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September 25, 2019

Frank Pestana, Executive Director
North Bergen Municipal Utilities Authority
6200 Tonnelle Avenue
North Bergen, NJ 07047

Re: Review of Development and Evaluation of Alternatives Report
North Bergen Municipal Utilities Authority (MUA) - Central, NJPDES Permit No. NJ0108898

Dear Mr. Pestana:

Thank you for your submission of the “Development and Evaluation of Alternatives for Long Term Control Planning for Combined Sewer Systems – Regional Report” dated June 2019 as submitted to the New Jersey Department of Environmental Protection (the Department or NJDEP) which contains the “Development and Evaluation of Alternatives Report” (hereafter “the report”) for the Township of North Bergen. The regional report was submitted in a timely manner and was prepared in response to Part IV.D.3.v of the above referenced NJPDES permit. The regional report is part of the development of the Long-Term Control Plan (LTCP) submittal requirements, of which the next deliverable is due on June 1, 2020.

The “Development and Evaluation of Alternatives for Long Term Control Planning for Combined Sewer Systems – Regional Report” includes individual reports developed by PVSC and each of its 8 member combined sewer municipalities as Appendices, where Appendix H is specific to the Township of North Bergen. This subject letter serves to provide a response to the “Development and Evaluation of Alternatives Report” specific to the Township of North Bergen (Appendix H) where a response to the overall regional report is provided under separate cover.

The overall objective of the Development and Evaluation of Alternatives Report is to develop and evaluate a range of CSO control alternatives that meet the requirements of the Federal CSO Control Policy Section II.C.4, N.J.A.C. 7:14A-11, Appendix C, and the USEPA Combined Sewer Overflows Guidance for Long-Term Control Plan (EPA 832-B-95-002). Such evaluation shall include a range of CSO control alternatives for eliminating, reducing, or treating CSO discharge events. This subject report builds on other previously submitted LTCP reports referenced in Part IV.D.3.b of the NJPDES permit, which includes an approved hydrologic, hydraulic and water quality model and other information in the June 2018 “System Characterization Report” (approved by the Department on April 12, 2019); the June 2018 “Public Participation Process Report” (approved by the Department on March 29, 2019); the June 30, 2018 “NJCSO Group Compliance Monitoring Program Report” (approved by the Department on March 1, 2019); and the June 2018 “Identification of Sensitive Areas Report” (approved by the Department on April 8, 2019).

As per Part IV.G.4.e.i – vii of the above referenced NJPDES permits, the Development and Evaluation of Alternatives for the LTCP shall include, but not be limited to, an evaluation of the following CSO control alternatives:

- i. Green infrastructure.
- ii. Increased storage capacity in the collection system.
- iii. Sewage Treatment Plant (STP) expansion and/or storage at the plant while maintaining compliance with all permit limits.
- iv. Inflow and Infiltration (I/I) reduction to meet the definition of non-excessive infiltration and non-excessive inflow as defined in N.J.A.C. 7:14A-1.2 in the entire collection system that conveys flows to the treatment works.
- v. Sewer separation.
- vi. Treatment of the CSO discharge.
- vii. CSO related bypass of the secondary treatment portion of the STP in accordance with N.J.A.C. 7:14A-11.12 Appendix C, II C.7.

The Department finds that the report includes an analysis of a range of CSO control alternatives as identified in the NJPDES permit. A general overview of the information provided for the CSO control alternatives, as provided in response to Part IV.G.4.e, can be summarized below where the Department’s comments follow:

- **Green infrastructure** (GI) technologies are described in Section C.2.1 (Green Infrastructure) where this section also includes a description of the ancillary environmental, social and economic benefits of GI to the community. As stated on page 4 GI “will be considered for evaluation in conjunction with other primary alternatives that are necessary to achieve the volume and bacteria reduction primary goals for CSO control.”
- Regarding **increased storage capacity in the collection system**, the report evaluated sewer system optimization in Section C.4 (Sewer System Optimization) including regulator modifications, conveyance, outfall consolidation/relocation and real time control. Conveyance is identified as a primary technology that will be reviewed further for the development of CSO control alternatives whereas real time control is identified as a complementary technology to be reviewed in combination with primary storage.

As discussed in Section C.5 (Storage), various **storage** technologies were evaluated including pipeline storage, tunnel storage and tank storage. Section D.2.1 (Controls) focuses on the storage tank option and storage tunnel option where sizes are shown in Table D-4 (Storage Tank Size (MG)) and Table D-7 (Storage Tunnel Size (MG)).

- **STP Expansion** is discussed in Section C.6 (Sewage Treatment Plant (STP) Expansion or Storage) where it is explained that the Township of North Bergen transports their combined sewer flows to PVSC through a force main shared with Jersey City Municipal Utilities Authority, the City of Bayonne, and Kearny MUA. It is also stated on page 6 that based on a contract with PVSC, the combined sewer flow from the Township of North Bergen is limited to a maximum of 18 MGD and that “STP expansion or modification for wet weather flow could only be done by PVSC.” It is then stated that while negotiations have been initiated with Jersey City and Kearny MUAs to investigate joint facilities to serve all three municipalities, “it would likely be less intricate and more cost effective if local storage

(e.g., tunnel, tank) is considered, rather than conveying the full peak flow of the Township of North Bergen to PVSC for treatment.”

- **Inflow and infiltration (I/I) reduction** is described in Section C.3 (Infiltration and Inflow Control) and in Section D.2.1. It is concluded on page 19 that this control strategy will not be further considered “due to the fact that North Bergen’s collection system is primarily a combined sewer system, inflow and infiltration cannot be eliminated without a significant investment.”
- **Sewer separation** is described in Section C.7 (Sewer Separation) where it is stated that “Sewer separation at North Bergen was previously found to represent the most expensive CSO control alternative.” It further states that because “sewer separation is a primary technology that would completely eliminate CSOs” and that “the previous cost evaluation will be used for a comparison with the tunnel and tank storage options.”
- The report evaluates **satellite treatment** (i.e., treatment of the CSO discharge) namely PAA Disinfection in Section D.2.1 where disinfection facilities are sized “based on the maximum CSO discharge flow rate for each event to treat all but 4, 8, 12 and 20 CSO events.

Specific Comments

Comment 1

A discussion of public participation and the CSO supplemental team is included in Section D.1.4 (Public Acceptance). As per Part IV.G.2 of the NJPDES CSO permit, public participation shall actively involve the affected public throughout each of the three steps of the LTCP process including the Development and Evaluation of Alternatives phase. The Department acknowledges that a list of meetings and agendas for the CSO Supplemental Team, as well as a discussion of other public outreach, is included in your Public Participation Process Report dated June 2018. Please amend Section D.1.4 of this subject report with a brief summary of subsequent public participation activities as well as meeting dates specific to the development and evaluation of alternatives including a general overview of feedback on any alternatives presented that are specific to the Township of North Bergen.

Moving forward, public participation is a required element of the ‘Selection and Implementation of Alternatives’ for the LTCP. Continued public participation must be provided to garner public input regarding CSO control alternatives where a description of such activities must be included in the LTCP. The discussion should include a description of the public participation activities that occurred during the development of these reports, the feedback opportunities provided, and how feedback was considered. It is also recommended that members of the CSO Supplemental Team be provided a copy of the LTCP in advance of the June 1, 2020 due date to the Department.

Comment 2

The NJPDES permit requires that the permittee select either the Presumption or Demonstration Approach as defined in the Federal CSO Control Policy as well as in the NJPDES permit. These alternatives are briefly discussed in Section D.1.5 (Performance Considerations) and 85 percent capture is identified in Table D-12 (CSO Control Alternatives Costs Summary) as a CSO Event Target where percent capture is one of the alternatives for the Presumption Approach. However, a specific approach has not been selected within the report. While this comment does not necessitate a response at this time, a final selection is required to be made in the ‘Selection and Implementation of Alternatives’ report as part of the LTCP

submission due on June 1, 2020. Note that if the Presumption Approach is selected, the percent capture equation utilized to calculate any baseline and other percent capture values for each hydraulically connected system must be included for report completeness.

Comment 3

The Department acknowledges that hydraulically connected system is defined within the notes and definitions in Part IV of the NJPDES permit as “The entire collection system that conveys flows to one Sewage Treatment Plan (STP)...” The definition of hydraulically connected system allows the permittee to “segment a larger hydraulically connected system into a series of smaller inter-connected systems.” As depicted in Table D-12 85% capture is calculated, however it is unclear if this applies specifically to the North Bergen or to a larger system. Please provide a justification for the segmentation of this portion as a hydraulically connected system. If it is your intention to define a hydraulically connected system together with the other municipalities that convey flow through the Hudson County Force Main, a justification for the segmentation of those communities that pump to the Hudson County Force Main must be provided. See also **Comment 2** above regarding the evaluation of percent capture.

Comment 4

There is limited discussion within the report in section C.6 (Sewage Treatment Plant (STP) Expansion or Storage) regarding the required evaluation of the alternatives concerning STP Expansion and CSO-related bypass. The Department acknowledges that North Bergen MUA does not own/operate the PVSC treatment plant; however, documentation of coordination between the two parties is essential in order to evaluate whether or not this is a viable alternative. In addition, additional documentation regarding coordination with the other communities that share the force main is needed. For example, please identify the current conveyance capacity of the force main, as well as if there is there adequate conveyance capacity to divert additional CSO flow to PVSC? Has there been discussion with PVSC about the acceptance of these flows? Please clarify.

Comment 5

In accordance with the Federal CSO Control Policy, the assessment of system-wide CSO control alternatives is required to be based on an “average” or “typical” rainfall year. As stated within the May 2018 report entitled “Typical Hydrological Year Report”, 2004 was selected as the typical hydrological year. While a long-term precipitation data set (i.e. greater than 30 years) was considered as part of this analysis, a more recent period was used in the ultimate selection of 2004 in order to consider local climate change. While use of the year 2004 does consider climate change, please be sure to consider resiliency requirements in the design of any infrastructure (e.g., storage and satellite treatment). Specifically, in accordance with the provisions of Executive Order 11988, the USEPA and the New Jersey Water Bank require that funded infrastructure be located outside of floodplains or elevated above the 500-year flood elevation. Where such avoidance is not possible, the following hierarchy of protective measures has been established:

1. Elevation of critical infrastructure above the 500-year floodplain;
2. Flood-proofing of structures and critical infrastructure;
3. Flood-proofing of system components.

While this comment does not necessitate a response at this time, these protective measures should be a consideration in the LTCP.

Comment 6

In Section D.2.1 the use of GI as a complementary CSO control technology is described where it is stated that two different control levels of GI were assessed. Specifically, an assessment is included of the management of 1” of storm water runoff generated from 5% of impervious surface as well as the management of 1” of storm water runoff generated from 10% of impervious surface. Both scenarios are as shown in Table D-3 (Overflow Volumes and Frequencies), along with the associated percent volume reduction and gallons of CSO reduction for each scenario from the baseline value. The Department notes that a quantitative metric for GI is needed in order to establish that any volumetric credit is given towards overall CSO reduction goals. Please describe how you derived the volumes included in this table in order to quantify any volumetric decrease in CSO flow from GI measures.

In addition, the report contains limited information regarding the siting of potential GI projects. While there is a reference within Section C.2.1 (Green Infrastructure) to the “Green Infrastructure Feasibility Study, North Bergen,” as prepared by Rutgers University, there is limited discussion of possible locations for GI opportunities in North Bergen Township. Please elaborate.

Comment 7

As stated on page 22 the “Storage tank alternative is considered as a primary solution for the CSO frequency control because other alternatives cannot reach the overflow events control target.” Storage tank sizes are depicted in Table D-5 based on 0, 4, 8, 12 and 20 “CSO Event Target/yr” where storage tank sizes for 4 overflows a year ranges from 0.1 million gallons (MG) to 7.4 MG. Additional discussion needs to be included to explain if there is land available for storage and if any properties could sustain the needed tank sizes referenced in Table D-5. If storage is being considered at this property or at any other locations, please describe whether any potential storage tanks would be surface or subsurface and, if subsurface, whether consideration has been given to any amenities such as parks, parking lots or GI. In addition, please elaborate as to whether or not PVSC could accept stored tank flow given the contractual limitations on the contractual limitation of 18 MGD.

Comment 8

In Section D.2.1 the use of disinfection by Peracetic Acid (PAA) is discussed. It is stated that “This preliminary disinfection alternative assumes that PAA disinfection will be implemented at locations between the existing regulators and existing outfalls.” However, in Section D.3.3 (Selection of Preliminary Alternative) it is stated that “We may test PAA alone and with filtration.” Based on this statement, it appears that there will be no pretreatment technology to provide primary clarification and reduce settleable solids. Please clarify.

In addition, on page 24 under “6) Treatment – PAA Disinfection” it is stated that “When full treatment is achieved, disinfection is assumed to remove 99.9% of pathogens (a “3-log kill.”). Please provide documentation and supporting analysis to justify the 3-log reduction.

Comment 9

While cost analyses are provided within the report, particularly in Section D.2 (Preliminary Control Program Alternatives) and Section D.3 (Preliminary Selection of Alternatives), please note that the Department is not commenting on any cost analysis at this time and will defer its comments until the LTCP submission. This includes any conclusions regarding the selection of any preliminary CSO control alternatives, present value calculations, and the cost range of any CSO control alternatives.

Comment 10

Table D-12 (CSO Control Alternatives Cost Summary) includes different alternatives for various CSO Event Target/year. The Alternative identifications for each of the CSO Event Targets include 1) 85% Capture, PAA, FlexFilter; 2) Tank; 3) Tunnel; 4) PAA, FlexFilter; and 5) Sewer Separation. Generally, these alternatives show a singular approach through the implementation of one alternative as opposed to a mix of various alternatives. Please expand on whether or not a mixed approach has been considered to address each outfall.

Please incorporate these changes to the report and submit a revised version of the regional report to the Department no later than 60 days from the date of this letter. Thank you for your continued cooperation.

Sincerely,



Dwayne Kobesky
CSO Team Leader
Bureau of Surface Water Permitting

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