I. FACILITY INFORMATION

Passaic Valley Sewerage Commission is located at 600 Wilson Avenue, Newark, Essex County, NJ 07105 and consists of a wastewater treatment plant. Passaic Valley Sewerage Commission is publicly owned and operated.

The facility is classified as a major facility based on its potential to emit 81.75 tons per year of volatile organic compounds, 75.8 tons per year of nitrogen oxides, and 107.5 tons per year of carbon monoxide.

This permit allows individual hazardous air pollutants to be emitted at a rate not to exceed: 152 pounds per year of 1,1,2,2-tetrachloroethane, 824 pounds per year of 1,3-butadiene, 5,040 pounds per year of 1,4-dichlorobenzene, 600 pounds per year of acetaldehyde, 22 pounds per year of acrolein, 80 pounds per year of acrylonitrile, 780 pounds per year of benzene, 8,820 pounds per year of chloroform, 0.1822 pounds per year of ethylene dibromide, 3,680 pounds per year of ethylene dichloride, 1,010 pounds per year of formaldehyde, 2,120 pounds per year of hydrogen chloride, 1,728 pounds per year of hydrogen sulfide, 102 pounds per year of phenol, 2,740 pounds per year of styrene, 200 pounds per year of vinyl acetate, and 5,680 pounds per year of xylene.

II. AREA ATTAINMENT CLASSIFICATION

The Federal Clean Air Act (CAA) sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are particulate matter, ground-level ozone, carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), and lead. The US Environmental Protection Agency (USEPA) also classifies areas as “attainment” or “nonattainment” for each criteria pollutant, based on the magnitude of an area's problem. Nonattainment classifications are used to specify what air pollution reduction measures an area must adopt, and when the area must reach attainment. Currently, the entire State of New Jersey is designated as nonattainment for the 8-hour ozone NAAQS. New Jersey is designated attainment for all other pollutants. For nonattainment classification refer to https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information.

III. BACKGROUND AND HISTORY

The equipment that emits air contaminants from this facility include: fifteen (15) boilers and hot water heaters; sewerage processing, dewatering, and odor control equipment; bulk solids material handling and storage equipment; two (2) gasoline tanks; paint spray booth; three (3) combustion turbines, two (2) emergency black start engines, and two (2) emergency fire pump engines. There are twenty-one (21) control devices, filters and scrubbers reduce particulate emissions by 99% or more, scrubbers and thermal oxidizers reduce VOC emissions by 98% or more, scrubbers reduce hydrogen sulfide and ammonia by 99% or more, thermal oxidizers reduce carbon monoxide by 98% or more, selective catalytic reduction reduces NOx by 71 % or more, and oxidation catalysts reduce VOC by 60% or more and CO by 65% or more.

Health Risk Assessment was conducted as part of the review of this permit application and health risk was determined to be negligible consistent with NJDEP Technical Manual 1003.

This is a Permit Modification and includes the following changes:

1. Installation of three (3) 315 MMBtu/hr 28 MW natural gas-fired combustion turbine generators (CTGs) controlled by selective catalytic reduction (SCR) and oxidation catalyst (OC) (Emission Unit U301, Operating Scenarios OS1-3,5-7, and 9-15, Equipment E3001-3003, Control Devices CD31-36, Emission Points PT301-303).

2. Installation of two (2) 18.7 MMBtu/hr 2 MW natural gas-fired emergency black start generators (BSGs) (Emission Unit U304, Operating Scenarios OS1-2, Equipment E3004-3005, Emission Points PT304-305).

3. Installation of two (2) 1.54 MMBtu/hr 147 kW diesel-fired emergency fire pump engines (FPEs) (Emission Unit U306, Operating Scenarios OS1-2, Equipment E3006-3007, Emission Points PT306-307).

The changes made during this permit activity result in allowable annual emissions changes as follows: Increase of VOC by 1.34 tons, increase of NOx by 2.21 tons, increase of CO by 4.09 tons, increase of SO2 by 0.670 tons, increase of TSP by 2.78 tons, increase of PM-10 by 2.78 tons, increase of PM-2.5 by 2.78 tons, increase of HAPs (Total) by 0.267 tons, increase of acrolein by 0.0110 tons, increase of ethylene dibromide by 0.0000911 tons, increase of formaldehyde by 0.256 tons, and an increase of ammonia by 1.31 tons. Differences in emission changes listed here and shown in the table below are the result of rounding.

This modification will also change the facility-wide emission limits as listed in the following table:

Allowable Emission Limits	Facility's Potential Emissions (tons per year)*									
	VOC (total)	NO_x	CO	SO_2	TSP (total)	PM_{10} (total)	$PM_{2.5}$ (total)	Pb	HAPs (total)	CO_2e (total)
Current Permit	80.35	73.6	103.5	24.9	14.1	15.1	N/A	N/A	15.7	287,000
Proposed Permit	81.75	75.8	107.5	25.6	16.8	17.9	2.88	N/A	15.9	310,000
Change (+ / -)	+1.40	+2.20	+4.00	+0.70	+2.70	+2.80	+2.88	N/A	+0.200	+23,000

VOC Volatile Organic Compounds
NO_x Nitrogen Oxides
CO Carbon Monoxide
SO_2 Sulfur Dioxide
TSP Total Suspended Particulates
PM_{10} Particulates under 10 microns
$PM_{2.5}$ Particulates under 2.5 microns
Pb Lead
HAPs Hazardous Air Pollutants
CO_2e Carbon Dioxide equivalent
* Other Any other air contaminant regulated under the Federal Clean Air Act. This modification will change permitted ammonia emissions from 19.8 to 21.1 tons per year.

4. Inclusion of EJ Special Conditions in Group GR2. These include the following emission reduction measures and their estimated emission reductions (summarized in the table below):

A. Removal of Operations and Maintenance (O&M) Building Natural Gas Boilers #2 and #3;
B. Removal of the Head End Emergency Diesel Generator;
C. Removal of two Natural Gas Oxygen Production Boilers;
D. Removal of two Natural Gas Grit and Screening Boilers;
E. Installation of air pollution control equipment for CO, NOx, and VOCs to the four currently uncontrolled Natural Gas Sludge Heat Treatment ("Zimpro") Boilers;
F. Transition combustion gas turbine fuel from natural gas to a renewable energy source;
G. Installation of up to 5 MW of solar panels at the PVSC Facility site; and
H. Installation of up to 5 MW of battery storage capacity to offset the need for black start capability and supplement operating electricity.

Table 2	Effect of Additional Facility-wide Emission Reductions (tons per year)									
	VOC (total)	NO_x	CO	SO_2	TSP (total)	PM_{10} (total)	$PM_{2.5}$ (total)	Pb	HAPs (total)	CO_2e (total)
Remove O&M Building Boilers	-0.11	-0.89	-1.01	-0.02	-0.19	-0.19	-0.19	0	0	-2,965
Remove 600-kW Engine Generator	-0.01	-0.03	-0.02	0	0	0	0	0	0	-3.3
Remove 2 Oxygen Production Boilers	-0.01	-0.16	-0.14	0	-0.02	-0.02	-0.02	0	0	-185

Table 2	Effect of Additional Facility-wide Emission Reductions (tons per year)									
	VOC (total)	NO_x	CO	SO_2	TSP (total)	PM_{10} (total)	$PM_{2.5}$ (total)	Pb	HAPs (total)	CO_2e (total)
Remove 2 Grit and Screening Boilers	0	-0.17	-0.14	0	-0.02	-0.02	-0.02	0	0	-210
Add SCR and OC to Zimpro Boilers	-1.17	-10.3	-3.42	0	0	0	0	0	0	0
5% H2 in CTG Fuel	-0.01	0	-0.12	0	-0.01	-0.01	-0.01	0	0	-1,183
5 MW On-Site Solar Panels	0	0	0	0	0	0	0	0	0	-3,883
5 MW / 10 MWh Modular Batteries for Peak Load Management	0	0	0	0	0	0	0	0	0	-371
Change (+ / -)	-1.31	-11.55	-4.85	-0.02	-0.24	-0.24	-0.24	0	0	-8,800.3

IV. CASE-BY-CASE DETERMINATIONS

No case-by-case determinations were required for this modification.

V. EMISSION OFFSET REQUIREMENTS

This modification is not subject to Emission Offset requirements.

VI. BASIS FOR MONITORING AND RECORDKEEPING REQUIREMENTS

The facility's operating permit includes monitoring, recordkeeping and reporting requirements that are sufficient to demonstrate the facility's continued compliance with the applicable requirements consistent with the following:

1. Provisions to implement the testing and monitoring requirements of N.J.A.C. 7:27-22.18, the recordkeeping and reporting requirements of N.J.A.C. 7:27-22.19, and all emissions monitoring and analysis procedures or compliance assurance methods required under the applicable requirements, including any procedures and methods promulgated pursuant to 40 CFR 64; and

2. Where the applicable requirement does not require direct periodic monitoring of emissions, the Department requires periodic monitoring of surrogate parameters sufficient to yield reliable data from the relevant time period that are representative of the facility's compliance with the permit.

   For the two (2) emergency black start engines in U304 and two (2) emergency fire pump engines in U306, the facility monitors the hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, TSP, PM-10, PM-2.5, HAPs (Total) (U304 only), acrolein (U304 only), and formaldehyde (U304 only). Surrogate monitoring for the short-term (lb/hr) emission limits are fuel oil sulfur content for SO2.

   For the three (3) combustion turbines in U301, the facility monitors the hours of operation as the surrogate for the long-term (TPY) emissions limits for VOC, NOx, CO, SO2, TSP, PM-10, PM-2.5, HAPs (Total), acrolein, and formaldehyde. The turbines are each equipped with Selective Catalytic Reduction (SCR) CD31-33 and Oxidation Catalysts (OC) CD34-36. The SCR performance is continuously monitored by ammonia injection rate and temperature at the catalyst bed, and the OC performance is continuously monitored by the inlet and outlet catalyst bed operating temperature and pressure drop.

3. In some cases, direct periodic monitoring of emissions and/or surrogate parameters is not required due to one or more of the following:

- Equipment size and capacity limitations,
- Subject equipment being permitted at the maximum rated capacity,
- There is no specific state or Federal standard that applies to this piece of equipment,
- Not a pollutant of concern for this piece of equipment,
- Agreements with EPA on the frequency of testing and monitoring for combustion sources.

VII. APPLICABLE STATE AND FEDERAL RULES

This modification is subject to New Jersey Air Pollution Control Regulations, codified in N.J.A.C. 7:27-1 through 34, as applicable. A complete text of these regulations is available at: http://www.nj.gov/dep/aqm/rules27.html

This modification is also subject to Federal regulations listed below.

NSPS Subpart A:	General Provisions
NSPS Subpart IIII:	Stationary Compression Ignition Internal Combustion Engines
NSPS Subpart JJJJ:	Stationary Spark Ignition Internal Combustion Engines
NSPS Subpart KKKK:	Stationary Combustion Turbines
MACT Subpart ZZZZ:	Stationary Reciprocating Internal Combustion Engines

The Greenhouse Gas (GHG) emissions from this facility are 310,000 TPY CO2e and the GHG emissions increase are 23,000 TPY CO2e. This modification is not subject to PSD rules at 40 CFR 52.21.

VIII. FACILITY'S COMPLIANCE STATUS

The Responsible Official at the facility has certified that the facility currently meets all applicable requirements of the Federal Clean Air Act and the New Jersey Air Pollution Control Act. Based on this certification, the Department's evaluation of the information included in the facility's application, and a review of the facility's compliance status, the Department has concluded that this air pollution control operating permit should be approved.

This operating permit includes a permit shield, pursuant to the provisions of N.J.A.C. 7:27-22.17. A permit shield provides that compliance with the relevant conditions of the operating permit shall be deemed compliance with the specific applicable requirements that are in effect on the date of issuance of the draft operating permit, and which form the basis for the conditions in the operating permit.

Prior to the expiration of the Operating Permit's five-year term, the facility will be required to apply for a renewal, at which time the Department will evaluate the facility and issue a public notice with its findings.

IX. EXEMPT ACTIVITIES

The facility's operating permit does not include exempt activities such as office and interior maintenance activities, maintenance shop activities, food preparation facilities, cafeterias and dining rooms, etc. A complete list of exempt activities, as allowed by the Operating Permit rule, can be found at N.J.A.C. 7:27-22.1.

FACILITY NAME (FACILITY ID NUMBER)
BOP050001

Activity Number assigned by the Department

New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit Number assigned by the Facility

Brief description of emission unit

Emission Unit: **U40 Sewage Sludge Incinerators**
Operating Scenario: **OS Summary** **OR** **OS2 Fluidized Bed Incinerator**

OS Summary lists all rules and requirements that apply to an emission unit. An emission unit may contain one or more pieces of equipment and corresponding operating scenarios.

OSX denotes the operating scenario number and lists the rules and requirements that apply to a scenario. An operating scenario represents various ways (or scenarios) a piece of equipment is permitted to operate.

Item Number

Description of applicable requirement

Monitoring method to ensure compliance

Recordkeeping to show facility's compliance

Actions and submittals required for the facility

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
3	The permittee shall conduct an annual performance test for each pollutant in Table 2 of 40CFR62 Subpart LLL between 11 and 13 calendar months after the previous performance test or within 60 days of a process change. [40 CFR 62.16000(a)]	Other: Conduct the performance test using the test methods, averaging methods and minimum sampling volumes or durations as specified in 40CFR62 Subpart LLL and according to the testing, monitoring and calibration requirements specified in 40 CFR 62.16015(a). [40 CFR 62.16000(a)].	Other: (1) Maintain records of the results of initial, annual and any subsequent performance tests conducted to determine compliance with the emission limits and standards and/or to establish operating limits, as applicable. [40 CFR 62.16025(e)].	Submit a report: Annually to the Administrator and to the Department. The permittee shall submit an annual compliance report as specified in 40 CFR 62. [40 CFR 62.16000(d)]

Rule citation for applicable requirement

Rule citation for monitoring requirement

Rule citation for recordkeeping requirement

Rule citation for submittal/ action requirement

Explanation Sheet for Facility Specific Requirements