



November 12, 2013

Carter H. Strickland, Jr.
Commissioner

Joseph DiMura, P.E.
Director
Bureau of Water Compliance
New York State Department of Environmental Conservation
625 Broadway, 4th Floor
Albany, New York 12233-3506

Vincent Sapienza, P.E.
Deputy Commissioner
Bureau of Wastewater
Treatment
vsapienza@dep.nyc.gov

**Re: CSO Order on Consent (DEC Case No. CO2-20110512-25)
Appendix A, I. Alley Creek CSO, E. Drainage Basin Specific LTCPs, 1.
Submit Approvable Drainage Basin Specific LTCP for Alley Creek**

James G. Mueller, P.E.
Assistant Commissioner
Planning & Capital Projects
Bureau of Wastewater
Treatment
jmueller@dep.nyc.gov

Dear Mr. DiMura:

New York City Department of Environmental Protection (DEP) hereby submits to the New York State Department of Environmental Conservation (DEC) the Revised Alley Creek Long Term Control Plan (LTCP). This submittal includes the major updates in the attached DEP letter dated November 4, 2013. As required, this submittal is within 60 days of your letter dated September 12, 2013 providing review comments on the June 2013 LTCP for Alley Creek and Little Neck Bay. Also attached are responses to the Detailed Comments contained in that review letter.

96-05 Horace Harding
Expressway
Corona, NY 11368
T: (718) 595-5973
F: (718) 595-6950

DEP looks forward to receiving DEC's approval of this LTCP. Please feel free to contact me regarding any questions you may have.

Very truly yours,

James G. Mueller, P.E.
Assistant Commissioner, Planning & Capital Projects
Bureau of Wastewater Treatment

Attachments

Send 1 hard copy and 1 electronic copy

(CD) to:

Linda Allen
New York State Department of
Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, NY 12233-3506

Selvin T. Southwell
New York State Department of
Environmental Conservation - Region 2
47-40 21st Street
Long Island City, NY 11101

Cover Letter and 1 electronic copy (CD)

to:

Cheryle Webber, P.E.
New York State Environmental Facilities
Corporation
625 Broadway, 7th Floor
Albany, NY 12207

Mark Klotz
New York State Department of
Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233-3500

Robert Elburn, P.E.
New York State Department of
Environmental Conservation - Region 2
47-40 21st Street
Long Island City, NY 11101

Gary Kline, P.E.
New York State Department of
Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233-3500

Stan Stephansen
US Environmental Protection Agency
290 Broadway
New York, NY 10007-1866

Mary von Wergers, Esq.
Office of General Counsel
New York State Department of
Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233-3500

William Plache, Esq.
Assistant Corporation Counsel
New York City Law Department
100 Church Street
New York, NY 10007

NYCDEP

James Mueller, Anthony Maracic, Keith
Mahoney, Robert LaGrotta, Ken Moriarty,
Jim Garin, Heather Donnelly, Pinar Balci,
Lily Lee, Sri Rangarajan



November 4, 2013

Joseph DiMura, P.E.
Director
Bureau of Water Compliance
New York State Department of Environmental Conservation
625 Broadway, 4th Floor
Albany, New York 12233-3506

**Re: Order on Consent ("CSO Order"), DEC Case C02-20110512-25
Modification to DEC, Case C02-20000107-8
Appendix A, I. Alley Creek CSO, E. Drainage Basin Specific LTCPs
1. Submit Approvable Drainage Basin Specific LTCP for Alley Creek
Overview of Updates to LTCP**

Dear Mr. DiMura:

DEP is in receipt of DEC's September 12, 2013, comment letter on the Alley Creek and Little Neck Bay LTCP.

The purpose of this letter is to provide DEC with an overview of the major updates being made to the LTCP document in response to DEC's September 12th written and recent verbal comments, as well as to address the threshold issues identified by DEC in the comment letter. This letter is also being provided as a basis for our discussions at the November 7th technical meeting. DEP will follow up with responses to all of the other DEC detailed comments contained in the September 12, 2013 letter. These responses will be included in our November 12, 2013 resubmittal of a revised LTCP.

Introduction

The LTCP clearly demonstrates major water quality (WQ) benefits have resulted from \$130 million of abatement efforts originating back to the original Facilities Plan and the later DEC approved Alley Creek and Little Neck Bay Waterbody/Watershed Facilities Plan. DEP strongly believes that further work on these waterbodies is not warranted based on the minimal WQ benefits associated with further controls, particularly disinfection. Below is a summary of the conclusions with supporting analyses provided in subsequent sections of this letter.

- Disinfection of the Alley Creek CSO Tank will be included as a final alternative in the November 2013 resubmittal of the LTCP, however it cannot be recommended due to negligible improvement in existing and potential future water quality criteria, TRC impacts to WQ, and the many O&M challenges posed for an unmanned, satellite facility. Outfall relocation is included as a component of this analysis.
- The baseline assumption of 2XDDWF for this LTCP is technically sound and justifiable based upon the location of the Alley Creek drainage area relative to the plant, and ongoing projects that will increase the time the plant process 2x DDWF and reduces CSO from other drainage areas.
- The LTCP assesses the highest attainable use and demonstrates that no further CSO controls are justified.

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Vincent Sapienza, P.E.
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vsapienza@dep.nyc.gov

James G. Mueller, P.E.
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Planning & Capital Projects
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Treatment
jmueller@dep.nyc.gov

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F: (718) 595-6950

- Best use of waterbodies and access issues support the designated uses. Further, public input was solicited during the development of the LTCP as called for both in the LTCP Goal Statement and the federal CSO Policy. The public was clear in their input; they were not supportive of additional storage and treatment infrastructure.
- DEP will track down and characterize sources of pollution into Oakland Lake and the Duck Pond and abate any human sources of contamination that are detected,

To guide our discussion at our technical meeting on November 7th, each of the major LTCP updates with more details on the summary conclusions above are listed and described below.

Enterococci Water Quality Criteria

Under the BEACH Act of 2000, States with coastal recreation waters were to adopt new bacteria criteria for primary contact waters. For marine waters, like those in NYC, EPA proposed using enterococcus as the new indicator organism with a requirement that the geometric mean concentration of enterococci not exceed 35 col/100 ml. When this rule was promulgated, the EPA guidance document provided flexibility in the interpretation of the calculation of the geometric mean (GM). States were given the discretion by EPA to apply this new standard as either a seasonal GM, a monthly GM, or a rolling 30 day GM. Consistent with the DEC approved waterbody/watershed plans under the CSO Consent Order, DEP has revised the enterococci compliance calculations in the LTCP by applying a summer seasonal GM to calculate enterococci compliance. The June 2013 LTCP submitted and reviewed by DEC had used a more stringent rolling 30-day GM. When using a summer seasonal GM, instead of a rolling 30-day GM, the short-term sources become less important and the constant sources become more important in terms of attainment of the standard.

Figure 1a presents the revised 10-year attainment with the seasonal GM enterococci criterion for the baseline conditions that will be included in the updated LTCP document. The figure shows Little Neck Bay in full attainment of the enterococcus criterion under baseline conditions. With this updated LTCP baseline condition, there is no compliance gap between baseline conditions and the applicable water quality standards in Little Neck Bay. Therefore, the UAA in the June 2013 LTCP will be withdrawn and a UAA will not be submitted for Little Neck Bay in the revised LTCP. Although the UAA will not be included for Little Neck Bay, we note that the LTCP will include an analysis of the effects of disinfection on attainment of potential future enterococci limits based on a 30 day GM.

In contrast to Little Neck Bay, Alley Creek does not meet Class SB standards under baseline conditions. A gap analysis is conducted in the LTCP to determine if Alley Creek, which is a Class I waterbody, could potentially be upgraded to Class SB in order to meet the fishable/swimmable goals of the Clean Water Act under current standards. . The gap analyses indicate that 100 percent removal of CSOs (the equivalent of disinfecting the tank overflow) will not close the gap between the baseline concentrations and the potential upgrading of Alley Creek to Class SB. Under the 100 percent CSO capture scenario, compliance with the 90 day GM enterococci criterion in the creek increases from only 30 percent to 40 percent. A load source component analysis was conducted and demonstrates that other non-CSO sources are the contributors to the non-attainment of the fishable/swimmable goal. Non-attainment of the fishable/swimmable goal is due to stormwater and local lake discharges into the creek. As a result of this analysis, DEP will resubmit the UAA request for Alley Creek in the updated LTCP with a recommendation that the current Class I classification remain.

Alternatives Considered

As DEC noted in their comment letter, and as identified as one of the threshold issues, the alternative of disinfection within the existing Alley Creek CSO Retention Tank was screened-out following Step 2 of the three-step technology evaluation process. In response to DEC's request, disinfection within the existing Alley Creek CSO Retention Tank is advanced further in the evaluation process in the revised

report. However, it should be noted that the June 2013 LTCP evaluated and presented the water quality attainment of capturing 100% of the CSO, which is the equivalent to disinfection. As described below disinfection is rejected based on several factors including, but not limited to:

1. High levels of attainment with existing CSO controls
2. Negligible improvement in attainment of future WQS
3. Total residual chlorine (TRC) toxicity and environmental risk
4. Difficulties in operation and maintenance of satellite CSO disinfection facilities

Each of these factors are discussed below:

1. High levels of attainment with existing CSO controls

The revised LTCP will clearly demonstrate a high level of compliance with existing bacterial WQS within the two water bodies as a result of the \$130M in CSO control and related infrastructure improvement investments. Table 1 presents attainment of existing WQ standards for five selected water quality stations. The table indicates that for the 10-year baseline condition, the fecal coliform criterion is met everywhere for all but one month in the 120-month modeling period (i.e. 99% compliance) at one location in the lower section of Little Neck Bay – Station OW2. The addition of disinfection of the tank overflow results in only minor improvements in the attainment of the existing fecal coliform criterion. The 10 year enterococci baseline modeling simulation shows all stations in Little Neck Bay in full compliance with the summer seasonal GM. Station AC1, for which this criterion does not currently apply, has low attainment at 30 percent and improves to only 40 percent with disinfection. As previously mentioned, non-attainment of the fishable/swimmable goal is largely due to stormwater and local lake discharges into the creek.

Table 1. Fecal Coliform and Enterococci Attainment

Station	Class	Fecal Coliform Attainment (%)		Enterococci Attainment (%)	
		Baseline	w/Disinfection	Baseline	w/Disinfection
AC1	I	100	100	30 *	40 *
OW2	SB	99	100	100	100
LN1	SB	100	100	100	100
DMA	SB	100	100	100	100
E11	SB	100	100	100	100

*AC1 not classified as Class SB (standard does not apply), current classification is Class I.

As indicated above in Table 1, and presented spatially in Figure 1b, only a small section of lower Little Neck Bay is at less than 100 percent attainment with the fecal coliform criterion.

Figure 1c and 1d presents the CSO disinfection scenario for the fecal coliform and enterococci criteria attainment. From this display, it can be seen that the area of fecal non-attainment is slightly reduced and disinfection would not result in an appreciable increase in enterococci compliance in Alley Creek when considering an upgrade to Class SB.

2. Negligible improvement in attainment of future WQS

In 2012, EPA released recreational water quality criteria recommendations for protecting human health in all coastal and non-coastal waters designated for primary contact recreation use. Due to this new guidance from EPA on enterococci criteria, NYSDEC has confirmed that they will adopt

BASELINE

100% CSO CONTROL / DISINFECTION

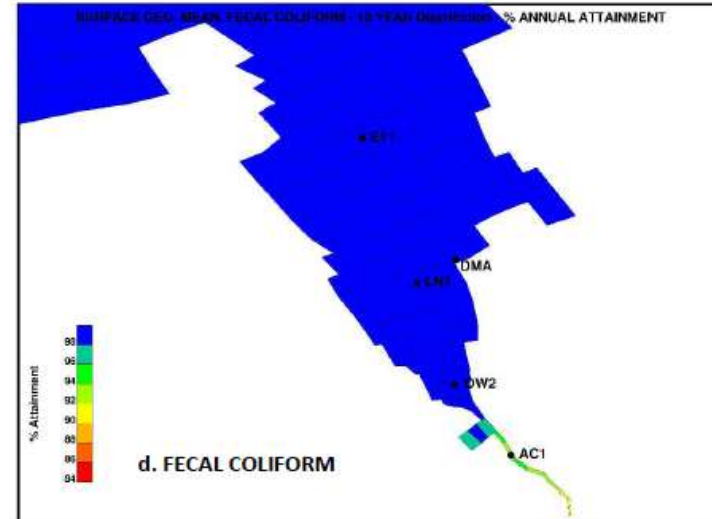
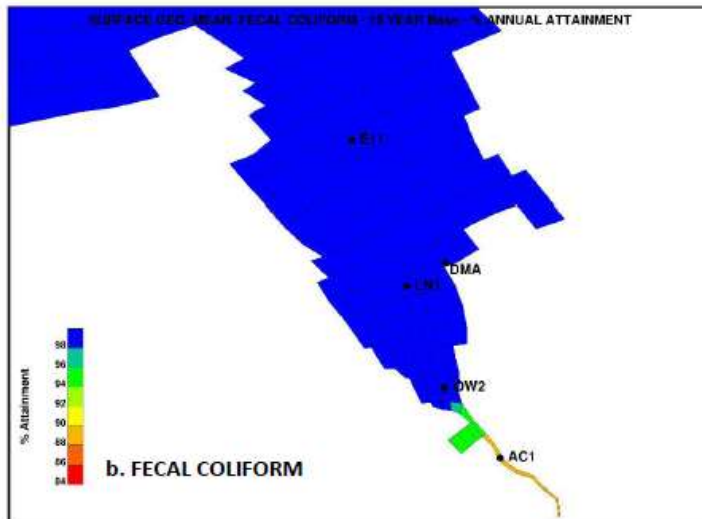
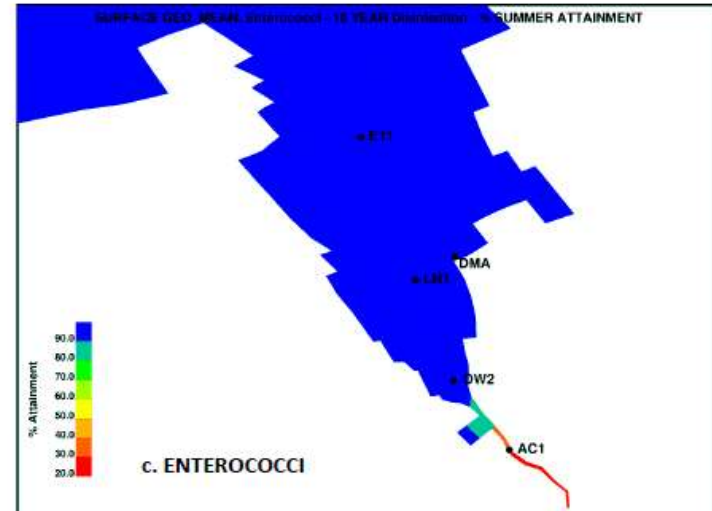
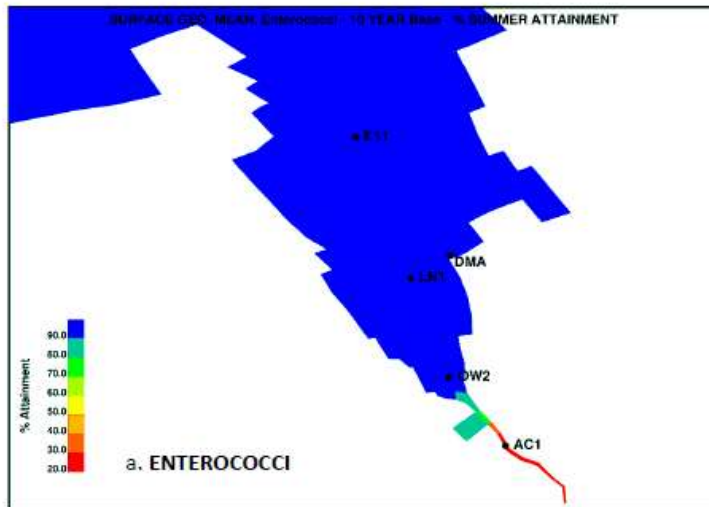


Figure 1. Pathogen Standards Attainment under Baseline Conditions and with 100% CSO Control / Disinfection.

these new enterococci standards for class SB waterbodies by 2015. The standards would include a rolling 30-day geometric mean of either 30 col/100mL or 35 col/100mL and a 90th percentile statistical threshold value (STV) during the rolling 30-day period of either 110 col/100mL or 130 org/100mL. A sensitivity analysis was conducted of the 10-year baseline and 100 percent CSO control/ disinfection conditions model simulation results using the 35 col/100mL geometric mean and 130 col/100mL 90th percentile criteria to assess compliance with these potential future criteria.

Table 2 presents the annual attainment at the five WQ stations with the potential future standards. While the rolling 30-day geometric mean of 35 col/100mL appears to be achievable a high percentage of the time in much of Little Neck Bay, attainment declines for the 30-day rolling geometric mean of 30 col/100mL, and declines still further for the 90th percentile STV criterion. The difficulty in meeting the 90th percentile STV criterion stems from the discharge of stormwater, as stormwater outfalls can discharge during more than 1,000 hours per year, or more than 10 percent of the time during the year. Table 2 also presents the attainment of potential future enterococci criteria for the 100 percent CSO control/disinfection scenario. Some minor improvement is calculated nearest the CSO tank at Stations AC1 and OW2, on the order of 2 to 4 percent points. Disinfection would not result in an appreciable increase in enterococci compliance in Alley Creek when considering these potential future primary contact criteria.

Table 2. Annual Attainment with Potential Future Enterococci Criteria

Station	Enterococci (Percent Attainment)							
	Baseline				100% CSO Control/Disinfection			
	30-day rolling GM		90 th percentile		30-day rolling GM		90 th percentile	
	<=35 col/100ml	<=30 col/100ml	<=130 col/100ml	<=110 col/100ml	<=35 col/100ml	<=30 col/100ml	<=130 col/100ml	<=110 col/100ml
AC1 *	19*	14*	7*	5*	21*	14*	7*	6*
OW2	79	73	27	22	82	77	30	24
LN1	94	89	65	52	95	92	73	64
E11	99	97	83	77	99	98	86	80
DMA	93	89	62	52	95	91	72	59

*AC1 not classified as Class SB (standard does not apply), current classification is Class I.

Table 3 presents the summer attainment with the potential future standards. Applying the standard to the summer season as a rolling 30-day GM does increase compliance as compared to the annual attainment shown above, but again only minor improvement is calculated near the CSO tank and disinfection would not result in an appreciable increase in enterococci compliance.

Table 3. Summer Attainment with Potential Future Enterococci Criteria

Station	Enterococci (Percent Annual Attainment)							
	Baseline				w/Disinfection			
	30-day rolling GM		90th percentile		30-day rolling GM		90th percentile	
	<=35 col/100m l	<=30 col/100m l	<=130 col/100m l	<=110 col/100m l	<=35 col/100m l	<=30 col/100m l	<=130 col/100m l	<=110 col/100m l
AC1*	42*	32*	14*	9*	45*	34*	15*	11*
OW2	93	92	41	36	95	93	45	42
LN1	100	98	82	74	100	100	91	85
E11	100	100	90	87	100	100	94	91
DMA	100	99	86	80	100	100	95	89

*AC1 not classified as Class SB (standard does not apply), current classification is Class I.

Figure 2 presents the model results from Tables 2 and 3 and as a rolling 30-day geometric mean of 35 col/100mL for both an annual and a summer period. These graphics show that the annual enterococci concentrations calculated for the baseline within Little Neck Bay are divided into areas that are in attainment with the potential enterococci criteria a high percentage of the time (outer Little Neck Bay), a transition zone (inner Little Neck Bay) where attainment with the criteria ranges from a low of 68 to a high of 92 percent, and attainment with the projected standards then drop off in Alley Creek. As shown in the table, compliance in Alley Creek with these potential future criteria are quite low attainment less than 21 percent under all scenarios. These graphics also show that summer enterococci concentrations show improved compliance, particularly in the transition zone but there are still areas of non-attainment with the potential future criteria in Alley Creek.

In summary, non-attainment with the potential future EPA RWQC is caused by non-CSO sources as 100% CSO removal does not result in a significant increase in projected compliance. The projected non-attainment is due to remaining point sources including stormwater and local lake discharges. Stormwater discharges will be addressed to the maximum extent practical under the MS4 program. Two lake overflows were identified as continuous dry weather discharges to Alley Creek during the LTCP field program- Oakland Lake and a small unnamed pond in Alley Pond Park (aka Duck Pond). Both have relatively low concentrations of fecal coliform and enterococcus and the dry weather flows for each were estimated at about 2.1 MGD and 1.5 MGD, respectively; these dry weather flows are likely associated with natural springs in the area and high groundwater tables. During the baseline period, the Oakland Lake enterococcus concentration is assigned as 120 col/100 ml, based on a GM of dry-weather sampling data, and the Duck Pond enterococcus concentration is assigned as 70 col/100ml based on a GM of dry-weather sampling data. At this time, it is not known if these levels of enterococcus can be reduced or if there are human dry weather sources that are affecting the pathogen level in these ponds. The Duck Pond is adjacent to the Long Island Expressway and Northern Boulevard cloverleaf highway interchange and the possibility for illicit connections seem very unlikely in this area. DEP is initiating a track down program starting in November 2013 to obtain additional data on sources of pollution and ascertain whether additional actions are required.

3. Total residual chlorine (TRC) toxicity and environmental risk

DEP has performed water quality modeling runs on the potential effects of TRC using estimated effluent TRC concentrations of 0.1 mg/L (or 100 µg/L) and 1.0 mg/L (or 1,000 µg/L). The model runs are based on 2008 rainfall conditions, the representative typical year rainfall conditions for

BASELINE

100% CSO CONTROL / DISINFECTION

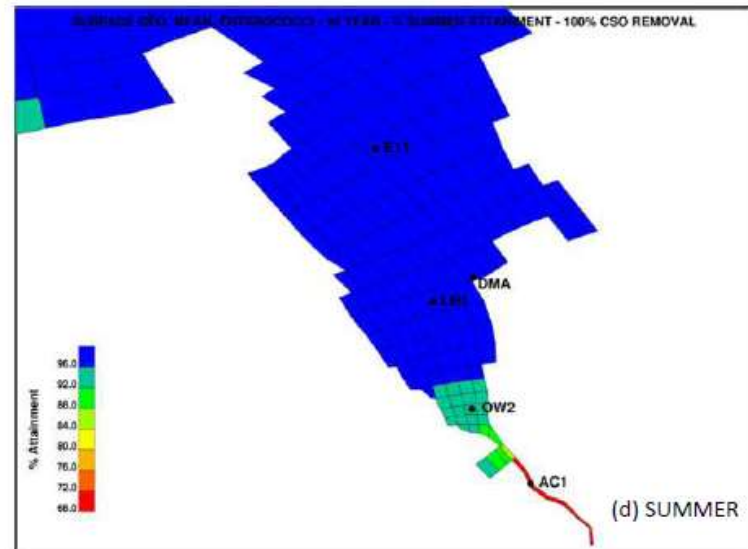
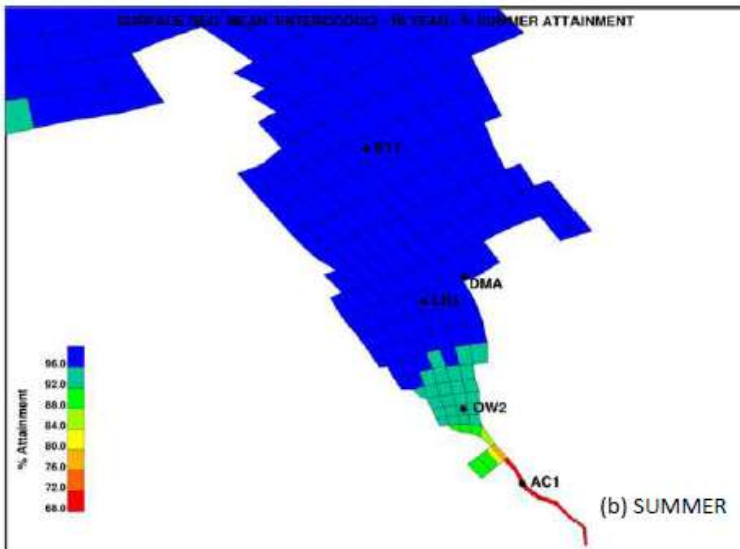
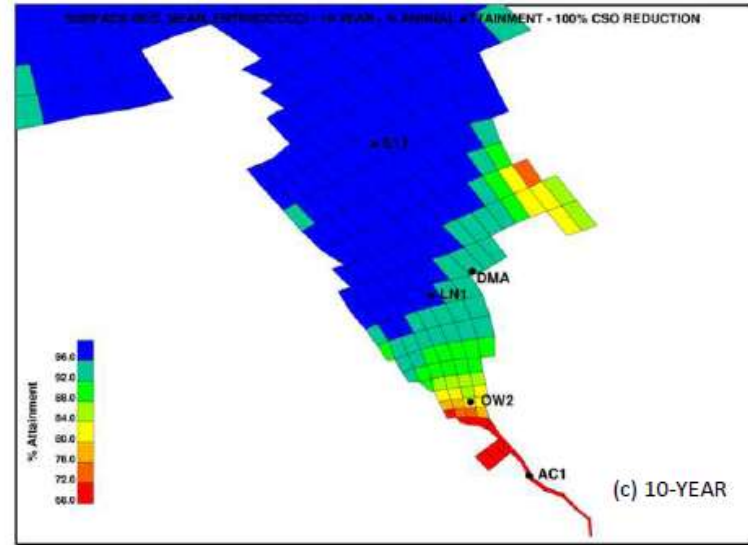
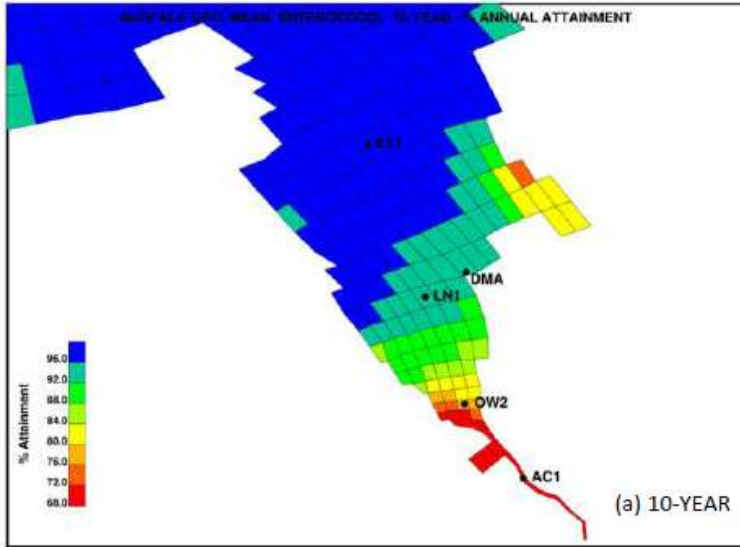


Figure 2. Attainment of Potential Future Enterococcus Criterion (30-day GM).

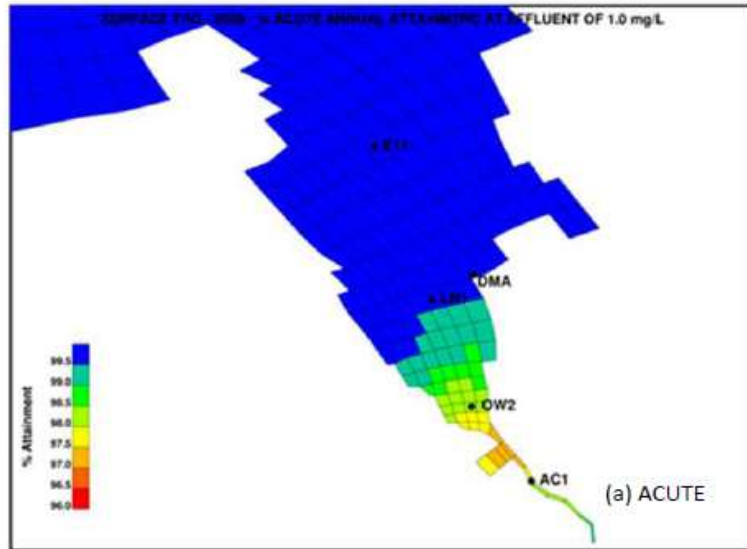
LTCP purposes. DEP believes that the 0.1 mg/L TRC concentration is the minimal achievable effluent chlorine concentration for a satellite CSO chlorination/dechlorination facility, while 1.0 mg/L of chlorine is the minimal achievable chlorine concentration for a CSO chlorination facility. TRC toxicity is calculated using two criteria, acute and chronic toxicity. Acute criteria are established as a maximum one hour concentration of 13 µg/L, while chronic toxicity is based on a four day average concentration of 7.5 µg/L.

The results show that TRC toxicity, even with a very low allowable TRC discharge of 100 ug/L, would result in persistent levels above the adopted WQS in both Alley Creek and the adjacent sections of Little Neck Bay because of limited dilution in this confined area adjacent to the CSO tank. Maximum water column TRC concentrations are essentially equal to the tank overflow concentration. At 100 µg/L, the effluent is more than seven times the acute TRC criterion of 13 µg/L. Figure 3 presents the areas that would violate the acute and chronic TRC criteria based on the 2008 simulation results and these results are summarized in Table 3. The area of non-attainment due to TRC toxicity ranges from 75 to 544 acres for the acute criteria and 1 to 65 acres for the chronic criteria.

As a possible solution to mitigate the TRC toxicity issues, DEP considered relocation of the discharge of the disinfected CSO effluent to a site where dilution would be more favorable in order to attain acceptable ambient TRC concentrations. Based on local bathymetry, two locations were selected for potential outfall relocation: one 5,500 feet and one 8,300 feet from the current tank outfall. Estimates of expected TRC concentrations for each location are depicted in Figures 3a and 3d. As shown, the modeling demonstrated that the 8,300 foot outfall extension has the most favorable dilution conditions leading to the lowest TRC levels in the receiving waterbody, and approaching the acute TRC criterion at a discharge concentration of 0.1 mg/L.

In order to implement either relocation option, alternative pumping would be necessary as the local bathymetry does not allow for a gravity discharge. Thus, a 330 MGD pumping station would be required along with a system of multiple force mains to closely match the effluent flow rates. When added to the cost of the disinfection system, the total cost of this alternative would exceed \$500M. When matched with the minimal gain in WQS attainment discussed above, disinfection is neither an economically viable nor environmentally favorable alternative.

EFFLUENT TRC = 1.0 mg/L



EFFLUENT TRC = 0.1 mg/L

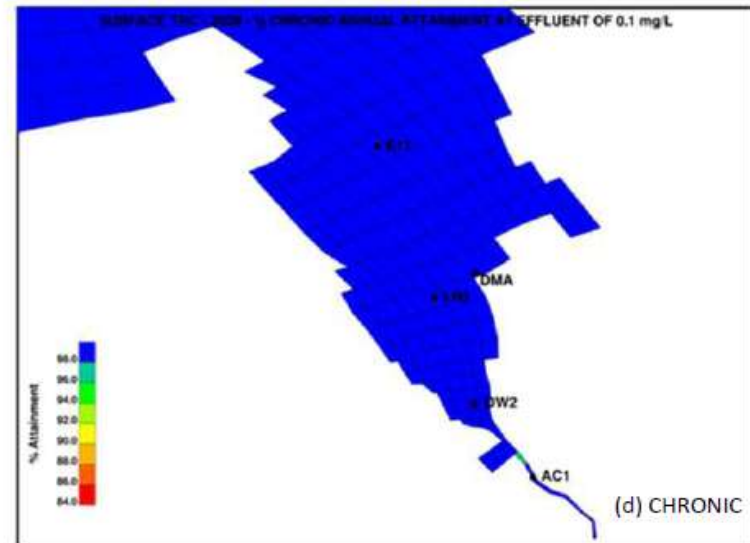
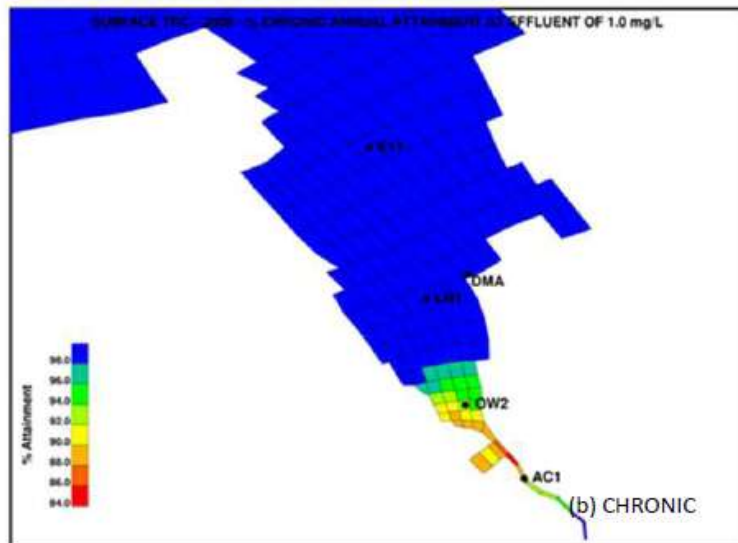
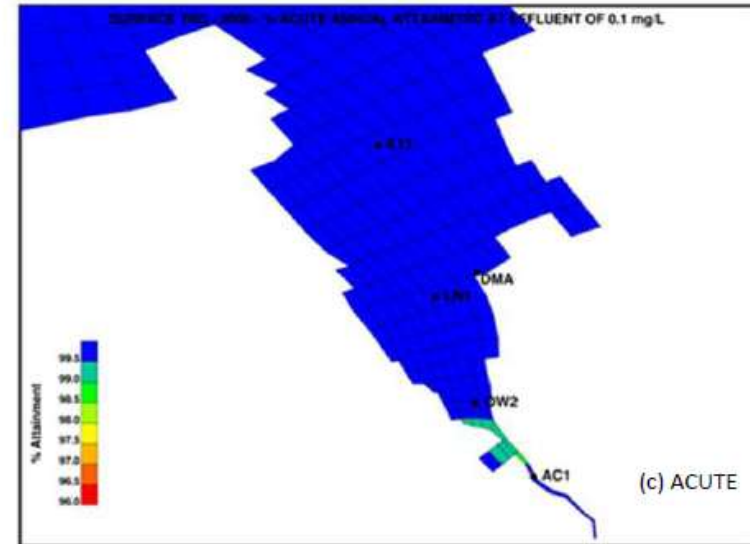


Figure 3. Acute and Chronic TRC Toxicity Attainment for Effluent TRC Concentrations of 1.0 mg/L and 0.1 mg/L.

4. Difficulties in operation of satellite CSO disinfection facilities

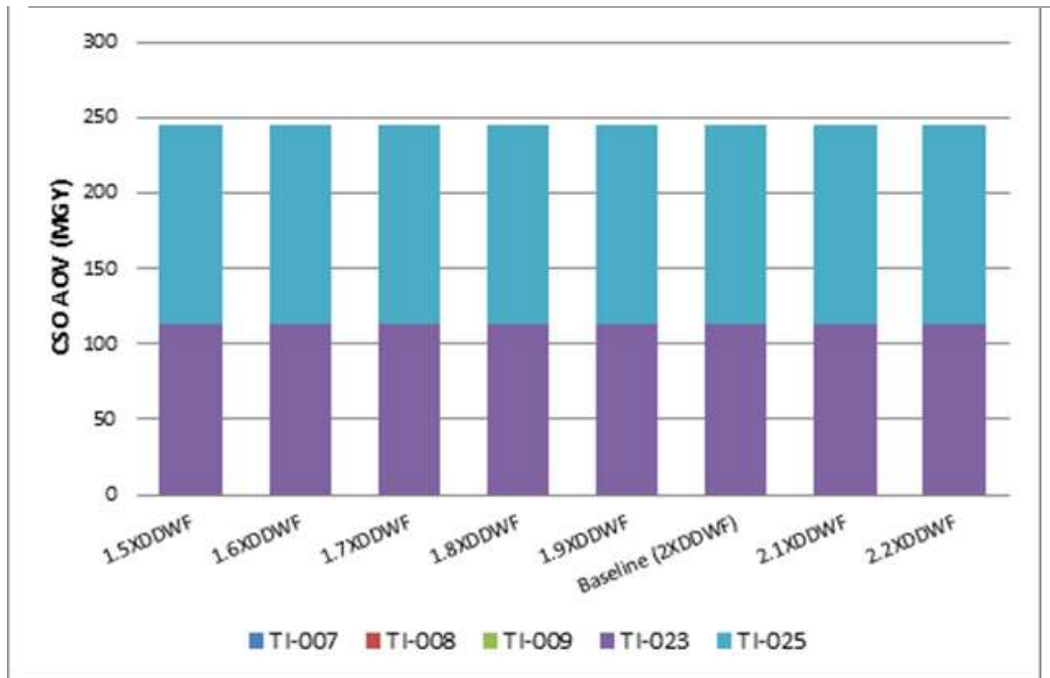
The operation of satellite, unstaffed CSO facilities is problematic from both a technical and staffing/O&M standpoint. Technically, the disinfection process must have an extreme level of reliability to ensure that the bacterial reductions are achieved (assumed minimum 3-log reduction) and that the TRC limits are met. From a staffing perspective, DEP would need to assign dedicated operations personnel to mobilize to this unmanned satellite facility whenever rain is forecasted to provide for operational oversight of the disinfection facility and monitor, adjust, and optimize chemical dosages based on effluent chlorine concentrations, which will vary widely throughout a rain event. During dry weather additional operational resources would be required on site for chemical deliveries; O&M of chemical pumps, meters and instruments; and periodic draining and replacing of stored chlorine, as chlorine will degrade over time and will lose its strength and effectiveness. The additional burden to operate a satellite disinfection facility at the Alley Creek CSO Tank for marginal water quality improvements and potential ecological risk is not recommended.

In summary, the revised LTCP will include disinfection as a final alternative, but it was again not recommended due to the toxicity and negligible improvement in existing and potential future water quality criteria. This conclusion is documented in Section 8 and supported by the above-noted TRC modeling results and other supporting data. Further, the report will show that while the toxic impacts of disinfection can be minimized by relocation of the Alley Creek CSO outfall into Little Neck Bay, outfall relocation as an alternative is extremely costly and out of the reasonable range of expenditures for the minimal benefits attained.

Disinfection will continue to be analyzed in future LTCPs for other waterbodies and in some cases will be a preferred alternative. However, for Alley Creek/Little Neck Bay existing controls provide high levels of attainment in this, and there is poor flushing/circulation resulting in poor dilution, and there are concerns regarding chlorine toxicity impacts to these thriving wetlands as well as operational challenges, disinfection is not a preferred alternative.

InfoWorks Model 2xDDWF Baseline Assumption.

To demonstrate that the baseline assumption of 2xDDWF is reasonable and valid for this LTCP, a sensitivity analysis using the InfoWorks model was conducted to assess the changes in CSO annual overflow volumes (AOV) to Alley Creek and Little Neck Bay at various multiples of DDWF (1.5 to 2.2 x DDWF) at the Tallman Island (TI) WWTP. The results of this analysis are shown in the bar graph below and it does demonstrate that CSO discharges into Alley Creek are not impacted by the wet weather pumping capacity at the Tallman Island WWTP. This is due to the fact that the Alley Creek and Little Neck Bay drainage areas, that encompass about 10% of the total drainage area and less than 2% of the combined drainage area, is located at the far end of the drainage area and is essentially hydraulically disconnected from the Tallman Island WWTP. Periodic discharges to Alley Creek from the CSO tank are not hydraulically affected by the wet weather operations at the WWTP. This is due to the fact that the Alley Creek and Little Neck Bay watersheds are at the beginning of the Tallman Island collection system and the treatment plant at the end of the system does not affect the system's ability to receive flows from these watersheds.



**TI-008 & TI-009 AOV = 0 mg/yr. TI-007 AOV = 0.1 mg/yr.
TI-025 is the Alley Creek CSO Tank outfall**

Figure 8. Impact of TI Wet Weather Performance on AC/LNB CSO Discharges

In contrast to Alley Creek, other areas closer to the plant are hydraulically impacted by WWTP wet weather operations. Significant investments are being made to the Tallman Island WWTP and collection system that will improve wet weather operations and CSO capture. Specifically, as part of the ongoing BNR upgrade and stabilization work at the WWTP, the DEP is removing the engine driven main sewage pumps and replacing them with new electrically driven pumps. It's also important to note that there is redundancy with all tanks and equipment needed to treat 2xDDWF. In the collection system, DEP is constructing the new Whitestone Interceptor extension, which will increase the wet weather conveyance to the TI WWTP and result in improved CSO capture. These investments will not impact CSO discharges in Alley Creek for the reasons mentioned above.

Water Quality Endpoint and Assessment of Highest Attainable Use

As outlined above, the LTCP clearly demonstrates high levels of attainment of current water quality standards within the two water bodies. For the baseline conditions, there is nearly 100% compliance with the fecal coliform criterion at all locations for the long-term 10-year simulation. Disinfection (the equivalent of the 100% CSO control alternative in the LTCP) results in only minor improvements in the attainment of the fecal coliform criterion. With regard to the enterococci criterion, disinfection is not needed to meet existing standards in Little Neck Bay and has a negligible impact on the level of increased attainment in Alley Creek, an increase from 30 to 40 percent compliance is projected. Further, based on DEC's indication that it intends to adopt, by 2015, water quality criteria consistent with EPA's 2012 RWQC, DEP will include a sensitivity analysis using one of the potential future RWQC options. That sensitivity analysis shows that disinfection of CSO would result in very little improvement in compliance with potential future water quality criteria in either waterbody.

The baseline alternative achieves a similar level of attainment as the disinfection alternative, but without adverse ecological risks associated with chlorine toxicity or the high cost of relocating the chlorinated

effluent. The assessment of highest attainable use in both waterbodies shows that even with 100% CSO abatement (1) Alley Creek cannot attain existing primary contact standards (and little improvement over baseline conditions) and (2) under baseline conditions lower Little Neck Bay is attaining existing primary contact standards essentially 100% of the time for both fecal coliform and the seasonal enterococcus GM of 35 col/100 ml. The sensitivity analysis further shows that disinfection of CSO would not result in significant improvements to water quality even assuming the potential RWQC in 2015. The LTCP clearly demonstrates that primary contact is not an existing use in either location due to lack of suitable access. Accordingly the LTCP, and the UAA, conclude that the current Class I and SB, respectively, should remain in effect to reflect the waterbodies' highest attainable uses.

Additionally, in regard to the highest attainable use the LTCP Goal Statement provides the following language: *“Where existing water quality standards do not meet the goals of the Clean Water Act, or where the proposed alternative set forth in the LTCP will not achieve existing water quality standards, the LTCP will include a Use Attainability Analysis examining whether applicable waterbody classifications, criteria, or standards should be adjusted by the State. The Use Attainability Analysis will assess the waterbody’s highest attainable use, which the State will consider in adjusting water quality standards, classifications, or criteria and developing waterbody-specific criteria. Any alternative selected by a LTCP will be developed with public input to meet the goals listed above.”* For Alley Creek, we will resubmit a UAA, since the waterbody does not meet the fishable/swimmable goal. As shown through the LTCP, the highest attainable use of Alley Creek is its current water quality designation of I. Public input was solicited during the development of the LTCP as called for both in the LTCP Goal Statement and the federal CSO Policy. The public was clear in their input; they were not supportive of additional storage and treatment infrastructure and did not see the need for it. Rather, they voiced support for additional green infrastructure instead of additional large grey infrastructure projects.

Characterization and Removal of Dry Weather Sources of Impairment of Alley Creek and Little Neck Bay.

As stated in Section 9 of the LTCP, DEP is committed to tracking down and characterizing the sources of bacteria pollution into Oakland Lake and the Duck Pond, including the pond outlets. Accordingly, a follow-up sampling program of the Oakland Lake and Duck Pond effluent will be initiated in November 2013. The program includes sampling of the distinct point discharge locations of the two waterbodies and determination of the sources of dry-weather bacterial loadings. Should human sources of contamination be detected, DEP will conduct specific investigations to identify them. Following these efforts, the bacterial loadings assigned to the water quality model calibration runs, baseline condition and alternatives will be revised, if necessary, and the water quality compliance of Alley Creek will be reassessed. As referenced previously, these sources have relatively low concentrations of bacteria and whether these levels of enterococcus can be reduced is not clear at this time. This will depend on whether human based dry weather sources can be found or if these concentrations are caused by local wildlife.

DEP has addressed the threshold issues identified by NYSDEC in this letter. In summary, disinfection of the Alley Creek CSO Tank will be included as a final alternative in the November 2013 resubmittal of the LTCP, however it will not be recommended due to TRC toxicity and the negligible improvement in existing and potential future water quality criteria. Disinfection also poses many O&M challenges at unmanned satellite facilities. In addition, the baseline assumption of 2XDDWF for this LTCP is technically sound and justifiable. The LTCP assesses the highest attainable use of both waterbodies, and supports the proposed CSO abatement measures. Public input was solicited during the development of the LTCP as called for both in the LTCP Goal Statement and the federal CSO Policy. The public was clear in their input; they were not supportive of additional storage and treatment infrastructure and did not see the need for it. Finally, DEP will continue to track down and characterize sources of pollution into Oakland

Lake and the Duck Pond with the goal of further improving water quality beyond what can be achieved through the reasonable CSO control measures proposed in the LTCP. .

As noted in the introduction, this letter serves as the basis of our technical discussion. We look forward to meeting with you to further review the contents of this letter on November 7th as we integrate these revisions into our revised LTCP.

Very truly yours,

A handwritten signature in blue ink that reads "Keith Mahoney for AM". The signature is written in a cursive style.

Anthony Maracic, P.E.
Director of Capital Planning & Asset Management
Bureau of Wastewater Treatment

Copy to:

Cheryle Webber, P.E.
New York State Environmental
Facilities Corporation
625 Broadway, 7th Floor
Albany, New York 12207

Robert Elburn, P.E.
Regional Water Engineer
Division of Water, Region 2
New York State Department of
Environmental Conservation
47-40 21st Street
Long Island City, New York 11101

Mark Klotz, P.E.
Director, Division of Water
New York State Department of
Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233-3500

Gary E. Kline, P.E.
Division of Water
New York State Department of
Environmental Conservation
625 Broadway 4th Floors
Albany, NY 12233-3500

Mary von Wergers, Esq.
Office of General Counsel
New York State Department of
Environmental Conservation
Division of Environmental Enforcement
625 Broadway, 14th Floor
Albany, NY 12233-5500

William Plache, Esq.
Assistant Corporation Counsel
New York City Law Department
Church Street
New York, NY 100

DEP BWT: J. Mueller, A. Maracic, K.
Mahoney, L. Lee, K. Wong
DEP BEPA: A. Licata, P. Balci
DEP BLA: R. Levine, M. Eckels, H. Donnelly
AECOM: D. Bingham, S. Freedman, A. Boulet
H&S: P. Young

DETAILED COMMENTS:

1. Section 1.

- a. Section 1.2.d. The LTCP states that adoption of the Green Infrastructure Plan resulted in elimination of some grey infrastructure, which is not correct. The changes made to the CSO Order 2012 did not reflect a trade between green and grey infrastructure and the LTCP must be revised to reflect this fact.

Response: See revised Section 1.2.d

2. Section 2.

- a. Under Section 2.1.c.3, the City presents the modeling results for operation of the Tallman Island WWTP for calendar years 2008 and 2011 to illustrate the change in hours at 2xDDWF under two different scenarios (pre-CEG and CEG). It is not clear; however, why the simulation results for 2011 are being presented in this LTCP, this year is not part of the baseline rainfall years. Thus, it is recommended that the discussion of 2xDDWF hours during 2011 be removed from the LTCP.

Response: See revised Section 2.1.c.3. These modeling scenarios were removed from the LTCP.

- b. Tables 2-7 and 2-8 present pathogen loadings for groundwater infiltration but the LTCP does not discuss how these loadings were determined or why they are being included in the modeling for the LTCP. Additional information on the loads from groundwater should be presented in the LTCP.

Response: See revised Section 2.1.c.2.

- c. Table 2-7 presents dry weather flows from Oakland Lake and Upstream Pond but the LTCP does not discuss how these flows were determined. Additional information on the determination of these flows should be presented in the LTCP.

Response: See revised Section 2.1.c.2.

- d. Under Section 2.1.c.5, the City discusses the interceptor inspection program, but it is recommended that the LTCP include a figure within this Section to illustrate the interceptors that were cleaned for the Alley Creek sewershed as well as any data on sediment depths for the interceptors and combined sewers.

Response: The portions of the Tallman Island interceptors that were cleaned are shown in the LTCP. See Figure 2-14 in Section 2.1.c.5.

3. Section 4.

- a. Table 4-1: Table 4-1 provides a summary of the calculated monthly retained volumes and overflows for 2012 for the Alley Creek CSO storage facility, information that was also reported in Table 3-9 of the August 2013 Post Construction Compliance Monitoring and CSO Retention Facility Overflow Summary for Calendar Year 2012 (August 2013 PCCM Report). However, the August 2013 PCCM report also provided the InfoWorks model results for the same time period and these modeling results are consistently higher than the calculated results. The LTCP should include a discussion of both the modeled and calculated results for the CSO storage facility, possible reasons for the discrepancies between the two sets of values, and implications for predicting the levels of attainment with water quality standards that are presented in the LTCP.

Response: See revised Section 4.3.b

- b. Table 4-2: Include in this table the estimated overflow volumes for each overflow event based on the flow monitoring data collected at the tank as well as the predicted monthly overflow volumes based on the InfoWorks model run using the 2012 rainfall data.

Response: See revised Table 4-2 in Section 4.3.b

- c. Section 4.3.b. Discuss in this Section how the City is able to confirm that an overflow event actually occurs using the data available from the flow monitoring. Also discuss if the InfoWorks model using 2012 rainfall data predicted an overflow for a particular rainfall event that did not occur based on the tank flow monitoring data.

Response: *The Alley Creek and Little Neck Bay June 2013 LTCP report contained an extensive discussion of the PCCM in Section 4.3. A map of sampling locations was included along with graphics of water quality data and information on the overflows from the CSO storage facility. DEP provides DEC with an annual PCCM report as part of our SPDES obligations and believes additional information requested by DEC should be included in that report instead of the LTCP report. DEP will make sure that the SPDES PCCM report is referenced in Section 4 of the LTCP.*

Differences between monitored data and model-predicted data are discussed in Section 4.3.b

4. Section 5.

- a. Figure 5-1 does not show the Alley Creek or Little Neck Bay waterbodies or sewershed and it is recommended that the figure be expanded to show these areas.

Response: *Figure 5-1 does not extend to Alley Creek and the Little Neck Bay area because it is not an OGI priority area, therefore the figure does not need to be revised.*

- b. Section 5.4.c discusses the baseline application rate for green infrastructure and states that the expected application rate will be three (3) percent, all of which will be in onsite private properties. It is recommended that the LTCP include a figure illustrating where this green infrastructure will be located.

Response: *There are no specific locations for GI implementation defined currently. There is an assumption that selected drainage areas will have a 3% GI implementation, based on GI opportunity analysis, built in the InfoWorks model. A figure showing such locations cannot be compiled at the current stage of the GI program.*

5. Section 6.

- a. Table 6-2 and 6-3. Explain the basis for calculation of the total pollutant loads for TI-025 and TI-024. The total flows for these two outfalls are approximately the same, but the pollutant loads for stormwater are roughly half of the loads for CSO. Given the pollutant concentrations in Table 6-1, it would seem that there would be a greater difference in the pollutant loads from these two sources.

Response: *CSO effluent concentrations are calculated using the stormwater and sanitary concentrations assigned in Table 6-1 multiplied by the flow calculated by InfoWorks. InfoWorks provides a calculated fraction of flow from stormwater and flow from sanitary sources. For 2008, InfoWorks calculates that a total of 132 MG discharges from the tank, but only 1.9 MG, or 1.4% of the flow is sanitary and the remainder is stormwater. This mixture of flows results in an average CSO enterococci*

concentration of 29,200 org/100 mL, which is roughly twice the stormwater concentration. This has been modified in the LTCP.

- b. There are two Figure 6-1, thus all subsequent figures are numbered incorrectly. There are two Table 6-6 as well, thus all subsequent tables are numbered incorrectly.

Response: *Figures and tables have been renumbered correctly.*

- c. Table 6-6 on page 6-16 does not include the names of water bodies or sampling points that correspond to the data presented.

Response: *The previously shown Table 6-6 has been removed from the LTCP.*

- d. On page 6-26, there is a reference to Figures 6-5 and 6-6 and a statement that the 30 day max and GM concentrations for enterococci at AC1 are over 500 org/100 ml and 1000 org/100 ml respectively, however, the Figure 6-5 does not reflect these data and there is no Figure 6-6.

Response: *See revised Section 6.3.b.*

- e. Figures 6-1 and 6-1 on pages 6-13 and 6-14 show the attainment levels with the pathogen water quality standards for sampling points AC1 and DMA, however, similar figures should be provided for sampling points OW2, LN I, and EI I.

Response: *Similar figures are provided for OW2, LN1, and E11. See Section 6.3.a,*

- f. It is recommended that additional figures similar to Figure 6-4 and 6-5 be provided that illustrate seasonal and annual attainment levels for the enterococci standard.

Response: *Additional figures are provided. See section 6.3.b, 6.3.c and 6.3.d.*

- g. Section 5.4.c. Discuss the estimated percent of CSO reduction associated with the on-site 3 percent GI application rate for new development under baseline conditions.

Response: *See revised Section 5.4.c.*

- h. Section 6.3, page 6-14. The LTCP states that the City did not assess the attainment levels of Alley Creek with the enterococci standards because it is a class I waterbody. However, as the Department has stated in the past, the LTCP should evaluate the ability of the waterbody to attain the next highest standards or fishable/swimmable goals of the Clean Water Act.

Response: *See revised Section 6.3 and other related Sections.*

6. Section 8.

- a. 8.2. The City needs to include the evaluation of disinfection as an alternative for closing the performance gap. The City also needs to more specifically address the requirement that LTCP should eliminate or relocate CSOs that impact sensitive areas, in particular Douglaston Manor Association beach and ensure that the level of treatment and/or CSO reductions proposed in the LTCP will meet water quality standards for full protection of existing and designated uses for sensitive areas.

Response: *See revised Section 8.2, and other related portions of Section 8 (revised Sections 8.3, 8.4 and 8.5), where new Alternative 4, Disinfection in the Existing CSO Retention Tank, was carried forth for further evaluation. It was, however, subsequently*

rejected for a host of reasons as described in detail in the above-referenced Sections. With respect to the DMA beach, as clearly demonstrated in Sections 6 and 8, all current applicable bacteria standards will be attained.

- b. Section 8.2.b. The City evaluated two possible GI scenarios, one consisting of a 10 percent application rate and the other consisting of a 50 percent application rate. The LTCP states that the 10 percent GI application will result in a 15 percent reduction in CSO AAOV while the 50 percent GI application will result in a 65 percent reduction in CSO AAOV. However, the LTCP does not discuss the technical basis for estimating these CSO reductions, which appear to be unrealistically high. The City should describe in more detail the technical basis for these estimates.

Response: *See explanation of technical basis for the estimates in Section 8.2.*

7. Section 9.

- a. Section 9.5. The LTCP should provide a more detailed discussion of the Post-Construction Compliance Monitoring (PCCM) being performed for Alley Creek and Little Neck Bay and include, for example, a map of the sampling locations, information on the sampling frequency and parameters monitored, the methodology for calculating the overflow from the CSO storage facility, and protocol for using the monitoring data for verifying the InfoWorks and water quality receiving model. Moreover, the Department requests that the City add the sampling point OW2 as a permanent monitoring station and conduct sampling of pathogens (fecal coliform and enterococci) for the retention facility overflows for Alley Creek and Little Neck Bay PCCM.

Response: *The Alley Creek and Little Neck Bay June 2013 LTCP report contained an extensive discussion of the PCCM in Section 4.3. A map of sampling locations was included along with graphics of water quality data and information on the overflows from the CSO storage facility. DEP provides DEC with an annual PCCM report as part of our SPDES obligations and believes additional information requested by DEC should be included in that report instead of the LTCP report. DEP will make sure that the SPDES PCCM report is referenced in Section 4 of the LTCP*

DEP will consider adding OW2 as an additional PCCM receiving water monitoring station should it be accessible with DEP's Harbor Sampling vessel. Retention facility monitoring requirements should be addressed through DEP's Tallman Island WWTP SPDES Permit, not through a comment on the Alley Creek LTCP report, as such no further action will be taken at this time.

8. Appendices D and E.

- a. The Department is not providing detailed comments at this time on the Use Attainability Analyses (UAA) for Alley Creek and Little Neck Bay. The Department will assess any UAA after all LTCP comments are addressed and an approvable LTCP is received.

Response: *Noted. The previously submitted Appendix E: Little Neck Bay UAA has been removed. Appendix E is now the SPDES Variance Application.*

- 9. General Comment: The LTCP contains numerous ambiguous or misleading statements related to the sources of impairment and their relative contributions, such as on page 6-22 where it states the East River is a significant contributor to high concentrations of enterococci or that the Nassau County stormwater becomes a larger portion of the calculated enterococci concentrations. These statements are not consistent with the data presented in Table 6-8 as well as the Departments understanding of the major sources of impairment. These statements

should be revised to more accurately reflect the impacts of the sources of impairment. Moreover, the fact that complete reduction of CSOs may not close the performance gap for attaining water quality standards does not preclude the potential for the reduction of CSOs to meet the highest attainable use.

Response: *With respect to the Nassau County and East River contributions, they vary depending upon which station is being evaluated. At station E11 the East River is a significant contributor to the total enterococci concentration, but as you move toward Alley Creek its contribution decreases. Section 6.3.d of the LTCP has been modified to clarify the issue.*

DEP acknowledges that reductions of CSO pathogens will improve pathogen concentrations but is not convinced the complete CSO reduction will allow for a higher use than is currently established by the existing WQ Classifications.

10. SPDES Variance. If the selected alternative will not achieve water quality goals of the CWA then the LTCP must include a draft application for a variance to effluent limits for any overflow from the CSO storage tank.

Response: *A SPDES variance application is included in Appendix E of the LTCP.*