| Air Quality<br>PERMIT TO CONSTRUCT<br>State of Idaho<br>Department of Environmental Quality | PERMIT NUMBER | CLASS | SIC |
|---|---|---|---|
| | P-2011.0054 | B | 4953 |
| | FACILITY ID | AQCR | NAICS |
| | 031-00046 | 63 | 562212 |
| | UTM ZONE | UTM COORDINATES (km) | |
| | 11 | 746.6 Easting | 4705.7 Northing |

| PERMITTEE | | | |
|---|---|---|---|
| Milner Butte Landfill | | | |
| **PROJECT** | | | |
| PROJECT No. 60771 Landfill flare | | | |
| **MAILING ADDRESS** | **CITY** | **STATE** | **ZIP** |
| 1050 West 400 South | Burley | ID | 83318 |
| **FACILITY CONTACT** | **TITLE** | **TELEPHONE** | |
| Josh Bartlome | Executive Director | (208) 432-9082 | |
| **RESPONSIBLE** | **TITLE** | **TELEPHONE** | |
| Josh Bartlome | Executive Director | (208) 432-9082 | |
| **EXACT PLANT LOCATION** | | **COUNTY** | |
| 1050 West 400 South, Burley | | Cassia | |
| **GENERAL NATURE OF BUSINESS & KINDS OF PRODUCTS** | | | |
| Municipal solid waste landfill | | | |

**PERMIT AUTHORITY**

This permit is issued according to the Rules for the Control of Air Pollution in Idaho, IDAPA 58.01.01.200 through 228, and pertains only to emissions of air contaminants regulated by the state of Idaho and to the sources specifically allowed to be constructed or modified by this permit.

This permit (a) does not affect the title of the premises upon which the equipment is to be located; (b) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (c) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; (d) in no manner implies or suggests that the Department of Environmental Quality (DEQ) or its officers, agents, or employees, assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment.

This permit will expire if construction has not begun within two years of its issue date or if construction is suspended for one year.

This permit has been granted on the basis of design information presented with its application. Changes in design, equipment or operations may be considered a modification. Modifications are subject to DEQ review in accordance with IDAPA 58.01.01.200 through 228 of the Rules for the Control of Air Pollution in Idaho.

| | DATE ISSUED | Proposed for Public Comment |
|---|---|---|
| **CAROLE ZUNDEL, PERMIT WRITER** | | |
| **MIKE SIMON, STATIONARY SOURCE MANAGER** | | |

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## PERMIT TO CONSTRUCT SCOPE

### *Purpose*

1. This is the initial permit to construct a landfill gas flare.
2. The emission sources regulated by this permit are listed in the following table.

**Table 1 REGULATED SOURCES**

| Source Descriptions | Emission Controls |
|---|---|
| Landfill<br>Max. Capacity: 19,400,000 cubic yards<br>Date of Construction: 1993 | Flare<br>Manufacturer: Perennial Energy, Inc.<br>Model No.: FL114-32-E |

## LANDFILL FLARE

### *Process Description*

3. Process Description

The Milner Butte Landfill (MBL), owned and operated by Southern Idaho Regional Solid Waste District (SISW), is located approximately 13 miles west of Burley, Idaho, and 25 miles east of Twin Falls, Idaho. The MBL is located in Western Cassia County approximately 13 miles west of the Burley, Idaho, and 25 miles east of Twin Falls, Idaho. The site lies near the East slope of Milner Butte and occupies 640 acres. The site began accepting waste in 1994 and currently consists of four existing contiguous solid waste disposal units (cells) occupying approximately 58 acres. The landfill has a current overall permitted capacity of 140 acres and accepts mixed municipal solid waste from seven counties in southern Idaho.

Based upon an estimated annual increase of 1.5 percent in waste acceptance rates for the landfill for year 2011 and onward, and the total maximum permitted waste capacity of the landfill (19,400,000 cubic yards), it is estimated that the final maximum permitted capacity will be reached by 2060.

The existing Gas Collection and Control System (GCCS) was constructed during 2009 and is currently being evaluated for system performance and well coverage. To increase coverage, five (5) vertical extraction wells were installed in May 2010 and connected to the system on June 5, 2010. The GCCS consists of a header piping network, vertical gas extraction wells, horizontal gas collectors, condensate collection, connections to the existing Leachate Collection and Recovery System (LCRS), and a blower/flare station.

The blower/flare station is equipped with two blowers and a single enclosed flare. A second blower is used in the event of a breakdown or subsequent maintenance to the primary blower. The blowers are manufactured by Houston Service Industries (HSI) and are rated at 30 horsepower (HP) each. The flare was manufactured by Perennial Energy and has a maximum rating of 1,500 standard cubic feet per minute (scfm) at 50% methane. The flare is equipped with:

- Continuous temperature and flow recorder
- Flow meter
- UV flame scanner to monitor for flame failure
- Automated shut-off (isolation valve) to close off the gas supply to the flare and avoid venting to atmosphere
- Flame arrestor

The process description is provided for informational purposes only and does not represent an enforceable permit condition.

4. Emission Controls Description

**Table 2 LANDFILL FLARE DESCRIPTION**

| Emissions Units / Processes | Emission Control Devices |
|---|---|
| Landfill<br>Max. Capacity: 19,400,000 cubic yards<br>Date of Construction: 1993 | Flare<br>Manufacturer: Perennial Energy, Inc.<br>Model No.: FL114-32-E |

### *Emission Limits*

5. Hydrogen Sulfide Limit

The hydrogen sulfide concentration in the landfill gas being burned in the flare shall not exceed 785 ppmv.

### *Operating Requirements*

6. Subpart WWW Control Device Operational Parameter

In accordance with 40 CFR 60.752 (2)(iii)(B)(2), 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 40 CFR 60.756, which was incorporated as Permit Condition 15.

7. Subpart WWW Operational standards for collection and control systems

In accordance with 40 CFR 60.753, the permittee shall:

(a) Operate the collection system such that gas is collected from each area, cell, or group of cells in the municipal solid waste (MSW) landfill in which solid waste has been in place for:

(1) 5 years or more if active; or

(2) 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:

(1) 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 40 CFR 60.757(f)(1);

(2) Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan;

(3) 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 Administrator;

(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.

(1) The nitrogen level shall be determined using Method 3C, unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i).

(2) Unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:

(i) The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;

(ii) A data recorder is not required;

(iii) Only two calibration gases are required, a zero and span, and ambient air may be used as the span;

(iv) A calibration error check is not required;

(v) 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 40 CFR 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 in paragraphs (b), (c), or (d) of this section are not met, corrective action shall be taken as specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements in this section.

### *Monitoring and Recordkeeping Requirements*

8. Subpart WWW Gas Collection System Flowrate Monitoring

In accordance with 40 CFR 60.755(a)(3), the permittee 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 Permit Condition 7 (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 may be submitted to the Administrator for approval.

9. Subpart WWW Well Monitoring

In accordance with 40 CFR 60.755(a)(5), the permittee shall monitor each well monthly for temperature and nitrogen or oxygen as provided in Permit Condition 7 (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 Administrator for approval.

10. Subpart WWW Well Installation

In accordance with 40 CFR 60.755 (b), the permittee shall place each well or design component as specified in the approved design plan as provided in 40 CFR 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:

(1) 5 years or more if active; or

(2) 2 years or more if closed or at final grade.

11. Subpart WWW Surface Methane Monitoring

In accordance with 40 CFR 60.755(c):

(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 40 CFR 60.755 (d).

(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 40 CFR 60.755(c)(4) (i) through (v) shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 60.753(d).

(i) The location of each monitored exceedance shall be marked and the location recorded.

(ii) 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.

(iii) 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 40 CFR 60.755(c)(4)(v) shall be taken, and no further monitoring of that location is required until the action specified in 40 CFR 60.755(c)(4)(v) has been taken.

(iv) 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 40 CFR 60.755(c)(4) (ii) or (iii) shall be re-monitored 1 month from the initial exceedance. If the 1-month remonitoring 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 remonitoring shows an exceedance, the actions specified in 40 CFR 60.755(c) (4) (iii) or (v) shall be taken.

(v) 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 Administrator for approval.

(5) The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

12. Subpart WWW Methane Monitoring Instrumentation

In accordance with 40 CFR 60.755(d), the permittee 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 40 CFR 60 appendix A, 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, the instrument evaluation procedures of section 4.4 of Method 21 of 40 CFR 60 appendix A shall be used.

(4) The calibration procedures provided in section 4.2 of Method 21 of 40 CFR 60 appendix A shall be followed immediately before commencing a surface monitoring survey.

13. Subpart WWW Exception to Provisions

In accordance with 40 CFR 60.755(e), the provisions of Subpart WWW 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.

14. Subpart WWW Other Monitoring

In accordance with 40 CFR 60.756, except as provided in 40 CFR 60.752(b)(2)(i)(B),

(a) Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(ii)(A) for an active gas collection system shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead and:

(1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in 40 CFR 60.755(a)(3); and

(2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5); and

(3) Monitor temperature of the landfill gas on a monthly basis as provided in 40 CFR 60.755(a)(5).

(b) Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(iii) using an enclosed combustor shall calibrate, maintain, and operate according to the manufacturer's specifications, the following equipment.

(1) 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 degrees Celsius, whichever is greater. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity equal to or greater than 44 megawatts.

(2) A device that records flow to or bypass of the control device. The owner or operator shall either:

(i) 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

(ii) 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.

15. Subpart WWW Surface Concentrations of Methane Monitoring

In accordance with 40 CFR 60.756(f), the permittee shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in 40 CFR 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

16. Subpart AAAA SSM Plan

In accordance with 40 CFR 63.1960, the permittee must develop a written SSM plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to write or maintain a copy of the SSM plan is a deviation from the requirements of this subpart.

In accordance with 40 CFR 63.10(d)(5), 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 actions, followed by a letter 7 days after the event.

### *Performance Testing Requirements*

17. Hydrogen Sulfide ($H_2S$) Concentration Monitoring

The permittee shall measure the $H_2S$ concentration, in ppmv, of the landfill gas stream prior to being combusted in the flare. The $H_2S$ concentration shall be determined by conducting three separate measurements within five minutes of each other. The three separate measurements shall then be averaged to determine compliance with the Hydrogen Sulfide Limit permit condition.

18. Hydrogen Sulfide ($H_2S$) Concentration Monitoring Schedule

$H_2S$ concentration monitoring shall occur as follows:

- Beginning the day following permit issuance, the Permittee shall measure the $H_2S$ concentration once per day for five consecutive business days.
- If the measured $H_2S$ concentration demonstrates compliance with the landfill gas stream Hydrogen Sulfide Limit after five consecutive business days. Subsequent $H_2S$ monitoring shall occur once per week for four consecutive weeks.
- If the $H_2S$ concentration demonstrates compliance with the landfill gas stream Hydrogen Sulfide Limit after four consecutive weeks, then subsequent $H_2S$ monitoring shall occur once every two weeks continuing thereafter.
- If the $H_2S$ concentration does not demonstrate compliance during any of the monitoring periods, then $H_2S$ monitoring shall revert back to the daily schedule.

19. Hydrogen Sulfide ($H_2S$) Concentration Recordkeeping

Records shall include the results of each $H_2S$ measurement and the calculated average of the three separate $H_2S$ measurements used to demonstrate compliance with the $H_2S$ Concentration Limit permit condition.

The hand held $H_2S$ monitor used to measure the $H_2S$ concentration of the landfill gas stream shall have a certified accuracy of plus or minus 10%. The hand held monitor shall be calibrated and maintained in accordance with the manufacturer's specifications.

Records of this information shall be maintained in accordance with the Recordkeeping General Provision.

20. Gas Flow Rate Monitoring

Each time the $H_2S$ concentration is monitored and recorded; the flow rate of the landfill gas used in the engines shall also be monitored and recorded in standard cubic feet per minute (scfm).

21. Subpart WWW Initial Test Requirement

In accordance with 40 CFR 60.752(b)(2)(iii)(B), the permittee shall, for NMOC, establish the reduction efficiency or parts per million by volume by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in 40 CFR 60.754(d).

### *Reporting Requirements*

22. Hydrogen Sulfide ($H_2S$) Reporting Requirements

$H_2S$ concentration and gas flow rate measurement data shall be submitted to Idaho DEQ each month for $H_2S$ concentration and gas flow rate data collected during the previous month. The initial report shall be submitted on the last day of the month following the month of permit issuance.

23. Subpart WWW Annual Reports

In accordance with 40 CFR 60.757(f), the permittee shall submit to the Administrator annual reports of the recorded information in (f)(1) through (f)(6) of this paragraph.

(1) Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(a), (b), (c), and (d).

(2) 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 under 40 CFR 60.756.

(3) Description and duration of all periods when the control device was not operating for a period exceeding 1 hour and length of time the control device was not operating.

(4) All periods when the collection system was not operating in excess of 5 days.

(5) The location of each exceedance of the 500 parts per million methane concentration as provided in 40 CFR 60.753(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month.

(6) The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), and (c)(4) of 40 CFR 60.755.

24. Subpart WWW Recordkeeping Requirements

In accordance with 40 CFR 60.758(a), except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 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.

In accordance with 40 CFR 60.758(b), except as provided in 40 CFR 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 in 40 CFR 60.752(b)(1) and (b)(2) of 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.

(1) Where an owner or operator subject to the provisions of Subpart WWW seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(ii):

(i) The maximum expected gas generation flow rate as calculated in 40 CFR 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.

(ii) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1).

(2) Where an owner or operator subject to the provisions of Subpart WWW seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) through use of an enclosed combustion device other than a boiler or process heater with a design heat input capacity equal to or greater than 44 megawatts:

(i) The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.

(ii) The percent reduction of NMOC determined as specified in 40 CFR 60.752(b)(2)(iii)(B) achieved by the control device.

25. Subpart WWW Equipment Operating Parameter Recordkeeping Requirements

In accordance with 40 CFR 60.758(c), except as provided in 40 CFR 60.752(b)(2)(i)(B), each owner or operator of a controlled landfill subject to the provisions of Subpart WWW shall keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 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.

(1) The following constitute exceedances that shall be recorded and reported under 40 CFR 60.757(f):

(i) For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 million British thermal unit per hour) or greater, all 3-hour periods of operation during which the average combustion temperature was more than 28 °C below the average combustion temperature during the most recent performance test at which compliance with 40 CFR 60.752(b)(2)(iii) was determined.

26. Subpart WWW Flow Recordkeeping Requirements

In accordance with 40 CFR 60.758(c)(2), each owner or operator subject to the provisions of Subpart WWW 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 40 CFR 60.756.

27. Subpart WWW Collection System Recordkeeping Requirements

In accordance with 40 CFR 60.758(d), except as provided in 40 CFR 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.

(1) Each owner or operator subject to the provisions of Subpart WWW shall keep up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b).

(2) Each owner or operator subject to the provisions of Subpart WWW 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 40 CFR 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii).

In accordance with 40 CFR 60.758(e), except as provided in 40 CFR 60.752(b)(2)(i)(B), each owner or operator subject to the provisions of Subpart WWW 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 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

28. Subpart WWW Collection Wells

In accordance with 40 CFR 60.759, (a) the permittee shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the Administrator as provided in 40 CFR 60.752(b)(2)(i)(C) and (D):

(1) The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat.

(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

(3) The placement of gas collection devices determined in paragraph (a)(1) of this section shall control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (a)(3)(ii) of this section.

(i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Administrator upon request.

29. Subpart WWW Non Productive Areas

In accordance with 40 CFR 60.759(a)(3)(ii) and (iii), any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the Administrator upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation:

$Q_i = 2\ k\ L_o\ M_i(e^{-kti})\ (C_{NMOC})\ (3.6 \times 10^{-9})$

where,

$Q_i$= NMOC emission rate from the $i^{th}$ section, megagrams per year

k = methane generation rate constant, $year^{-1}$

$L_o$= methane generation potential, cubic meters per megagram solid waste

$M_i$= mass of the degradable solid waste in the $i^{th}$ section, megagram

$t_i$= age of the solid waste in the $i^{th}$ section, years

$C_{NMOC}$= concentration of nonmethane organic compounds, parts per million by volume

$3.6\times10^{-9}$= conversion factor

The values for k and $C_{NMOC}$ determined in field testing shall be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, LO and $C_{NMOC}$ provided in 40 CFR 60.754(a)(1) or the alternative values from 40 CFR 60.754(a)(5) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 60.754 (a)(3)(i).

30. Subpart AAAA Recordkeeping

In accordance with 40 CFR 63.1980, the permittee must submit the annual report described in 40 CFR 60.757(f) every 6 months.

## PERMIT TO CONSTRUCT GENERAL PROVISIONS

### *General Compliance*

31. The permittee has a continuing duty to comply with all terms and conditions of this permit. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the Rules for the Control of Air Pollution in Idaho. The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit and the Rules for the Control of Air Pollution in Idaho, and the Environmental Protection and Health Act, Idaho Code §39-101, et seq.

**[Idaho Code §39-101, et seq.]**

32. The permittee shall at all times (except as provided in the Rules for the Control of Air Pollution in Idaho) maintain in good working order and operate as efficiently as practicable, all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.

**[IDAPA 58.01.01.211, 5/1/94]**

33. Nothing in this permit is intended to relieve or exempt the permittee from the responsibility to comply with all applicable local, state, or federal statutes, rules and regulations.

**[IDAPA 58.01.01.212.01, 5/1/94]**

### *Inspection and Entry*

34. Upon presentation of credentials, the permittee shall allow DEQ or an authorized representative of DEQ to do the following:

- Enter upon the permittee's premises where an emissions source is located or emissions related activity is conducted, or where records are kept under conditions of this permit;
- Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
- Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- As authorized by the Idaho Environmental Protection and Health Act, sample or monitor, at reasonable times, substances or parameters for the purpose of determining or ensuring compliance with this permit or applicable requirements.

**[Idaho Code §39-108]**

### *Construction and Operation Notification*

35. The permittee shall furnish DEQ written notifications as follows in accordance with IDAPA 58.01.01.211:

- A notification of the date of initiation of construction, within five working days after occurrence; except in the case where pre-permit construction approval has been granted then notification shall be made within five working days after occurrence or within five working days after permit issuance whichever is later;
- A notification of the date of any suspension of construction, if such suspension lasts for one year or more;
- A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date; and

- A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date.

**[IDAPA 58.01.01.211, 5/1/94]**

### *Performance Testing*

36. If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ, at its option, may have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.

37. All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.

38. Within 60 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The written report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.

**[IDAPA 58.01.01.157, 4/5/00]**

### *Monitoring and Recordkeeping*

39. The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Records of monitoring information shall include, but not be limited to the following: (a) the date, place, and times of sampling or measurements; (b) the date analyses were performed; (c) the company or entity that performed the analyses; (d) the analytical techniques or methods used; (e) the results of such analyses; and (f) the operating conditions existing at the time of sampling or measurement. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes, but is not limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit. All records required to be maintained by this permit shall be made available in either hard copy or electronic format to DEQ representatives upon request.

**[IDAPA 58.01.01.211, 5/1/94]**

### *Excess Emissions*

40. The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130-136 for excess emissions due to startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.

**[IDAPA 58.01.01.130-136, 4/5/00]**

### *Certification*

41. All documents submitted to DEQ, including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certification shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

**[IDAPA 58.01.01.123, 5/1/94]**

### *False Statements*

42. No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under this permit, or any applicable rule or order in force pursuant thereto.

**[IDAPA 58.01.01.125, 3/23/98]**

### *Tampering*

43. No person shall knowingly render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

**[IDAPA 58.01.01.126, 3/23/98]**

### *Transferability*

44. This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.209.06.

**[IDAPA 58.01.01.209.06, 4/11/06]**

### *Severability*

45. The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

**[IDAPA 58.01.01.211, 5/1/94]**

## Attachment B

**TABLE 1.**
**SUMMARY OF TOXIC AIR CONTAMINANT DATA**
**LANDFILL GAS CHARACTERIZATION**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| CAS | COMPOUNDS | | | Compound Concentration Found in LFG [2] (ppmv) |
|---|---|---|---|---|
| | TOXIC AIR CONTAMINANTS [1] | | | |
| 71-55-6 | 1,1,1-Trichloroethane (methyl chloroform) | | | 0.168 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | | 0.070 |
| 75-34-3 | 1,1-Dichloroethane | | | 0.741 |
| 75-35-4 | 1,1-Dichloroethene | | | 0.092 |
| 107-06-2 | 1,2-Dichloroethane | | | 0.120 |
| 78-87-5 | 1,2-Dichloropropane | | | 0.023 |
| 107-13-1 | Acrylonitrile | | | 0.036 |
| 71-43-2 | Benzene | | | 0.972 |
| 75-15-0 | Carbon disulfide (3) | | | 0.320 |
| 56-23-5 | Carbon tetrachloride | | | 0.007 |
| 463-58-1 | Carbonyl sulfide (3) | | | 0.183 |
| 108-90-7 | Chlorobenzene | | | 0.227 |
| 75-45-6 | Chlorodifluoromethane (Freon 22) | | | 0.355 |
| 75-00-3 | Chloroethane (ethyl chloride) | | | 0.239 |
| 67-66-3 | Chloroform | | | 0.021 |
| 106-46-7 | Dichlorobenzene (1,2; 1,3; and 1,4) | | | 1.607 |
| 75-09-2 | Dichloromethane (Methylene Chloride) | | | 3.395 |
| 100-41-4 | Ethylbenzene | | | 6.789 |
| 106-93-4 | Ethylene Dibromide (Dibromoethane) | | | 0.046 |
| 110-54-3 | Hexane | | | 2.324 |
| 7647-01-0 | Hydrochloric acid [3] | | | 10.742 |
| 7783-06-4 | Hydrogen sulfide | | | 23.578 |
| 7439-97-6 | Mercury [4] | | | 2.92E-04 |
| 74-87-3 | Methyl Chloride (Chloromethane) | | | 0.249 |
| 78-93-3 | Methyl ethyl ketone | | | 10.557 |
| 108-10-1 | Methyl isobutyl ketone | | | 0.750 |
| 127-18-4 | Perchloroethylene (tetrachloroethylene) | | | 1.193 |
| 108-88-3 | Toluene | | | 25.405 |
| 79-01-6 | Trichloroethylene | | | 0.681 |
| 75-01-4 | Vinyl chloride | | | 1.077 |
| 1330-20-7 | Xylenes | | | 16.582 |
| | | | | |
| **TOTALS** | TACs | | | 108.549 |

**NOTES:**
(1) Regulated toxic compounds include hazardous air pollutants (HAPs) defined by the U.S. EPA (Title III of the Clean Air Act)
(2) Average concentration of compounds found in LFG based on "Waste Industry Air Coalition" (WIAC) Comparison of Recent Landfill Gas Analyses with or AP-42 if WIAC values not available.
(3) Concentration of HCl is based on concentrations of chlorinated compounds in WIAC.
(4) Concentration of Mercury based on the Revised EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

NA = Not Analyzed
ND = Not Detected
CFCs = Chlorofluorohydrocarbons
TACs = Toxic Air Contaminants

**TABLE 2.**
**MAXIMUM POTENTIAL TO EMIT CONTROLLED EMISSIONS FROM LANDFILL GAS (EU 02)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| CAS | COMPOUNDS [1] | Molecular Weight (g/Mol) | Concentration of Compounds Found In LFG [2] (ppmv) | Pollutant Flow Rate to Flare [3] (tons/yr) | Compound-Specific Flare Destruction Efficiency [4] | Controlled LFG Emissions After Flare Destruction (lbs/hr) | Controlled LFG Emissions After Flare Destruction [5] (tons/yr) |
|---|---|---|---|---|---|---|---|
| | **HAZARDOUS AIR POLLUTANTS** | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane (methyl chloroform) | 133.42 | 0.1680 | 0.02 | 98.00% | 1.05E-04 | 4.59E-04 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 167.85 | 0.0700 | 0.01 | 98.00% | 5.49E-05 | 2.41E-04 |
| 75-34-3 | 1,1-Dichloroethane | 98.95 | 0.7410 | 0.08 | 98.00% | 3.43E-04 | 1.50E-03 |
| 75-35-4 | 1,1-Dichloroethene | 96.94 | 0.0920 | 0.01 | 98.00% | 4.17E-05 | 1.83E-04 |
| 107-06-2 | 1,2-Dichloroethane | 98.96 | 0.1200 | 0.01 | 98.00% | 5.55E-05 | 2.43E-04 |
| 78-87-5 | 1,2-Dichloropropane | 112.98 | 0.0230 | 0.00 | 98.00% | 1.21E-05 | 5.32E-05 |
| 107-13-1 | Acrylonitrile | 53.06 | 0.0360 | 0.00 | 99.70% | 1.34E-06 | 5.87E-06 |
| 71-43-2 | Benzene | 78.11 | 0.9720 | 0.08 | 99.70% | 5.32E-05 | 2.33E-04 |
| 75-15-0 | Carbon disulfide (7) | 76.13 | 0.3200 | 0.02 | 100.00% | 0.00E+00 | 0.00E+00 |
| 56-23-5 | Carbon tetrachloride | 153.84 | 0.0070 | 0.00 | 98.00% | 5.03E-06 | 2.20E-05 |
| 463-58-1 | Carbonyl sulfide | 60.07 | 0.1830 | 0.01 | 100.00% | 0.00E+00 | 0.00E+00 |
| 108-90-7 | Chlorobenzene | 112.56 | 0.2270 | 0.03 | 98.00% | 1.19E-04 | 5.23E-04 |
| 75-45-6 | Chlorodifluoromethane (Freon 22) | 86.47 | 0.3550 | 0.03 | 98.00% | 1.43E-04 | 6.28E-04 |
| 75-00-3 | Chloroethane (ethyl chloride) | 64.52 | 0.2390 | 0.02 | 98.00% | 7.21E-05 | 3.16E-04 |
| 67-66-3 | Chloroform | 119.39 | 0.0210 | 0.00 | 98.00% | 1.17E-05 | 5.13E-05 |
| 106-46-7 | Dichlorobenzene | 147 | 1.6070 | 0.24 | 98.00% | 1.10E-03 | 4.84E-03 |
| 75-09-2 | Dichloromethane (methylene chloride) | 84.94 | 3.3950 | 0.30 | 98.00% | 1.35E-03 | 5.90E-03 |
| 100-41-4 | Ethylbenzene | 106.16 | 6.7890 | 0.74 | 99.70% | 5.05E-04 | 2.21E-03 |
| 106-93-4 | Ethylene dibromide | 187.88 | 0.0460 | 0.01 | 98.00% | 4.04E-05 | 1.77E-04 |
| 110-54-3 | Hexane | 86.17 | 2.3240 | 0.20 | 99.70% | 1.40E-04 | 6.15E-04 |
| 7647-01-0 | Hydrochloric acid | 36.50 | 10.7420 | 0.40 | 98.00% | 9.25E-02 | 4.05E-01 |
| 7783-06-4 | Hydrogen sulfide | 34.08 | 23.5780 | 0.82 | 100.00% | 0.00E+00 | 0.00E+00 |
| 7439-97-6 | Mercury (total) | 200.61 | 0.0003 | 0.00 | 0.00% | 1.37E-05 | 6.00E-05 |
| 74-87-3 | Methyl chloride (chloromethane) | 50.49 | 0.2490 | 0.01 | 98.00% | 5.88E-05 | 2.57E-04 |
| 78-93-3 | Methyl ethyl ketone | 72.11 | 10.5570 | 0.78 | 99.70% | 5.34E-04 | 2.34E-03 |
| 108-10-1 | Methyl isobutyl ketone | 100.16 | 0.7500 | 0.08 | 99.70% | 5.27E-05 | 2.31E-04 |
| 127-18-4 | Perchloroethylene (tetrachloroethylene) | 165.83 | 1.1930 | 0.20 | 98.00% | 9.25E-04 | 4.05E-03 |
| 108-88-3 | Toluene | 92.13 | 25.4050 | 2.40 | 99.70% | 1.64E-03 | 7.19E-03 |
| 79-01-6 | Trichloroethylene | 131.38 | 0.6810 | 0.09 | 98.00% | 4.18E-04 | 1.83E-03 |
| 75-01-4 | Vinyl chloride | 62.50 | 1.0770 | 0.07 | 98.00% | 3.15E-04 | 1.38E-03 |
| 1330-20-7 | Xylenes | 106.16 | 16.5820 | 1.80 | 99.70% | 1.23E-03 | 5.41E-03 |
| **TOTALS** | HAPs | | | 8.47 | | | 4.46E-01 |
| Total Non-Methane Organics (NMOCs) as Hexane | | 86.18 | 1200 | 105.86 | 98.00% | 4.83E-01 | 2.12 |
| Volatile Organic Compounds (VOCs) | | 86.18 | 468 | 41.29 | 98.00% | 1.89E-01 | 0.83 |
| **Criteria Air Pollutants** | | Molecular Weight (g/Mol) | Concentration of Compound (ppmv) | Emission Factor (lb/MMBtu) [6] | Emission Factor (lb/hr/scfm methane) | Maximum Emissions from Flare (lbs/hr) | Maximum Emissions from Flare (tons/yr) |
| Nitrogen oxides (NOx) | | | | 0.060 | | 2.70 | 11.83 |
| Sulfur oxides (as SO2) [7] | | 64.10 | 150.00 | | | 2.25 | 9.84 |
| Carbon monoxide (CO) | | | | 0.200 | | 9.00 | 39.42 |
| Particulates (PM10) | | | | | 0.001 | 0.75 | 3.29 |
| TOTAL CRITERIA POLLUTANTS | | | | | | | 64.37 |

NOTES:
(1) List of hazardous air pollutants (HAPs) regulated by U.S. EPA that are anticipated to be found in LFG as determined from a list in AP-42 Section 2.4
(2) Average concentration of compounds found in LFG based on "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values."
(3) Based on concentrations in Column D and proposed maximum landfill gas flow of flare
(4) Compound-specific flare destruction efficiencies: 98.0% for VOCs and NMOCs, 98% for Halogenated Species, 99.7% for Non-Halogenated Species, 0% for Mercury (per AP-42 Table 2.4-3)
(5) Controlled emissions of HAPs, NMOCs, and VOCs after destruction in flare equals uncontrolled emissions x (1- flare destruction efficiency).
(6) Controlled emissions of NOx, SOx, CO, and PM10 were estimated with the following emission factors: NOx = 0.06 and CO = 0.2 lb/MMBtu (manufacturer's guarantee); PM-10 = 0.001 lb/hr/dscfm (AP-42); and SOx (assume conversion of reduced sulfur @ 150 ppmv to sulfur dioxide).
(7) Destruction efficiency of reduced sulfur compounds assumed to be 100%; i.e., complete conversion to sulfur dioxide

MODEL VARIABLES
Maximum capacity of flare: 1500 cfm

**TABLE 3.**
**ACTUAL CONTROLLED EMISSIONS FROM LANDFILL GAS (EU 02)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| CAS | COMPOUNDS [1] | Molecular Weight (g/Mol) | Concentration of Compounds Found In LFG [2] (ppmv) | Pollutant Flow Rate to Flare [3] (tons/yr) | Compound-Specific Flare Destruction Efficiency [4] | Controlled LFG Emissions After Flare Destruction (lbs/hr) | Controlled LFG Emissions After Flare Destruction [5] (tons/yr) |
|---|---|---|---|---|---|---|---|
| | **HAZARDOUS AIR POLLUTANTS** | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane (methyl chloroform) | 133.42 | 0.1680 | 0.01 | 98.00% | 2.44E-05 | 1.07E-04 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 167.85 | 0.0700 | 0.00 | 98.00% | 1.28E-05 | 5.61E-05 |
| 75-34-3 | 1,1-Dichloroethane | 98.95 | 0.7410 | 0.02 | 98.00% | 8.00E-05 | 3.50E-04 |
| 75-35-4 | 1,1-Dichloroethene | 96.94 | 0.0920 | 0.00 | 98.00% | 9.73E-06 | 4.26E-05 |
| 107-06-2 | 1,2-Dichloroethane | 98.96 | 0.1200 | 0.00 | 98.00% | 1.30E-05 | 5.67E-05 |
| 78-87-5 | 1,2-Dichloropropane | 112.98 | 0.0230 | 0.00 | 98.00% | 2.83E-06 | 1.24E-05 |
| 107-13-1 | Acrylonitrile | 53.06 | 0.0360 | 0.00 | 99.70% | 3.12E-07 | 1.37E-06 |
| 71-43-2 | Benzene | 78.11 | 0.9720 | 0.02 | 99.70% | 1.24E-05 | 5.44E-05 |
| 75-15-0 | Carbon disulfide (7) | 76.13 | 0.3200 | 0.01 | 100.00% | 0.00E+00 | 0.00E+00 |
| 56-23-5 | Carbon tetrachloride | 153.84 | 0.0070 | 0.00 | 98.00% | 1.17E-06 | 5.14E-06 |
| 463-58-1 | Carbonyl sulfide | 60.07 | 0.1830 | 0.00 | 100.00% | 0.00E+00 | 0.00E+00 |
| 108-90-7 | Chlorobenzene | 112.56 | 0.2270 | 0.01 | 98.00% | 2.79E-05 | 1.22E-04 |
| 75-45-6 | Chlorodifluoromethane (Freon 22) | 86.47 | 0.3550 | 0.01 | 98.00% | 3.35E-05 | 1.47E-04 |
| 75-00-3 | Chloroethane (ethyl chloride) | 64.52 | 0.2390 | 0.00 | 98.00% | 1.68E-05 | 7.37E-05 |
| 67-66-3 | Chloroform | 119.39 | 0.0210 | 0.00 | 98.00% | 2.73E-06 | 1.20E-05 |
| 106-46-7 | Dichlorobenzene | 147 | 1.6070 | 0.06 | 98.00% | 2.58E-04 | 1.13E-03 |
| 75-09-2 | Dichloromethane (methylene chloride) | 84.94 | 3.3950 | 0.07 | 98.00% | 3.15E-04 | 1.38E-03 |
| 100-41-4 | Ethylbenzene | 106.16 | 6.7890 | 0.17 | 99.70% | 1.18E-04 | 5.16E-04 |
| 106-93-4 | Ethylene dibromide | 187.88 | 0.0460 | 0.00 | 98.00% | 9.43E-06 | 4.13E-05 |
| 110-54-3 | Hexane | 86.17 | 2.3240 | 0.05 | 99.70% | 3.28E-05 | 1.43E-04 |
| 7647-01-0 | Hydrochloric acid | 36.50 | 10.7420 | 0.09 | 98.00% | 2.16E-02 | 9.45E-02 |
| 7783-06-4 | Hydrogen sulfide | 34.08 | 23.5780 | 0.19 | 100.00% | 0.00E+00 | 0.00E+00 |
| 7439-97-6 | Mercury (total) | 200.61 | 0.0003 | 0.00 | 0.00% | 3.19E-06 | 1.40E-05 |
| 74-87-3 | Methyl chloride (chloromethane) | 50.49 | 0.2490 | 0.00 | 98.00% | 1.37E-05 | 6.01E-05 |
| 78-93-3 | Methyl ethyl ketone | 72.11 | 10.5570 | 0.18 | 99.70% | 1.25E-04 | 5.45E-04 |
| 108-10-1 | Methyl isobutyl ketone | 100.16 | 0.7500 | 0.02 | 99.70% | 1.23E-05 | 5.38E-05 |
| 127-18-4 | Perchloroethylene (tetrachloroethylene) | 165.83 | 1.1930 | 0.05 | 98.00% | 2.16E-04 | 9.45E-04 |
| 108-88-3 | Toluene | 92.13 | 25.4050 | 0.56 | 99.70% | 3.83E-04 | 1.68E-03 |
| 79-01-6 | Trichloroethylene | 131.38 | 0.6810 | 0.02 | 98.00% | 9.76E-05 | 4.27E-04 |
| 75-01-4 | Vinyl chloride | 62.50 | 1.0770 | 0.02 | 98.00% | 7.34E-05 | 3.22E-04 |
| 1330-20-7 | Xylenes | 106.16 | 16.5820 | 0.42 | 99.70% | 2.88E-04 | 1.26E-03 |
| **TOTALS** | HAPs | | | 1.98 | | | 1.04E-01 |
| Total Non-Methane Organics (NMOCs) as Hexane | | 86.18 | 1200 | 24.70 | 98.00% | 1.13E-01 | 0.49 |
| Volatile Organic Compounds (VOCs) | | 86.18 | 468.00 | 9.63 | 98.00% | 4.40E-02 | 0.19 |
| **Criteria Air Pollutants** | | Molecular Weight (g/Mol) | Concentration of Compound (ppmv) | Emission Factor (lb/MMBtu) [6] | Emission Factor (lb/hr/scfm methane) | Estimated Emissions from Flare (lbs/hr) | Estimated Emissions from Flare (tons/yr) |
| Nitrogen oxides (NOx) | | | | 0.060 | | 0.63 | 2.76 |
| Sulfur oxides (as SO2) [7] | | 64.10 | 150.00 | | | 0.52 | 2.30 |
| Carbon monoxide (CO) | | | | 0.200 | | 2.10 | 9.20 |
| Particulates (PM10) | | | | | 0.001 | 0.18 | 0.77 |
| TOTAL CRITERIA POLLUTANTS | | | | | | | 15.02 |

NOTES:
(1) List of hazardous air pollutants (HAPs) regulated by U.S. EPA that are anticipated to be found in LFG as determined from a list in AP-42 Section 2.4
(2) Average concentration of compounds found in LFG based on "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values."
(3) Based on concentrations in Column D and proposed maximum landfill gas flow of flare
(4) Compound-specific flare destruction efficiencies: 98.0% for VOCs and NMOCs, 98% for Halogenated Species, 99.7% for Non-Halogenated Species, 0% for Mercury (per AP-42 Table 2.4-3)
(5) Controlled emissions of HAPs, NMOCs, and VOCs after destruction in flare equals uncontrolled emissions x (1- flare destruction efficiency).
(6) Controlled emissions of NOx, SOx, CO, and PM10 were estimated with the following emission factors: NOx = 0.06 and CO = 0.2 lb/MMBtu (manufacturer's guarantee); PM-10 = 0.001 lb/hr/dscfm (AP-42); and SOx (assume conversion of reduced sulfur @ 150 ppmv to sulfur dioxide).
(7) Destruction efficiency of reduced sulfur compounds assumed to be 100%; i.e., complete conversion to sulfur dioxide

MODEL VARIABLES
Current flare flow rate: 350 cfm
Current methane content of LFG: 50.0%

**TABLE 4.**
**LANDFILL GAS NMOC AND VOC EMISSIONS (EU 01)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| Gas / Pollutant | Total LFG Production [1, 2] (tons/yr) | LFG Collected by the GCCS [3] (tons/yr) | Fugitive LFG [3] (tons/yr) | Non-Fugitive LFG [4] (tons/yr) |
|---|---|---|---|---|
| NMOC | 63.58 | 47.69 | 15.90 | 2.12 |
| VOCs [2] | 24.80 | 18.60 | 6.20 | 0.83 |

| Gas / Pollutant | Emission Rate [1] | | | | |
|---|---|---|---|---|---|
| | (Mg/year) | (m3/year) | (av ft3/min) | (ft3/year) | (tons/year) |
| Total landfill gas | 16,782 | 13,438,221 | 902.9 | 474,570,781 | 18,460.16 |
| NMOC | 58 | 16,126 | 1.1 | 569,485 | 63.58 |

**Notes:**
(1) These emission rates were calculated based on the U.S. EPA LandGEM v3.02 model for 2010.
(2) VOCs are calculated at 39% of NMOC (by weight) per AP-42 Table 2.4-2. for No or Unknown co-disposal.
(3) Based on assumed GCCS gas collection efficiency of 75% per AP-42 paragraph 2.4.4.2.
(4) Emissions after combustion in the flare and release from flare stack.

**TABLE 5.**
**ACTUAL FUGITIVE DUST EMISSIONS FROM WIND EROSION OF STOCKPLIES (EU 03)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| Pollutant | Particle Size Multiplier k [1] | TSP Emission Factor [2] | Emission Factor [3] | Units | Total Exposed Area (acres) | Emissions Amount (tons/yr) |
|---|---|---|---|---|---|---|
| PM30 | 0.082 | 0.380 | 0.380 | tons/acre-year | 15.8 | 6.00 |
| PM10 | 0.016 | 0.380 | 0.074 | tons/acre-year | 15.8 | 1.17 |
| PM2.5 | 0.004 | 0.380 | 0.019 | tons/acre-year | 15.8 | 0.29 |

**Notes:**
(1) k values are from AP-42 Table 13.2-1.1.
(2) TSP (i.e., PM30) emission factor is 0.38 from AP-42 Table 11.9-4.
(3) Per AP-42, the emission factors are calculated as: $E_{PMX} = E_{PM30} \times (k_{PMX}) / (k_{PM30})$

**TABLE 6.**
**ACTUAL FUGITIVE DUST ($PM_x$) EMISSIONS FROM PAVED ROADS FOR REFUSE VEHICLES (EU 04)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| | | Vehicle Miles Traveled [1] | | | | | PM2.5 | | | PM10 | | | PM30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Annually | | Daily Average (5 days/wk) | | Vehicle Weight [5] | Emission Factor for Paved Roads [2] | Controlled Emission Factor for Paved Roads [3] | Annual Emissions from Paved Roads | Emission Factor for Paved Roads [2] | Controlled Emission Factor for Paved Roads [3] | Annual Emissions from Paved Roads | Emission Factor for Paved Roads [2] | Controlled Emission Factor for Paved Roads [3] | Annual Emissions from Paved Roads |
| | Total trips in 2009 [4] | paved | unpaved | paved | unpaved | (tons) | (lb/VMT) | (lb/VMT) | (tpy) | (lb/VMT) | (lb/VMT) | (tpy) | (lb/VMT) | (lb/VMT) | (tpy) |
| Commercial Refuse Vehicle (full) | 6358 | 1271.6 | 5086.4 | 4.9 | 19.6 | 23.2 | 0.202 | 0.050 | 0.032 | 0.806 | 0.202 | 0.128 | 4.133 | 1.033 | 0.657 |
| Commercial Refuse Vehicle (empty) | 6358 | 1271.6 | 5086.4 | 4.9 | 19.6 | 13.5 | 0.090 | 0.022 | 0.014 | 0.359 | 0.090 | 0.057 | 1.840 | 0.460 | 0.293 |
| Refuse Transfer Truck (full) | 7300 | 1460.0 | 5840.0 | 5.6 | 22.5 | 23.2 | 0.202 | 0.050 | 0.037 | 0.806 | 0.202 | 0.147 | 4.133 | 1.033 | 0.754 |
| Refuse Transfer Truck (empty) | 7300 | 1460.0 | 5840.0 | 5.6 | 22.5 | 13.5 | 0.090 | 0.022 | 0.016 | 0.359 | 0.090 | 0.066 | 1.840 | 0.460 | 0.336 |
| Self Haul Customer (Small Trucks, other vehicles) | 8614 | 3445.6 | 0.0 | 13.3 | 0.0 | 2.0 | 0.005 | 0.001 | 0.002 | 0.020 | 0.005 | 0.009 | 0.104 | 0.026 | 0.045 |
| Roll Off | 494 | 197.6 | 790.4 | 0.8 | 3.0 | 23.2 | 0.202 | 0.050 | 0.005 | 0.806 | 0.202 | 0.020 | 4.133 | 1.033 | 0.102 |
| **TOTAL** | | **9106** | **22643** | **35.0** | **87.1** | | | | **0.107** | | | **0.427** | | | **2.187** |

**Notes:**
(1) From the entrance to the public unloading area = 0.4 miles of paved road (roundtrip) based on road miles calculated by using the site map.
From the entrance to the landfill active area = 0.4 mile of paved road and 1.6 mile of unpaved road (roundtrip).
(2) Emission factor E = k*(s/2)^0.65*(W/3)^1.5, whe k = particle size multiplier = 0.004 for PM2.5 (AP-42 Table 13.2-1.1)
0.016 for PM10 (AP-42 Table 13.2-1.1)
0.082 for PM30 (AP-42 Table 13.2-1.1)
s = silt loading factor = 7.4 $g/m^2$ (AP-42 Table 13.2.1-4)
W = vehicle weight (tons)

(3) Control efficiency is assumed to be 75% based on AP-42 Figure 13.2.2-2.
(4) Number of trips based on 2009 scale records.
(5) Vehicle Weights based on average 2009 Gross and Tare scale data.

**TABLE 7.**
**ACTUAL FUGITIVE DUST ($PM_X$) EMISSIONS FROM UNPAVED ROADS FOR REFUSE VEHICLES (EU 05)**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| | | Vehicle Miles Traveled [1] | | | | | PM2.5 | | | PM10 | | | PM30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Annually | | Daily Average (5 days/wk) | | Vehicle Weight [5] | Emission Factor for Unpaved Roads [2] | Controlled Emission Factor for Unpaved Roads [3] | Annual Emissions from Unpaved Roads | Emission Factor for Unpaved Roads [2] | Controlled Emission Factor for Unpaved Roads [3] | Annual Emissions from Unpaved Roads | Emission Factor for Unpaved Roads [2] | Controlled Emission Factor for Unpaved Roads [3] | Annual Emissions from Unpaved Roads |
| | Total trips in 2009 [4] | paved | unpaved | paved | unpaved | (tons) | (lb/VMT) | (lb/VMT) | (tpy) | (lb/VMT) | (lb/VMT) | (tpy) | (lb/VMT) | (lb/VMT) | (tpy) |
| Commercial Refuse Vehicle (full) | 6358 | 1271.6 | 5086.4 | 4.9 | 19.6 | 23.2 | 0.328 | 0.082 | 0.209 | 2.140 | 0.535 | 1.360 | 7.926 | 1.981 | 5.039 |
| Commercial Refuse Vehicle (empty) | 6358 | 1271.6 | 5086.4 | 4.9 | 19.6 | 13.5 | 0.257 | 0.064 | 0.164 | 1.678 | 0.420 | 1.067 | 6.218 | 1.554 | 3.953 |
| Refuse Transfer Truck (full) | 7300 | 1460.0 | 5840.0 | 5.6 | 22.5 | 23.2 | 0.328 | 0.082 | 0.239 | 2.140 | 0.535 | 1.562 | 7.926 | 1.981 | 5.786 |
| Refuse Transfer Truck (empty) | 7300 | 1460.0 | 5840.0 | 5.6 | 22.5 | 13.5 | 0.257 | 0.064 | 0.188 | 1.678 | 0.420 | 1.225 | 6.218 | 1.554 | 4.539 |
| Self Haul Customer (Small Trucks, other vehicles) | 8614 | 3445.6 | 0.0 | 13.3 | 0.0 | 2.0 | 0.109 | 0.027 | 0.000 | 0.710 | 0.177 | 0.000 | 2.629 | 0.657 | 0.000 |
| Roll Off | 494 | 197.6 | 790.4 | 0.8 | 3.0 | 23.2 | 0.328 | 0.082 | 0.032 | 2.140 | 0.535 | 0.211 | 7.926 | 1.981 | 0.783 |
| **TOTAL** | | **9106** | **22643** | **35.0** | **87.1** | | | | **0.832** | | | **5.426** | | | **20.100** |

**Notes:**

(1) From the entrance to the public unloading area = 0.06 miles of paved road (roundtrip) based on road miles calculated by using the site map.
From the entrance to the landfill active area = 0.152 mile of paved road and 0.54 mile of unpaved road (roundtrip).

(2) Emission factor E = k*(s/12)^a*(W/3)^b, where k = particle size multiplier =

| | | |
|---|---|---|
| | 0.23 for PM2.5 | (AP-42 Table 13.2.2-2) |
| | 1.5 for PM10 | (AP-42 Table 13.2.2-2) |
| | 4.9 for PM30 | (AP-42 Table 13.2.2-2) |
| s = surface material silt content (%) = | 6.4 | (AP-42 Table 13.2.2-1) |
| W = vehicle weight (tons) | | |
| a = | 0.9 for PM2.5 | (AP-42 Table 13.2.2-2) |
| | 0.9 for PM10 | (AP-42 Table 13.2.2-2) |
| | 0.7 for PM30 | (AP-42 Table 13.2.2-2) |
| b = | 0.45 for PM2.5 | (AP-42 Table 13.2.2-2) |
| | 0.45 for PM10 | (AP-42 Table 13.2.2-2) |
| | 0.45 for PM30 | (AP-42 Table 13.2.2-2) |

(3) Control efficiency is assumed to be 75% based on AP-42 Figure 13.2.2-2.
(4) Number of trips based on 2009 scale records.
(5) Vehicle Weights based on average 2009 Gross and Tare scale data.

**TABLE 8.**
**SCREENING EMISSIONS LEVELS AND ACCEPTABLE AMBIENT CONCENTRATIONS**
**NON-CARCINOGENIC AND CARCINOGENIC COMPOUNDS**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| CAS | COMPOUNDS | EL (lb/hr) | AAC (24hr avg) ($mg/m^3$) [3] | AAC (Annual avg) ($mg/m^3$) [4] | Actual Emissions (lb/hr) | Emissions Over EL | PTE Emissions (lb/hr) | Emissions Over EL |
|---|---|---|---|---|---|---|---|---|
| | **HAZARDOUS AIR POLLUTANTS** | | | | | | | |
| 71-55-6 | 1,1,1-Trichloroethane (methyl chloroform) | 127 | 95.5 | - | 2.44E-05 | No | 1.05E-04 | No |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.10E-05 | - | 1.70E-02 | 1.28E-05 | Yes | 5.49E-05 | Yes |
| 75-34-3 | 1,1-Dichloroethane | 2.50E-04 | - | 3.80E-02 | 8.00E-05 | No | 3.43E-04 | Yes |
| 75-35-4 | 1,1-Dichloroethene (1,1-Dichloroethylene) | 1.30E-04 | - | 2.00E-02 | 9.73E-06 | No | 4.17E-05 | No |
| 107-06-2 | 1,2-Dichloroethane | 2.50E-04 | - | 3.80E-02 | 1.30E-05 | No | 5.55E-05 | No |
| 78-87-5 | 1,2-Dichloropropane (Propylene dichloride) | 23.133 | 17.35 | - | 2.83E-06 | No | 1.21E-05 | No |
| 107-13-1 | Acrylonitrile | 9.80E-05 | - | 1.50E-02 | 3.12E-07 | No | 1.34E-06 | No |
| 71-43-2 | Benzene | 8.00E-04 | - | 1.20E-01 | 1.24E-05 | No | 5.32E-05 | No |
| 75-15-0 | Carbon disulfide | 2 | 1.5 | - | 0.00E+00 | No | 0.00E+00 | No |
| 56-23-5 | Carbon tetrachloride | 4.40E-04 | - | 6.70E-02 | 1.17E-06 | No | 5.03E-06 | No |
| 463-58-1 | Carbonyl sulfide | 0.027 | 0.02 | - | 0.00E+00 | No | 0.00E+00 | No |
| 108-90-7 | Chlorobenzene | 23.3 | 17.5 | - | 2.79E-05 | No | 1.19E-04 | No |
| 75-45-6 | Chlorodifluoromethane (Freon 22) [1] | - | - | - | 3.35E-05 | No | 1.43E-04 | No |
| 75-00-3 | Chloroethane (ethyl chloride) | 176 | 132 | - | 1.68E-05 | No | 7.21E-05 | No |
| 67-66-3 | Chloroform | 2.80E-04 | | 4.30E-02 | 2.73E-06 | No | 1.17E-05 | No |
| 106-46-7 | Dichlorobenzene (1,2; 1,3; and 1,4) | 30 | 22.5 | - | 2.58E-04 | No | 1.10E-03 | No |
| 75-09-2 | Dichloromethane (Methylene chloride) | 1.60E-03 | - | 2.40E-01 | 3.15E-04 | No | 1.35E-03 | No |
| 100-41-4 | Ethylbenzene | 29 | 21.75 | - | 1.18E-04 | No | 5.05E-04 | No |
| 106-93-4 | Ethylene Dibromide (Dibromoethane) | 3.00E-05 | - | 4.50E-03 | 9.43E-06 | No | 4.04E-05 | Yes |
| 110-54-3 | Hexane | 12 | 9 | - | 3.28E-05 | No | 1.40E-04 | No |
| 7647-01-0 | Hydrochloric acid (Hydrogen chloride) | 5.00E-02 | 0.375 | - | 2.16E-02 | No | 9.25E-02 | Yes |
| 7783-06-4 | Hydrogen sulfide | 0.933 | 0.7 | - | 0.00E+00 | No | 0.00E+00 | No |
| 7439-97-6 | Mercury [2] | 1.00E-03 | 5.00E-04 | - | 3.19E-06 | No | 1.37E-05 | No |
| 74-87-3 | Methyl Chloride (Chloromethane) | 6.867 | 5.15 | - | 1.37E-05 | No | 5.88E-05 | No |
| 78-93-3 | Methyl ethyl ketone | 39.3 | 29.5 | - | 1.25E-04 | No | 5.34E-04 | No |
| 108-10-1 | Methyl isobutyl ketone | 13.7 | 10.25 | - | 1.23E-05 | No | 5.27E-05 | No |
| 127-18-4 | Perchloroethylene (tetrachloroethylene) | 1.30E-02 | - | 2.1 | 2.16E-04 | No | 9.25E-04 | No |
| 108-88-3 | Toluene | 25 | 18.75 | - | 3.83E-04 | No | 1.64E-03 | No |
| 79-01-6 | Trichloroethylene | 17.93 | 13.45 | - | 9.76E-05 | No | 4.18E-04 | No |
| 75-01-4 | Vinyl chloride | 9.40E-04 | - | 1.40E-01 | 7.34E-05 | No | 3.15E-04 | No |
| 1330-20-7 | Xylenes | 29 | 21.75 | - | 2.88E-04 | No | 1.23E-03 | No |

Notes:
(1) Neither compound nor CAS number listed in IDAPA 58.01.01.585 - 586.
(2) Emissions level and acceptable ambient concentrations for Mercury are lowest concentrations listed per IDAPA 58.01.01.585.
(3) 24-hour average concentrations are for non-carcinogenic substances.
(4) Annual average concentrations are for carcinogenic substances.

**TABLE 9.**
**CRITERIA POLLUTANT, PM, AND NMOC EMISSION SUMMARY**
**MILNER BUTTE LANDFILL**
**BURLEY, IDAHO**

| Criteria Air Pollutants | lbs/hr | tons/year |
|---|---|---|
| Volatile Organic Compounds (VOCs) | 4.43 | 7.03 |
| Nitrogen oxides ($NO_x$) | 2.70 | 11.83 |
| Sulfur oxides (as $SO_2$) | 2.25 | 9.84 |
| Carbon monoxide (CO) | 9.00 | 39.42 |
| Particulates ($PM_{10}$) | 2.35 | 10.31 |
| TOTAL CRITERIA POLLUTANTS | 20.74 | 78.42 |

| Pollutant | lbs/hr | tons/year |
|---|---|---|
| Particulates ($PM_{2.5}$) | 0.28 | 1.23 |
| Particulates ($PM_{30}$) | 6.46 | 28.29 |
| Total Non-Methane Organics (NMOCs) as Hexane | 4.11 | 18.01 |

Note:
All values are potential to emit (PTE) except for particulate emissions, because PTE emissions for particulates cannot be calculated.

# PTC Fee Calculation

**Instructions:**
**Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.**

| | |
|---|---|
| **Company:** | **Milner Butte Landfill** |
| **Address:** | **1050 West 400 South** |
| **City:** | **Burley** |
| **State:** | **Idaho** |
| **Zip Code:** | **83318** |
| **Facility Contact:** | **Josh Bartlome** |
| **Title:** | **Executive Director** |
| **AIRS No.:** | **031-00046** |

| | |
|---|---|
| **N** | Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N |
| **Y** | Did this permit require engineering analysis? Y/N |
| **N** | Is this a PSD permit Y/N (IDAPA 58.01.01.205.04) |

| **Emissions Inventory** | | | |
|---|---|---|---|
| Pollutant | Annual Emissions Increase (T/yr) | Annual Emissions Reduction (T/yr) | Annual Emissions Change (T/yr) |
| $NO_X$ | 11.8 | 0 | 11.8 |
| $SO_2$ | 9.8 | 0 | 9.8 |
| CO | 39.4 | 0 | 39.4 |
| PM10 | 3.3 | 0 | 3.3 |
| VOC | 0.8 | 0 | 0.8 |
| TAPS/HAPS | 1.0 | 0 | 1.0 |
| Total: | 66.2 | 0 | **66.2** |
| | | | |
| Fee Due | **$ 5,000.00** | | |

Comments:

***M E M O R A N D U M***

**DATE:** December 13, 2011 - DRAFT

**TO:** Carole Zundel, Permit Writer, Air Quality Division

**FROM:** Cheryl Robinson, P.E., Air Quality Engineer/Modeling Analyst, Air Quality Division

**PROJECT NUMBER:** P-2011.0054 PROJ 60771

**SUBJECT:** Modeling Review for SISW, Milner Butte Landfill Gas Flare, Facility ID 031-00046
Initial PTC for Existing Landfill Gas Flare

## 1.0 Summary

Southern Idaho Solid Waste (SISW) submitted a Permit to Construct (PTC) application for a landfill gas enclosed flare constructed in 2009 and located at Milner Butte Landfill, 1050 West 400 South, near Burley, Idaho. Emissions include criteria pollutants and several state-regulated toxic air pollutants (TAPs) from combustion of landfill gas in the flare.

Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were performed to demonstrate the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]) or Toxic Air Pollutant (TAP) increment (Idaho Air Rules Section 203.03). The application and modeling analyses conducted by SCS Engineers on SISW's behalf were received on September 12, 2011.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information, combined with DEQ's analyses, demonstrated to the satisfaction of the Department that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

**Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES**

| Criteria/Assumption/Result | Explanation/Consideration |
|---|---|
| • The maximum $H_2S$ concentration in the landfill gas is 150 ppmv.<br>• $NO_2$ emissions were presumed equal to 100% of NOx emissions on an hourly and annual basis.<br>• At the current typical LFG feed rate of 350 scfm at 50% methane, impacts …<br>• At the landfill PTE of 1,500 scfm LFG at 50% methane… | • Experience at other landfills suggests that $H_2S$ concentrations may routinely exceed 150 ppmv. Routine testing of the LFG for $H_2S$ concentration is recommended.<br>• Flare emissions at feed rates of 350 scfm LFG and 1500 scfm LFG were estimated based on operating continuously, i.e., for 8760 hours per year. |

## 2.0 Background Information

### 2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance for this facility located at 1050 West 400 South, near Burley, Idaho. Approximate UTM coordinates for the facility are 746.6 km Easting and 4,705.7 km Northing, in UTM Zone 11 (Datum WGS84).

### 2.1.1 Area Classification

The Milner Butte Landfill facility is located within Cassia County which is designated as an attainment or unclassifiable area for carbon monoxide (CO), lead (Pb), nitrogen dioxide ($NO_2$), ozone, particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers ($PM_{10}$), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), and sulfur oxides ($SO_x$). There are no Class I areas within 10 kilometers of this location.

### 2.1.2 DEQ Modeling Thresholds

Modeling is typically not required if the changes in estimated criteria pollutant emission rates for a proposed project are below DEQ's modeling thresholds, shown in Table 2. "Case-by-case" thresholds may be used only with prior DEQ approval. "Threshold I" values were used for this project.

**Table 2. DEQ CRITERIA POLLUTANT MODELING THRESHOLDS**

| Criteria Air Pollutants | Averaging Period | DEQ Modeling Threshold | | | |
|---|---|---|---|---|---|
| | | Threshold I | | Threshold II (Case-by-Case) | |
| $PM_{10}$ | 24-hr | 0.22 | lb/hr | 2.6 | lb/hr |
| $PM_{2.5}$ | 24-hr | 0.054 | lb/hr | 0.63 | lb/hr |
| | Annual | 0.35 | T/yr | 4.1 | T/yr |
| CO | 1-hr, 8-hr | 15 | lb/hr | 175 | lb/hr |
| $NO_2$ | 1-hour | 0.20 | lb/hr | 2.4 | lb/hr |
| | Annual | 1.2 | T/yr | 14 | T/yr |
| $SO_2$ | 1-hr | 0.21 | lb/hr | 2.5 | lb/hr |
| | 24-hr | 0.22 | lb/hr | 2.6 | lb/hr |
| | Annual | 1.2 | T/yr | 14 | T/yr |
| Lead | 3-month rolling avg | 14 | lb/mo | | |

### 2.1.3 Significant and Cumulative NAAQS Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the existing unpermitted facility exceed the significant contribution levels (SCLs) of Section 006 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules), then a cumulative impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02 for Permits to Construct and Section 403.02 for Tier II Operating Permits. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 3. The SCLs and the modeled value that must be used for comparison to the NAAQS are also listed in Table 3.

**Table 3. APPLICABLE REGULATORY LIMITS**

| Pollutant | Averaging Period | Significant Contribution Levels[c] ($\mu g/m^3$)[b] | Regulatory Limit[d] ($\mu g/m^3$)[b] | Modeled Value Used[g, h] |
|---|---|---|---|---|
| $PM_{10}$[a] | 24-hour | 5.0 | 150[f] | Maximum 6th highest[i] |
| $PM_{2.5}$[a] | Annual | 0.3[b] | 15[e] | $PM_{2.5}$ –Maximum 1st high[j] |
| | 24-hour | 1.2[b] | 35 | $PM_{2.5}$ –Maximum 1st high[j] |
| Carbon monoxide (CO) | 8-hour | 500 | 10,000[f] | Maximum 2nd highest |
| | 1-hour | 2,000 | 40,000[f] | Maximum 2nd highest |

| Table 3. APPLICABLE REGULATORY LIMITS | | | | |
|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Significant Contribution Levels[c] ($\mu g/m^3$)[b]** | **Regulatory Limit[d] ($\mu g/m^3$)[b]** | **Modeled Value Used[g, h]** |
| Sulfur Dioxide ($SO_2$) | Annual | 1.0 | 80 [e] | Maximum 1st highest |
| | 24-hour | 5 | 365 [f] | Maximum 2nd highest |
| | 3-hour | 25 | 1,300 [f] | Maximum 2nd highest |
| | 1-hour [o] | EPA Interim: 3 ppb [m] (~7.8 $\mu g/m^3$) | 0.075 ppm [m,n] (196 $\mu g/m^3$) | Maximum 4th highest [m] |
| Nitrogen Dioxide ($NO_2$) *$NO_2$ is the indicator species for NOx* | Annual | 1.0 | 100 [f] | Maximum 1st highest |
| | 1-hour [m] | EPA Interim: 4 ppb [l] (7.5 $\mu g/m^3$) | 0.100 ppm [l, n] (188 $\mu g/m^3$) | Maximum 8th highest [l] |
| Lead (Pb) | Rolling 3-month average | NA | 0.15 [f, k] | Maximum 1st highest |

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) or 2.5 micrometers.

[b] Micrograms per cubic meter.

[c] SCLs are defined in Idaho Air Rules Section 006. $PM_{2.5}$ SCLs (75 FR 64864, October 20, 2010) were adopted as an Idaho temporary rule effective April 26, 2011. The pending rule will become final and effective upon adjournment of the 2012 legislative session if approved by the Idaho Legislature.

[d] Federal NAAQS (see 40 CFR 50) in effect as of July 1 of each year are incorporated by reference during the legislative session the following spring. See Idaho Air Rules Section 107.

[e] Never expected to be exceeded in any calendar year.

[f] Never expected to be exceeded more than once in any calendar year. The 3-hr and 24-hr $SO_2$ standards were revoked (see 75 FR 35520, June 22, 2010) but will remain in effect until one year after the effective date (~late 2012) of initial area designations for the new 1-hour $SO_2$ NAAQS (i.e., in effect until ~late 2013).

[g] Concentration at any modeled receptor.

[h] The maximum 1st highest modeled value is always used for significant impact analyses.

[i] $PM_{10}$ concentration at any modeled receptor when using five years of meteorological data. Use the maximum 2nd highest value for analyses with less than five years of meteorological data or one year of site-specific met data.

[j] $PM_{2.5}$ concentration at any modeled receptor when using a single year of site-specific meteorological data or a concatenated file with five years of meteorological data. EPA recommends using the high 8th high 3-year average monitored value for background, and using the highest 24-hr average and highest annual averages across five years of met data for the modeled result (Steven Page memo, Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010).

[k] Pb: The EPA's October 15, 2008 standard became effective in Idaho's NSR program when it was incorporated by reference into the Idaho Air Rules, i.e., when the Idaho Legislature adjourned *sine die* on March 29, 2010.

[l] $NO_2$ concentration at any modeled receptor when using complete year(s) of site-specific met data or five consecutive years of representative meteorological data. Compliance is based on the 3-year average of the 98th percentile of the annual distribution of 1-hour average daily maximum concentrations. EPA Interim SIL, Page memo, dated June 29, 2010.

[m] $SO_2$ concentration at any modeled receptor when using complete year of site-specific met data or five consecutive years of representative meteorological data. Compliance is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA Interim SIL, Page memo, dated August 23, 2010.

[n] EPA's February 10, 2010 1-hour $NO_2$ standard (75 FR 6474) and June 22, 2010 1-hour $SO_2$ standard (75 FR 35520) became effective in Idaho on April 7, 2011.

### *2.1.4 Toxic Air Pollutant Analyses*

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permit requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Section 210, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

In accordance with Section 210.20 of the Idaho Air Rules, a demonstration of compliance with state-only TAPs standards is not required for any TAP that is regulated at the time of permit issuance under 40 CFR Part 60 (New Source Performance Standards [NSPS]), 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants [NESHAP], or 40 CFR Part 63 (NESHAP for Source Categories / MACT standards).

## 2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1] and are currently being updated. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. The recommended background levels for this project are shown in Table 4.

**Table 4. BACKGROUND CONCENTRATIONS**

| Pollutant | Averaging Period | Background Concentration (ppb) | Background Concentration (µg/m$^3$) | NAAQS | Background Value Reference |
|---|---|---|---|---|---|
| $PM_{10}$ | 24-hour | --- | 73 | 150 µg/m$^3$ | Default: Rural Agricultural |
| $PM_{2.5}$ | 24-hour | --- | 26.7 | 35 µg/m$^3$ | Avg of 98$^{th}$ percentile values plus 1 sigma, 2003-2008 Counties: Bannock, Boundary, Latah (ID), Columbia, Jackson, Lane, Marion (OR) |
| | Annual | --- | 6.5 | 15 µg/m$^3$ | Avg of annual mean values plus 1 sigma, 2003-2008 Counties: Bannock, Boundary, Latah (ID), Columbia, Jackson, Lane, Marion (OR) |
| Carbon monoxide (CO) | 1-hour | Default 3,000 | Default 3,600 | 9,000 ppb (10,000 µg/m$^3$) | Default: Rural Agricultural |
| | 8-hour | Default 2,000 | Default 2,300 | 35,000 ppb (40,000 µg/m$^3$) | Default: Rural Agricultural |
| Nitrogen dioxide ($NO_2$) | 1-hour | 22.4 | 42 | 100 ppb (188 µg/m$^3$) | Avg of high 2$^{nd}$ high 1-hour values plus 1 sigma, 2006-2008 Counties: Burke, Dunn, McKenzie, and Jackson (ND) |
| | Annual | 1.8 | 3.0 | 53 ppb (100 µg/m$^3$) | Avg of annual mean values plus 1 sigma, 2006-2008 Counties: Burke, Dunn, McKenzie, and Jackson (ND) |

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

| Table 4. BACKGROUND CONCENTRATIONS | | | | | |
|---|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Background Concentration (ppb)** | **Background Concentration (µg/m$^3$)** | **NAAQS** | **Background Value Reference** |
| Sulfur dioxide ($SO_2$) | 1-hour | 24.7 | 65 | 75 ppb (196 µg/m$^3$) | Avg of 1$^{st}$ high values plus 1 sigma, 2006-2008<br>Counties: Billings, McLean (ND), Jackson (SD), Uinta (WY) |
| | Annual | 1.0 | 2.6 | 30 ppb (80 µg/m$^3$) | Average of annual means plus 1 sigma, 2006-2008<br>Counties: Billings, McLean (ND), Jackson (SD), Uinta (WY) |
| Lead (Pb) | Rolling 3-month average | --- | Default 0.03 | 0.15 µg/m$^3$ | Default: Rural Agricultural |
| ppb = parts per billion by volume (ppbv) µg/m$^3$ = micrograms per cubic meter 1 sigma = σ = one standard deviation<br>"Default" values were taken from Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling.* Idaho DEQ, Memorandum to Mary Anderson, March 14, 2003. | | | | | |

## 3.0 Modeling Impact Assessment

### 3.1 Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate compliance with applicable air quality standards.

#### *3.1.1 Overview of Analyses*

SCS Engineers performed air quality analyses using AERMOD in support of the submitted permit application. A brief description of parameters used in the modeling analyses is provided in Table 5.

| Table 5. MODELING PARAMETERS | | |
|---|---|---|
| **Parameter** | **Description/Values** | **Documentation/Addition Description** |
| Model | AERMOD | AERMOD with the PRIME downwash algorithm, version 11103 |
| Meteorological data | Twin Falls 2000 - 2004 | NWS surface data from Twin Falls/Joslin Field and upper air data collected from 2000 through 2004 at the Boise Airport. |
| Terrain | NED 1/3 arc-sec | AERMAP v. 11103, using 1/3-arc second NED terrain data files (NAD83/WGS84). |
| Building downwash | BPIP-PRIME v. 04274 | Building downwash parameters were calculated using the BPIP PRIME algorithm (version 04274). |
| Receptor Grid | Receptors | Receptor locations were defined in UTM coordinates (NAD83) |
| | Grids | 25-meter (m) spacing along the property boundary<br>50-m spacing centered on the flare out to 2,000 m<br>250-m spacing centered on the flare from 2,000 m to 10,000 m |

#### *3.1.2 Modeling Protocol and Methodology*

A modeling protocol received by DEQ on April 29, 2011 was approved with comment on June 23, 2011. The modeling protocol approval was delayed awaiting new guidance for the 1-hour $NO_x$ and $SO_2$ NAAQS. Although EPA had issued guidance with regard to modeling for these new standards, there was still a lot of uncertainty regarding the best (or better) ways to model emissions from intermittent sources, including emergency generators. DEQ's NSR Modeling Coordinator was a member of a joint EPA/State/Local working group assembled in Spring 2011 and tasked with reviewing modeling concerns for these 1-hour NAAQS. The group was scheduled to present its findings during the EPA Modelers Workshop scheduled for June 6-9, 2011 in Atlanta, Georgia. Approval of the modeling protocol for this project was delayed pending additional guidance from this workshop.

Modeling was generally conducted using data described in the protocol and methods described in the *State of Idaho Air Quality Modeling Guideline*. Default rural dispersion was used.

### 3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a one-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer.
- Improved plume rise and buoyancy calculations.
- Improved treatment of terrain effects on dispersion.
- New vertical profiles of wind, turbulence, and temperature.

### 3.1.4 Meteorological Data

DEQ provided AERMOD-ready meteorological data to SCS Engineers on March 16, 2011. National Weather Service (NWS) surface data were collected at Twin Falls/Joslin Field and upper air meteorology data collected at the Boise Airport (KBOI) from 2000 through 2004.

### 3.1.5 Terrain Effects

Terrain effects on dispersion were considered in these analyses. SCS Engineers used AERMAP v. 11103 to extract the actual elevation of each receptor and determine the controlling hill height elevation from a 1/3-arc second (about 10 meter resolution) tiff file downloaded from the Seamless National Elevation Database (NED). The NED file encompassed the area between -114.602 and -113.328 degrees longitude and 43.095 and 41.860 degrees north latitude.

### 3.1.6 Facility Layout

The facility layout is shown in Figure 3-1 (taken from the application).

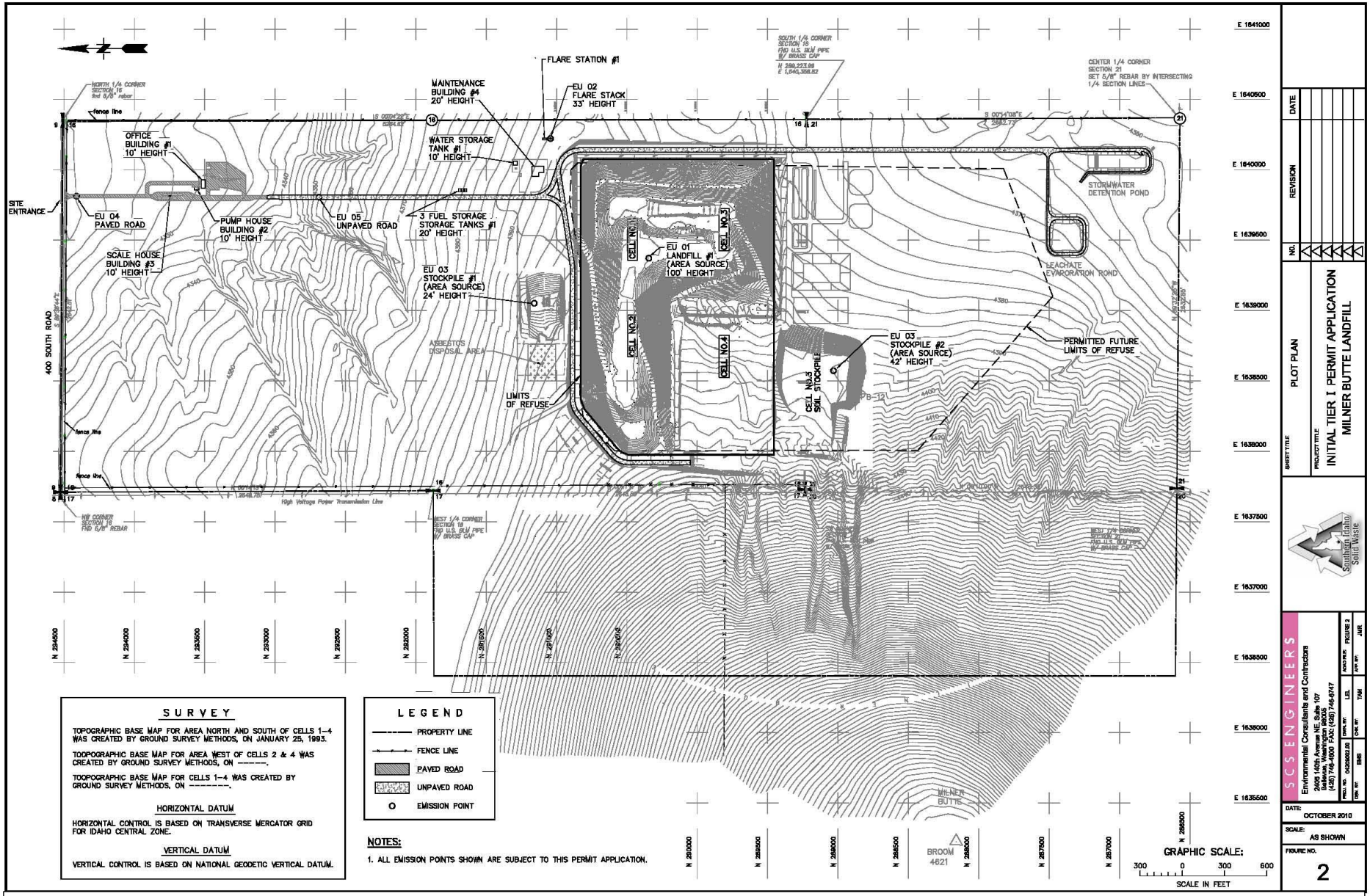


**Figure 3-1. SUBMITTED FACILITY LAYOUT**

### 3.1.7 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the submitted modeling analyses. The Building Profile Input Program with Plume RIse Model Enhancements (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emission release parameters for input to AERMOD. Building parameters used in the submitted modeling are summarized in Table 6.

**Table 6. BUILDING PARAMETERS**

| Building | Building Height | Base Elevation (m) | UTM Datum NAD83 Zone 11 | |
|---|---|---|---|---|
| | | | Easting, X (m) | Northing, Y (m) |
| | | | | |
| Maintenance Building | 20 ft (6.10 m) | 1339.49 | 746531.0 | 4705640.0 |
| | | | 746550.0 | 4705640.0 |
| | | | 746550.0 | 4705615.0 |
| | | | 746539.0 | 4705615.0 |
| | | | 746539.0 | 4705625.0 |
| | | | 746531.0 | 4705625.0 |

### 3.1.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access. The ambient air boundary for the Milner Butte Landfill is shown in Figure 3-2. Public access is controlled by fencing around portions of the landfill property (see Figure 3-2). **DRAFT: How is public access controlled in unfenced areas?** In accordance with DEQ modeling guidance, this access control is acceptable for PSD minor source permitting.

### 3.1.9 Receptor Network

The receptor grids used for the submitted screening modeling analyses are summarized in Table 5, and shown graphically in Figure 3-2. **DEQ verification analyses included additional receptors within the apparently unfenced part of the property (not yet complete).**

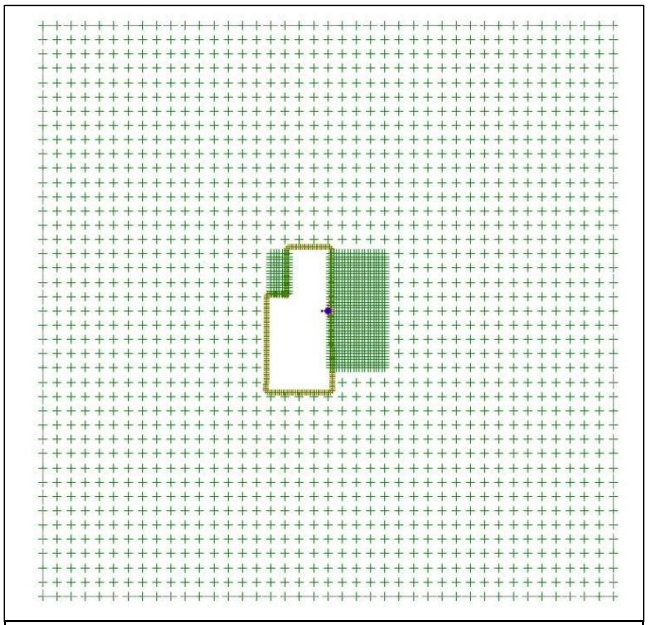

**Figure 3-2. RECEPTOR GRID**

## 3.2 Emission Release Parameters

The emission release parameters used in the submitted analysis and DEQ's AERMOD verification analyses are shown in Table 7. Although the approved modeling protocol proposed to model the enclosed flare as a point source and the submitted modeling report describes modeling the flare as a point source using the parameters shown in the first two rows of Table 7, the submitted modeling set the source type to "Flare" with various release heights, stack temperatures, and exit velocities. **The enclosed flare was modeled as a point source for DEQ verification modeling (not yet complete).**

**Table 7. EMISSION RELEASE PARAMETERS**

| Source ID | Description | UTM Zone 11 (NAD83) | | Base Elevation (m) | Stack Height (Effective Release Height) | Exit Temp. | Exit Dia. | Exit Velocity | Exhaust Flow Rate (acfm) |
|---|---|---|---|---|---|---|---|---|---|
| | | Easting (m) | Northing (m) | | | | | | |
| **POINT SOURCE Flare Parameters (from Table 1 of the submitted modeling report)<br>MBPRELIM, Significance Analysis using 1 g/s emission rate, Flares modeled as Point Sources** | | | | | | | | | |
| FLARE1 | Flare, 1500 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 33.0 ft (10.06 m) | 1000°F (810.9 K) | 8.38 ft (2.54 m) | 19.54 fps (5.838 m/s) | 63,386 |
| FLARE2 | Flare, 350 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 33.0 ft (10.06 m) | 1000°F (949.8 K) | 8.38 ft (2.54 m) | 4.467 fps (1.362 m/s) | 14,790 |
| **MBPM, $PM_{2.5}$ analysis, Modeled Source Type: "Flare"<br>MBSOx , Modeled Source Type: "Flare"<br>DEQ Verification: Modeled Source Type: "Point"** | | | | | | | | | |
| FLARE1 | Flare, 1500 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 33.0 ft (10.06 m) | 1000°F (810.9 K) | 8.38 ft (2.54 m) | 19.54 fps (5.838 m/s) | 63,386 |
| FLARE2 | Flare, 350 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 33.0 ft (10.06 m) | 1000°F (949.8 K) | 8.38 ft (2.54 m) | 4.467 fps (1.362 m/s) | 14,782 |
| **MBNOx, Modeled Source Type: "Flare"<br>DEQ Verification: Modeled Source Type: "Point," using point source parameters shown above.** | | | | | | | | | |
| FLARE1 | Flare, 1500 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 51.72 ft (15.76 m) | 1831.73°F (1273 K) | 3.778 ft (1.151 m) | 65.62 fps (20.0 m/s) | 44,125 |
| FLARE2 | Flare, 350 scfm LFG feed rate | 746650.49 | 4705632.54 | 1337.14 | 42.34 ft (12.9 m) | 1831.73°F (1273 K) | 1.825 ft (0.556 m) | 65.62 fps (20.0 m/s) | 10,296 |

m = meters ft = feet
°F = degrees Fahrenheit, K = Kelvin
m/sec = meters per second fpm = feet per minute fps = feet per second

## 3.3 Emission Rates

As shown in Table 8, emissions of NOx, SOx, $PM_{10}$, and $PM_{2.5}$ exceed DEQ modeling thresholds for criteria pollutants, and emissions of the four TAPs listed in the table exceed the applicable screening emission level (EL) listed in Section 585 or 586 of the Idaho Air Rules. Modeling is required to demonstrate compliance for each pollutant and averaging time that exceeds these thresholds (shown in bold in the table).

**Table 8. EMISSION RATES COMPARED TO MODELING THRESHOLDS**

| | PTE (1500 scfm LFG) | | Current Emissions (350 scfm LFG) | | DEQ Modeling Thresholds | |
|---|---|---|---|---|---|---|
| **Criteria Pollutants** | **(TPY)** | **(lb/hr)** | **(TPY)** | **(lb/hr)** | **(TPY)** | **(lb/hr)** |
| CO | 39.42 | 9.0 | 9.2 | 2.1 | --- | 15 |
| NOx | **11.83** | **2.7** | **2.76** | **0.63** | 1.2 | 0.20 |
| SOx | **9.84** | **2.2** | **2.3** | **0.53** | 1.2 | 0.21 |

| Table 8. EMISSION RATES COMPARED TO MODELING THRESHOLDS | | | | | | |
|---|---|---|---|---|---|---|
| | PTE (1500 scfm LFG) | | Current Emissions (350 scfm LFG) | | DEQ Modeling Thresholds | |
| **Criteria Pollutants** | **(TPY)** | **(lb/hr)** | **(TPY)** | **(lb/hr)** | **(TPY)** | **(lb/hr)** |
| $PM_{10}$ | 3.29 | **0.80** | 0.77 | 0.18 | --- | 0.22 |
| $PM_{2.5}$ | 3.29 | **0.80** | 0.77 | **0.18** | 0.35 | 0.054 |
| Lead | --- | --- | --- | --- | --- | 14 lb/mo |
| **TAPS** | | | | | **Avg. Period** | **EL (lb/hr)** |
| 1,1,2,2-Tetrachloroethane | --- | **5.49E-05** | --- | **1.28E-05** | Annual | 1.1E-05 |
| 1,1-Dichloroethane | --- | **3.43E-04** | --- | 8.00E-05 | Annual | 2.5E-04 |
| Ethylene Dibromide (Dibromoethane) | --- | **4.04E-05** | --- | 9.43E-06 | Annual | 3.0E-05 |
| Hydrogen chloride | --- | **0.0925** | --- | 0.0216 | 24-hr | 0.05 |

## 3.4 Modeling Results

### *3.4.1 Significance Analyses*

The significance analysis was run using a 1 g/sec emission rate for "Flare 1" and "Flare 2," which were modeled as point sources. The model was run using a concatenated five-year met file. **Note: significance analyses for pollutants and averaging times other than $PM_{10}$, $PM_{2.5}$, and 1-hour NOx and $SO_2$ should have been run separately for each of the five years of met data. DEQ is running verification analyses (not yet complete) to ensure that the full impact modeling was conducted for all pollutants and averaging times with significant impacts** . The maximum ambient impacts (high 1st high) for each pollutant were determined by multiplying the pollutant emission rate by the dispersion coefficient ($\mu g/m^3$ per g/sec emitted) produced from the modeling results.

Significant impact results for pollutants that exceeded the modeling thresholds are shown in Table 9. The acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for each TAP is shown in parentheses for comparison with the highest modeled impact. None of the modeled TAP impacts exceeded the applicable AAC/AACC.

| Table 9. SIGNIFICANT IMPACT RESULTS (1st Highs) | | | | | | |
|---|---|---|---|---|---|---|
| | Dispersion Coefficient ($\mu g/m^3$ per g/sec) | | | | | |
| | **Averaging Period:** | **1-hr** | **3-hr** | **8-hr** | **24-hr** | **Annual** |
| | Flare 1 | 116.9 | 80.26 | 44.7 | 24.45 | 1.372 |
| | Flare 2 | 331.1 | 297.4 | 262.9 | 149.8 | 14.15 |
| **Pollutant** | **Emission Rate (lb/hr)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** |
| $NO_2$ – Flare 1 | 2.7 | 39.8 | --- | --- | --- | 0.467 |
| $NO_2$ – Flare 2 | 0.63 | 26.3 | --- | --- | --- | 1.1 |
| $SO_2$ – Flare 1 | 2.2 | 32.4 | 22.2 | | | 0.4 |
| $SO_2$ – Flare 2 | 0.53 | 22.1 | 19.9 | | | 0.9 |
| $PM_{2.5}$ – Flare 1 | 0.80 | --- | --- | --- | 2.5 | 0.1 |
| $PM_{2.5}$ – Flare 2 | 0.18 | --- | --- | --- | 3.4 | 0.3 |
| $PM_{10}$ – Flare 1 | 0.80 | --- | --- | --- | 2.5 | 0.14 |
| $PM_{10}$ – Flare 2 | 0.18 | --- | --- | --- | 3.4 | 0.32 |
| 1,1,2,2-Tetrachloroethane - Flare 1 | 5.49E-05 | --- | --- | --- | --- | 9.49E-06 (1.7E-02) |

| Table 9. SIGNIFICANT IMPACT RESULTS (1st Highs) | | | | | | |
|---|---|---|---|---|---|---|
| | Dispersion Coefficient ($\mu g/m^3$ per g/sec) | | | | | |
| | **Averaging Period:** | **1-hr** | **3-hr** | **8-hr** | **24-hr** | **Annual** |
| | Flare 1 | 116.9 | 80.26 | 44.7 | 24.45 | 1.372 |
| | Flare 2 | 331.1 | 297.4 | 262.9 | 149.8 | 14.15 |
| **Pollutant** | **Emission Rate (lb/hr)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** | **Impact ($\mu g/m^3$)** |
| 1,1,2,2-Tetrachloroethane - Flare 2 | 1.28E-05 | --- | --- | --- | --- | 2.21E-06 (1.7E-02) |
| 1,1-Dichloroethane – Flare 1 | 3.43E-04 | --- | --- | --- | --- | 5.93E-05 (3.8E-02) |
| Ethylene Dibromide – Flare 1 | 4.04E-05 | --- | --- | --- | --- | 6.98E-06 (4.5E-03) |
| Hydrogen chloride – Flare 1 | 0.0925 | --- | --- | --- | 0.28 (375) | --- |

Note: 1 g/s = 7.936641 lb/hr

### *3.4.2 Full Impact Analyses*

Full impact analyses were conducted for each pollutant and averaging time with impacts greater than significant.

| Table 10. MODELING RESULTS FOR CRITERIA POLLUTANTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Pollutant** | **Averaging Period** | **Modeled Ambient Impact ($\mu g/m^3$)** | | **Background Value ($\mu g/m^3$)** | **Total Ambient Impact ($\mu g/m^3$)** | | **NAAQS ($\mu g/m^3$)** | **Percent of NAAQS** | |
| | | **Flare 1 (1500scfm)** | **Flare 2 (350 scfm)** | | **Flare 1 (1500scfm)** | **Flare 2 (350 scfm)** | | **Flare 1 (1500scfm)** | **Flare 2 (350 scfm)** |
| $NO_2$ | 1-hour | 16.44 | 21.74 | 42 | 58.44 | 63.74 | 188 | 31.1% | 33.9% |
| | Annual | 27.96 | 23.37 | 3.0 | 31.0 | 26.4 | 100 | 31.0% | 26.4% |
| $SO_2$ | 1-hour | 23.79 | 21.71 | 65 | 88.8 | 86.7 | 196 | 45.3% | 44.2% |
| | Annual | 0.380 | 0.945 | 2.6 | 2.98 | 3.55 | 80 | 3.73% | 4.43% |
| $PM_{10}$ | 24-hr | --- | --- | 73 | 73.0 | 73.0 | 150 | --- | --- |
| $PM_{2.5}$ | 24-hr | 1.03 | 2.07 | 26.7 | 27.7 | 28.8 | 35 | **79.0%** | **82.2%** |
| | Annual | 0.138 | 0.321 | 6.5 | 6.64 | 6.82 | 15 | 44.3% | 45.5% |

## 4.0 Conclusions

The submitted ambient air impact analyses, combined with DEQ's analyses (**DRAFT: verification modeling not yet complete)**, demonstrated to DEQ's satisfaction that emissions from the landfill gas flare located at Milner Butte Landfill will not cause or significantly contribute to a violation of any air quality standard.