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CATHERINE R. McCABE
Commissioner

September 25, 2019

Bridget M. McKenna, Chief Operating Officer
Passaic Valley Sewage Commissioners
600 Wilson Avenue
Newark, NJ 07105

Re: Review of Development & Evaluation of Alternatives Report
Passaic Valley Sewerage Commission (PVSC), NJPDES Permit No. NJ0021016

Dear Ms. McKenna:

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 PVSC. 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 A is specific to PVSC. This subject letter serves to provide a response to the "Development and Evaluation of Alternatives Report" specific to the PVSC (Appendix A) 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.

PVSC provides for regional collection, conveyance, and treatment of sewage; however, PVSC does not own or operate any outfalls or any portion of the CSS of the municipalities that it serves. PVSC's alternatives, as included in the subject report, focus on increasing the volume capture and/or reducing the frequency of overflow events of CSOs throughout the collection system to varying levels of control, by analyzing alternatives designed for CSO outfalls associated with PVSC-owned and operated regulators. Control technologies evaluated include GI, PVSC-owned regulator modifications (Newark Regulators), parallel interceptor, storage tanks, tunnels, and expansion of plant treatment capacity via bypass. A range of alternatives were developed to evaluate each of the screened and preselected technologies, both individually and in combination with other technologies. The resulting alternatives are presented in Table D-1 (PVSC Alternatives). 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:

- Increasing **in-line storage** in the conveyance system is addressed throughout the report. Specifically, Section C.4.1.2 (Regulator Modifications) evaluates modifications to regulators owned and operated by PVSC as an alternative. Section D.2 (Preliminary Control Program Alternatives) considers regulator modifications as a singular alternative and in combination with other alternatives. However, Section D.2.3 (Alternative 3 – Newark Regulator Modifications) states, "Regulators alone provide minimal CSO reduction relative to other alternatives."

  The report evaluated **storage** alternatives for increasing storage capacity of the conveyance system, individually and in combination, including regulator modifications, new parallel interceptors next to the existing interceptors in Newark and Harrison, storage tunnels (Paterson Citywide Tunnel, McCarter Highway Tunnel, NJ440 Tunnel), and eleven storage tanks for PVSC owned regulators in Paterson, Newark, Kearny, and Harrison.

- **STP expansion** and **bypass** are evaluated and discussed within the report and in the Appendix entitled, "Passaic Valley Sewerage Commission, New Jersey – WWTP No Feasible Alternatives (NFA) Analysis Report". A bypass would incorporate the acceptance of up to 720 MGD of wet weather flows at the treatment plant. Other technologies can make use of this increased treatment capacity by conveying more flow to the plant.

- **Sewer separation** is discussed in Section C.7 (Sewer Separation) but is not considered a feasible technology for PVSC implementation. Sewer separation was not considered for further evaluation as a CSO control alternative since PVSC does not own or operate the combined sewer system.

- **Inflow and infiltration (I/I)** is discussed in Section C.3 (Infiltration and Inflow Control). Since PVSC does not own or operate any of the combined sewer systems, the report states that PVSC has limited influence on I/I reduction and will not be evaluated as a control alternative.

- **Treatment of the CSO discharge** is discussed in Section C.8 (Treatment of CSO Discharge). As PVSC does not own or operate any of the CSS and/or CSO outfalls, treatment of CSO discharge is not considered a feasible technology and will not be evaluated as a control alternative.

- **Green Infrastructure** (GI) technologies are evaluated in Section C.2 (Source Control) and D.2.4 (Alternative 4 – GI). Section C.2.1 (Green Infrastructure) explains that GI's benefits extend beyond reducing the flow of water into CSSs during wet weather events. GI performs a range of ecosystem services and benefits to people.

Specific Comments

Comment 1

Section B.4 (Projected Future Wastewater Flows) states that despite increase in population within the PVSC Sewer District, dry weather flows have decreased over the previous decades due to water conservation measures. The report states, "Based on the continued application of water conservation measures, PVSC expects this trend to continue; however, there is uncertainty in whether the flows to the PVSC WRRF are going to increase proportional to population growth. Therefore, the wastewater flows used for existing and future conditions are the same for the purpose of this study." Given a projected population growth increase of roughly 20% by 2045 (as stated on page 10), please provide additional information as to how water conservation measures supports this assertion.

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.1.1 (Alternatives Evaluation Approach) and 85% capture is identified in many of the alternative performance tables throughout the report 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." A justification for the hydraulically connected systems, namely the segmentation of the interceptor communities as well as the segmentation of those communities that pump to the Hudson County Force Main, must be provided.

Comment 4

Section C.2.1 (Green Infrastructure) details the derivation of estimated GI and it is assumed that for 1.4 to 2 gallons of runoff treated by GI, 1 gallon of CSO reduction can be achieved depending on the hydraulic conditions in the system. Please provide justification for this figure.

Section D.2.4 (Alternative 4 – GI) considers three levels of GI implementation (2.5%, 5%, and 10%) to be applied to the entire PVSC Treatment District. Figure D-4 (Alternative 4 – Green Infrastructure) in Section D.2.5 depicts the PVSC Treatment District area to which GI is proposed to be applied at the various percentages whereas Table D-6 (Alternative 4 Performance and Cost) depicts the results utilizing the hydrologic and hydraulic model. However, the report contains limited information and discussion of possible specific locations for GI opportunities in the PVSC district area that would be needed to attain the impervious surface targets of 2.5%, 5%, or 10%. Please elaborate.

In addition, as GI implementation continues to be assessed any percentage must be equated to a reduction in CSO volume, frequency and duration in order to attain these targets and show any changes from the baseline. The inclusion of this 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 referenced in order to quantify any decrease in CSO flow from GI measures referenced in Table D-6 (Alternative 4 Performance and Cost).

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

Section C.6 (WRRF Expansion and or Storage at the Plant) states that based on a No Feasible Alternatives Analysis, there was no feasible way to expand the capacity of the WRRF other than bypass of secondary treatment. Throughout the report, the use of bypassing to reach flows up to 720 MGD are referenced as "expansion". Please note that the Department does not consider bypassing as a form of expansion and references to bypass should be stated as such.

Comment 7

A discussion of public participation is included in Section D.1.5 (Public Input). 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. As stated in Section D.1.5 (Public Input) of the report, "The implementation of the LTCP PPP is an ongoing process that includes hosting quarterly public meetings with the Clean Waterways Healthy Neighborhoods Supplemental CSO Team, participating in the meetings of various local groups, participating as an active member of the PVSC Treatment District Communities GI Programs, including Newark DIG, Jersey City START, Paterson SMART, Bayonne Water Guardians, Harrison Tide, and Kearny AWAKE and partnering with Rutgers University in a GI municipal outreach program, … attending public events, meeting with municipal representatives, and soliciting public input through the Clean Waterways Healthy Neighborhoods website and social media platforms."

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 8

In Section D.2 (Preliminary Control Program Alternatives), Table D-1 (PVSC Alternatives) cites alternatives which include "JC Pipe (146 MGD HCFM)", "JC Pipe (185 MGD HCFM)", and "JC Pipe (235 MGD HCFM)". Please verify the current capacity of the HCFM, current flows.

Comment 9

In Section D.2.5 (Alternative 5 – Newark Regulator Modifications + Plant Expansion (720 MGD) + Jersey City Pipe (235 MGD HCFM)), Table D-7 considers inflow from the HCFM at 235 MGD and states that this alternative would capture 603 million gallons of CSO flow, resulting in a reduction of 29.5%. However, Table D-8 (Alternative 5a Performance and Cost) in Section D.2.6 (Alternative 5.a – Newark Regulator Modifications + Plant Expansion (720 MGD) + Jersey City Pipe (146 MGD HCFM)) only considers 146 MGD from the HCFM, but would capture 618 million gallons of CSO flow, resulting in a slightly larger reduction of 30.3%. Please explain how accepting more flow (235 MGD) from the HCFM would result in a lower volume of CSO flow capture than accepting a smaller flow (146 MGD).

Comment 10

Section C.5 (Storage) and in Section D (Alternatives Analysis) discuss various storage alternatives. Siting information has been included for tunnels in Figure D-1 (Alternative 1 – Tunnels) and grouped storage tanks in Figure D-2 (Alternative 2 – Storage Tanks) and Table D-3 (Alternative 2 – Tank Locations and Associated Outfalls). This resulted in 2 tunnels in Paterson and Newark and 11 reinforced concrete storage tanks throughout Paterson, Newark, Harrison, and Kearny. Necessary storage capacity of the tunnels and tanks were given in Tables C-5 and C-6 in Section C.5.1.1 (Tunnels), and Table C-8 in Section C.5.2.1 (Tanks). Please supplement this section with additional discussion as to whether or not these areas could sustain the needed volume of storage infrastructure. 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 confirm as to whether or not this stored flow would be

sent PVSC, whether PVSC could accept stored tank flow, or if there are any conveyance limitations that would prevent such.

Comment 11

Regarding Alternative 2, there is a discrepancy between Figure D-2 (Alternative 2 - Storage Tanks) in Section D.2.2 (Alternative 2 – Tanks) and Table C-8 (Storage Tanks Analysis) in Section C.5.2.1 (Tanks). Table C-8 shows 4 storage tanks located in the Paterson, 5 storage tanks in Newark, 2 storage tanks in Harrison, and 1 storage tank in Kearny. In contrast, the Figure D-2 shows only 3 storage tanks in Paterson. Also, there are only 9 tanks shown in the figure, while 11 tanks are shown in Table C-8. In addition, there are 11 tanks listed in Table D-3 (Alternative 2 – Tank Locations and Associated Outfalls), but it appears there is only one tank in Harrison. Please correct or explain the discrepancies between Figure D-2 and Tables C-8 and D-3.

Comment 12

While cost analyses are provided throughout the report, particularly in Section D.1.7 (Cost) as well as for each alternative evaluated in Section D, 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.

Please incorporate these changes to the report and submit a revised version 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
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