



State of New Jersey

PHIL MURPHY
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Mail Code – 401-02B
Water Pollution Management Element
Bureau of Surface Water & Pretreatment Permitting
P.O. Box 420 – 401 E State St
Trenton, NJ 08625-0420
Phone: (609) 292-4860 / Fax: (609) 984-7938

SHAWN M. LATOURETTE
Acting Commissioner

SHEILA OLIVER
Lt. Governor

Via E-mail
May 7, 2021

Luis A. Perez-Jimenez, Director of Operations
Utility Services Affiliates (Perth Amboy) Inc.
590 Smith Street
Perth Amboy, NJ 08861

Lisa Oberreiter, General Superintendent
Middlesex County Utilities Authority
2571 Main Street Ext., P.O. Box 159
Sayreville, NJ 08872

Re: Review of Selection and Implementation of Alternatives Report
Middlesex County Utilities Authority, NJPDES Permit No. NJ0020141
City of Perth Amboy, NJPDES Permit No. NJ0156132

Dear Permittees:

Thank you for your submission dated October 1, 2020 entitled “Selection and Implementation of Alternatives Report” for the City of Perth Amboy and Middlesex County Utilities Authority (MCUA) as submitted to the New Jersey Department of Environmental Protection (the Department). This report was submitted in a timely manner and was prepared in accordance with Part IV.D.3.b.vi of the above referenced New Jersey Pollutant Discharge Elimination System (NJPDES) permit. This submission was issued in response to the Long-Term Control Plan (LTCP) submittal requirements as due on October 1, 2020.

The overall objective of the LTCP is to identify and select 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). The Federal CSO Policy establishes a framework for the coordination, planning, selection, and implementation of CSO controls required for permittee compliance with the Clean Water Act. 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 for the City of Perth Amboy on January 15, 2019 and MCUA on January 31, 2019); the June 30, 2018 “NJCSO Group Compliance Monitoring Program Report” (approved by the Department on February 6, 2019); the June 2018 “Public Participation Process Report” (approved by the Department on March 29, 2019); the June 2018 “Identification of Sensitive Areas Report” (approved by the Department on April 8, 2019) and the July 1, 2019 Development and Evaluation of Alternatives (DEAR) (approved by the Department on December 18, 2019).

The below represents the Department’s initial comments. The Department reserves the right to further comment on these issues. Comments are as follows.

Executive Summary

Comment 1: Section E.2, System Description states the following:

“The MCUA owns and operates a regional sewerage system that collects wastewater flows from thirty-six (36) communities in Middlesex, Somerset, and Union Counties and provides secondary treatment of these flows at its Central Treatment Plant (CTP) located at 2571 Main Street Extension in Sayreville, New Jersey. The City of Perth Amboy is the only municipality whose collection system has combined sewers...

The City of Perth Amboy is served by both combined and separate sewers and owns and operates combined sewer overflows (CSOs). An estimated 41,000 of the City of Perth Amboy’s residents are served directly by a combined sewer system which covers approximately 2.5 square miles....”

As described above, the City of Perth Amboy operates a combined sewer system where flows are conveyed to the Middlesex County Utilities Authority (MCUA). The Department acknowledges that the City of Perth Amboy and MCUA have elected to submit a single LTCP in order to comply with Part IV.D.3.b.vi of the respective NJPDES permits. While this comment does not necessitate a response at this time, the Department hereby notes this information for the Administrative Record.

Comment 2: Section E.9, Selected Long Term Control Plan and Section E.10, Implementation Schedule include references to the term “Sensitive Area” as well as in Table ES-2 – Summary of Selected Long Term Control Plan Project Elements and Table ES-3 – Anticipated Implementation Schedule. The Department acknowledges that the selected CSO control alternatives prioritize a reduction in CSO events in CSO Group 4 and 5 and CSO Group 3.

The Department agrees that the LTCP as proposed prioritizes these outfalls for reduced CSO discharges which is consistent with the intent of the Federal CSO Control Policy. However, the term “sensitive area” should be revised within the Executive Summary and throughout the report given that these outfalls are not currently deemed “sensitive areas” within the context of the Federal CSO Control Policy.

Section 1, Introduction

Comment 3: Section 1.3, Background states the following:

“Sewage flows from Perth Amboy are pumped to the Woodbridge Township’s Keasbey Interceptor which ultimately flows through the MCUA’s Heyden Gravity Sewer to the Edison Pump Station, where flow is pumped to the MCUA’s Edward J. Patten Water Reclamation Center for treatment...Perth Amboy has been coordinating with MCUA and Woodbridge Township in developing the City’s Long-Term Control Plan as required by the City’s permit. It has been determined that the Township of Woodbridge (Woodbridge) is not hydraulically connected and therefore was not issued a CSO Permit. The City has coordinated with Woodbridge and Woodbridge has advised the City the Woodbridge interceptor capacity has been reached, so no further flow can be conveyed through it to MCUA.”

The Department acknowledges that flows are pumped from Perth Amboy to MCUA through the conveyance line as owned by the Township of Woodbridge. The Township of Woodbridge does not have a direct discharge to surface water or a CSO outlet and it was for these reasons they were not issued a NJPDES CSO permit. The Department maintains that there is a hydraulic connection between the City of Perth Amboy, the Township of Woodbridge and MCUA based on the method of conveyance. Revise accordingly.

Comment 4: Part IV.D.1.b of your existing CSO permit states the following:

“b. All reports submitted to the Department pursuant to the requirements of this permit shall comply with the signatory requirements of N.J.A.C. 7:14A-4.9, and contain the following certification:

- i. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information”.

The Department acknowledges that a modified version of the above referenced certification statement is included in the report in Section 1.6 (City of Perth Amboy) and Section 1.7 (MCUA). These statements are consistent with the version utilized in other previous reports where the statement has been signed by representatives for both the City of Perth Amboy and MCUA. These certification statements are acceptable to the Department.

Section 2, Sewer System and Treatment Facilities Description

Comment 5: Section 2.1.1, Woodbridge’s Infrastructure states the following:

“The infrastructure owned and operated by each municipality has capacity limitations that are addressed in the MCUA’s System Characterization Report - Heyden Gravity Sewer (June 2018, Revised December 2018). The report describes the conveyance system in detail and the capacities of the Perth Amboy, Woodbridge and MCUA components of the system.... In addition to the capacity limitations described in the MCUA’s aforementioned System Characterization Report, there are constraints to the conveyance of Perth Amboy’s flows to the CTP via Woodbridge’s infrastructure by the terms and conditions in the service agreement between the City of Perth Amboy and Woodbridge Township. The capacity limitations and contractual terms and conditions in the service agreements make this existing conveyance system a very complex as well as contractually and hydraulically limited system.”

The Department acknowledges inclusion of Table 2-1 where a portion of this table is shown below:

Typical Year (2004) Storms -- Ranked by Total Rainfall by PVSC (in)*	Newark Rainfall	Perth Amboy P.S. (Note 1)	Perth Amboy M.C. (Note 1)	Woodbridge Upper Keasbey Interceptor (Notes 3&4)	Woodbridge M.C. (Note 1)	Woodbridge Lower Keasbey Interceptor (Notes 3&4)	Upper Heyden Gravity Sewer (Note 1)	Lower Heyden Gravity Sewer (Note 1)	Edison P.S. (Note 1)	CTP (Note 2)	
		Capacity (MGD)									
		13.7	21.4	56	67	68	26	92	89.9	147	
Ranking	DATE	(in)	Actual Flow / Capacity (%)								
1	9/28/2004	3.10	80%	51%	78%	65%	64%	35%	57%	63%	109%
	9/29/2004	0.57	68%	44%	63%	52%	52%	28%	46%	50%	214%

Provide additional detail in this section to address the following questions:

- 1) Specify whether the limitations are contractual or hydraulic for each component of the system.
- 2) Confirm whether the percentages listed under each column for the Woodbridge Upper Keasbey Interceptor, Woodbridge Lower Keasbey Interceptor, Upper Heyden Gravity Sewer, Lower Heyden Gravity Sewer and the Edison Pump Station are based on Perth Amboy's flow contribution only or are based on all flows from contributing municipalities.
- 3) Provide detail and justification as to why these capacities are limiting, particularly for the smaller storm events, since many of them are not at or near 100% capacity.
- 4) Justify why conveyance piping and pumping capacities cannot be expanded so that MCUA can accept additional flow.
- 5) Provide a similar table with a summation of plant related discharges at MCUA during each of these rain events. Are there any operational changes at MCUA during rain events and at what flow levels does that occur?
- 6) Provide a similar table with a summation of CSO discharges for each storm event included in this table.

Comment 6: Section 2.2.2, Combined Sewer Service Area states the following:

“The City’s wastewater collection system is made up of approximately 95 miles of main and trunk pipelines. These pipelines flow into the Eastside or Westside Interceptor Sewer and then flow towards the Second Street Pumping Station for pumping to MCUA. These main and trunk lines installed in the past were constructed of vitrified clay, brick, and concrete. Current practice is to use PVC, ductile iron, and concrete for new sewer pipelines and system repairs. There are approximately 1,850 manholes which serve as access points to the collection system, which are as deep as 35 feet. There are approximately 2,000 storm sewer inlets that feed into the combined wastewater system. Within the collection system there are no chemical feed sites, no inverted siphons, and no inverted chambers.

...

All flow from the Second Street Pumping Station is ultimately conveyed to the Middlesex County Utilities Authority (MCUA) Edward J. Patten Water Reclamation Center for treatment. The Second Street Pumping Station is capable of delivering a maximum of 13.6 MGD to MCUA during wet weather. The force main is 24” in diameter. Perth Amboy’s flow is recorded in the Perth Amboy meter chamber, which is located upstream of the Woodbridge Township’s Keasbey Interceptor. From there, flow is conveyed by gravity sewer to the MCUA’s Edison Pumping Station and then to the reclamation center headworks, which is located on the Raritan Bay shoreline, upstream and on the opposite bank from Perth Amboy.”

Provide additional detail on the current conveyance lines and pumping from Perth Amboy to MCUA including the composition and state of the Woodbridge Keasbey line. In addition, address whether or not it is feasible to expand the City’s collection system to divert additional flows to the Second Street Pumping Station. Given that the Second Street pump was overhauled in 2010, as indicated in Table 2-4, Summary of Perth Amboy Pump Stations, explain why the capacity of the Perth Amboy pump station is not closer to 100% in Table 2-1. As questioned in Comment 5, can the capacity of the Second Street Pumping Station be expanded accordingly? Please include another column in Table 2-1 that states the volume of combined sewage discharged, if any, during each rain event.

Comment 7: Section 2.2.2, Combined Sewer Service Area further states the following:

“Historically, Perth Amboy has had very few issues in its sewer system related to CSO related flooding. Fats, oil and grease buildup in the sewers have been known to cause sewer backups in certain areas,

however, a regular maintenance program has been instated in these areas which has allowed issues to be resolved in a timely manner. The City of Perth Amboy maintains a phone line to respond to questions or concerns raised by the public (732-826-5335 or 732-721-3664). The phone calls are recorded on incident cards and are also entered into a logbook maintained at the Second Street Pumping Station.”

Provide additional detail as to any issues related to CSO related flooding. For example, even though it is stated that flooding is limited, does it occur in certain areas? Explain if this flooding is strictly related to sewer backups, stormwater flooding, or tidal inundation.

Section 3, Baseline Sewer System Performance

Comment 8: Section 3.5, Baseline Percentage Capture states the following:

“Percentage capture is a more complex metric than CSO volume and frequency. This is the fraction (as a percentage) of wet weather flow in the combined sewer system that is captured for treatment. On a system wide basis, captured flow is the wet weather flow that passes through the headworks of the treatment plant or in Perth Amboy’s case, it is the discharge of the Second Street Pumping Station. Of all the wet weather flow that enters the sewer system, the portion that is not captured includes overflows to area waterways at the CSO outfalls or to the surface as combined sewer system flooding.

To calculate percentage capture, first the wet weather period needs to be defined. In this case, simulated total flow entering the sewer system is compared to the dry weather flow rate (base groundwater flow and sanitary diurnal flow) for every time step. When the former is more than 10 percent greater than the latter, this time step is flagged as a wet weather time step. Wet weather time steps are flagged for the entire Typical Year. Simulated total wet weather flow (total system wet weather inflow) that entered the modeled sewer network is then summed for all the wet weather time steps. Finally, the system wide percentage capture is calculated using the following formula for fraction captured (which can be converted to a percentage):

$$Percentage\ Capture = 1 - \frac{(Total\ CSO\ Volume + Total\ Flooding\ Volume)}{(Total\ System\ Wet\ Weather\ Inflow)}$$

The system wide capture for Perth Amboy is 57 percent...”

Table 4-1 is then displayed as follows:

Table 4-1 - Baseline CSO Discharge by Receiving Water

Receiving Water	Baseline Annual CSO, MG
Arthur Kill	141.5
Raritan River	244.9
Total	386.4

As described further in Comment 9 below as well as in Section 6.2.4, Impact to LTCP Approach later in the report, the permittee has selected the Presumption Approach, namely 85% capture. As a result, the derivation of percent capture is central to a review of this report. Supplement this report with a detailed table of the numerical values utilized within the equation that was used to derive the baseline value of 57%.

In addition, clarify that the above referenced values include only combined sewer areas as portions of Perth Amboy are serviced by separate sewers. Approval of this report hinges in part on the inputs and results of this equation being clearly demonstrated and reproducible. See also Comment 17.

Section 4, Water Quality Objectives

Comment 9: Section 4, Water Quality Objectives states the following:

“This LTCP will seek to provide water quality benefits to the receiving water bodies commensurate with the expenditure of public funds. The evaluations necessary to define these benefits are being performed pursuant to the Presumption Approach defined by both national policy and the NJPDES CSO permits.

In support of the Presumption Approach, various combinations of technologies were evaluated for a series of control levels. The City’s target level of control is 85% capture, as defined in the City’s approved NJPDES permit.”

The Federal CSO Control Policy and the NJPDES permit at Part IV.G.4.f.ii specify that wet weather capture is a means of compliance under the Presumption Approach as follows:

“ii. The elimination of the capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS during precipitation events on a system-wide annual average basis;”

Section 4.1, Background further states the following:

“As defined in the selected Long Term Control Plan presented in Section 9 of this report, Perth Amboy will implement all recommended LTCP capital projects to achieve the criteria for the Presumption Approach.”

The 2015 NJPDES CSO permit requires selection of either the Presumption Approach or the Demonstration Approach. The Department acknowledges that the City of Perth Amboy and MCUA have selected the Presumption Approach.

Comment 10: Section 4.2, Receiving Waters Description states the following:

“A Pathogen Water Quality Model of the complete NY/NJ harbor, including the Arthur Kill and Raritan River/Bay, has been developed by the NJ CSO Group and this model is being used to understand the pollutant sources and their relative contributions for the affected study area. Use of the NJ CSO Group water quality model is expected to indicate which level of control evaluated for the CSO outfalls is needed to demonstrate attainment of WQS [water quality standards] and designated uses of the corresponding receiving waters. The Pathogen Water Quality Model is also intended to demonstrate the maximum pollutant reduction benefits reasonably attainable for the receiving waters.”

The Department is in receipt of the “Calibration and Validation of the Pathogen Water Quality Model,” September 2020 as submitted by the NJ CSO Group and is currently pending review. Note also that the permittee is required to comply with the Federal CSO Control Policy and has elected to do so through the Presumption Approach. While the NJCSO Group permittees have submitted a Pathogen Water Quality Model, a modeling approach is germane to the Demonstration Approach. The Department does not agree that the Pathogen Water Quality Model will define the level of control or the maximum pollutant reduction benefits reasonably attainable for the receiving waters rather compliance with the Presumption Approach will define the level of control. Revise accordingly.

Comment 11: Section 4.3.1, Water Quality Classifications and Listed Impairments states the following:

“Water Quality Classifications are described in Sections 4.2.1 and 4.2.2.

None of the affected water bodies have listed impairments. However, the NJ CSO Water Quality Model”

The Department conducts a water quality assessment of all waters of the State and determines the causes and sources of water quality impairment. Assessment results are reported every two years in the New Jersey Integrated Water Quality Assessment Report which includes the Section 303(d) List of Water Quality Limited Waters (303(d) List) (see www.state.nj.us/dep/wms/bears/index.html). The Raritan River and Arthur Kill do have listed impairments and the statement above is incorrect. Revise this section accordingly. In addition, please note that this section appears to be incomplete.

Comment 12: Section 4.4.1.1, Program Description states the following:

“The [Baseline Compliance Monitoring] BCMP was designed to generate sufficient data to establish existing ambient water quality conditions for pathogens in the CSO receiving waters and to update, calibrate and validate a pathogen water quality model of the receiving water bodies. The resulting model will be used to support the development of CSO Long Term Control Plans (LTCPs) by the Passaic Valley Sewerage Commission (PVSC) and participating members of the NJ CSO Group, of which the City and MCUA are members.”

The Department agrees that the data collected for the June 30, 2018 BCMP was designed to populate a pathogen water quality model that is documented in the report entitled “Calibration and Validation of the Pathogen Water Quality Model,” September 2020 as submitted by the NJ CSO Group. This report is pending review. In addition, the Department asserts that the BCMP did not have sufficient data to conduct an analysis against water quality standards. In fact, this is stated on page 35 of the June 30, 2018 “NJCSO Group Compliance Monitoring Program Report”:

“The BCMP was not designed to provide an adequate data volume for assessing attainment of water quality standards, which would have required five samples per month at each sampling location to compute monthly geometric means.”

As stated in Comment 10, while the NJ CSO Group permittees have submitted a Pathogen Water Quality Model, a modeling approach is germane to the Demonstration Approach. The Department does not agree that the Pathogen Water Quality Model will define the level of control or the maximum pollutant reduction benefits reasonably attainable for the receiving waters rather compliance with the Presumption Approach will define the level of control.

Section 5, Development and Evaluation of Alternatives

Comment 13: Section 5.2.3, Treatment Plant Expansion and Storage at CTP states the following:

“The MCUA and Perth Amboy are required to consider maximizing flow to the Treatment Plant as one of the Nine Minimum Controls established by the USEPA...Originally, options for treating or storing flows that are received by the MCUA from Perth Amboy’s combined sewer system were evaluated and presented in the DEAR. During the initial development of the SIAR [Selection and Implementation of Alternatives Report], PA [Perth Amboy] indicated that the selected long-term plan would be conveying the baseline flow (maximum of 13.6 MGD) which is the flow limit from the agreement between the

City of Perth Amboy and Woodbridge Township as indicated earlier in Section 2 and in the DEAR, but for [an] extended period of time. Since the storage and dedicated high rate treatment (HRT) alternatives were evaluated to receive additional flows (higher than the baseline of 13.6 MGD), it was determined that these alternatives would not be evaluated further for long-term implementation.

The original evaluations to expand the CTP's capacity, provide CSO storage, or provide flow bypass and HRT and disinfection are based on the three (3) potential CSS flow rates projected from the Perth Amboy CSO system as indicated in the DEAR:

- Direct CSO Flows up to 13.6 MGD to the CTP for full-treatment. The duration of this flow rate may extend beyond the normal peak period for various storm events to handle the CSS flows stored within Perth Amboy.
- Direct flows up to a maximum rate of 42 MGD to the CTP for full-treatment.
- Direct flows up to a maximum rate of 54 MGD to the CTP for full-treatment.

Based on further evaluation, it is determined that the City would convey up to a maximum of 13.6 MGD instantaneous flow rate of the CSO to MCUA; therefore, only the first scenario (13.6 MGD) is evaluated further in this SIAR...

Based on this evaluation done for the MCUA CTP in the DEAR, the CTP would not be able to receive and treat increased peak CSS flow rates greater than 13.6 MGD from Perth Amboy, such as the 42 MGD and 54 MGD of CSS flow rates being contemplated, without substantial capacity increases to most unit processes which are evaluated under Section 4.2.3 of the DEAR.

The CTP expansion alternative represents the most complex, costly and disruptive to plant operations alternative. Therefore, this alternative is not being considered further. Since it is determined that the City would convey up to 13.6 MGD maximum instantaneous flow rates to MCUA CTP, the alternatives for MCUA CTP Storage or HRT as evaluated and presented in the October 2019 DEAR are not applicable and therefore, are not evaluated further.”

As noted above, the LTCP concludes that storage and HRT are not evaluate further consistent with the DEAR. However, while the Department acknowledges that Section 5 of the LTCP contains a summary of the DEAR, the Department maintains that the DEAR suggested that storage would be evaluated further. Specifically, storage was determined to be a viable option in the DEAR for additional flows pumped from the City of Perth Amboy even though pumping at the same rate of 13.6 MGD is selected. An excerpt from Section 4.2.3.1, Directing Combined Sewer Flows to the CTP of the DEAR is as follows:

“The evaluations to provide CSO Storage at the CTP are based on the three (3) potential flow conditions projected from the Perth Amboy CSO system:

- Direct CSS flows up to 13.6 MGD to the CTP for full-treatment. The duration of this flow rate may extend beyond the normal peak period for various storm events to be able to handle the CSS flows stored within Perth Amboy.
- Direct CSS flows up to a maximum rate of 42 MGD to the CTP for full-treatment.
- Direct CSS flows up to a maximum rate of 54 MGD to the CTP for full-treatment.

The CTP’s existing Aerobic Digester #2 was taken off-line in 1990 and has not been in use since that time. Preliminary engineering evaluations suggest this tank could serve as a CSS flow holding tank with a nominal capacity of 4 million gallons (MG).

Based on this evaluation and the initial cost estimate, this alternative would apply to certain storm events with CSS flows below 54 MGD and above 13.6 MGD. The actual design flow rate to maximize storage would be evaluated in the development of Long Term Control Plan. Depending on the technical requirements and associated costs for pumping CSS flows directly to the CTP, storage at the CTP is therefore a viable and relatively low-cost alternative for accomplishing the project objectives and will be further evaluated.”

To follow-up to these statements in the DEAR, supplement the LTCP with an evaluation of storage at the CTP which would allow that the maximum pumping rate of 13.6 MGD could be treated at MCUA.

Comment 14: As a follow-up to information presented in Section 5.2.3, Treatment Plant Expansion and Storage at CTP, the Department notes that Table 6-51 of the DEAR (excerpted below) concludes that pumping rates at the baseline (13.6 MGD) are within the same cost range for storage and treatment to costs for Alternative A (42 MGD through storage) and Alternative B (54 MGD through high rate treatment) and Alternative C (storage and high rate treatment and 10% green infrastructure). Table 6-51 from the DEAR is excerpted as follows:

Table 6-51 - Combined Alternatives

Mixed Technology Alternative	Store & Treat ¹	MCUA ²	Total
Baseline	\$383.5	\$17.3	\$400.8
A	\$396.2	\$36.8	\$433.0
B	\$385.9	\$53.5	\$439.4
C	\$375.5	\$53.5	\$429.0

1. Storage is used for CSO Group 3, 4, 5, while treatment is used for CSO Group 1 and 2.
2. Based on capital and annual O&M costs included in Section 6.5. Includes 20-year present value for O&M calculated using a discount rate of 2.75%.

Given that this table is utilized to inform the selected alternative of the LTCP, clarify which permittee is responsible for these costs in the table.

Comment 15: Section 5.2.3.1, Directing Combined Sewer Flows to the CTP states:

“A new direct force main can be constructed to convey flow to the CTP from Perth Amboy. The proposed force main to convey flow directly from the Second Street Pumping Station in Perth Amboy to the CTP would be approximately 2 miles in length and would be installed by horizontal directional drilling (HDD) under the Raritan River...

...

If Perth Amboy were to pump its CSS flow to the CTP directly, it would not pump any flow through the Keasbey Interceptor to the CTP. Therefore, flows will not be directed through both the existing interceptor and new force main at the same time. If Perth Amboy pumps CSS flows directly to the CTP up to a maximum of 13.6 MGD, the flow would be directed to a new connection (to be determined by Perth Amboy) and the flows would go to the existing headworks to receive full-treatment. It is

anticipated that Perth Amboy would provide fine-screening (maximum ½” clear spacing) before pumping to the CTP.

During the dry weather periods Perth Amboy would pump a maximum of 13.6 MGD to the CTP on a regular basis to flush-out settled solids in the force mains. During the wet weather period, the 13.6 MGD maximum instantaneous flow rates would be pumped through Woodbridge via the Keasbey Interceptor for extended periods of time or directed to the headworks via a new forcemain to receive full treatment through the CTP.”

Based on these excerpts it is unclear if Perth Amboy is proposing to use the newly constructed force main to direct flows directly to MCUA but would also continue to pump flows through the current conveyance lines including the Keasbey interceptor. Clarify if it is feasible to pump through the existing and proposed force main simultaneously. If not, clarify if the existing force main will continue to be used for any purpose.

Comment 16: Section 5.5.1, Summary of Selected Mixed Technology Alternative includes Table 5-19 as follows:

Table 5-19 – Summary of Selected Mixed Technology

IS	Component	Target Level of control	Peak flow to MCUA (mgd)	Storage			Treatment	Remaining Annual CSO (MG)		System Wide Capture (%)	
				Tank Vol (MG)	Additional Vol/yr to MCUA (MG)	Cumulative vol/yr to MCUA (MG)	HRT facility size (mgd)				
1	CSO Group 4	2/yr	13.6	0.9	61.6	61.6	36	324.8		64%	
1	CSO Group 5	2/yr	13.6	3.1			107				
2	CSO Group 3	2/yr	13.6	7.8	154	215.6	285	170.8		81%	
3	Second St PS	NA	13.6	NA	NA	NA	NA	170.8		81%	
4	CSO Group 1	27/yr / 40/yr	13.6	0.3	10.2	225.8	1.2	160.6 ^S	133 ^T	82% ^S	85% ^T
5	CSO Group 2	27/yr / 47/yr	13.6	1.0	29.7	255.5	1.3	130.9 ^S	106 ^T	85% ^S	88% ^T

IS = Implementation Schedule

S: If storage is used to control CSO.

T: If treatment is used to control CSO.

As noted in Comment 8, the derivation of percent capture is central to a review of this report. Supplement this report with a detailed table of the numerical values utilized within the equation that was used to derive the system wide capture values in Table 5-19. In addition, provide a row for baseline system wide percent capture.

Section 6, Selected CSO Control Approach

Comment 17: Section 6.2.1.1, Methodology states the following:

“Previous calibration of the HEP PATH TMDL model was based on conditions from the mid-to-late 1980s, and then was recalibrated to data from 2002 and 2004....Therefore, a calibration/validation of the bacteria calculations were performed using primary data collected during this project under a related QAPP data collected under the Baseline Compliance Monitoring Program QAPP, the NJHDG Annual

Program, and the NYCDEP Harbor Survey. The model was considered calibrated/validated when the comparison of results and data met the standard of best professional judgment.”

Regarding the first sentence, clarify the name of the HEP PATH TMDL model. If this reference is intended to mean the TMDL model for the New York/New Jersey Harbor, note that that model was based on conditions from the mid to late 1990s. Revise accordingly.

As noted in Comment 10, the Department is in receipt of the “Calibration and Validation of the Pathogen Water Quality Model,” September 2020 as submitted by the NJ CSO Group and is currently pending review. This most recent September 2020 model serves to provide an updated version of the HEP PATH TMDL model. Given that the model is undergoing review, the Department maintains that it is premature to state that “the model was considered calibrated/validated when the comparison of results and data met the standard of best professional judgment.” Revise as appropriate.

Finally, within Section 6.2.1.1 as well as elsewhere in Section 6, the report date for the “Calibration and Validation of the Pathogen Water Quality Model” varies where dates of January and June are included. Note that the date of the report as submitted to the Department is September 2020 and the submitted report is available here: https://www.nj.gov/dep/dwq/pdf/CSO_SIAR_AppendixO_PVSC_20201001.pdf. Revise as appropriate.

Comment 18: Section 6.2.1.2, Results for WQ Attainment includes Tables 6-1 through 6-4 which displays information related to assessment unit attainment in FW2, FW2/SE2, SE2 and SE3 waterbodies under baseline and 100% control conditions. Section 6.2.2, Component Responses includes graphics to depict the output for the Raritan River B-19 sampling location.

Given the pending status of the Pathogen Water Quality Model, the Department maintains that inclusion of this information is premature. In addition, as noted in Comment 12, the BCMP was not designed to provide an adequate data volume for assessing attainment of water quality standards, which would have required five samples per month at each sampling location to compute monthly geometric means. Revise or delete the narrative to show that the model is pending Department review.

Comment 19: Section 6.2.3, Cost-Benefit Analysis states the following:

“The City evaluated costs to achieve 0 overflows per year at Group 3 (CSOs beach along Sadowski Parkway) and compare them with a variety of control levels.”

...

“Figure 6-3 shows a dramatic reduction in costs by targeting 2 overflows per year at CSO Group 3. Figure 6-3 serves as the basis for the City’s selection of 2 overflows per year along CSO Group 3 while still targeting 85% capture overall on completion of the implementation of the LTCP.”

Explain how CSO Group 3 has been included in the percent capture equation or if this is being considered a separate hydraulically connected system. Justify why Figure 6-3 serves as the basis for the City’s selection of 2 overflows per year.

Comment 20: Section 6.2.4, Impact to LTCP Approach states the following:

“Given the limited benefit provided by CSO controls in the vicinity of the Raritan River and Raritan Bay, the City and MCUA have selected the Presumption Approach for their LTCP. The target criteria is 85% capture of the volume of wet weather combined sewer flow within the service area served by

the City during the Typical Year with Perth Amboy implementing all recommended LTCP capital projects to achieve the criteria for the Presumption Approach.”

Clarify what is intended by the first statement in this excerpt. Implementation of the CSO controls selected based on the Presumption Approach is likely to have a positive impact on water quality.

Comment 21: Section 7.2, Methodology and Assumptions provides an overview of the preparation of the report and financial capability assessment. This section includes a listing of some of the critical assumptions used for this analysis including the statement that “Perth Amboy’s current maximum flow is approximately 12.0 MGD.” Given that the pumping capacity of the Second Street Pump Station is 13.6 MGD, confirm why this assumption was selected.

Section 7, Financial Capability Assessment

Comment 22: Section 7.2, Methodology and Assumptions states the following:

“This report and financial capability assessment have been prepared in accordance with the EPA’s financial capability assessment guidance document as modified and standard industry practices. Data was obtained from various sources to develop a financial model for the purpose of projecting the impact of the proposed capital program on the future revenue requirements and rates for the City and its residents...”

The methodology and assumptions are well defined where separate tables are provided within this section showing the projected O&M costs; debt service and capital expenditures; and revenue requirements. However, additional clarification is needed in order to reconcile the O&M costs, debt service and capital expenditures presented in 10 year increments with the revenue requirements presented in 6-year increments. As a result, the Department requests to see in table format in an Excel spreadsheet showing calculations, a year-by-year listing of (1) existing O&M costs and debt service; (2) CSO control program additional O&M costs, capital outlay and loan amounts, additional debt service and other additional costs; (3) current and projected wastewater treatment and CSO costs including residential share, number of households, cost per household; and (4) median household income and resulting residential indicator. A review of the financial capability analysis can not be conducted until this information has been provided.

Comment 23: Section 7.3.1, Operation and Maintenance Costs includes Table 7-2:

Table 7-2 – Operations and Maintenance

O&M Category	FY 2020	FY 2030	FY 2040	FY 2050	FY 2060
Operating Expenses	\$402,188	\$540,507	\$726,397	\$976,217	\$1,311,953
USA/PA Fixed Service Fee	\$3,350,000	\$3,852,500	\$4,430,375	\$5,094,931	\$5,859,171
MCUA Sewer Use Charge (SUC)	\$3,875,415	\$4,396,510	\$5,055,884	\$5,926,902	\$6,723,845
Incremental O&M	\$0	\$757,332	\$1,142,051	\$1,946,034	\$2,778,967
Total Operations and Maintenance	\$7,627,603	\$9,546,849	\$11,354,706	\$13,944,084	\$16,673,936

However, in Section 7.3.4, Revenue Requirement the following is stated:

“...As discussed, nearly 50% of Perth Amboy’s total O&M is related to the MCUA fee. We believe the assumption that MCUA charges to Perth Amboy will increase at an annual rate of 1.3% throughout the projection period is overly conservative, and understates the overall projected costs.”

Given that the MCUA Sewer Charge is a significant component of the overall LTCP project, provide additional detail on the derivation of this value per household or user as generally described in Section 7.2, Methodology and Assumptions. In addition, clarify if Table 7-2 includes any current user charges to Woodbridge Township for use of the Keasbey Interceptor.

It is further stated in this section that “Perth Amboy’s total O&M expenditures are projected to grow from \$7.6 million in FY 2020 to over \$18.5 million in FY 2060.” However, Table 7-2 displays total O&M in FY2060 at \$16.7 million.

Comment 24: Section 7.3.1, Operation and Maintenance Costs includes the following table:

Table 7-3 - Incremental O&M (2020 \$)

Description	Annual Cost	Start Year
Green Infrastructure	\$2,772	2023
CSO Group 4 and 5 (CSO P-017 & P-019) 0 overflows/year	\$560,754	2030
CSO Group 3 (CSO P-009 to P-016) 0 overflows/year	\$68,800	2037
Main Infl PS and Force Main to MCUA (20 MGD)	\$169,414	2044
CSO Group 1 (CSO P-002) 20 overflows/year	\$25,032	2051
CSO Group 2 (CSO P-003 to P-008) 20 overflows/year	\$25,140	2058

The reference to “overflows/year” appears to be incorrect as this was not the selected alternative. In addition, it is unclear why the number of overflows per year is presented in this table since 85 percent capture wet weather is the selected method of compliance. Revise accordingly.

Comment 25: Section 7.3.4, Revenue Requirements includes Table 7-6 - Projected Revenue Requirement, Increments where O&M Expenses are listed in 6-year increments, and appear to duplicate the total O&M dollars from Table 7-2 in 10-year increments, but fails to match dollars to years. For example, Table 7-6 FY2044 O&M costs is listed as \$16,673,936, but this dollar amount appears in Table 7-2 under FY2060. Furthermore, it is questionable that Table 7-6 dollar amounts under column FY2050 will be equal to Table 7-6 dollar amounts under column FY2020 as indicated. Please revise or clarify.

Section 7.3.4, Revenue Requirements also includes Table 7-7 - Projected Revenue Requirement, Next 10 Years. It is expected that the projected revenue requirement listed in Table 7-7 would reconcile with those listed in Table 7-6; however, Table 7-7 Year 2026 shows \$19,596,840 and Table 7-6 FY 2026 shows \$22,855,650. Please revise or clarify.

Comment 26: Section 7.6.3, Implications for the Long Term CSO Control Program states the following:

“The City anticipates the financial implications of the COVID-19 pandemic will be discussed as more information becomes available and more specifically with NJDEP during the review of the SIAR and as the 2021 – 2025 NJPDES permit is developed. Given the current and likely continuing uncertainties as to the New Jersey and national economic conditions, Permittees like the City will be reticent to commit to long term capital expenditures for CSO controls without the incorporation of meaningful

adaptive management provisions, including provisions to revise and reschedule the long term CSO controls proposed in this SIAR based on emergent economic conditions beyond the permittees' control. As detailed in Section 10 of this SIAR, these provisions could include scheduling the implementation of specific CSO control measures to occur during the five-year NJPDES permit cycles. A revised affordability assessment should be performed during review of the next NJPDES permit to identify controls that are financially feasible during that particular permit period.”

The Department agrees that financial capability and economic conditions are critical components of the LTCP review. As a separate process, the Department is currently conducting rulemaking for New Jersey's Environmental Justice Law (N.J.S.A. 13:1D-157) as signed by Governor Murphy on September 18, 2020, as indicated on the Department's website: <https://www.nj.gov/dep/ej/>.

As noted in this section, as well as in Section 10.7, Adaptive Management, an Adaptive Management approach could serve as a compliance “check in” as the projects proceed and an Adaptive Management requirement could be a component of the next NJPDES permit renewal. The Department agrees that Adaptive Management could also allow flexibility from the perspective of treatment technology advancements and compliance provided the resultant percent capture requirement is attained. However, while flexibility can be a component of each five year permit cycle, the permittee is obligated to set forth a path for compliance with the Federal CSO Control Policy through measures set forth in the LTCP. Note that any changes to projects set forth in the NJPDES permit as part of the LTCP will require a NJPDES permit modification or renewal. While this comment does not necessitate a response at this time, the Department hereby notes this information for the Administrative Record.

Section 8, Public Participation Process

Comment 27: Section 8 includes a summary of public participation to date including Supplemental CSO Team meetings, public input opportunities, the NJCSO Group, and other community outreach and collaboration. Public participation will continue in the next NJPDES permit and could include three primary goals: inform, educate and engage. The Department is evaluating this issue and is in the process of preparing updated NJPDES permit language to advance this issue for the next permit renewal as part of a stakeholder process. Future permit language will likely include specific requirements for advance advertisement of public meetings. Please provide any suggestions as to how to better inform the public of meetings. Another element for future public participation could include public input on the siting of green infrastructure projects. Please provide input on the viability of public input on this topic.

Comment 28: Section 8.6, Posters, Flyers, Brochures and Handouts shows a variety of targeted printed materials that have been distributed by Perth Amboy as related to specific initiatives and the LTCP. While it is stated that the focus has been on making these copies available at City Hall, please provide additional information as to where these materials have been distributed and other avenues where they can be made available (https://www.perthamboynj.org/government/departments/sewer_utility).

Comment 29: Section 8.7, Media Coverage and Press Release describes the May 2016 announcement of a Build it Green Competition grant from New Jersey Future, in partnership with Re:Focus Partners and support of Geraldine R. Dodge Foundation and Robert Wood Johnson Foundation, to the City of Perth Amboy to fund engineering support services to design a green infrastructure project, namely the 2nd Street Greenway to improve stormwater management. A secondary goal of this investment is to aid in improving the quality of life in Perth Amboy neighborhoods and create aesthetically inviting areas for conducting business. Provide additional detail as to how this early green infrastructure design work may have led to suggested green infrastructure projects.

Comment 30: Section 8.11 is entitled Future Public Participation. The Department acknowledges that the City of Perth Amboy has proposed additional ideas to continue to engage the public on CSO issues and looks forward to future collaboration on this topic. The Department notes that a Public Participation Virtual Room is currently available on the City of Perth Amboy’s Sewer Utility website at https://www.perthamboynj.org/government/departments/sewer_utility. This availability of this tool should be included in the LTCP and it is suggested that the number of times the page is viewed also be added to offer a metric of its effectiveness. In addition, please update and/or revise this section to delete information regarding submissions that have already taken place and to delete expected meeting dates that did not occur (i.e., December 2020, March 2021).

Section 9, Selected Long Term Control Plan

Comment 31: Section 9.2, Selected Long Term Control Program Overview states the following:

“The selected Long Term Control Plan represents an integrated plan that will be implemented as two separate programs overseen separately by the City and MCUA.”

While the Department acknowledges that certain elements of these programs must be overseen by either Perth Amboy or MCUA, the NJPDES CSO permit requires that the parties work together and coordinate. Please ensure that continued cooperation and collaboration occurs throughout the implementation phase.

Comment 32: Section 9.2.1 includes an overview of the elements of the LTCP including Green Infrastructure as follows:

“Green Infrastructure – we anticipate a planning and design period for the first 2 years, then implementation program for the remaining 38 years. The target coverage of Green Infrastructure is 46.8 acres or 10% of the directly connection impervious area within the City.”

Section 9.2.3, Plan Element 2 – Green Infrastructure then states the following

“The Supplemental CSO Team has also indicated a desire for the City to focus on priority areas such as the following:

- Willow Pond/Little League Field parking areas;
- Waterfront Park;
- Sunshine Alley;
- Green space between Madison Avenue and the Robert N. Wilentz School;
- Perth Amboy Train Station;
- Bioswales or tree pits;
- Old Firehouse Facility – porous pavements”

As acknowledged in the LTCP, green infrastructure can mitigate CSO dischargers particularly for smaller rain events and also has other ancillary benefits such as aesthetic improvements and reducing heat island effects. To advance the timely implementation of green infrastructure indicate whether any feasibility studies have been conducted on these locations to determine if green infrastructure is viable. Provide an estimate as to how many CSO gallons would be diverted from waterways if 46.8 acres of green infrastructure is implemented.

Comment 33: Section 9.2.4, Plan Element 3 – Main Pumping Station and Force Main to MCUA includes the following:

“For this Plan Element 3, Perth Amboy would pump CSS flows directly to the MCUA up to a maximum instantaneous flow of 13.6 MGD, the flow would be directed to a new receiving chamber at the MCUA CTP to be connected to the existing headworks and receive full-treatment.”

Similar to Comment 13, there is limited information regarding modifications to MCUA. Please ensure that additional detail is provided regarding the new receiving chamber at MCUA, associated size, costs etc.

Comment 34: Section 9.2.5, Plan Element 4 – CSO Group 4 and 5; Section 9.2.6, Plan Element 5 – CSO Group 3; Section 9.2.7 Plan Element 6 – CSO Group 1; and Section 9.2.8 – CSO Group 2 include an overview of the elements of the LTCP including satellite storage (CSO Group 4 and 5, CSO Group 3) and high rate treatment CSO Group 6 and CSO Group 7). The State of New Jersey and the Department are working to address and mitigate the impacts of climate change where additional information is available here: <https://www.nj.gov/dep/climatechange/>. Climate change can have an impact on the design for resiliency for CSO storage and high rate treatment and resiliency requirements must be considered in the design of any infrastructure. 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.

Please address how the selected CSO control alternatives address climate change and sea level rise.

Section 10, Implementation Schedule

Comment 35: Section 10.2.1, Sensitive Areas includes the statement that CSO Group 3 has been identified as a sensitive area. Please refer to Comment 2.

Comment 36: Section 10.2.2, Sequencing and Phasing states the following:

“The implementation schedule will synchronize projects, milestones and activities to coincide with the five year NJPDES permit cycles.”

Appendix C, Anticipated Planning, Design, Bidding, and Construction Schedule includes a general Gantt chart to show the order of LTCP elements. Provide additional detail particularly for the first five year NJPDES permit cycle. In addition, please expedite the planning and design for the force main to MCUA to ensure that it is a feasible, viable project given that it is integral to the LTCP.

Comment 37: Section 10.3.2, Expenditure Schedule states the following:

“Assuming no impact to the City’s finances due to the COVID-19 pandemic, the anticipated expenditure schedule as presented in Section 5.5 would approximate that shown in Table 10-1.”

Table 10-1 - Anticipated LTCP Expenditure Schedule

Description	Yr1-5	Yr5-10	Yr10-15	Yr15-20	Yr20-25	Yr25-30	Yr30-35	Yr35-40
Anticipated LTCP expenditures (1)	\$10.66	\$32.64	\$50.66	\$85.99	\$108.80	\$3.51	\$19.26	\$12.84

(1) Includes costs for capital costs for Planning, Design, and Construction only and do include O&M.

Clarify the units for Table 10-1 as it appears that this was intended to be in millions of dollars.

Comment 38: Section 10.6, Operational Plan states the following:

“With the implementation of the LTCP program, new sewer system infrastructure and treatment facilities for CSO control will be constructed, placed into service, and operated, primarily by the City. The City is prepared to operate and maintain the facilities associated with the LTCP.

As the proposed CSO control facilities are implemented, the existing O&M programs and manuals will be expanded and updated accordingly as part of the LTCP operational plan. The City and MCUA will continue to review the O&M Program and Manual on an annual basis and make updates to reflect any additional operations and maintenance requirements for new system or shared assets. Training will be provided where necessary, to ensure that staff are able to operate any new CSO control assets.”

As noted within the LTCP, Part IV.G.6 of the NJPDES CSO permit states the following regarding Operational Plan:

“a. Upon Departmental approval of the final LTCP and throughout implementation of the approved LTCP as appropriate, the permittee shall modify the O&M Program and Manual in accordance with D.3.a and G.10, to address the final LTCP CSO control facilities and operating strategies, including but not limited to, maintaining Green Infrastructure, staffing and budgeting, I/I, and emergency plans.”

In accordance with N.J.A.C. 7:14A-6.12 of the NJPDES Rules, the permittee must maintain and operate the treatment works and facilities installed by the permittee to achieve compliance with the terms and conditions of the discharge permit. The rules provide that proper operation and maintenance includes, but is not limited to, effective performance; adequate funding; effective management; adequate staffing and training; regularly scheduled inspections and maintenance; and adequate laboratory/process controls. While you have provided information regarding the O&M Program and Manual and updates that will be performed in the future for CSO controls, please expand upon this section as to how the Operational Plan for the LTCP, including the Emergency Plan and Asset Management Plan, will address effective performance; adequate funding; effective management; adequate staffing and training; regularly scheduled inspections and maintenance; and adequate laboratory/process controls. In addition, please acknowledge that an operational plan will be prepared for the operation and maintenance of green infrastructure.

Comment 39: Section 11.1, Compliance Monitoring Approach states the following:

“Post-construction monitoring will be completed to evaluate the incremental reduction in overflow rates and volumes as CSO control facilities are placed into operation. For the selected presumption approach, the National CSO Policy and the NJPDES Permit require an 85% wet weather capture on an annual system-wide basis for the Typical Year. Wet weather capture will be determined on a system-wide basis using the hydraulic and hydrologic (H&H) model that will be calibrated and updated using post-construction monitoring data and evaluated over the model Typical Year, which has been previously approved by the New Jersey Department of Environmental Protection (NJDEP). This is the performance criteria that will be used for the LTCP capital projects....”

The Department concurs that a rerun of the model would be appropriate particularly after significant construction projects are completed. This will allow verification of the percent capture calculations as part of Adaptive Management to provide an assessment of compliance against 85% wet weather capture. However, please note that any effort to recalibrate the H&H model should be performed after consultation with the Department. Clarify accordingly.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Dwayne Kobesky". The signature is written in a cursive, slightly slanted style.

Dwayne Kobesky
CSO Team Leader
Bureau of Surface Water & Pretreatment Permitting

- C: Marzooq Alebus, Bureau of Surface Water and Pretreatment Permitting
Dianne Crilly, Office of Economic Analysis
Teresa Guloy, Bureau of Surface Water and Pretreatment Permitting
Molly Jacoby, Bureau of Surface Water and Pretreatment Permitting
Joseph Mannick, Bureau of Surface Water and Pretreatment Permitting
Susan Rosenwinkel, Bureau of Surface Water and Pretreatment Permitting
Adam Sarafan, Bureau of Surface Water and Pretreatment Permitting
Brian Salvo, Bureau of Surface Water and Pretreatment Permitting
Stephen Seeberger, Bureau of Surface Water and Pretreatment Permitting