

2.2.5 SECTION 8.0 – EVALUATION OF ALTERNATIVES

DEC Comment No. 15 on the *Flushing Creek LTCP*:

Section 8: The selected alternative includes disinfection of CSOs from TI-011 and Diversion Chamber 5 that will not provide for floatables or settleable solids removal prior to disinfection. Explain the assumptions made regarding the effectiveness of the disinfection of the unscreened and unsettled CSOs, compared to overflow from the storage tank with screening. Given the lack of screening, it is likely that the disinfection will be less effective and far more costly at TI-011 and Diversion Chamber 5. The Department requests that preliminary screens be assessed and included for CSOs at TI-011 and Diversion Chamber 5. The screening can be co-located with the chlorination but design to ensure chlorination occurs downstream of the screens.

DEP Response:

As discussed previously with DEC, pilot testing will be conducted at the Spring Creek Auxiliary Water Pollution Control Plant (AWPCP) to develop dose-response curves that will guide the design for effective disinfection at the three locations proposed for Flushing Creek. The Spring Creek AWPCP does not have influent screening, only screens at the pump-back/dewatering wet well, and therefore the pilot testing will identify the appropriate dosing strategy for unscreened, unsettled CSO.

As discussed with DEC at the April 7, 2015 meeting, the ability to provide screens at the disinfection locations is discussed in this Supplemental Documentation; however the inclusion of solids and floatables capture and the specific location of the chlorine injection with relation to any solids and floatables control will be determined during the final design.

DEC Comment No. 16 on the *Flushing Creek LTCP*:

Section 8: As part of the disinfection alternatives, the City should consider two sewer system modifications:

DEC Comment No. 16a on the *Flushing Creek LTCP*:

Diversion of additional flows from the CSO retention tank bypass structures into the retention tank to take advantage of existing screening and settling capacities of the tank.

DEP Response:

Modeling was completed during the development of the LTCP to evaluate diverting bypass flow into the tank. The model was used to raise weirs in Diversion Chambers 2, 3/5, 4 and R-31. As part of this run, the model was revised to lower the tank effluent weirs two feet below their as-built elevation, from +2 ft. AD to +0 ft. AD. The tank effluent weirs had to be lowered to avoid adverse HGL impacts upstream. The revised weir elevations are summarized in the following table:

Structure	Weir Elevation (ft.)	
	Baseline	Weir Modification
Diversion Chamber 2	2.5	4.25
Diversion Chamber 3	2	4.25
	2	4.25
	2	4.25
R-31	12	12.85
Diversion Chamber 4	4	4.25
Flushing Bay CSO Retention Facility Effluent Weir	2	0

The sewer system modifications described above were modeled. The model projected that the proportion of CSO bypassing the tank would decrease, but CSO volume would increase overall, leading to more partially treated flow discharging through TI-010 and a corresponding reduction in flow being treated at the TI WWTP. Modeling results indicated that the portion of TI-010 annual overflow that is first routed through the tank (receiving screening and settling) would increase by 86 percent. However, overall overflow to Flushing Creek through Outfall TI-010 would also increase by nearly 90 million gallons, with a corresponding decrease of 90 million gallons to the TI WWTP. Even with chlorination of the additional flow through the tank, the level of treatment of the additional 90 million gallons discharged at TI-010 would be lower than the level of treatment available at TI. Therefore, this would not be a beneficial trade-off.

DEC Comment No. 16b on the December 2014 Flushing Creek LTCP:

Diversion of additional flow from Kissena Corridor CSO lines into TI-010 outfall that otherwise would flow into the Flushing Interceptor during wet weather, in order to maximize the benefits for disinfection of TI-010 overflows.

DEP Revised Response:

Modeling was completed during the development of the LTCP to evaluate throttling flow from the TI-010 tributary area into the Flushing Interceptor to free up capacity in the interceptor so that it could handle additional flow from the TI-022 and TI-011 tributary area. Two alternative scenarios were evaluated: one with the Flushing Bay CSO Retention Facility weir at its existing elevation, and one with the weir lowered by two feet to elevation +0 ft. AD to maximize flow through the tank and to minimize bypassing. Both scenarios resulted in reduced annual overflow volumes at TI-022 and TI-011, as well as additional flow being routed through the tank getting partial treatment before being discharged at TI-010. However, both scenarios also resulted in increased annual average total overflow volumes to Flushing Creek. Keeping the existing weir elevation resulted in an overall increase of over 900 million gallons per year. Lowering the weir elevation resulted in an increase of over one billion gallons per year. This option throttles the flow

in the Flushing Interceptor downstream of R-31, limiting the flow to approximately 150 percent of peak DWF.

Optimization of the weir elevations at Diversion Chambers 2, 3/5, 4 and R-31 could potentially reduce the amount of additional untreated overflow at TI-010 and send more flow through the Flushing Creek CSO Retention Facility, but this would increase the HGL in the Kissena Corridor.