

Facility Name: **Taylor County LFGTE Power Station**
 City: Mauk
 County: Taylor
 AIRS #: 04-13-269-0016

Application Numbers: TV-14263 & 14110
 Date SIP Application Received: November 7, 2002
 Date Title V Application Received: January 30, 2003
 Date of Draft Permit:
 Permit No: 4911-269-0016-V-01-0

| Program | Review Engineers | Review Managers |
|----------------|-------------------------|------------------------|
| SSPP | John Yntema | John Yntema |
| SSCP | Andrea Taylor | Karen Hays |
| ISMP | Deanna Oser | Larry Webber |
| Toxics | Andrea Taylor | Karen Hays |

Introduction

This narrative is being provided to assist the reader in understanding the content of the attached SIP permit to construct and/or draft/proposed operating permit amendment. Complex issues and unusual items are explained herein simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit amendment is being issued pursuant to: (1) Georgia Air Quality Act, O.C.G.A § 12-9-1, et seq. (2) Georgia Rules for Air Quality Control, Chapter 391-3-1, and (3) Title V of the Clean Air Act Amendments of 1990. Section 391-3-1-.03(10) of the Georgia Rules for Air Quality Control incorporates requirements of Part 70 of Chapter I of Title 40 of the Code of Federal Regulations promulgated pursuant to the Federal Clean Air Act. The primary purpose of this permit amendment is to identify state and federal air requirements applicable to the Taylor County LFGTE Power Station, which is a new plant to be constructed at the existing Taylor County Landfill and which is considered part of the same Title V site as the Taylor County Landfill (Operating under separate Title V Air Quality Permit No. 4953-269-0014-V-01-0), and to provide practical methods for determining compliance with these requirements. The following narrative is designed to accompany the draft permit amendment and is presented in the same general order as the permit amendment. It initially describes the facility receiving the permit amendment, the applicable requirements and their significance, and the methods for determining compliance with those applicable requirements. This narrative is intended as an adjunct for the reviewer and to provide information only. It has no legal standing. Any revisions made to the permit amendment in response to comments received during the public participation and EPA review process will be described in an addendum to this narrative.

I. Facility Description

A. Facility Identification

1. Facility Name

Taylor County LFGTE Power Station

Note: LFGTE is an abbreviation of the phrase “Landfill Gas to Energy”

Note: The Taylor County LFGTE Power Station is part of the same Title V site as the Taylor County Landfill.

2. Parent/Holding Company Name

Bio Energy (Georgia) LLC (owned by Energy Developments, Incorporated)

According to SIP Application No. 14110, “Energy Developments, Inc. (EDI) is part of the Energy Developments group of companies. Energy Developments Limited (EDL), the ultimate parent company, is an independent power producer formed in Australia in 1988 that has pursued expansion opportunities in overseas markets such as Asia, Western Europe, and the U.S. The U.S. energy development projects have been implemented through EDI beginning in 1998. EDI has focused on ... landfill gas to energy (LFGTE) projects”, where landfill gas (LFG) that is currently flared can be used as engine fuel.

3. Previous and/or Other Name(s)

This is a new facility and so could have no previous names.

4. Facility Location

County Road 33
Mauk, Georgia 31058 (Taylor County)

5. Attainment or Non-attainment Area Location

The facility is located in an attainment area.

6. Class I Area Impacts

The facility is not located within 100 km of a Class I area.

B. Site Determination

The Bio Energy (Georgia) LLC – Taylor County LFGTE Power Station will be located at the Taylor County Landfill, an open and operating landfill which is subject to Georgia Rules for Air Quality 391-3-1-.02(2)(ggg). It has Title V permit No. 4953-269-0014-V-01-0. A site

determination was carried out to determine if the landfill and the generating plant were going to be one site under Title V. The following is a summary of the results.

1. Contiguous/adjacency: The Taylor County LFGTE Power Station will be located on the Taylor County Landfill. The facilities are clearly contiguous.
2. Common control: The ownership and management of the two companies appear to not be related in any way other than by contract(s) which provide that the generation plant will buy the LFG and maintain the GCCS. There is no other common financial interest and nor management relationship. Therefore, it might normally be concluded that there is not "common control" and the facilities are separate Title V sites. However, because the only fuel available to the power station is supplied by the landfill, it was determined that the landfill and the power station are effectively under common control and are therefore one site per Title V.

This conclusion is supported by an EPA determination from Region 3. This is found in the May 1, 2002 letter to the Commonwealth of Virginia DEQ regarding the Maplewood Landfill, owned by USA Waste of Virginia, and Industrial Power Generating Corporation ("INGENCO"), a power generating company. This is regarding a proposal by Maplewood to sell LFG to INGENCO, which would use it to fuel IC engines to drive generators. According to the determination, the "overarching question" raised by a letter from VADEQ was "whether Maplewood and INGENCO are under 'common control' for purposes of determining whether Maplewood and INGENCO are a single stationary source under PSD and Title V." An important aspect raised by VADEQ was that "landfill gas will comprise up to 70 percent of the INGENCO's fuel."

The Region 3 determination letter concluded that the facilities were not the same Title V site because "INGENCO's facility does not need landfill gas to operate; the engines at use at the facility can run exclusively on liquid fuels such as diesel. In addition, Maplewood owns and controls its gas collection system and will continue to maintain its own flare. Maplewood accordingly does not need INGENCO to destroy the landfill gas as required by 40 CFR part 60, subpart WWW."

In contrast to that, the determination cites an EPA February 11, 1998 letter "to Terry Godar, VADEQ that addressed common control for another Virginia landfill. In its letter to EPA, VADEQ noted that 'The gas collection and the control system ... [landfill gas energy recovery]... will be located on the landfill property *and will be used exclusively to collect emissions from the landfill and to control those emissions through energy recovery.*' (emphasis added). EPA cited this interdependence between the landfill and the gas collection and control system as an indication that the two facilities were under common control."

At the request of the applicant, the landfill will continue to be permitted under its existing Title V permit and the power plant will be issued a separate Title V permit; each facility will have a separate AFS number. The landfill AFS number is 04-13-269-00014; the power plant AFS number is 04-13-269-0016.

C. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments. Comments are listed in Table 2 below.

Table 1: Current Title V Permit and Amendments

| Permit/Amendment Number | Date of Issuance | Comments | |
|-------------------------|------------------|----------|----|
| | | Yes | No |
| 4953-269-0014-V-01-0 | January 29, 2001 | X | |
| | | | |

Table 2: Comments on Specific Permits

| Permit Number | Comments |
|----------------------|---|
| 4953-269-0014-V-01-0 | This is the initial Title V permit for the existing Landfill. |
| | |

D. Process Description

1. SIC Codes(s)

4911

2. Description of Product(s)

Baseload electricity for sale.

3. Overall Facility Process Description

LFG will be fed to three or four reciprocating internal combustion (IC) engines. Each engine will drive a generator. Each engine / generator pair (a generator set or “Genset”) will be located inside of a module which will contains most of the switching equipment associated with that genset.

4. Overall Process Flow Diagram

A simple process flow diagram was included with the Title V application.

E. Regulatory Status

1. PSD/NSR

Taylor County is in an attainment area for all air pollutants so the applicable NSR rules would be dictated by the Prevention of Significant Deterioration (PSD) rules. PSD rules apply, as follows:

- a. For facilities located in an area classified as “non-attainment” for a particular criteria pollutant, the non-attainment NSR (NNSR) program potentially applies to new construction or modifications that result in emission increases of that pollutant; and
- b. For facilities located in an area classified as “attainment” or “unclassifiable” for a particular criteria pollutant, the Prevention of Significant Deterioration (PSD) program potentially applies to new construction or modifications that result in emission increases of that pollutant.

The existing landfill is a true minor source for all PSD pollutants (meaning potential emissions are less than 250 tons per year of each pollutant). The potential emissions from combustion of LFG in their proposed internal combustion engines, as calculated by the Permittee, are shown below, compared with the major source thresholds. The table shows that the modification is minor for PSD:

| Pollutant | Potential Emission Rate (tons/yr) | PSD Major Source Threshold (tons/yr) | Source Status |
|------------------|--|---|----------------------|
| PM10 | 10.2 | 250 | Minor |
| NOx | 62.4 | 250 | Minor |
| SO2 | 2.8 | 250 | Minor |
| CO | 187.2 | 250 | Minor |
| VOC | 9.6 | 250 | Minor |
| HAP | 0.14 | N/A | N/A |

As is indicated in the emissions section of this narrative, the emissions of carbon monoxide and nitrogen oxides could possibly be higher than indicated in the table, depending on whether the units operate at full load or less than full load. However, it is also clear that, using any reasonably conservative factors (and assuming the combustion of LFG, as required), the proposed modification will add less than the PSD major source thresholds and so is clearly a minor modification for PSD.

The site will remain a true PSD minor source. The existing flare is to be converted for use as a back-up control device. We have found that flare emissions appear to be lower than emissions from the IC engines, while burning LFG. Since any use of the flare in place of an IC engine will result in a reduction in emissions and since there are no other combustion emissions sources, the IC engine PTE is the same as the site PTE regarding combustion emissions. Since fugitive emissions are not counted in determining PSD status, and the only pollutants are stack pollutants, the IC engine PTE is the site PSD PTE. Therefore, the site is a true minor source for PSD. The facility is located in an attainment area.

2. Title V Major Source Status by Pollutant

Table 3: Title V Major Source Status

| Pollutant | Is the Pollutant Emitted? | If emitted, what is the facility's Title V status for the Pollutant? | | |
|------------------|---------------------------|--|-----------------------------------|-------------------------|
| | | Major Source Status | Major Source Requesting SM Status | Non-Major Source Status |
| PM | ✓ | | | ✓ |
| PM ₁₀ | ✓ | | | ✓ |
| SO ₂ | ✓ | | | ✓ |
| VOC | ✓ | | | ✓ |
| NO _x | ✓ | | | ✓ |
| CO | ✓ | ✓ | | |
| TRS | ✓ | | | ✓ |
| H ₂ S | ✓ | | | ✓ |
| Individual HAP | ✓ | | | ✓ |
| Total HAPs | ✓ | | | ✓ |

3. MACT Standards

According to Section 2.10 of Title V Application No. 13851, received June 21, 2002, for an amendment to the Taylor County Landfill, the landfill potential to emit HAP is less than 25 tpy. Section 2.20 of this application indicated that maximum anticipated HAP emissions were 7 tpy. That makes the existing site a minor source of HAPs with regard to Title V. The application for the power station indicated that HAP emissions were to be less than one ton per year. Therefore, even if these were to be added together, the entire site will be a minor source for HAP emissions, with emissions of each HAP being less than 10 tpy and total HAPs being less than 25 tpy.

Note: According to the initial Title V application, No. 10520, dated February 17, 1998, the site was major for HAPs. Section 2.10 of that Title V application indicates that its potential to emit HAPs exceeded 25 tpy. Section 2.20 of that application indicates that maximum anticipated HAP emissions were 35.9 tpy [26.82 for next five years]. If true, that made the site a major source of HAPs. However, this is not the case and, as indicated above, the company corrected this error in its 2002 application. It is likely that the original calculation did not assume the required destruction of HAPs by the flare system.

40 CFR Part 63, Subpart AAAAA

40 CFR Part 63, Subpart AAAAA, *National Emission Standards for Municipal Solid Waste Landfills* was promulgated on January 16, 2003 and is effective for existing landfills on January 16, 2004. This rule applies to each landfill that received waste after 11/6/87 that is a major source, is co-located with a major source, or is subject to the

control requirements of 40 CFR 60 Subpart WWW or Subpart Cc (the EG on which Georgia Rule (ggg) is based). The Taylor County Landfill does meet these criteria, so it is subject to Subpart AAAA. It has a permitted capacity of 50 million cubic yards; using Tier 1, its emissions have been previously calculated to exceed 50 Mg per year of NMOCs and the landfill elected to comply with the GCCS requirements of the rules rather than conduct testing which would have allowed a Tier 2 calculation.

There were not many requirements added by the MACT; EPA determined that the NSPS and the EG already required MACT. The Taylor County landfill is subject to the EG (issued in the Georgia Rules as Rule (ggg)). The only additional requirement is that the site must develop and implement a written SSM (startup, shutdown and malfunction) plan in accordance with § 60.6(e)(3) and maintain copy of its SSM plan on site. The IC engines in the proposed power station, which are to be the primary control device for landfill gas, must be addressed in the site's SSM plan.

40 CFR Part 63, Subpart ZZZZ

40 CFR Part 63, Subpart ZZZZ, *National Emission Standards for Reciprocating Internal Combustion Engines (RICE)* was proposed on December 19, 2002 and is expected to be final on February 28, 2004. Since the site is minor for HAPs, it will not be subject to Subpart ZZZZ. In any case, the proposed rule does not apply to reciprocating internal combustion engines that burn predominantly landfill or digester gas. The proposed power station will use only landfill gas as fuel.

40 CFR PART 61, SUBPART M

40 CFR Part 61, Subpart M, *National Emission Standard for Asbestos*, applies to various industrial facilities that deal to some degree or another with asbestos. The Taylor County Landfill accepts asbestos containing solid waste and as a result, this Landfill is subject to 40 CFR § 61 Subpart M. The only link between the proposed power station and the existing landfill is that the former will act as a control device for the latter. The power station does not impact the asbestos containing waste material. Therefore, 40 CFR § 61 Subpart M will not apply to the power station.

4. Program Applicability

| Program Code | Applicable (y/n) |
|---------------------------------|-------------------------|
| Program Code 6 - PSD | no |
| Program Code 8 – Part 61 NESHAP | no |
| Program Code 9 - NSPS | no |
| Program Code M – Part 63 NESHAP | yes |
| Program Code V – Title V | yes |

Regulatory Analysis

II. Proposed Modification

A. Description of Modification

State SIP Application No. 14110, for the Power Station, was received on November 7, 2002. This application replaced an earlier application (No. 13995), dated September 9, 2002, which had specified different engines. Title V Application No. 14263, for this same power station was received on February 20, 2003. The applications were submitted by Energy Developments, Inc. (EDI) for their subsidiary, Bio Energy (Georgia) LLC. The applications indicate that, "The proposed power generation project will be located near Mauk in Taylor County within the property boundary of the existing Taylor County Landfill. The landfill accepts municipal solid waste and deposits it into the ground before covering the waste with soil. Once the waste is covered, the material starts a...process of decomposition, resulting in the formation of landfill gas, which is extracted and collected from the landfill in a gas extraction and collection header. The proposed power station will use landfill gas as the sole fuel."

The documentation also states that "The construction of Taylor County Landfill was completed in 1989 and it has remained an active site that continues to receive municipal solid waste. An active gas collection system was installed in 1999 (consisting of 55 extraction wells). The landfill gas produced in this site is currently combusted through an enclosed flare. The landfill currently operates under a Part 70 Operating Permit issued by the Georgia Environmental Protection Division (EPD) effective January 29, 2001 (Permit No. 4953-269-0014-V-01-0)."

The documentation continues: "The existing landfill gas extraction system at the Taylor County Landfill will be used to collect gas for the power station. This system consists of multiple gas extraction wells drilled into the landfill together with a series of collection pipelines and headers. The landfill gas is currently extracted from the collection header under a negative pressure maintained by a blower system and then sent to a flare for combustion. The gas extraction system is currently owned and operated by Allied Services, LLC (dba Southern States Environmental Services, Inc.), who is also the permit holder for the Taylor County Landfill. Once the proposed power station becomes operational, the gas extraction and collection system will be operated by EDI, though still owned by Allied Services. Additional gas filtering equipment may be installed to treat the landfill gas to a level suitable for use in the power generation unit, if needed. The gas extraction system operates continuously, and the proposed power station will also operate continuously."

EDI proposed to use four identical Jenbacher reciprocating engines designed to use landfill gas as fuel, which will produce up to a total of 4.24 MW for sale for power generation at this site. The existing flare, currently used to combust the landfill gas, will serve as the backup combustion device once the proposed power station commences operation.

B. Emissions Change**Particulate Matter (PM) emissions**

The combustion of any fuel causes the emissions of PM and PM₁₀ (PM less than 10 microns in aerodynamic diameter), which are regulated pollutants. We expect that all PM emissions emitted from an internal combustion engine is small so we assume that PM = PM₁₀. The application uses an emissions factor of 0.18 grams PM₁₀ per brake horsepower-hour (bhp-hr) for their proposed Jenbacher engines. At the design power output rating of 1,468 bhp per engine, the emissions were computed, as follows:

$$PM_{10} = 0.18 \text{ gram/bhp-hr} \times \text{lb}/453.6 \text{ gram} \times 1,468 \text{ bhp} = 0.58 \text{ lb/hr}$$

Their application states: "Considering continuous operation (i.e., 24 hours a day, 365 days a year), the annual PM10 emissions will be 2.55 tons per year per engine. For the four engines combined, the PM10 emissions are estimated as 10.2 tons per year."

Note: Using the hourly emission rate of 0.58 lb/hour and the engine heat input rating of 9.75 MMBtu/hour, the emissions per Btu can also be calculated.

$$(0.58 \text{ lb/hour}) \times (\text{hour}/9.75 \text{ MMBtu}) = 0.0595 \text{ lb/MMBtu}$$

This compares very closely with the information in the AP-42 for landfills, which includes Table 2.4-5 "EMISSION RATES FOR SECONDARY COMPOUNDS EXITING CONTROL DEVICES." This has an E-rated factor for IC engines fired with LFG, which is 48 lb PM per million dscf methane. Since methane is about 1000 Btu/dscf, that is roughly equivalent to 0.048 lb/MMBtu. However, there is evidence that actual PM emissions may be less than that. The AP-42 document for natural gas fired engines includes Table 3.2-2 "UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES" which has a D-rated factor that is about 3 orders of magnitude smaller than that, 0.0000771 lb/MMBtu. I note that the AP-42 for natural gas fired engines includes Table 3.2-2 "UNCONTROLLED EMISSION FACTORS FOR 4 STROKE RICH-BURN ENGINES" which has an E-rated factor that is much closer to the landfill AP-42, 0.0095 lb PM10 per million dscf methane. In any case, it appears that PM emissions, from the proposed engines, is likely to be 10.2 tons per year or less.

Nitrogen Oxides (NO_x)emissions

The combustion of fuels in the presence of air generates nitrogen oxides. NO_x emissions from internal combustion engines relatively high, compared to other combustion sources. This is evident in the AP-42 for landfills, which includes Table 2.4-5 "EMISSION RATES FOR SECONDARY COMPOUNDS EXITING CONTROL DEVICES." This has a NO_x emissions factor for engines of 250 lb/MM dscf methane (equivalent to 0.254 lb/MMBtu). This is high compared to the factors of 40 lb/MMBtu for a flare, 33 lb/MMBtu for a low-NO_x boiler and 87 lb/MMBtu for a gas turbine.

The application bases its calculations on a manufacturer emission factor of 1.1 grams per bhp-hour, which is equivalent to 0.365 lb/MMBtu. A NO_x emission rate is calculated per engine:

$$\text{NO}_x = 1.1 \text{ gram/bhp-hour} \times \text{lb/} 453.6 \times 1,468 \text{ bhp} = 3.56 \text{ lb/hr.}$$

Assuming continuous operation, the annual NO_x emissions will then be 15.6 tons per year per engine. For four engines combined, the NO_x emissions are therefore estimated to be 62.4 tons per year.

The emissions can be estimated using the AP-42 emissions factor of 0.254 lb/MMBtu:

$$\text{NO}_x = 0.254 \text{ lb/MMBtu} \times 9.75 \text{ MMBtu/hour} = 2.48 \text{ lb/hr.}$$

The emission rate estimated by the applicant was 40% higher than that predicted by AP-42.¹

Sulfur Dioxide (SO_2) emissions

Given the very low sulfur content of LFG, emissions of SO_2 are expected to be relatively insignificant. The application has used an emissions factor of 0.05 gr/bhp-hr, to estimate SO_2 emissions to be 0.16 lb/hr from each engine:

$$\text{SO}_2 = 0.05 \text{ gr/bhp-hr} \times \text{lb/} 453.6 \times 1,468 \text{ bhp} = 0.16 \text{ lb/hr.}$$

Assuming continuous operation, the annual SO_2 emissions will then be 0.7 tons per year per engine. For four engines combined, the SO_2 emissions are therefore estimated to be 2.8 tons per year.

Carbon Monoxide (CO) emissions

Most combustion generates some carbon monoxide from incomplete combustion. The application uses a manufacturer's emission factor of 3.3 grams/bhp-hr to calculate an emission rate per engine of 10.68 lb/hr:

$$\text{CO} = 3.3 \text{ gr/bhp-hr} \times \text{lb/} 453.6 \times 1,468 \text{ bhp} = 10.68 \text{ lb/hr.}$$

Assuming continuous operation, the annual CO emissions will then be 46.8 tons per year per engine. For four engines combined, the CO emissions are therefore estimated to be 187 tpy from 4 engines.

This emission rate is relatively high in comparison to that predicted using the emission factor in the AP-42 for landfills, in Table 2.4-5 "EMISSION RATES FOR SECONDARY COMPOUNDS EXITING CONTROL DEVICES." That CO emissions factor is 470 lb/MM dscf methane. Given that methane is about 1000 Btu/dscf and that each IC engine's maximum

¹The relatively high NO_x emission rate has been discussed with EDI. They have stated that the manufacturer guarantees NO_x emissions will not exceed 1.0 grams per bhp-hr. With de-rating, this emission rate guarantee can go as low as 0.5 grams per bhp-hr. In order to qualify as Green-Energy, they may de-rate the engines and operate at 0.6 gr/bhp-hr, but there is no need to put that into the air quality permit.

Btu/hour heat input is 9.75 MMBtu/hour, the AP-42 predicted emission rate is calculated as follows:

$$0.470 \text{ lb/MMBtu} \times 9.75 \text{ MMBtu/hour} = 4.56 \text{ lb CO per hour.}$$

The emission rate estimated by the applicant was 134% higher than that predicted by AP-42.

Volatile Organic Compound (VOC) emissions

All combustion generates some amounts of VOCs, either due to incomplete combustion of VOCs or creation of VOCs by partial combustion of non-VOC hydrocarbons. They base their calculations on a manufacturer's emission factor of 0.17 gr/bhp-hr.

$$\text{VOCs} = 0.17 \text{ gr/bhp-hr} \times \text{lb} / 453.6 \times 1,468 \text{ bhp} = 0.55 \text{ lb/hr.}$$

Assuming continuous operation, the annual VOC emissions will then be 2.4 tons per year per engine. For four engines combined, the VOC emissions will be 9.64 tons per year.

AP-42 for lean-burn engines is 0.118 lb/MMBtu. Assuming 9.75 MMBtu/hour input, the emission rate can be estimated:

$$0.118 \text{ lb/MMBtu} \times 9.75 \text{ MMBtu/hour} = 1.145 \text{ lb VOC per hour.}$$

For 4 engines, the total emissions would be 20.0 tons per year.

As required by Rule (ggg), these engines must destroy NMOC by 98%. Given that the average GCCS collects 75% of the landfill gas generated, and the NMOC generated by the landfill is 100 tons per year, the uncombusted NMOC exhausted from the engines may contribute up to 1.5 tpy additional VOC to the above estimate provided by the Permittee. In comparison to the existing open flare, the IC engines will have a higher destruction efficiency and therefore lower VOC emissions resulting from uncombusted NMOC.

Change in emissions with this modification

In determining what the modification's effect on emissions will be, the past actual emissions must be compared with the future actual and potential emissions. Calculating the past-actual emission rate for landfills is somewhat easier than for other sources, because they operate year-round. It is assumed that the flare down-time is infrequent enough that it can be ignored. However, the available AP-42 emission factors for landfill flares are very low-rated. It would therefore be better to use site-specific information. The Taylor County Landfill Title V application included estimates of Maximum Expected emission rates and these have been used to determine past actual emissions. These previous emission estimates are found in a Table in Section 2.20 of the old application, which is reproduced below:

Section 2.20 - Facility Wide Emissions Estimates

1. FACILITY NAME: Taylor County Landfill – Application No. 13851

2. FACILITY WIDE EMISSIONS ESTIMATES:

| Air Pollutant | Maximum Anticipated Actual Emissions, Tons Per Year (TPY) | Average Anticipated Actual Emissions For Next 5 Years, TPY |
|---------------------------------------|---|--|
| Particulate Matter | 7 | 7 |
| PM – 10 | 7 | 7 |
| Sulfur Dioxide | 6 | 6 |
| Volatile Organic Compounds | 6 | 6 |
| Nitrogen Oxides | 17 | 17 |
| Total Hazardous Air Pollutants (HAPs) | 7 | 7 |

This can be then compared to the same table found in the recent power generation project Title V application to generate the actual emission increase. The potential increase would be better generated comparing the old Title V application with the potential to emit.

Section 2.20 - Facility Wide Emissions Estimates

1. FACILITY NAME: Taylor County Landfill – with IC engines

2. FACILITY WIDE EMISSIONS ESTIMATES:

| Air Pollutant | Maximum Anticipated Actual Emissions, Tons Per Year (TPY) | Average Anticipated Actual Emissions For Next 5 Years, TPY |
|---------------------------------------|---|--|
| Particulate Matter | 10.2 | 10.2 |
| PM – 10 | 10.2 | 10.2 |
| Sulfur Dioxide | 2.8 | 2.8 |
| Volatile Organic Compounds | 9.6 | 9.6 |
| Nitrogen Oxides | 62.4 | 62.4 |
| Total Hazardous Air Pollutants (HAPs) | <1 | <1 |

For PM / PM₁₀, a comparison between the Title V applications indicates that the change is an increase of 3.2 tpy. Since AP-42 shows that PM emissions from IC engines is expected to be 3 times as high as from flares, this could be a low figure; the increase might be as much as 14 tpy.

For SO₂, a comparison between the Title V applications indicates that the change is a decrease of 3.2 tpy. This appears to be unlikely. It is expected that, since SO₂ is based solely on the sulfur in the LFG, SO₂ should not change as a result of changing incineration devices.

For VOC, a comparison between the Title V applications indicates that the change is an increase of 3.6 tpy. Since the engines are of an ultra lean-burn design (a technique which often allows an increase in VOCs as a trade-off for a decrease in NO_x), an increase could occur. However, it should be small, since the landfill rules set the same NMOC limit regardless of what device is used to control it. The control device must destroy at least 98% of NMOCs or achieved an exit concentration of no more than 20 ppm NMOCs. It therefore seems reasonable to say that the predicted increase is 3.6 tpy.

For NO_x, a comparison between the Title V applications indicates that the change is an increase in 45.4 tpy. This shows an increase of 267 percent. It is likely that the increase will be at least this much, since the AP-42 factors predict a 525 percent increase in NO_x emissions. While ultra low-NO_x technology may mitigate that, a 525 percent increase would be an increase of 89 tpy.

For CO, the tables cannot be compared, since Table 2.20 does not contain a CO emission rate. The SIP application indicates that potential to emit from all four IC engines together is 187.2 tpy. AP-42 factors indicate that CO emissions will go down, when changing from a flare to IC engines. The emissions from the flare are indicated, in Table 2.10 of the Title V application, that CO will exceed 100 tpy, but be less than 250 tpy. That would allow for CO emissions going down, staying the same or going up. With four 9.75 MMBtu/hour heat-input engines, that implies a landfill heat generation rate of 39 MMBtu/hour or less. Assuming that methane is 1020 Btu/scf, that indicates that 38,235 scf/hour of methane equivalent. Applying the CO emission factor for flares of 750 lb/MMdscf, the emissions are predicted to be 28.67 lb/hour for an annual emission rate of 125.6 tons per year. Comparing that to the CO rate predicted for the generators by the application (187.1 tpy), that indicates an increase of 61.2 tpy. Since AP-42 predicts a decrease, it seems reasonable to say that the increased PTE will not be higher than 61.2 tpy.

For HAPs, a comparison between the Title V applications indicates that the change is a decrease of over 6 tpy. This may be true if the IC engines cause the LFG to burn hotter than the flare does. However, as with VOC factors, this seems unlikely due to the ultra-lean burn technology. It seems likely that there would be a minimal increase or no change at all.

The change in TRS and H₂S should be less than 1 ton per year.

Table 4: Emissions Change Due to Modification

| Pollutant | Is the Pollutant Emitted? | Net Actual Emissions Increase (Decrease) (tpy) | Net Potential Emissions Increase (Decrease) (tpy) |
|------------------|---------------------------|--|---|
| PM | ✓ | 3.2 | 14 |
| PM ₁₀ | ✓ | 3.2 | 14 |
| SO ₂ | ✓ | 0 | 0 |
| VOC | ✓ | 3.6 | 3.6 |
| NO _x | ✓ | 45.4 | 89 |
| CO | ✓ | 61.2 | 61.2 |
| TRS | ✓ | <1 | <1 |
| H ₂ S | ✓ | <1 | <1 |
| Individual HAP | ✓ | <1 | <1 |
| Total HAPs | ✓ | <1 | <1 |

TOXIC AIR POLLUTANT IMPACT ANALYSIS

The proposed power station at the Taylor County Landfill has the potential to emit several chemical compounds that are categorized as “toxic air pollutant” (TAP) by EPD. Therefore the emissions are subject to the *Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions* (the EPD Toxics Guidelines).

At our recommendation, EDI conducted an air quality impact analysis for the potential TAP emitted from the proposed power station and provide the results in the permit application.

According to the Toxics Guidelines, a dispersion modeling analysis may be performed to estimate the expected maximum toxic pollutant concentration downwind of the release point. This guideline allows an initial simplified evaluation of air toxic impacts using the U.S. EPA SCREEN3 model. If the SCREEN3 evaluation indicates an unacceptable air quality impact, then refined modeling using an appropriate U.S. EPA dispersion model is recommended.

An acceptable ambient concentration (AAC) value is calculated from the toxicity data available in EPD recommended publications. For any pollutant, both a long-term and short-term AAC should be calculated. If a pollutant has an inhalation reference concentration (RfC) and/or unit risk, an annual average (long-term) AAC is calculated. If RfC and unit risk data are not available, then an annual value cannot be calculated and a 24-hour AAC is derived.

The bases for the 24-hour values are the OSHA PEL given at 29 CFR Part 1910 Subpart Z, followed in priority by the ACGIH TLV, NIOSH REL, and LD50 databases. These resources provide exposure limits as time-weighted averages (TWA) in terms of occupational exposure duration (i.e., typically an 8-hour average).

An additional AAC must be calculated if a given pollutant has listed a Short Term Exposure Limit (STEL) or Ceiling (C) in any one of the above-named resources.¹⁷ These values have been established for pollutants that are acute sensory irritants. A 15-minute average AAC, if applicable, must be considered in addition to an annual average and/or 24-hour average AAC. The EPD Guideline states that each of annual, 24-hour, and 15-minute AAC should be derived if the appropriate toxicity information is provided in any of the listed resources. A flowchart outlining the procedure for derivation of AAC values follows this discussion.

The applicant reviewed the data resources specified by EPD to determine the applicable AAC standards for toxic air pollutants identified as being emitted from the proposed power station. They used these values for comparison of model predicted impacts.

The results of their toxic impact assessment predict that the concentrations of all pollutants from the IC engines will be below the AAC for each compound.

In addition to the Toxic Impact Assessment conducted by the power generation company on the proposed generators, EPD staff conducted a toxic impact assessment for the “worst case” pollutant that is emitted from landfill gas. Based on emission rate and acceptable ambient concentration, vinyl chloride was determined to be the worst case pollutant. A SCREEN3 area source model was run assuming that 25% of the vinyl chloride generated in the landfill is emitted uncontrolled as fugitive gases, while 75% of the gas is controlled by the IC engines. The results of the toxic impact assessment predict that the combined concentration of vinyl chloride released from the landfill and the IC engines will be below the AAC.

C. PSD/NSR Applicability

The existing source (with GCCS and flare to comply with the landfill rules), according to the previous Title V narrative and permit, is minor for PSD. The proposed source, after modification (with GCCS, IC engines to comply with the landfill rules and a flare as a backup control device) will be a minor PSD source. Therefore this modification is minor.

III. Facility Wide Requirements

A. Emission and Operating Caps:

None

B. Applicable Rules and Regulations

As indicated above, the following is an applicable requirement for the generating plant: 40 CFR Part 63 Subpart AAAA- "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste landfills." This is cited in Condition 2.2.2. Because of that, the plant is subject to Subpart A- "General Provisions" for the National Emission Standards for Hazardous Air Pollutants (NESHAP) as specified in Table 1 of 40 CFR 63 Subpart AAAA. This is cited in Condition 2.2.1.

As indicated above, the following is an applicable requirement for the generating plant: Georgia Rule for Air Quality Control 391-3-1-.02(2)(ggg) "Existing Municipal Solid Waste Landfills." This is cited in Condition 2.3.1.

C. Compliance Status

The proposed generation facility is brand new and so could not be out of compliance. The Title V site includes the existing Taylor County Landfill. There is no indication that there are any compliance problems with the Taylor County Landfill. Therefore, the site appears to be in compliance.

D. Operational Flexibility

None requested

E. Permit Conditions

See Section B above.

IV. Regulated Equipment Requirements

A. Brief Process Description

LFG is fed to three or four reciprocating internal combustion engines, IC01, IC02, IC03 and IC04. Initially three engines will be installed. Depending on the availability of landfill gas, a fourth may be added to the power station while the construction permit issued for this project remains valid. Each power module will be an enclosed and self-contained unit consisting of a blower, an internal combustion engine, a generator, and a transformer. The manufacturer-rated power output of each engine is 1,060 kW. The modular enclosures are standard steel shipping containers lined with acoustic damping material and will measure approximately 40 ft long by 10 ft wide by 10 ft high and will weigh approximately 33 tons. These enclosures will be generally unoccupied structures but can be entered for inspection and repair. Each module will incorporate all ancillary electrical, cooling, and exhaust gas venting components and will be completely enclosed except for the cooling system inlet and outlet ducts and engine exhaust. According to SIP application No. 14110, "The engine model for the proposed power station is the landfill gas version of the currently manufactured LEANOX ® lean burn low-emitting engine. Lean burn technology can be thought of as an emission control option that is proven to achieve very low NOX emission levels."

The SIP application continues: "The power station will be constructed on leased land obtained from the current landfill owner. Bio Energy (Georgia) LLC will own the power station, while EDI will be the operator. The landfill gas will be purchased from the landfill owner who will continue to maintain ownership of the gas extraction and collection system and the flare. The gas extraction and collection system, power generators, transformers, and electrical equipment will be operated continuously (24 hours a day) except during maintenance periods. Operation of the entire facility will be automated except for minor adjustments and some monitoring being performed by personnel. This facility will not be generally attended outside of normal working hours except under unusual circumstances. Routine maintenance of power generation equipment will occur at specific prescheduled intervals and major overhauls will be conducted as necessary. All maintenance and overhauling will be performed by EDI personnel or appropriate subcontractors."

B. Equipment List for the Process

| Emission Units | | Specific Limitations/Requirements | | Air Pollution Control Devices | |
|----------------|--|---|---|-------------------------------|-------------|
| ID No. | Description | Applicable Requirements/Standards | Corresponding Permit Conditions | ID No. | Description |
| IC01 | Jenbacher Model No. JGC 320 GS-LL Internal Combustion Reciprocating Engine | 391-3-1-.02(2)(ggg) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) | 3.4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 5.2.1, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4 | N/A | N/A |
| IC02 | Jenbacher Model No. JGC 320 GS-LL Internal Combustion Reciprocating Engine | 391-3-1-.02(2)(ggg) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) | 3.4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 5.2.1, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4 | N/A | N/A |
| IC03 | Jenbacher Model No. JGC 320 GS-LL Internal Combustion Reciprocating Engine | 391-3-1-.02(2)(ggg) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) | 3.4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 5.2.1, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4 | N/A | N/A |

| Emission Units | | Specific Limitations/Requirements | | Air Pollution Control Devices | |
|----------------|---|---|---|-------------------------------|-------------|
| ID No. | Description | Applicable Requirements/Standards | Corresponding Permit Conditions | ID No. | Description |
| IC04 | Jenbacher Model No. JGC 320 GS-LL Internal Combustion Reciprocating Engine | 391-3-1-.02(2)(ggg) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) | 3.4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 5.2.1, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4 | N/A | N/A |

* Generally applicable requirements contained in this permit may also apply to emission units listed above.

C. Equipment & Rule Applicability

New Source Review

Taylor County is in an attainment area for all air pollutants so the applicable NSR rules would be dictated by the Prevention of Significant Deterioration (PSD) rules. Potential Emissions from combustion of LFG, calculated by the Permittee, in comparison to the major source threshold, are listed below. It is clear that the facility will be a true minor source for PSD

| Pollutant | Potential Emission Rate (tons/yr) | PSD Major Source Threshold (tons/yr) | Source Status |
|------------------|-----------------------------------|--------------------------------------|---------------|
| PM ₁₀ | 10.2 | 250 | Minor |
| NO _X | 62.4 | 250 | Minor |
| SO ₂ | 2.8 | 250 | Minor |
| CO | 187.2 | 250 | Minor |
| VOC | 9.6 | 250 | Minor |
| HAP | 0.14 | N/A | N/A |

New Source Performance Standards

NSPS Subpart WWW

NSPS Subpart WWW regulates landfills that undertook certain actions after the applicability date. The rule states that: "The provisions of this subpart apply to each municipal solid waste landfill that commenced construction, reconstruction or modification on or after May 30, 1991. Physical or operational changes made to an existing landfill solely to comply with Subpart Cc of this part are not considered construction, reconstruction, or modification for the purposes of this section." Since the Taylor County Landfill was in operation prior to the NSPS Subpart WWW applicability date of May 30, 1991, Subpart WWW does not apply to this landfill. As a result, this subpart will not apply to the proposed power station. [However, the same process that created this federal rule also created an Emission Guideline that required Georgia to pass rules governing existing landfills that were at least as stringent as specified; the minimum requirements were, aside from dates, identical to those in Subpart WWW. These rules were written in the Georgia Rules for Air Quality 391-3-1-.02(2)(ggg).

NSPS Subpart Kb

NSPS Subpart Kb applies to each volatile organic liquid storage vessel for which construction, reconstruction, or modification commenced after July 23, 1984. The oil storage tanks at the proposed power station will be used to store lubricating oil, which meets the definition of a volatile organic liquid (VOL). However, the volume of the tanks is less than 40 cubic meters (10,566 gallons), which is the minimum volume for NSPS Subpart Kb applicability. Therefore, NSPS Subpart Kb will not apply to the oil storage tanks at the proposed power station.

National Emissions Standard for Air Quality Pollutants

40 CFR Part 63, Subpart AAAA

As indicated above, the landfill generating plant are subject to 40 CFR Part 63, Subpart AAAA, *National Emission Standards for Municipal Solid Waste Landfills*. It was promulgated on January 16, 2003 and is effective for existing landfills on January 16, 2004. The site must develop and implement written SSM (startup, shutdown and malfunction) plan in accordance with § 60.6(e)(3) and maintain copy of SSM plan on site. This must include the IC engines in the proposed power station, which are to be the primary control device for landfill gas, must be part of the site's SSM plan.

Acid Rain Program

The Acid Rain Program was established by Title IV of the Clean Air Act Amendments 1990 to reduce acid rain in the U.S. and Canada. For the Acid Rain Program to be applicable to a power generation unit, the following three conditions must be met.

1. The unit must be a combustion device.
2. The unit must be fossil fuel fired.
3. The unit must supply electricity for sale or serve an electricity-generating device that supplies electricity for sale.

The proposed power station meets the definition of a combustion device and it plans to supply electricity for sale. However, the landfill gas, which will constitute the only fuel for the proposed power station, does not meet the definition of fossil fuel². Therefore, the Acid Rain Program will not apply to the proposed power station.

² Preamble to the final acid rain "core" rules, 58 FR 3596, January 11, 1993.

GEORGIA RULES FOR AIR QUALITY CONTROL

Visible Emissions

Georgia Rules for Air Quality Control Chapter 391-3-1-.02(b), "Rule (b)", requires that visible emissions from an air contaminant source be limited to a maximum opacity of 40%. This standard is applicable to sources subject to some other emission limitation under section 391-3-1-.02. The proposed power station will be subject to an emission limitation of the above-mentioned section. Therefore, the visible emission standard under this rule will be applicable to the proposed power station. [Note: Opacity from these engines is expected to be near zero percent.]

Sulfur Dioxide

Rule (g) specifies the maximum sulfur content in fuels used for combustion. Paragraph 2 of this rule limits the maximum sulfur content to 2.5% (by weight) in all fuels fired in a combustion source below 100 million Btu per hour heat input rate. The heat input for each engine is 9.752 million Btu per hour. As such, the landfill gas may not contain more than 2.5% sulfur by weight. [Note: That is far more than LFG could possibly contain.]

Existing Municipal Solid Waste Landfills

As indicated above, Rule (ggg) contains provisions applicable to existing municipal solid waste landfills that commenced construction, reconstruction or modification before May 30, 1991 and have accepted waste at any time since November 8, 1987, or have additional design capacity for future waste deposition. This rule is equivalent to the emissions standards specified in NSPS Subpart WWW except for several minor variations. The Taylor County Landfill is subject to the provisions contained in this rule.

Section 3(i) of this rule defines the air emissions standards for existing municipal solid waste landfills. Since these emissions standards relate to the NMOC concentration at the outlet of the control device used to reduce NMOC emissions from the landfill, and the proposed power station will be used to achieve the required level of NMOC emission control, this rule will apply to the proposed power station.

The maximum allowable NMOC concentration at the outlet of the proposed power station is less than 20 parts per million by volume, dry basis, measured as hexane at 3% oxygen. As an alternate emission standard, the proposed power station can reduce the landfill generated NMOC by 98 weight percent through combustion in the reciprocating engines.

D. Compliance Status

The proposed facility is not yet constructed so could not be out of compliance.

E. Operational Flexibility

Not Applicable.

F. Permit Conditions

The permit conditions that were incorporated in Section 3 of the Title V application have been developed out of the requirements of the Federal Air Quality Rules, including provisions found in 40 CFR Part 63 Subpart AAAAA, which will be adopted into GA Rules by reference, and the Georgia Air Quality Rules, including provisions found in 40 CFR Part 60 Subpart WWW which had been adopted into Rule (ggg) by reference.

Condition 3.4.1 is included to require that the IC engines comply with the NMOC emission limits set by Rule (ggg).

V. Testing Requirements (with Associated Record Keeping and Reporting)

Taylor County Landfill will use the Taylor County LFGTE Power Station, with its group of three or four IC engines, as the primary method of controlling NMOC emissions from the landfill. In order to demonstrate that the engines provide NMOC removal sufficient to comply with Rule (ggg), the Permittee is required to test the emissions to show that either (a) the control efficiency is at least 98% or (b) emissions of NMOCs do not exceed 20 ppm. Therefore, the Permittee is required by Condition 4.2.1 to perform a test on each engine within 180 days after startup of each engine.

In order to provide assurance that the NMOC removal is continuously complying with Rule(ggg), Condition 4.2.2 requires that, during the testing per Condition 4.2.1, the landfill must “determine and record the oxygen concentration (%) of the exhaust gas and the fuel-to-air setting of each engine at least every 10 minutes.” Condition 4.2.3 requires that the landfill to use “...the engine operating data...and the parameter ranges...to establish the acceptable range (that which indicates compliance) for each engine parameter for each IC engine”, to include the ranges ‘in the emissions test report’ and use them “for reporting excursions as specified in Condition 6.1.7.”

Condition 4.2.4 is also included to require CO and NOx emissions testing on at least one engine to ensure that the emission factors provided by the Permittee are accurate.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

A. General Monitoring Requirements

This permit specifies that any monitoring systems installed should be in continuous operation and that downtime due to maintenance should be minimized.

B. Specific Monitoring Requirements

Taylor County Landfill and the Taylor County LFGTE Power Station are subject to Rule (ggg), a state rule passed in accordance with Subpart Cc of 40 CFR Part 60, which had been promulgated in March 1996. Rule (ggg) was approved by EPA; therefore it is presumed to contain monitoring sufficient to fulfill Title V periodic monitoring requirements. The landfill uses IC engines as the primary control, and an open utility flare as backup control device, to burn NMOC emissions in LFG. Rule (ggg) the landfill is required to monitor for the bypass flow of the control device(s) by either installing a continuous (at least one reading every 15 minutes) flow monitor or by securing the bypass line valve and conducting a monthly inspection.

To provide adequate monitoring to assure destruction of at least 98% of NMOCs in LFG by the IC engines, Condition 5.2.1 requires (a) that an hour meter be installed on each engine, (b) that an automatic fail-safe block valve be installed on each engine to stop the flow of landfill gas to that engine in the event of engine failure, (c) that records be kept of the fuel-to-air ratio setting be kept, (d) that each engine be operated at the fuel-to-air ratio setting established (by testing) to represent good combustion [Note: Condition 6.1.7b.vi makes it a reportable exceedance for an engine's fuel-to-air ratio to not be kept this setting.], (e) that each engine be operated within 0.5 percent of the oxygen concentration established by testing to represent good combustion [Note: Condition 6.1.7b.vii makes it a reportable exceedance for an engine's oxygen concentration to not be kept within 0.5 percent of the established concentration.], (f) that the fuel-to-air ratio setting and the oxygen concentration be recorded on a monthly basis, and (g) that an oxygen concentration measuring device be maintained on-site.

The engines will be subject to Georgia Rules (b) "Visible Emissions." The opacity of emissions from the engines is expected to be near zero percent. Because the likelihood of violation of the 40% opacity limit of Rule (b) is minimal, no monitoring is required in the permit.

The engines will be subject to Georgia Rules (g) "Sulfur Dioxide." The sulfur content of landfill gas is much lower than 2.5%. Because the likelihood of violation of the 2.5% sulfur content limit of Rule (g) is minimal, no monitoring is required in the permit.

C. Record Keeping and Reporting Requirements:

Condition 5.3.1 requires that records, including identification of any deviations from applicable monitoring triggers, the cause of such occurrence, and the corrective action taken, are required to be kept and reported by the Permittee.

Condition 5.3.2 requires that the Permittee report excessive periods of control device(s) downtime (1 hour).

Condition 5.3.3 requires that the Permittee keep records of oxygen concentration measurements as required by Condition 5.2.1(f). That is because Rules (ggg) contains a specific emission limit, which is applicable to the proposed power station. This rule requires that either (1) NMOC emissions from the proposed power station must not exceed 20 parts per million parts by volume, dry basis, measured as hexane at 3% oxygen or (2) a minimum 98% (by weight) NMOC destruction efficiency is achieved. In their application, EDI proposed to comply with the requirements of this rule through an initial stack test and ongoing monitoring of the combustion zone temperature to assure that sufficiently high temperatures are being maintained to achieve the required NMOC destruction.

Note 1: Rule (ggg) requires most reporting on an annual basis, but 40 CFR Part 70 specifies "Submittal of reports of any required monitoring at least every 6 months." All reports generated due to monitoring activities are therefore, required to be submitted, on a semiannual basis in this permit.

VII. Other Record Keeping and Reporting Requirements

Rule (ggg) requires that certain records be kept, as specified by 40 CFR 60.758(b)(1) through (4) in accordance with Rule (ggg). Condition 6.2.1a requires that monthly records be kept of the fuel-to-air setting and oxygen concentration in the exhaust gas of each engine for at least 5 years. Condition 6.2.1b requires that the results of initial testing of the IC engines (to show NMOC removal) be kept until the equipment's removal; subsequent test results must be kept for at least 5 years.

Condition 6.2.2 contains the requirement for the Permittee to develop and implement a written startup, shutdown, and malfunction (SSM) plan, in accordance with 40 CFR 63 Subpart A and 40 CFR 63 Subpart AAAA.

Condition 6.2.3 contains a requirement to submit a written certification to the Division and EPA that the company will manage and combust the landfill gas in accordance with the requirements of the existing MSW landfill EG (Georgia Rule (ggg)). This requirement is derived from the proposed amendment to 40 CFR Part 60 Subpart WWW.

Condition 6.2.4 provides provisions for the company to rescind the above-required certification if and when they stop accepting landfill gas from the landfill.

VIII. Specific Requirements

A. Operational Flexibility

Not Applicable.

B. Alternative Requirements

Application did not specify any alternative operating scenarios.

C. Insignificant Activities

A complete list of insignificant activities is included at the end of the Title V Permit as Attachment B. These insignificant units may also be found in sections 4.10 and 4.50 of the Title V application.

D. Temporary Sources

Not Applicable.

E. Short-Term Activities

Not Applicable.

F. Compliance Schedule/Progress Reports

Not Applicable.

G. Emissions Trading

Not Applicable.

H. Acid Rain Requirements

Not Applicable.

I. Prevention of Accidental Releases

Not Applicable.

J. Stratospheric Ozone Protection Requirements

The Taylor County LFGTE Power Station listed no equipment that uses CBC's, HCFC's, or other stratospheric ozone depleting substances as listed in 40 CFR Part 82, Subpart A, Appendices A and B.

K. Pollution Prevention

Not Applicable.

L. Specific Conditions

Not Applicable.

VIII. Response to Comments Received During Public Advisory

A Public Advisory was held for this application from November 14, 2002 through December 13, 2002. We received comments from the Georgia Center for Law in the Public Interest, “on behalf of the Sierra Club and the Grassroots Recycling Network” The comments requested that EPD hold a public meeting which will be held. Following are the comments received and EPD’s responses:

- 1) THIS PROJECT SHOULD BE PROCESSED AS AN AMENDMENT TO TAYLOR COUNTY LANDFILL’S TITLE V PERMIT.

The Taylor County Landfill Title V permit provides:

8.6.1 This Permit is not transferable by the Permittee. Future owners and operators shall obtain a new Permit from the Director. The new Permit may be processed as an administrative amendment if no other change in this Permit is necessary, and provided that a written agreement containing a specific date for transfer of Permit responsibility coverage and liability between the current and new Permittee has been submitted to the Division at least thirty (30) days in advance of the transfer.

[391-3-1-.03(4)]

Taylor County Landfill Part 70 Operating Permit No. 4953-269-0014-V-01-0 (“Taylor County Title V permit”) at 23.

Construction Permit Application Bio Energy (Georgia) LLC Mauk, Georgia (“Application”) provides that “the gas extraction and collection system will be operated by EDI, through still owned by Allied Services.” Application at 2. EDI is the sister company of Bio Energy (Georgia) LLC. Thus, the Taylor County Landfill, Allied Services, EDI and Bio Energy (Georgia) LLC will be in violation of Condition 8.6.1 of the Taylor County Title V permit as well as 42 U.S.C. § 7661a(a) if EPD were to issue this permit and EDI were to operate the gas extraction system that is governed by the Taylor County Landfill Title V permit. Of course, this situation is easily avoided by EDI simply submitting an application for an amendment to the Taylor County Landfill Title V permit to add EDI as an operator. This would avoid the need for an enforcement action. In contrast, EDI’s failure to be included in the Taylor County Landfill Title V permit is grounds for denying the SIP permit as EDI would be in violation of the law. See In re: Bulk Distribution Centers, Inc., 1989 Ga. ENV LEXIS 33 (Bd. of Nat. Res. Oct. 31, 1989) at *10 - *14.

However, once EDI is properly included as an operator on the Taylor County Landfill Title V permit, the best procedure, consistent with EPD’s approach in that past at sites like Georgia Power Company’s Plant Wansley, is to process this application as a significant amendment to the Taylor County Landfill Title V permit. If that does not happen, however, this SIP permit, should be denied as it would permit Taylor County Landfill, Allied Services, EDI and Bio Energy (Georgia) LLC to violate the Taylor County Title V permit as well as Title V itself.

EPD RESPONSE: EPD agrees. EPD has determined, as indicated in the narrative, that the landfill and the generating plant will be one site with regard to Title V permitting. EPD therefore required that the applicant submit a Title V application for the power plant and that Taylor County Landfill submit a Title V application to amend the landfill permit. EPD has also agreed to issue the Title V permit for the generating plant and the amendment to the Title V permit for the landfill at the same time.

2) EPD SHOULD HOLD A PUBLIC HEARING ON THIS PERMIT APPLICATION

EPD should hold a public hearing on this permit application. This is a permit application for a Minor New Source Review (NSR) source. The public must be given an opportunity to comment on the application and EPD's proposed approval or disapproval. See 40 CFR 51.161(a). We have not had an opportunity to review EPD's proposed approval or disapproval. Therefore EPD should provide an opportunity for a public hearing after it issues a proposed approval or disapproval.

EPD RESPONSE: EPD agrees and will hold a public hearing on the proposed Title V permit, after allowing 30 days for public comment and notice.

3) THE PERMIT APPLICATION IS INCOMPLETE.

The Application is incomplete. For example, the Application only includes toxic air pollutants that are present in the landfill gas entering the internal combustion engines. Application at 9. It ignores products of incomplete combustion (PICs) and other toxic air pollutants that may be formed during the combustion process. For example, the application does not mention dioxins and furans, which are PICs from landfill gas combustion. In order for the application to be complete, it needs to include an evaluation of the emission of PICs.

In addition, although the application uses the AP-42 for many toxic air pollutants present in the LFG, the application does not include benzene and toluene. Like PICs, the application must include an evaluation of the emissions of benzene and toluene to be complete.

Furthermore, the Application makes a vague reference to additional gas filtering equipment. Information about this gas filtering equipment needs to be included in the Application. The applicant's argument that "it is anticipated that additional gas filtering equipment will not have any potential for air emissions," is no defense. Without information about this gas filtering equipment, there is no way to determine whether the equipment has the potential for air emissions. Therefore, we suggest that EPD require the applicant to submit a new, complete application and provide the public with a new 30-day comment period to comment on the new application.

EPD RESPONSE: EPD agrees that the listed pollutants have not been included in the application and responds as follows:

The landfill gas (LFG) is already being combusted and causing emissions of PICs, including dioxins and furans. There is no evidence that combusting the LFG produces significantly higher quantities of such pollutants.

Toluene and Benzene were inadvertently left out of the application, probably because they appear in a separate table in EPA's AP-42. This was pointed out to the applicant and they submitted a revised Toxic Guideline including those pollutants on April 3, 2003.

- 4) EPD SHOULD DENY THE PERMIT AS THIS PROJECT IS ADVERSE TO THE PUBLIC HEALTH, SAFETY AND WELFARE OF GEORGIA.

Georgia's air quality rules provide:

Notwithstanding any other emission limitation or other requirement provided in the regulations, more stringent emission limitations or other requirements may be required of a facility as deemed necessary by the Director to:

- (i) meet any existing Federal laws or regulations; or
- (ii) safeguard the public health, safety and welfare of the people of the State of Georgia.

The Application states that the IC engines will emit NO_x at a rate of 3.358 lb/MW-hr. In order to safeguard the public health, safety and welfare of the people of the State of Georgia, EPD should include a limitation in the permit that requires that IC engines, which we understand will be marketed as "Green Energy," to emit NO_x at a rate of no higher than .1 lb/MW-hr, which is approximately equivalent to the capabilities of new conventional fossil fuel power plants.

EPD RESPONSE: If EPD finds that the proposed generating plant cannot comply with any air quality rules, a permit will not be issued. The commenter complains that the application indicates that the IC engines will emit 3.358 lb NO_x per MegaWatt-hour. The commenter complains about this for two reasons.

Firstly, the commenter states that the NO_x emissions should be limited to 0.1 lb/MW-hr, because that is what is being required of new fossil fuel power plants. While EPD would certainly encourage the applicant to use engines that emit as little NO_x as practicable, EPD has no authority to require emission rates as low as those stated by the commenter. The emission limit of 0.1 lb/MW-hr that the commenter mentions would only have been required by Federal New Source Review (NSR) regulations, which only subjects new projects that will be major sources or major modifications. The Taylor County landfill is currently a minor source for all PSD pollutants and will be a minor source after the engines are installed. Therefore, NSR is not applicable. Also, even if NSR were applicable, the emission limit would be set based upon a Best Available Control Technology (BACT) determination which would take into consideration the cost of control technology and the feasibility of add-on technology.

Secondly, the commenter complains that, since it is evident that the power generated is to be sold as Green Energy, the emission of NO_x should be held, by air quality permit, to the level allowed by the Georgia Green Energy Pricing agreement. That level is 1.77 lb NO_x per MW-hour.

It is clear that the applicant does hope to sell the electrical power as Green Energy so that they can charge more for it. If so, the emissions must average no more than 1.77 lb NO_x per MW-hour per year. Since this is not a requirement that is in the Air Quality Rules, and since the Air Protection Branch therefore has no means to enforce that limit, it will not be put into the permit.

We understand that the company is able to de-rate these particular engines to be able to achieve 1.77 lb NO_x per MW-hour. We also understand that the Green Energy Pricing Group is developing its own methods that it will require be used by the power producer to verify it is not emitting more than 1.77 lb NO_x per MW-hr.

Addendum to Narrative

As described in Section VIII of this narrative, EPD received a request for a public hearing during the public advisory period which expired on December 13, 2002. On May 29, 2003, EPD published a notice in the Taylor County News that served as both the notice for the hearing and public notice for the draft Title V Permit for the power station and draft Significant Modification to the landfill's Title V permit. No written comments were received during the public comment period. On July 2, 2003 EPD conducted a combination public hearing/meeting regarding the Bio Energy construction permit application, Bio Energy Title V application, and Taylor County Landfill Title V modification. The public hearing was held at the Taylor County Government Complex in Butler, Georgia. All comments received at the hearing were supportive of the power station and landfill. It should be noted that the group that requested the hearing, The Georgia Center for Law in the Public Interest, did not attend.

The hearing attendee list, hearing outline, and a videotape of the hearing have been placed in the public hearing file.