system operations that were inspected and surveyed (the idea being to eliminate illicit discharges)

The obvious and not so obvious findings were further investigated by EPA's Monitoring and Assessment Branch who then followed up with sampling (in some cases DNA sampling was necessary)



Sources of Illicit Discharges

- Illegal dumping
- Floor drain connection to storm sewer
- Channeled industrial discharges
- Broken sanitary sewer line
- Cross-connections
- Sanitary sewer overflows
- Inflow/infiltration
- Straight pipe sewer discharge
- Failing onsite sanitary systems
- Improper RV waste disposal
- Pump station failure
- Wildlife (animals in storm lines)



Outfall Inspection Sheets

Town _____, NY – MS4 Field Inspection

Date: _____, 2012 time: _____ or page #: _____

inspector(s): Jerry Ciotola, Robert Ferri, _____
weather conditions: previous day _____ today _____
location (street #/cross streets/site name): _____
GPS coordinates: + _____ -0 _____

open channel (ditch/swale) description:

flow from/to a piped outfall discharges to: _____
Vegetation: bare soil riprap erosion: none mild severe

notes: _____

pipid outfall description

shape: circular elliptical box other _____ pipe material: concrete PVC steel CMP HDPE
height/diameter _____ width _____ water in pipe: none trickle partial full submerged
conduit condition: poor fair good sediment: none partial full
discharges to: _____

notes: _____

visual observations

debris around outfall: none sediment trash toilet paper debris in pipe: none sediment trash
flow volume: none low moderate heavy floatable: none oily foam trash organic
staining: none red/orange white green algae oily scum flow color: clear muddy milky sheen soapy
flow odor: none petroleum sewage sulfur chemical other _____

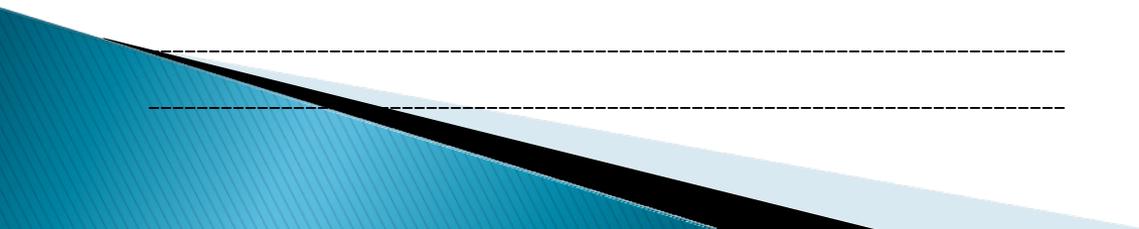
notes: _____

observations _____

action required

potential sampling location	photo ID # & description
_____	_____
_____	_____
_____	_____

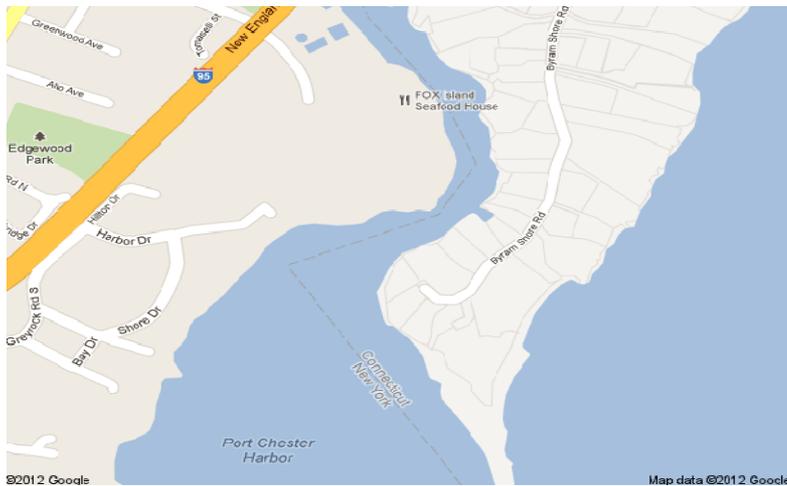
no action	<input type="checkbox"/>
structural (o & m)	<input type="checkbox"/>
illicit discharge	<input type="checkbox"/>
other	<input type="checkbox"/>



EPA Sampling

Sampling conducted was both dry and wet weather

Innovative DNA Sampling and Analysis was conducted thru EPA ORD Cincinnati



Dye Testing

County DOH was instrumental in pinpointing direct discharges to the Byram River

Enforceable Schedule

Municipality	Inspected	Schedule	Closed Out
Larchmont	3Q07	1Q08	1QFY13
New Rochelle	3Q07	1Q08	ongoing
Port Chester	3Q07	4Q08	ongoing
Mamaroneck (T)	4Q07	1Q11	ongoing
Mamaroneck (V)	4Q07	2Q11	ongoing
Harrison	3Q08		
Rye	3Q08		
Rye Brook	4Q09		
Eastchester	1Q11		
Pelham	2Q12		
Pelham Manor	2Q12		

Cost Estimates

Average (pop. 30,000, 2.5 sq. mi., old infrastructure)
\$1.7 M expended for the first 4 years of an 9 year project

MS4 Phase I

IDDE conducted DRE inspection, sampling and engineering	15%
TV inspection	25%

Phase II

Sanitary Sewer Repairs	23%
Sewer Replacement	20%
Sewer Lining	17%

Infrastructure Emergency Repair for 3 MS4s

Phase I Work

Larchmont	75 Lf sanitary
New Rochelle	280 Lf of 12" storm sewer and 2100 Lf of sanitary pipe
Port Chester	combination of storm/sanitary repair/lining 31,816 Lf pipe

MS4 Funding Sources

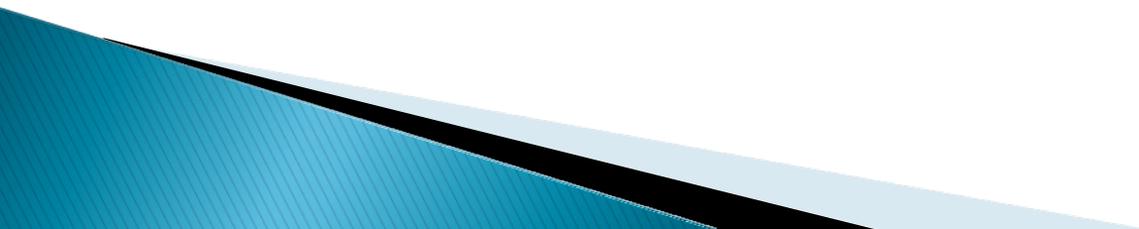
Competitive Grants (improvements and Green Infrastructure through the state)

Clean Water State Revolving Fund Grants

Water Quality Improvement Projects (Statewide Grant Program)

Clean Waters (EPA Grant Program)

Example of Success/Port Chester

- Created a Village wide Sanitary Sewer District
 - Changed water fees based on water use percentage for sanitary sewer (all properties included)
 - Estimated 15 million budget over a five year period
 - Experimenting with bacteria in manholes
- 

Contributors:



Contacts:

mckenna.douglas@epa.gov
modigliani.justine2epa.gov
ciotola.jerry@epa.gov
ferri.robert@epa.gov

Natalie Browne, NYSDEC R3
Joseph DeMura, NYSDEC HQ
Patrick Ferracane, NYSDEC R3
Kathleen Foley, DESA
Meena George, NYSDEC R3
Steven Hale, DESA
Ruth Izraeli, EPA R2
Nicole Kraft, DECA
Henry Mazzucca, EPA R2
Brian Mitchell, IEC
Justine Modigliani, EPA R2
Dolph Rotfeld Engineering
Mathew Smith, Westchester DOH
Steven Winnet, EPA R1