



**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

APPLICANT

South Florida Water Management District
3301 Gun Club Road, Dept. 5640
West Palm Beach, FL 33406

South Florida Water Management District
Pump Station S-6
Facility ID No. 0990350

PROJECT

Project No. 0990350-009-AC & 0990350-010-AV
Application for Concurrent Air Construction Permit & Air Operational Permit Revision

Project: (New) EU009 Cummins 79bhp LP Generator for Emergency Backup Power for Telemetry Tower

COUNTY

Palm Beach County, Florida

PERMITTING and COMPLIANCE AUTHORITY

Florida Department of Health Palm Beach County
Division of Environmental Public Health
Air & Waste Section
800 Clematis St., 4th Floor
West Palm Beach, FL. 33401

September 3, 2015

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

The South Florida Water Management District Pump Station S-6 is an existing facility, which is categorized under Standard Industrial Classification Code No. 9511. Pump Station S-6 is located on the Hillsborough Canal where the northern corner of Water Conservation Area 2-A meets with the western edge of Water Conservation Area 1 (L-6, L-7, L-15, and L-39), near the city of Belle Glade in Palm Beach County, Florida. The UTM coordinates of the existing facility are Zone 555.231 km East, and 2928.06 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to National Ambient Air Quality Standards (NAAQS).

Facility Regulatory Categories

- The facility is not a major source of hazardous air pollutants (HAPs)
- The facility will not operate units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C. for NOx.
- The diesel engines in this facility are not subject to the Major Source NOx RACT requirements in accordance with guidance issued by the Florida Department of Environmental Protection.
- This facility is subject to NSPS (40 CFR 60, Subpart JJJJ) for new spark ignition engines.
- The facility is subject to the requirements of 40 CFR 61, Subpart M, Asbestos.
- The facility is subject to 40 CFR Part 63 Subpart ZZZZ “*National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.*”
- The facility is synthetic minor stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

The pump station S-6 consists of three identical pump and diesel engine combinations. The pumps are 144-inch vertical propeller, three 6-cylinder 1240bhp Caterpillar Model No. 3606 engines, two 252bhp diesel engines powering, two emergency electrical generators. Also included in this permit are the following unregulated emissions units which are considered insignificant:

Two 25,000-gallon aboveground storage tanks,

Four 250-gallon aboveground day tanks less than 40 cubic meters in capacity, and

Adding one 1500 gallon below ground propane tank for the new Cummins 79bhp generator with the restrictions of operation to 800 hours.

The potential emissions of criteria pollutants from the facility are limited to be below the 250 ton per year-- major source threshold.

The facility is designated as a Title V source under Rule 62-210.200, F.A.C. because the potential emissions of nitrogen oxides are greater than 100 tons per year. This permit (0990549-006-AC) limits the sulfur content of the distillate fuel to 0.0015% sulfur by weight for all Reciprocating Internal Combustion Engines (RICE) based on 40 CFR Part 63 Subpart ZZZZ regulations.

Purpose: The purpose of this air construction permit (0990350-009-AC) is to add the Cummins 79bhp LP Generator for the telemetry tower located adjacent to SFWMD Pump Station S-6 and to revise Permit No. 0990350-007-AV. The permit conditions in 0990350-009-AC will be incorporated into Permit No. 0990350-010-AV. When commercial power is not available, this generator will be used to support backup power to a data telemetry tower at this location. The potential emissions of nitrogen oxides (NOx) from the facility, with the addition of the Cummins LP Generator will be 246.72 tons per year. The potential NOx emissions from the LP generator are 0.48 tons per year. Pump station S-6 will retain its synthetic-minor source status under the Prevention of Significant Deterioration (PSD) program. This air construction permit modification updates the specific conditions of Permit No. 0990350-007-AV.

Processing Schedule

May 18, 2015: The Health Department received application for concurrent Air Construction Permit No. 0990350-009-AC and Title V Air Operation Permit Revision 0990350-010-AV.

June 19, 2015: The Health Department sent Request for Additional Information (RFI).

July 13, 2015: The Health Department received response to RFI.

PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 5 tons per year or more of lead;
- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, Portland cement plants, primary zinc smelters, iron

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and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_x); sulfur dioxide (SO₂); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM₁₀); particulate matter with a mean particle diameter of 2.5 microns or less (PM_{2.5}); volatile organic compounds (VOC); lead (Pb); fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H₂S); total reduced sulfur (TRS), including H₂S; reduced sulfur compounds, including H₂S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO₂ and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 µg/m³, 24-hour average.

If the potential emission equals or exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

Table 1 Fuel Oil Usage

Table 1 – Historical Annual Fuel Consumption

Year	Permitted Annual Fuel Consumption (Gallons)	Actual Annual Fuel Consumption (Gallons)	Actual fuel consumption as Percent of the fuel limit	Remarks
2004	920,000	141,860	15.4%	Multiple Hurricanes
2005	920,000	164,940	17.9%	Hurricane Wilma
2006	920,000	148,020	16.1%	Very Wet Rainy Season
2007	920,000	80,568	8.8%	
2008	920,000	167,365	18.2%	Tropical Storm Fay
2009	920,000	171,616	18.7%	Very Wet Rainy Season
2010	920,000	94,082	10.2%	
2011	920,000	78,513	8.5%	
2012	751,166*	127,987	17.0%	Very Wet Rainy Season
2013	751,666	134,662	17.9%	Very Wet Rainy Season
2014	751,666	186,400	24.8%	Very Wet Rainy Season

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{Technical Evaluation Note:} *in 2012, The fuel limit is changed to 751,166 gallons per year. The applicant requested that the manufacturer's emission factor for the pump engines (0.035 lb/hp-hr, or 4.69 lb/mmbtu) be used for the estimation of NOx emissions. Use of the manufacturer's emission factor is equivalent to a fuel use of 751,166 gallons per year. }

Pump station S-6 will retain its synthetic-minor source status under the Prevention of Significant Deterioration (PSD) program. Other pollutants associated with the fuel combustion, including sulfur dioxide, carbon monoxide, particulate matter (TSP and PM10), and volatile organic compounds, will also be indirectly capped at levels of less than 50% of the PSD Major Source thresholds. In Table 1, the historical annual fuel consumption shows that the highest fuel consumption was in 2014 at 186,400 gallons and was **24.8% of the fuel consumption permit limit of 751,166 gallons**.

The project is located in Palm Beach County which is in an area that is currently in attainment with the NAAQS or is otherwise designated as unclassifiable. The proposed project will not increase emissions for any PSD pollutant; therefore, the project is not subject to a PSD preconstruction review.

Table 2 - Summary of Potential-to-Emit (PTE) Pump Station S-6. PTE calculation is based on 751,166 gallons/yr.

Pollutant	Emission Factors LB/MMBTU AP-42 Table 3.4-1 thru 3.4-4 & Table 3.3-1 thru and 3.3-2	Maximum Hours of Operation Pump Engines/ Generators	Potential Emissions (TPY) Pump Engines/ Generators	Emission Factors LB/MMBTU LP Generator	Maximum Hours of Operation LP Generator	Potential Emissions (TPY) LP Generator	Total Potential Emissions (TPY)
Nitrogen Oxide	4.69 ¹ /4.41	3700/500	242.07/4.17	1.78 ²	800	0.48	246.72
Carbon Monoxide	0.85/0.95	3700/500	43.87/0.90	12.94 ²	800	3.49	48.26
Particulate Matter	0.1/0.31	3700/500	5.16/0.29	0.00991	800	0.0027	5.46
PM 10	0.0573/0.31	3700/500	2.96/0.29	0.0000771	800	0.0000	3.25
Volatile Organic Compounds	0.0819/0.35	3700/500	4.23/0.33	0.39 ²	800	0.10	4.66
Sulfur Dioxide	0.00152/0.29	3700/500	0.08/0.27	0.000588	800	0.0002	0.35
Benzene	0.000776/0.000933	3700/500	0.0401/0.000882	0.000440	800	0.00	0.00411
Toluene	0.000281/0.000409	3700/500	0.0145/0.000387	0.000408	800	0.0001	0.015
Xylene	0.000193/0.000285	3700/500	0.00996/0.000296	0.000184	800	0.0000	0.0103
Formaldehyde	0.0000789/0.00113	3700/500	0.00407/0.00112	0.0528	800	0.0143	0.0194
Acetaldehyde	0.0000252/0.000767	3700/500	0.0013/0.000725	0.00836	800	0.0023	0.0043
Acrolein	0.00000788/0.0000925	3700/500	0.000407/0.0000874	0.00514	800	0.0014	0.0019
PAH	0.000212/0.000168	3700/500	0.0109/0.000159	0.0000269	800	0.0000	0.0111
Total HAPs	0.001/0.004	3700/500	0.08/0.004	0.067	800	0.0182	0.10

¹ Manufacturer's emission factor for pump engines.

² Manufacturer's emission factor for Cummins 79bhp LP Generator.

Note: Heat input from each pump engines = 9.3 mmbtu/hr; heat input from each diesel generator = 1.89 mmbtu/hr; heat input from LP generator = 0.68 mmbtu/hr.

3. DEPARTMENT REVIEW

The purpose of this air construction permit (0990350-009-AC) is to add the Cummins 79bhp (50Kw) LP Generator for the telemetry tower located adjacent to SFWMD Pump Station S-6. The permit conditions in 0990350-009-AC will be incorporated into Permit No. 0990350-010-AV. The LP generator will be subject to the requirements in 40 CFR 63 Subpart ZZZZ and 40 CFR 60 Subpart JJJJ for **new** spark ignition engines. The LP generator must comply with EPA's emission standards for stationary (Spark Ignition) SI ICE.

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Table 1 to Subpart JJJJ of Part 60—NO_x, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and **Stationary Emergency Engines >25 HP**

Engine Type and Fuel	Maximum Engine Power	Manufacture Date	Emission Standards	
			g/HP-hr	
			NO _x ^a	CO
Emergency LP	25<HP<130	1/1/2009	10 ^b	387 ^c

^aThe emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NO_x + HC.

^bCummins Manufacturer certification of guarantee: NO_x+HC is 8.4 g/HP-hr.

^cCummins Manufacturer certification of guarantee: CO is 50.2 g/HP-hr.

State Requirements

This facility is subject to the following regulations: Florida Administrative Code Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297.

Federal NSPS Provisions

This proposed LP generator is subject to NSPS (40 CFR 60, Subpart JJJJ) for **new** spark ignition engines

Federal NESHAP Provisions

The pump engines and all generators are subject to 40 CFR Part 63 Subpart ZZZZ “National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.”

Other Draft Permit Requirements

This proposed stationary Cummins 79bhp (50Kw) generator is an manufacturer certified SI internal combustion engine and must be operated in accordance to the manufacturer's emission-related written instructions. Records of maintenance must be maintained to demonstrate certification of compliance, but no performance testing is required. The permittee must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and monitor the fuel consumption, and hours of operation of the LP generator engine in a manner consistent with good air pollution control practice for minimizing emissions.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Paul Kalamaras is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Florida Department of Health Palm Beach County, 800 Clematis St., 4th Floor, West Palm Beach, FL, 33401, phone (561) 837-5946, or by email at paul.kalamaras@flhealth.gov.