Department of Environmental Conservation

Source Specific State Implementation Plan Revision

BERGEN POINT WASTEWATER TREATMENT PLANT

PERMIT ID: 1-4720-00355

MAY 2024

Table of Contents

Acronyms and Abbreviations

CAA	Federal Clean Air Act
DAR	DEC Division of Air Resources
DEC	New York State Department of Environmental Conservation
EPA	United State Environmental Protection Agency
NAAQS	National Ambient Air Quality Standards
NO_X	Oxides of Nitrogen
NYCRR	New York Codes, Rules, and Regulations
RACT	Reasonably Available Control Technology
SIP	State Implementation Plan
SSSR	Source Specific SIP Revision
VOCs	Volatile Organic Compounds

Introduction

The United States Environmental Protection Agency (EPA) defines Reasonably Available Control Technology (RACT) as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

Title 6 of the New York Codes, Rules, and Regulations (NYCRR) contains several regulations that define Reasonably Available Control Technology (RACT) for certain categories of stationary sources in New York. These regulations seek emissions reductions of nitrogen oxides (NO_x) and/or volatile organic compounds (VOCs) to help attain and/or maintain the 8-hour ozone National Ambient Air Quality Standards (NAAQS).

Depending upon the relevant RACT regulation, a source that is required to implement RACT must meet a presumptive RACT limit, meet an alternate limit determined from an approved technical analysis if reaching a presumptive RACT limit is technically or economically infeasible, or meet an approved case-by-case RACT limit for sources which do not have a presumptive RACT limit established in regulation. Individual source specific RACT determinations that are included in a facility's operating permit must be submitted to EPA as a revision to the New York State Implementation Plan (SIP) to satisfy the NO_x and/or VOC RACT requirements under sections 182 and 184 of the Clean Air Act (CAA).

The New York State Department of Environmental Conservation's (DEC's) DAR-20 guidance, titled "Economic and Technical Analysis for Reasonably Available Control Technology (RACT)," provides procedures for the economic and technical feasibility analysis that needs to be used to evaluate source-specific RACT determinations and to determine appropriate RACT emission limits. This analysis must also be completed at each renewal of the emission source owner's permit. The re-evaluation must contain the latest control technologies and strategies available for review and allow for an inflation-adjusted economic threshold.

Source-specific RACT Determination and RACT Analysis

The Air Title V Facility Permit for Bergen Point Wastewater Treatment Plant (WWTP) issued on April 28, 2022 contains permit conditions that establish a NO_X variance for three existing emission units (groups of emission sources) that were previously classified as exempt. The permitted units are U-00010: Four Emergency Engine Generators; U-00011: Two Standby Turbine Generators; and U00012: Four Cogeneration Units. These emission units are subject to annual NOx emission limits as per 6 NYCRR Part 231 netting procedures. The turbines are also subject to 6 NYCRR Subpart 227-2 Reasonably Available Control Technology (RACT) for Major Facilities of Oxides of Nitrogen (NOx).

The technical analyses used by DEC to determine the alternate RACT limits is included in this Source Specific SIP Revision (SSSR) as Appendix A.

Air Title V Facility Permit and Permit Review Report

The RACT permit conditions are included in Appendix B. The complete Air Title V Permit issued on April 28, 2022, for Bergen Point WWTP is available at: PERMIT

The Permit Review Report for this facility is available at:
PRR

Appendix A: Technical Analyses

Appendix B

Reasonable Available Control Technology (RACT) Analysis

1.1 Purpose

NYSDEC has required that Suffolk County conduct a nitrogen oxides (NOx) Reasonable Available Control Technology (RACT) analysis for the two existing combustion turbines as part of this Title V permit modification application.[1] The two stand-by turbine generators are subject to 6 NYCRR 227-2 Reasonably Available Control Technology (RACT) for Major Facilities of Oxides of Nitrogen (NOx). 6 NYCRR 227 requires RACT on existing combustion sources in areas that do not meet national ambient air quality standards.

1.2 Emission Source Description

The two Stand-by Turbine Generators (U-00007) are 3.5-MW-each Siemens 501-KB5 Stand-by Turbines with a heat input rate of 45 MMBtu/hr each. These turbines are simple cycle combustion turbines (SCCT) operating on distillate fuel oil # 2. These oil-fired turbines use ultra-low sulfur diesel fuel with a sulfur content of 0.0015 percent or less.

In a simple cycle combustion turbine, air is compressed, mixed with fuel, and the mixture is burned in a combustor. The resulting hot, pressurized gases are expanded through a turbine that drives the compressor and the electric generator. There is no Heat Recovery Steam Generator (HRSG) system in simple cycle turbines. SCCT's have conversion efficiencies of up to about 40%. The two primary NOx formation mechanisms in gas turbines are thermal and fuel NOx. Fuel such as natural gas and distillate fuel oil # 2 have little or no nitrogen content. Therefore, thermal NOx is the dominant source of NOx emissions.

Table 1, below, summarizes the uncontrolled maximum potential NOx emission rates from the Siemens 501-KB5 Stand-by Fuel Oil Turbines (for one turbine) at the Suffolk County's Bergen Point Wastewater Treatment Plant.

Table 1 Maximum Potential NOx Emission Rates for a Single Siemens 501-KB5 Stand-by Fuel Oil Turbine

Pollutant	Emission Rates for One Turbine			
	ppm @ 15% O2	lb/hr	Tons/year (500 hours of operation)	lb/MMbtu
Nitrogen Oxides (NOx)	177	33.3	8.2	0.73

Source: Siemens Energy, Inc. Industrial Engine Performance & Emissions Estimate (EDR 16738), Engine Configuration: 501-KB5, Uncontrolled Emissions, July 20, 2018

[1] Mike Jennings, NYSDEC, telephone conversation, July 10, 2019.

1.3 RACT Evaluation

RACT is" the lowest emission limit that a particular source is capable of meeting by application of control technology that is reasonably available, considering technological and economic feasibility." (6 NYCRR 200.1 (bq)). RACT requirements applicable to a particular emission source may fall into one of two categories - presumptive RACT limits or case-by-case RACT determinations. Presumptive RACT limits are category-wide requirements. Presumptive RACT limits are based on capabilities that are general to an emission source category. However, for some categories of emission sources, presumptive RACT limits may not be attainable at every individual emission source. Case-by-case RACT determinations consider the technological and economic circumstances of the individual emission source.

6 NYCRR 227-2.4(e) contains presumptive RACT requirements for simple cycle combustion turbines (SCCTs) each with heat input rate greater than 10 million Btu/hr. For SCCTs designed to burn distillate oil, the NOx limit is 100 ppmvd, corrected to 15 percent oxygen (@ 15% O_2) (6 NYCRR 227-2.4(e)(1)(ii)). Table 1, above, shows that Suffolk County's Siemans 501-KB5 Standby Turbine Generators have a NOx exhaust concentration of 177 ppmvd @ 15% O_2. Installation of air pollution control technology achieving at least 44 percent NOx removal would be necessary to meet the presumptive RACT limit. 6 NYCRR 227-2.5 contains NOx RACT compliance options. Subsection 2.5(c) states that for those emission sources where the owner or operator demonstrates the applicable presumptive RACT emission limit in Section 227-2.4 is not economically or technically feasible, a case-by-case RACT analysis may be submitted. The analysis below shows that all available NOx control technologies achieving 44 percent NOx removal or greater are technically or economically infeasible. The economic infeasibility is primarily because the Standby Turbine Generators are used for emergencies only (when primary power has been interrupted), and are restricted to operating no more than 500 hours per year.

Therefore, in accordance with 6 NYCRR 227-2.5(c), a case-by-case RACT proposal is presented in the following sections, based on the guidance provided in NYSDEC's "DAR-20: Economic and Technical Analysis for RACT."

The steps for a case-by-case determination are:

1. Identify and list available control options, starting with the "top", or most effective control technology. If the "top" case is proposed as control for the equipment, then the RACT analysis is complete for that pollutant, and no further analysis is required. If the most effective technology is not selected, then the following steps are required:
2. Evaluate technical feasibility;
3. Evaluate environmental and energy impacts; and
4. Evaluate economic feasibility.

If the "top" control technology is eliminated from consideration based on 2., 3. or 4., then each successive technology on the list must be evaluated following this procedure, until a control technology is reached that is not eliminated.

NYSDEC provided the following guidance for performing the NO_x RACT analysis:

- The analysis shall address all reasonably available controls of NO_x including changes in operation and work practices.
- The economic feasibility analysis shall be based on a calculation of annual cost per ton of NOx removed. The economic infeasibility threshold to eliminate a control technology is $5,500 per ton of NOx removed[2].
- The analysis shall be done according to the procedures in EPA's OAQPS Cost Manual. EPA's cost spreadsheets are recommended where applicable. The Manual and spreadsheets are available on the CATC/RBLC web page on EPA's Technology Transfer Network (TTN) at http://www.epa.gov/ttn/catc/.
- For this supplication, site-specific vendor quotes are not required for the estimation of control technology capital and operating costs. Available references may be used, with costs inflated to current values based on the Bureau of Labor Statistics cost escalator calculator. The cost escalator calculator is available here: https://www.bls.gov/data/inflation_calculator.htm

1.4 Identification of Control Technologies

The formation rate of thermal NOx increases exponentially with increases in temperature. Because the flame temperature of oil fuel is higher than that of natural gas, NOx emissions are higher for operations using oil fuel than natural gas. Reductions in NOx emissions can be achieved using combustion controls or flue gas treatment. Available combustion controls are water or steam injection and dry low-NOx combustion designs. Catalytic sorbents and Selective catalytic reduction are the only available flue gas treatments.

Table 2, below, presents available NOx control options in the order of highest to lowest removal efficiency.

Table 2 NOx Control Options for Simple Cycle Combustion Turbines (Operating on Fuel Oil or Natural Gas)

Category	Control Options	Removal Efficiency Range (%)	NOx Emissions Range (at 15% O_2)
Catalytic Sorbent Technology	SCONOx™	90-95%	~ 2-2.5 ppm
Catalytic Reduction	Selective Catalytic Reduction (SCR)	80-95%	< 9-18 ppm
Low-NOx burning	Dry Low NOx (DLN)	83%-89%	~ 25- 42 ppm
Addition to Combustion Air	Diluent Injection (Water or Steam)	NA	25-75 ppm

Source: Status Report on NOx Controls, Technologies and Cost effectiveness, December 2000, NESCAUM. Accessed here: www.nescaum.org/documents/nox-2000.pdf (September 6, 2019)

[2] Mike Jennings, NYSDEC, email dated June 25, 2019.

1.3 Evaluation of Technical Feasibility

The following sections provide an overview of the NOx control options in **Table 2**, above.

1.3.1 Catalytic Sorbent Technology SCONOx™

SCONOx™ is a post-combustion, multi-pollutant control technology, originally developed by Goal Line Environmental Technologies (now EmeraChem LLC). The SCONOx system uses a single catalyst to remove NOx, CO and VOC emissions in the turbine exhaust gas by oxidizing nitrogen oxide (NO) to nitrogen dioxide (NO_2), CO to CO_2, and hydrocarbons to CO_2 and water, and then absorbing NO_2 onto the catalytic surface using a potassium carbonate (K_2CO_3) absorber coating. The potassium carbonate coating reacts with NO_2 to form potassium nitrites and nitrates, which are deposited onto the catalyst surface. SCONOx does not use ammonia; therefore, there are no ammonia emissions from this catalyst system.

Other issues that may impact application of this technology include relatively high capital cost, large reactor size, system complexity, high utilities cost and demand (steam, compressed air and electricity) are required, and a gradual rise in NOx emissions over time that requires a 1- to 2-day shutdown every 6 to 12 months (depending on fuel quality and operation) to remove and regenerate the absorption modules ex-situ.[3]

The exhaust gas from the simple cycle Siemens 501-KB5 Turbine has a temperature of 1,016 degrees Fahrenheit. This gas temperature would be higher than the recommended temperature range for SCONOx of 300 to 700 degrees F. Therefore, the Siemens 501-KB5 Turbine exhaust gas would have to be cooled prior to introduction to the catalyst. Additionally, steam would be needed to regenerate the catalyst bed. Since these combustion turbines are not combined cycle, no steam is available. Because of the high exhaust temperature and lack of readily available steam, SCONOx is a technically infeasible control technology for the existing Siemens 501-KB5 Turbine Generators at the Facility.

1.3.2 Catalytic Reduction

Selective Catalytic Reduction (SCR) is also a post-combustion technology capable of reducing NOx emissions by about 80 to 95 percent. SCR systems selectively reduce NOx by combining ammonia (NH_3) and oxygen (O_2) with NOx in the turbine exhaust gas in the presence of a catalyst to form molecular nitrogen and water. The catalyst, comprised of parallel plates or honeycomb structures, is installed in the form of rectangular modules, downstream of the gas turbine in simple-cycle configurations and into the heat recovery steam generator (HRSG) portion of the gas turbine downstream of the superheater in combined-cycle and cogeneration configurations.

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[3] USEPA Combined Heat and Power Partnership: Report "Catalog of CHP Technologies" dated March 2015, Section 3 -Technology Characterization – Combustion Turbines, Accessed on September 4, 2019: https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_3._technology_characterization_-_combustion_turbines.pdf

A typical SCR system is comprised of an ammonia storage tank, vaporization and injection equipment for ammonia, a booster fan for the flue gas, an SCR reactor with catalyst, and instrumentation and control equipment. The turbine exhaust gas must contain a minimum amount of oxygen and be within a particular temperature range in order for the SCR system to operate properly. The temperature range is dictated by the catalyst, which is typically made from noble metals, base metal oxides, or zeolite-based material. If the temperature drops below the specified minimum, the reaction efficiency becomes too low and increased amounts of NOx and ammonia will be released out the stack. If the reaction temperature exceeds approximately 900°F, the catalyst may begin to decompose. The simple cycle Siemens 501-KB5 Turbine has an exhaust temperature of 1,016 °F. High-temperature catalysis are available that can operate at temperatures up to 1050 °F. Exhaust air cooling could also be used to lower exhaust gas temperatures to about 900°F. Therefore, SCR is judged to be technically feasible.

1.3.3 Dry Low-NOx Combustion

This control technology is integrated into the turbine equipment. The combustor is the space inside the gas turbine where fuel and compressed air are burned. Typically, combustors are diffusion controlled, meaning fuel and air are injected into the combustor separately and mixed in small, localized zones. These zones burn hot and produce more NOx. A lean pre-mix combustor such as a dry Low-NOx (DLN) combustor lower combustion temperatures by providing a lean premixed air/fuel mixture, where air and fuel are mixed before entering the combustor. This minimizes fuel rich pockets and allows the excess air to act as a heat sink. The lower temperatures reduce NOx formation.

This technology typically requires use of natural gas. Burning of liquid fuels in DLN systems is still challenging due to the complexities of fuel vaporization and air premixing. Since fuel oil cannot be easily premixed, it is not typically suitable as a DLN fuel. Therefore, DLN combustion is considered technically infeasible control technology for the existing Siemens 501-KB5 Turbine Generators at the Facility.

1.3.4 Diluent Injection

Injection of water and steam into the combustor has been used to reduce flame temperature and reduce NOx emissions. This is normally achieved with a special fuel injector that permits injection of fuel and the diluent. Diluent Injection can be used with any fuel.

With water injection, there is an additional benefit of absorbing the latent heat of vaporization from the flame zone. Water or steam is typically injected at a water-to-fuel ratio of less than one. Water or steam injection is usually accompanied by an efficiency penalty (typically 2 to 3 percent) but an increase in power output (typically 5 to 6 percent) due to the increased mass flow required to maintain turbine inlet temperature at manufacturer's specifications. Both CO and VOC emissions are increased by water injection depending on the amount of water that is injected. Water injection is generally used for fuel oil combustion, because it is difficult to aerosolize the fuel oil with steam. Water injection is considered a technically feasible option for the existing Siemens 501-KB5 Turbine Generators at the Facility.

1.4 Economic Evaluation

The control options that are technically feasible were evaluated for economic feasibility. These are listed below, with the top case first, and in decreasing order of effectiveness:

- Selective Catalytic Reduction (SCR);
- High Pressure Water Injection

1.4.1 SCR Economic Feasibility Evaluation

Table B-1 presents the costs, and cost effectiveness of this NOx control technology. The calculations are based on the following:

- The estimated capital cost was taken from NESCAUM's[4] Status Report on NOx Controls:
  - Capital equipment costs are based on an average of $252/kW for SCR installations. This cost is the average of $167/kW and $337/KW from supplier estimates for a retrofit of simple cycle turbine with high temperature SCR (Page III-22 in the NESCAUM document). It is assumed that all direct and indirect installation costs are included in the capital costs.
  - The capital equipment costs were inflated to current cost estimates using Bureau of Labor Statistics cost escalator calculator[5].
- The administrative and insurance cost factorswere based on U.S. EPA, Air Pollution Control Cost Manual, February 1, 2018, Chapter 2 – Cost Estimation, Concepts and Methodology[6].
- The annual O&M cost factors for operating labor, supervisory labor, maintenance labor and maintenance materials were lumped together. This cost factor is 0.005 x the total capital investment, based on Section 4-NOx Controls, Chapter 2 – Selective Catalytic Reduction, in the U.S. EPA Air Pollution Cost Control Manual[7].
- All indirect cost factors for general, engineering and process contingency were lumped together. This cost factor is 0.2 x the total capital investment, based on Section 4-NOx Controls, Chapter 2 – Selective Catalytic Reduction, in the U.S. EPA Air Pollution Cost Control Manual[7].

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[4] Status Report on NOx Controls, Technologies and Cost effectiveness, December 2000, NESCAUM. Accessed here: www.nescaum.org/documents/nox-2000.pdf (September 6, 2019)
[5] Bureau of Labor Statistics CPI Inflation Calculator here: https://www.bls.gov/data/inflation_calculator.htm
[6] EPA Cost Reports and Guidance for Air Pollution Regulations here: https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution
[7] EPA Cost Control Manual, Section - NOx Controls, Chapter 2 Selective Catalytic Reduction https://www3.epa.gov/ttn/ecas/docs/cs4-2ch2.pdf

- Reagent costs were determined to be $1.66 per gallon from the U.S. EPA SCR cost calculation spreadsheet[8] . The amount of urea needed was estimated from the default values provided in the spreadsheet.
- The net present value of the annualized capital costs was calculated based on an interest rate (i) of 7.5% and an assumed 10-year life of the equipment, resulting in the cost recovery factor of 0.1457.
- Electricity costs were obtained from the New York State Energy Research and Development Authority's (NYSERDA) monthly average retail price of commercial electricity for June 2019[9].

The SCR would achieve approximately a 90 percent reduction of NOx emissions[2]. Each Siemens 501-KB5 Turbine Generator has a maximum potential annual NOx emission rate of 8.2 tons/year. This is based on an enforceable operating restriction of 500 hours per year for each of these standby emergency Turbines, and an emission rate (without control) of 0.73 lb NOx/MMBtu. The SCR would remove approximately 7.4 tons/year of NOx.

Appendix B, Table B-1 shows that the cost of control would be $48,700 per ton of NOx removed. This exceeds the guideline economic feasibility threshold of about $5,500 per ton removed, provided by Mike Jennings (NYSDEC) via email on June 25, 2019. Therefore, SCR control for the Siemens 501-KB5 Turbine Generators is determined to be economically infeasible, and this option is removed from consideration.

1.4.1 Water Injection Economic Feasibility Evaluation

Table B-2 presents the costs, and cost effectiveness of this NOx removal. The calculations are based on the following:

- The estimated capital cost was taken from NESCAUM's[10] Status Report on NOx Controls:
  - Capital equipment costs are based on a turbine retrofit project in New Jersey by PSE&G. The retrofit project cost $9 million in capital costs for 24 peaking turbines, with each turbine generating 21MW. (NESCAUM[2] document, Page III-20)
  - A $17,900/MW cost was calculated based on the above capital costs incurred for the PSE&G project. A capital cost for Suffolk County's 3.5MW turbines was calculated using the $/MW factor.

[8] EPA Cost Control Manual, Section 4 – NOx Controls, Chapter 2 Selective Catalytic Reduction SCR Cost Calculation Spreadsheet, https://www.epa.gov/sites/production/files/2019-06/scrcostmanualspreadsheet_june-2019vf.xlsm

[9] New York State Energy Research and Development Authority's (NYSERDA) monthly average retail prices of electricity, commercial https://www.nyserda.ny.gov/Researchers-and-Policymakers/Energy-Prices/Electricity/Monthly-Avg-Electricity-Commercial

[10] Status Report on NOx Controls, Technologies and Cost effectiveness, December 2000, NESCAUM. Accessed here: www.nescaum.org/documents/nox-2000.pdf (September 6, 2019)

- The capital equipment costs were inflated to current dollars using the Bureau of Labor Statistics cost escalator calculator[3].

- All direct and indirect installation cost factors were based on U.S. EPA, Air Pollution Control Cost Manual, Chapter 6 – Particulate Matter Control, Table 2.8 cost factors for venturi scrubber[4].

- The annual O&M cost factors were based on an assumed 0.5 hour of labor per week at the rate of $60/hr.

- The high-pressure water injection system requires purified water. Costs of purified water were calculated for a usage of 10 gallons per minute at the cost of $0.025 per gallon. This is based on the PSE&G retrofit project referenced in the NESCAUM[2] document.

- The net present value of the annualized capital costs was calculated based on an interest rate (i) of 7.5% and an assumed 10-year life of the equipment, resulting in the cost recovery factor of 0.1457.

- Electricity costs were obtained from the NYSERDA monthly average retail prices of commercial electricity for June 2019[9].

For turbines without a NOx control system, a water injection system can be added that lowers NOx emissions from about 180 ppm @ 15% O2 to about 50 ppm @ 15% O2 for liquid fuel. This represents an approximately 72% reduction. This system injects demineralized water into the combustor through the fuel nozzles to regulate the combustor flame temperature and lower NOx emissions.

Water Injection, therefore, would achieve a 72 percent reduction of NOx emissions[10]. Each Siemens 501-KB5 Turbine Generator has a maximum potential annual NOx emission rate of 8.2 tons/year. This is based on an enforceable operating restriction of 500 hours per year for each of these standby emergency Turbines, and an emission rate (without control) of 0.73 lb NOx/MMBtu. A Water Injection System would remove about 5.9 tons/year of NOx.

Appendix B, Table B-2 presents the costs, and cost effectiveness of this NOx removal. Table B-2 shows that the cost of control would be $9,800 per ton of NOx removed. This exceeds the guideline economic feasibility threshold of about $5,500 per ton removed provided by Mike Jennings (NYSDEC) via email on June 25, 2019. Therefore, Water Injection for the Siemens 501-KB5 Turbine Generators is determined to be economically infeasible, and this option is removed from consideration.

1.4 Conclusion

Since none of the available NOx control technologies is economically feasible, RACT is determined to be good combustion practices. Good combustion practices for the Siemens 501-KB5 Turbine Generators is annual inspections to tune up and maintain the Turbines. The annual inspection involves conducting an evaluation to determine if the equipment needs to be cleaned or repaired. This includes:

- gas generator enclosure inspection;
- gas generator external inspection;
- gas generator inlet inspection;
- spark igniter inspection;
- borescope inspection;
- package instrumentation calibration.

Consistent with the requirements in 6 NYCRR 227-2.4(d), Suffolk County would annually perform a tune-up and maintain, in a permanently bound log book, or other format approved in writing by NYSDEC, the following information:

(1) the date of the last tune-up;

(2) the name, title, and affiliation of the person who made the adjustments; and

(3) any other information that the department may require.

Appendix B: Case-by-case Permit Conditions

The following conditions are subject to annual compliance certification requirements for Title V permits only.

Condition 20: Emission Unit Definition
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR Subpart 201-6

Item 20.1:
The facility is authorized to perform regulated processes under this permit for:
Emission Unit: U-00003
Emission Unit Description:
This emission unit consists of six (6) packed bed scrubbers using liquid hypochlorite to remove hydrogen sulfide and trace organics from liquid and solids open processes prior to discharge through six (6) stacks.
Liquid and solids open processes process up to 40.5 mgd of wastewater, emitting VOC and HAPs. These liquid and solid processes include:
-Two (2) scavenger waste holding tanks
-Two (2) scavenger waste chemical tanks
-Two (2) equalization tanks and pump station for scavenger waste treatment
-Three (3) cyclone de-gritters (scavenger waste)
-Main influent wet well
-Three (3) grit tanks
-Eight (8) primary settling tanks
-Twelve (12) aeration tanks
-Eight (8) final clarifiers
-Three (3) sludge blending tanks
-Three (3) gravity belt thickeners
-One (1) scum handling system
-Eight (8) belt presses
-Effluent wet well
-One (1) UV treatment system

Building(s): C0606
C0610
C0613
C0614
C0615
C0616
C0617
C0618
C0619
C1107

Item 20.2:

The facility is authorized to perform regulated processes under this permit for:
Emission Unit: U-00010
Emission Unit Description:
Four emergency engine generators including: P&S Engine Generator, Cummins, model no. 750DFJA, 750 kW (Emission Source ID 00033, Emission Point ID ST-33)
Trailer-Mounted Diesel Engine Generator 1, Cummins, model no. DOGAA-543445, 1,250 kW (Emission Source ID 00034, Emission Point ID ST-34)
Trailer-Mounted Diesel Engine Generator 1, Cummins, model no. DOGAA-543445, 1,250 kW (Emission Source ID 00035, Emission Point ID ST-35)
UV Disinfection Engine Generator - Cummins Model No. 750DQCB; 750 kW, certified to 2012 EPA Tier 2 exhaust emission (Emission Source ID 00036, Emission Point ID ST-36)

All process ID = EDI (Emergency Diesel Internal Combustion Engine)

Building(s): C0606

Item 20.3:
The facility is authorized to perform regulated processes under this permit for:
Emission Unit: U-00011
Emission Unit Description:
Two (2) turbine generators Standby Turbine Generator 1 and Standby Turbine Generator 2, (Emission Source ID 00037 and 00038, Common stack ST-37)
Siemens 501-KB5, both turbines drive single 10,000 hp generator, no. 2 fuel oil
Siemens 501-KB5, both turbines drive single 10,000 hp generator, no. 2 fuel oil

Each Standby Generator is for use during emergencies only, and is limited to operating no more than 500 hours per year.

Process ID = SDT (Standby Diesel Turbines)

Item 20.4:
The facility is authorized to perform regulated processes under this permit for:
Emission Unit: U-00012
Emission Unit Description:
Four (4) cogeneration units Model: TECOGEN Model No. CM-75 75 kW natural-gas-fired co-gen unit (Emission Source IDs 00039, 00040, 00041 and 00042 and respective stacks ST-39, ST-40, ST-41 and ST-42)

Building(s): C0610

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~
~~The owner or operator of a small boiler, small combustion turbine, or small internal combustion engine must perform an annual tune-up of their equipment. This tune-up should be performed in accordance with the requirements of the DAR-5 guidance document. Records of each tune-up must be kept on-site for a minimum of five years.~~

~~Monitoring Frequency: ANNUALLY~~
~~Reporting Requirements: ANNUALLY (CALENDAR)~~
~~Reports due 30 days after the reporting period.~~
~~The initial report is due 1/30/2023.~~
~~Subsequent reports are due every 12 calendar month(s).~~

Condition 29: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR 231-6.2

Item 29.1:
The Compliance Certification activity will be performed for the facility:
The Compliance Certification applies to:

Emission Unit: U-00010
Process: EDI Emission Source: 00034

Emission Unit: U-00010
Process: EDI Emission Source: 00035

Emission Unit: U-00010
Process: EDI Emission Source: 00036

Regulated Contaminant(s):
CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 29.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:
Total NOX emissions from the Trailer-Mounted Diesel Engine Generator 1, Cummins, model no. DOGAA-543445; Trailer-Mounted Diesel Engine Generator 2, Cummins, model no. DOGAA-543445; and UV Disinfection Engine Generator - Cummins Model No. 750DQCB are limited to 12.17 tons per year (combined between the three engines).

The facility will calculate emissions using emission factors from 40 CFR 60 Subpart IIII along with engine usage data.

Data and calculations used to determine compliance with this limit must be maintained at the facility for a period of at least five years.

(The limit in this condition is based on a potential to emit of 4.56 tons per year per generator for Trailer-Mounted Generators 1&2 and 3.05 tons per year for the UV Disinfection Generator.)

Parameter Monitored: OXIDES OF NITROGEN
Upper Permit Limit: 12.17 tons per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL MAXIMUM ROLLED MONTHLY
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

~~**Condition 30: EPA Region 2 address.**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:40CFR 60.4, NSPS Subpart A**~~

~~**Item 30.1:**~~
~~All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted in duplicate to the following address:~~

~~Director, Division of Enforcement and Compliance Assistance~~
~~USEPA Region 2~~
~~290 Broadway, 21st Floor~~
~~New York, NY 10007-1886~~

~~Copies of all correspondence to the administrator pursuant to this part shall also be submitted to the NYSDEC Regional Office issuing this permit (see address at the beginning of this permit) and to the following address:~~

~~NYSDEC~~
~~Bureau of Quality Assurance~~
~~625 Broadway~~
~~Albany, NY 12233-3258~~

~~**Condition 31: Compliance Certification**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:40CFR 60.4205(b), NSPS Subpart IIII**~~

~~**Item 31.1:**~~
~~The Compliance Certification activity will be performed for the facility:~~
~~The Compliance Certification applies to:~~

Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:40CFR 60.4214(b), NSPS Subpart IIII

~~**Item 35.1:**~~
~~The Compliance Certification activity will be performed for the Facility.~~

~~**Item 35.2:**~~
~~Compliance Certification shall include the following monitoring:~~

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~

~~For stationary CI internal combustion engines that are emergency stationary internal combustion engines, the owner or operator is not required to submit an initial notification.~~

~~Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter.~~

~~The owner must record the time of operation of the engine and the reason the engine was in operation during that time.~~

~~Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION~~
~~Reporting Requirements: SEMI-ANNUALLY (CALENDAR)~~
~~Reports due 30 days after the reporting period.~~
~~The initial report is due 7/30/2022.~~
~~Subsequent reports are due every 6 calendar month(s).~~

****** Emission Unit Level ******

Condition 36: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR 231-2.7

Item 36.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00010
Process: EDI Emission Source: 00033

Regulated Contaminant(s):

CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 36.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:
NOx emissions from the P&S Engine Generator, Cummins Model No. 750DFJA are limited to 6.83 tons per year.

The facility will calculate emissions using an appropriate emission factor from AP-42 Chapter 3.4 along with engine usage data.

Data and calculations used to determine compliance with this limit must be maintained at the facility for a period of at least five years.

Parameter Monitored: OXIDES OF NITROGEN
Upper Permit Limit: 6.83 tons per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL MAXIMUM ROLLED MONTHLY
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

Condition 37: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:40CFR 63.6603(a), Subpart ZZZZ

Item 37.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00010
Process: EDI Emission Source: 00033

Item 37.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:
The owner or operator of an existing emergency and black start compression ignition stationary RICE located at an area source of HAP emissions must comply with the following maintenance procedures:

(1) Change oil and filter every 500 hours of operation or annually, whichever comes first;
(2) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary;
(3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Initial compliance will be demonstrated according to the provisions in 40 CFR 63.6630.

Continuous compliance will then be demonstrated according to 40 CFR 63.6640. The facility must keep records according to the provisions in 40 CFR 63.6655 and submit the notifications and reports listed in 40 CFR 63.6645 and 63.6650.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 38: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:40CFR 63.6625(e), Subpart ZZZZ

Item 38.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00010
Process: EDI Emission Source: 00033

Item 38.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:
The facility must operate and maintain its existing P&S Engine Generator, Cummins diesel engine identified as emission source: 00033 of EU:U-00010 according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

~~**Condition 39: Compliance Certification**~~

~~Reporting Requirements: SEMI-ANNUALLY (CALENDAR)~~
~~Reports due 30 days after the reporting period.~~
~~The initial report is due 7/30/2022.~~
~~Subsequent reports are due every 6 calendar month(s).~~

~~Condition 42:~~ ~~Compliance Certification~~
~~Effective between the dates of 04/28/2022 and 04/27/2027~~

~~Applicable Federal Requirement:40CFR 60.4209(a), NSPS Subpart IIII~~

~~Item 42.1:~~
~~The Compliance Certification activity will be performed for:~~

~~Emission Unit: U-00010~~
~~Process: EDI~~ ~~Emission Source: 00036~~

~~Item 42.2:~~
~~Compliance Certification shall include the following monitoring:~~

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~
~~The owner or operator of an emergency stationary compression ignition IC engine must install and maintain a non-resettable hour meter prior to startup to monitor engine usage~~

~~Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION~~
~~Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY~~

Condition 43: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR Subpart 201-6

Item 43.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00011

Item 43.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: WORK PRACTICE INVOLVING SPECIFIC OPERATIONS
Monitoring Description:
Each standby turbine generators may operate no more than 500 hours per year. The facility must maintain monthly records which demonstrate that each turbine is operated less than 500 hours per year, on a 12-month rolling total basis.

Work Practice Type: HOURS PER YEAR OPERATION
Upper Permit Limit: 500 hours per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL MAXIMUM ROLLED MONTHLY
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

Condition 44: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR 227-2.5 (c)

Item 44.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00011

Regulated Contaminant(s):
CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 44.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING
Monitoring Description:
The concentration of NOx in the exhaust gas of a turbine may not exceed 177 ppmvd @ 15% O2. Compliance will be determined by emissions testing.

The owner or operator shall submit a testing protocol to the Department for approval a minimum of 90 days prior to any stack testing.

The owner or operator will maintain records on-site for a minimum of five years.

Parameter Monitored: OXIDES OF NITROGEN
Upper Permit Limit: 177 parts per million by volume
(dry, corrected to 15% O2)
Reference Test Method: 40 CFR 60 Appendix A - Method 20
Monitoring Frequency: Once every five years
Averaging Method: 1-HOUR AVERAGE
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

Condition 45: Compliance Certification
Effective between the dates of 04/28/2022 and 04/27/2027

Applicable Federal Requirement:6 NYCRR 231-6.2

Item 45.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00011

Regulated Contaminant(s):
CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 45.2:
Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:
Total NOX emissions from the turbines are limited to 16.65 tons per year (combined between the two turbines).

The facility will calculate emissions using manufacturer-provided emission factors and turbine usage data.

Data and calculations used to determine compliance with this limit must be maintained at the facility for a period of at least five years.

Parameter Monitored: OXIDES OF NITROGEN
Upper Permit Limit: 16.65 tons per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL MAXIMUM ROLLED MONTHLY
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

~~**Condition 46: Compliance Certification**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:40CFR 60.4333, NSPS Subpart KKKK**~~

~~**Item 46.1:**~~
~~The Compliance Certification activity will be performed for:~~

~~Emission Unit: U-00011~~

~~**Item 46.2:**~~

~~Compliance Certification shall include the following monitoring:~~

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~
~~The facility must operate and maintain stationary combustion turbines, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.~~

~~Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION~~
~~Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY~~

~~**Condition 47:** **Compliance Certification**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:40CFR 60.4390, NSPS Subpart KKKK**~~

~~**Item 47.1:**~~
~~The Compliance Certification activity will be performed for:~~

~~Emission Unit: U-00011~~

~~**Item 47.2:**~~
~~Compliance Certification shall include the following monitoring:~~

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~
~~If you operate an emergency combustion turbine, you are exempt from the NOx limit and must submit an initial report to the Administrator stating your case.~~

~~Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION~~
~~Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION~~

~~**Condition 48:** **Compliance Certification**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:6 NYCRR 231-6.2**~~

Item 48.1:
The Compliance Certification activity will be performed for:

Emission Unit: U-00012

Regulated Contaminant(s):
CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 48.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE
Monitoring Description:

Total NOX emissions from the cogeneration units are limited to 4.17 tons per year (combined between the four engines).

The facility will calculate emissions using emission factors/limits from 40 CFR 60 Subpart, JJJJ along with engine usage data.

Data and calculations used to determine compliance with this limit must be maintained at the facility for a period of at least five years.

(The limit in this condition is based on a potential to emit of 1.04 tons per year per unit)

Parameter Monitored: OXIDES OF NITROGEN
Upper Permit Limit: 4.17 tons per year
Monitoring Frequency: MONTHLY
Averaging Method: ANNUAL MAXIMUM ROLLED MONTHLY
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 7/30/2022.
Subsequent reports are due every 6 calendar month(s).

~~**Condition 49: Compliance Certification**~~
~~**Effective between the dates of 04/28/2022 and 04/27/2027**~~

~~**Applicable Federal Requirement:40CFR 60.4233(e), NSPS Subpart JJJJ**~~

~~**Item 49.1:**~~
~~The Compliance Certification activity will be performed for:~~

~~Emission Unit: U-00012~~

~~**Item 49.2:**~~
~~Compliance Certification shall include the following monitoring:~~

~~Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES~~
~~Monitoring Description:~~

~~The four SI ICE engines of EU: U-00012 must comply with the following emissions standards in Table 1 to NSPS JJJJ:~~

~~NOx = 1 g/BHP-hr;~~
~~CO = 2 g/BHP-hr; and~~

Appendix C: Public Notice Documents