

Application Review

Issue Date: xx/xx/2108

Region: Mooresville Regional Office
County: Cleveland
NC Facility ID: 2300393
Inspector's Name: N/A
Date of Last Inspection: N/A
Compliance Code: N/A

<p style="text-align: center;">Facility Data</p> <p>Applicant (Facility's Name): Cleveland County Municipal Solid Waste Landfill</p> <p>Facility Address: Cleveland County Municipal Solid Waste Landfill 1609 Airport Road Shelby, NC 28150</p> <p>SIC: 4953 / Refuse Systems NAICS: 562212 / Solid Waste Landfill</p> <p>Facility Classification: Before: N/A After: Title V Fee Classification: Before: N/A After: Title V</p>	<p style="text-align: center;">Permit Applicability (this application only)</p> <p>SIP: 15A NCAC 02D .0516, 02D .0521, 02D .0524, 02D.1100, 02D .1111, 02D.1806, 02Q .0711 NSPS: Subpart XXX, Subpart III NESHAP: Subpart ZZZZ PSD: N/A PSD Avoidance: N/A NC Toxics: 02Q .0711 TPERs for Benzene, Hydrogen Sulfide, and Vinyl Chloride exceeded; 02D .1100 Modeling analysis performed by RCO at applicant request 112(r): N/A Other: N/A</p>
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Contact Data			Application Data
<p style="text-align: center;">Facility Contact</p> <p>Nathan McNeilly Solid Waste Director (704) 447-8200 200 South Post Road Shelby, NC 28152</p>	<p style="text-align: center;">Authorized Contact</p> <p>Nathan McNeilly Solid Waste Director (704) 447-8200 200 South Post Road Shelby, NC 28152</p>	<p style="text-align: center;">Technical Contact</p> <p>Nathan McNeilly Solid Waste Director (704) 447-8200 200 South Post Road Shelby, NC 28152</p>	<p>Application Number: 2300393.17A Date Received: 11/02/2017 Application Type: Greenfield Facility Application Schedule: TV-1st Time <p style="text-align: center;">Existing Permit Data</p> Existing Permit Number: N/A Existing Permit Issue Date: N/A Existing Permit Expiration Date: N/A</p>

Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP

<No Inventory>

<p>Review Engineer: Joshua L. Harris</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p style="text-align: center;">Comments / Recommendations:</p> <p>Issue 10556/T00 Permit Issue Date: xx/xx/2018 Permit Expiration Date: xx/xx/2023</p>
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1. Purpose of Application

Cleveland County Municipal Solid Waste Landfill is an existing Municipal Solid Waste (MSW) landfill located in Shelby, Cleveland County. Application No. 2300393.17A is for a 1st time Title V permit, was received on November 1, 2017, and was considered complete on that date. The application is being submitted now that the landfill's design capacity has exceeded the regulatory threshold of 2.5 million Mg and 2.5 million m³, at which point the landfill is required to obtain a Title V permit per 40 CFR 60, Subpart XXX. The application was amended several times to revise and provide additional information requested by DAQ in order to perform modeling for toxic air pollutants emitted from the landfill that exceeded threshold levels for permitting. The application will go through the 30-day public and 45-day EPA review prior to issuance.

The facility contact for this application is Nathan M^cNeilly, Solid Waste Director, (704-447-8200). A consulting firm, Smith Gardner, Inc., submitted the application. The contacts at Smith Gardner for this application are Mary Kennamer, Staff Engineer, and Matt Lamb, Senior Scientist, (919-828-0577). Prior to issuance, consulting services for the landfill were taken over by WithersRavenel, Inc. The contact at WithersRavenel is Mark Brown, Project Manager, (919-608-4582).

2. Facility Description

The Cleveland County Municipal Solid Waste Landfill is an active landfill which began operation in 1971, and is operated under Solid Waste Permit No. 2301. The landfill consists of multiple sites: West MSW, East MSW, Self-M^cNeilly MSW, and a construction and demolition debris (C&D) landfill. The West MSW site consists of two separate unlined landfill sites, the southernmost site, was active from 1971 to 1978, and the northernmost site was active from 1979 to 1998. The active C&D landfill currently sits atop the northern portion of the West MSW landfill. The East MSW site is a closed out, lined landfill, which was active from 1998 to 2009. The Self-M^cNeilly MSW landfill is a currently active filling site, with Phases 1 and 2 accepting waste, and Phase 3 being constructed at this time. The landfill currently does not operate a landfill gas collection and control system (GCCS), but may be required to operate a system depending on the results of Tiered testing.

The Self-M^cNeilly site consists of three phases which are currently permitted for construction/operation by the NC Division of Waste Management, Solid Waste Section (SWS), and four additional proposed phases which have not yet been permitted for construction. The SWS issued the permit to construct for the Phase 2 vertical expansion August 14, 2014, which increased the landfill's design capacity to approximately 2.6 million Mg. With the issuance of that permit, the facility triggered the requirement to obtain a Title V permit, and triggered applicability of NSPS Subpart XXX. The permit to construct the Phase 3 expansion was issued on September 28, 2016 by the SWS, which brought the landfill's current design capacity to approximately 3,311,455 Mg (3,650,997 tons) including waste-in-place; the facility has commenced construction on that expansion. The facility also has two 348,000-gallon leachate storage tanks, and a 60-kW diesel-fired emergency generator located on site.

3. History/Application Chronology

- 11/02/17 Application No. 2300293.17A received at RCO. The application appeared to be complete for processing. A copy of the permit application was sent to the Mooresville Regional Office (MRO).
- 11/06/17 RCO sent the facility a letter acknowledging receipt of the permit application.
- 11/12/17 RCO received the returned acknowledgement letter. The letter was not deliverable to the address provided by the facility.
- 11/17/17 RCO sent a second acknowledgement letter to the facility.
- 12/21/17 Joshua Harris, RCO DAQ, emailed Mary Kennamer, Project Consultant with Smith Gardner, Inc., regarding the modeling request for toxic air pollutants, and requested additional information necessary for modeling of additional pollutants which appeared to exceed their respective TPERs. Mr. Harris received a follow-up call from Matt Lamb, Senior Scientist with Smith Gardner, Inc., during which the request was discussed further. Ms. Kennamer provided the requested information later that day.

- 01/11/18 Joshua Harris forwarded the modeling request to Tom Anderson, Supervisor AQAB, who assigned the modeling analysis to Alex Zarnowski.
- 01/26/18 Joshua Harris sent an email to Mary Kennamer regarding the contribution of emissions from each landfill area. Mr. Harris had a follow-up conversation with Matt Lamb, who will revisit the emission calculations since they were calculated for the year prior to the peak emission rate of the landfill. Also, Mr. Lamb will determine the distribution of waste between the two separate areas of the West MSW site to better determine how each section contributes to the total emission rate for toxics modeling. Mr. Lamb provided the requested information later the same day.
- 02/12/18 Joshua Harris sent an email to Matt Lamb regarding potential AAL exceedance for vinyl chloride emissions. Mr. Harris requested that the facility re-evaluate and refine toxic emission rate calculations for each section of the landfill.
- 03/06/18 Joshua Harris received an email from Mary Kennamer requesting clarification on the information being requested. Mr. Harris followed-up with a phone call and email to explain.
- 03/13/18 Joshua Harris received an email from Mary Kennamer with the requested information attached. Mr. Harris forwarded the attached documentation to Alex Zarnowski.
- 03/15/18 Alex Zarnowski, AQAB, completed the dispersion modeling analysis.
- 03/28/18 Gregg O'Neill, DAQ Technical Services Branch, sent a letter to the facility approving the protocol for the Tier 2 testing to be conducted at the facility, however the request to deviate from the purge requirements of Method 25C was forwarded to EPA for approval.
- 05/10/18 Joshua Harris emailed Mary Kennamer requesting an update on the status of Tier 2 testing at the landfill, and also requesting information regarding the applicability to NESHAP Subpart M. Matt Lamb responded stating that the facility's Solid Waste permit allows for disposal of asbestos, but he would have to speak with the facility to find out if asbestos is actually received and disposed of. He also stated that he is waiting for a response from EPA regarding approval of their proposed alternative testing procedure.
- 08/02/18 Joshua Harris called Matt Lamb regarding the Tier 2 testing status, and was informed that Smith Gardner, Inc. is no longer providing consulting services for the facility. Mr. Lamb stated that the new consulting firm is WithersRavenel, Inc., and that the contact is Mark Brown. With regard to the Tier 2 sample, Mr. Lamb stated that the sampling event had not taken place, and that EPA did respond, approving the request to deviate from normal sampling procedures, with stipulations on requirements and how the testing is to be performed. Smith Gardner may continue working on the sampling if an agreement is reached with the new consultant.

- 08/02/18 Joshua Harris left a voice message with Mark Brown and requested a call back. Mr. Harris asked about the status of Tier 2 testing and whether the facility is an active recipient of asbestos waste. He also mentioned the requirement to submit a GCCS design plan within one year of the initial NMOC report which showed NMOC emissions greater than the 34 Mg/yr threshold that was submitted on November 1, 2017.
- 08/03/18 Joshua Harris sent an email to Mark Brown regarding the application, Tier 2 testing deadlines and the requirement to submit a design plan. Mr. Harris requested to be contacted.
- 08/03/18 Joshua Harris spoke with Mark Brown of WithersRavenel, Inc. and Vance Moore of Garrett and Moore, Inc. Mr. Brown and Mr. Moore requested a meeting with DAQ regarding questions around Tier 2 testing and the requirement to submit a GCCS design plan, and stated that the facility planned to request to conduct Tier 2 testing even though the deadline had passed in order to show that NMOC emissions are below the threshold which would require a design plan to be submitted and a GCCS to be installed. Mr. Harris stated that DAQ likely does not have the authority to approve such a request, and that it may need to be posed to EPA for approval. After the call, Mr. Harris followed up with an email in which he confirmed possible dates for a future meeting, and also confirmed that DAQ does not have the ability to make a determination regarding a request for Tier 2 testing after the deadline to show that a design plan is not required to be submitted; Mr. Harris stated that the request will need to be sent to EPA for approval.
- 08/08/18 A meeting was held at RCO concerning the Cleveland County Landfill. In attendance from DAQ were William Willets, Booker Pullen, Gary Saunders, Alice Wessner, and Joshua Harris. Individuals representing the landfill were Mark Brown, Matt Lamb, and Vance Moore. Mr. Brown, Mr. Lamb, and Mr. Moore offered some background on Tier 2 testing issues faced at the site, and elaborated on the EPA response to the landfill's requests to deviate from testing procedures. They requested that DAQ have a representative on site to verify that the testing is performed according to EPA's requirements contained in the response. Mr. Saunders stated that an observer would be coordinated through the MRO, and Mr. Harris requested a copy of EPA's response letter for DAQ to be able to verify the test is being performed as EPA is requiring.

As required by the NSPS, the landfill will submit a GCCS design plan within 12 months of the Tier 1 calculation which showed NMOC emissions rate greater than the threshold. If the GCCS design plan is submitted in a timely manner, the landfill can still conduct Tier 2 testing within the 30-month compliance window to show that the NMOC emission rate is below the threshold, however, if the NMOC emission rate is determined to exceed the 34 Mg/yr threshold, the facility will be required to install the GCCS and begin operation within the 30-month compliance window. Mr. Harris stated that he thought the initial performance test of the GCCS is required to be completed within that 30-month window, and that he would find out and follow-up.

Joshua Harris later sent a follow-up email offering clarification on the initial performance test timeframe, stating that the initial GCCS performance test is not required to be completed within the 30-month compliance window of the NSPS.

- 08/16/18 Joshua Harris emailed copies of the draft permit and review documents to Booker Pullen, RCO, and Melinda Wolanin, MRO, for comments.
- 08/27/18 Bob Caudle, MRO, and Booker Pullen responded with minor editorial comments.
- 09/04/18 Joshua Harris emailed copies of the draft permit and review documents to Nathan M^cNeilly, Solid Waste Director, and to Mark Brown, Matt Lamb, and Vance Moore for comments.
- 09/04/18 Joshua Harris received an email from Matt Lamb with questions regarding toxics and amended design capacity reports. Mr. Lamb asked for confirmation that there are no permit limitations for modeled pollutants. Mr. Harris confirmed that this is the case since the landfill is subject to a NESHAP, which exempts the landfill from toxics permitting per 15A NCAC 02Q .0702(a)(27)(A). Mr. Harris explained that DAQ will continue to evaluate toxic emissions and that the facility may become subject to permitting for toxics in the future if the landfill is no longer subject to a NESHAP/MACT.

Mr. Lamb also asked about the requirement in the draft permit to submit an amended design capacity report, since the facility has already exceeded the 2.5 million Mg and 2.5 million m³ thresholds. Mr. Harris responded, stating that Mr. Lamb is correct, and that the reporting requirement can be removed to eliminate any confusion.

No additional comments were received.

- Xx/xx/18 30-day public notice and 45-day EPA review periods begin.
- Xx/xx/18 Public notice period ends.
- Xx/xx/18 EPA review period ends.
- Xx/xx/18 Permit 10556T00 issued.

4. Changes to Existing Permit

The facility was previously exempted from permitting per 15A NCAC 02Q .0102(g)(13). This is the first air quality permit issued to the facility.

Page No.	Section	Description of Changes
All Pages	All Sections	All parts of the Cover Letter and Permit are new.

5. Changes in Equipment

This is the first air quality permit obtained by the facility. As previously stated, the facility is a Municipal Solid Waste Landfill, which consists of four separate sites: the West MSW, which is further separated into a Northern and Southern site, the East MSW site, and the currently active Self-M^cNeilly site. This landfill as a whole has been added to the air quality permit as ID No. ES-1.

Additionally, there is a small, 60 kW, diesel-fired emergency generator, and two 348,000-gallon leachate storage tanks; these have been added to the insignificant activities list as ID Nos. IES-1 and IES-2, respectively.

Title V Equipment Editor has been updated to include these emission sources.

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 Subpart XXX 40 CFR 61, Subpart M	Municipal Solid Waste Landfill consisting of four sites: Closed West MSW sites (Northern and Southern), Closed East MSW site, and Active Self-M ^c Neilly site (total design capacity of 3,311,455 Mg)	N/A	N/A

The facility’s insignificant/exempt activities per 15A NCAC 02Q .0503(8) are as follows:

Emission Source ID No.	Emission Source Description
IES-1 NSPS IIII GACT ZZZZ	One (1) Diesel-fired Emergency Generator (60 kW, 97 HP)
IES-2	Two (2) Leachate Storage Tanks (348,000 gallons each)

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

- **NSPS –**
 - ✓ The MSW Landfill (ID No. ES-1) is subject to 40 CFR 60, Subpart XXX “Municipal Solid Waste Landfills that Commenced Construction, Reconstruction, or Modification after July 17, 2014,” since the Phase 2 vertical expansion began construction was permitted and began construction on August 14, 2014, at which point the landfill also triggered the requirement to obtain a Title V permit due to the design capacity exceeding 2.5 million Mg and 2.5 million m³.
 - ✓ The emergency generator (ID No. IES-1) is subject to 40 CFR 60, Subpart IIII “Stationary Compression Ignition Internal Combustion Engines.”
 - ✓ The MSW Landfill (ID No. ES-1) is NOT subject to 40 CFR 60, Subpart WWW, “Municipal Solid Waste Landfills.” The landfill was recently modified and is subject to NSPS Subpart XXX, which supersedes Subpart WWW.

- **NESHAP** –
 - ✓ The MSW Landfill (ID No. ES-1) is NOT currently subject to 40 CFR 63, Subpart AAAA “Municipal Solid Waste Landfills.” Although the design capacity exceeds the 2.5 million Mg and 2.5 million m³ thresholds, the facility is working through the Tiered testing methods contained in 40 CFR 60.754(a). If the facility’s NMOC emission rate exceeds the 50 Mg/yr threshold, the compliance date is the date by which the facility would be required to install a GCCS per NSPS Subpart WWW.
 - ✓ The MSW Landfill (ID No. ES-1) is subject to 40 CFR 61, Subpart M “National Emission Standard for Asbestos,” since it is an active disposal site for asbestos-containing material.
 - ✓ The emergency generator (ID No. IES-1) is subject to 40 CFR 63, Subpart ZZZZ “Reciprocating Internal Combustion Engines,” and is considered a new emergency engine under this regulation. The facility will comply with this subpart by complying with the requirements of 40 CFR 60, Subpart IIII.
- **PSD** – The facility’s potential emissions do not exceed PSD permitting thresholds.
 - ✓ Cleveland County has triggered increment tracking under PSD for PM_{2.5}, PM₁₀, SO₂, and NO_x. This permitting action will consume the following increments: PM_{2.5} = 0.21 lb/hr, PM₁₀ = 0.21 lb/hr, NO_x = 3.01 lb/hr.
- **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 to this facility, since the facility does not use control devices to comply with emission standards.
- **Attainment status** – Cleveland County is in attainment for all criteria pollutants.

7. Regulatory Review

The MSW landfill (ID No. ES-1) is subject to the following air quality regulations:

- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart XXX
- 15A NCAC 02D .1110: National Emission Standards for Hazardous Air Pollutants, 40 CFR 61, Subpart M
- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

The emergency generator (ID No. IES-1) is subject to the following air quality regulations:

- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521: Control of Visible Emissions
- 15A NCAC 02Q .0524: New Source Performance Standards, 40 FCR 60, Subpart IIII
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart ZZZZ

MSW landfill (ID No. ES-1):

15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart XXX

The facility is subject to 40 CFR 60, Subpart XXX since it was modified after July 17, 2014. The landfill submitted the initial design capacity report and initial NMOC emission rate report on November 1, 2017. The initial NMOC report indicated that NMOC emissions from the landfill surface exceed the 34 Mg/yr threshold. The landfill missed the 6-month window to complete Tier 2 testing to show that NMOC emissions are below the threshold, and is now required to submit a GCCS design plan no later than October 31, 2018, which is 1 year after the Tier 1 submittal. The facility also has 30 months from the submittal of the Tier 1 calculation to install and begin operation of the GCCS unless Tier 2 testing shows that the landfill's NMOC emissions are below the threshold.

The facility intends to conduct Tier 2 testing, and believes that the NMOC emission rate will be less than 34 Mg/yr. The permit condition has been written based on this assumption, and includes conditions for periodic testing and reporting. If the facility cannot demonstrate through Tier 2 testing that the NMOC emission rate is below the threshold, then the facility will be required to install a GCCS, and submit a permit modification to include the appropriate requirements for operation and monitoring. 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 materials, and is therefore subject to 40 CFR 61, Subpart M. The landfill must utilize a general set of work practices which may include ensuring there are no visible emissions at the disposal site, cover waste daily with at least six inches of compacted non-asbestos material or use another dust suppression agents, or 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. 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 .1806: Control and Prohibition of Odorous Emissions

This regulation is state-enforceable only. The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary. Compliance is expected.

IES-1 Diesel-fired Emergency Generator:

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

Emissions of sulfur dioxide from fuel combustion shall not exceed 2.3 lb/mmBtu heat input. The generator combusts No. 2 fuel oil. The AP-42 emission factor for combustion of No. 2 fuel oil with a sulfur content of 0.0015 wt.% is 0.002 lb/mmBtu. Compliance is expected.

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

The emergency generator was installed after July 1, 1971, and is therefore subject to 15A NCAC 02D .0521(d). Per this regulation visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute periods averaging more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. The combustion of diesel fuel in a properly maintained and operated engine is not likely to produce visible emissions other than those observed immediately after start-up. Compliance is expected.

15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart IIII

The diesel-fired emergency generator (ID No. IES-1) is subject to the requirements of 40 CFR 60, Subpart IIII. The engine must be a certified engine, as evidenced by a Certificate of Conformity issued by the EPA. Diesel fuel used in the engine is limited to a maximum sulfur content of 15 ppm, and must have a minimum cetane rating of 40 or maximum aromatic content of 35 vol.%. The engine shall be equipped with a non-resettable hour meter, and the engine and any control devices must be maintained and operated per the manufacturer's written instructions. Only emission-related settings that are permitted by the manufacturer may be changed.

Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity.

For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

The Permittee must keep the following records:

- i. the date and time of each recorded action;
- ii. the results of each inspection;
- iii. the results of any maintenance performed on the engine;
- iv. any variance from manufacturer's recommendations, if any, and corrections made;
- v. the hours of operation of the engine in emergency and non-emergency service.
[40 CFR 60.4214(b)]
- vi. If a PM filter is used, records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached
[40 CFR 60.4214(c)]; and
- vii. Documentation from the manufacturer that the engine is certified to meet the emission standards in 40 CFR 60.4202.

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

The Permittee shall comply with all applicable provisions, including the monitoring, recordkeeping, and reporting contained in Environmental Management Commission Standard 15A NCAC 02D .1111 "Maximum Achievable Control Technology" (MACT) as promulgated in 40 CFR 63, Subpart ZZZZ, "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines."

Pursuant to 40 CFR 63.6590(c)(6), the emergency generator (ID No. IES-1) must meet the requirements of 40 CFR Part 63 Subpart ZZZZ and Subpart A by meeting the requirements of 40 CFR 60, Subpart IIII. No further requirements apply for this engine under 40 CFR 63, Subpart ZZZZ and Subpart A.

8. Other Regulatory Requirements

- A Zoning Consistency Determination was submitted with the permit application. Chris Martin, Senior Planner with the Cleveland County Planning Department, determined that the proposed operation is consistent with applicable zoning ordinances.
- A P.E. Seal is required for this permit application. The application was sealed by Pieter K. Scheer, who is a registered Professional Engineer in the State of North Carolina (Seal #021666).
- The required application fee of \$9,561 for a Greenfield facility requesting a 1st Time Title V permit was received with the permit application.

9. Emissions Review

The facility's potential emissions are as follows:

Pollutant	Landfill Volume Emissions (tons/yr)	Emergency Generator (tons/yr)	Leachate Storage Tanks (tons/yr)	Total (tons/yr)
PM (TSP)	0.00	0.05	0.00	0.05
PM ₁₀	0.00	0.05	0.00	0.05
PM _{2.5}	0.00	0.05	0.00	0.05
SO ₂	0.00	0.00	0.00	0.00
NO _x	0.00	0.75	0.00	0.75
CO	0.00	0.16	0.00	0.16
VOC	34.37	0.06	0.00	34.43
Highest Individual HAP (Toluene, pounds/yr)	3,110	0.14	5.5 x 10 ⁻³	3,110
Total HAP (pounds/yr)	11,228	1.3	0.12	11,230

There are no control devices or limitations, so the actual emissions are expected to be equal to the facility's potential emissions.

Landfill Volume Emissions:

Volume emissions from the landfill surface are based on the LFG generation rate from LandGEM, estimated through CY2025, which is the anticipated end of life for the currently permitted to operate Phases 1-3 of the Self-M^cNeilly site. Volume emissions were calculated using the methods of the 2008 Draft of AP-42 Chapter 2.4; example calculations are in the review of the landfill's toxic emissions in Section 10. Per AP-42, the VOC concentration for landfills with the majority of waste in place after 1992 (East MSW and Self M^cNeilly) is 99.7% of the NMOC concentration, and is 39% of the NMOC concentration for landfills with the majority of waste in place prior to 1992 (West MSW).

The calculated NMOC emission rate for the landfill is assumed to be biased high since it was based on the Tier 1 calculation method, which assumes an NMOC concentration of 4,000 ppmv. The facility has yet to conduct Tier 2 testing to establish a site-specific NMOC concentration. To provide a more realistic estimate of NMOC emissions and VOC, the default values in AP-42 were used: 838 ppmv for the East MSW and Self-M^cNeilly sites, and 595 ppmv for the West MSW sites. VOC emissions were then calculated by applying the percentages mentioned above.

Emergency Generator:

Potential emission from the facility's emergency generator were calculated using NC DAQ spreadsheet "Gas and Diesel Internal Combustion Engines with Power Rating of ≤ 600 HP for diesel engines and ≤ 250 HP for Gasoline Engines Emissions Calculator, Revision S 6/22/2015," which utilizes emission factors from AP-42 Chapter 3.3. 500 hours of operation per year were assumed for this calculation.

Leachate Storage Tanks:

Emissions based on sample data available from 2016 records. Potential emissions were estimated using the total amount of leachate collected in 2016, and maximum pollutant concentrations from sample data, with a 10x multiplier applied.

10. Air Toxics

The facility evaluated toxic emissions from each portion of the landfill through Phase 3 of construction of the Self-M^cNeilly site, projecting emissions through CY2025. This projection resulted in a total estimated peak LFG generation rate of 12,051,406 m³/yr through CY2025. Individual pollutant emission rates were estimated using the LandGEM output and default pollutant concentrations from the October 2008 Draft of AP-42 Chapter 2.4 for Municipal Solid Waste Landfills. Toxic emissions from leachate collection and storage were also included, however, these emission rates are extremely low, and have a negligible contribution to toxic air pollutant emission rates.

In addition to historical waste acceptance records, the facility used the following parameters in LandGEM to determine each landfill section's contribution to the overall LFG and methane generation rates:

Parameter	West MSW (Southern)	West MSW (Northern)	East MSW	Self-M ^c Neilly Phases 1-3
Landfill Open Year	1971	1979	1998	2009
Landfill Closure Year	1978	1998	2009	2025
Design Capacity (Mg) (Waste-in-place if closed)	139,907	889,416	819,929	1,249,555
Waste Acceptance Rate (TPY)	Closed	Closed	Closed	84,191
Methane Generation Rate (year ⁻¹)	0.04	0.04	0.04	0.04
Potential Methane Generation Capacity (m ³ /Mg)	100	100	100	100
NMOC Concentration* (ppmv)	4,000	4,000	4,000	4,000
Methane Content	50%	50%	50%	50%
LFG Generation Rate at Peak (m ³ /yr)	154,584	1,841,006	2,836,944	7,218,872
Methane Generation Rate at Peak (m ³ /yr)	77,292	920,503	1,418,472	3,609,436

*NMOC concentration assumed to be default since evaluation was made prior to site-specific Tier 2 sampling.

Molecular Weights and Concentrations as listed in the October 2008 Draft of AP-42 Chapter 2.4:

Constituent	Waste-in-Place Prior to 1992		Waste-in-Place on or After 1992	
	Molecular Weight (grams/gmole)	Concentration (ppmv)	Molecular Weight (grams/gmole)	Concentration (ppmv)
1,1,1-Trichloroethane (Methyl Chloroform)	133.41	0.48	133.40	0.243
1,1,2,2-Tetrachloroethane	167.85	1.11	167.85	0.535
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	187.37	0.0672
1,1-Dichloroethene (Vinylidene Chloride)	96.94	0.20	96.94	0.160
1,2 Dibromoethane (Ethylene Dibromide)	187.88	0.001	187.86	0.00480
1,2-Dichloroethane (Ethylene Dichloride)	98.96	0.41	98.96	0.159
1,3 Butadiene	ND	ND	54.09	0.166
1,4 Dioxane	ND	ND	88.11	8.29 x 10 ⁻³
2-Butanone (MEK)	72.11	7.09	72.11	4.01
4-Methyl-2-Pentanone (MIBK)	100.16	1.87	100.16	0.883
Acetaldehyde	ND	ND	44.05	0.0774
Acrylonitrile	53.06	6.33	BDL	BDL
Benzene	78.11	1.91	78.11	2.40
Benzyl Chloride	ND	ND	126.58	0.0181
Carbon Disulfide	76.13	0.58	76.14	0.147
Carbon Tetrachloride	153.84	0.004	153.82	7.98 x 10 ⁻³
Chlorobenzene	112.56	0.250	112.56	0.484
Dichlorobenzene	147.0	0.210	147.0	0.940
Dichlorodifluoromethane	120.91	15.7	120.91	1.18
Dichlorofluoromethane	102.92	2.62	ND	ND
Dichloromethane (Methylene Chloride)	84.94	14.3	84.93	6.15
Ethyl Acetate	ND	ND	88.11	1.88
Ethyl Mercaptan	62.13	2.28	62.14	0.198
Formaldehyde	ND	ND	30.03	0.0172
n-Hexane	86.18	6.57	86.18	3.10
Hydrogen Sulfide	34.08	35.5	34.08	32.0
Hydrogen Chloride*	36.47	42.0	36.47	72.0
Mercury (total)	200.61	2.92 x 10 ⁻⁰⁴	200.59	1.22 x 10 ⁻⁴
Methanethiol (Methyl Mercaptan)	48.11	2.49	48.11	1.37
Perchloroethylene (Tetrachloroethene)	165.83	3.73	165.83	2.03
Styrene	ND	ND	104.15	0.411
Toluene	92.13	39.3	92.14	29.5
Trichloroethylene (Trichloroethene)	131.40	2.82	131.39	0.828
Trichlorofluoromethane	137.38	0.76	137.37	0.248
Trichloromethane (Chloroform)	119.39	0.03	119.38	0.0708
Vinyl Chloride	62.50	7.34	62.50	1.42
Xylenes	106.16	12.1	106.17	9.23

*Hydrogen Chloride is generated by sources combusting Cl⁻ ion-laden LFG; there are no LFG combustion sources at this facility.

ND = No Data

BDL = Below Detection Limit

The following example calculation is for the emission of benzene as a volume emission from the landfill surface; calculations for other pollutants follow the same methodology

- Maximum LFG emission Rate from LandGEM estimates above in m³/hour
- Methane is only 50% of each gas stream
- Q_{benzene} = Emission rate of benzene, m³/hour
- C_{benzene} = Concentration of benzene (1.91 ppmv, pre-1992; 2.40 ppmv, post-1992)
- Multiplication factor for 50% methane concentration in landfill gas = 2.0
- Molecular weight of benzene = 78.11 g/mole

$$Q_{benzene} = 2.0 \times Q_{CH_4} \times \left(\frac{C_{benzene}}{1 \times 10^6} \right) \quad (\text{AP-42, Equation 3})$$

Equation 3 can be expressed as a summation of each individual waste disposal site to determine the total generation rate of benzene facility-wide at the peak, using the hourly methane generation rates from the LandGEM outputs listed previously:

$$Q_{benzene} = 2.0 \times \left[\left(Q_{WestCH_4} \times \left(\frac{C_{benzene}}{1 \times 10^6} \right) \right) + \left((Q_{EastCH_4} + Q_{SMCH_4}) \times \left(\frac{C_{benzene}}{1 \times 10^6} \right) \right) \right]$$

$$Q_{benzene} = 2.0 \times \left[\left(997,795 \frac{m^3}{hour} \times \left(\frac{1.91 \text{ parts}}{1 \times 10^6} \right) \right) + \left(\left(1,418,472 \frac{m^3}{hour} + 3,609,436 \frac{m^3}{hour} \right) \times \left(\frac{2.40 \text{ parts}}{1 \times 10^6} \right) \right) \right]$$

$$Q_{benzene} = \frac{27.95 m^3}{hour}$$

The total mass of benzene present in the LFG generated across all sites was found using Equation 4 of AP-42, Section 2.4.4.2:

$$UM_{benzene} = \frac{27.95 m^3}{hour} \times \left[\frac{78.11 \text{ g / gmole} \times 1 \text{ atm}}{\frac{8.205 \times 10^{-5} m^3 - atm}{gmol-K} \times \frac{1,000 \text{ g}}{kg} \times (273 + 25^\circ C) K} \right] \times \frac{2.2 \text{ lbs}}{kg} = \frac{196.4 \text{ lbs (benzene)}}{hour}$$

The projected toxic emissions through CY2025 and comparison to their respective TPERs from 15A NCAC 02Q .0711(a) are as follows:

Toxic Air Pollutant	Averaging Period	Total Landfill Volume Emissions	TPER	Modeling Required?
1,1,1-Trichloroethane (Methyl Chloroform)	lb/day	0.11	250	No
	lb/hr	4.6×10^{-3}	64	No
1,1,2,2-Teterechloroethane	lb/yr	114.7	430	No
1,1,2-Trichloro-1,2,2-Trifluoroethane	lb/hr	1.3×10^{-3}	240	No
1,1-Dichloroethene (Vinylidene Chloride)	lb/day	0.047	2.5	No
1,2-Dibromoethane (Ethylene Dibromide)	lb/yr	0.85	27	No
1,2-Dichloroethane (Ethylene Dichloride)	lb/yr	21.52	260	No
1,3-Butadiene	lb/yr	8.12	11	No
1,4-Dioxane	lb/day	1.8×10^{-3}	12	No
2-Butanone (MEK)	lb/day	0.97	78	No
	lb/hr	0.040	22.4	No
4-Methyl-2-Pentanone (MIBK)	lb/day	0.31	52	No
	lb/hr	0.013	7.6	No
Acetaldehyde	lb/hr	3.5×10^{-4}	6.8	No
Acrylonitrile	lb/day	0.17	0.4	No
	lb/hr	6.8×10^{-3}	0.22	No
Benzene	lb/yr	196.4	8.1	YES
Benzyl Chloride	lb/hr	2.4×10^{-4}	0.13	No
Carbon Disulfide	lb/day	0.049	3.9	No
Carbon Tetrachloride	lb/yr	1.22	460	No
Chlorobenzene	lb/day	0.15	46	No
p-Dichlorobenzene	lb/hr	0.015	16.8	No
Dichlorodifluoromethane	lb/day	1.29	5200	No
Dichlorofluoromethane	lb/day	0.13	10	No
Dichloromethane (Methylene Chloride)	lb/yr	690.7	1600	No
	lb/hr	0.079	0.39	No
Ethyl Acetate	lb/hr	0.017	36	No
Ethyl Mercaptan	lb/hr	4.1×10^{-3}	0.025	No
Formaldehyde	lb/hr	3.6×10^{-5}	0.04	No
n-Hexane	lb/day	0.94	23	No
Hydrogen sulfide	lb/day	3.30	1.7	YES
Mercury (alkyl)	lb/day	8.9×10^{-5}	0.0013	No
Methanethiol (Methyl Mercaptan)	lb/hr	9.3×10^{-3}	0.013	No
Perchloroethylene (Tetrachloroethylene)	lb/yr	415.6	13000	No
Styrene	lb/hr	4.4×10^{-3}	2.7	No
Toluene	lb/day	8.52	98	No
	lb/hr	0.35	14.4	No
Trichloroethylene	lb/yr	165.0	4000	No
Trichlorofluoromethane	lb/hr	3.7×10^{-3}	140	No
Trichloromethane (Chloroform)	lb/yr	8.29	290	No
Vinyl chloride	lb/yr	162.7	26	YES
Xylene	lb/day	3.1	57	No
	lb/hr	0.13	16.4	No

Since facility-wide emissions of Benzene, Hydrogen Sulfide, and Vinyl Chloride were found to exceed their respective TPERs, a compliance demonstration was required. The facility requested that DAQ perform a dispersion analysis for these pollutants. Each section of the landfill was individually modeled for emissions through CY2025 as determined below:

Source	Modeled Emission Rates (lb/hr)		
	Benzene	Hydrogen Sulfide	Vinyl Chloride
West MSW (Northern Section)	2.84×10^{-3}	2.30×10^{-2}	8.74×10^{-3}
West MSW (Southern Section)	2.37×10^{-4}	1.92×10^{-3}	7.29×10^{-4}
East MSW	5.48×10^{-3}	3.18×10^{-2}	2.63×10^{-3}
Self-McNeilly Phases 1-3	1.39×10^{-2}	8.11×10^{-2}	6.62×10^{-3}

The analysis concluded the following impacts at the facility’s property boundary:

Pollutant	Concentration at Property Boundary ($\mu\text{g}/\text{m}^3$)	AAL ($\mu\text{g}/\text{m}^3$)	% AAL
Benzene	0.055	0.12	46%
Hydrogen Sulfide	1.60	120	1%
Vinyl Chloride	0.033	0.38	9%

None of the toxic air pollutants evaluated exceed their respective AAL; therefore, DAQ has determined that there is NOT an unacceptable risk to human health. The modeling adequately demonstrates compliance on a source-by-source basis. The facility was discovered to be an active disposal site for asbestos containing waste, making it subject to 40 CFR 61, Subpart M. Since such facilities are exempt from toxics permitting per 15A NCAC 02Q .0702(a)(27)(A), the permit will contain neither a 02D .1100 nor a 02Q .0711 condition. Emissions of toxic air pollutants from the landfill should be periodically re-evaluated to ensure compliance, and the landfill may become subject to toxics permitting in the future in the event that it is no longer an active asbestos waste disposal site subject to 40 CFR 61, Subpart M.

11. 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 pursuant shall be provided to EPA.

The 30-day public notice period was from MONTH XX, 2018 through MONTH XX 2018.

The EPA 45-day review period was from MONTH XX, 2018 through MONTH XX, 2018.

XX comments were received during the public notice period or the EPA 45-day review.

12. Statement of Compliance

There is no compliance history for this facility as this is the first air permit issued. The facility was previously exempt from permitting per 15A NCAC 02Q .0102(g)(13).

13. Comments and Recommendations

The permit application for a 1st Time Title V permit for Cleveland County Municipal Solid Waste Landfill located in Shelby, Cleveland County, NC has 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. 10556T00.