Pollution Prevention/Good Housekeeping Assessments for Over 1000 Municipal Facilities

Manuel Quintela
NYC Environmental Protection
Flushing, NY 11373
mquintela@dep.nyc.gov

Radmehr, Ryan
NYC Environmental Protection
Flushing, NY 11373
rradmehr@dep.nyc.gov

John Aldrich, PE, D.WRE
CDM Smith
Cleveland OH 44114
aldrichja@cdmsmith.com

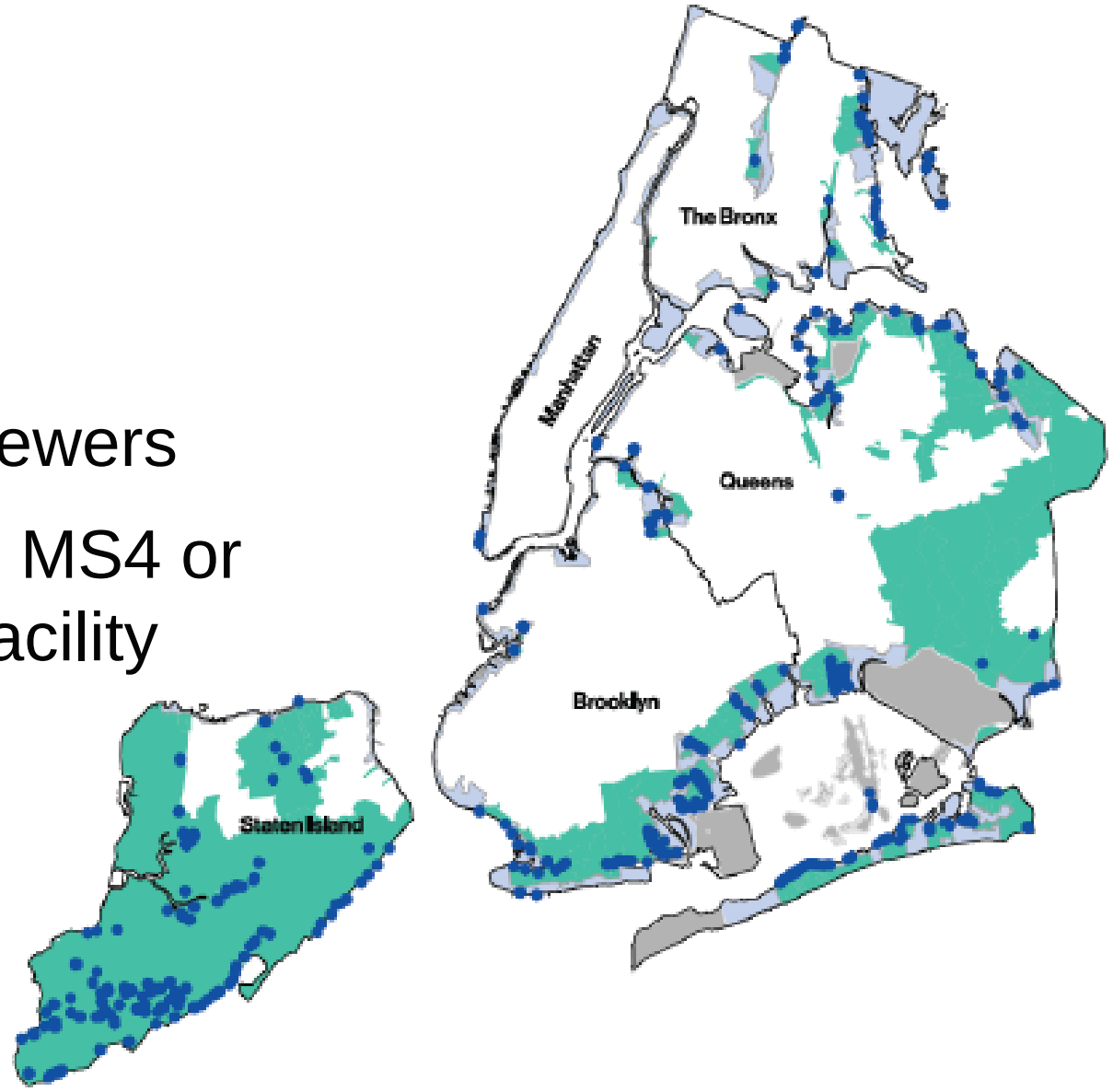
Patrick Parault, P.E.
Arcadis
Long Island City, NY 11101
Patrick.Parault@arcadis.com

Today's Presentation

- New York City's MS4 Program
- Inventory and Initial Prioritization of Municipal Facilities
- Self-Assessment Standard Operating Procedures
- Pilot Test Findings
- Conclusions

New York City in a Nutshell

- 305 square miles
- 8,622,698 population (2017)
- 72 percent impervious area
- 60 percent served by combined sewers
- MS4 area served by a city-owned MS4 or overland flow from a city-owned facility

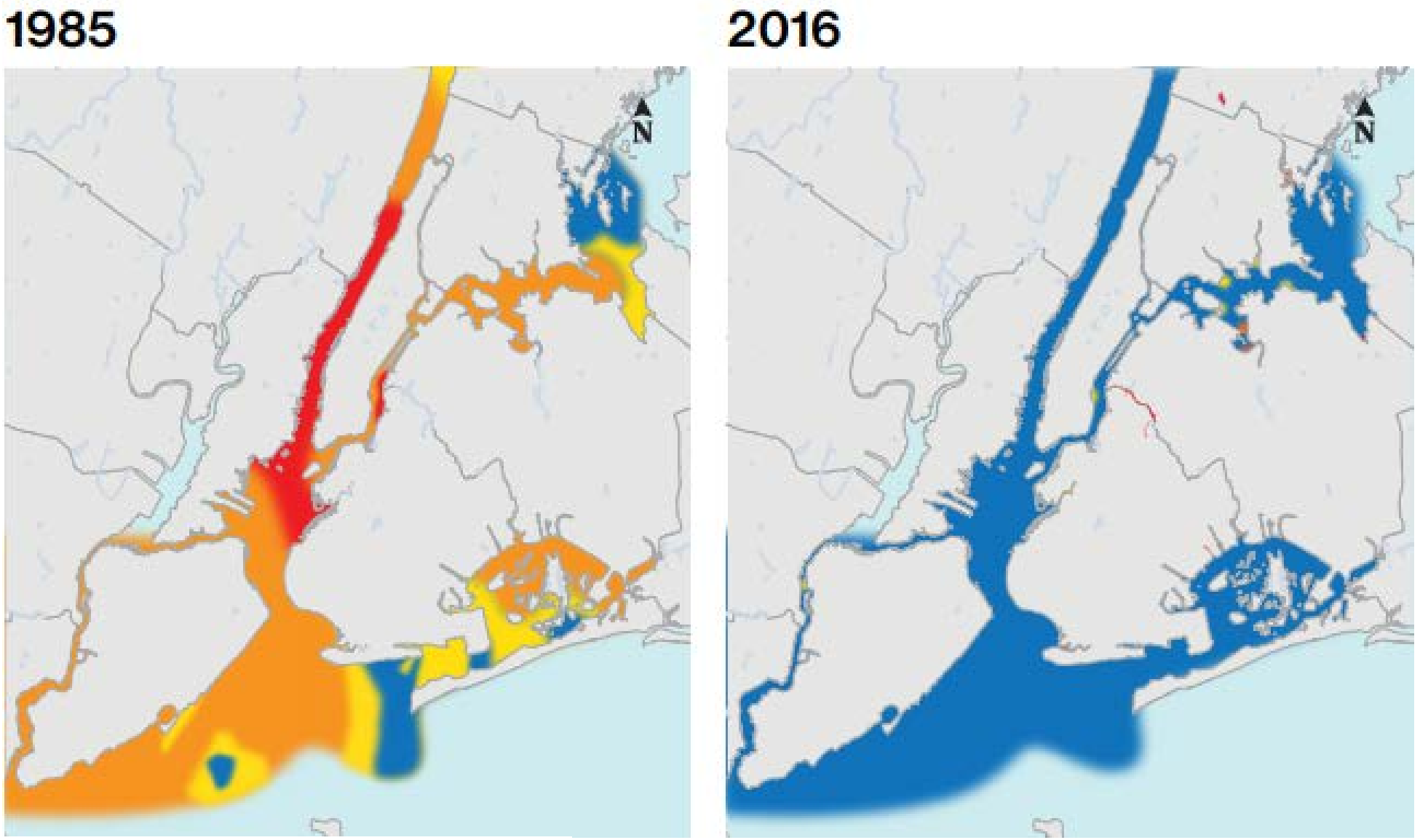


Drainage Area Type

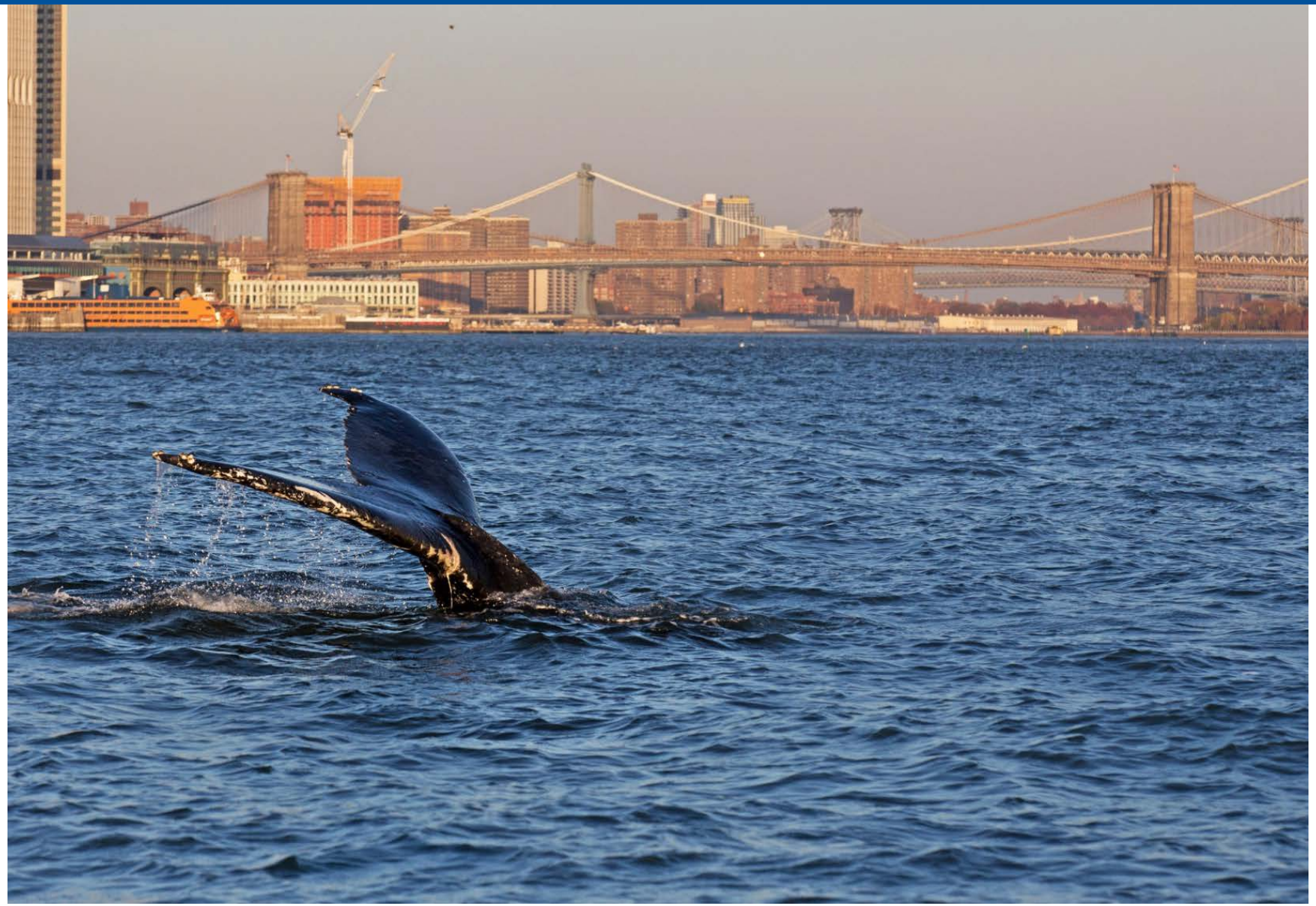
- Direct Drainage
- Municipal Separate Storm Sewer System
- Combined Sewer System (Not Covered by MS4 Permit)
- Federal Land and Airports (Not Covered by MS4 Permit

- MS4 Outfalls

Water Quality Improvement in NYC



New York Harbor Today



New York State Pollutant Discharge Elimination System (SPDES)

- Municipal Separate Storm Sewer System Permit (MS4 Permit)
  - Effective date: August 1, 2015
  - Duration: renewal every 5 Years
  - Permit intent: to implement measures to reduce pollution in stormwater runoff
  - NYC is required to develop a Stormwater Management Program (SWMP) to submit to NYSDEC on August 1, 2018

Plan Development and Review Process

2015 - Q2 2017

- Interagency coordination
- DEC coordination
- Public Meetings
- Progress Reports and Public Comment Periods

Q3 2017 – Q1 2018

- Draft development
- Draft evolved through multiple review rounds/ review by interagency work group
- Plain language and graphics review

Q2 – Q3 2018

- Draft available for public comment
- Public meetings
- Finalize Plan
- Submit August 1

- Full Plan available at www.nyc.gov/dep/ms4
- Public-friendly Executive Summary also available

New York's Stormwater Management Program (SWMP) Plan

1. Legal Authority and Program Administration
2. Public Education and Outreach
3. Public Involvement and Participation
4. Mapping
5. Illicit Discharge Detection and Elimination
6. Construction and Post-Construction
7. Pollution Prevention/Good Housekeeping for Municipal Operations and Facilities
8. Industrial and Commercial Stormwater Sources
9. Control of Floatable and Settleable Trash and Debris
10. Monitoring and Assessment of Controls
11. Special Conditions for Impaired Waters
12. Recordkeeping and Reporting

Municipal Facilities/Operations Pollution Prevention/Good Housekeeping

Major MS4 Permit Requirements:

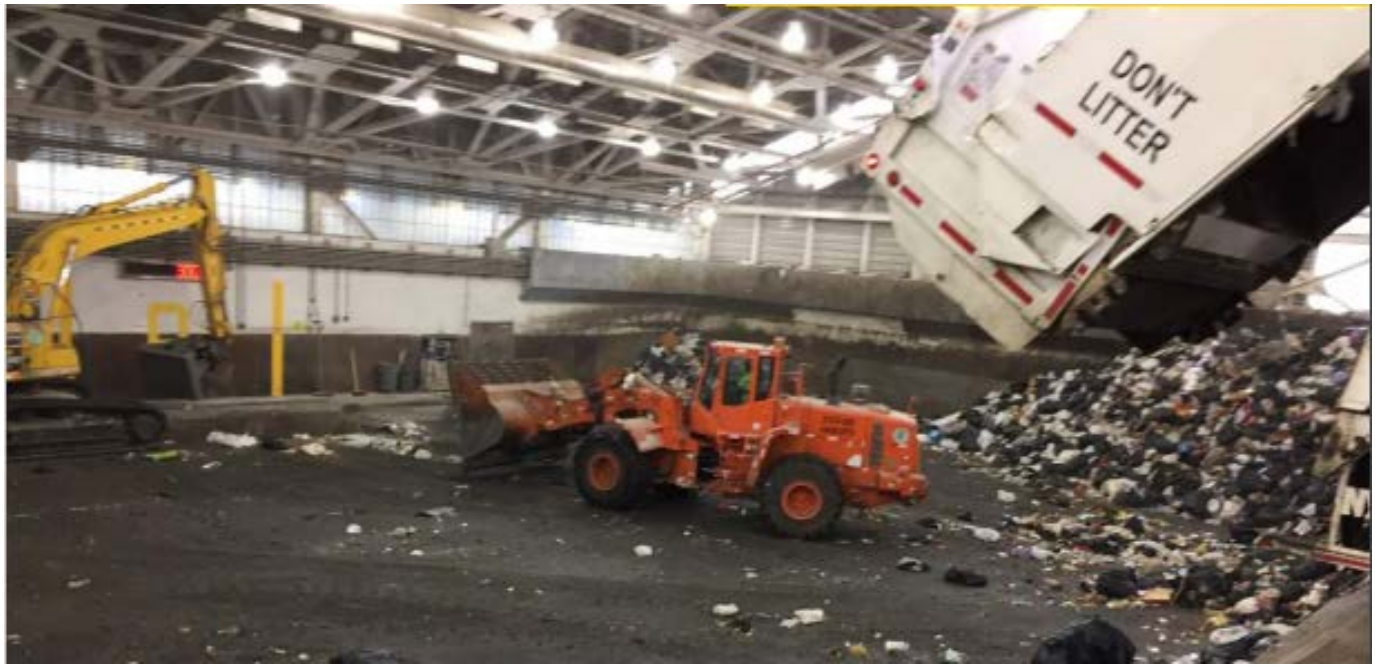
- Develop a program to address municipal operations and facilities
- Prepare an inventory of municipal operations and facilities with preliminary prioritization of high, medium, and low categories
- Prepare a procedure for self-assessment
- Identify best management practices and stormwater control measures
- Create an employee training program
- Incorporate runoff reduction / green infrastructure into municipal projects.

City Agencies with Facilities/Operations

- Department of Citywide Administrative Services (DCAS)
- Department of Design and Construction (DDC)
- Department of Environmental Protection (DEP)
- Department of Corrections (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)

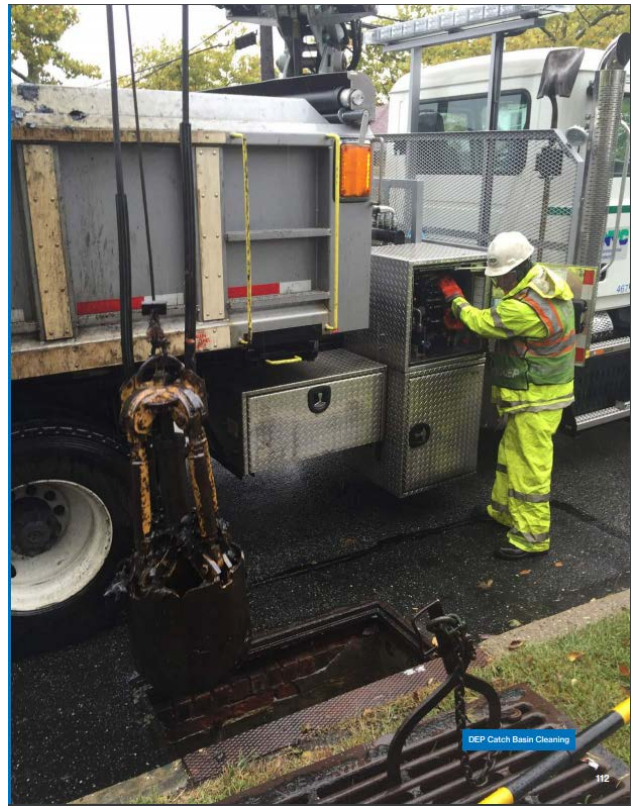
On-Site Municipal Operations/Facilities

- **Vehicle/Equipment Operations**
  - Vehicle/Equipment Maintenance/Repair
  - Vehicle/Equipment Cleaning
  - Vehicle/Equipment Fueling
  - Truck Bed Management
  - Vehicle/Equipment Storage
- **Material Storage Facilities**
  - General Outdoor Storage
  - Above-Ground Storage Tanks
  - Underground Storage Tanks
  - Drum Storage and Management
  - Material Stockpiles
- **Waste Management Facilities**
  - Waste Transfer Stations
  - Landfills
  - Shooting Ranges
- **Other Types of Facilities**
  - Golf Courses
  - Animal Recreational Facilities/Stables
  - Swimming Pools
  - Marine Operations



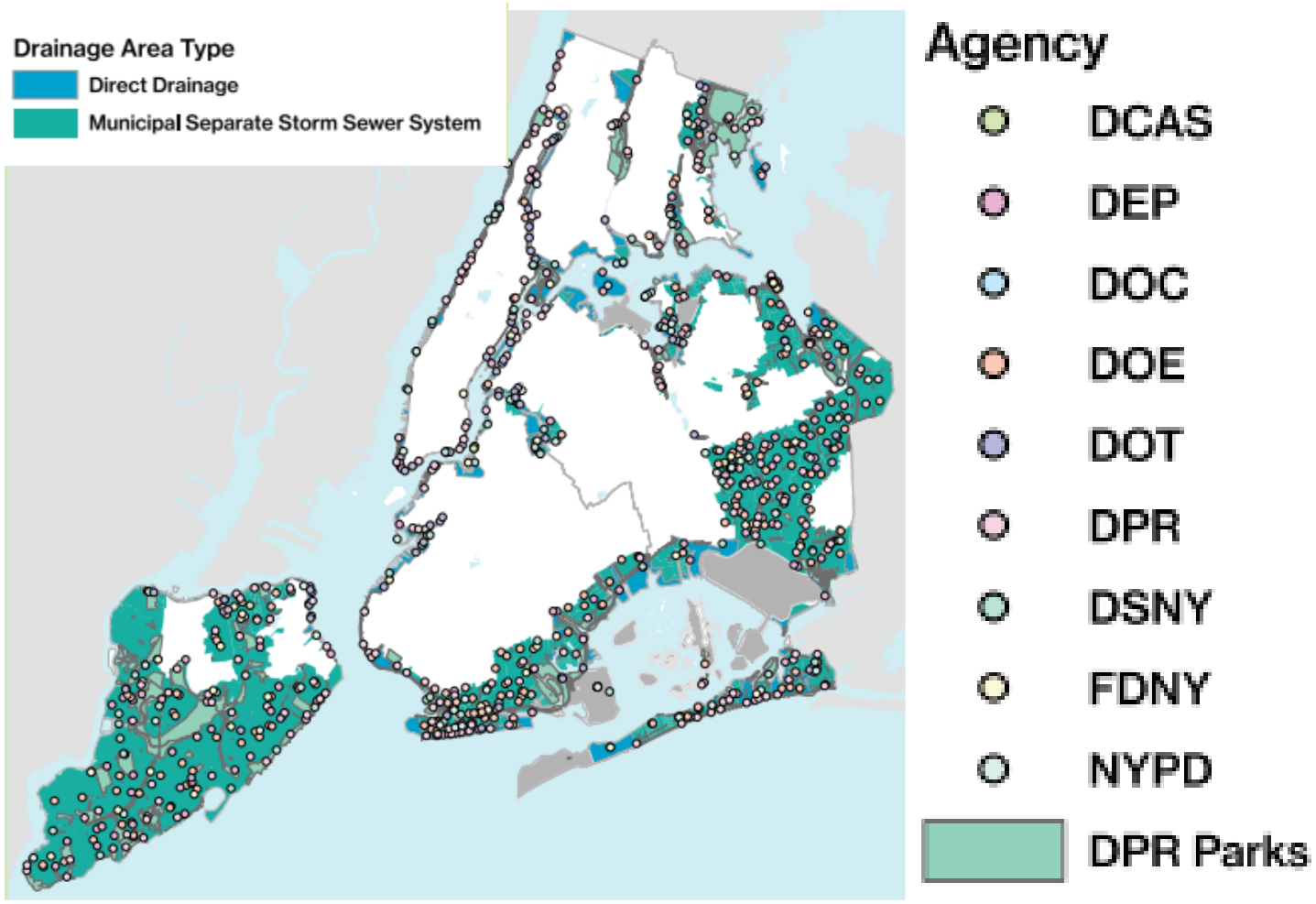
Off-Site Municipal Operations/Facilities

- **Stormwater Collection System Maintenance**
  - Catch basin/inlet cleaning and repair
  - Storm sewer/underground facility cleaning/repair
  - Ditch/open channel cleaning/repair
  - Green infrastructure/open facility maintenance
  - Hydrologic habitat maintenance
- **Paved Surface Maintenance**
  - Pavement Cleaning
  - Winter Pavement maintenance
  - Pavement/Sidewalk resurfacing/repair
  - Spill prevention and response
  - Bridge/elevated structure maintenance
- **Landscaping/Open Space Maintenance**
  - Herbicide/pesticide/fertilizer application
  - Landscape/ground care
  - Turf management
- **Building Maintenance and Repair**
  - Building Repair and Remodeling
  - Painting



Initial Inventory of Municipal Facilities

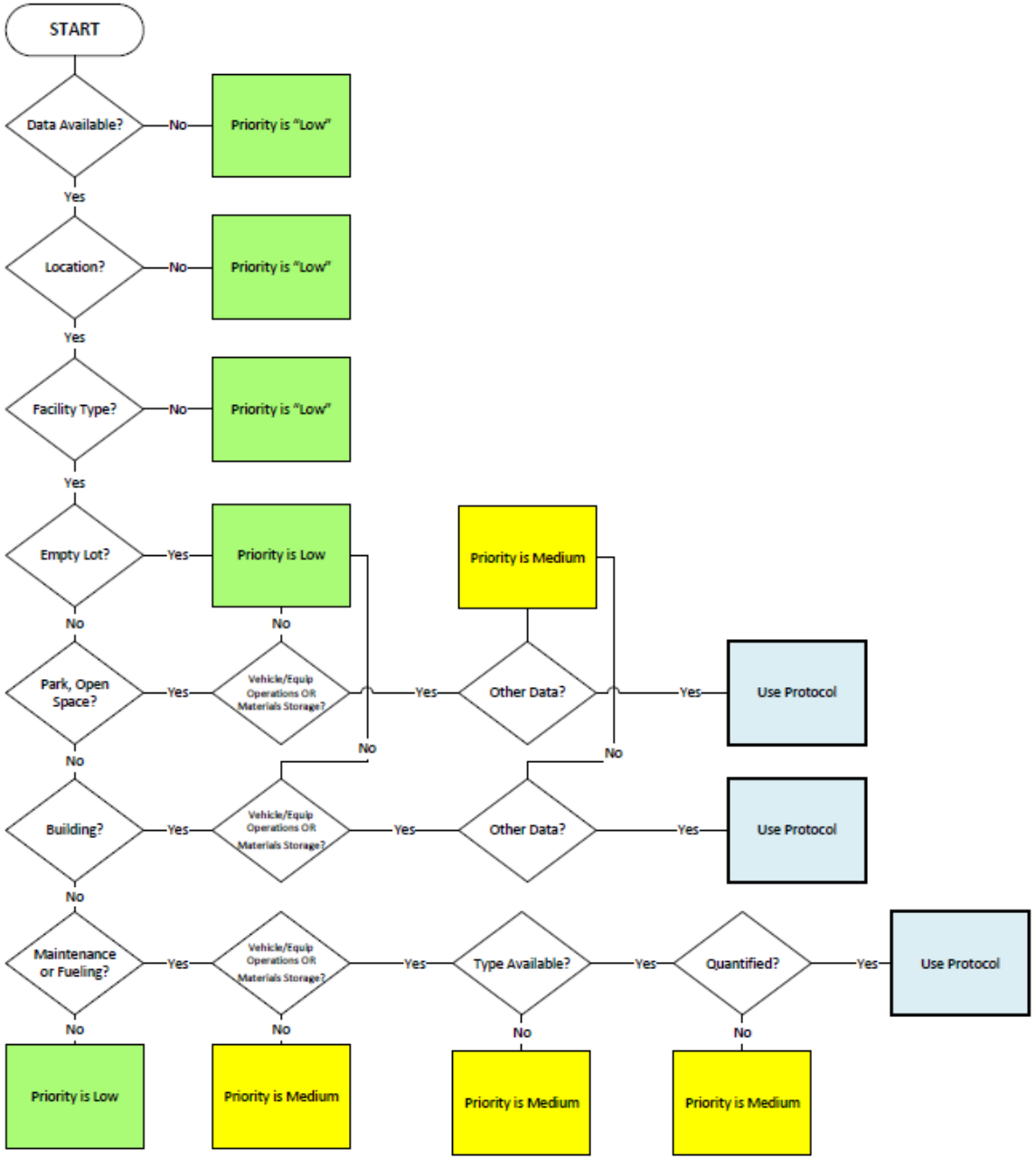
- **Drains to MS4 or directly to receiving water**
- **Activity of Concern exposed to stormwater:**
  - Vehicle/Fleet/Equipment Operations
  - Storage Facilities
  - Stormwater Collection and Conveyance System
  - Paved Surface Maintenance
  - Landscape and Open Space Maintenance
  - Waste Management
  - Small-Scale Land Disturbances
  - Building Maintenance/Repair
  - Marine Operations



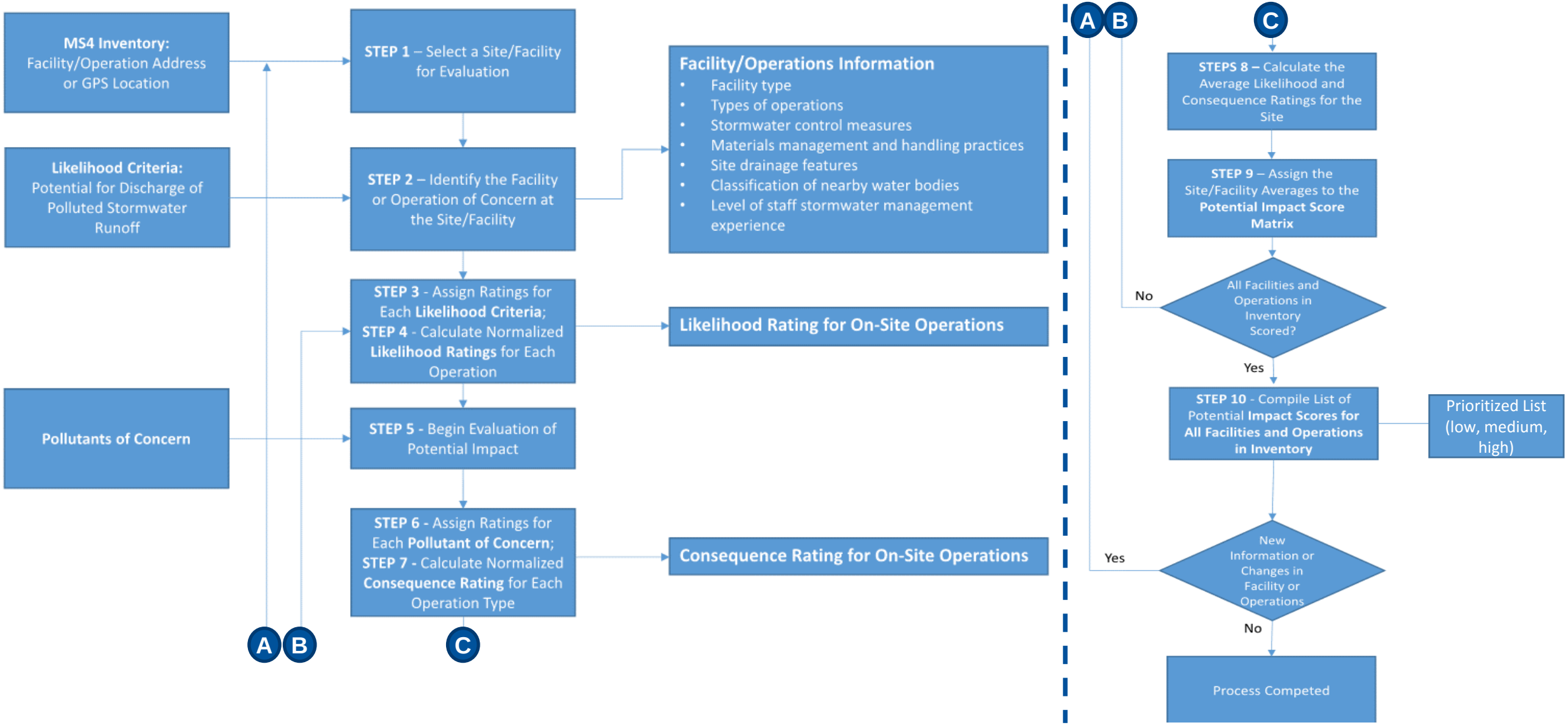
Initial Prioritization of Municipal Facilities

Available Data Assessment

- Data assessed:
  - Aerial Photography
  - Agency-provided (limited)
- Low priority if:
  - No data
  - Not in MS4 area
  - No visible activities of concern
- Medium priority if:
  - Visible activities of concern
  - No data for determining risk
- Prioritization Protocol for Remaining Facilities



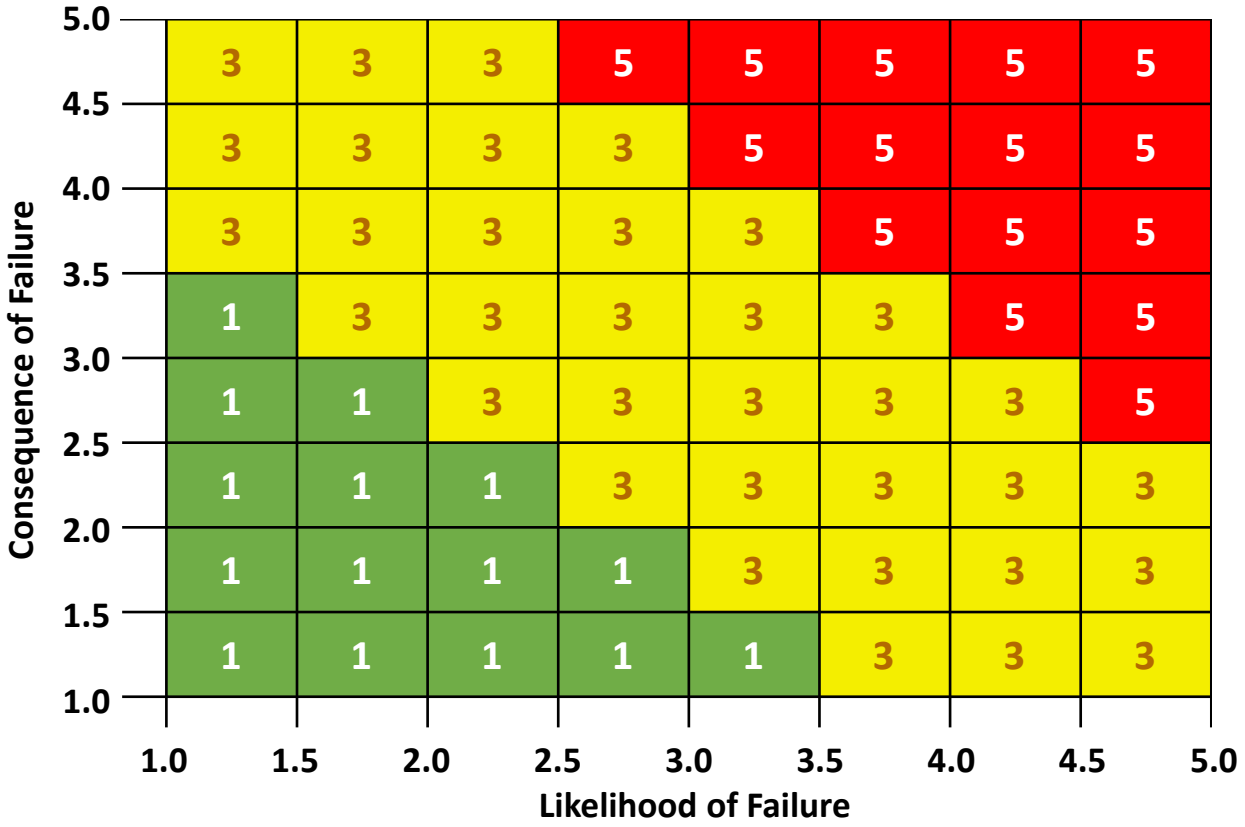
Initial Prioritization of Municipal Facilities



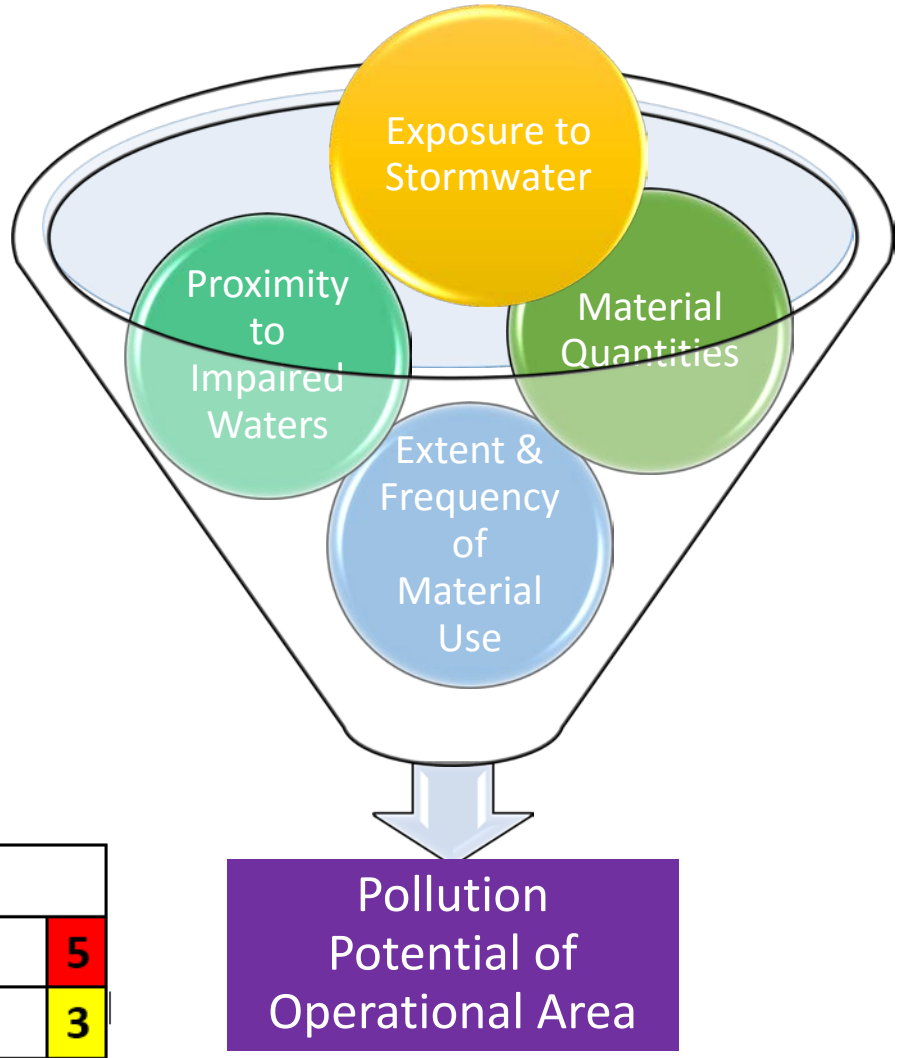
Initial Prioritization of Municipal Facilities

Stormwater Pollution Potential:

- **Likelihood:** Proximity to waters, Exposure to Stormwater, Extent/Frequency of Use
- **Consequence:** Material Types/Quantities (related to Pollutants of Concern)

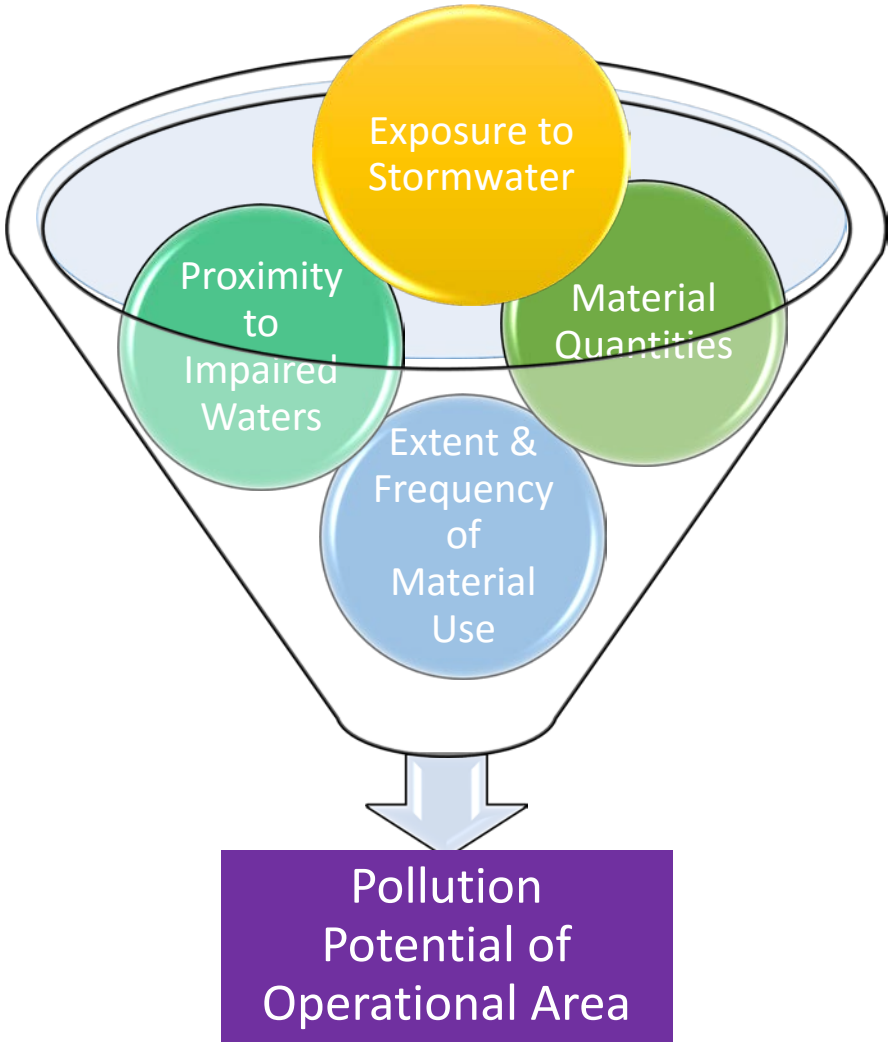


LEGEND	
HIGH	5
MEDIUM	3
LOW	1



Initial Prioritization of Municipal Facilities

Results



Agency	Low Priority Facilities	Medium Priority Facilities	High Priority Facilities	Total Number of Facilities
DCAS	2	3	--	5
DEP	16	115	--	131
DOC	--	--	2	2
DOE	14	146	--	160
DOT	55	21	2	78
FDNY	35	40	--	76
DSMY	26	34	3	63
DPR	172	91	--	263
NYPD	22	44	2	68
Total	**342**	**494**	**10**	**846**

Self-Assessment Protocol

Pre-Assessment Activities

- Develop Prioritized Schedule
- Mobilize Agencies
- Facility/Operation Mobilization
- Select Represenative Off-Site Operations

Assessment Day Activities

- Orientation
- Map Facility/Operational Areas
- Inspect/Assess Each Operational Area:
  - Assess Potential for Runoff with POCs
  - Assess existing/Potential SCMs
  - Review Findings with Supervisor(s)

Post-Assessment Activities

- Compile Draft Assessment Summary
- Prepare Action Plan
- Finalize Report Following Agency Review
- Re-prioritize Facilities and Operations

Key Participants in PP/GH Program

Key Participants	Prepare for Assessments	Perform Assessments	Participate in Assessments	Perform SCMs	Report Progress
NYCDEP Liaison	✔		Initial		
Agency PP/GH Liaison	✔				✔
PP/GH Contractor	✔	Initial			
Agency Assessor(s)	✔	Subsequent	Initial		✔
Facility Mangers			✔	✔	✔
Operation Supervisors			✔	✔	✔
Staff				✔	

Pre-Assessment Activities

Prioritization

- DEP establishes assessment priorities, schedule, SOPs
- DEP hires PP/GH contractor

Agency Mobilization

- Agency assessors
- Facility managers
- Operation supervisors
- Background information

Facility/ Operation Mobilization

- Facility manager, operations supervisors notified
- Representative off-site operations identified
- Facility information assembled

Assessment Activities

Orientation
- Describe Assessment
- Confirm participants
- Review facility-specific information

Facility Layout
- Operational areas
- Material/waste storage areas
- Drainage patterns
- Location of storm and sewer drains

Pollutant Potential ID
- Material quantities, frequency of use
- Likelihood, consequence of pollutant release

SCM Assessment
- Existing SCM effectiveness
- Risk-appropriate SCM enhancements

Brief supervisors on findings

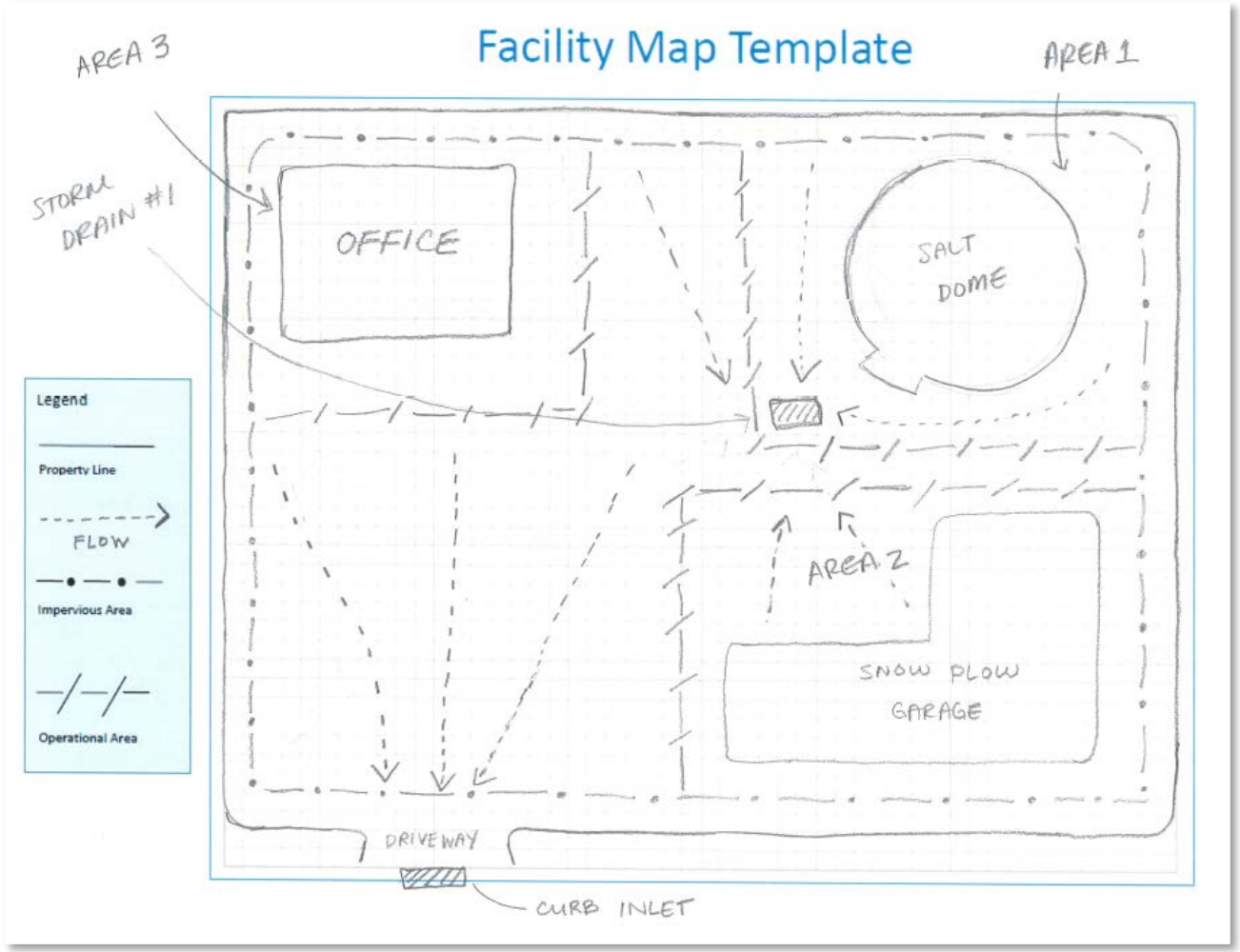
Assessment Activities

On-Site Operations Checklist

Fill out the checklist by 1) transfering the name of each operational area from the Facility Layout Map to the appropriate column heading, and 2) placing an "X" next to each operation that is conducted within each operational area.

Category	Operation	ID	OPERATIONAL AREAS		
			Area 1	Area 2	Area 3
Education	Staff Education and Training	SCM-EDU-1	X	X	X
Vehicle/Fleet/Equip. Operations	Veh./Equip Main and Repair	SCM-PP/GH-1			
	Veh./Equip Cleaning	SCM-PP/GH-2			
	Veh./Equip Fueling	SCM-PP/GH-3			
	Truck Bed Management	SCM-PP/GH-4			
Storage Facilities	Veh/Equip Storage	SCM-PP/GH-5		X	
	General Outdoor Storage	SCM-PP/GH-6	X		
	Above-Ground Storage Tanks	SCM-PP/GH-7			
	Underground Storage Tanks	SCM-PP/GH-8			
	Drum Storage and Mgmt.	SCM-PP/GH-9			
	Material Stockpiles	SCM-PP/GH-10	X		
	Catch Basin/ Inlet Clean & Rpr	SCM-PP/GH-11			
Stormwater Collection Systems	Storm Sew/Undgrnd Fac. Cln & Rpr	SCM-PP/GH-12			
	Ditch/Open Channel Clean & Rpr	SCM-PP/GH-13			
	Green Infr./Open Fac. Maint.	SCM-PP/GH-14			
	Hydro. Habitat Mod.	SCM-PP/GH-15			
Paved Surface Maintenance	Pavement Cleaning	SCM-PP/GH-16			
	Winter Pavement Maint.	SCM-PP/GH-17			
	Pavemt/Sidewalk Resurf & Rpr	SCM-PP/GH-18			
	Spill Prevention and Repair	SCM-PP/GH-19			
	Bridge/Elev. Structure Maint.	SCM-PP/GH-20			
Landscape and Open Space Maintenance	Herbic./Pestic./Fertilizer App	SCM-PP/GH-21			
	Landscape/Turf/Grounds Care	SCM-PP/GH-22			
	Synthetic Turf Management	SCM-PP/GH-23			
	Golf Courses	SCM-PP/GH-24			
	Animal Rec Fac./Stables Maint.	SCM-PP/GH-25			
Waste Management	Waste Mgmt. And Disposal	SCM-PP/GH-26			
	Debris Mgmt. And Disposal	SCM-PP/GH-27			
	Waste Transfer Stations	SCM-PP/GH-28			
	Landfill Runoff	SCM-PP/GH-29			
	Shooting Ranges	SCM-PP/GH-30			
Building Maintenance and Repair	Building Repair and Remodel	SCM-PP/GH-31			
	Painting	SCM-PP/GH-32			
	Swimming Pool Maint./Disch.	SCM-PP/GH-33			
Marine Ops.	Dock/Pier Maintenance	SCM-PP/GH-34			
	On-Land Marine Ves. Maint.	SCM-PP/GH-35			
	Marine Fueling Stations	SCM-PP/GH-36			
	Loading/Unloading	SCM-PP/GH-37			
Small Scale Land Disturbance	Erosion and Sediment Control	SCM-PP/GH-38			

Facility Layout / Operational Areas



Assessment Activities

Worksheet B-3.2
Materials Inventory

Note: Prepare one Worksheet for each Operational Area shown on the Facility Layout Map

Facility / Operation Name: DCAS-DFMCS Central Repair Shop

Operational Area Name: 1 Area 1

Type of On-Site Operation: Vehicle/Fleet/Equipment Operations

Exposure to Stormwater: Criteria[2]	Score	Weight	Total
No Cover	5	4	20

Proximity to Impaired Water Body and Flood Risk: Criteria[1]	Score	Weight	Total
Discharge only to combined sewer system	1	4	4

Material	A. Inventory	B. Weight	C. Quantity[3] (Q)		D. Frequency of Use[3] (F)		Associated Pollutants
Gasoline	Y	2	M	6	M	6	Oil & Grease, Hazardous Materials
Diesel Fuel	Y	2	M	6	M	6	Oil & Grease, Hazardous Materials
Motor Oil	Y	2	M	6	M	6	Sediment, Oil & Grease, Hazardous Materials
Radiator Coolant	Y	2	M	6	M	6	Sediment, Hazardous Materials, Debris
Hydraulic Fluid	Y	2	M	6	M	6	Oil & Grease, Hazardous Materials
Solvents	Y	3	M	9	M	9	Oil & Grease, Hazardous Materials
Asphalt	Y	2	M	6	M	6	Sediment, Oil & Grease, Hazardous Materials
Sand/Stone Mix		1		0		0	
Soil		1		0		0	
Paint		2		0		0	
Pesticides	Y	3	H	15	H	15	Hazardous Materials, Herbicides/Pesticides
Herbicides		3		0		0	
Fertilizer	N	3	H	0	L	0	
Used Tires		2		0		0	
Used Vehicle Batteries		2		0		0	
Cement/Fluid Concrete		2		0		0	
Other Waste Fluids		3		0		0	
Used Paint Containers		1		0		0	
Garbage	Y	2	H	10	H	10	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Leachate, Vegetative Waste
Trash / Litter	Y	2	L	2	M	6	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Oil & Grease, Hazardous Materials
Vegetation	Y	2		0		0	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Heribicides/Pesticides, Vegetative Waste
Salt / Deicers	Y	2	L	2	M	6	Sediment, Hazardous Materials, Deicers
Other		0		0		0	
		0		0		0	
		0		0		0	
		0		0		0	

Maximum Material Score:	130	**Total Quant:**	74	**Total Freq. of Use:**	82	Blue Cells indicate input needed
		Consequence:	2.85	**Likelihood:**	3.12	White Cells indicate autofilled calculation - DO NOT EDIT

Overall Risk: Medium

Assessment = No Exposure = No SCMs Required

[1]Proximity to Impaired Water Body and Flood Risk: Cri	Score
Discharge only to combined sewer system	1
Greater than 2,000 ft. from waterbody and not within FEMA 100-yr f	3
Within 2,000 ft. of waterbody or FEMA 100-yr flood zone	5

[2]Exposure to Stormwater: Criteri	Score
Total Cover	0
Partial Cover/Runoff to Exposed Area	3
No Cover	5

[3]Quantity and Frequency of Use factors precomputed based on assigned material weights and associated high, medium and low values

Note: If obvious situation where non-stormwater discharge is flowing to storm drains can be seen during assessment, note here and document.

Potential Pollutant Identification

Develop for every operational area:

- ❖ Inventory materials
- ❖ Define quantity, frequency of use
- ❖ Assess exposure to stormwater
- ❖ Determine drainage to impaired waters

Assessment Activities

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Materials Inventory

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Hydraulic Fluid	Y	2	M	6	M	6	Oil & Grease, Hazardous Materials
Solvents	Y	3	M	9	M	9	Oil & Grease, Hazardous Materials
Asphalt	Y	2	M	6	M	6	Sediment, Oil & Grease, Hazardous Materials
Sand/Stone Mix		1		0		0	
Soil		1		0		0	
Paint		2		0		0	
Pesticides	Y	3	H	15	H	15	Hazardous Materials, Herbicides/Pesticides
Herbicides		3		0		0	
Fertilizer	N	3	H	0	L	0	
Used Tires		2		0		0	
Used Vehicle Batteries		2		0		0	
Cement/Fluid Concrete		2		0		0	
Other Waste Fluids		3		0		0	
Used Paint Containers		1		0		0	
Garbage	Y	2	H	10	H	10	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Leachate, Vegetative Waste
Trash / Litter	Y	2	L	2	M	6	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Oil & Grease, Hazardous Materials
Vegetation	Y	2		0		0	Sediment, Pathogens, Floatables, Nitrogen, Phosphorus, Heribicides/Pesticides, Vegetative Waste
Salt / Deicers	Y	2	L	2	M	6	Sediment, Hazardous Materials, Deicers
Other		0		0		0	
		0		0		0	
		0		0		0	
		0		0		0	

Maximum Material Score:	130	Total Quant:	74	Total Freq. of Use:	82
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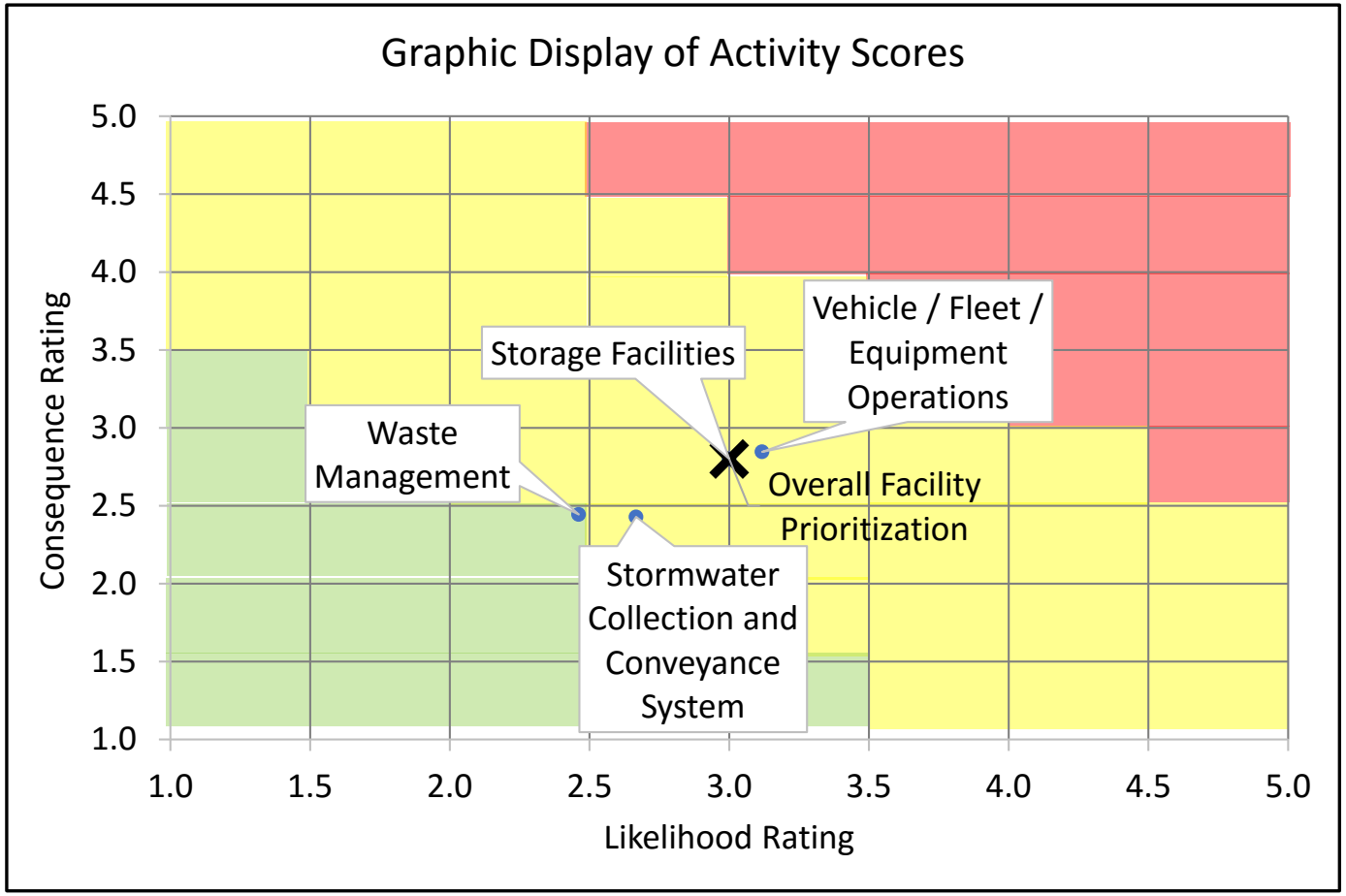
Pollutant Risk Assessment



Assessment Activities

NYC Municipal Self –Assessment
General Outdoor Storage Checklist (SCM-PP/GH-6)

Agency Name: Small Town Maintenance Facility/Operation Name: Snow Removal Central

Operational Area Name/Location (from Facility Map): Salt Dome/ Area #1 On-site ✓ Off-Site ___

Name of Assessor Mr. Assessor Assessor Initials MA Date: 1/15/2017

Control Strategies/Suggested Practices	SCM Condition	SCM Recommendation
COVER/CONTAIN		
Cover material storage area under existing structure to minimize contact with rainwater and snow.	E	Continue
At minimum use a secure waterproof cover that is in place unless active work is occurring.	E	Continue
CLEAN UP		
Use dry cleaning methods (sweeping) regularly to remove debris.	P	Recommend
REDUCE/MINIMIZE		
Provide clean and clear walkways for inspections and properly stack materials to minimize accidental spills or dispersement.	E	Continue
Perform regular inspections to identify material spillage and damaged containers or structures.	P	Recommend
Keep storage areas secure to prevent vandalism/unauthorized access.	P	Recommend
Use material transfer procedures that reduce the chance of leaks or spills.	N	Recommend
PRODUCT SUBSTITUTION		
N/A		
MANAGE RUNOFF		
Use curbing or berm at edge of storage area to prevent runoff/run-on from adjacent areas to minimize storm water contact.	N/A	None
CAPTURE/TREAT/DISPOSE		
Utilize catch basin inserts, vaults, or particle separators to prevent particulate matter from entering the storm sewer system.	N	Recommend
Comments (Use back for additional space, if necessary):		

SCM Assessment

SCM Condition Assessment	
E	Existing, Effective
P	Existing, Partially Effective
N	Not Existing
N/O	Existing but Not Observed in Field
N/A	Not Applicable

Recommend SCM	Action Plan
Continue	Maintain, enhance existing SCM
Recommend	Schedule/implement new SCM
None	SCM not under consideration

SCM Guidance

- SCM-1 – Vehicle/Equipment Maintenance
- SCM 2 – Vehicle/Equipment Cleaning
- SCM-3 – Vehicle/Equipment Fueling
- SCM-4 – Truck Bed Management
- SCM-5 – Vehicle/Equipment Storage
- SCM-6 – General Outdoor Storage
- SCM-7 – Above-Ground Storage Tanks
- SCM-8 – Underground Storage Tanks
- SCM-9 – Drum Storage and Management
- SCM-10 – Material Stockpile
- SCM-11 – Catch Basin/Inlet Cleaning and Repair
- SCM-12 – Storm Sewer / Underground Facility Cleaning and Repair
- SCM-13 – Ditch/Open Channel Cleaning and Repair
- SCM-14 – Green Infrastructure / Open Facility Maintenance
- SCM-15 – Hydrologic Habitat Modification
- SCM-16 – Pavement Cleaning
- SCM-17 – Winter Pavement Maintenance
- SCM-18 – Pavement/Sidewalk Resurfacing/and Repair
- SCM-19 – Spill prevention and Response
- SCM-20 – Bridge/Elevated Structure Maintenance
- SCM-21 – Herbicides/Pesticides/Fertilizer Application
- SCM-22 – Landscape / Grounds Care
- SCM-23 – Turf Management
- SCM-24 – Golf Courses
- SCM-25 – Animal Recreational Facilities/Stables Maintenance
- SCM-26 – Waste Management and Disposal
- SCM-27 – Debris Management and Disposal
- SCM-28 – Waste Transfer Stations
- SCM-29 – Landfill Runoff
- SCM-30 – Shooting Ranges
- SCM-31 – Building Repair and Remodeling
- SCM-32 – Painting
- SCM-33 – Swimming Pool Maintenance/Discharges
- SCM-34 – Dock/Pier Maintenance
- SCM-35 – On-Land Marine Vessel Maintenance and Repair Areas
- SCM-36 – Marine Fueling Stations
- SCM-37 – Loading/Unloading
- SCM-38 – Erosion and Sediment Control

Assessment Activities

SCM Guidance

A relevant example photo provides visual context to each SCM

SCM Category, Name and ID correspond to SCM Inventory

A concise statement summarizes the purpose and function fo each SCM

MCMs Addressed in this SCM

Guidance and suggested performance goals are provided

Most effective controls (detailed on reverse side) are overviewed

Common sense effectiveness checklist allows SWMP developers to easily access which pollutants will be well-controls by this SCM

Specifies related regulations and control measures to be considered, in addition to the SCM, while developing an SWMP Plan

Potential control strategies for effective stormwater pollution

Storage Facilities

Issue Date: January 2017

GENERAL OUTDOOR STORAGE — **SCM-PP/GH-6**

Description

Outdoor storage of solid materials, equipment, or other items can introduce sediment, nutrients, hydrocarbons, trash and other pollutants to stormwater runoff. Application of control measures can help minimize the potential introduction of pollutants into the stormwater system and local waterways.

Image Source:

NYC MS4 SPDES Permit Requirement(s)	IV.E Construction Site Controls IV.G Pollution Prevention/Good Housekeeping for Municipal Operations and Facilities IV.H Industrial/Commercial Sources
KEY SELECTION CRITERIA	
Targeted Activities	• Storage of outdoor solid materials
Performance Goals	• Minimize pollutants entering storm sewers and waterways • Implement good housekeeping practices
Most Effective Controls (more detail on page 2)	• Store under cover • Perform regular inspections • Use secondary containment
RELATED CONTROL MEASURES AND REGULATIONS	
Related SCMs	• SCM-PP/GH-7 • SCM-PP/GH-26 • SCM-PP/GH-9 • SCM-STC-14 • SCM-PP/GH-10 • SCM-STC-24
Other Regulatory Requirements*	

EFFECTIVENESS FOR TARGETED POLLUTANTS/ IMPAIRMENTS	
✓	Floatables
✓	Sediments
✓	Nitrogen
✓	Phosphorus
	Pathogens
	Oxygen Demand
✓	PCBs
✓	Metals
✓	Petroleum Products/ PAHs

✓✓ = Good ✓ = Fair = Poor

CONTROL STRATEGIES	
✓	Cover/Contain
✓	Clean Up
✓	Reduce/Minimize
	Product Substitutions
✓	Manage Runoff
✓	Capture/Treat/Dispose

✓ = Yes

*Note: RCNY: Rules of the City of New York; NYCRR: New York Codes, Rules and Regulations; CFR: Code of Federal Regulations

Listed regulatory requirements are not inclusive of all legal requirements applicable to NYC facilities. Local, state, and/or federal regulations should be consulted to ensure full regulatory compliance.

Strategies to decrease the size and concentration of pollutants being exposed

Control measures intended to prevent stormwater and pollutants from interacting

Methods to remove pollutant from an area before being exposed to stormwater/ runoff

Strategies to manage stormwater flow

Alternative product choices to decrease pollutant

Options for capturing/ removing pollutants before discharge and proper disposal

Citations provided

GENERAL OUTDOOR STORAGE

Control Strategies/Suggested Practices
COVER/CONTAIN
• Cover material storage area to minimize contact with rainwater and snow. • At minimum use a secure waterproof cover that is in place unless active work is occurring.
CLEAN UP
• Use dry cleaning methods (sweeping) regularly to remove debris.
REDUCE/MINIMIZE
• Provide clean and clear walkways for inspections and properly stack materials to minimize accidental spills or dispersement. • Perform regular inspections to identify material spillage and damaged containers or structures. • Keep storage areas secure to prevent vandalism/unauthorized access. • Use material transfer procedures that reduce the chance of leaks or spills.
PRODUCT SUBSTITUTION
• N/A
MANAGE RUNOFF
• Use curbing or berm at edge of storage area to prevent runoff/run-on from adjacent areas to minimize storm water contact.
CAPTURE/TREAT/DISPOSE
• Utilize catch basin inserts, vaults, or particle separators to prevent particulate matter from entering the storm sewer system.

References

1. *USEPA, Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) – Fact Sheet, 2015*
2. *NYSDEC SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity, Permit No. GP-0-12-001, October 2012*
3. *USEPA Potential Pollutants Likely Associated with Specific Municipal Facilities and Activities, November 2011*
4. *California Stormwater Quality Association, Best Management Practice Handbook – Municipal, January 2003*
5. *Center for Watershed Protection, USEPA, Urban Subwatershed Restoration Manual 8: Pollution Source Control Practices, Version 2.0, February 2005*
6. *Municipal Pollution Prevention and Good Housekeeping Program Assistance, NYSDEC May 2006*

These control strategies and suggested practices are not all-inclusive and are intended to help identify practices that are efficient, effective and practicable in addressing potential impacts to stormwater.

SCM-PP/GH-6: General Outdoor Storage

Post-Assessment Action Planning

Pre-Assessment Activities

Assessment Day Activities

Post-Assessment Activities

- Compile Draft Assessment Summary
- Prepare Action Plan
- Finalize Report Following Agency Review
- Re-prioritize Facilities and Operations

Post-Assessment Action Planning

Worksheet C-1.2

Facility Action Plan

Agency Name: _____

Facility Name: _____

Facility Location: _____

Date and Time of Assessment: _____

Date of Facility Notification: _____

Weather Conditions: _____

Overall Site Prioritization: _____

Next Self-Assessment to be Conducted by: _____

Section C-1.2.1
Summary of Pollution Potential of Operations

Operational Area		Pollution Potential [1]
Name	Description	
1.		
2.		
3.		
4.		
5.		

[1] Pollution Potential from Prioritization: High, Medium, Low

Section C-1.2.2
Summary of Potential Compliance Issues and Recommended Actions

Action Item	Operational Area	Action Category[2]
1.		
2.		
3.		
4.		
5.		
6.		
7.		

[2] Action Category includes: (i) "NA" – no action required; (ii) "SPCC/FRP" – action requires development of an SPCC and/or FRP; (iii) "Spills/Illicit Discharge/Dumping" – action requires follow-up in accordance with the Illicit Discharge Detection and Elimination (IDDE) plan; (iv) "Potential Unpermitted Discharge" – action requires follow up in a timely manner.

Section C-1.2.3
Summary of Pollution Prevention/Good Housekeeping Recommended Actions

Action Item	Operational Area
1.	
2.	
3.	
4.	
5.	

Section C-1.2.4
Permitting Requirements for the Facility

Are some or all operations at the Facility considered Industrial Activities? ☐ Yes ☐ No
If Yes, Fill in the following information:

Type of industrial activity conducted: _____

Applicable MSGP Requirements: _____

_____

_____

_____

_____

Select appropriate permit for Facility (select one):

☐ NYC MS4 SPDES Permit

☐ NYCDEC SPDES Individual

☐ NYSDEC MSGP

Section C-1.2.5
Assessment Report Sign-Off

Assessor's Name: _____ Date Prepared: _____, 20__

Agency Liaison Name: _____ Date Approved: _____, 20__

Facility Manager Name: _____ Date Approved: _____, 20__

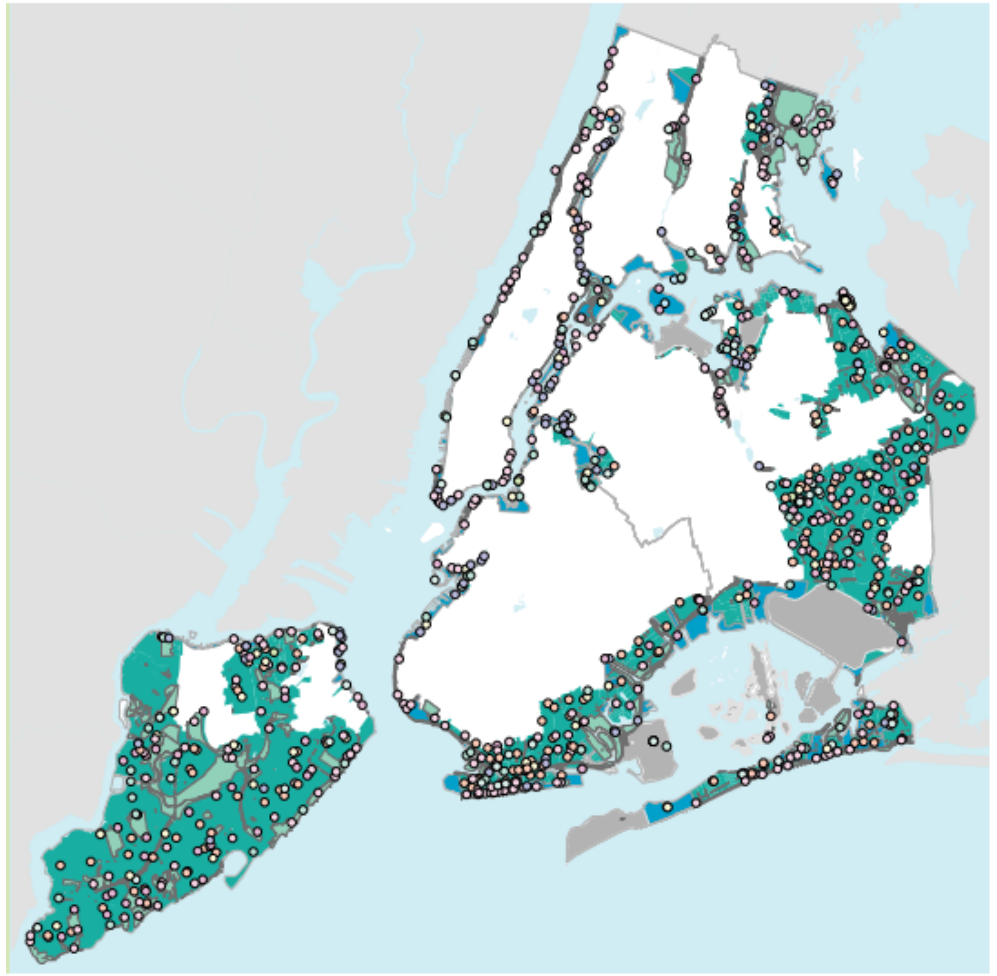
Pilot Phase

Pilot Phase Objectives

- Select Key Sites
  - Potential for high risk and range of operations
- Validation of SOPs and SCMs
  - Test and finalize SOPs and SCMs before application across all sites
- Calibrate Approach and Recommendations
  - Ensure evaluations and recommendations are consistent

Selection of Key Sites

- High priority sites
- Range of operations
  - Based on coordination with Agencies
- Proximity
  - To support multiple assessments per day



Selection of Key Sites

High and Pilot Sites						
Agency	Low Priority Sites in Pilot	Medium Priority Sites in Pilot	High Priority Sites in Pilot	Add'l Sites in Pilot	Total	% of Total*
DSNY	2	6	3	1	**12**	19%
DOT	0	3	2	0	**5**	6%
DPR	4	3	0	1	**8**	3%
DOE	0	7	0	0	**7**	4%
FDNY	1	1	1	0	**3**	4%
DCAS	1	0	0	0	**1**	20%
DEP	0	3	0	0	**3**	2%
NYPD	0	2	2	2	**6**	9%
DOC	0	0	2	0	**2**	100%
Total	**8**	**25**	**10**	**3**	**47**	**5%**

New sites identified

Selection of Key Sites

Sites merged

- Sites merged
  - Initial inventory included multiple sites within same area or facility
  - Results in combination of sites
- Sites split
  - Sites that represent different operating departments
- Sites removed
  - Administration sites (e.g., offices)

Assessment Day

Project Orientation

- Objectives of assessment
- General overview of process

Site Orientation

- Review of site map
- Review of activities and materials
- Pre-population of checklists

Site Walkthrough

- Identification of materials
- Discussion of frequency
- Discussion of activities not witnessed

Debrief

- Review of findings
- Discussion of potentially major issues

Preliminary Findings

- Most facilities had a number of acceptable housekeeping practices in place
- Most recommendations are housekeeping/operational focus or administrative in nature
  - Store indoors where practical
  - Sweep area
- Some structural recommendations
  - Repairs & perimeter berms
- Identification of other potentially applicable SPDES permits

Covered secondary containment

Ponding and direct drainage

Material Stockpiles

Combination exposed and unexposed salt stockpile

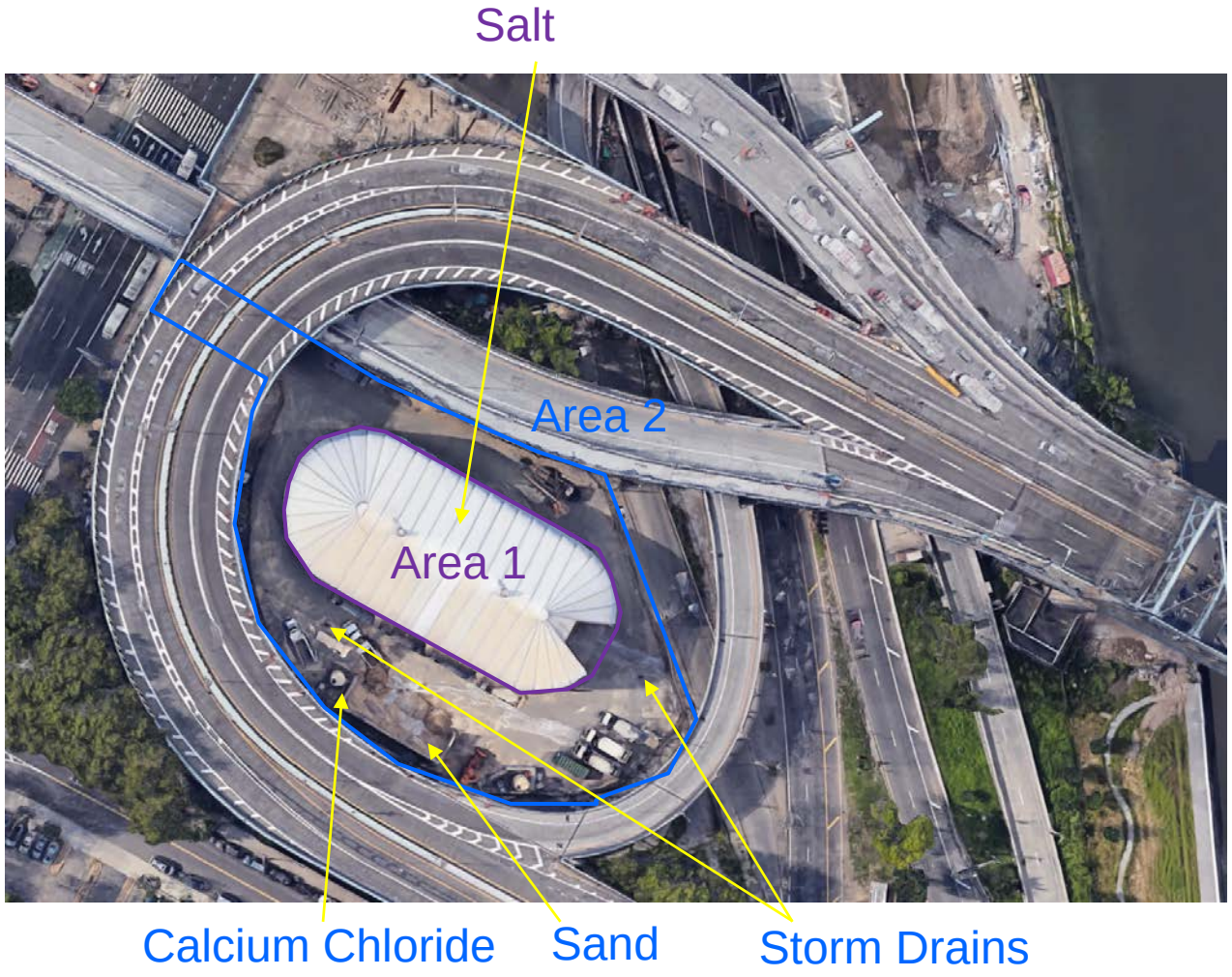
Exposed sand stockpile

Exposed millings stockpile

Partially exposed soil stockpile

Salt Storage Facility

- Area 1
  - Salt dome
- Area 2
  - Calcium chloride
  - Sand stockpile
  - Catch basins
  - Pavement maintenance



Identifying Applicable Stormwater Control Measures

Category	Operation	ID	OPERATIONAL AREAS		
			Area 1	Area 2	Area 3
Education	Staff Education	SCM-EDU-1			
Vehicle/Fleet/ Equipment Op	Veh/Equipment Main and Repair	SCM-PP/GH-1			
	Veh/Equip Cleaning	SCM-PP/GH-2			
	Veh/Equip Fueling	SCM-PP/GH-3			
	Truck Bed Management	SCM-PP/GH-4			
	Veh/Equip Storage	SCM-PP/GH-5			
Storage Facilities	General Outdoor Storage	SCM-PP/GH-6			
	Above-Ground Storage Tanks	SCM-PP/GH-7		X	
	Underground Storage Tanks	SCM-PP/GH-8			
	Drum Storage and Management	SCM-PP/GH-9			
	Materials Stockpiles	SCM-PP/GH-10	X	X	
Stormwater Collection Systems	Catch Basin/Inlet Clean & Repair	SCM-PP/GH-11		X	
	StormSew/UndergroundFacCl&Rep	SCM-PP/GH-12			
	Ditch/Open Channel Clean & Rep	SCM-PP/GH-13			
	GreenInfr/Open Fac Maint.	SCM-PP/GH-14			
	Hydro. Habitat Mod	SCM-PP/GH-15			
Paved Surface Maintenance	Pavement Cleaning	SCM-PP/GH-16			
	Winter Pavement Maintenance	SCM-PP/GH-17		X	
	Pavement/Sidewalk Resurface&Rpr	SCM-PP/GH-18			
	Spill Prevention and Repair	SCM-PP/GH-19			
	Bridge/Elev. Structure Maint.	SCM-PP/GH-20			
Landscape and Open Space Maintenance	Herbic/Pestic/Fertilizer Application	SCM-PP/GH-21			
	Landscape/Grounds Care	SCM-PP/GH-22			
	Turf Management	SCM-PP/GH-23			
	Golf Courses	SCM-PP/GH-24			
	Animal Rec Fac/Stable Maintenance	SCM-PP/GH-25			
Waste Management	Waste Mgmt. And Disposal	SCM-PP/GH-26			
	Debris Mgmt. and Disposal	SCM-PP/GH-27			
	Waste Transfer Stations	SCM-PP/GH-28			
	Landfill Runoff	SCM-PP/GH-29			
	Shooting Ranges	SCM-PP/GH-30			
Building Maintenance and Repair	Building Repair and Remodel	SCM-PP/GH-31			
	Painting	SCM-PP/GH-32			
	Swimming Pool Main/Discharge	SCM-PP/GH-33			
Marine Ops	Dock/Pier Maintenance	SCM-PP/GH-34			
	On-Land Marine Vessel Maintenance	SCM-PP/GH-35			
	Marine Fueling Stations	SCM-PP/GH-36			
	Loading/Unloading	SCM-PP/GH-37			
Small Scale Land Disturbances	Erosion and Sediment Control	SCM-PP/GH-38			

NYC Municipal Self –Assessment

Material Stockpiles Checklist (SCM-PP/GH-10)

Agency Name: NYC **Facility/Operation Name:**

Operational Area Name/Location (from Facility Map): Area 1 – Salt Storage **On-site** __X__ **Off-Site**___

Name of Assessor John Snow **Assessor Initials** AJS **Date:** 4/10/2017

Control Strategies/Suggested Practices	SCM Condition	SCM Recommendation
COVER/CONTAIN		
Store under cover such as an existing roof, secure waterproof tarp/sheeting, or in a sealed container.	N/A	N
Keep storage bins elevated above the ground or on pallets to minimize contact with water and other materials.	N/A	N
Enclose stockpile with a building.	N/A	N
Cover or enclose salt stockpiles unless there is no discharge from the salt stockpile or the discharge is covered under another SPDES permit.	P	N
CLEAN UP		
Regularly inspect storage areas and repair/replace damaged structures and containers.	E	C
Monitor for accidental releases when transferring materials and promptly address issues.	N/O	C
Use dry cleaning (sweeping) for material release or to regularly remove debris.	E	R
Provide adequate aisle space including clean and clear walkways for 360-degree inspections.	E	C
REDUCE/MINIMIZE		
Maintain an inventory of materials and minimize stored materials as practicable, taking into consideration seasonal changes.	E	C
Use material transfer procedures that reduce chances of accidental release.	N/O	C
PRODUCT SUBSTITUTION		
Evaluate material needs and consider alternative products that will reduce potential pollutants.	N/A	N
MANAGE RUNOFF		
Minimize run-on from adjacent areas using curbing/grading/berming/elevated storage areas to keep water away from material.	E	C
Minimize run-off from stockpile using curbing/grading/berming to keep water from entering the storm sewer system or nearby waterways.	P	N
CAPTURE/TREAT/DISPOSE		
Utilize catch basin inserts, vaults, or particle separators to prevent particulate matter from entering the storm sewer system.	N	N

Comments (Use back for additional space, if necessary):

SCM Condition Key	SCM Recommendation Key
E –Existing, Effective P – Existing, Partially Effective N – Not Existing N/O – Existing but Not Observed in Field N/A – Not Applicable	C—Continue R—Recommend N—None

SCM - PP/GH - 10: Storage Facilities Checklist Page | 1

Use dry cleaning (sweeping) for material release or to regularly remove debris.

Salt Dome

Prioritization Score

Material	A. Inventory[1]	B. Maximum Score[1]	C. Quantity[1] (Q)	D. Frequency of Use[1] (F)
Gasoline		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Diesel Fuel		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Motor Oil		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Radiator Coolant		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Hydraulic Fluid		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Solvents		15	H (15) M (9) L (3)	H (15) M (9) L (3)
Asphalt		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Sand/Stone Mix		5	H (5) M (3) L (1)	H (5) M (3) L (1)
Soil		5	H (5) M (3) L (1)	H (5) M (3) L (1)
Paint		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Pesticides		15	H (15) M (9) L (3)	H (15) M (9) L (3)
Herbicides		15	H (15) M (9) L (3)	H (15) M (9) L (3)
Fertilizer		15	H (15) M (9) L (3)	H (15) M (9) L (3)
Used Tires		5	H (5) M (3) L (1)	H (5) M (3) L (1)
Used Vehicle Batteries		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Cement/Fluid Concrete		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Other Waste Fluids		15	H (15) M (9) L (3)	H (15) M (9) L (3)
Used Paint Containers		5	H (5) M (3) L (1)	H (5) M (3) L (1)
Garbage		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Trash / Litter		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Vegetation		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Salt	✖	10	H (10) M (6) L (2)	H (10) M (6) L (2)
Deicers		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Other				
		Maximum Material Score = 10	Total Quant. = 10	Total Freq. of Use = 6

Table B-3.3.1 Computed the Consequence Score

Criteria	Reference	Score
B. Maximum Material Score	Materials Inventory	10
C. Total Quantity	Materials Inventory	10
i. Consequence Score (C/B)*5 =	N/A	5.0

Table B-3.3.2 Computed the Likelihood Score

Criteria	Reference Worksheet	Score
A. Exposure Score	Exposure and Proximity	0
B. Proximity Score	Exposure and Proximity	20
C. Maximum Material Score	Materials Inventory	10
D. Total Frequency of Use	Materials Inventory	6
i. Total Maximum Material Score C + 40 =	N/A	50
ii. Raw Likelihood Score A + B + D =	N/A	26
iii. Likelihood Score (ii/i)*5 =	N/A	2.6

Exposure Score: Is the Operational Area Exposed to Stormwater?:

- ✖ Total Cover: No rain can enter the Area (Score = 0)
- ☐ Partial Cover: Rain may be blown or flow into Area, or may runoff into an Area exposed to stormwater (Score = 12)
- ☐ No Cover: Rain falls directly onto the Area (Score = 20)

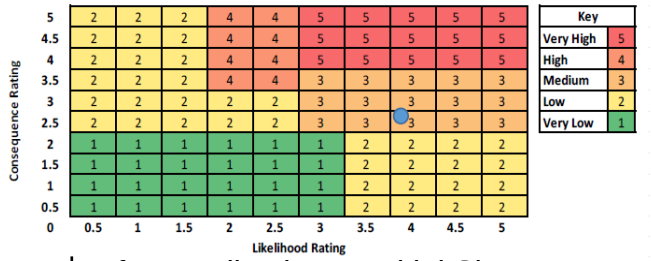
Proximity Score: How near to Impaired Water Body and Flood Risk?:

- ☐ Discharge only to combined sewer system (Score = 4)
- ☐ Greater than 2,000 ft. from waterbody and not within FEMA 100-yr flood zone (Score = 12)
- ✖ Within 2,000 ft. of waterbody or FEMA 100-yr flood zone (Score = 20)

- Area Score is 5 (High)
- Facility score based on highest score from all areas
- Facility score dictates frequency of future assessments

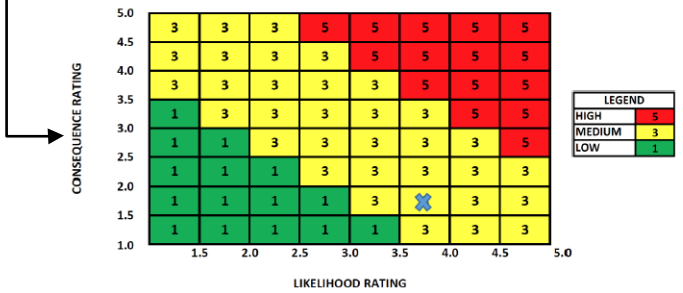
Evolution of Prioritization Scoring

Initial Untested Application



After Application to Initial Sites

After Application to Multiple Sites



Site	Before Assessment	After Assessment
1	Low	Medium
2	Medium	Low
3	Medium	Medium
4	Medium	Low
5	High	Medium
6	High	High
7	Medium	Medium
8	Medium	Medium
9	Medium	Low
10	Medium	Medium
11	Medium	Medium
12	High	High
13	High	High
14	Medium	High
15	Medium	High
16	Medium	Medium
17	Medium	High
18	Medium	High
19	Medium	Medium
20	New Site	High
21	High	Medium
22	High	High
23	High	High
24	Medium	High
25	Medium	Medium
26	Medium	High
27	Medium	High
28	Medium	High
29	New Site	High
30	High	High
31	Medium	Low
32	Medium	Medium
33	Medium	Medium
34	High	High
35	High	Medium
36	New Site	High
37	New Site	Low

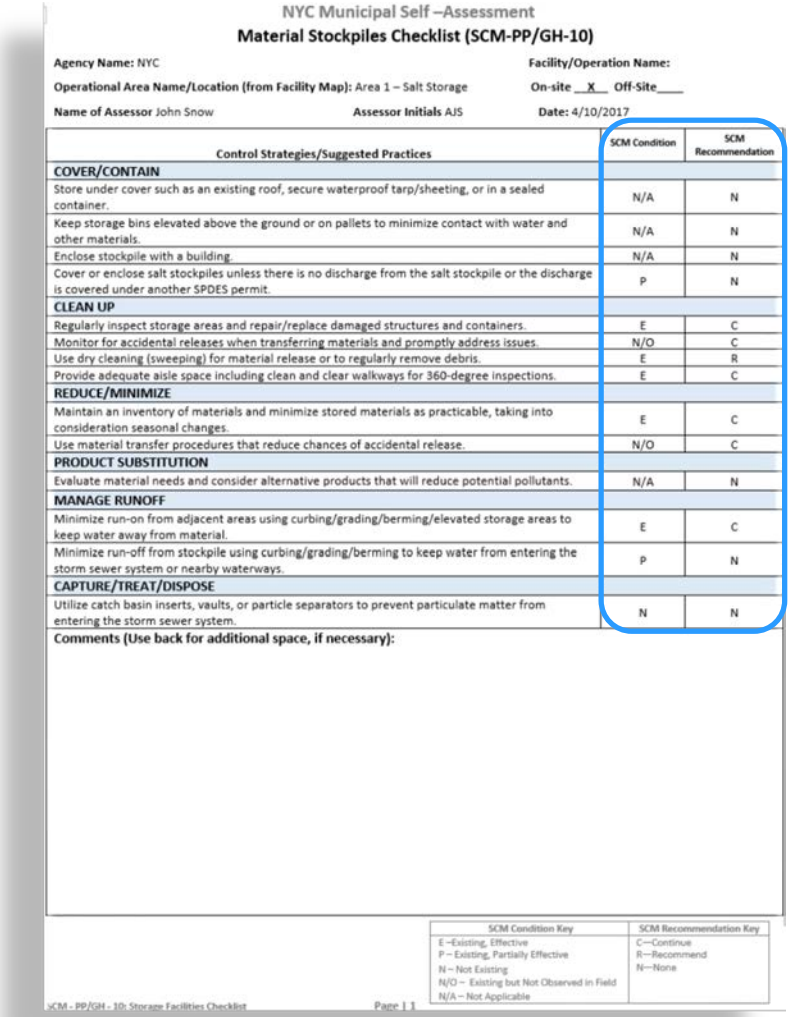
Final Prioritizations

- Post-Assessment Prioritization
  - 52%-no change
  - 27%-increased
  - 21%-decreased

Post Assessment Analyses

- Calibration of recommendations
  - Within agency
  - Across agencies

SCM Condition	SCM Recommendation	Application
E-Existing, Effective	C-Continue	SCM is in place, effective, and should be continued
P-Exists, Partially Effective	R-Recommend	SCM is in place, but could be improved upon
N-Not Existing	R-Recommend	SCM is not in place and is recommended
N-Not Existing	N-None	SCM is not in place and is not recommended
N/O-Not Observed	C-Continue	SCM was not observed during the assessment, but from speaking with operations personnel, it is in place
N/A-Not Applicable	N-None	SCM recommendation does not apply to the operations at this site



NYC Municipal Self –Assessment

Material Stockpiles Checklist (SCM-PP/GH-10)

Agency Name: NYC — **Facility/Operation Name:**

Operational Area Name/Location (from Facility Map): Area 1 – Salt Storage — **On-site** __X__ **Off-Site**____

Name of Assessor John Snow — **Assessor Initials** AJS — **Date:** 4/10/2017

Control Strategies/Suggested Practices	SCM Condition	SCM Recommendation
COVER/CONTAIN		
Store under cover such as an existing roof, secure waterproof tarp/sheeting, or in a sealed container.	N/A	N
Keep storage bins elevated above the ground or on pallets to minimize contact with water and other materials.	N/A	N
Enclose stockpile with a building.	N/A	N
Cover or enclose salt stockpiles unless there is no discharge from the salt stockpile or the discharge is covered under another SPDES permit.	P	N
CLEAN UP		
Regularly inspect storage areas and repair/replace damaged structures and containers.	E	C
Monitor for accidental releases when transferring materials and promptly address issues.	N/O	C
Use dry cleaning (sweeping) for material release or to regularly remove debris.	E	R
Provide adequate aisle space including clean and clear walkways for 360-degree inspections.	E	C
REDUCE/MINIMIZE		
Maintain an inventory of materials and minimize stored materials as practicable, taking into consideration seasonal changes.	E	C
Use material transfer procedures that reduce chances of accidental release.	N/O	C
PRODUCT SUBSTITUTION		
Evaluate material needs and consider alternative products that will reduce potential pollutants.	N/A	N
MANAGE RUNOFF		
Minimize run-on from adjacent areas using curbing/grading/berming/elevated storage areas to keep water away from material.	E	C
Minimize run-off from stockpile using curbing/grading/berming to keep water from entering the storm sewer system or nearby waterways.	P	N
CAPTURE/TREAT/DISPOSE		
Utilize catch basin inserts, vaults, or particle separators to prevent particulate matter from entering the storm sewer system.	N	N

Comments (Use back for additional space, if necessary):

SCM Condition Key	SCM Recommendation Key
E –Existing, Effective P – Existing, Partially Effective N – Not Existing N/O – Existing but Not Observed in Field N/A – Not Applicable	C—Continue R—Recommend N—None

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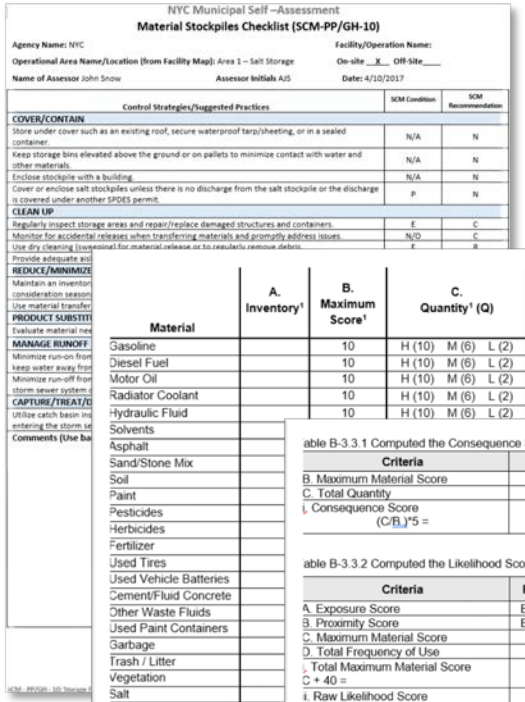
Moving Forward


NYC Municipal Self –Assessment

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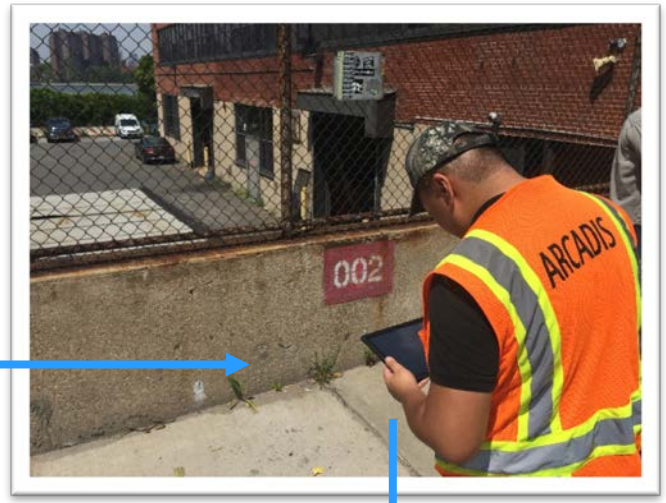
Name of Assessor John Snow — Assessor Initials AJS — Date: 4/10/2017

Control Strategies/Suggested Practices	SCM Condition	SCM Recommendation
COVER/CONTAIN		
Store under cover such as an existing roof, secure waterproof tarp/sheeting, or in a sealed container.	N/A	N
Keep storage bins elevated above the ground or on pallets to minimize contact with water and other materials.	N/A	N
Enclose stockpile with a building.	N/A	N
Cover or enclose salt stockpiles unless there is no discharge from the salt stockpile or the discharge is covered under another SPDES permit.	P	N
CLEAN UP		
Regularly inspect storage areas and repair/replace damaged structures and containers.	E	C
Monitor for accidental releases when transferring materials and promptly address issues.	N/D	C
Use dry cleaning (sweeping) for material release or to regularly remove debris.	E	R
Provide adequate ins		
REDUCE/MINIMIZE		
Maintain an inventor consideration season		
Use material transfer		
PRODUCT SUBSTITU		
Evaluate material nee		
MANAGE RUNOFF		
Minimize run-on fron keep water away fro		
Minimize run-off fron storm sewer system		
CAPTURE/TREAT/D		
Utilize catch basin ins entering the storm se		
Comments (Use ba		

Material	A. Inventory[1]	B. Maximum Score[1]	C. Quantity[1] (Q)	D. Frequency of Use[1] (F)
Gasoline		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Diesel Fuel		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Motor Oil		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Radiator Coolant		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Hydraulic Fluid		10	H (10) M (6) L (2)	H (10) M (6) L (2)
Solvents				
Asphalt				
Sand/Stone Mix				
Soil				
Paint				
Pesticides				
Herbicides				
Fertilizer				
Used Tires				
Used Vehicle Batteries				
Cement/Fluid Concrete				
Other Waste Fluids				
Used Paint Containers				
Garbage				
Trash / Litter				
Vegetation				
Salt				
Deicers				
Other				

Integration of assessment forms to tablets



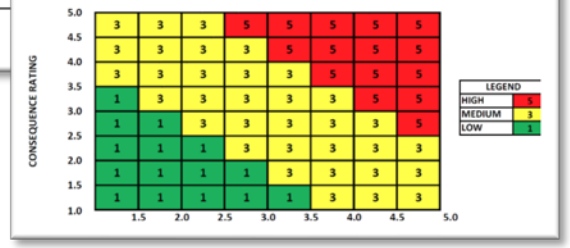
Automated reporting

able B-3.3.1 Computed the Consequence Score

Criteria	Reference	Score
B. Maximum Material Score	Materials Inventory	10
C. Total Quantity	Materials Inventory	10
i. Consequence Score (C/B)*5 =	N/A	5.0

able B-3.3.2 Computed the Likelihood Score

Criteria	Reference Worksheet	Score
A. Exposure Score	Exposure and Proximity	0
B. Proximity Score	Exposure and Proximity	20
C. Maximum Material Score	Materials Inventory	10
D. Total Frequency of Use	Materials Inventory	6
i. Total Maximum Material Score C * 40 =	N/A	50
ii. Raw Likelihood Score A + B + D =	N/A	26
iii. Likelihood Score (ii/i)*5 =	N/A	2.6




NYC Environmental Protection — ARCADIS

DRAFT

INITIAL ON-SITE ASSESSMENT REPORT

PPGH-MS4: POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

DSNY-38: Hunt's Point

April 24, 2018

- Continued standardization of viewpoints
- Integration of forms to tablets
  - Automated database population
  - Automated report development

CDM Smith ARCADIS

Conclusions

- Standard operating procedures provide consistent self-assessment protocol for assessing storm water pollution risk at over 800 facilities operated by fifteen agencies within New York City.
- Guidelines for a range of municipal operations supported a structured approach for selecting stormwater control measures appropriate for the assessed pollution risk.
- Walk-through assessments with facility managers and Agency leads allowed City contractors to prepare accurate assessments and gain buy-in to appropriate stormwater controls.