

**NORTH CAROLINA DIVISION OF  
 AIR QUALITY**

## Application Review

**Issue Date:** **TBD**

**Region:** Raleigh Regional Office  
**County:** Wake  
**NC Facility ID:** 9200593  
**Inspector's Name:** Sindy Huang  
**Date of Last Inspection:** 02/16/2022  
**Compliance Code:** 3 / Compliance - inspection

Facility Data	Permit Applicability (this application only)
<p><b>Applicant (Facility's Name):</b> North Wake County Landfill</p> <p><b>Facility Address:</b>            North Wake County Landfill            9004 Deponie Drive            Raleigh, NC 27614</p> <p><b>SIC:</b> 4953 / Refuse Systems  <b>NAICS:</b> 562212 / Solid Waste Landfill</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V  <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>	<p><b>SIP:</b> 15A NCAC 02D .0516, .0517, .0521, .0524, .1111, .1806  <b>NSPS:</b> N/A  <b>NESHAP:</b> MACT AAAA, GACT ZZZZ  <b>PSD:</b> N/A  <b>PSD Avoidance:</b> N/A  <b>NC Toxics:</b> N/A  <b>112(r):</b> N/A  <b>Other:</b> 40 CFR 62 Subpart OOO</p>

Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	
Mike Proctor LFG Operations Coordinator (919) 856-6434 PO Box 550 Raleigh, NC 27602	John Roberson Solid Waste Management Director (919) 856-6365 PO Box 550 Raleigh, NC 27602	Lee Squires Facilities Manager (919) 856-6199 PO Box 550 Raleigh, NC 27602	<p><b>Application Number:</b> 9200593.21A  <b>Date Received:</b> 12/08/2021  <b>Application Type:</b> Modification  <b>Application Schedule:</b> TV-Reopen for Cause  <b>Existing Permit Data</b>  <b>Existing Permit Number:</b> 08890/T10  <b>Existing Permit Issue Date:</b> 04/20/2020  <b>Existing Permit Expiration Date:</b> 03/31/2025</p>

Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2021	0.7500	3.22	5.41	8.01	0.8900	1.99	0.7253 [Toluene]
2020	0.1500	0.6200	4.13	1.60	0.1700	1.36	0.5605 [Toluene]
2019	0.2800	1.22	5.47	3.01	0.3300	1.83	0.7430 [Toluene]
2018	0.2900	1.22	7.54	3.10	0.3400	2.48	1.02 [Toluene]
2017	0.2400	1.01	6.53	2.60	0.2900	2.15	0.8869 [Toluene]

<p><b>Review Engineer:</b> Massoud M. Eslambolchi</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue:</b> 08890T11  <b>Permit Issue Date:</b> TBD  <b>Permit Expiration Date:</b> 3/31/2025</p>
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## 1. Purpose of Application

The North Wake County Landfill is a closed municipal solid waste (MSW) landfill located in Raleigh, Wake County, North Carolina. The landfill submitted application 9200593.21A in accordance with 15A NCAC 02D .0517 “Reopen for Cause” in order to replace the existing MACT AAAA conditions in the Title V permit to include the changes in the February 14, 2022 Federal Register, Volume 87, Issue 30 for this Subpart. Also, because the North Carolina Rules (15A NCAC 02D .1700) for existing landfills have not yet been approved in the State Implementation plan by the US EPA, the Federal regulations for existing landfills as codified in 40 CFR 62, Subpart OOO will be placed into the permit to replace the previous 40 CFR 60, Subpart WWW regulations.

In the February 14, 2022 Federal Register, the U.S. Environmental Protection Agency (EPA) finalized technical revisions and clarifications for the National Standards for Hazard Air Pollutants (NESHAP, Subpart AAAA) for MSW Landfills established in the March 26, 2020, final rule.

- This final rule also amended the MSW Landfill’s NSPS regulations in 40 CFR Part 60, Subpart XXX, to clarify and align the timing of compliance for certain requirements involving the installation of a gas collection and control systems (GCCS) under related MSW landfill rules.
- Additionally, the EPA revised the definition of Administrator in the MSW Landfills Federal Plan that was promulgated on May 21, 2021 to clarify who has the authority to implement and enforce the applicable requirements. The final rule was effective February 14, 2022.

The landfill has submitted Application No. 9200593.21A for a “Reopen for Cause” and the application will go through the 30-day public notice and 45-day EPA review periods prior to issuance.

## 2. Facility Description

North Wake County Landfill originally opened in 1986 to accept municipal waste from the Raleigh/Wake County area. The landfill (ID Nos. ES-1 and ES-2) is comprised of a closed unlined section of the landfill and a closed lined section of the landfill. The unlined section of the landfill opened in 1986 and closed in 1997, at which time a final cover system was installed. The unlined section of the landfill is approximately 36 acres with a capacity of 1.4 million megagrams of waste.

The lined section of the landfill opened in 1996 and was closed in May 2008. The final cover system on the remaining portion of the fill area was completed in June 2009. A geomembrane system was used for the final cover of this section of the landfill. The closed landfill has an existing capacity of approximately 4.1 megagrams.

The unlined landfill has 36 vertical gas extraction wells, and the lined landfill has 56 vertical extraction wells. The wells are connected to a header pipe that conveys collected landfill gas (LFG) to a blower station. The collected gas is either flared or transported to SpecGx LLC - Mallinckrodt Pharmaceuticals (Facility ID 9200349) for use in the facility’s gas-fired boilers. The LFG is treated by a gas treatment system (ID No. CD-Treatment) prior to being sent offsite to the boilers. The facility’s LFG is managed by a private company, DTE. The landfill is currently open to the public as a park.

## 3. Permit History Since Last Renewal and Application Chronology

- 10/10/2021 DAQ sent letter of Re-open For Cause to the facility.
- 12/08/2021 Application No. 9200593.21A was created by DAQ.
- 08/15/2023 Pre-Draft for supervisory review. Received comments and revised draft.
- 08/17/2023 Draft permit and review sent to Facility, SSCB, and Regional Office (RRO).
- Xxxxx Draft Permit & Review documents sent for Public Notice.
- Xxxxxx 30-Day Public Comment period ends.

Xxxxx 45-Day EPA review periods ends.

Xxxxxx Air Quality Permit issued.

**4. Table of Changes to Existing Permit No. 08890T10**

Page No.	New Permit Section	Description of Changes
-----	Cover letter	<ul style="list-style-type: none"> <li>● Updated letterhead and permit using new permit shell</li> <li>● Updated permit revision numbers and dates throughout</li> </ul>
-----	Cover letter	<ul style="list-style-type: none"> <li>● Added page containing “Notice Regarding the Right to Contest A Division Of Air Quality Permit”</li> </ul>
-----	Cover letter	<ul style="list-style-type: none"> <li>● Revised the Summary of Changes to the Permit page</li> </ul>
1	1 <sup>st</sup> Page of Permit	<ul style="list-style-type: none"> <li>● Changed number, changed “Replaces Permit” number</li> <li>● Changed effective date and issue date of the Permit</li> <li>● Revised the application number and complete application date</li> </ul>
Page 3	List of Acronyms	<ul style="list-style-type: none"> <li>● Added list to the front of the permit</li> </ul>
Page 5	Section 2.1	<ul style="list-style-type: none"> <li>● Removed NSPS WWW citation for NMOC row and replaced with Federal regulations for existing landfills pursuant to 40 CFR 40 CFR 62, Subpart OOO</li> </ul>
Page 5	Section 2.1	<ul style="list-style-type: none"> <li>● Removed NSPS Subpart WWW applicability from table of regulated pollutants</li> <li>● Added 40 CFR 62 Subpart OOO to permit for existing municipal solid waste landfills</li> </ul>
Page 6	Section 2.1 A.3	<ul style="list-style-type: none"> <li>● Updated MACT AAAA requirements</li> </ul>
Page 18	Section 2.1 A.7	<ul style="list-style-type: none"> <li>● Added 40 CFR 62, Subpart OOO requirements for existing municipal solid waste landfills</li> </ul>
Page 45	Section 3	<ul style="list-style-type: none"> <li>● Added new Section 3 for Insignificant Activities</li> </ul>
Page 46	Section 4	<ul style="list-style-type: none"> <li>● Added new Section 4 for General Conditions (Updated version 7.0, 8/21/2023)</li> </ul>

**5. Changes in Equipment**

There are no changes to the facility’s permitted emission sources or control devices as part of this application. 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	Municipal Solid Waste Landfill	CD-GCCS1	One landfill gas collection and control system
ES-2		CD-Treatment	One landfill gas treatment system
MACT AAAA, 40 CFR 62 Subpart OOO		CD-4	One utility flare (1,500 scfm maximum flow rate)
		CD-3	One utility flare (2,800 scfm maximum flow rate)

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

Emission Source ID No.	Emission Source Description
I-1 GACT ZZZZ	One diesel-fired emergency generator (130 kW)
I-3	Closed waste disposal unit

## 6. Regulatory Review

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

- 15A NCAC 02D .0516: Sulfur Dioxide Emission from Combustion Sources
  - 15A NCAC 02D .0521: Control of Visible Emissions
  - 15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart AAAA
  - 40 CFR 60, Subpart WWWW: Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification on or After May 30, 1991, but Before July 18, 2014 (This regulation will be removed)
  - 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions
- All these regulations will remain in the permit except 40 CFR 60, Subpart WWWW.

- 15A NCAC 02D .0524: New Source Performance Standards “40 CFR 60, Subpart WWWW” will be removed from the permit because it no longer applies and will be replaced with the Federal regulation 40 CFR 62, Subpart OOO because the State Plan for Landfills has not been approved by the US EPA.

### **15A NCAC 02D .0516: Sulfur Dioxide Emission from Combustion Sources**

The landfill’s flares (ID Nos. CD-3 and CD-4) are subject to this requirement. This TV-reopen for cause modification of the facility’s permit does not change the existing requirement. SO<sub>2</sub> emissions from combustion sources are limited to 2.3 pounds per million Btu heat input. The emissions of SO<sub>2</sub> are calculated in Section 10 below in this engineering review to be 0.91 pounds per hour (0.91 pounds per hour ÷ 130.29 million Btu per hour = .007 lbs SO<sub>2</sub>/million Btu heat input). No monitoring, recordkeeping or reporting will be required for LFG combustion as stated in the current permit because the combustion of landfill gas should always comply with the 2.3 pounds of SO<sub>2</sub> per million Btu heat input. This is mainly because of the high heat content of the gas and the ratio of sulfur compounds in the gas. Continued compliance is expected.

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

The landfill’s flares (ID Nos. CD-3 and CD-4) are subject to this requirement because they were manufactured after July 1, 1971. Visible emissions are limited to a six-minute average opacity of 20%. Visible emissions from a properly maintained and operated flare are commonly not a concern. No monitoring, recordkeeping or reporting is required for LFG combustion in this source. Continued compliance is expected.

### **15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart AAAA**

The MSW landfill (ID Nos. ES-1 and ES-2) are the subject source because the landfill emits greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR 63.1959. The MACT AAAA regulations contain the updated operational standards, compliance provisions, and monitoring requirements of 40 CFR 63.1958, 63.1960, and 63.1961, as well as the recordkeeping and reporting requirements of MACT AAAA. These conditions also include requirements for enhanced monitoring of elevated temperature wells. The landfill is required to continue wellhead monitoring and surface emissions monitoring, as well as continue to keep records and make periodic reports, some of which are required to be submitted electronically via EPA’s electronic reporting tool in CDX.

For reports previously submitted, the Permittee is required to submit a statement with the first semi-annual report certifying that the listed reports were previously submitted to include the dates of submittal. As part of the updated requirements, the landfill will be required to develop a site-specific treatment monitoring plan for a LFG treatment system if it begins the sale of landfill gas for beneficial use.

**40 CFR 62 Subpart 000: Federal Requirements for Municipal Solid Waste Landfills**

The North Wake Landfill (ES-1 and ES-2) is classified as an existing MSW landfill because the landfill has accepted waste after November 8, 1987, was constructed before July 17, 2014 and has not been modified after this date. Existing landfills are subject to Emission Guidelines Subpart Cf, as codified in the North Carolina rule 15A NCAC 02D .1700 if these rules have been approved by the US EPA. Since the State Implementation Plan for North Carolina rules for existing landfills (15A NCAC 02D .1700) has not yet been approved, the permit conditions for NSPS WWW written in the existing permit are being removed and replaced with the Federal rules in accordance with 40 CFR 62, Subpart 000. This landfill is required to install and operate a GCCS, and to route the collected gas to a control device/system. Compliance is expected.

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

This is a “State-enforceable only” requirement and is applicable facility wide. The Permittee shall implement practices or controls sufficient to prevent odorous emissions from causing or contributing to objectionable odors beyond the property boundary. During a recent inspection report dated February 2022, the inspector states that “there were no objectionable odors on the site and that there been no complaints in the DAQ database. Continued compliance is expected.

**7. NSPS, Federal Regulations, NESHAP, PSD, 112(r), CAM & Attainment Status**

The MSW landfill (ID No. ES-01) is currently subject to 40 CFR 60, Subpart WWW “Municipal Solid Waste Landfills” in the existing permit since the facility was modified after May 30, 1991, but before July 17, 2014. The landfill’s design capacity is greater than 2.5 million Mg and 2.5 million m<sup>3</sup>, and has an annual NMOC emission rate greater than 50 Mg/yr.

**NSPS-**

- ✓ The MSW landfill (ID No. ES-01) is no longer subject to 40 CFR 60, Subpart WWW “Municipal Solid Waste Landfills” since the facility is now considered an existing source under 40 CFR Subpart Cf “Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills” because the landfill has accepted waste after November 8, 1987 and was constructed prior to July 17, 2014. The NSPS WWW regulations will be removed from the permit and replaced with the Federal Landfill regulations (40 CFR 62, Subpart 000) for existing facilities since the North Carolina State Plan for existing Landfills has not been approved by the US EPA.
- ✓ The MSW landfill (ID No. ES-01) is NOT subject to 40 CFR 60, Subpart XXX “Municipal Solid Waste Landfills the Commenced Construction, Reconstruction, or Modification After July 17, 2014” since the landfill has not been modified after July 17, 2014.
- ✓ The diesel-fired emergency generator (ID No. I-1) is NOT subject to 40 CFR 60, Subpart IIII “Stationary Compression Ignition Internal Combustion Engines” because the construction date is prior to the applicability date of the NSPS regulation.

**40 CFR 62, Subpart 000 – Federal Regulations for Municipal Solid Waste Landfills:**

This facility is subject to the Part 70 Title V program because the design capacity of the landfill is greater than or equal to 2.5 million megagrams and 2.5 million cubic meters. This landfill is considered an “existing” landfill because it has accepted waste since November 8, 1987 and the landfill commenced construction, reconstruction, or modification on or before July 17, 2014. This existing landfill would be subject to the State Rules for North Carolina (as codified under 15A NCAC 02D .1700) for existing landfills if the rules have been approved by the US EPA.

However, since the State Plan for North Carolina landfill rules for existing landfills has not yet been approved, the Federal rules pursuant to 40 CFR 62, Subpart 000 will apply until the rules in 15A NCAC 02D .1700 have been approved.

Physical or operational changes made to an existing MSW landfill solely to comply with an emission standard under this Section are not considered a modification or a re-construction of the landfill, and do not subject an existing MSW landfill to the requirements of 40 CFR 60, Subpart XXX.

**NESHAP**

- ✓ The MSW landfill (ID Nos. ES-1 and 2) is subject to 40 CFR 63, Subpart AAAA “Municipal Solid Waste Landfills” since the facility has accepted waste since November 8, 1987, has a design capacity greater than 2.5 million Mg and 2.5 million m<sup>3</sup>, and has demonstrated an annual NMOC emission rate greater than 50 Mg/yr.
- ✓ The diesel-fired emergency generator (ID No. I-1) is subject to 40 CFR 63, Subpart ZZZZ “Reciprocating Internal Combustion Engines” and is considered an existing emergency engine under this regulation.

**PSD** – The facility’s potential emissions of criteria pollutants do not exceed PSD permitting thresholds of 250 tons per year.

- ✓ Wake County has triggered increment tracking under PSD for SO<sub>2</sub>. This permitting action is neither expected to consume nor expand any increments.

**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 is regulated by NSPS and MACT regulations that were promulgated after 1990 and control the pollutants that would be subject to CAM.

**Attainment status** – Wake County is in attainment for all criteria pollutants.

**8. Other Regulatory Requirements**

- A Zoning Consistency Determination is NOT required for this permit “Reopen for Cause” application.
- A P.E. Seal is NOT required for this permit application.
- There are no permit application fees required for this permit “Reopen for Cause” “Reopen for Cause” application.

**9. Air Toxics**

This application results in no increases in toxic emissions; therefore, no additional toxics modeling demonstration is required. The landfill is subject to MACT Subpart AAAA and is exempt from permitting for State toxics per 15A NCAC 02Q .0702(a)(27), therefore the permit contains neither a 02D .1100 nor a 02Q .0711 toxics condition in the permit.

Dispersion modeling was conducted in 2005 for benzene, hydrogen sulfide, and vinyl chloride emissions, with additional modeling in 2009 for hydrogen chloride. Those demonstrations resulted in the following impacts at the property boundary:

Pollutant	Emission Rate	Averaging Period	% AAL
Benzene	94.76	lb/yr	6%
Hydrogen Chloride	0.6941	lb/hr	27%
Hydrogen Sulfide	4.749	lb/day	<1%
Vinyl Chloride	168.76	lb/yr	3%

As part of previous permit modifications, the DAQ conducted an air toxics evaluation, and a modeling exercise was performed which demonstrated that the emission rates of toxic air pollutants from the sources at the landfill were well below the Acceptable Ambient Levels (AALs). Therefore, the DAQ believes that the sources of toxic air pollutants do not present an unacceptable risk to human health. This Reopen For Cause application does not change this status.

## 10. Emissions Review

Uncontrolled potential emission rates by source:

Pollutant	Landfills (ES-1 and 2) tons/yr	Flares (CD-3 and 4) tons/yr
PM (TSP)	--	9.61
PM <sub>10</sub>	--	9.61
PM <sub>2.5</sub>	--	9.61
SO <sub>2</sub>	--	7.80
NOx	--	38.81
CO	--	117.45
VOC	20.14	1.15

The facility's actual emissions as reported on the annual AQEI can be seen in the table on page one of this document. The potential emissions listed above are based on the maximum emission rates of the flares and of the landfills (uncontrolled). The estimated gas collection efficiency is 90% based on the estimation methods of 40 CFR 98, Subpart HH (Table HH-3) for Mandatory Greenhouse Gas Reporting for Municipal Solid Waste Landfills. Since the landfills are closed, these emission rates are expected to slowly decline over time as less LFG is generated, and the flares will not likely be used to their maximum capacities.

### Flare Emissions:

VOC emissions for the flare were calculated as above but are based on the maximum capacity of the flares, regardless of LFG generation rate from the landfill, and assume a 98% control efficiency.

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

NOx: 0.068 lb/mmBtu (AP-42 13.5-1)

PM: 17 lb/10<sup>6</sup> ft<sup>3</sup> CH<sub>4</sub> (AP-42 2.4-5)

CO: 0.15 lb/mmBtu (CD-3 based on manufacturer guarantee)

CO: 0.31 lb/mmBtu (CD-4 based on AP-42 13.5-2)

Flare (CD-4) = 1,500 scfm maximum design flow

Flare (CD-3) = 2,800 scfm maximum design flow

The flares (CD-3 and CD-4) have a total rating of 130.29 mmBtu per hour at 4,300 ft<sup>3</sup> lfg per minute with a heat value of 505 Btu per cubic foot of landfill gas. See calculation below.

{ 1,500 scfm (CD-4) + 2,800 scfm (CD-3) } = 4,300 ft<sup>3</sup> lfg per minute total.

$$\frac{4,300 \text{ ft}^3 \text{ lfg}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{505 \text{ Btu}}{\text{ft}^3 \text{ lfg}} \times \frac{\text{mmBtu}}{1 \times 10^6} = \frac{130.29 \text{ mmBtu}}{\text{hour}}$$

Example calculations for criteria pollutants from both flares:

$$\frac{130.29 \text{ mmBtu}}{\text{hour}} \times \frac{0.068 \text{ lb NOx}}{\text{mmBtu}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 38.81 \frac{\text{tons NOx}}{\text{year}}$$

The PM calculations are based on the flow rate of methane instead of landfill gas.

$$\frac{4,300 \text{ ft}^3 \text{ lfg}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{50 \text{ ft}^3 \text{ methane}}{100 \text{ ft}^3 \text{ lfg}} \times \frac{\text{million ft}^3}{10^6 \text{ ft}^3}$$

$$= \frac{1,130 \text{ million ft}^3 \text{ methane}}{\text{year}}$$

$$\frac{1,130 \text{ million ft}^3 \text{ CH}_4}{\text{year}} \times \frac{17 \text{ lb PM}}{\text{million ft}^3 \text{ CH}_4} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 9.61 \frac{\text{tons PM}}{\text{year}}$$

$$\frac{1,130 \text{ million ft}^3 \text{ CH}_4}{\text{year}} \times \frac{17 \text{ lb PM}}{\text{million ft}^3 \text{ CH}_4} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 9.61 \frac{\text{tons PM}}{\text{year}}$$

$$\left[ \left( \frac{84.84 \text{ mmBtu}}{\text{hour}} \times \frac{0.15 \text{ lb CO}}{\text{mmBtu}} \right) + \left( \frac{45.45 \text{ mmBtu}}{\text{hour}} \times \frac{0.31 \text{ lb CO}}{\text{mmBtu}} \right) \right] \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 117.45 \frac{\text{tons CO}}{\text{year}}$$

All particulate emissions (PM) from the combustion of landfill gas are considered as PM<sub>2.5</sub>.

To calculate potential SO<sub>2</sub> emissions, AP-42 Chapter 2.4 was used along with information submitted by the facility in the application:

- Total flare design rating = 4,300 ft<sup>3</sup>/minute (or 121.76 m<sup>3</sup>/min = 7,305.6 m<sup>3</sup>/hour)
- Methane is 50% of this gas stream (3,652.8 m<sup>3</sup>/hour)
- Q<sub>s</sub> = Emission rate of reduced sulfur compounds, m<sup>3</sup>/hour
- C<sub>s</sub> = Concentration of reduced sulfur compounds (43.0 ppmv, 2004 site-specific analysis)
- Multiplication factor for 50% methane concentration in landfill gas = 2.0
- Molecular weight of sulfur = 32.06 g/mole

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

$$Q_s = 2.0 \times 3,652.8 \frac{\text{m}^3}{\text{hour}} \times \left( \frac{43 \text{ parts}}{1 \times 10^6} \right) = 0.314 \frac{\text{m}^3}{\text{hour}}$$

The mass of the pre-combustion sulfur compounds present in the methane were found using Equation 4 of AP-42, Section 2.4.4.2.:

$$UM_s = \frac{0.314 \text{ m}^3}{\text{hour}} \times \left[ \frac{32.06 \text{ g/gmol} \times 1 \text{ atm}}{8.205 \times 10^{-5} \frac{\text{m}^3 \cdot \text{atm}}{\text{gmol} \cdot \text{K}} \times 1000 \frac{\text{g}}{\text{kg}} \times (273 + 25^\circ\text{C}) \text{ K}} \right] \times 2.2 \frac{\text{pounds}}{\text{kg}}$$

$$UM_s = \frac{0.91 \text{ pounds SO}_2}{\text{hour}}$$

To calculate SO<sub>2</sub> emitted from the combustion of sulfur, Equation 10 of Section 2.4-8 was used.

$$\text{SO}_2 \text{ emitted} = UM_s \times \frac{\eta_{\text{col}}}{100} \times 2.0$$

Where:



UM<sub>s</sub> = Uncontrolled mass emission rate of sulfur compounds (0.91 lb sulfur/hour)  
η<sub>col</sub> = Collection efficiency of the landfill gas collection system, percent  
(assumed 100% by facility)  
2.0 = Ratio of the molecular weight of SO<sub>2</sub> to the molecular weight of Sulfur

$$\text{SO}_2 \text{ emitted} = 0.91 \frac{\text{lb}}{\text{hour}} \times \frac{100}{100} \times 2.0 \times 8760 \frac{\text{hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 7.97 \frac{\text{tons SO}_2}{\text{year}}$$

The AP-42 calculation assumes that 100% of the sulfur compounds in the gas stream are converted to SO<sub>2</sub> and does not account for the destruction efficiency of the flare. However, when the nominally assumed 98% control efficiency is accounted for, the hourly emission rate of SO<sub>2</sub> is 0.89 lb/hr or 7.80 tons per year.

## 11. Statement of Compliance

The landfill has no negative compliance history over the last five years. The latest compliance inspection was conducted on 8/9/2023 by the Regional Office (RRO) and indicated the landfill was found to be operating in apparent compliance.

## 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 **TBD**

The EPA 45-day review period was from **TBD** - EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions<sup>1</sup>. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses<sup>2</sup> and will harmonize the EPA's treatment of affirmative defenses across different CAA programs. As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised. Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J. Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

<sup>1</sup> NRDC v. EPA, 749 F.3d 1055 (D.C. Cir. 2014).

<sup>2</sup> In newly issued and revised New Source Performance Standards (NSPS), emission guidelines for existing sources, and NESHAP regulations, the EPA has either omitted new affirmative defense provisions or removed existing affirmative defense provisions. See, e.g., National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Final Rule, 80 FR 44771 (July 27, 2015); National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters; Final Rule, 80 FR 72789 (November 20, 2015); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units; Final Rule, 81 FR 40956 (June 23, 2016).

### **13. Comments and Recommendations**

This Reopen for Cause Permit modification for North Wake County Landfill located in Raleigh, Wake 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. 08890T11.