

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date: xx/xx/2020

Region: Mooresville Regional Office
County: Catawba
NC Facility ID: 1800488
Inspector's Name: Jim Vanwormer
Date of Last Inspection: 10/09/2019
Compliance Code: 3 / Compliance - inspection

Facility Data	Permit Applicability (this application only)
<p>Applicant (Facility's Name): Blackburn Sanitary Landfill</p> <p>Facility Address: Blackburn Sanitary Landfill 3993 Rocky Ford Road Newton, NC 28658</p> <p>SIC: 4953 / Refuse Systems NAICS: 562212 / Solid Waste Landfill</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>	<p>SIP: 15A NCAC 02D .0516, 02D .0521, 02D .0524, 02D .1110, 02D .1111, 02D .1806 NSPS: Subpart XXX NESHAP: 40 CFR 63 Subparts AAAA and ZZZZ; 40 CFR 61, Subpart M PSD: N/A PSD Avoidance: N/A NC Toxics: N/A 112(r): N/A Other: Major Source of HAPs</p>

Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	
Rodney Hamby Landfill Superintendent (704) 462-1348 PO Box 389 Newton, NC 28658	Mick Berry County Manager (828) 465-8201 PO Box 389 Newton, NC 28658	Rodney Hamby Landfill Superintendent (704) 462-1348 PO Box 389 Newton, NC 28658	<p>Application Number: 1800488.17A, .18A, .19A Date Received: 11/01/2017, 06/15/2018, 10/29/2019 Application Type: Renewal and Modification Application Schedule: TV-Renewal</p> <p style="text-align: center;">Existing Permit Data</p> <p>Existing Permit Number: 08533/T10 Existing Permit Issue Date: 04/09/2014 Existing Permit Expiration Date: 03/31/2019</p>

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	1.06	25.01	24.42	64.52	1.54	18.68	12.87 [Formaldehyde]
2018	1.56	22.86	14.80	52.34	4.52	17.71	13.40 [Formaldehyde]
2017	1.69	26.67	13.38	51.24	5.14	20.54	16.38 [Formaldehyde]
2016	1.74	26.47	11.65	55.29	5.16	18.41	14.59 [Formaldehyde]
2015	2.22	34.76	5.71	69.57	6.74	2.90	1.16 [Hydrogen chloride (hydrochlori)]

<p>Review Engineer: Joshua L. Harris</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p style="text-align: center;">Comments / Recommendations:</p> <p>Issue: 08533/T11 Permit Issue Date: xx/xx/2020 Permit Expiration Date: xx/xx/2025</p>
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1. Purpose of Application

The Blackburn Sanitary Landfill is an active municipal solid waste (MSW) landfill, located in Newton, Catawba County. The landfill submitted the following applications:

- Application No. 1800488.17A – Significant modification application to classify the facility as a major source of hazardous air pollutants (HAPs) due to formaldehyde emissions, and to remove sources that were previously permitted but not installed;
- Application No. 1800488.18A – Application for renewal;
- Application No. 1800488.19A – Significant modification application to include recently triggered NSPS XXX regulations.

These applications will be consolidated and processed under renewal Application No. 1800488.18A. The applications will go through the 30-day public notice and 45-day EPA review periods prior to issuance of a revised permit.

The facility contact for this application is Rodney Hamby, Landfill Superintendent, (phone: 704-462-1348). The landfill utilized a consultant, CDM Smith, Inc., for the submittal of the permit application. The contacts at CDM Smith are Aaron Weispfenning, Environmental Engineer, (phone: 919-325-3532), and Bridget Wlosek, Environmental Engineer, (phone: 704-342-4546).

2. Facility Description

The Blackburn Sanitary Landfill is an MSW landfill facility, located in Newton, Catawba County, consisting of one non-active, unlined landfill (ID No. ES-1), and one active, lined Subtitle D landfill (ID No. ES-2). The landfill operates under Solid Waste Permit No. 1803 and has a permitted design capacity greater than 2.5 million Mg and 2.5 million cubic meters. The landfill's uncontrolled non-methane organic compound (NMOC) emission rate exceeds the 50 Mg/yr threshold, and the landfill operates a gas collection and control system (GCCS) as required by NSPS XXX and MACT AAAA. Collected gas is routed either to a 1,600 SCFM open flare (ID No. CD-11) or through a treatment system (ID No. CD-Treatment) that sends the gas to three LFG-fired gensets (ID Nos. ES-8, ES-9, and ES-10), which are operated in parallel.

3. Application Chronology

- 10/30/17 The Division of Air Quality (DAQ), Mooresville Regional Office (MRO), received the permit modification application, Application No. 1800488.17A, and forwarded a copy to the Raleigh Central Office (RCO). The application contained the required forms, and there was no request for confidentiality. The application included the required \$929 modification fee.
- 11/01/17 RCO received the permit application.

- 11/06/17 RCO sent the facility a letter acknowledging receipt of the complete permit application 1800488.17A.
- 11/16/17 Multiple emails exchanged between Charlie Yirka and Aaron Weispfenning regarding
Through MACT/NSPS applicability, rebuild schedule, rebuild cost, and formaldehyde concerns
07/25/18 for the LFG-fired gensets. Mr. Yirka also raised the issue of formaldehyde emissions
appearing to exceed the AAL based on previous modeling.
- 02/27/18 Aaron Weispfenning submitted a letter, electronically, to DAQ which included an
analysis of the cost of rebuilds as well as an analysis of the applicable regulations.
- 06/15/18 DAQ received application No. 1800488.18A submitted for permit renewal. The
application appeared to be complete for processing.
- 06/19/18 RCO sent the facility a letter acknowledging receipt of the complete permit application
1800488.18A.
- 07/25/18 Charlie Yirka sent Aaron Weispfenning an email with DAQ's determination regarding
MACT and NSPS applicability regarding the landfill's LFG-fired gensets. Mr. Yirka
stated that DAQ's position is that the gensets are subject to MACT Subpart ZZZZ and
are not subject to NSPS Subpart JJJJ.
- 02/26/19 Application No. 1800488.17A reassigned to Joshua Harris.
- 03/13/19 Joshua Harris received a phone call from Bridget Wlosek regarding status of
Application No. 1800488.18A, submitted for renewal. Mr. Harris explained that the
application was on hold until the issues surrounding the modification application
(1800488.17A) are resolved. Mr. Harris also explained that the application shield was
intact since the application was timely received.
- After speaking with Ms. Wlosek, Mr. Harris sent an email to Aaron Weispfenning and
Ms. Wlosek requesting info necessary to move forward with the review of Application
No. 1800488.17A.
- 03/22/19 Joshua Harris had a conversation with Aaron Weispfenning regarding the status of
permit application 1800488.17A.
- 04/26/19 Joshua Harris spoke with Aaron Weispfenning regarding setting up a conference call
with DAQ, CDM Smith, and Catawba County Management.
- 04/30/19 Joshua Harris received a phone call from Aaron Weispfenning and Disha Shah. Mr.
Weispfenning requested that Mr. Harris send an agenda-like document prior to having
a conference call; Mr. Harris agreed and will send a primer via email before the call
takes place. Ms. Shah had questions regarding modeling. Mr. Harris responded that
DAQ had not conducted its own modeling, and that formaldehyde emissions were
currently being evaluated based on modeling that was previously submitted by the
facility. Ms. Shah stated that CDM Smith may run updated modeling to eliminate old
sources that are no longer planned to be installed.

05/08/19 A conference call was held to discuss formaldehyde emissions from the LFG-fired generators. Present from DAQ were Booker Pullen, Steve Hall, Joshua Harris, Melinda Wolanin, and Joe Foutz. Present from Catawba County was Rodney Hamby. Present from CDM Smith were Martin Sanford, Aaron Weispfenning, Disha Shah, and John Pearson.

The landfill intends to conduct updated modeling to account for changes to installed equipment. Additionally, Mr. Pearson stated that the initial modeling was conducted using conservatively low values for the stack exit velocities. Ms. Shah asked if Mr. Harris needs to review a draft of the modeling protocol that CDM Smith will submit. Mr. Harris responded that a draft isn't necessary and explained the modeling protocol review process.

Briefly discussed were the possibility of testing and that there are other options that may or may not be feasible for the landfill to undertake. Finally, prior to ending the call, Mr. Harris requested that the horsepower rating of the engines themselves, rather than the electrical generation capacity, be verified prior to recalculating any emission rates.

06/20/19 Joshua Harris received an email from Disha Shah with a modeling protocol attached.

07/12/19 Mark Yoder replied to Disha Shah with comments on the modeling protocol.

07/25/19 Joshua Harris received an email from Disha Shah with an electronic copy of the modeling analysis, she will also be sending a hardcopy.

07/29/19 Construction commenced on the Phase 2 expansion, triggering applicability of NSPS Subpart XXX.

08/02/19 Joshua Harris spoke with Aaron Weispfenning who had questions regarding NSPS XXX applicability. The conversation centered around the triggering events. Mr. Harris stated DEQ's stance on how an increase in design capacity is defined based on applicability determinations made by EPA. Mr. Weispfenning stated that he will have further internal conversations and that he will follow-up with Mr. Harris.

Mr. Harris forwarded a copy of applicability determination Control No. 1000047 to Mr. Weispfenning.

08/06/19 Joshua Harris spoke with Aaron Weispfenning who had questions regarding the required actions and permit application process for the landfill since it appears to have triggered NSPS Subpart XXX.

08/14/19 Mark Yoder completed the review of the toxics modeling and issued a memo stating that the submitted analysis appeared to demonstrate compliance for formaldehyde emissions from the facility's LFG-fired engines.

- 10/29/19 Mooresville Regional Office (MRO), received Application No. 1800488.19A, submitted for a significant permit modification, and forwarded a copy to the Raleigh Central Office (RCO). The application contained the required forms, and there was no request for confidentiality. No fees were required for this application since it was made due to a change in regulations. This application will be consolidated and processed under Application No. 1800488.18A.
- 11/01/19 RCO sent the facility a letter acknowledging receipt of the complete application No. 1800488.19A.
- 12/12/19 Joshua Harris sent Aaron Weispfenning an email regarding the methods used to make the NOx emission calculations. The NOx emission rates appear to have been calculated using inappropriate emission factors.
- 01/07/20 Joshua Harris spoke with Aaron Weispfenning, and Mr. Weispfenning will look at NOx emission rate and respond. Mr. Weispfenning also verified that one of the tub grinders is a “horizontal” grinder, Mr. Harris will change the IES-9 description to reflect this.
- 01/28/20 Joshua Harris spoke with Aaron and Disha Shah regarding NOx emission rate. Ms. Shah asked how this will affect the permit, Mr. Harris replied that the permit should be unaffected by the updated calculations as there shouldn't be any change to how the facility is currently classified.
- 03/06/20 Aaron Weispfenning submitted updated emission rate calculations for the facility.
- 03/26/20 EPA promulgated a final rule which included significant updates to MACT AAAA, and minor updates to NSPS XXX, WWW, and Cf.
- 10/14/20 Joshua Harris sent electronic copies of the draft permit and review documents to Booker Pullen, Samir Parekh, and Bruce Ingle for comments. The MRO did not respond to the request for comments.
- 10/16/20 Booker Pullen provided minor editorial comments.
- 10/21/20 Samir Parekh responded with no comments.
- 10/23/20 Joshua Harris sent electronic copies of the draft permit and review documents to Mick Berry, Rodney Hamby, Bridget Wlosek, and Aaron Weispfenning for comments.
- 10/30/20 Joshua Harris received an email with comments from Bridget Wlosek and Aaron Weispfenning with minor comments.
- 11/02/20 Joshua Harris replied to Bridget Wlosek and Aaron Weispfenning addressing their comments and questions. The draft permit was updated to correct typographical errors that were identified, and to include a correction to the requirement to operate the GCCS in cells which have had waste in place for 5 years for active landfills. Mr. Harris provided updated copies of these documents for additional comments. Mr. Weispfenning replied, stating that there were no additional comments or questions.

Xx/xx/20 30-day public notice and 45-day EPA review periods begin.

Xx/xx/20 Public notice period ends; [comments received].

Xx/xx/20 EPA review period ends; [comments received].

Xx/xx/20 Air Quality Permit Revision No. 08533T11 issued.

4. Table of Changes to Existing Permit No. 08533T10

Page No.	Section	Description of Changes
Cover and Throughout	Cover and Throughout	<ul style="list-style-type: none"> Updated letterhead. Updated name of Responsible Official. Updated PSD increment statement. Updated dates and permit revision numbers throughout.
Attachment to Cover	Attachment to Cover	<ul style="list-style-type: none"> Updated description of IES-9 to be a “horizontal grinder.” Included new URL for the MACT/GACT guidance website.
3	1 (Table)	<ul style="list-style-type: none"> Updated NSPS and MACT applicability to listed sources as necessary. Removed emissions sources EN-01, EN-02, and EN-03, and control device EN-02FF at the request of the Permittee. These pieces of equipment were never installed. Added landfill gas treatment system as CD-Treatment. Relisted the LFG-fired gensets as emission source numbers ES-8, ES-9, and ES-10 for permitting consistency with other similar permits. These engines were previously listed as control devices CD-8, CD-9, and CD-10. Removed table note for sources subject to toxics modeling as these sources have been removed.
4	2.1 A.	<ul style="list-style-type: none"> Added CD-Treatment and removed CD-8, CD-9, and CD-10 as sources.
	2.1 A. (Table)	<ul style="list-style-type: none"> Included NSPS Subpart XXX as an applicable regulation for NMOC emissions. Inserted row for Asbestos with NESHAP Subpart M applicability. Updated limits and standards for HAPs to include updated MACT AAAA requirements. Updated limits and standards for Sulfur Dioxide, Visible Emissions, and Odorous Emissions to cross reference appropriate permit section.
5-11	2.1 A.1.	<ul style="list-style-type: none"> Updated NSPS Subpart WWW permit condition to reflect latest permitting language and format.
5	2.1 A.1.a.i. 2.1 A.1.a.ii.	<ul style="list-style-type: none"> Inserted compliance dates.
11-14	2.1 A.2.	<ul style="list-style-type: none"> Moved 15A NCAC 02D .0516 condition to section 2.2 A.1. Inserted 15A NCAC 02D .0524 condition to include NSPS Subpart XXX requirements.
14-16	2.1 A.3.	<ul style="list-style-type: none"> Moved 15A NCAC 02D .0521 condition to section 2.2 A.2. Inserted 15A NCAC 02D .1110 condition to include NESHAP Subpart M requirements.

Page No.	Section	Description of Changes
16-29	2.1 A.4	<ul style="list-style-type: none"> Moved 15A NCAC 02D .1806 condition to section 2.2 A.3. Inserted 15A NCAC 02D .1111 condition to include updated MACT AAAA requirements.
-----	2.1 A.5.	<ul style="list-style-type: none"> Removed old MACT AAAA requirements.
30	2.1 B	<ul style="list-style-type: none"> Relisted genset ID numbers as ES-8, ES-9, and ES-10.
	2.1 B (Table)	<ul style="list-style-type: none"> Updated limits and standards for Sulfur Dioxide and Visible Emissions to cross reference appropriate permit section. Inserted row for Odorous Emissions with a cross reference appropriate permit section. Removed row for Toxic Air Pollutants. Updated limits and standards for HAPs.
30	2.1 B.1.	<ul style="list-style-type: none"> Moved 15A NCAC 02D .0516 condition to section 2.2 A.1. Inserted 15A NCAC 02D .1111 condition to include updated MACT ZZZZ requirements for engines located at a Major Source of HAPs.
-----	2.1 B.2.	<ul style="list-style-type: none"> Moved 15A NCAC 02D .0521 condition to section 2.2 A.2.
-----	2.1 B.3.	<ul style="list-style-type: none"> Removed old MACT ZZZZ requirements.
-----	2.1 C. 2.1 D. 2.1 E.	<ul style="list-style-type: none"> Removed these sections at request of Permittee. Subject sources were never installed.
31	2.2 A.1.	<ul style="list-style-type: none"> Removed 15A NCAC 02D .1100 condition since the subject sources have been removed from the permit. Inserted 15A NCAC 02D .0516 condition as applicable to ES-8, ES-9, ES-10 and CD-11.
	2.2 A.1.	<ul style="list-style-type: none"> Inserted 15A NCAC 02D .0521 condition as applicable to ES-8, ES-9, ES-10 and CD-11.
	2.2 B	<ul style="list-style-type: none"> Removed old section which is no longer applicable, and replaced with Facility-Wide section to include a 15A NCAC 02D .1806 condition as specific condition 2.2 B.1.
32	2.3 A. 2.3 B.	<ul style="list-style-type: none"> Removed these sections as they are no longer applicable. Subject sources were never installed. Re-numbered old Sections 2.3 C. and D. as 2.3 A. and B.
	2.3 C. 2.3 D.	<ul style="list-style-type: none"> Re-numbered old Sections 2.3 C. and D. as 2.3 A. and B.
33-42	3	<ul style="list-style-type: none"> Updated General conditions to latest version (Version 5.5, 08/25/2020).

5. Changes in Equipment

- Removed biomass dryer (ID No. EN-01) as a permitted source. EN-01 was never installed.
- Removed syngas-fired boiler (ID No. EN-02) and its associated bagfilter (ID No. EN-02FF) as permitted sources. EN-02 and EN-02FF were never installed.
- Removed 2,719 hp syngas-fired engine (ID No. EN-03) as a permitted source. EN-03 was never installed.
- Updated description for IES-9 to show the source as a horizontal grinder.
- Added landfill gas treatment system as ID No. CD-Treatment.
- Removed CD-8, 9, and 10, and relisted engines as ES-8, 9, and 10.

Title V equipment editor is up to date for the changes listed above.

The facility's permitted emission sources are as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-1 NSPS XXX MACT AAAA 40 CFR 61 Subpart M	Non-active (unlined) portion of landfill	CD-GCCS1 CD-Treatment	One landfill gas collection system with, One landfill gas treatment system
ES-2 NSPS XXX MACT AAAA 40 CFR 61 Subpart M	Active (lined) portion of landfill	CD-11	One open-type flare (1600 scfm of landfill gas)
ES-8 MACT ZZZZ	Landfill gas-fired genset unit (11 million Btu per hour heat input capacity)	N/A	N/A
ES-9 MACT ZZZZ	Landfill gas-fired genset unit (11 million Btu per hour heat input capacity)		
ES-10 MACT ZZZZ	Landfill gas-fired genset unit (11 million Btu per hour heat input capacity)		

The facility's insignificant/exempt activities are as follows:

Emission Source ID No.	Emission Source Description
IES-5	Oil burning furnace
IES-6	Leachate system (250,000-gallon capacity)
IES-7	One Diesel fuel storage tank (10,000-gallon capacity)
IES-8	Tub grinder
IES-9	Horizontal grinder

6. NSPS, NESHAP, PSD, 112(r), CAM & Attainment Status

- **NSPS –**

- ✓ The MSW landfills (ID Nos. ES-1 and ES-2) are subject to 40 CFR 60, Subpart XXX “Municipal Solid Waste Landfills that Commenced Construction, Reconstruction, or Modification After July 17, 2014.” The Blackburn Sanitary Landfill was recently issued a permit-to-construct by the Division of Waste Management, Solid Waste Section, for the Unit 3 Phase 2 lateral expansion on June 12, 2018, triggering the modification provisions of NSPS XXX due to an increase in permitted design capacity. Construction on that project commenced on July 29, 2019, triggering applicability of NSPS XXX.
- ✓ The MSW landfills (ID Nos. ES-1 and ES-2) are NOT subject to 40 CFR 60, Subpart WWW “Municipal Solid Waste Landfills” since the landfill is subject to NSPS XXX, which supersedes NSPS WWW.
- ✓ The LFG-fired gensets (ID Nos. ES-8, ES-9 and ES-10) are NOT subject to 40 CFR 60, Subpart JJJJ “Stationary Spark Ignition Internal Combustion Engines” because the engines were manufactured in 1998, which is prior to the applicability date of the NSPS regulation. Based on information supplied by the facility, the cost of rebuilding the engines does not exceed 75% of the fixed capital cost of comparable new units, and the engine blocks are reused. Therefore, the engines are not considered as reconstructed, and retain the original manufacture dates of the engine blocks. [40 CFR §60.4248]
- ✓ The tub and horizontal grinders (ID Nos. IES-8 and IES-9) are NOT subject to 40 CFR 60, Subpart IIII “Stationary Compression Ignition Internal Combustion Engines” because the units are mobile, therefore the engines are not considered stationary sources.

- **NESHAP –**

- ✓ The MSW landfills (ID Nos. ES-1 and ES-2) are subject to 40 CFR 63, Subpart AAAA “Municipal Solid Waste Landfills” since the landfill design capacity is greater than 2.5 million Mg and 2.5 million cubic meters, and the uncontrolled NMOC emission rate exceeds 50 Mg/yr. Additionally, the facility is now considered a Major Source of HAPs due to formaldehyde emissions from the LFG-fired engines exceeding the 10 TPY emission threshold for individual HAP.
- ✓ The MSW landfills (ID Nos. ES-1 and ES-2) are subject to 40 CFR 61, Subpart M “National Emission Standard for Asbestos,” since the facility is an active waste disposal sites for asbestos-containing waste.
- ✓ The LFG-fired gensets (ID Nos. ES-8, ES-9 and ES-10) are subject to 40 CFR 63, Subpart ZZZZ “Stationary Reciprocating Internal Combustion Engines.” These are considered reconstructed engines since the cost of periodic engine rebuilds exceeds 50% of the fixed capital cost of comparable new units [40 CFR §63.2]. As reconstructed engines located at a Major Source of HAPs with a site rating greater than 500 hp, these engines are not required to comply with 40 CFR 60 Subpart JJJJ [40 CFR §63.6590(c)].

- ✓ The tub and horizontal grinders (ID Nos. IES-8 and IES-9) are NOT subject to 40 CFR 63, Subpart ZZZZ “Stationary Reciprocating Internal Combustion Engines” because they are not considered stationary sources.
- **PSD** – The facility’s potential emissions of criteria pollutants do not exceed PSD permitting thresholds. The existing avoidance condition has been removed since the subject sources were never installed and are being removed from the permit at the applicant’s request.
 - ✓ Catawba County has triggered increment tracking under PSD for PM₁₀. There is a 2.4 lb/hr decrease in the PM₁₀ emission rate associated with the elimination of emission sources EN-01, EN-02, and EN-03. This emission rate change is based on the calculation made in the permit review for revision number T09.
- **112(r)** – The facility does not store any of the listed 112(r) chemicals in amounts that exceed the threshold quantities. Therefore, the facility is not required to maintain a written Risk Management Plan (RMP).
- **CAM** – CAM does not apply since the facility’s sources are regulated by NSPS and MACT regulations that were proposed after November 15, 1990 and control the pollutants which would be subject to CAM.
- **Attainment status** – Catawba County is in attainment for all criteria pollutants.

7. Regulatory Review

The facility’s permit will no longer contain the following conditions since the landfill has recently modified, and sources that were subject to these conditions (ID Nos. EN-01, EN-02, and EN-03), are being removed as a result of this permitting action:

- 15A NCAC 02D .0503: Particulates from Fuel Burning Indirect Heat Exchangers
- 15A NCAC 02D .0515: Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart JJJJ
- 15A NCAC 02D .1100: Control of Toxic Air Pollutants
- 15A NCAC 02Q .0317: Avoidance Condition for 15A NCAC 02D .0530, Prevention of Significant Deterioration
- Senate Bill 3, North Carolina General Statute (NCGS) 62-133.8(g)

The facility is subject to the following air quality regulations in addition to the General Conditions:

- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521: Control of Visible Emissions
- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart WWW
- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR60, Subpart XXX
- 15A NCAC 02D .1110: National Emission Standards for Hazardous Air Pollutants, 40 CFR 61, Subpart M
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart AAAA
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart ZZZZ
- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources

SO₂ emissions from combustion sources are limited to 2.3 pounds per million Btu heat input. LFG combustion in the utility flare (ID No. CD-11) emits 3.14 lb SO₂/hr, at the maximum heat input rate of 43.2 mmBtu/hr, based a heat value of 450 Btu/ft³. The LFG-fired engines (ID Nos. ES-8, ES-9, and ES-10) emit 2.39 lb SO₂/hr with a maximum total heat input of 33 mmBtu/hr. This results in an emission rate of 0.073 lb SO₂/mmBtu for LFG combustion in these sources. No monitoring, recordkeeping or reporting is required for LFG combustion. Continued compliance is expected.

15A NCAC 02D .0521: Control of Visible Emissions

Visible emissions from the utility flare (ID No. CD-11) and LFG-fired engines (ID Nos. ES-8, ES-9, and ES-10) are limited to a six-minute average opacity of 20%. These sources have been routinely observed during compliance inspections, and no issues have been noted. No monitoring, recordkeeping or reporting is required for LFG combustion. Continued compliance is expected.

15A NCAC 02D .0524, New Source Performance Standards, 40 CFR 60, Subparts WWW and XXX

Construction commenced on the Unit 3, Phase 2 expansion after July 17, 2014, triggering NSPS Subpart XXX. The facility is subject to the requirement to install and operate a GCCS, and has an existing system installed since the landfill was previously also required to operate a GCCS due to requirements of NSPS WWW and MACT AAAA.

Since there is no “transitional language” in the regulation, DAQ’s current interpretation of NSPS XXX compliance timeframes for landfills that were previously subject to the NSPS WWW requirement to operate a GCCS is that the landfill may have the full 30-month compliance timeframe to comply with the requirements of NSPS XXX. With the promulgation of an updated rule for MACT AAAA, many of the NSPS XXX requirements now overlap with MACT requirements. These changes to the MACT allow landfills to continue to comply with NSPS WWW through September 27, 2021. Landfills are required to comply with the new MACT requirements thereafter, but may choose to comply earlier. As such, DAQ has allowed landfills to continue to comply with NSPS WWW until the September 27, 2021 compliance date, so the permit will contain conditions for both NSPS WWW and NSPS XXX. After September 27, 2021, NSPS WWW can no longer be complied with, and the landfill is required to comply with the requirements of NSPS XXX and MACT AAAA.

As previously stated, many requirements of NSPS XXX overlap with MACT AAAA. Where NSPS XXX directly allows compliance with MACT AAAA to demonstrate compliance for the NSPS requirements, the permit contains conditions that specifically cross reference corresponding MACT requirements. Specifically, compliance with §§63.1958, 63.1960, and 63.1961 of MACT AAAA is used to demonstrate compliance with §§60.763, 60.765, and 60.766. In addition, recordkeeping and reporting requirements that have an equivalent requirement in MACT AAAA, but are not directly cited within NSPS XXX, have been cross referenced to allow the MACT requirement to satisfy the NSPS requirement in order to minimize duplicate requirements. Those NSPS recordkeeping and reporting requirements that do not appear to have sufficient overlap with the MACT requirements have been retained and have stand-alone provisions within the permit condition.

Compliance is expected.

15A NCAC 02D .1110: National Emission Standards for Hazardous Air Pollutants, 40 CFR 61, Subpart M

The landfill is an active disposal site for asbestos-containing wastes; therefore, it is subject to the requirements of this regulation. To comply, the facility must adhere to a general set of work practices which may include ensuring there are no visible emissions at the disposal site, covering waste daily with at least six inches of compacted non-asbestos material or use another dust suppression agent; the landfill may propose alternative methods for DAQ approval. The facility will be required to post signage and barriers if the method of compliance does not include covering the asbestos-containing waste. Closed portions of the landfill which have previously received asbestos-containing waste are also subject and are required to comply with the requirements of 40 CFR 61.151 for inactive waste disposal sites. The facility's current Solid Waste permit contains a requirement for the facility to comply with the requirements of 40 CFR 61, Subpart M, and continued compliance is expected.

15A NCAC 02D .1111, Maximum Achievable Control Technology, 40 CFR 63, Subpart AAAAA

The MSW landfills (ID Nos. ES-1 and ES-2) are the subject sources. Compliance with MACT Subpart AAAAA is achieved by complying with the requirements of NSPS Subpart WWW until September 27, 2021. The facility may choose to begin complying with the updated MACT rules before that date. The condition has been updated to include the requirements promulgated on March 26, 2020.

The application states that there are no changes to the previously approved GCCS design plan, so no revision is required to be submitted. However, MACT AAAAA requires landfills utilizing treatment systems to treat LFG prior to sale or beneficial use to develop a treatment system monitoring plan. The treatment system itself will be subject to the requirements of MACT AAAAA. Specifically, the landfill will be required to ensure the treatment system is operating at all times during which it is being sent LFG, maintain and operate all associated monitoring systems according to a site-specific monitoring plan. This plan has been developed, and a copy was submitted electronically to the DAQ on October 27, 2020. Additionally, the landfill shall ensure that a device that records flow to, or bypass of, the treatment system is installed, calibrated, maintained and operated. The landfill will be required to maintain records of flow to, and bypass of, the treatment system and make semi-annual reports.

The facility previously requested that DAQ approve an alternative operating and monitoring plan for wells experiencing declining gas flow rates which in oxygen content greater than 5% when vacuum is applied. This was approved as an alternative to decommissioning a well and included a monitoring plan that was approved by EPA in Applicability Determination Control Number 0600062. The wellhead operating standards for nitrogen and oxygen have been removed with the promulgation of updated rules. Furthermore, in the absence of an operating standard for oxygen, the operating procedures for the root cause analysis, corrective action analysis, and implementation timeline as outlined in §63.1960(a)(3) appear to be appropriate for these situations, therefore these alternative procedures will not be included in the MACT AAAAA permit condition. The alternative will be retained in the NSPS WWW condition for the period during which the facility still complies with NSPS WWW.

This permit condition contains the operational standards, compliance provisions, and monitoring requirements of §§63.1958, 63.1960, and 63.1961, as well as the recordkeeping and reporting requirements of MACT AAAAA. Compliance is expected.

15A NCAC 02D .1111: Maximum Achievable Control Technology, Subpart ZZZZ

The engines were manufactured in 1998 and are subject to MACT requirements for stationary Spark Ignition Reciprocating Internal Combustion Engines (SI RICE). Each was reconstructed after December 2002, is more than 500 hp, and burns exclusively landfill gas as fuel.

DAQ recently became aware of performance test results that indicate significant levels of formaldehyde emissions for spark-ignition RICE combusting LFG. Formaldehyde is a Title III HAP that is not present in such large quantities in LFG itself, but is formed during the combustion process. Using an emission factor developed by DAQ, the Blackburn Sanitary Landfill not only has the facility-wide potential to emit formaldehyde in excess of 10 tons in a 12-month period, its actual annual emissions of formaldehyde have exceeded 10 tons as reported on the annual AQEI. Based on this new information, the facility is now being classified as a major source of HAPs.

Therefore, the engines are subject to the 40 CFR 63 Subpart ZZZZ standards that apply to new LFG-fired SI RICE with a site rating of more than 500 brake horsepower located at a major source of HAPs rather than the standards for an area source. These engines are required to meet the initial notification requirements of 40 CFR 63.6645(f) and must comply with the monitoring, recordkeeping and reporting requirements in 40 CFR 63.6625(c), 63.6650(g), and 63.6655(c). However, LFG-fired engines at major sources do not have to meet emissions or operational limits. The applicable requirements include operating in a manner which reasonably minimizes HAP emissions, monitoring and recording of daily fuel usage, maintaining daily fuel usage monitor records, and annual reporting. Fuel flow to these engines is monitored via a single meter that measures total flow. For the purposes of demonstrating that LFG comprises more than 10% of the total fuel usage, DAQ has determined this to be acceptable for monitoring of fuel flow to each engine since the engines only fire a single fuel, LFG. The permit condition has been revised to reflect the applicable requirements for a major source of HAPs. Compliance is expected.

15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

This is applicable facility wide. DAQ inspectors have not noted odors beyond the facility's property boundary, and neither DAQ nor the facility have received any odor complaints from nearby residents. Continued compliance is expected.

8. Other Regulatory Requirements

- Zoning Consistency Determinations were included with the permit applications for significant modifications; such determinations are not required for renewal. Barbara E. Morris, Clerk to the Board of Commissioners, and Chris Timberlake, Assistant Planning Director, determined that the proposed operations of Application Nos. 1800488.17A and .19A are consistent with applicable zoning ordinances.
- Application Nos. 1800488.17A and 19A were sealed by Aaron Weispfenning, who is a registered Professional Engineer (PE) in the State of North Carolina (Seal #039255). A PE seal is not required for renewal.
- The required permit application fee of \$929 was received by RCO for Application No. 1800488.17A. No fees were required for the renewal application or for the significant modification Application No. 1800488.19A since it was submitted due to a change in regulations.

9. Air Toxics

Except for formaldehyde, these applications do not result in any increases in toxic emissions beyond those that have already been evaluated. The volume emissions from the landfill surface have been evaluated based on projected emission rates through CY2029. The current permit revision contains a 15A NCAC 02D .1100 condition for toxic emissions associated with the syngas boiler and biomass dryer (ID Nos. EN-02 and ES-03). Since EN-02 and EN-03 are being removed from the permit, and the landfill's remaining sources are exempt from permitting for toxics per 15A NCAC 02Q .0702(a)(27)(A), this condition will be removed from the permit.

The formaldehyde emission rate increase is associated with a change in emission factor. The landfill initially used the AP-42 emission factors for natural gas combustion to estimate formaldehyde emissions, however in 2016, DAQ established a formaldehyde emission factor specifically for LFG-fired engines. The DAQ factor results in emission rates roughly 7.8 times higher than those initially evaluated.

The landfill elected to re-perform dispersion modeling to account for changes in the modeling that may occur from eliminating sources which were never installed and will be removed from the permit. The new modeling also used higher exit velocities since those used in the initial modeling were conservatively low according to the facility's consultant. The modeling was reviewed by Mark Yoder, AQAB, who determined that it demonstrated compliance with the assumption that the source parameters and emission rates used in the analysis are correct.

The modeling resulting in the following impacts at the property boundary:

Pollutant	Averaging Period	Emission Source	Modeled Emission Rate	Concentration at Property Boundary $\mu\text{g}/\text{m}^3$	AAL $\mu\text{g}/\text{m}^3$	% AAL
Formaldehyde	lb/hr	CD-8	1.81	95.94	150	64%
		CD-9	1.81			
		CD-10	1.91			

The impacts for other pollutants modeled in 2011 from the engines, flare, and landfill surface are as follows:

Pollutant	Averaging Period	Concentration at Property Boundary $\mu\text{g}/\text{m}^3$	AAL $\mu\text{g}/\text{m}^3$	% AAL
Acrolein	lb/hr	11.6	80	15%
Benzene	lb/yr	0.096	0.12	80%
Hydrogen chloride	lb/hr	149.2	700	21%
Vinyl chloride	lb/yr	0.067	0.38	18%

The landfill and engines are subject to MACT regulations and are exempt from permitting for State toxics per 02Q .0702(a)(27)(B). Therefore, the permit does not contain 02D .1100 or 02Q .0711 conditions. Toxic emission from the landfill should be periodically re-evaluated as the landfill grows. None of the toxic air pollutants evaluated exceed their respective TPER or AAL; therefore, DAQ has determined that there is NOT an unacceptable risk to human health.

10. Emissions Review

Each source's potential to emit is listed in the table below. The landfills' potential emission rates were calculated using LandGEM to project future emission rates through CY2029. This projection may change over time depending on the actual waste placement rates at the landfill. The emission rates for the flare and LFG-fired engines were calculated using each source's maximum capacity.

Potential emissions before collection and control:

Pollutant	Landfill Surface tons/yr
PM (TSP)	-----
PM ₁₀	-----
PM _{2.5}	-----
SO ₂	-----
NO _x	-----
CO	-----
VOC	33.38

Potential emissions after collection and control:

Pollutant	Landfill Surface tons/yr	Flare tons/yr	LFG-fired Engines tons/yr	Total tons/yr
PM (TSP)	-----	3.47	2.65	6.12
PM ₁₀	-----	3.47	2.65	6.12
PM _{2.5}	-----	3.47	2.65	6.12
SO ₂	-----	13.75	10.49	24.24
NO _x	-----	12.87	53.15	66.02
CO	-----	58.66	132.88	191.54
VOC	8.35	0.72	15.95	24.37

The facility's actual emissions as reported on the annual AQEI can be seen in the table on page one of this document.

MSW Landfills:

The potential volume emissions from the landfill surfaces (ID No. ES-1 and 2) were calculated using the methodology in AP-42 Chapter 2.4 (November 2008) and are based on an LFG generation rate of 2,777 cfm as determined using a LandGEM projection that was included as part of the application.

The following example calculation is for VOC emissions from the landfill surface:

- CY2029 LFG generation rate from LandGEM = 2,777 cfm (or 4,718.2 m³/hour)
- Methane is 50% of this gas stream (2,359.1 m³/hour)
- Q_{NMOC} = Emission rate of NMOCs, m³/hour
- C_{NMOC} = Concentration of NMOCs (534 ppmv, 2008 Tier 2 testing)
- Multiplication factor for 50% methane concentration in landfill gas = 2.0
- Molecular weight of NMOC (as n-hexane) = 86.18 g/gmol

$$Q_{\text{NMOC}} = 2.0 \times Q_{\text{CH}_4} \times \left(\frac{C_{\text{NMOC}}}{1 \times 10^6} \right) \text{ (AP-42, Equation 3)}$$

$$Q_{\text{NMOC}} = 2.0 \times 2,359.1 \frac{\text{m}^3}{\text{hour}} \times \left(\frac{534 \text{ parts}}{1 \times 10^6} \right) = 2.52 \frac{\text{m}^3}{\text{hour}}$$

The uncontrolled mass emissions of NMOCs (UM_{NMOC}) was found using Equation 4 of AP-42, Section 2.4.4.2.

$$UM_{\text{NMOC}} = 2.52 \frac{\text{m}^3}{\text{hour}} \times \left[\frac{86.18 \text{ g/gmol} \times 1 \text{ atm}}{8.205 \times 10^{-5} \frac{\text{m}^3 \cdot \text{atm}}{\text{gmol} \cdot \text{K}} \times 1000 \frac{\text{g}}{\text{kg}} \times (273 + 25^\circ\text{C}) \text{ K}} \right] \times 2.2 \frac{\text{pounds}}{\text{kg}}$$

$$UM_{\text{NMOC}} = 19.54 \frac{\text{pounds}}{\text{hour}} = 85.59 \frac{\text{tons}}{\text{year}}$$

To calculate the VOC component of the landfill's uncontrolled surface emissions, AP-42 states in note "c" of Table 2.4-2 that VOC emissions are 39 wt.% of the NMOC emissions, therefore:

$$UM_{\text{VOC}} = 0.39 \times 85.59 \frac{\text{tons NMOC}}{\text{year}} = 33.38 \frac{\text{tons VOC}}{\text{year}}$$

Volume emission of VOC from the landfill surface after collection were calculated using AP-42 Section 2.4-6 Equation 5:

$$CM_{\text{p}} = \left[UM_{\text{p}} \times \left(1 - \frac{\eta_{\text{col}}}{100} \right) \right] + \left[UM_{\text{p}} \times \frac{\eta_{\text{col}}}{100} \times \left(1 - \frac{\eta_{\text{cnt}}}{100} \right) \right]$$

Where:

CM_p = Controlled mass emissions of pollutant

UM_p = Uncontrolled mass emission of pollutant

η_{col} = Collection efficiency of the landfill gas collection system, percent (75%)

η_{cnt} = Control efficiency of the landfill gas control devices (not considered)

Only the first term is considered for emissions from the landfill surface, therefore:

$$CM_{\text{VOC}} = \left[33.38 \frac{\text{tons}}{\text{year}} \times \left(1 - \frac{75}{100} \right) \right] = 8.35 \frac{\text{tons}}{\text{year}}$$

Flare Emissions:

Potential emission rates for the flare were all calculated assuming the flare is operating at its maximum flow capacity.

Particulate, NO_x, and CO emissions were calculated using the following emission factors:

NO_x: 0.068 lb/mmBtu (AP-42 13.5-1, vendor guarantee)

CO: 0.31 lb/mmBtu (AP-42 13.5-1, vendor guarantee)

PM: 16.5 lb/10⁶ ft³ CH₄ (AP-42 2.4-4, 2008 Draft plus 10% safety factor assumed by facility)

The flare's heat input rating is 43.2 mmBtu/hr based on an LFG heat value of 450 Btu/ft³, which was determined during flare testing in 2016. The flare's annual LFG flow rate is 840.96 million ft³ of LFG at its maximum flow rate.

Examples:

$$\frac{43.2 \text{ mmBtu}}{\text{hour}} \times \frac{0.068 \text{ lb NO}_x}{\text{mmBtu}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 12.87 \frac{\text{tons NO}_x}{\text{year}}$$

$$\frac{43.2 \text{ mmBtu}}{\text{hour}} \times \frac{0.31 \text{ lb CO}}{\text{mmBtu}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 58.66 \frac{\text{tons CO}}{\text{year}}$$

$$\frac{840.96 \text{ million ft}^3 \text{ LFG}}{\text{year}} \times \frac{16.5 \text{ lb PM}}{\text{million ft}^3 \text{ CH}_4} \times \frac{0.5 \text{ ft}^3 \text{ CH}_4}{\text{ft}^3 \text{ LFG}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 3.47 \frac{\text{tons PM}}{\text{year}}$$

All particulate emissions from the combustion of landfill gas are considered as PM_{2.5}.

To calculate potential SO₂ emissions, AP-42 Chapter 2.4 was used along with information submitted by the facility in the application. The facility assumes that H₂S is the main source of sulfur in the LFG:

- Total flare design rating = 1,600 ft³/minute (or 45.31 m³/min = 2,718.6 m³/hour)
- Methane is 50% of this gas stream (1,359.3 m³/hour)
- Q_S = Emission rate of H₂S, m³/hour
- C_S = Concentration of H₂S (200 ppmv, conservative industry estimate)
- Multiplication factor for 50% methane concentration in landfill gas = 2.0
- Molecular weight of H₂S = 34.08 g/mole

$$Q_s = 2.0 \times Q_{\text{CH}_4} \times \left(\frac{C_s}{1 \times 10^6} \right) \text{ (AP-42, Equation 3)}$$

$$Q_s = 2.0 \times 1,359.3 \frac{\text{m}^3}{\text{hour}} \times \left(\frac{200 \text{ parts}}{1 \times 10^6} \right) = 0.544 \frac{\text{m}^3}{\text{hour}}$$

The mass of H₂S present in the LFG prior to combustion was found using Equation 4 of AP-42, Section 2.4.4.2.:

$$UM_s = 0.544 \frac{\text{m}^3}{\text{hour}} \times \left[\frac{34.08 \text{ g/gmol} \times 1 \text{ atm}}{8.205 \times 10^{-5} \frac{\text{m}^3 \cdot \text{atm}}{\text{gmol} \cdot \text{K}} \times 1000 \frac{\text{g}}{\text{kg}} \times (273 + 25^\circ\text{C}) \text{ K}} \right] \times 2.2 \frac{\text{pounds}}{\text{kg}}$$

$$UM_s = 1.67 \frac{\text{pounds}}{\text{hour}}$$

To calculate SO₂ emitted from the combustion of sulfur, Equation 7 of Section 2.4-10 was used.

$$\text{SO}_2 \text{ emitted} = UM_s \times \frac{\eta_{\text{col}}}{100} \times 1.88$$

Where:

UM_s = Uncontrolled mass emission rate of sulfur compounds (1.67 lb sulfur/hour)

η_{col} = Collection efficiency of the landfill gas collection system, percent
 (assumed 100% since this is based on the maximum capacity of the flare)

1.88 = Ratio of the molecular weight of SO₂ to the molecular weight of H₂S

$$\text{SO}_2 \text{ emitted} = 1.67 \frac{\text{lb}}{\text{hour}} \times \frac{100}{100} \times 1.88 \times 8760 \frac{\text{hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 13.75 \frac{\text{tons SO}_2}{\text{year}}$$

The potential emission rate of VOCs for the flare are based on the maximum flow capacity. The mass emission rate of VOC is commonly determined using a mass balance, an example of which is above for SO₂, based on the NMOC concentration within the LFG. The facility bases the emission rate calculation on a statement from the manufacture that the theoretical maximum NMOC concentration in the flare's combustion gases is 20 ppmv. Assuming that the destruction efficiency of the flare is 98%, this would be equivalent to an NMOC concentration of 1,000 ppmv in the LFG prior to entering the flare. This is much higher than the typical default value of 595 ppmv, so this appears to result in a conservatively high estimate for VOC emissions from the flare.

Using the mass balance example above, the maximum NMOC flow rate from the flare is estimated to be 0.423 pounds of NMOC per hour, or 1.85 tons per year. AP-42 states that VOCs make up 39% of the NMOC emissions, therefore, the VOC emission rate is 0.72 tons per year.

LFG-fired Engine Emissions:

The mechanical power output and heat input of the engines are dependent on the heat value of the fuel being combusted. The heat input of the landfill's engines was determined to be 11 mmBtu/hr each at the time of initial permitting based on an LFG heat value of 506 Btu/ft³. The landfill has used this theoretical maximum heat input along with manufacturer specifications for brake-specific fuel consumption (BSFC) to determine the mechanical power rating for each engine.

The engines powering CD-8 and 9 are the same type, with a BSFC of 6,720 Btu/bhp-hr, while the engine powering CD-10 has a BSFC of 6,359. The facility recently determined the LFG heat value to be 450 Btu/ft³ during the 2016 flare testing.

Determine horsepower rating for each engine:

For CD-8 and CD-9:

$$11 \frac{\text{mmBtu}}{\text{hr}} \times \frac{\text{bhp} - \text{hr}}{6720 \text{ Btu}} \times \frac{10^6 \text{ Btu}}{\text{mmBtu}} = 1637 \text{ bhp per engine}$$

For CD-10:

$$11 \frac{\text{mmBtu}}{\text{hr}} \times \frac{\text{bhp} - \text{hr}}{6359 \text{ Btu}} \times \frac{10^6 \text{ Btu}}{\text{mmBtu}} = 1730 \text{ bhp}$$

Determine fuel consumption rate:

$$3 \text{ engines} \times \frac{11 \text{ mmBtu}}{\text{hour per engine}} \times \frac{10^6 \text{ Btu}}{\text{mmBtu}} \times \frac{1 \text{ ft}^3 \text{ LFG}}{450 \text{ Btu}} = 73,333.33 \frac{\text{ft}^3 \text{ LFG consumed}}{\text{hour}}$$

The facility used emission factors for NO_x, CO, and VOC that were provided by the engine manufacturer, and included a 10% safety factor in order to make a conservative estimate. This method appears to estimate emission rates for these pollutants above the rates that would be calculated using AP-42 Chapter 2.4 (2008 Draft). Particulate emissions were estimated using AP-42 Chapter 2.4 (2008 Draft), and the emission factor included a 10% increase as well.

NO_x: 1.1 g/hp-hr
 CO: 2.75 g/hp-hr
 VOC: 0.33 g/hp-hr
 PM: 16.5 lb/10⁶ ft³ CH₄

Examples at a total site rating of 5,004 hp with a fuel consumption rate of 73,333.33 ft³ LFG/hour:

$$5004 \text{ hp} \times \frac{1.1 \text{ g NO}_x}{\text{hp} - \text{hr}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 53.15 \frac{\text{tons NO}_x}{\text{year}}$$

$$5004 \text{ hp} \times \frac{2.75 \text{ g CO}}{\text{hp} - \text{hr}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 132.88 \frac{\text{tons CO}}{\text{year}}$$

$$5004 \text{ hp} \times \frac{0.33 \text{ g VOC}}{\text{hp} - \text{hr}} \times \frac{1 \text{ lb}}{453.59 \text{ g}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 15.95 \frac{\text{tons VOC}}{\text{year}}$$

$$\frac{73,333.33 \text{ ft}^3 \text{ LFG}}{\text{hour}} \times \frac{16.5 \text{ lb PM}}{10^6 \text{ ft}^3 \text{ CH}_4} \times \frac{0.50 \text{ ft}^3 \text{ CH}_4}{1 \text{ ft}^3 \text{ LFG}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2,000 \text{ lb}} = 2.65 \frac{\text{tons PM}}{\text{year}}$$

All particulate emissions from the combustion of landfill gas are considered as PM_{2.5}.

Potential emission rate of SO₂ from the LFG-fired engines was calculated in the same manner as the flare, using the maximum fuel consumption rate of 2,076.57 m³ LFG/hour. This analysis resulted in a total SO₂ emission rate of 10.49 TPY.

11. Statement of Compliance

The latest compliance inspection was conducted by Jim Van Wormer, MRO DAQ, on October 9, 2019. Mr. Van Wormer found the landfill to be operating in apparent compliance. The landfill has no negative compliance history for the past 5 years.

12. Public Notice Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA.

The 30-day public notice period was from MONTH XX, 2020 through MONTH XX, 2020.

The EPA 45-day review period was from MONTH XX, 2020 through MONTH XX, 2020.

[Number of] comments were received during the public notice period and the EPA review period.

13. Comments and Recommendations

The permit modification and renewal applications for the Blackburn Sanitary Landfill located in Newton, Catawba County, NC have been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 08533T11.