Facility Name: City:	CII Methane Manaş Winterville	gement l	II LFGTE Project	
County:	Clarke			
AIRS #:	04-13-059-00102			
	Application #:	TV-6	52948	
Date A	pplication Received:	May	12, 2022	
	Permit No:	4911-	-059-0102-V-04-0	
Program	Review Engine	ers	Review	Mana

Program	Review Engineers	Review Managers
SSPP	Jada Levers	Cynthia Dorrough
ISMU	Bob Scott	Dan McCain
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Permitting Program Manager		Steve Allison

Introduction

This narrative is being provided to assist the reader in understanding the content of referenced operating permit. Complex issues and unusual items are explained here in simpler terms and/or greater detail than is sometimes possible in the actual permit. The permit is being issued pursuant to: (1) Georgia Air Quality Act, O.C.G.A § 12-9-1, et seq. and (2) Georgia Rules for Air Quality Control, Chapter 391-3-1, and (3) Title V of the Clean Air Act. Section 391-3-1-.03(10) of the Georgia Rules for Air Quality Control incorporates requirements of Part 70 of Title 40 of the Code of Federal Regulations promulgated pursuant to the Federal Clean Air Act. The narrative is intended as an adjunct for the reviewer and to provide information only. It has no legal standing. Any revisions made to the permit in response to comments received during the public participation and EPA review process will be described in an addendum to this narrative.

I. Facility Description

- A. Facility Identification
 - 1. Facility Name: CII Methane Management III LFGTE Project
 - 2. Parent/Holding Company Name

Athens-Johnston Renewables, LLC

3. Previous and/or Other Name(s)

CII Methane Management III LFGTE Plant

4. Facility Location

5700 Lexington Highway Winterville, Georgia 30605

5. Attainment, Non-attainment Area Location, or Contributing Area

The LFGTE Project is located in Clarke County, which is an attainment area for all criteria pollutants.

B. Site Determination

CII Methane Management III LFGTE Project is a landfill gas to energy (LFGTE) power generation plant that is located at the existing Athens-Clarke County MSW Landfill, an operating municipal solid waste landfill. Athens-Clarke County MSW Landfill operates under Title V Permit No. 4953-059-0084-V-05-0. The LFGTE Project utilizes landfill gas (LFG) generated by the landfill as fuel. The LFGTE Project is owned and managed separately from the landfill. There is no connection between the owners of the LFGTE Project, Athens-Johnston Renewables, LLC, and the owners of the landfill, Unified Government of Athens-Clarke County. The two operations are adjacent, contiguous, and considered under common control due to interdependence. EPD has determined that the landfill and the LFGTE Project are one site with regard to Title V and New Source Review. Each facility will have a separate AIRS number; the LFGTE Project (AIRS: 059-00102) will operate under this Title V operating permit, and the landfill (AIRS: 059-00084) will continue to operate under its current Title V permit.

C. Existing Permits

Table 1 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to the facility, based on a comparative review of form A.6, Current Permits, of the Title V application and the "Permit" file(s) on the facility found in the Air Branch office.

Table 1: List of Current Permits, Amendments, and Off-Permit Changes						
Permit Number and/or	Date of Issuance/	Purpose of Issuance				
Off-Permit Change Effectiveness						
4911-059-0102-03-0	November 15, 2017	Title V Renewal				

Table 1: List of Current Permits, Amendments, and Off-Permit Changes

D. Process Description

1. SIC Codes(s)

4911

The SIC Code(s) identified above were assigned by EPD's Air Protection Branch for purposes pursuant to the Georgia Air Quality Act and related administrative purposes only and are not intended to be used for any other purpose. Assignment of SIC Codes by EPD's Air Protection Branch for these purposes does not prohibit the facility from using these or different SIC Codes for other regulatory and non-regulatory purposes.

Should the reference(s) to SIC Code(s) in any narratives or narrative addendum previously issued for the Title V permit for this facility conflict with the revised language herein, the language herein shall control; provided, however, language in previously issued narratives that does not expressly reference SIC Code(s) shall not be affected.

2. Description of Product(s)

Landfill gas to energy (LFGTE) plant used for electric power generation.

3. Overall Facility Process Description

MSW Landfill:

The landfill receives municipal and industrial solid waste. The solid waste is deposited into the landfill disposal cells. The decomposition of the deposited waste produces landfill gas from biological activity within the disposed wastes, which consists mainly of methane and carbon dioxide, but contains trace organic compounds including hazardous air pollutants and volatile organic compounds. The MSW landfill facility was previously subject to the provisions of 40 CFR 60 Subpart WWW but will now be subject to the provisions of 40 CFR 60 Subpart XXX. On February 1, 2013, Athens-Clarke County MSW Landfill applied for Major Modification for cell expansion that was approved in February 2013. The landfill did not begin construction of the approved Phase V (Cells 1A & 1B) until January 8, 2019. Based on this information, the landfill has been modified after July 17, 2014, and has a design capacity exceeding 2.5 m³, therefore subjecting the landfill to the requirements of 40 CFR 60 Subpart XXX. The landfill is currently not required to install a gas collection and control system (GCCS), based on NMOC Tier 2 calculations. Furthermore, the landfill facility operates a voluntary landfill GCCS with a blower

and an open utility flare. The captured landfill gas is utilized by CII Methane Management III LFGTE Project for use as engine fuel as a renewable energy source to produce electricity. The landfill also operates a bio-solids (wastewater sludge) and yard trimmings composting operation at the facility.

Potential NOx emissions from LFG combusted in the flare were calculated using manufacturer's guarantee emission factor (0.068 lb/MMBtu) and the maximum flow capacity of the flare (1,250 scfm) which is greater than the maximum LFG generated by the landfill. (12.02 tons per year)

Potential CO emissions were calculated using manufacturer's guarantee emission factor (0.37 lb/MMBtu) and the maximum flow capacity of the flare (1,250 scfm) which is greater than the maximum LFG generated by the landfill. (61.66 tons per year)

LFGTE Project:

The LFGTE Project receives landfill gas (LFG) produced from the decomposition of deposited waste collected using the voluntary GCCS. The LFGTE Project operates one generator set consisting of a four-stroke, lean burn, spark ignition (SI) internal combustion engine (ICE) [Caterpillar model G3520C, 1600 kW electrical (kWe) rated at 2,233 brake horsepower (bhp) combusting LFG as fuel]. The LFGTE Project can consume 545 scfm of LFG.

Potential NOx emissions from LFG combusted in the generator are calculated based on 40 CFR 60 Subpart JJJJ (2.0 g/bhp-hr or 9.84 lb/hr) for 5,088 hours per year (non-ozone season) and Georgia Rule (mmm) (80 ppm or 4.92 lb/hr) for 3672 hours per year (ozone season). (34.06 tons per year)

Potential CO emissions were calculated using the manufacturer's emission factor of 3.90 g/bhp-hr and 8760 hours per year for a potential emission rate of 84.09 tons per year. This calculation is higher than the AP-42 potential (37.01 tons per year) calculated using Chapter 2.4 MSW Landfills, Table 2.4-5 "Emission Rates for Secondary Compounds Exiting Control Devices" for IC Engines, and lower than the Subpart JJJJ allowable (107.7 tons per year) for 8760 hour per year of operation.

MSW Landfill and LFGTE Project Site:

Potential site-wide emissions from the MSW Landfill and the LFGTE Project combined are shown below (the following values have been taken from Application No. 652948). Landfill gas cannot be burned by both facilities.

Pollutant	MSW Landfill LFGTE Project		Site-Wide		
	Potential Emissions	Potential Emissions	Potential Emissions		
	(tons/yr)	(tons/yr)	(tons/yr)		
PM	2.84	3.81	6.65		
PM _{2.5}	2.55	-	2.55		
NO _x	12.02	34.06	46.08		
SO ₂	2.10	1.10	19.63		
CO	61.66	84.09	145.75		
VOC	2.05	21.56	23.61		
HAPs*	1.26	0.45	1.71		

Table 1a: CII Methane Management III LFGTE and MSW Landfill Potential to Emit

4. Overall Process Flow Diagram

The facility provided a process flow diagram in their Title V permit application.

- E. Regulatory Status
 - 1. PSD/NSR

Clarke County is an attainment area for all criteria pollutants. All potential emissions from the facility are less than the PSD major source threshold of 250 tpy, therefore, the facility is a minor source with respect to PSD regulations. Please note that Athens-Clarke County MSW Landfill and CII Methane Management III LFGTE Project are not included in the list of 28 source categories that have a 100 tpy threshold to be subject to PSD regulations.

2. Title V Major Source Status by Pollutant

	Is the	If emitted, what is the facility's Title V status for the pollutant?					
Pollutant	Pollutant Emitted?	Major Source Status	Major Source Requesting SM Status	Non-Major Source Status			
PM	yes			\checkmark			
PM10	n/a						
PM _{2.5}	yes			\checkmark			
SO ₂	yes			\checkmark			
VOC	yes			\checkmark			
NO _x	yes			\checkmark			
СО	yes			\checkmark			
TRS	n/a						
H_2S	n/a						
Individual HAP	yes			\checkmark			
Total HAPs	yes			\checkmark			

Table 2: Title V Major Source Status

3. MACT Standards

Potential HAPs emissions from the MSW landfill and the LFGTE Project combined site are less than the major source thresholds of 10 tpy for a single HAP and 25 tpy for a combination of HAPs. The combined site is a true area source of HAPs.

<u>40 CFR 63 Subpart AAAA – National Emission Standards for Hazardous Air Pollutants:</u> <u>Municipal Solid Waste Landfills</u>

Subpart AAAA applies to a landfill that has accepted waste after November 6, 1987, and is a major source of HAPS, is collocated with a major source of HAPS, or is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters

(m³) and has estimated uncontrolled NMOC emissions equal to or greater than 50 megagrams per year (Mg/yr). Athens-Clarke County MSW Landfill is not a major source of HAPS, collocated with a major source of HAPS, nor are the nonmethane organic compounds (NMOC) emissions equaling or exceeding 50 Mg/yr based on Tier 2 testing done February 13, 2019 (7.75 Mg/yr for 2018). The combined site is a true area source for HAPs because potential emissions of HAPs from the combined site are less than the major source thresholds of 10 tpy for a single HAP and 25 tpy for a combination of HAPs. The landfill will currently not be subject to Subpart AAAA.

The landfill becomes subject to the GCCS requirements in 40 CFR 60 Subpart XXX when the NMOC emissions from the landfill equal or exceed 50 Mg/yr. The Landfill must then comply with the requirements of Subpart AAAA by the date on which it is required to install a GCCS. If the landfill begins adding liquids, other than leachate, in a controlled fashion to the waste mass, it will trigger Subpart AAAA provisions for a bioreactor.

<u>40 CFR 63 Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for</u> <u>Stationary Reciprocating Internal Combustion Engines</u>

The LFGTE Project engine (ID No.: ES-1) is a 4-stroke, lean-burn, water-cooled gas engine with an electronic control module that handles all engine functions: ignition, governing, air-to-fuel ratio control, and engine protection. The engine is coupled with a 1600 kW electrical power generator set.

ES-1 is subject to 40 CFR Part 63 Subpart ZZZZ, "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)", which is applicable to owners and operators of stationary RICE at a major or area source of HAP emissions. According to 40 CFR 63.6590(a)(2)(iii), ES-1 is defined as a new stationary RICE at an area source of HAPs since construction/installation commenced in 2012, which is after the June 12, 2006 provision date.

Per 40 CFR 63.6590(c) "Stationary RICE subject to regulation under 40 CFR Part 60," an affected source that is a new or reconstructed stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR Part 60 Subpart JJJJ for spark ignition engines. Therefore, the LFGTE engine is subject to Subpart ZZZZ, but is required to comply with 40 CFR Part 60 Subpart JJJJ requirements. There are no other applicable Subpart ZZZZ requirements.

4. Program Applicability (AIRS Program Codes)

Program Code	Applicable (y/n)		
Program Code 6 - PSD	no		
Program Code 8 – Part 61 NESHAP	no		
Program Code 9 - NSPS	yes		
Program Code M – Part 63 NESHAP	yes		
Program Code V – Title V	yes		

Regulatory Analysis

II. Facility Wide Requirements

A. Emission and Operating Caps:

None applicable.

B. Applicable Rules and Regulations

Not applicable.

C. Compliance Status

The facility did not indicate any compliance issues in its application.

D. Permit Conditions

None Applicable.

III. Regulated Equipment Requirements

A. Equipment List for the Process

Emission Units		Applicable	Air Pollution Control Devices			
ID No.	Description	Requirements/Standards	ID No.	Description		
ES-1	Landfill Gas Engine 1	40 CFR 60 Subpart A	ES1S	Vertical Exhaust Stack with		
	[Spark Ignition (SI) Internal	40 CFR 60 Subpart JJJJ		Rain Cap		
	Combustion Engine (ICE)]	40 CFR 63 Subpart A		_		
		40 CFR 63 Subpart ZZZZ				
	Caterpillar G3520C Gas	391-3-102(b)				
	Generator Set, rated at 2,233	391-3-102(g)				
	bhp and 1600 kWe,	391-3-102(mmm)				
	(DM5859)					

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards are intended as a compliance tool and may not be definitive.

B. Equipment & Rule Applicability

The following changes in the renewal will reflect any pertinent amendments made to 40 CFR 60 Subpart JJJJ on June 29, 2021, and any pertinent amendments made on August 10, 2022.

Emission and Operating Caps:

Engine type and fuel	Marimum	Monufacture	Emission Standards*					
		Manufacture	g/HP-hr ppmvd at 15% (5% O ₂
	пг	uate	NOx CO VOC*	VOC**	NOx	CO	VOC**	
Landfill/Digester Gas	HP ≥500	After 7/1/2010	2.0	5.0	1.0	150	610	80

Emission Standards from Table 1 of 40 CFR 60 Subpart JJJJ

*Owners of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O₂.

**For the purpose of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.

The LFGTE Project will be in compliance with NSPS standards since the engine will emit 1.0 g/HP-hr of NOx, per manufacturers guarantee. In order to demonstrate compliance with these emission standards, 40 CFR 60.4243(b) requires that the facility either purchase an engine certified according to specified procedure or purchase a non-certified engine and demonstrate compliance according to all applicable requirements of Subpart JJJJ [emission standards specified in §60.4233 (d) or (e), requirements of §60.4244 and §60.4243(b)(2)(ii)]. Annual testing for NOx, VOC and CO is required.

Rules and Regulations Assessment:

Georgia Rule 391-3-1-.02(2)(b) Visible Emissions

Rule (b) limits the opacity of gases emitted from any air contaminant source to not exceed forty (40) percent. This rule is applicable to the generator as it is not subject to any other visible emission

limitation. No visible emissions are anticipated from the engine (ID. No. ES-1) as it only combusts LFG.

Georgia Rule 391-3-1-.02(2)(g) Sulfur Dioxide

Rule (g) restricts the maximum fuel sulfur content to 2.5 wt.% for any fuel burning source with maximum heat input below 100 MMBtu/hr. This rule is applicable to the engine (ID. No. ES-1). The engine easily complies with this rule, since it only combusts LFG that has negligible sulfur content.

<u>Georgia Rule 391-3-1-.02(2)(mmm) NOx Emissions from Stationary Gas Turbines and Stationary</u> <u>Engines used to Generate Electricity</u>

Rule (mmm) limits NOx emissions from any stationary gas turbine or any stationary engine used to generate electricity whose name capacity is greater than or equal to 100 kilowatts (KW) and is less than or equal to 25 megawatts (MW), to 80 ppm NOx at 15% O_2 , dry basis. This emission standard applies from May 1 through September 30 of each year (ozone season). The NOx and O_2 measurements are required to be done March 1 through May 1 each year. The engine (ID No.: ES-1) is rated at 1600 kW and therefore subject to Rule (mmm). Annual NOx monitoring is required. The most recent performance test was conducted on April 12, 2022 which determined a NOx concentration of 16.2 ppm.

40 CFR 63 Subpart ZZZZ

Subpart ZZZZ establishes emission and operating limitations for HAPs from RICE located at major and area sources of HAP emissions. The engine (ID No.: ES-1) is subject to this rule because it is considered a new or reconstructed stationary RICE located at an area source, commencing construction on or after June 12, 2006. ES-1 will meet the requirements of this subpart by meeting the requirements of 40 CFR 60 Subpart JJJJ for spark ignition engines.

40 CFR 60 Subpart JJJJ

Subpart JJJJ applies to the engine (ID No.: ES-1) because it is a spark ignition (SI) internal combustion engine (ICE) manufactured on or after July 1, 2007, greater than 500 HP that commenced construction after June 12, 2006. The engine was manufactured after July 1, 2010, and is subject to emission standards for NOx, CO, and VOC.

C. Permit Conditions

Condition 3.3.1 requires the Permittee to comply with all the applicable general provisions of 40 CFR Subpart A and Subpart JJJJ.

Condition 3.3.2 establishes the applicability of 40 CFR 63 Subpart A and Subpart ZZZZ.

Condition 3.3.3 requires that the Permittee comply with the emission limits for NOx, CO and VOC as set forth by 40 CFR 60 Subpart JJJJ. Note that, per Table 1 of this rule, "For purposes of this Subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included."

Condition 3.3.4 requires the Permittee to operate the engine generator set (ID No.: ES-1) in a manner consistent with good air pollution control practice for minimizing emissions, per 60.4244(b)(2)(ii).

Condition 3.4.1 establishes the Rule (b) opacity limit of 40 percent applicable to ES-1.

Condition 3.4.2 establishes the Rule (g) sulfur in fuel limit of 2.5 percent by weight as applicable to ES-1.

Condition 3.4.3 establishes the Rule (mmm) emission standards for stationary engines during the ozone season from May 1 to September 30 each year.

IV. Testing Requirements (with Associated Record Keeping and Reporting)

A. General Testing Requirements

The permit includes a requirement that the Permittee conduct performance testing on any specified emission unit when directed by the Division. Additionally, a written notification of any performance test(s) is required 30 days (or sixty (60) days for tests required by 40 CFR Part 63) prior to the date of the test(s) and a test plan is required to be submitted with the test notification. Test methods and procedures for determining compliance with applicable emission limitations are listed and test results are required to be submitted to the Division within 60 days of completion of the testing.

B. Specific Testing Requirements

Condition 4.2.1 requires the Permittee to conduct performance tests on the engine generator set (ID No.: ES-1) every 8,760 operating hours or 3 calendar years, whichever comes first, to demonstrate compliance with NOx, CO and VOC emissions limitations in 40 CFR 60 Subpart JJJJ.

Condition 4.2.2 specifies procedures to be followed for conducting performance testing and determining compliance, per section 60.4244 of 40 CFR 60 Subpart JJJJ.

V. Monitoring Requirements

A. General Monitoring Requirements

Condition 5.1.1 requires that all continuous monitoring systems required by the Division be operated continuously except during monitoring system breakdowns and repairs. Monitoring system response during quality assurance activities is required to be measured and recorded. Maintenance or repair is required to be conducted in an expeditious manner.

B. Specific Monitoring Requirements

Athens-Clarke County MSW Landfill is subject to 40 CFR 60 Subpart XXX, but the LFG gas collection and control system (GCCS) and flare are not required by regulation under this subpart. Therefore, the LFGTE Project is not subject to specific monitoring under Subpart XXX since NMOC emissions are not expected to ever exceed 50 Mg/yr.

Although the purpose of the installation of engine/generator is to produce power from LFG, the landfill gas engine also destroys NMOC in the LFG. The engine must be operated properly to provide adequate monitoring to ensure the destruction of NMOCs in LFG by the IC engine (this is not required by Subpart XXX) and also to make sure that criteria air pollutants emissions are minimized. Please note that if LFG is not treated before combustion in the engine, the engine will be subject to the monitoring requirements of Subpart XXX upon requirement to control LFG.

Condition 5.2.1 requires the Permittee install and operate monitoring devices on the engine generator set (ID No. ES-1).

Condition 5.2.2 requires that NO_x and O_2 emissions be monitored during May 1 through September 30 each year to comply with GA Rule (mmm). Test measurements shall be performed between March 1 and May 1 of each calendar year.

C. Compliance Assurance Monitoring (CAM)

Not Applicable.

VI. Record Keeping and Reporting Requirements

A. General Record Keeping and Reporting Requirements

The Permit contains general requirements for the maintenance of all records for a period of five years following the date of entry and requires the prompt reporting of all information related to deviations from the applicable requirements. Records, including identification of any excess emissions, exceedances, or excursions from the applicable monitoring triggers, the cause of such occurrence, and the corrective action taken, are required to be kept by the Permittee and reporting is required on a semiannual basis.

B. Specific Record Keeping and Reporting Requirements

Condition 6.2.1 requires the Permittee to comply with the notification, reporting and recordkeeping requirements, per 40 CFR 60.4245 and 40 CFR 60.4246 for the engine. This condition was modified to remove initial startup notification requirement.

Condition 6.2.2 requires the Permittee to submit a semiannual report regarding times when LFG is not being used in the engine generator set (ID No. : ES-1) and when ES-1 is not in operation for periods exceeding 1 hour.

VII. Specific Requirements

- A. Operational Flexibility
 - None Applicable.
- B. Alternative Requirements
 - None Applicable.
- C. Insignificant Activities

See Permit Application on GEOS website. See Attachment B of the permit

- D. Temporary Sources
 - None Applicable.
- E. Short-Term Activities
 - None Applicable.
- F. Compliance Schedule/Progress Reports
 - The facility did not indicate any compliance issues in their application.
- G. Emissions Trading
 - Not Applicable.
- H. Acid Rain Requirements
 - None Applicable.
- I. Stratospheric Ozone Protection Requirements

The facility has indicated that they are subject to Title VI.

- J. Pollution Prevention
 - Not Applicable.
- K. Specific Conditions
 - Not Applicable.

VIII. General Provisions

Generic provisions have been included in this permit to address the requirements in 40 CFR Part 70 that apply to all Title V sources, and the requirements in Chapter 391-3-1 of the Georgia Rules for Air Quality Control that apply to all stationary sources of air pollution.

Template Condition 8.14.1 was updated in September 2011 to change the default submittal deadline for Annual Compliance Certifications to February 28.

Template Condition Section 8.27 was updated in August 2014 to include more detailed, clear requirements for emergency generator engines currently exempt from SIP permitting and considered insignificant sources in the Title V permit.

Template Condition Section 8.28 was updated in August 2014 to more clearly define the applicability of the Boiler MACT or GACT for major or minor sources of HAP.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//