

NORTH CAROLINA DIVISION OF AIR QUALITY			Region: Mooresville Regional Office County: Cabarrus NC Facility ID: 1300110 Inspector's Name: Jim Westmoreland Date of Last Inspection: 04/10/2007 Compliance Code: C/In Compliance With Procedural Reqr
Air Permit Review – Significant Modification (second step) Permit Issue Date: XXXX, 2008			Permit Applicability (this application only) SIP: 15A 2Q .0501(c)(2), 15A NCAC 2D. 0524, 2D .0512, 2D .0516, 2D .1806, 2Q .0317 of 2D .0530, 2D. 0705, 2D .1100 NSPS: Subpart WWW NESHAP: Subpart AAAA PSD: N/A PSD Avoidance: Less than 250 tons per year CO NC Toxics: Yes, last MACT re-evaluated 112(r): N/A Other: N/A
Facility Data Applicant (Facility's Name): BFI Waste Systems of North America, Charlotte Motor Speedway (CMS) Landfill V Facility Address: BFI Waste Systems of North America, CMS Landfill V 5105 Morehead Road Concord, NC 28027 SIC: 4953 / Refuse Systems NAICS: 562213 / Solid Waste Combustors and Incinerators Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			
Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	Application Number: 1300110.07A Date Received: 04/10/2007 Application Type: Modification Application Schedule: TV-Significant
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Review Engineer: Booker Pullen Regional Engineer: Jim Westmoreland Review Engineer's Signature: _____		Begin Date: January 24, 2008	Comments / Recommendations: Issue: 08612T08 Permit Issue Date: XXX, 2008 Permit Expiration Date: May 31, 2010

I. Introduction:

BFI Waste Systems of America, Charlotte Motor Speedway Landfill, owns and operates a municipal solid waste landfill, located in Cabarrus County, Concord, North Carolina. The application (1300110.07A) for this modification was received by the DAQ Central Office on April 10, 2007 and was considered complete on that date.

II. Purpose of this application (1300110.07A):

- A. This application has been resubmitted in accordance with the current permit requirements that this facility shall file a Title V Air Quality Permit Application pursuant to 15A NCAC 2Q .0504 for modification to air emission source (ID No. ES-1) on or before 12 months after commencing operation of the enclosed flare (ID No. CD-FLARE2).
- B. Remove the temporary flare (CD-TempFlare) from the permit.
- C. A revised gas collection and control system was submitted to the DAQ in January 2006 with proposed alternatives to operation, monitoring, recordkeeping, and reporting requirements. The DAQ approved the some of alternatives and submitted a response letter to the facility on July 3, 2007. Approval was mostly based on the EPA Applicability Determination Index on the EPA website. These approved alternatives to the operation, monitoring, recordkeeping, and reporting requirements will be added to the permit in this modification process.

III. Changes to existing permit per application (1300110.07A):

Old Page	New Page No.	Condition No.	Changes
Cover Letter			
Page 1	Page 1	Heading and body of letter	Revised issue date, revised permit number, changed "complete application" received date, added the Significant modification language to the permit
Page 2	Page 2	Heading and body of letter	Revised issued date at the top of letter, and changed the effective date of permit, added PSD increment, added EPA to copy list, changed signature name to Don van der Vaart
Part I of Permit			
Page 1	Page 1	Cover Page	Revised: permit number, "replaces permit" number, issue date, effective date, complete application date, application number, removed the renewal date, changed signature name to Don van der Vaart
All pages	All pages	Header of page	Revised the permit number to T08
Page 3	N/A	Table of Permitted Sources	Removed CD-TEMPFLARE from the permit, removed ** and associated footnotes from the table
Page 3	N/A	Specific Limitation and Conditions	Removed CD-TEMPFLARE from the Condition "A"
Page 5	Page 5	Specific Limitation and Conditions	Added the following language to condition 2.1 A. 1. c. iv. "Each owner or operator seeking to demonstrate compliance with §60.755(c), shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in §60.755(d)"
N/A	Page 5	Specific Limitation and Conditions	Added alternative monitoring Section 2.1 A. 1. d., e., f., g., h., and i.
Page 6	N/A	Specific Limitation and Conditions	Removed "* minor modification footnote" from the bottom of page
Page 7	Page 7	Specific Limitation and Conditions	Removed CD-TEMPFLARE from the Condition "A.3", Removed "* minor modification footnote" from the bottom of page
Page 8	Page 8	Specific Limitation and Conditions	Removed CD-TEMPFLARE from the Condition "A.4."
Pages 12 - 20	Pages 13-21	Specific Limitation and Conditions	Added most current set of General Conditions

IV. Facility Description:

This facility is a Municipal Solid Waste Landfill. This landfill accepts about 4000 tons per day of industrial, municipal, and construction waste. The facility does not accept hazardous material or any hospital wastes.

V. Statement of Compliance:

The DAQ has reviewed the compliance status of this facility. Mr. Jim Westmoreland of the Mooresville Regional Office, performed a facility inspection on April 10, 2007 and states that the facility appeared to be in compliance with all applicable requirements.

VI. Summary Of The Emission Sources at this facility:

Emission Source ID	Emission Source Description	Control Device	Control Device Description
ES-1 NSPS, Subpart WWW	Municipal solid waste landfill	CD-GCCS1	One landfill gas collection and control system with a gas treatment system and:
		CD-TURB1 NSPS – Subpart GG	One stationary landfill gas-fired combustion turbine (63.84 million Btu per hour heat input capacity)
		CD-FLARE1	One landfill gas-fired enclosed-type flare (4000 scfm gas flow rate, 120 million Btu per hour heat input capacity),
		CD-FLARE2	One landfill gas-fired enclosed-type flare (6000 scfm gas flow rate, 180 million Btu per hour heat input capacity)

VII. Source-by Source Evaluation (For sources for which this 2-step, Significant Modification is For):

A. Municipal solid waste landfill (ID Nos. ES-1) with associated control equipment;

- One gas collection and control system,
- One enclosed-type flare (180 million Btu per hour heat input capacity, ID No. CD-FLARE2)

Description:

1. This facility is a Municipal Solid Waste Landfill. This landfill accepts industrial, municipal, and construction waste. The facility does not accept hazardous material or any hospital wastes.

This facility currently has a gas collection and control system (GCCS) that operates in accordance with New Source Performance Standard, 40 CFR part 60, Subpart WWW. This GCCS primarily routes the landfill gas to a gas-fired turbine with any excess gas routed to the existing enclosed flare FLARE1. This enclosed-type flare was in need of immediate repair. Therefore, a temporary flare was added to burn the excess landfill gas that was not burned by the gas turbine while the existing flare was being repaired. The existing flare (ID No. CD-FLARE1) has been repaired, and now the temporary flare (CD-TEMPFLARE) will be replaced by a permanent enclosed flare (CD-FLARE2). Gas Recovery Services, Inc. (GRS) is contracted by BFI to operate the gas turbine and closed flare systems.

The new enclosed flare is rated at 6000 scfm (180 million Btu per hour heat input)

Btu value of landfill gas = 500 Btu per ft³ (using higher heating value):

$$\frac{6000 \text{ ft}^3}{\text{minute}} \times \frac{500 \text{ Btu}}{\text{ft}^3} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{1 \text{ million Btu}}{10^6 \text{ Btu}} = \frac{180 \text{ mmBtu}}{\text{hour}}$$

2. **Applicable Regulatory Requirements for this modification:** This landfill is subject to 40 CFR Part 60, Subpart WWW and 40 CFR Part 63, Subpart AAAA. The combustion turbine is subject to NSPS, 40 CFR Part 60, Subpart GG and the turbine MACT under 40 CFR Part 63, Subpart YYYY (however, there are no requirements because this turbine was installed prior to January 14, 2003).

Regulated Pollutant	Limits/Standards	Applicable Regulation
Nonmethane organic compounds (NMOC)	Route landfill gas to an enclosed combustion device that reduces the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen or to a treatment system	15A NCAC 2D .0524 40 CFR Part 60, Subpart WWW
Sulfur dioxide	<i>AOS - landfill gas routed to enclosed flares</i> 2.3 pounds per million Btu heat input	15A NCAC 2D .0516
Visible emissions	20 percent opacity	15A NCAC 2D .0521
Odorous emissions	Apply suitable odor control measures "State-enforceable only"	15A NCAC 2D .1806
Hazardous air pollutants	Work practice standards, startup, shutdown, and malfunction plan	15A NCAC 2D .1111 40 CFR Part 63, Subpart AAAA
Toxic air pollutants	Facility wide toxics evaluation	15A NCAC 2Q .0711
	Modeled limits	15A NCAC 2D .1100
Carbon monoxide	Less than 250 tons per year	15A NCAC 2Q .0317 of (15A NCAC 2D .0530) PSD Avoidance

a. **15A NCAC 2D .0524, 40 CFR Part 60, Subpart WWW "New Source Performance Standards"**

Regulation Analysis

- i. This municipal solid waste landfill (ID No. ES-1) was modified after May 1, 1991, and is subject to 40 CFR Part 60, Subpart WWW. It is subject to Title V because the design capacity is greater than 2.5 million megagrams (2.75 million tons) by mass and 2.5 million cubic meters by volume. This facility has a gas collection and control system, that:

Routes landfill gas to an enclosed combustor (enclosed-type flares and turbine) that reduces the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen; or

The reduction efficiency or parts per million shall be established by an initial performance test of the enclosed flare, required under 40 CFR §60.8 using the test methods specified in 40 CFR §60.754(d). The Permittee shall submit the initial annual report within 180 days of the installation and start-up of the collection and control system, and shall include the initial performance test report required under 40 CFR §60.8.

Testing [15A NCAC 2Q .0524, 40 CFR §60.754]

- ii. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0524, 40 CFR §60.754 and General Condition JJ located in Section 3 of the Permit. If the results of this test are above the limits given in 40 CFR Part 60, Subpart WWW, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524, Subpart WWW.
- iii. **Standards For Air Emissions From Municipal Solid Waste Landfills** [40 CFR Part 60, §60.752]
- (A) The owner or operator of a municipal solid waste landfill having a design capacity equal to or greater than 2.5 million megagrams by mass and 2.5 million cubic meters, with a calculated NMOC emission rate equal to or greater than 50 megagrams per year, shall submit a gas collection and control system design plan prepared by a professional engineer who is registered in the State of North Carolina, within one year of the annual report that shows that NMOC emissions will exceed 50 Mg per year.

- (1) The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions of §§60.753 through 60.758 proposed by the owner or operator.
 - (2) The collection and control system design plan shall either conform with specifications for active collection systems in §60.759 or include a demonstration to the Administrator's satisfaction of the sufficiency of the alternative provisions to §60.759.
 - (3) The Division of Air Quality shall review the information submitted in the gas collection and control system design plan and either approve it, disapprove it, or request that additional information be submitted.
- (B) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner and operator shall install a collection and control system that captures the gas generated within the landfill as required by paragraphs (b)(2)(ii)(A) or (B) and (b)(2)(iii) of this section within 30 months after the first annual report in which the emission rate equals or exceeds 50 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the emission rate is less than 50 megagrams per year, as specified in §60.757(c)(1) or 2.
- (1) An active collection system shall:
 - (a) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade.
 - (b) Collect gas at a sufficient extraction rate and be designed to minimize off-site migration of subsurface gas.
 - (c) Route all the collected gas to a control system that complies with the requirements in either paragraph (b)(2)(iii) (A), (B) or (C) of this section.
 - (d) The control device shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in §60.756.

iv. **Operational Standards For Collection and Control Systems** [40 CFR Part 60, §60.753]

- (A) Each owner or operator of a MSW landfill with a gas collection and control system used to comply with the provisions of §60.752(b)(2)(ii) of this subpart shall:
 - (1) Operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - (a) 5 years or more if active; or 2 years or more if closed or at final grade;
 - (b) Operate the collection system with negative pressure at each wellhead except under the following conditions:
 - (i) A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in §60.757(f)(1);

- (ii) Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan;
 - (iii) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the DAQ Regional Office;
- (c) Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.
- (i) The nitrogen level shall be determined using Method 3C, unless an alternative test method is established as allowed by §60.752(b)(2)(i) of this subpart.
 - (ii) Unless an alternative test method is established as allowed by §60.752(b)(2)(i) of this subpart, the oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:
 - (A) The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;
 - (B) A data recorder is not required;
 - (C) Only two calibration gases are required, a zero and span, and ambient air may be used as the span;
 - (D) A calibration error check is not required;
 - (E) The allowable sample bias, zero drift, and calibration drift are ±10 percent.
- (d) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. To determine if this level is exceeded, the owner or operator shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing.
- (e) Operate the system such that all collected gases are vented to a control system designed and operated in compliance with §60.752(b)(2)(iii). In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within 1 hour; and

- (f) Operate the control or treatment system at all times when the collected gas is routed to the system.
 - (g) If monitoring demonstrates that the operational requirements of this subpart are not met, corrective action shall be taken as specified in §60.755(a)(3) through (5) or §60.755(c) of this subpart. If corrective actions are taken as specified in §60.755, the monitored exceedance is not a violation of the operational requirements in this section.
- v. **Compliance Provisions** [40 CFR Part 60, §60.755]
- (A) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with §60.752(b)(2)(ii)(A)(3), the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under §60.753(b). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance shall be submitted to the DAQ Regional Office for approval.
 - (B) Owners or operators are not required to expand the system as required in paragraph §60.755(a)(3) of this section during the first 180 days after gas collection system startup.
 - (C) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature and nitrogen or oxygen as provided in §60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within 5 calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the DAQ for approval.
 - (D) An owner or operator seeking to demonstrate compliance with §60.752(b)(2)(ii)(A)(4) through the use of a collection system not conforming to the specifications provided in §60.759 shall provide information satisfactory to the Administrator as specified in §60.752(b)(2)(i)(C) demonstrating that off-site migration is being controlled.
 - (E) For purposes of compliance with §60.753(a), each owner or operator of a controlled landfill shall place each well or design component as specified in the approved design plan as provided in §60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active; or 2 years or more if closed or at final grade.

- (F) The following procedures shall be used for compliance with the surface methane operational standard as provided in §60.753(d).
- (1) After installation of the collection system, the owner or operator shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in paragraph (d) of this section.
 - (2) The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.
 - (3) Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of appendix A of this part, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.
 - (4) Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified in this section shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of §60.753(d).
 - (a) The location of each monitored exceedance shall be marked and the location recorded.
 - (b) Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance.
 - (c) If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in paragraph §60.755(c)(4)(v) shall be taken, and no further monitoring of that location is required until the action specified in paragraph §60.755(c)(4)(v) has been taken.
 - (d) Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in paragraph §60.755(c)(4) (ii) or (iii) shall be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in paragraph §60.755(c)(4) (iii) or (v) shall be taken.
 - (e) For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the DAQ for approval.

- (G) The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.
- (H) Each owner or operator seeking to comply with the provisions in paragraph §60.755(c) of this section shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:
 - (1) The portable analyzer shall meet the instrument specifications provided in section 3 of Method 21 of appendix A of this part, except that “methane” shall replace all references to VOC.
 - (2) The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.
 - (3) To meet the performance evaluation requirements in section 3.1.3 of Method 21 of appendix A of this part, the instrument evaluation procedures of section 4.4 of Method 21 of appendix A of this part shall be used.
 - (4) The calibration procedures provided in section 4.2 of Method 21 of appendix A of this part shall be followed immediately before commencing a surface monitoring survey.
- (I) The provisions of this subpart apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.

Monitoring [40 CFR Part 60, §60.756]

- vi. If a gas collection and control system is used, the Permittee shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:
 - (A) Measure the gauge pressure in the gas collection header on a **monthly** basis as provided in 40 CFR §60.755(a)(3);
 - (B) Monitor nitrogen or oxygen concentration in the landfill gas on a **monthly** basis as provided in 40 CFR §60.755(a)(5);
 - (C) Monitor temperature of the landfill gas on a **monthly** basis as provided in §60.755(a)(5); and
 - (D) Monitor surface concentrations of methane along the entire perimeter of the collection area (or site-specific established spacing) for each collection area on a **quarterly basis**.
- vii. The owner or operator shall calibrate, maintain, and operate according to the manufacture’s recommendations the following equipment **when using an open flare** to comply with this Subpart:
 - (A) A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.
 - (B) A device that records flow to or bypass of the flare. The owner or operator shall either:
 - (1) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
 - (2) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least **once every month** to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

- viii. The owner or operator shall calibrate, maintain, and operate according to the manufacturer's recommendations the following equipment **when using an enclosed combustor** to comply with this Subpart:
- (A) A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ± 1 percent of the temperature being measured expressed in degrees Celsius or ± 0.5 °C, whichever is greater.
 - (B) A device that records flow to or bypass of the control device. The Permittee shall either install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or secure the bypass valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least **once every month** to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.
- ix. The owner or operator, who is seeking to install a collection system that does not meet the specifications in 40 CFR §60.759, or seeking to monitor alternative parameters to those required by 40 CFR §60.753 through §60.756, shall provide information satisfactory to the EPA as provided in §60.752(b)(2)(i)(B) and (C) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures.

Recordkeeping [40 CFR Part 60, §60.758]

- x. Except as provided in §60.752(b)(2)(i)(B), each owner or operator of an MSW landfill subject to the provisions of §60.752(b) shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered §60.752(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.
- xi. Except as provided in §60.752(b)(2)(i)(B), each owner or operator of a controlled landfill shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed below in this section as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of the control device vendor specifications shall be maintained until removal.
- (A) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.752(b)(2)(ii):
 - (1) The maximum expected gas generation flow rate as calculated in §60.755(a)(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator.
 - (2) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in §60.759(a)(1).
 - (B) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with §60.752(b)(2)(iii)(A) through use of an open flare, the flare type (i.e., steam-assisted, air-assisted, or nonassisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in §60.18; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent.

- (C) Except as provided in §60.752(b)(2)(i)(B), each owner or operator of a controlled landfill subject to the provisions of this subpart shall keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in §60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.
- (D) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under §60.756.
- (E) Each owner or operator seeking to comply with the provisions of this subpart by use of an open flare shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under §60.756(c), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent.
- (F) Except as provided in §60.752(b)(2)(i)(B), each owner or operator subject to the provisions of this subpart shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.
- (G) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under §60.755(b).
- (H) Each owner or operator subject to the provisions of this subpart shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in §60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in §60.759(a)(3)(ii).
- (I) Except as provided in §60.752(b)(2)(i)(B), each owner or operator subject to the provisions of this subpart shall keep for at least 5 years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in §60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

Reporting [40 CFR Part 60, §60.757]

- xii. The Permittee shall submit the initial annual report within 180 days of the installation and start-up of the collection and control system, and shall include the initial performance test report required under 40 CFR §60.8.
- xiii. The Permittee shall submit annual reports of the recorded information for the gas collection and control system as follows:
 - (A) Value and length of time for exceedance of applicable parameters monitored under 40 CFR §60.756(a), (b), (c), and (d).
 - (B) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified in 40 CFR §60.756.
 - (C) Description and duration of all periods when the control device was not operating for a period exceeding one hour and length of time the control device was not operating.

- (D) All periods when the collection system was not operating in excess of 5 days.
- (E) The location of each exceedance of the 500 parts per million methane concentration and the concentration recorded at each location for which an exceedance was recorded in the previous month.
- (F) The date of installation and the location of each well or collection system expansion added in accordance with 40 CFR §60.755(a)(3), (b), and (c)(4).

xiv. The Permittee shall submit a **summary report** of monitoring and recordkeeping activities by January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

**b. 15A NCAC 2D .0516 "Sulfur Dioxide Emissions From Combustion Sources"
(For enclosed flares CD-FLARE1 and CD-FLARE2)**

Regulation Analysis:

- i. Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed **2.3 pounds per million Btu heat input**. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard.

The enclosed flares (ID No. CD-FLARE1 and 2) are subject to this rule because it is a source of combustion and it discharges sulfur dioxide into the atmosphere due to combustion.

Potential emissions of sulfur dioxide are expected to be well below the allowable emissions when burning landfill gas because the sulfur content is negligible. Compliance is indicated.

Testing [15A NCAC 2Q .0508(f)]

- ii. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(4) and General Condition JJ found in Section 3 of the Permit. If the results of this test are above the limit given in Section VII. A. 2. b. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0516.

- iii. Monitoring/recordkeeping/reporting [15A NCAC 2Q .0508(f)]

No monitoring, recordkeeping, or reporting is required for sulfur dioxide emissions from the utility flare (ID No. CD-FLARE2) when firing landfill gas.

c. 15A NCAC 2D .0521 "Control Of Visible Emissions"

Regulation Analysis:

- i. The flares (ID No. CD-FLARE1 and 2) will be installed after July 1, 1971 and is therefore subject to 15A NCAC 2D .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.

Compliance is indicated with this regulation because the firing of landfill gas under normal operation will have negligible visible emissions.

Testing [15A NCAC 2D .0501(c)(8)]

- ii. If emissions testing is required, the testing shall be performed in accordance with 15A NCAC 2D .0501(c)(8) and General Condition JJ found in Section 3 of the Permit. If the results of this test are above the limit given in Section VII. A. 2. c. i. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0521.

Monitoring [15A NCAC 2Q .0508(f)]

- iii. No monitoring, recordkeeping, or reporting is required for visible emissions from the enclosed flares (ID No. CD-FLARE1 and 2) while firing landfill gas.

d. 15A NCAC 2D .1806 "Control And Prohibition Of Odorous Emissions" (State-enforceable only)

A Permittee shall not cause, allow, or permit any facility to be operated without employing suitable measures for the control of odorous emissions including wet scrubbers, incinerators, or other devices approved by the commission.

e. 15A NCAC 2D .1111, 40 CFR Part 63, Subpart AAAA: National Emission Standards for Hazardous Air Pollutants, Municipal Solid Waste Landfills (including control system)

- One enclosed-type flare (180 million Btu per hour heat input capacity, ID No. CD-FLARE2)
- One enclosed-type flare (120 million Btu per hour heat input capacity, ID No. CD-FLARE1)

Applicability

- i. BFI Waste Systems of North America, Inc., Charlotte Motor Speedway Landfill (Nos. ES-1) shall comply with all requirements of 15A NCAC 2D .1111 "Maximum Achievable Control Technology" and 40 CFR Part 63, Subpart AAAA "National Emission Standards for Hazardous Air Pollutants, Municipal Solid Waste Landfills" [40 CFR, §63.1935]

Definitions and Nomenclature [40 CFR, §63.1990]

- ii. For the purpose of this permit condition, the definitions and nomenclature contained in 40 CFR, 63, §1990 shall apply.

REGULATED POLLUTANTS [40 CFR, §63.2]

- iii. Hazardous Air Pollutant (HAP) means any air pollutant listed in or pursuant to section 112(b) of the Clean Air Act. [40 CFR §63.2]

40 CFR Part 63 Subpart A "GENERAL PROVISIONS"

- iv. The Permittee shall comply with the requirements of 40 CFR, §63 Subpart A "General Provisions" according to the applicability of Subpart A to such sources as identified in 40 CFR Part 63, Subpart AAAA, §63.1935.

Compliance dates [40 CFR Part 63, §63.1945]

- v. The Permittee (BFI Waste Systems of America) is an **existing affected area source** in accordance with 40 CFR Part 63, §63.1935 (a)(3). An area source is by definition a landfill that is not major due to the annual emission rate of HAPs, but one that has greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC emissions. This facility shall be in compliance with this regulation by the date this landfill is required to install a collection and control system in accordance with 40 CFR §60.752(b)(2) of the New Source Performance Standards, Subpart WWW. [§ 63.1945]

Monitoring [40 CFR Part 63, §63.1955 and §63.1960]

- vi. Compliance with this Subpart (AAAA) is determined in accordance with the New Source Performance Subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitor, and other credible evidence. In addition, continuous parameter monitoring data, collected under 40 CFR §60.756(c)(1) and (d) of Subpart WWW, are used to demonstrate compliance with the operating conditions for control systems.

The Permittee shall develop and implement a written Start-Up/Shutdown/Malfunction (SSM) plan according to the provision in 40 CFR 63.6(e)(3). A copy of the SSM shall be maintained on site.

Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

- (A) fails to meet any requirement or obligation established by this subpart, including, but not limited to, any emissions limitation (including any operating limit) or work practice standard;
- (B) fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit;
- (C) fails to meet any emission limitation, (including any operating limit), or work practice standard in this subpart during SSM, regardless of whether or not such failure is permitted by this subpart; or
- (D) fails to write, develop, implement, or maintain a copy of the SSM plan.
If a deviation occurs, the Permittee has failed to meet the control device operating conditions describe in this subpart and have deviated from the requirements of this subpart.

Recordkeeping/Reporting Requirements [40 CFR Part 63, §63.1980]

- vii. Keep records and reports as specified in the general provisions of 40 CFR Part 60, and in Subpart WWW, except the annual report described in 40 CFR §60.757(f) shall be submitted every 6 months.

If actions taken during a startup, shutdown, and malfunction plan are consistent with the procedures in the startup, shutdown, and malfunction plan, this information shall be included in a semi-annual startup, shutdown, and malfunction plan report. Any time an action taken during a startup, shutdown and malfunction plan is not consistent with the startup, shutdown and malfunction plan, the source shall report actions taken within **2 working days** after commencing such action, followed by a letter **7 days** after the event.

f. 15A NCAC 2Q. 0317: AVOIDANCE CONDITIONS 15A NCAC 2D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION

- One enclosed-type flare (120 million Btu per hour heat input capacity, ID No. CD-FLARE1)
- One enclosed-type flare (180 million Btu per hour heat input capacity, ID No. CD-FLARE2)
- One stationary landfill gas-fired combustion turbine (63.84 million Btu per hour heat input, ID No. CD-TURB1)

Criteria pollutant emissions from the installation of the new enclosed flare will increase, however, they do not trigger PSD. This source is currently a minor source for PSD purposes, and the modification by itself does not trigger PSD. The following exercise is done to show the levels of the criteria pollutants at the facility.

Calculation of the potential to emit for sulfur dioxide:

The emissions of sulfur oxides, particularly sulfur dioxide, from the flare are dependent on the inlet concentration of sulfur-bearing compounds in the LFG. The calculation of the estimated SO₂ emissions from the flare is based on the assumption that all of the total reduced sulfur (TRS) in the LFG is oxidized to SO₂. Since site-specific data for the TRS concentration in the LFG at the landfills is not available. SO₂ emissions from the flare were estimated based on the published mean concentration of TRS in LFG samples. AP-42, Section 2.4 lists concentrations of various compounds in uncontrolled LFG. This section reports that the mean concentration of TRS in LFG is 46.9 ppmv and its molecular weight is 32 grams/gmole. The following equations (3,4, and 7) are from AP-42 Section 2.4.

Calculate the sulfur dioxide emission rate from both flares:

Where: Maximum possible LFG flow rate through both flares: 6000 scfm + 4000 scfm = 10,000 scfm
 Conversion factor: 1 m³ = 35.3198 ft³

$$Q_s = \frac{10,000 \text{ ft}^3 \text{ LFG}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{\text{m}^3}{35.3198 \text{ ft}^3} \times \frac{46.9 \text{ parts S}}{10^6 \text{ LFG}} = \frac{6979.3 \text{ m}^3 \text{ S}}{\text{year}}$$

Calculate the uncontrolled mass emission of Sulfur using Equation 4 of AP-42, Section 2.4:

The following equation from AP-42, fifth edition, Section 2.4.4.1 "Emissions", Revised November 1998, to calculate the uncontrolled emission of individual air pollutants present in landfill gas.

$$UM_p = Q_p (m^3 / yr) \left[\frac{MW (g / gmole) \times (1 \text{ atmosphere})}{\left(\frac{8.205 \times 10^{-5} \text{ m}^3 - \text{atmosphere}}{\text{gmol}^{-0}K} \right) \times \frac{1000 \text{ g}}{\text{kg}} \times (273 + 25^0 \text{ C})^0 K} \right]$$

Where:

- UM_p = Uncontrolled mass emissions of pollutants, kg/yr
- MW_p = Molecular weight of sulfur (32 g/mol)
- Q_p = Emission rate of sulfur in the LFG, (6979.3 m³ sulfur/yr)
- T⁰ = 25⁰ C (77 ⁰F), recommended by AP-42 for landfill gas temperature if temperature is unknown

$$UM_p = \frac{6979.3 \text{ m}^3}{\text{yr}} \times \left[\frac{32.0 \text{ g / gmole} \times 1 \text{ atmosphere}}{\left(\frac{8.205 \times 10^{-5} \text{ m}^3 - \text{atmosphere}}{\text{gmol}^{-0}K} \right) \times \frac{1000 \text{ g}}{\text{kg}} \times (273 + 25^0 \text{ C})^0 K} \right] \times \frac{2.2 \text{ lbs}}{\text{kg}} = \frac{20095 \text{ lbs S}}{\text{year}}$$

f. 15A NCAC 2Q. 0317: AVOIDANCE CONDITIONS 15A NCAC 2D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION (Continued)

Per AP-42, Section 2.4, the ratio of the molecular weight of SO₂ to the weight of sulfur is 2.0. Therefore, the amount of Sulfur dioxide created by the flare is: (20095 lbs S x 2) = 40,190 lbs S (20 tons SO₂/year)

The applicant sent a revised design plan in to the DAQ Central Office on January 17, 2006 stating that due to a recent expansion at the BFI landfill, the closure year has been changed from 2009 to 2010. This means that the maximum landfill gas generation will occur in 2011 instead of 2010 as was originally stated in the "Last MACT" toxics demonstration.

Calculate the uncontrolled mass emissions of nitrogen dioxide from both flares:

Vendor emission factor: 0.06 lbs NO_x/mmBtu heat input
 Maximum heat input from the flares: 180 mmBtu/hour + 120 mmBtu/hour = 300 mmBtu/hour

$$\frac{0.06 \text{ lbs NO}_x}{\text{mmBtu}} \times \frac{300 \text{ mmBtu}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{78.84 \text{ tons NO}_x}{\text{year}}$$

Calculate the uncontrolled carbon monoxide from the two flares:

Vendor emission factor: 0.2 lbs CO/mmBtu heat input
 Maximum heat input from the flares: 180 mmBtu/hour + 120 mmBtu/hour = 300 mmBtu/hour

f. 15A NCAC 2Q. 0317: AVOIDANCE CONDITIONS 15A NCAC 2D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION (Continued)

$$\frac{0.2 \text{ lbs CO}}{\text{mmBtu}} \times \frac{300 \text{ mmBtu}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{262.8 \text{ tons CO}}{\text{year}}$$

Calculate the uncontrolled PM-10 from both flares:

AP-42 emission factor, Section 2.4: 0.001 lbs PM-10/hr cfm CH₄ (methane)

Methane content is approximately 50% of the total LFG generated

Maximum possible LFG flow rate through both flares: 6000 scfm + 4000 scfm = 10,000 scfm

$$\frac{0.001 \text{ lbs PM-10}}{\text{hr-cfm CH}_4} \times \frac{10000 \text{ scfm LFG}}{1} \times \frac{0.5 \text{ cfm CH}_4}{1 \text{ cfm LFG}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton PM-10}}{2000 \text{ lbs}} = \frac{21.9 \text{ tons PM-10}}{\text{year}}$$

Compound	LFG Flare Emission Factors	PTE LFG for both Flares (ID No. CD-FLARE1 & FLARE2)
NOx	0.06 lb/mmBtu heat input ⁽¹⁾	78.84 tons NOx per year
CO	0.20 lbs/mmBtu heat input ⁽¹⁾	262.8 tons CO per year
PM-10	0.001 lbs/hr cfm CH ₄ ⁽²⁾	21.9 tons PM-10 per year
VOC	⁽³⁾	1.61 tons VOCs per year
SO ₂	⁽⁴⁾	20.0 tons SO ₂ per year

¹ NOx, CO, and HAP emission factors were obtained from the flare manufacturer John Zink Company, LLC

² Emission factors obtained from AP-42, Section 2.4.

³ It is assumed that VOC emissions are 39% of NMOC emission, per AP-42, Section 2.4.

⁴ SO₂ emission are based on an AP-42 concentration of 46.9 ppmv of Total Reduced Sulfur (TRS) in LFG

The only criteria pollutant that has a value higher than 250 tons per year is carbon monoxide. The applicant (BFI) and the consultant (SCS Engineers) have requested a PSD Avoidance condition for CO to be placed in the permit. With the addition of the carbon monoxide emissions from the landfill gas fired turbine, the facility wide totals for CO are:

$$262.8 \text{ tons CO/yr (both flares)} + 20.81 \text{ tons CO/year (Turbine)} = 283.61 \text{ tons CO/year}$$

However, if the existing flare (FLARE1) is controlled such that the maximum flow rate of landfill gas to the flare is kept below 2500 ft³ per minute, or if the total for the two flares is kept below 8,500 scfm, the carbon monoxide emissions with all devices (FLARE1, FLARE2, and the Turbine) operating would remain below 250 tons per year. The following example calculation reflects the limiting of LFG to flare (FLARE1).

$$\text{LFG Btu higher heating value} = 500 \text{ Btu/ft}^3$$

Control the existing FLARE1 heat input rating to 75 mmBtu/hour by controlling flow rate into flare

$$\frac{2500 \text{ ft}^3}{\text{minute}} \times \frac{500 \text{ Btu}}{\text{ft}^3} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{1 \text{ million Btu}}{10^6 \text{ Btu}} = \frac{75 \text{ mmBtu}}{\text{hour}}$$

$$\text{FLARE2 heat input rating} = 180 \text{ mmBtu/hour}$$

$$\frac{6000 \text{ ft}^3}{\text{minute}} \times \frac{500 \text{ Btu}}{\text{ft}^3} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{1 \text{ million Btu}}{10^6 \text{ Btu}} = \frac{180 \text{ mmBtu}}{\text{hour}}$$

f. 15A NCAC 2Q. 0317: AVOIDANCE CONDITIONS 15A NCAC 2D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION (Continued)

Calculation of CO emissions

Vendor emission factor for flare = 0.2 lbs CO/mmBtu

Vendor emission factor for turbine = 0.005 lbs CO/hr-cfm of CH₄

LFG flow rate into turbine = 1900 cfm

$$FLARE1: \frac{0.2 \text{ lbs CO}}{\text{mmBtu}} \times \frac{75 \text{ mmBtu}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{65.70 \text{ tons CO}}{\text{year}}$$

$$FLARE2: \frac{0.2 \text{ lbs CO}}{\text{mmBtu}} \times \frac{180 \text{ mmBtu}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{157.68 \text{ tons CO}}{\text{year}}$$

$$\frac{0.005 \text{ lbs CO}}{\text{hr-cfm CH}_4 \text{ mmBtu}} \times \frac{1900 \text{ scfm LFG}}{1} \times \frac{0.5 \text{ cfm CH}_4}{1 \text{ cfm LFG}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ ton CO}}{2000 \text{ lbs}} = \frac{20.81 \text{ tons CO}}{\text{year}}$$

Total CO emissions: 65.70 (FLARE1 @2500scfm) + 157.68 (FLARE @6000 scfm) + 20.81 (Turbine @1900 scfm) = 244.19 tons CO per year

- i. In order to avoid applicability of this regulation, the above emission sources shall discharge into the atmosphere less than **250 tons of Carbon monoxide** per consecutive 12-month period. [15A NCAC 2D .0530]

Monitoring/Recordkeeping [15A NCAC 2Q .0508 (f)]

- ii. The landfill gas flow rate entering control device ID No. CD-FLARE1 shall be ≤ 2500 scfm average for the month or the average total LFG flow rate going to FLARE1 and FLARE2 shall be ≤ 8,500 scfm. The LFG flow rate shall be monitored and recorded on a monthly basis. Calculations of carbon monoxide (CO) emissions per month shall be made at the end of each month. CO emissions from these sources shall be determined as follows.

$$X = \left\{ \frac{Y \text{ ft}^3 \text{ LFG}}{\text{min}} \times \frac{500 \text{ Btu}}{\text{ft}^3 \text{ LFG}} \times \frac{1 \text{ mmBtu}}{10^6 \text{ Btu}} \times \frac{0.20 \text{ lbs CO}}{\text{mmBtu}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{730 \text{ hours}}{\text{month}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \right\} + 1.75 \frac{\text{tons CO}}{\text{month}} (\text{Turbine})$$

Where: X = total monthly emissions of carbon monoxide (flares and turbine)
 Y = total monthly average LFG flow rate to the enclosed flares (scfm)
 Heating value of LFG = 500 Btu/ft³
 Vendor emission factor = 0.20 lbs CO/mmBtu
 Hours per month = 730 hours/month (8760 hours divided by 12 months per year)
 Carbon monoxide emissions from turbine = 1.75 tons CO/month (21 tons/year maximum divided by 12 months per year)

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the CO emissions are not monitored and recorded.

- iii. Calculations and the total amount of CO emissions shall be recorded monthly in a logbook (written or electronic format). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the CO emissions exceed 250 total tons per year.

Reporting [15A NCAC 2Q .0508(f)]

iv. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:

(A) The monthly CO emissions for the previous 17 months. The emissions must be calculated for each of the 12-month periods over the previous 17 months;

g. 15A NCAC 2Q .0705 and 2D .1100 “Air toxics evaluation”

On June 24, 2005, BFI Waste Systems of America submitted a facility wide toxics demonstration to the DAQ Central Office. This demonstration was done in accordance with 15A NCAC 2Q .0705 (Last MACT). The toxics demonstration was based on the estimated maximum methane gas generation rate from the landfill that would occur approximately one year after the closure of 2009) for the landfill. The landfill has been expanded, and the closure year was changed to 2010. The toxics evaluation was revised to reflect the additional year added to the landfill closure (year 2009 versus 2010) and the fact that a larger flare (6000 scfm versus 2100 scfm of landfill gas) was installed at the site than was used in the 2005 calculations. The following input rates listed in the table below will be reevaluated by the DAQ Air Analysis Branch.

Pollutant	Averaging Period	Emission limits (used in 2005)	Emissions limits (used in 2008)	% of AAL (2008)
Benzene	Annual	180.64 lbs per year	185.60 lbs per year	17.5%
Hydrogen chloride	1-hour	0.26 lbs per hour	1.91 lbs per hour	7.3%
Methy mercaptan	1-hour	0.01643 lbs per hour	0.02 lbs per hour	.024%
Hydrogen sulfide	24-hour	5.20 lbs per day	5.38 lbs per day	1.03%
Vinyl chloride	Annual	159.51 lbs per year	174.71 lbs per year	4.4%

The new limits will be reevaluated and placed in body of the permit. The applicant sent a revised design plan into the DAQ Central Office on January 17, 2006 stating that due to a recent expansion at the BFI landfill, the closure year has been changed from 2009 to 2010. This means that the maximum landfill gas generation will occur in 2011 instead of 2010 as was originally stated in the “Last MACT” toxics demonstration. The increase in emissions in 2011 from what was projected prior to the expansion is:

Maximum projected flow rate (2010) before the expansion = $4.821E^{+7}$ m³ LFG/year

Maximum projected flow rate (2011) before the expansion = $5.308E^{+7}$ m³ LFG/year

Difference = $4.87E^{+6}$ m³/year = $1.72E^{+8}$ ft³ LFG/year = 327.2 scfm LFG

This value equates to about 10% increase in gas flow. This amount should not adversely impact the percentage of the AALs that were modeled before the expansion, however the new emission rate values will be placed in to the permit.

- VIII. A Professional Engineers Seal was submitted by Mr. Steve Lamb, a registered professional engineer in North Carolina, with the design plan for this facility and in the 1st step of this 2-step Significant Modification. The calculations for the new enclosed flare that is being added to the existing gas collection and control system to replace the temporary flare were included.
- IX. A consistency determination **is required** for this modification and was included with the 1st step of this 2-step Significant Modification.
- X. An application fee of \$867.00 **is required** and was received by the DAQ Raleigh Central Office on April 10, 2007.
- XI. The appropriate number of copies of the application were received by the DAQ on April 10, 2007.

- XII. The application did contain the Reduction and Recycling Form.
- XIII. The application was signed by an authorized official as defined by 15A NCAC 2Q .0304(j).
- XIV. Air toxics evaluation was performed in the 1st step of the 2-step Significant Modification. All toxic air pollutants that will be emitted from the addition of the new Flare and the removal of the temporary flare, were taken into account. The facility also performed the last MACT toxics demonstration in October 2005.

XV. Public Notice

A thirty-day public notice **is required** for this 2nd step of this 2-step Significant Modification. .

Public notice: The 30 day public notice period was from ____, 2008 through _____. ____ public comments were received for this permit application.

EPA 45-Day review Period: The DAQ sent copies of the appropriate information to the USEPA prior to the public notice. The EPA 45-day review period was from _____, 2008 through _____ 2008. The USEPA ____ have any comments on this modification.

XVI. NonAttainment:

Cabarrus County is located in an 8-hour ozone nonattainment area. BFI Waste Systems of America is considered a minor source for nonattainment. The worse case NOx emission rate from the facility including the emissions from the addition of the enclosed flare (CD-FLARE2) in the first step of this 2-step modification, yield a NOx emission rate that is still below 100 tons per year.

XVII. Prevention of Significant Deterioration (PSD)

This facility is a minor source for PSD. The modifications in this permit will be less than the major source thresholds. Therefore, PSD does not apply.

A PSD Avoidance condition for carbon monoxide was placed in the permit during 1st step of this 2-step Significant Modification process.

The minor source baseline for Cabarrus was triggered for PM-10 in 1978 and for SO₂ in 1981. The increment increases were not placed in the permit during the first step of this 2-step significant modification.

PM-10 emissions for the addition one flare (CD-FLARE2):

AP-42 emission factor, Section 2.4: 0.001 lbs PM-10/hr cfm CH₄ (methane)
Methane content is approximately 50% of the total LFG generated
Maximum possible LFG flow rate through CD-FLARE2: 6000 scfm

$$\frac{0.001 \text{ lbs PM} - 10}{\text{hr} - \text{cfm CH}_4} \times \frac{6000 \text{ scfm LFG}}{1} \times \frac{0.5 \text{ cfm CH}_4}{1 \text{ cfm LFG}} = \frac{3.0 \text{ lbs PM} - 10}{\text{hour}}$$

Sulfur dioxide emissions for the addition one flare (CD-FLARE2):

The emissions of sulfur oxides, particularly sulfur dioxide, from the flare are dependent on the inlet concentration of sulfur-bearing compounds in the LFG. The calculation of the estimated SO₂ emissions from the flare is based on the assumption that all of the total reduced sulfur (TRS) in the LFG is oxidized to SO₂. Since site-specific data for the TRS concentration in the LFG at the landfills is not available. SO₂ emissions from the flare were estimated based on the published mean concentration of TRS in LFG samples. AP-42, Section 2.4 lists concentrations of various compounds in uncontrolled LFG. This section reports that the mean concentration of TRS in LFG is 46.9 ppmv and its molecular weight is 32 grams/gmole. The following equations (3,4, and 7) are from AP-42 Section 2.4.

Calculate the sulfur dioxide emission rate from both flares:

Where: Maximum possible LFG flow rate through both flares: 6000 scfm

Conversion factor: $1 \text{ m}^3 = 35.3198 \text{ ft}^3$

$$Q_s = \frac{6,000 \text{ ft}^3 \text{ LFG}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{\text{m}^3}{35.3198 \text{ ft}^3} \times \frac{46.9 \text{ parts S}}{10^6 \text{ LFG}} = \frac{4187.56 \text{ m}^3 \text{ S}}{\text{year}}$$

Calculate the uncontrolled mass emission of Sulfur using Equation 4 of AP-42, Section 2.4:

The following equation from AP-42, fifth edition, Section 2.4.4.1 "Emissions", Revised November 1998, to calculate the uncontrolled emission of individual air pollutants present in landfill gas.

$$UM_p = Q_p (m^3 / yr) \left[\frac{MW (g / gmole) \times (1 \text{ atmosphere})}{\left(\frac{8.205 \times 10^{-5} \text{ m}^3 - \text{atmosphere}}{\text{gmol}^{-0} K} \right) \times \frac{1000 \text{ g}}{\text{kg}} \times (273 + 25^0 C)^0 K} \right]$$

Where:

UM_p = Uncontrolled mass emissions of pollutants, kg/yr

MW_p = Molecular weight of sulfur (32 g/mol)

Q_p = Emission rate of sulfur in the LFG, (6979.3 m³ sulfur/yr)

T^0 = 25⁰ C (77⁰ F), recommended by AP-42 for landfill gas temperature if temperature is unknown

$$UM_p = \frac{4187.56 \text{ m}^3}{\text{yr}} \times \left[\frac{32.0 \text{ g / gmole} \times 1 \text{ atmosphere}}{\left(\frac{8.205 \times 10^{-5} \text{ m}^3 - \text{atmosphere}}{\text{gmol}^{-0} K} \right) \times \frac{1000 \text{ g}}{\text{kg}} \times (273 + 25^0 C)^0 K} \right] \times \frac{2.2 \text{ lbs}}{\text{kg}} = \frac{12,057 \text{ lbs S}}{\text{year}}$$

Per AP-42, Section 2.4, the ratio of the molecular weight of SO₂ to the weight of sulfur is 2.0. Therefore, the amount of Sulfur dioxide created by the flare is: (12,057 lbs S x 2) = 24,114 lbs SO₂/year (2.75 lbs SO₂/hour)

Therefore, for PSD increment tracking purposes, PM10 emissions have increased by 3.0 pounds per hour and sulfur dioxide emissions have increased by 2.75 lbs per hour as a result of this modification.

- XVIII.** The revised gas collection and control system was submitted to the DAQ with proposed alternatives to operation, monitoring, recordkeeping, and reporting requirements. The DAQ approved the appropriated alternatives and submitted a response letter to the facility on July 3, 2007. These approved alternatives to the operation, monitoring, recordkeeping, and reporting requirements will be added to the permit.
- XIX.** This facility is not subject to 15A NCAC 2Q .0508(g) "Prevention of Accidental Releases" because it does not store chemicals that are subject to this regulation.
- XX. Recommendations**
This modification issued under section 15A NCAC 2Q .0501(c)(2) for BFI Waste Systems of America, Charlotte Motor Speedway Landfill V, located in Concord, Cabarrus County, North Carolina, has been reviewed by the DAQ to determine compliance with all procedures and requirements. The Mooresville Regional Office did comment on the initial application, and made comments on the draft permit. The DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements. The Mooresville Raleigh Regional Office concurs.

Issue permit No. 08612T08.

