## FLUSHING BAY PUBLIC COMMENT RESPONSE SUMMARY

**Public Letters Received:**

1. Queensboro Hill Flushing Civic Association (QHFCA). November 23, 2016. Flushing Bay CSO Long Term Control Plan.
2. Guardians of Flushing Bay (GFB). November 28, 2016. Flushing Bay CSO Long Term Control Plan.
3. Email from Nathalie J. Weeks (NJW). November 28, 2016. Flushing Bay CSO Long Term Control Plan.
4. The Council of the City of New York, Peter Koo (Koo). November 30, 2016. Flushing Bay CSO Long Term Control Plan.
5. Email from Timothy Eaton and Gregory O'Mullan (E&O). November 29, 2016. Flushing Bay CSO Long Term Control Plan initial public presentation.
6. S.W.I.M. Coalition (SWIM). November 30, 2016. NYC DEP Flushing Bay CSO LTP Public Meeting #2.
7. Save the Sound (STS). November 30, 2016. Flushing Bay CSO Long Term Control Plan Alternative Analysis – Save the Sound Comments.
8. Friends of Flushing Creek (FFC). November 30, 2016. Flushing Bay CSO Long Term Control Plan.

### 1. Re-open and Re-evaluate the Flushing Creek LTCP

*Response:*

- *The Flushing Bay and Flushing Creek LTCPs have both been approved by DEC (on March 7, 2017). The approved LTCP projects are expected to achieve the applicable water quality standards for these waterbodies; thus DEP does not believe there is a basis for re-opening these LTCPs.*

- *The existing CSO controls for Flushing Bay and Flushing Creek include a 43 MG CSO Storage Tank at TI-010, dredging and ecological restorations in Flushing Bay and conveyance system improvements, and green infrastructure.*

- *The total investment for the approved Flushing Bay and Flushing Creek CSO controls for is about $2B, a significant investment for these two waterbodies. In conjunction with the 25 MG CSO storage tunnel in the Flushing Bay LTCP, the Flushing Creek LTCP recommends additional CSO controls including floatables control and chlorination/dechlorination for CSO outfalls TI-010 and TI-011.*

- *For Flushing Creek, disinfection was determined to be the most cost effective alternative as it takes advantage of the existing CSO retention tank and long outfalls to provide adequate detention time for the chlorination to effectively kill bacteria. Dechlorination was added into the approved Flushing Creek CSO LTCP to address chlorine toxicity. Treatment of CSO using chlorination is a proven technology utilized by utilities throughout the country for treatment of CSO discharges for pathogen reduction.*

**2. <u>Modeling for CSO Attainment:</u>**

**a. Provide more clarity on the projection of 100% attainment of water quality standards for baseline conditions, given that 1.4 billion gallons of sewage and stormwater would still enter Flushing Bay every year.**

*<u>Response:</u>*

- *Sampling conducted as part of the LTCP demonstrated that in dry weather, fecal coliform concentrations in Flushing Bay are generally well below 200 cfu/100mL, the applicable water quality standard for Class I waterbodies. There is significant tidal influence from the East River, thus the duration of high fecal coliform concentrations associated with CSO events is relatively short, with concentrations often recovering within a day of the rain event. As a result, the monthly geometric means for fecal coliform are below the existing bacterial water quality standards.*

- *Baseline conditions differ from existing conditions as baseline conditions include ongoing conveyance improvements that will result in additional CSO reductions beyond the existing conditions. The approved Flushing Bay CSO LTCP 25 MG CSO Storage Tunnel will result in a 50% reduction in CSO discharges from baseline conditions and will also significantly reduce the number of CSO events from 47 to 14 per year.*

**b. Including the billion or more gallons from Flushing Creek, what is the full picture of floatables, chemical oxygen demand, biological oxygen demand, toxic pollution, and virus load into the Bay each year?**

*<u>Response:</u>*

- *DEP CSO LTCPs analyze pathogens and DO criteria for the determination of water quality compliance. The criteria are based upon the DEC water quality standards.*

- *The baseline loadings of fecal coliform, Enterococcus and biological oxygen demand (BOD) from Flushing Bay CSOs and non-CSO sources are presented in Section 6 of the December 2016 CSO LTCP for Flushing Bay, and the loadings to Flushing Creek are presented in Attachment 1 Revised Executive Summary of the May 2015 CSO LTCP for Flushing Creek Supplemental Documentation. Floatables loadings are difficult to quantify, although in general floatables loadings city-wide have been reduced over the years as the City has implemented best management practices such as installing hooded catch basins, street sweeping, and litter prevention public awareness programs. The Flushing Creek CSO Retention tank has influent screens to remove all floatables entering and overflowing from this CSO retention tank. The approved LTCP project also includes some additional floatables control that will further improve aesthetic conditions in these waterbodies. With regard to toxics, sampling data from other tributaries in NYC have shown that CSO discharges are not a significant source of hazardous substances.*

**c. We have seen - and submitted - concerns that dissolved oxygen levels, due to DEP's plan to continue discharges of CSOs in Flushing Creek, the long-term nature of the Flushing Bay LTCP's actual construction timeframes, as well as any remaining Flushing Bay CSO discharges, will regularly fall below the "never below" limits for fish survival; why is the DEP not using continuous Dissolved Oxygen monitoring for this LTCP (and other LTCPs)?**

*Response:*

- *For Flushing Bay, the DO criterion is not less than 4.0 mg/L. The LTCP sampling data presented in Section 2 of the December 2016 CSO LTCP for Flushing Bay show very few excursions below 4.0 mg/L at the Flushing Bay sampling stations. The sampling stations where the minimum data values fell below 4.0 mg/L were located in the outer Bay, furthest from the Flushing Bay CSOs. For Flushing Creek, Table 2-16 from the December 2014 CSO LTCP for Flushing Creek presented Harbor Survey Monitoring Program DO data from summer months for the year 2000, and years 2008 to 2014. These data did show minimum values below 3.0 mg/L for Flushing Creek but no values indicating hypoxic conditions. Use of continuous DO monitoring for extended monitoring periods in marine environments can be challenging due to potential interferences from biofouling and sediments, as well as identifying appropriate representative locations where the equipment can be safely deployed/secured. Water quality models were also used to assess 100% CSO reduction alternatives; although this level of control provides slight improvements in DO.*

**3. Green Infrastructure: GI needs even more priority in LTCPs. We urge the DEP to immediately plan and construct larger-scale stormwater wetlands in New York City Parks to capture runoff from adjacent streets and parking areas. Operational and planned examples, which must be replicated across the city, include the wetlands at the southern end of Meadow Lake, the Queens Botanical Garden, Queensboro Community College and the Conduit Ave and Shoelace Park installations.**

*Response:*

- *DEP continues to advance planned green infrastructure (GI) projects throughout the Flushing Bay sewershed to provide water quality and other co-benefits. At this time in the Flushing Bay area, the vast majority of right-of-way GI projects have been implemented or are in progress; these projects have been incorporated into the baseline conditions. Additional GI projects planned for the watershed will include public property retrofits including Parks, schools and NYCHA properties and private property projects implemented through DEP's Grant Program.*

4. **<u>Gray Infrastructure:</u> We believe green infrastructure or tanks/storage solutions is a more holistic approach that will reduce floatables and toxins in the waterways, not only address bacteria. We commend DEP for leaning towards a CSO storage tunnel solution and hope this indeed becomes the preferred alternative for the LTCP submission to the State.**

   *<u>Response:</u>*
   - *The approved LTCP plan is a tunnel with 25-MG storage capacity to capture and convey CSOs discharged from Outfalls BB-006 and BB-008 to a dewatering pump station located on a site near the Bowery Bay WWTP. The final siting and sizing of the facilities, as well as the alignment of the tunnel and connecting conduits will be further refined during the Basis of Design Phase of the project.*

5. **Though we appreciate the investment DEP is looking to make in Flushing Bay, there are other alternatives that were brought up in the public meeting that we believe should be considered. If they have already been considered, we would like to see the rationale why they were not retained as alternatives:**

   a. **Citi Field seems like an ideal location for a CSO tank to reduce CSOs from BB-006. Instead of building an entirely new tunnel, the tank would only need a pump station and use the existing network of interceptors along the Bay.**

      *<u>Response:</u>*
      - *While the cost of constructing an off-line CSO storage tank ($750M) and supporting sewers/facilities is comparable to the CSO storage tunnel ($670 to $829M), the tank alternative at Citi Field was eliminated from further consideration due to the property acquisition issues and the construction and operational issues. These issues are outlined in Pages 8-39 through 8-41 of Section 8 of the December 2016 CSO LTCP for Flushing Bay.*

      - *In addition, as noted above, there are also potential concerns with park alienation in relation to construction of above grade facilities in Flushing Meadows Corona Park.*

   b. **Compared to the proposed CSO tunnels, an above grade retention facility at Citi Field has important advantages.**

      i. **It would be more cost effective, capture more CSO and have a smaller footprint and maintenance/cleaning costs than a tunnel. An installation the size of the Flushing Creek CSO retention facility would be much cheaper, and capture more CSO (40 MG compared to 28 MG tunnel)**

         *<u>Response:</u>*
         - *It is uncertain whether an above grade retention facility would be less costly to build compared to a below grade tank or tunnel, as it would require a significant influent wet well and pumping to lift the CSO into the tank. In order to convey the high peak flows generated during storm events, the size of the pumps would be extremely large and very costly to operate and maintain. Increasing the size of the tank footprint and volume would increase the pump sizes to accommodate the peak flows from the larger storm events to be captured. The footprint of an above-grade*

*25-MG tank would be much larger than the above-grade features of the proposed 25-MG storage tunnel. It would also be very difficult to site an above ground facility as it would require a much larger permanent foot print.*

- *In addition, as noted above, there are also potential concerns with park alienation in relation to construction of above grade facilities in Flushing Meadows Corona Park.*

**ii. It could be combined with a multi-deck parking facility, so parking space would not be sacrificed. Such a dual-use facility with pumping capacity could be modeled on the Flushing Creek CSO retention facility.**

*Response:*

- *A parking deck or other amenity could be incorporated into an above grade or below grade tank to incorporate dual usage of the property. However, this would not address the significant challenge of providing parking to address lost parking spaces during the multi-year project construction period. Space for material laydown, equipment, staging and other construction support services would be necessary. In addition, there would be impacts associated with the construction of the CSO diversion sewers and the dewatering pump station force main. Any additional space required for accommodation of a parking garage or other amenity would also need to be considered. In sum, identifying land for such large scale alternate parking during construction presents a significant challenge among others for this location.*

**iii. It is in close proximity (less than 500 ft) to existing stormwater and sewage pipelines leading to the Bowery Bay WWTP, so it would be more easily and quickly integrated into the existing infrastructure than a completely new tunnel.**

*Response:*

- *Dewatered CSO must be diverted to the interceptor sewer located in 108$^{th}$ Street, which measures in excess of 2,500 feet from the Citi Field parking lot along 38$^{th}$ Avenue. The force main would need to cross the Grand Central Parkway and CSO Outfalls BB-006 and BB-008. A chamber would need to be installed in 108$^{th}$ Street to accommodate the connection to the interceptor. Open cut construction in this roadway would impact businesses, bus routes and residents. While potentially a shorter stretch than the alignment of the force main from the tunnel dewatering pump station to the Bowery Bay WWTP, the risk associated with the crossing of structures and final connection point are significantly less for the tunnel alternative. The force main would be constructed using trenchless methods to minimize neighborhood and business impacts. The connection points requiring more sizable excavations would be located at the WWTP and the dewatering pump station site.*

- *Of greater concern is the length of consolidation piping from Outfalls BB-006 (>800 feet) and BB-008 (>3,500 feet) to a tank at Citi Field. Outfall BB-006 would have to be diverted to the tank near the Pell Avenue. A diversion chamber would need to be constructed in the highway median with the consolidation sewer jacked under the Grand Central Parkway. Outfall BB-008 must be diverted at a point downstream of*

*Regulator BB-R06, which is located at the intersection of 31st Drive and Ditmars Boulevard. The consolidation sewer would have to be constructed through a maze of highways and associated entrance and exit ramps. The impacts and risks associated with these routes are much greater than the consolidation pipe routing required for diversion of the CSO to the tunnel drop shaft.*

**c. An auxiliary wastewater treatment plant, such as the Spring Creek facility in Jamaica Bay, seems like a great alternative. We suggest looking at Willets Point, which will be undergoing redevelopment, is located at a low elevation on the Bay and Creek, and could also expand on the existing network of interceptors along the Bay.**

*Response:*

- *Spring Creek, Paerdegat Basin and Flushing Bay are off-line CSO Retention Facilities. These facilities are sized for a specific design storm and include influent screening, a dewatering pump station and provisions for overflow during extreme wet weather conditions. All the challenges (other than park alienation) discussed above with respect to the Citi Field site would apply. The distance to Willets Point from Outfall BB-006 (over a mile), would result in higher construction costs, a larger area of project impact and increased project risk, in comparison to the Citi Field site due to the significantly longer CSO consolidation sewers and dewatering force main.*

**6. CSO storage tunnels in other cities have invariably leaked and filled with groundwater, which must be continuously pumped to maintain storage space for eventual CSO retention. This is inefficient and leads to ongoing operational costs for the DEP in perpetuity, costs that are not clearly integrated into the LTCP.**

*Response:*

- *Tanks, tunnels and other below grade structures are subject to hydrostatic forces from groundwater. Regardless of the facility, there will be some level of infiltration that will enter the facility and require intermittent pumping. Rehabilitative measures to minimize groundwater influences will be necessary over the life of the facility. The operators of the tunnel facilities contacted during the LTCP planning indicated that infiltration rates were not an issue and did not impact storage capacity.*

- *Costs for operations and maintenance are included in the LTCP, but will be revisited upon further development of the design. Operational strategies and the sizing and type of pumps incorporated into the dewatering pump station design will impact the O&M costs.*

**7. CSO tunnels below grade are likely to be a poor long-term strategy in the face of global climate change and sea-level rise over the next 50 years, locking in growing pumping, energy and cleaning costs for the NYCDEP into the future. Sludge that now accumulates in Flushing Bay will need to be removed periodically and that can be more difficult in below-grade tunnels.**

*Response:*

- *Climate change and sea-level rise will not have any greater impact on a tunnel in comparison to a tank. Both facilities serve as storage vessels except that the tunnel also provides several advantages over a tank as follows:*
    - *The tunnel provides conveyance to a dewatering pump station site located near the WWTP and does not rely upon capacity in the interceptor to be available prior to initiation of the dewatering process.*
    - *Pumping directly to the WWTP reduces the risk of dry weather overflows at regulators located along the downstream reaches of the interceptor during dewatering operations.*
    - *The tunnel provides for a secondary conduit to the WWTP which could be used for diversion of flow from the interceptor in order to facilitate cleaning and preventative maintenance of the interceptor sewer.*
    - *The tunnel provides opportunities for expansion to accommodate CSOs, within the combined sewer system tributary to the Bowery Bay WWTP that currently overflow to Bowery Bay and the East River.*

- *In the case of the tank alternatives, the CSO captured by the tank would need to be pumped twice. The tank would be initially pumped to the interceptor sewer for conveyance to the Bowery Bay WWTP. Upon reaching the WWTP, the captured CSO volume would be pumped again at the head of the plant. Since the dewatering pump station for the tunnel will be located in close proximity to the WWTP, the force main will be extended to the plant. The design will evaluate options for connecting directly to the distribution box at the head of the primary settling tanks or a new distribution box to eliminate the need to double pump.*

- *Upon implementation of the control facilities, CSO related solids, floatables and sediment that currently accumulate in Flushing Bay, would be diverted to the tunnel or tank (within the limits of the facility storage capacity). As the tank fills, solids and sediment settle out and must be removed following each storm event. While tanks are typically provided with flushing or tank wash down systems to facilitate cleaning, manual labor and confined space entry are still required after storm each event to maintain the tank. Considering DEP's experience with operating a number of CSO tanks, DEP is aware that there is also a tendency for solids to settle in the downstream reaches of the interceptor impacting conveyance capacity which necessitates additional sewer cleaning.*

- *A properly designed tunnel will convey the solids to a grit sump at the head of the dewatering pump station. Those solids that cannot be pumped to the WWTP settle in the sump or are captured along the face of a coarse screen. The material is then*

*removed using rake and clam shell attachments to a bridge crane. Solids are kept in suspension in the tunnel by maintaining scouring velocities during tunnel filling and pump down. Many of the tunnel operators we spoke to indicated that the need to enter the tunnel for cleaning is minimal. In many cases, tunnels in service for over 15 years have only required spot cleaning or none at all. Due to the specialized equipment, long periods of confined space entry and infrequent performance of tunnel cleaning, it is envisioned that this work would be subcontracted to a third party.*

- *Based upon the foregoing, the Flushing Bay CSO tunnel will be more cost-effective and require less staff to operate and maintain than a storage tank located in the vicinity of Outfalls BB-006 and BB-008. In addition, the facility provides greater operational flexibility and opportunities for synergies to accommodate future expansion.*

**8. Interim solutions:**

**a. Floatables must be addressed in the meantime. These alternatives won't be completed for at least a decade, and there are many inexpensive approaches we encourage DEP to consider immediately. For example, Baltimore's Mr. Trash Wheel has become a fun-loving icon for the Baltimore Harbor. We believe this could be an immediate and relatively inexpensive solution to a constant issue in the Bay.**

*Response:*

- *While floatables booms are currently in place at outfalls BB-006 and BB-008 for capture of floatables similar to those in Baltimore Harbor, the technology used for collection of the captured material is different.*

- *DEP has placed booms at the end of the outfalls to capture the floatables at the source. DEP operates a fleet of skimmer boats which remove the floatables from the booms and skim areas along the waterfront where floatables tend to collect and create aesthetic or navigation issues. DEP plans to evaluate options for improving the effectiveness of the existing facilities and is considering the feasibility of a technology such as Mr. Trash Wheel in the future.*

**9. LTCP Process**

**a. Future meetings must be more easily accessible by car and public transit.**

*Response:*

- *DEP makes every effort to select meeting venues that have the facilities to accommodate public meetings and are easily accessible by car and public transportation. Unfortunately, the second public meeting for Flushing Bay LTCP at the USTA Billie Jean King National Tennis Center was impacted by construction limiting the availability of parking close to the meeting. We apologize for the inconvenience and will make efforts in the future to minimize similar issues.*

**b. We again thank DEP for providing advertisements in multiple languages; we just ask that in future meetings they are provided at least three weeks in advance so they can**

**effectively be used for outreach. One week in advance was not enough time to inform the community.**

*Response:*

- *DEP will make every effort to issue meeting notices earlier to provide organizations additional time for outreach to their members and the community.*

**c. We are concerned about the lack of marine scientists on staff at DEP and encourage DEP to bring in scientists to speak to chlorine toxicity and marine ecosystems at public meetings.**

*Response:*

- *The recommended plan for Flushing Bay does not include disinfection of CSO discharges. In addition, both the DEP and its LTCP engineering consultants have in-house expertise pertaining to marine science and ecology that we will continue to draw from both in-house and externally, as needed to address complex technical ecosystem issues. Also for all projects (including for LTCPs that include chlorination/dechlorination) Chlorination is a proven technology utilized by utilities throughout the country for pathogen reduction. Disinfection of CSO outfalls will present challenges to DEP that will be specific to each outfall and waterbody where disinfection will be utilized. The approved LTCP includes both chlorination and dechlorination. Also for all LTCP projects (including those that involve chlorination) an Environmental Assessment Statement (EAS) will be prepared during the design process and the analyses will be performed in accordance with the CEQR Technical Manual. This process will review many things including natural resources and the effect of chlorine on ecology. In the event a significant adverse impact is identified and can't be mitigated, and Environmental Impact Statement (EIS) would be prepared, which involves scoping and a public hearing.*