



June 27, 2016

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Re: CSO Order on Consent (DEC Case # CO2-20000107-8
as modified)
City-Wide Green Infrastructure Implementation – Green
Infrastructure Contingency Plan (Paragraph IV.A.3.)
Contingency Plan Submittal

Dear Ms. vonWergers:

In accordance with the above referenced CSO Order on Consent (the “Order”) Paragraph IV.A. 3, the New York City Department of Environmental Protection (DEP) is required to submit by June 30, 2016: (i) a certification that it has encumbered \$187,000,000 for green infrastructure and (ii) a Green Infrastructure Contingency Plan (“Contingency Plan”).

On April 29, 2016, DEP submitted certification that as of December 31, 2015, DEP had encumbered \$187,000,000 toward the 1.5% green infrastructure application rate in accordance with the Order. DEC acknowledged and accepted that certification on May 17, 2016.

With this letter and its attachment, DEP hereby submits its Contingency Plan for the 1.5% application rate, pursuant to the Order.

If you require additional information regarding this submittal, please feel free to contact me at (718) 595-6610 or donnellyh@dep.nyc.gov.

Yours truly,


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Green Infrastructure Contingency Plan

NYC Department of Environmental Protection

June 27, 2016

Introduction

The CSO Order on Consent (the Order¹) as modified in 2012 between the New York City Department of Environmental Protection (DEP) and the New York State Department of Environmental Conservation (DEC) outlines a multi-year phased approach for the implementation of green infrastructure (GI) throughout New York City (the City). The approach aims to manage stormwater and reduce combined sewer overflows (CSO), thereby improving water quality and promoting sustainability policies on a citywide basis. The milestones specified in the Order for the GI Program include the citywide implementation of GI to manage the equivalent of stormwater generated by one inch of precipitation on available impervious surfaces in combined sewer (CS) areas in the following phases: 1.5% (December 31, 2015), 4% (December 31, 2020), 7% (December 31, 2025), and 10% (December 31, 2030).

As noted in the 2015 GI Annual Report, the total impervious acres managed at the end of December 2015 was 0.6% citywide, falling short of the 1.5% implementation rate of the first milestone. On April 29, 2016, DEP submitted a certification to DEC verifying that that DEP had encumbered \$259 million in capital funds and \$26 million in expense funds on the GI Program and thereby had met the financial commitment to encumber \$187 million for GI by December 2015. In accordance with the Order and having met the financial requirement to show “best efforts,” DEP is now submitting this Contingency Plan (the “Plan”).

This Plan includes specific green infrastructure projects and implementation schedules sufficient to achieve the citywide 1.5% GI implementation rate as required by the Order. As discussed with DEC on several occasions, DEP has focused its GI implementation efforts on priority waterbodies², which do not meet water quality standards, in order to maximize water quality improvements. DEP believes further discussion is warranted concerning the implementation challenges, costs and water quality benefits of managing impervious acres in the East River/Open Water watershed³ where data and modeling to date indicate that the vast majority of the Open Waters are in attainment with existing water quality standards.

As stated in the 2015 Annual Report, the 1.5 % GI implementation thus far has mostly consisted of retention (i.e., infiltration) practices in the right-of-way in combined sewer areas that are considered confined tributaries with relatively high CSO volumes and frequencies. Each area/neighborhood has unique characteristics and associated physical, subsurface conditions, and other challenges of implementing GI practices. Implementation rates are directly related to siting constraints. Common implementation challenges are listed below.

In the Right of Way:

- Street conditions - Siting challenges include existing trees, street furniture, residential driveways, bus stops, building entrances, loading zones, underground/overhead transit lines, and others.

¹Order on Consent (DEC Case No. CO2-20110512-25, modification to DEC Case No. CO2-20000107-8)
http://www.nyc.gov/html/dep/html/cso_long_term_control_plan/index.shtml

² Priority waterbodies include Bronx River, Flushing Bay, Flushing Creek, Gowanus Canal, Hutchinson River, Jamaica Bay and Tributaries, Newtown Creek, and Westchester Creek.

³ The waterbodies included in East River/Open Waters watershed, namely the East River and Hudson River, which are cleaner than they have been in a century due to extensive investment by DEP in gray infrastructure improvements.

- Subsurface conditions - In many areas across the City, high bedrock, high groundwater, clay-rich soils, and existing contamination can limit opportunities for siting green infrastructure.
- Utility conflicts - Existing overhead/underground utilities can interfere with green infrastructure siting, and can present hazards during geotechnical testing.
- Other right of way (ROW) construction – construction by other utilities in the right-of-way have caused damage to constructed green infrastructure practices and those in construction
- Private property construction – Scaffolding, construction fences, and other equipment associated with private property development adjacent to right-of-way green infrastructure may limit accessibility to the site.

On Public Properties:

- Resource intensive site screening processes and agency coordination
- Incompatible site uses or programming needs
- Presence of hazardous materials or underground vaults
- Planned capital improvements
- Poor soil conditions
- Disrepair of a site or buildings that requires matching funds which are not available

Status of GI Implementation as of First Milestone (Dec 31, 2015)

As noted, DEP has prioritized efforts and investment of resources for installation of GI in priority combined sewer areas tributary to waterbodies that are not meeting existing water quality standards. By implementing the Program in this manner, DEP has been working to achieve CSO reductions and maximize water quality benefits from the projects and reduce the reliance on grey infrastructure in these areas. DEP anticipates that the CSO reductions from GI implementation in the priority waterbodies should have a greater effect on water quality than those in the East River and Open Waters area. This implementation strategy is reflected in the acres managed to date show in Table 1 below.

Since the establishment of the GI Program (the Program), DEP has been constructing GI assets throughout the City's combined sewer tributary areas, on both private and publicly owned property, primarily in the ROW. GI assets typically include ROW bioinfiltration practices, permeable paving, subsurface retention systems and synthetic turf fields with infiltration capability, on-site bioinfiltration, stormwater harvesting and reuse systems, and green roofs.

Table 1 below represents the progress DEP has made through December 31, 2015 in GI implementation. The table shows the impervious acres managed and percent of acres managed per waterbody. The acres managed includes all projects constructed, having a registered contract with a notice to proceed, or out for bid by December 31, 2015 and is consistent with the latest 2015 Annual Report.

The table sums the acres managed by "Total Priority Waterbodies" without East River/Open Waters, and the acres managed by "Total Citywide," which includes East River/Open Waters.

By the end of 2015, the acres managed by GI comprises 1% of impervious areas in the priority waterbodies and 0.6% of impervious areas citywide comprising a total of 3,734 GI assets.

In 2015, many of the GI projects were constructed or were under construction in Brooklyn, Queens, and the Bronx. Figure 1 below shows the exponential increase in the number of ROW practices from 2011 to 2015, demonstrating significant success ramping up the Program.

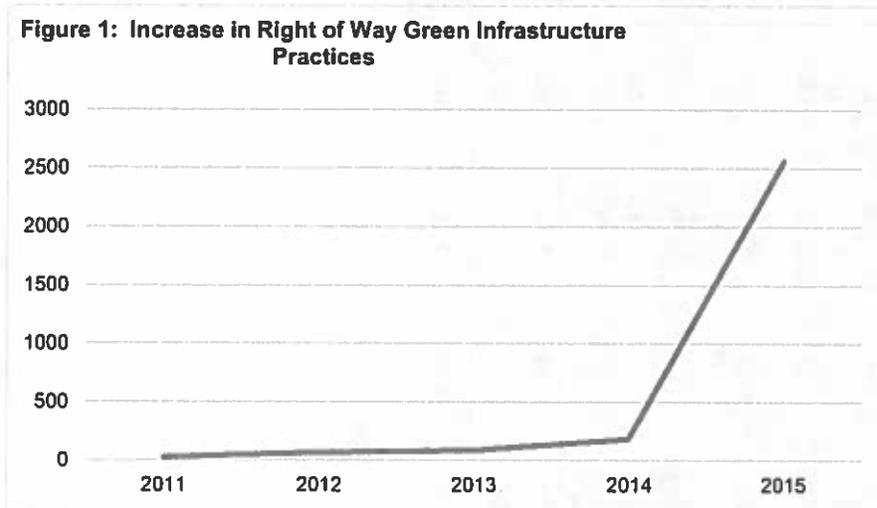


Table 1: 2015 Green Infrastructure Status

Waterbodies	Impervious Area within Combined Sewer Tributary, IACS (ac)	10% of IACS Tributary (ac)	1.5% of IACS Tributary (ac)	2010-2014			2015			Total 2010-2015			
				Built		Built / In Construction ¹	Number of Assets	IACS Managed (ac)	Number of Assets	IACS Managed (ac)	Number of Assets	Total IACS Managed (ac)	Total Percent of IACS Managed
				Number of Assets	IACS Managed (ac)								
Alley Creek	1,490	149	22	0	0	0	0	0	0	0	0.0%		
Bronx River*	2,331	233	35	42	11	47	14	89	25	25	1.1%		
Coney Island Creek	694	69	10	0	0	0	0	0	0	0	0.0%		
Flushing Bay*	4,049	405	61	193	21	813	92	1,006	113	113	2.8%		
Flushing Creek*	5,923	592	89	13	2	65	7	78	9	9	0.2%		
Gowanus Canal*	1,387	138	21	29	4	82	5	111	9	9	0.7%		
Hutchinson River*	1,128	113	17	22	1	183	24	205	26	26	2.3%		
Jamaica Bay & CSO Tributaries*	7,891	789	118	57	8	870	92	927	100	100	1.3%		
Newtown Creek*	4,524	452	68	25	3	1,286	107	1,311	110	110	2.4%		
Paerdegat Basin	4,725	473	71	4	0	0	0	4	0	0	0.0%		
Westchester Creek*	3,480	348	52	3	0	0	0	3	0	0	0.0%		
Total Waterbodies	37,622	3,762	564	388	50	3,346	342	3,734	392	392	1.0%		
East River & Open Waters (ER/OW)	41,127	4,113	617	58	25	38	20	96	46	46	0.1%		
Total Citywide²	78,749	7,875	1,181	446	75	3,384	362	3,830	437	437	0.6%		

*Priority CSO Tributary Areas

¹ Projected sites that will either be: constructed, registered contract with a Notice to Proceed, or out for bid.

² Total Waterbodies plus ER/OW

Contingency Plan Projects & Implementation Schedule

As shown in Table 1, the gap between what was accomplished by end of 2015 and the milestone to manage 1.5% target is 0.9%, or 744 acres; in priority waterbodies the gap is 0.5% or 173 acres. Table 2 below summarizes the 1.5% impervious acre target, the total impervious acres managed by 2015, and the remaining acres needed to be managed to close the gap.

Table 2: Summary Table

1.5% Impervious Acres Target Citywide	1181
2015 Impervious Acres Managed	437
Additional Impervious Acres Needed	744

Contingency Plan Projects – Expected Impervious Acres Managed	744
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Table 3 lists the specific green infrastructure projects identified sufficient to make up any shortfall from the 1.5% GI implementation rate. Projects in priority watershed are marked with an *. The GI projects listed below will be constructed through area-wide contracts; based on current estimations these contracts will result in an additional 744 managed acres. DEP is including all projects that will likely contribute to closing the gap for the 1.5% priority area implementation rate. Acres managed over the 744 acres needed to achieve 1.5% in priority waterbodies will be applied toward the next Order milestone of 4% impervious acres managed citywide. Project location, project status, and anticipated construction completion dates are included in the table.

Table 3: 1.5% Contingency Plan Projects

Priority Waterbodies	Area-Wide ROW Project	Current Status	Anticipated Construction Completion Date
Flushing Creek*	TI-011	60% Design	December 2019
Newtown Creek*	BB Cluster	60% Design	December 2019
Jamaica Bay*	JAM-003	Geotech	December 2019
EROW/Wallabout	NCB-014	Geotech	December 2020
EROW/Bowery Bay	BB-005	Geotech	December 2020
Westchester Creek*	HP-014	60% Design	December 2020
Westchester Creek*	HP-033	60% Design	December 2020
Flushing Creek*	TI-010	Walk-through	December 2020
Bronx River*	HP-007	Design Start July 2016	December 2020
Bronx River*	HP-004/-002	Design Start July 2016	December 2020
Jamaica Bay*	26W-005/-004	Design Start July 2016	December 2020

Conclusions

DEP continues to expand its tool box and strategies to work around the multiple physical and operational challenges to implement the GI Program. Physical limitations such as poor soils, high groundwater and bedrock, space constraints in the right of way, conflicting capital projects, environmental conditions, procurement timelines, and other constraints common throughout the City may delay, limit, and/or preclude green infrastructure implementation in some watersheds.

One of the major goals of the GI Program is to achieve measurable water quality benefits in the priority waterbodies while also providing co-benefits such as improved resiliency in order to adapt to the changing climate. To that end, DEP has, and will continue to, prioritize efforts and investment of resources for installation of GI in priority combined sewer areas tributary. While DEP continues to advance the development of green infrastructure in the City with significant success as part of a long-term endeavor, DEP will also reevaluate the level of program activity and benefits in East River and Open Waters in light of the major capital investments already made, resulting in the vast majority of the Open Waters currently in attainment with existing water quality standards.