

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Application Review**

**Issue Date:** xx/xx/2018

**Region:** Wilmington Regional Office  
**County:** New Hanover  
**NC Facility ID:** 6500343  
**Inspector's Name:** Linda Willis  
**Date of Last Inspection:** 12/01/2017  
**Compliance Code:** 3 / Compliance - inspection

<b>Facility Data</b>	<b>Permit Applicability (this application only)</b>
<p><b>Applicant (Facility's Name):</b> New Hanover County Secure Landfill</p> <p><b>Facility Address:</b>                  New Hanover County Secure Landfill                  5210 US Highway 421 North                  Wilmington, NC 28401</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 .0524, 02D .1100, 02D .1806, 02Q .0711  <b>NSPS:</b> Subpart XXX, Subpart JJJJ  <b>NESHAP:</b> Subpart ZZZZ  <b>PSD:</b> N/A  <b>PSD Avoidance:</b> N/A  <b>NC Toxics:</b> Modeled emission rates for pollutants which exceed TPERs  <b>112(r):</b> N/A  <b>Other:</b> N/A</p>

Contact Data			Application Data
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	
Andrew Mulvey Environmental Specialist (910) 798-4453 3002 US Highway 421 North Wilmington, NC 28401	Yousef Suleyman Director, Dept. of Env. Management (910) 798-4403 3002 US Highway 421 North Wilmington, NC 28401	Andrew Mulvey Environmental Specialist (910) 798-4453 3002 US Highway 421 North Wilmington, NC 28401	<p><b>Application Number:</b> 6500343.18A; 6500343.18B  <b>Date Received:</b> 03/23/2018; 07/25/2018  <b>Application Type:</b> Renewal/Modification  <b>Application Schedule:</b> TV-Renewal  <b>Existing Permit Data</b>  <b>Existing Permit Number:</b> 09805/T04  <b>Existing Permit Issue Date:</b> 10/16/2017  <b>Existing Permit Expiration Date:</b> 12/31/2018</p>

**Total Actual emissions in TONS/YEAR:**

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	0.3700	1.39	9.98	5.89	0.1000	4.73	1.65 [Toluene]
2015	0.6300	2.37	9.53	10.05	0.1000	5.73	1.96 [Toluene]
2014	---	---	9.15	---	0.1600	5.02	1.87 [Toluene]
2013	---	---	5.14	---	0.0900	4.79	1.78 [Toluene]
2012	---	---	4.92	---	0.0800	4.54	1.69 [Toluene]

<p><b>Review Engineer:</b> Joshua L. Harris</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p>Issue 09805/T05  <b>Permit Issue Date:</b> xx/xx/2018  <b>Permit Expiration Date:</b> xx/xx/2023</p>
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## 1. Purpose of Application

The New Hanover County Secure Landfill is an active Municipal Solid Waste (MSW) landfill located in Wilmington, New Hanover County. The landfill is requesting renewal of their current Title V permit. The complete renewal application, Application No. 6500343.18A, was timely received on March 23, 2018, and included a statement that a modification application will soon follow due to the anticipated commencement of construction on a new expansion, which would trigger applicability of 40 CFR 60, Subpart XXX.

The landfill commenced construction on the new expansion on May 1, 2018, and submitted the initial notification in May 15, 2018. An application for a Significant Modification, Application No. 6500343.18B, was received and considered complete on July 27, 2018, and will be consolidated with the renewal application under Application No. 6500343.18A. The application will go through the 30-day public notice and 45-day EPA review periods prior to issuance.

The facility contact for this application is Yousef “Joe” Suleyman, Director, Department of Environmental Management, (910-798-4403). A consultant, SCS Engineers, P.C., was used for the application preparation. The contact at SCS Engineers is David Greene, Project Manager, (828-285-8953).

## 2. Facility Description

This facility is an active Municipal Solid Waste Landfill owned and operated by New Hanover County. The landfill began operating in 1981, and the landfill’s permitted design capacity exceeds 2.5 million Mg and 2.5 million m<sup>3</sup>. The NC Division of Waste Management, Solid Waste Section (SWS) issued the latest revision of permit No. 65-04 on December 21, 2017, to expand design capacity by adding 9 additional Cells to the existing 6 and triggering the modification provision of NSPS XXX (§60.760 and §60.761). The permit-to-construct authorized the construction of Cells 7-13, and construction was commenced on May 5, 2018, triggering applicability of NSPS Subpart XXX. The landfill previously accepted asbestos-containing waste, which was placed in Cell 5, but no longer actively accepts asbestos-containing waste, and now directs such wastes to the Sampson County Landfill. The landfill uses a reverse osmosis (RO) system to treat leachate collected from the landfill prior to discharge to the Cape Fear River. Concentrated residuals from the RO system are reapplied to the landfill surface or are injected into the landfill via subsurface wells.

## 3. Application Chronology

03/23/18 The Division of Air Quality (DAQ), Raleigh Central Office (RCO), received the permit renewal application, Application No. 6500343.18A, and forwarded a copy to the Wilmington Regional Office (WiRO). The application contained the required forms, and there were no confidential materials included. No application fees were required for the renewal request. The application appeared to be complete for processing.

The application also mentioned that construction will soon be commenced for a planned expansion, recently permitted by the Solid Waste Section, which will make the landfill subject to 40 CFR 60, Subpart XXX. The application stated that once construction is commenced, the landfill will submit a second application for a modification to include the NSPS Subpart XXX conditions in the permit.

- 03/23/18 RCO sent the facility a letter acknowledging receipt of Permit Application No. 6500343.18A.
- 04/27/18 Required \$947 permit modification application fee received by RCO.
- 05/01/18 The New Hanover County Secure Landfill commenced construction on the lateral expansion recently permitted by Solid Waste, triggering applicability of NSPS Subpart XXX.
- 07/27/18 RCO received a permit application, Application 6500343.18B, for a Significant Modification to include a permit condition for NSPS Subpart XXX due to commencing construction on a lateral expansion. The application appeared to be complete for processing. The facility also included a copy of the design capacity report and NMOC emission rate report, which indicated that the facility's NMOC emissions exceed the 34 Mg/yr threshold for the requirement to install and operate a gas collection and control system (GCCS).
- 07/27/18 RCO sent the facility a letter acknowledging receipt of permit Application No. 6500343.18B.
- 08/08/18 Joshua Harris left a message for David Greene, Project Manager, and asked about a ~10 HP emergency generator that is described in the last inspection report. Mr. Harris asked Mr. Greene to verify its existence, and to provide additional information needed to determine applicability of Federal Rules.
- 08/17/18 Joshua Harris spoke with David Greene regarding the landfill's emergency generator. Mr. Green stated that it is a stationary unit located at the scale house and is a 20 kW, propane-fired, spark ignition unit that was installed in 2012, making the engine subject to GACT 4Z and NSPS 4J.
- 09/19/18 Joshua Harris sent electronic copies of the draft permit and review documents to Booker Pullen, Dean Carroll and Linda Willis for comments.
- 09/26/18 Joshua Harris received minor editorial comments from Booker Pullen.
- 10/01/18 Joshua Harris received minor editorial comments from Linda Willis.
- 10/03/18 Joshua Harris sent electronic copies of the draft permit and review documents to Joe Suleymen and David Greene for comments.
- 10/12/18 WiRO received a permit application, Application No. 6500343.18C, for a modification to install a GCCS and utility flare. The application will be processed separately from applications 6500343.18A and 18B.
- 10/17/18 Joshua Harris received an email from David Greene with comments on the draft permit and review documents.
- 10/19/18 Joshua Harris spoke with David Greene regarding comments made on the draft documents. Minor changes were made, and revised documents were returned to Joe Suleyman and David Greene.

10/23/18 David Green responded with no additional comments.

Xx/xx/18 30-day public notice and 45-day EPA review periods begin.

Xx/xx/18 30-day public notice period ends.

Xx/xx/18 45-day EPA review period ends.

Xx/xx/18 Air Quality Permit No. 09805T05 issued.

#### 4. Table of Changes to Existing Permit No. 09805T04

Page No(s).	Section	Description of Changes
--	Cover and Throughout	<ul style="list-style-type: none"> <li>Updated Letterhead</li> <li>Updated dates and permit revision numbers.</li> </ul>
--	Attachment to Cover	Added 20 kW propane-fired emergency generator as ID No. IES-EG1.
3	1	Updated applicable regulation to be NSPS Subpart XXX.
3	2.1-A.	<ul style="list-style-type: none"> <li>Updated limits/standards for NMOCs and updated applicable regulation to be NSPS Subpart XXX.</li> <li>Updated limits/standards for odors to show that it is state-enforceable only.</li> <li>Inserted row for toxic air pollutants</li> </ul>
3-13	2.1-A.1.	Replaced NSPS Subpart WWW condition with requirements for NSPS Subpart XXX.
14-15	2.1-A.4.	<ul style="list-style-type: none"> <li>Updated condition to use most recent permitting language.</li> <li>Re-formatted table and removed dichlorodifluoromethane as a toxic air pollutant, since it has been removed from the regulation per the recommendation of the SAB.</li> </ul>
16	3	Updated General Conditions to latest version (Version 5.3)

#### 5. Changes in Equipment

There are no changes being made to permitted equipment outside of the note that the landfill is now subject to NSPS Subpart XXX. The 20 kW, propane-fired, spark ignition emergency generator was added to the facility's insignificant activities list as ID No. IES-EG1. The engine power rating was estimated at 27 HP using the following conversion, 1 kW = 1.341 HP.

Title V Equipment Editor has been updated for the changes 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 Subpart XXX	One municipal solid waste landfill	None	None

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

Emission Source ID No.	Emission Source Description
IES-Leachate Pond	Leachate holding pond
IES-Aeration Tank	Aeration tank
IES-Diesel Tank	Diesel storage tank
IES-Waste Oil	Waste oil storage tank
IES-Ash Silo	Mobile ash silo for alternative daily cover
IES-TF	Twenty (20) LFG Temporary Flares
IES-EG1 NSPS JJJJ GACT ZZZZ	Propane-fired, spark ignition emergency generator (20 kW, 27 HP)

**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 landfill was issued a Solid Waste permit for the construction of a lateral expansion which increased the permitted design capacity, and construction commenced on May 1, 2018.
- ✓ 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 now subject to NSPS Subpart XXX, which supersedes Subpart WWW.
- ✓ The emergency generator (ID No. IES-EG1), is subject to 40 CFR 60, Subpart JJJJ, “Stationary Spark Ignition Internal Combustion Engines,” since the engine is a spark ignition emergency engine, manufactured after January 1, 2009.

• **NESHAP –**

- ✓ The MSW landfill (ID No. ES-1) is NOT subject to 40 CFR 63, Subpart AAAA “Municipal Solid Waste Landfills.” Although the landfill’s design capacity exceeds the 2.5 million Mg and 2.5 million m<sup>3</sup> thresholds, the uncontrolled NMOC emission rate, determined using the Tier 2 methodology, is less than 50 Mg/yr; see the discussion for 15A NCAC 02D .0524 in Section 7 for NMOC emission rates. Additionally, the landfill is not, nor is it collocated with, a major source of HAPs.
- ✓ The MSW landfill (ID No. ES-1) is NOT subject to 40 CFR 61 Subpart M, “National Emission Standard for Asbestos,” since it is not an active waste disposal site. The landfill previously accepted asbestos waste but has since ceased.
- ✓ The emergency generator (ID No. IES-EG1) is subject to 40 CFR 63, Subpart ZZZZ, “Stationary Reciprocating Internal Combustion Engines,” and is considered as a “new” emergency engine under this regulation. The facility complies with the requirements of 40 CFR 63, Subpart ZZZZ by complying with the requirements of 40 CFR 60, Subpart JJJJ.

- **PSD** – The facility’s potential emissions do not exceed PSD permitting thresholds.
  - ✓ New Hanover County has triggered increment tracking under PSD for PM<sub>10</sub>, SO<sub>2</sub>, and NO<sub>x</sub>. The inclusion of the emergency generator (ID No. IES-EG1) results in negligible emissions increases of less than one hundredth of one pound per hour, therefore increments for these pollutants are neither consumed nor expanded.
- **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** – Does not apply to this facility.
- **Attainment status** – New Hanover County is in attainment for all criteria pollutants.

## 7. Regulatory Review

Source-by source evaluations:

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

- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart XXX
- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions
- 15A NCAC 02D .1100: Control of Toxic Air Pollutants
- 15A NCAC 02Q .0711: Emission Rates Requiring a Permit

The emergency generator (ID No. IES-EG1) is subject to the following air quality regulations:

- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart JJJJ
- 15A NCAC 02D .1111: Maximum Achievable Control Technology, 40 CFR 63, Subpart ZZZZ

The following permit condition is being removed as a result of this application:

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

MSW Landfill (ID No. ES-1):

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

The facility is subject to NSPS Subpart XXX since it was modified after July 17, 2014. The facility submitted a design capacity and NMOC emission rate report on July 27, 2018 indicating that NMOC emissions from the landfill are 600.8 Mg/yr using LandGem and Tier 1 values:

Variable	LandGEM input
Landfill Open Year	1981
Landfill Closure Year	2050
Methane Generation Rate (k)	0.05 yr <sup>-1</sup>
Potential Methane Generation Capacity (L <sub>o</sub> )	170 m <sup>3</sup> /Mg
NMOC Concentration	4,000 ppmv
Methane Content	50%
Waste Acceptance Rates	Historical through 2017, excluding ash disposal

Previous Tier 2 testing was conducted on November 20 and 21, 2014, when the facility was subject to NSPS Subpart WWW. The site-specific NMOC concentration was determined to be 283.8 ppmv (as hexane), and LandGEM was used to estimate annual NMOC emissions from the landfill surface:

Year	NMOC Emission Rate <sup>1</sup> (Mg/yr)	NSPS XXX Threshold (Mg/yr)	GCCS Required?
2014	33.3	34	No
2015	35.2	34	YES
2016	37.1	34	YES
2017	39.1	34	YES
2018	41.3	34	YES
2019	43.5	34	YES
2020	45.5	34	YES
2021	47.6	34	YES
2022	49.6	34	YES
2023	51.7	34	YES

1. NMOC emission rates listed for years 2020 through 2023 are extrapolated values.

Since the NMOC emission rate exceeds 34 Mg/yr, the landfill indicated that it will submit a GCCS design plan for DAQ approval within 12 months of the submittal of the NMOC emission rate report, or no later than July 27, 2019, and is required to have a GCCS installed and operating within 30 months of the report submittal, or no later than January 27, 2021. The facility currently has a partial GCCS installed in the closed portions of the landfill.

The permit conditions for NSPS Subpart WWW will be removed and replaced with the NSPS Subpart XXX conditions, and will include the operating standards, monitoring, recordkeeping, and reporting requirements for a GCCS. Additionally, the facility uses a reverse osmosis (RO) system to treat leachate collected from the landfill prior to discharge to the Cape Fear River. Concentrated residuals from the RO system are reapplied to the landfill surface, or are injected into the landfill via

subsurface wells, so a reporting requirement for leachate recirculation will be included in the permit condition. 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. The facility was part of an odor complaint investigation related to a number of odor complaints received by the WiRO as described in Section 10. The complaints were investigated in conjunction with the last inspection, and odors were noted by inspectors while on site, however they were attributed largely to meteorological conditions, and the landfill was deemed to be in apparent compliance. Continued compliance is expected.

**15A NCAC 02Q .0711: Emission Rates Requiring a Permit -and- 15A NCAC 02D .1100: Control of Toxic Air Pollutants**

In 2015, the facility submitted a toxics demonstration for Hydrogen Chloride (HCl) emitted from the temporary flares, and submitted a second demonstration in 2017, for Benzene, Hydrogen Sulfide, and Vinyl Chloride emissions from the landfill surface as part of a response to a Notice of Deficiency issued by the WiRO. The facility included a LandGEM model with the design capacity and NMOC emission rate report, however the future waste disposal rate used after 2017 was 600,000 tons per year. This results in a LFG generation rate of approximately 73,760,000 m<sup>3</sup>/yr through CY2024, which is the year after permit revision T05 will expire. Scaling up from the initial modeled emission rates would result in Benzene and Vinyl Chloride emissions exceeding their respective AALs, however, 600,000 tons of waste placed per year is a gross exceedance of the facility's current permitted waste placement rate.

The landfill's permitted waste disposal rate, per the current operating permit issued by the SWS, is 320,500 tons per year, and allows for a maximum variance of 10% before triggering the requirement for the landfill to make a "substantial amendment" to the Solid Waste permit per NCGS 130A-294(b1)(1). Using the same LandGEM inputs as the facility, and a maximum waste disposal rate of 352,550 tons per year, the LFG generation rate is estimated to be 59,576,869 m<sup>3</sup>/yr through CY2024. Scaling the emission rates from the original toxics model, which was based on a LFG generation rate of 20,786,266 m<sup>3</sup>/yr, results in the following impacts:

Pollutant	Averaging Period	Initial Modeled Emission Rate	% AAL	CY2024 Emission Rate	% AAL
Benzene	lb/yr	279.03	33.8	799.7	97%
Hydrogen Sulfide	lb/day	17.46	4.2	50	12%
Vinyl Chloride	lb/yr	857.99	32.8	2,459	94%

As previously stated, HCl emissions from the facility's 20 temporary flares were evaluated in 2015. No changes have been made to these emission sources, and since the demonstration was made at the maximum operating capacity, the evaluated flare emissions are unaffected by changes in LFG generation. The modeled impacts of the temporary flares are as follows:

Pollutant	Averaging Period	Modeled Emission Rate	% AAL
Hydrogen Chloride	lb/hr	0.4135	1.7



No other toxic air pollutants exceed their respective TPERs, and current emissions of toxic air pollutants, as submitted by the facility on the facility's annual AQEI, are well below the TPERs and emission limits in the permit. Since none of the toxic air pollutants emitted exceeds their respective TPER or AAL, DAQ has determined that there is not an unacceptable risk to human health. No changes to the emission limits in the permit have been requested by the facility, and no changes will be made. Continued compliance is expected.

Also noteworthy is the fact that the facility is required by NSPS Subpart XXX to install and begin operating a GCCS no later than January 27, 2021, which will result in further reductions prior to the end date of the analysis above. The facility is required to submit a GCCS design plan for approval no later than July 27, 2019 and will be applying for a permit modification for the installation of a flare. Toxic air pollutant emissions should be re-evaluated at the time of the modification to account for these emissions changes, and potential changes to the previous models.

Emergency Generator (ID No. IES-EG1):

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

The diesel-fired emergency generator (ID No. IES-EG1) is subject to the requirements of 40 CFR 60, Subpart JJJJ. The engine must be a certified engine, as evidenced by a Certificate of Conformity issued by the EPA. 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 60.4245(b)]
- vi. Documentation from the manufacturer that the engine is certified to meet the emission standards in 40 CFR 60.4231.

**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)(1), the emergency generator (ID No. IES-EG1) must meet the requirements of 40 CFR Part 63 Subpart ZZZZ and Subpart A by meeting the requirements of 40 CFR 60, Subpart JJJJ. 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 permit application No. 6500343.18B. Benjamin Andrea, Planning and Zoning Supervisor of New Hanover County Planning and Land Use, determined that the proposed activity is consistent with applicable zoning ordinances.
- P.E. Seals are NOT required for these permit applications.
- The required permit modification application fee of \$947 was received by RCO.

**9. Emissions Review**

Uncontrolled potential emissions from the facilities sources are as follows:

Pollutant	Landfill Volume Emissions Through CY2024 tons/yr	Temporary Flare Emissions tons/yr	Emergency Generator Emissions tons/yr
PM (TSP)	---	4.02	1.37 x 10 <sup>-5</sup>
PM <sub>10</sub>	---	4.02	1.37 x 10 <sup>-5</sup>
PM <sub>2.5</sub>	---	4.02	1.37 x 10 <sup>-5</sup>
SO <sub>2</sub>	---	2.53	1.67 x 10 <sup>-7</sup>
NO <sub>x</sub>	---	9.46	9.03 x 10 <sup>-4</sup>
CO	---	40.21	1.10 x 10 <sup>-4</sup>
VOC	25.6	0.04	3.41 x 10 <sup>-5</sup>

The landfill's actual emissions from annual AQEIs, as submitted by the facility, are shown in the table at the beginning of this document. All sources at the facility are considered uncontrolled. The temporary flares (ID No. IES-TF), while they do provide some small amount of control for the landfill's volume emissions, are passive vent flares, and operate intermittently for the purposes of odor control. The emissions estimates for the flares were taken from the 6500343.15B permit application for permit revision T03 and are based on the maximum flow rates of the flares.

MSW Landfill:

The potential volume emissions from the landfill surface (ID No. ES-1) were calculated using the methodology in AP-42 Chapter 2.4 (November 1998) and are based on a LFG generation rate of 59,576,869 m<sup>3</sup>/year as determined using LandGEM. Aside from the small amount of control provided by the intermittent operation of the temporary flares, VOC emissions from the landfill's surface are otherwise uncontrolled and have been treated as such for emissions estimates. The following example calculation is for VOC emissions from the landfill surface:

- CY2024 LFG generation rate from LandGEM = 59,576,869 m<sup>3</sup>/year (or 6,801 m<sup>3</sup>/hour)
- Methane is 50% of this gas stream (3,400.5 m<sup>3</sup>/hour)
- Q<sub>NMOC</sub> = Emission rate of NMOCs, m<sup>3</sup>/hour
- C<sub>NMOC</sub> = Concentration of NMOCs (283.8 ppmv, Based on latest Tier 2 Sample)
- Multiplication factor for 50% methane concentration in landfill gas = 2.0
- Molecular weight of NMOC (as n-hexane) = 86.18 g/gmol

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

$$Q_{NMOC} = 2.0 \times 3,400.5 \frac{m^3}{hour} \times \left( \frac{283.8 \text{ parts}}{1 \times 10^6} \right) = 1.93 \frac{m^3}{hour}$$

The uncontrolled mass emissions of NMOCs (UM<sub>NMOC</sub>) was found using Equation 4 of AP-42, Section 2.4.4.2.

$$UM_{NMOC} = 1.93 \frac{m^3}{hour} \times \left[ \frac{86.18 \text{ g/gmol} \times 1 \text{ atm}}{8.205 \times 10^{-5} \frac{m^3 \cdot atm}{gmol \cdot K} \times 1000 \frac{g}{kg} \times (273 + 25^\circ C) K} \right] \times 2.2 \frac{pounds}{kg}$$

$$UM_{NMOC} = 14.97 \frac{pounds}{hour} = 65.6 \frac{tons}{year}$$

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:

$$UM_{VOC} = 0.39 \times 65.6 \frac{tons}{year} = 25.6 \frac{tons \text{ VOC}}{year}$$

Emissions of other pollutants from the landfill surface are calculated in similar fashion using default concentrations from AP-42 Chapter 2.4 (November 1998).

Propane-Fired Emergency Generator:

Potential emissions from the 20-kW propane-fired emergency generator (ID No. IES-EG1) are negligible and were calculated using emission factors for natural gas combustion in stationary reciprocating internal combustion engines found in AP-42 Chapter 3.2. The number of operating hours for calculating potential emissions is limited to 500 hours per year for emergency engines. The following emission factors were used:

PM =  $4.831 \times 10^{-2}$  pounds/mmBtu (all particulate matter is assumed to be as PM<sub>2.5</sub>)  
SO<sub>2</sub> =  $5.88 \times 10^{-4}$  pounds/mmBtu  
NO<sub>x</sub> = 3.17 pounds/mmBtu  
CO = 0.386 pounds/mmBtu  
VOC = 0.12 pounds/mmBtu

The following is an example calculation for NO<sub>x</sub> emissions from the engine:

$$20 \text{ kW} \times 0.9486 \frac{\text{Btu}}{\text{kW} - \text{second}} \times \frac{1 \text{ mmBtu}}{1 \times 10^6 \text{ Btu}} \times 3.17 \frac{\text{pounds}}{\text{mmBtu}} \times 60 \frac{\text{seconds}}{\text{hour}} = 0.00361 \frac{\text{pounds NO}_x}{\text{hour}}$$
$$0.00361 \frac{\text{pounds NO}_x}{\text{hour}} \times 500 \frac{\text{hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ pounds}} = 9.03 \times 10^{-4} \frac{\text{tons NO}_x}{\text{year}}$$

## 10. Statement of Compliance

The last compliance inspection was conducted by Brad Newland and Linda Willis, both of WiRO DAQ on December 1, 2017, and was conducted in coordination with an investigation of several odor complaints received by WiRO. The landfill was found to be operating in apparent compliance with their air quality permit at the time of the inspection. The odors were attributed to meteorological conditions and began to dissipate while the inspectors were on site. The facility was issued a Notice of Deficiency (NOD) on January 10, 2014 for late submittal of the Annual Compliance Certification and was issued another NOD on February 1, 2017 for late submittal of a semi-annual report.

## 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.

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

## **12. Comments and Recommendations**

The permit renewal and modification applications for the New Hanover County Secure Landfill located in Wilmington, New Hanover 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. 09805T05.