Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
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January 5, 2010

Jay Skabo
Montana-Dakota Utilities Co.
400 North 4th Street
Bismarck, ND 58501

Dear Mr. Skabo:

Montana Air Quality Permit #4479-00 is deemed final as of January 5, 2010, by the Department of Environmental Quality (Department). This permit is for the Billings Landfill Gas Production Facility. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-9741

Ed Warner
Environmental Engineer
Air Resources Management Bureau
(406) 444-2467

VW:EW
Enclosure
Cc: Kalle Kuether, Environmental Engineer, Montana-Dakota Utilities Co.

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #4479-00

Montana Dakota Utilities Co.
400 North 4th Street
Bismarck, ND 58501

January 5, 2010

MONTANA AIR QUALITY PERMIT

Issued To:	Montana-Dakota Utilities Co. Billings Landfill Gas Extraction Facility 400 North Fourth Street Bismarck, North Dakota 58501	Montana Air Quality Permit: #4479-00 Application Complete: 10/6/09 Preliminary Determination Issued: 11/13/09 Department's Decision Issued: 12/18/09 Permit Final: 1/5/10 AFS #: 111-0042

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Montana-Dakota Utilities Co. (Montana-Dakota), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Permitted Equipment

Montana-Dakota proposes to operate a landfill gas (LFG) extraction and purification facility at the City of Billings Municipal Solid Waste Landfill. The facility will be capable of handling up to 2,400 standard cubic feet per minute (scfm) of LFG at full capacity. The facility would consist of several wells (the number of wells will change over time as new wells are drilled and old wells are closed) and a LFG purification system to produce pipeline quality natural gas which will be sold. The air pollutant emitting units include:

- a propane-assisted Thermal Oxidizer (TO) enclosed flare with a maximum rated combustion fuel rate of 1,579 scfm at 15% methane (CH_4),
- an open utility flare with a maximum rated combustion fuel rate of 2,400 scfm,
- two LFG engines that drive electrical generators with a maximum design rating of up to 349 horsepower (hp) each, and
- fugitive gas leaks from the LFG collection system.

B. Plant Location

The Montana-Dakota LFG extraction and purification facility will be located at the City of Billings Municipal Solid Waste Landfill at 5240 Jellison Road, Billings, MT 59101. The legal description is the SW¼ of Section 29, Township 1 South, Range 26 East, in Yellowstone County.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Montana-Dakota shall install, operate, and maintain a TO enclosed flare to control Volatile Organic Compound (VOC) emissions from Tail Gas Stream #1 or #2 (ARM 17.8.752).

2. Montana-Dakota shall not cause or authorize to be discharged into the atmosphere from the TO enclosed flare:

   a. Any visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.752); and

b. Any particulate matter emissions in excess of 0.10 grains per dry standard cubic feet (gr/dscf) (ARM 17.8.752).

3. Montana-Dakota shall install and continuously operate a thermocouple and an associated recorder or any other equivalent device on the TO enclosed flare to detect the presence of a flame (ARM 17.8.749).

4. Montana-Dakota shall install, operate, and maintain up to two LFG engines with a maximum rated design capacity of 349-hp each to control VOC emissions from Tail Gas Stream #2 (ARM 17.8.752).

5. Emissions from the LFG engines shall not exceed the following limits, on a gram per brake horsepower hour (g/bhp-hr) basis. All limits are based on a 3-hour rolling average (40 Code of Federal Regulations (CFR) 60, Subpart JJJJ and ARM 17.8.752):

Oxides of Nitrogen (NO_x):	3.0 g/bhp-hr
Carbon Monoxide (CO):	5.0 g/bhp-hr
VOC:	1.0 g/bhp-hr

6. Montana-Dakota shall install, operate, and maintain a utility flare to control VOC emissions from Tail Gas Streams #1 and #2 or the entire LFG stream during facility upsets or maintenance activity (ARM 17.8.749).

7. Montana-Dakota shall install and continuously operate a thermocouple and an associated recorder or any other equivalent device on the utility flare to detect the presence of a flame (ARM 17.8.749).

8. Montana-Dakota shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

9. Montana-Dakota shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

10. Montana-Dakota shall treat all unpaved portions of the LFG facility haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.8 (ARM 17.8.749).

11. Montana-Dakota shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 CFR 60, Subpart JJJJ, Standard of Performance for Stationary Spark Ignition Internal Combustion Engines (ARM 17.8.340 and 40 CFR 60, Subpart JJJJ).

B. Testing Requirements

1. The LFG engines shall each be initially tested for NO_x, CO, and VOC concurrently to demonstrate compliance with the emission limits in Section II.A.6 within 180 days of the initial start up date of the engines. The emission tests shall consist of three separate test runs that are at least one hour in length and occur while the engine is operating within 10% of 100% peak (or the highest achievable) load (40 CFR 60, Subpart JJJJ; ARM 17.8.105; and ARM 17.8.749).

2. The TO enclosed flare shall be initially tested for opacity and PM concurrently to demonstrate compliance with the emission limits in Section II.A.2.a and II.A.2.b within 180 days of the initial start up date of the TO enclosed flare (ARM 17.8.105 and ARM 17.8.749).

3. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

4. The Department of Environmental Quality (Department) may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Montana-Dakota shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Montana-Dakota shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit***, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by Montana-Dakota as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Notification

1. Montana-Dakota shall provide the Department with written notification of installation of the LFG engines within 30 days after commencement of installation (ARM 17.8.749).

2. Montana-Dakota shall provide the Department with written notification of the actual start up date(s) of the LFG engine(s) within 15 days after the actual start up date(s) (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – Montana-Dakota shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Montana-Dakota fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Montana-Dakota of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Montana-Dakota may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Permit Analysis
Montana Dakota Utilities Co.
Montana Air Quality Permit (MAQP) #4479-00

I. Introduction/Process Description

Montana Dakota Utilities Co. (Montana-Dakota) proposes to operate a landfill gas (LFG) extraction and purification facility capable of handling up to 2,400 standard cubic feet per minute (scfm) of LFG at full capacity. The purification system will extract and convert a portion of the LFG into pipeline quality natural gas that will be sold. The facility is located at the City of Billings Municipal Solid Waste Landfill at 5240 Jellison Road, Billings, Montana 59101. The legal description is SW¼ of Section 29, Township 1 South, Range 26 East, in Yellowstone County.

A. Permitted Equipment

The LFG extraction and purification facility will consist of:

- several wells (the number of wells will change over time as new wells are drilled and old wells are closed),
- two pressure swing absorption (PSA) beds that remove nitrogen (N_2) and carbon dioxide (CO_2) from the LFG stream,
- a propane-assisted Thermal Oxidizer (TO) enclosed flare with a maximum rated combustion fuel rate of 1,579 scfm at 15% methane (CH_4),
- an open utility flare with a maximum rated combustion fuel rate of 2,400 scfm,
- two LFG engines with a maximum design rating of up to349 horsepower (hp) each that drive electrical generators. During the initial phase of this project, only one LFG engine and generator will be constructed and operated due to anticipated lower production rates at start-up. The second LFG engine and generator is being permitted at this time with the expectation that as production capability increases, a second unit will be warranted.
- Fugitive gas leaks from the LFG collection system.

The facility is not expected to reach full capacity until approximately 2025.

B. Source Description

The LFG extraction facility collects the LFG that is created as solid waste decomposes in the landfill. Typically, LFG is comprised of about 50% methane gas (CH_4), 50% CO_2, and a small amount of non-methane organic compounds (NMOC). Three test wells were drilled at the landfill in November 2008 for gas analysis that confirmed the presence of similar component concentrations. The LFG extraction facility will be capable of collecting and processing 2,400 scfm of LFG when operating at full capacity. The extraction facility will not be considered 100% efficient at collecting the LFG from the wells. As stated in the original permit application, there will be some leaks in the system and associated piping; therefore, an 85% collection efficiency is assumed for this project. This assumption is consistent with other LFG collection systems. The remaining 15% is represented as fugitive LFG emissions to the atmosphere.

The LFG collected by the extraction facility will be routed to the purification system. The purification system includes two PSA beds to remove CO_2 and N_2. Each of the PSA units produces a waste gas stream known as a tail gas stream. The LFG stream passes first through the CO_2 PSA unit. The CO_2 is removed from the LFG and the gas stream continues through the

process to the N_2 PSA unit. The tail gas stream from the CO_2 PSA unit, Tail Gas Stream #1, is a low heat content stream and is combusted in the propane-assisted TO flare. As stated in the original permit application, the TO flare is expected to operate at all times during normal production which is predicted to be 93% of the year.

After the gas stream passes through the N_2 PSA unit, the gas stream is either recycled back through the N_2 PSA unit again for further purification or it is compressed into a pipeline with an electric compressor to be sold as pipeline quality natural gas. The tail gas stream from the N_2 PSA, Tail Gas Stream #2, is routed to the two LFG engines driving electric generators, the TO flare, or the utility flare. During normal desired operation the entire Tail Gas Stream #2 will be combusted by the LFG engines to produce electricity. During times when the engines cannot operate, the Tail Gas Stream #2 will be routed to the TO flare for combustion. There may also be times when both the engines and the TO flare do not have the capacity to combust the entire Tail Gas Stream #2 and then the Tail Gas Stream #2 will be routed to the utility flare.

The LFG engines driving the electric generators will have a maximum rated design capacity of up to 349 hp each and will utilize the Tail Gas Stream #2 as their fuel source. The generators will provide auxiliary electricity for the purpose of reducing parasitic load. Only one LFG engine and generator is being installed initially due to anticipated lower production rates at start-up. The second LFG engine and generator is being permitted at this time with the expectation that as production capability increases, a second unit will be warranted. The engines are expected to operate 83% of the year.

The utility flare, also known as the open flare, is designed to be able to combust the entire process LFG stream of 2,400 scfm during periods of plant upset or maintenance. This flare will serve as a back-up control device for the LFG purification facility. The utility flare will also have the capability to combust off-spec Tail Gas #2 streams as needed. As stated in the original permit application, this flare is only expected to operate at full capacity 7% of the year when the entire LFG stream will be combusted, and at a reduced capacity when only burning Tail Gas #2 for 10% of the year.

C. Response to Public Comment

Person/Group Commenting	Permit Reference	Comment	Department Response
Montana-Dakota	Throughout	Montana-Dakota Utilities Co. prefers using “Montana-Dakota” for the company name abbreviation since “MDU” is often used in reference to MDU Resources Group, Inc., of which Montana-Dakota is a division.	The Department has made the requested change.
Montana-Dakota	Section I.A	Montana-Dakota believes it unnecessary to list the specific manufacturers of the air pollutant emitting units within the Air Quality permit.	The Department has removed the manufacturers’ names from the MAQP. The Draft MAQP originally included the specific manufacturers and models of some of the permitted equipment because the Department had been applying emission factors that had been provided in the original application that were specific to that manufacturer’s equipment for determining the potential air emissions. Because the emission factors came from information supplied by the equipment manufacturers, Montana-Dakota would have been required to install that specific equipment and therefore the

Person/Group Commenting	Permit Reference	Comment	Department Response
			manufacturers and models were listed as MAQP requirements. Montana-Dakota and the Department have agreed to calculate potential emissions based on emission factors found in 40 CFR 60, Subpart JJJJ and AP-42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Sources (AP-42). These sources of emission factors are based on equipment capacity and therefore the MAQP now limits the maximum capacity of the equipment rather than restricting Montana-Dakota to a specific manufacturer and model.
Montana-Dakota	Section II.A.3	The Tail Gas Stream #2 is not introduced until Section II.A.5. Montana-Dakota recommends inserting this requirement after Section II.A.5 so that Tail Gas Stream #2 is introduced before it is referenced.	The Department has made the requested change. In addition, Section II.A.4 of the Draft MAQP has been split into two requirements (now Sections II.A.3 and II.A.7) to maintain consistency with Montana-Dakota's recommendation of not referencing a process before it has been introduced.
Montana-Dakota	Section II.A.6	Montana-Dakota requests that the applicable emissions limits from 40 CFR 60, Subpart JJJJ be considered to meet the state BACT requirement in place of the manufacturer data. 40 CFR 60, Subpart JJJJ requires performance testing for compliance demonstration only for the applicable limits specifically identified within the subpart.	The Department agrees that the performance standards required by 40 CFR 60, Subpart JJJJ are protective of air quality standards. Compliance with these standards is considered to be BACT for these units. The emission limits found in the MAQP have been updated to reflect the values found in 40 CFR 60, Subpart JJJJ as it applies to these units.
Montana-Dakota	Section II.A.9	Montana-Dakota will be conducting LFG extraction within the boundary of City of Billings Landfill property, but only on a small portion of the property. It is important to indicate that Montana-Dakota is responsible for treating portions of the roads and surfaces that are within Montana-Dakota's operational responsibility. Montana-Dakota will work with the City of Billings to address any potential dust concerns regarding the LFG extraction operations that could occur within the landfill boundary. Montana-Dakota suggests inserting "landfill gas extraction facility" after the word "the" and before the words "haul roads".	The Department has made the requested change.
Montana-Dakota	Section II.D.1	Montana-Dakota suggests deleting "including purchase" and clarifying that the Department will be notified within 30 days of installation as the generators are not constructed on-site but purchased in completed form to be installed at the facility.	The Department has made the requested change.

Person/Group Commenting	Permit Reference	Comment	Department Response
Montana-Dakota	Permit Analysis I.B	It may be confusing to future readers as to how MT DEQ came up with the collection efficiency and fugitive gas emission percentages in this section. Montana-Dakota suggests inserting "As stated in the original permit application" before the word "There" to clarify the origin of this information.	The Department has made the requested change.
Montana-Dakota	Permit Analysis I.B	It may be confusing to future readers as to how MT DEQ came up with the predicted percentage operations of the TO flare. Montana-Dakota suggests inserting "As stated in the original permit application" before the word "The" to clarify the origin of this information.	The Department has made the requested change.
Montana-Dakota	Permit Analysis I.B	It may be confusing to future readers as to how MT DEQ came up with the predicted percentage operations of the utility flare. Montana-Dakota suggests inserting "As stated in the original permit application" before the word "This" to clarify the origin of this information.	The Department has made the requested change.
Montana-Dakota	Permit Analysis III. BACT	Montana-Dakota does not currently intend to sell gas on the market, but plans to initially distribute gas to our customers on the company's distribution system. Montana-Dakota may potentially sell this gas on the market in the future. Montana-Dakota suggests adding "distribute to customers on the company's distribution system or" before the words "sell on the market".	The Department has made the requested change.
Montana-Dakota	Environmental Assessment Section 2	Montana-Dakota suggests adding "or distribute to customers on the company's distribution system" before the word "sell".	The Department has made the requested change.
Montana-Dakota	Environmental Assessment Section 8.J	Montana-Dakota suggests adding "distribute to customers on the company's distribution system of" before the words "sell it on the market".	The Department has made the requested change.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (Department). Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   Montana-Dakota shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

Montana-Dakota must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter (PM). (2) Under this rule, Montana-Dakota shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere PM caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Further, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes. While Montana-Dakota is required to comply with the Emission Limitations specified in Section II.B of MAQP #4479-00 for the TO enclosed flare, this particular rule does not apply to the flare because Montana-Dakota has applied for and will operate under an MAQP in accordance with ARM 17.8.770 and MCA 75-2-215 for this unit.

6. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

7. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The Billings LFG extraction facility is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

   b. 40 CFR 60, Subpart JJJJ – Standard of Performance for Stationary Spark Ignition Internal Combustion Engines. The proposed engines are affected sources under this subpart because they are larger than 25 hp and are manufactured after January 1, 2008.

9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:

   a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to an NESHAP Subpart as listed below:

b. 40 CFR 63, Subpart HH - National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities. Owners or operators of oil and natural gas production facilities, as defined and applied in 40 CFR Part 63, shall comply with the applicable provisions of 40 CFR 63, Subpart HH. In order for a natural gas production facility to be subject to 40 CFR 63, Subpart HH requirements, certain criteria must be met. First, the facility must be a major source of hazardous air pollutants (HAPs) as determined according to paragraphs (a)(1)(i) through (a)(1)(iii) of 40 CFR 63, Subpart HH. Second, a facility that is determined to be major for HAPs must also either process, upgrade, or store hydrocarbon liquids prior to the point of custody transfer, or process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user. Third, the facility must also contain an affected source as specified in paragraphs (b)(1) through (b)(4) of 40 CFR 63, Subpart HH. Finally, if the first three criteria are met, and the exemptions contained in paragraphs (e)(1) and (e)(2) of 40 CFR 63, Subpart HH do not apply, the facility is subject to the applicable provisions of 40 CFR 63, Subpart HH. Based on the information submitted by Montana-Dakota, the LFG extraction and purification facility is not subject to the major source provisions of 40 CFR 63, Subpart HH because the facility is not a major source of HAPs. For area sources under 40 CFR 63, Subpart HH, the affected sources include each triethylene glycol (TEG) dehydration unit. The Montana-Dakota LFG extraction and purification facility does not have any TEG units and therefore does not operate an affected source under the area source provisions.

c. 40 CFR 63, Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants From Reciprocating Internal Combustion Engines. The proposed facility contains four stroke lean burn LFG engines at an area source of HAPs which are affected sources under 40 CFR 63 Subpart ZZZZ. However, because the LFG extraction and purification facility would be an area source of HAPs and not a major source of HAPs, the engines may meet the requirements of 40 CFR 63, Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ for spark ignition engines. No further requirements apply for such engines under 40 CFR 63, Subpart ZZZZ.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Montana-Dakota submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year (TPY) of any pollutant. The Billings LFG extraction facility has a PTE greater than 25 tons per year of nitrogen oxides (NO_x) and carbon monoxide (CO); therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Montana-Dakota submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Montana-Dakota submitted an affidavit of publication of public notice for the September 25, 26, and 27, 2009 issues of the *Billings Gazette*, a newspaper of general circulation in the City of Billings in Yellowstone County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Montana-Dakota of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

15. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, Montana Code Annotated (MCA).

F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source because this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:

a. PTE > 100 TPY of any pollutant;

b. PTE > 10 TPY of any one hazardous air pollutant (HAP), PTE > 25 TPY of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

c. PTE > 70 TPY of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #4479-00 for Montana-Dakota, the following conclusions were made:

a. The facility's PTE is less than 100 TPY for any pollutant.

b. The facility's PTE is less than 10 TPY for any one HAP and less than 25 TPY for all HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to a current NSPS. The LFG-fired RICE-driven generators are subject to NSPS Subpart JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.

e. This facility is not subject to any current NESHAP standards.

f. This source is not a Title IV affected source, or a solid waste combustion unit.

g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that the Billings LFG extraction facility will be a minor source of emissions as defined under Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Montana-Dakota will be required to obtain a Title V Operating Permit for the Billings LFG extraction facility.

H. MCA 75-2-103, Definitions provided, in part, as follows:

1. "Incinerator" means any single or multiple-chambered combustion device that burns combustible material, alone or with a supplemental fuel or catalytic combustion assistance, primarily for the purpose of removal, destruction, disposal, or volume reduction of all or any portion of the input material.

2. "Solid waste" means all putrescible and nonputrescible solid, semisolid, liquid, or gaseous wastes, including, but not limited to...air pollution control facilities...

I. MCA 75-2-215, Solid or hazardous waste incineration - additional permit requirements:

1. MCA 75-2-215 requires air quality permits for all new commercial solid waste incinerators; therefore, Montana-Dakota must obtain an air quality permit.

2. MCA 75-2-215 requires the applicant to provide, to the Department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants from the incineration of solid waste. The Department determined that the information submitted in the initial MAQP application was sufficient to fulfill this requirement.

3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety, and welfare. The Department completed a health risk assessment based on an emissions inventory and ambient air quality modeling for this MAQP application. Based on the results of the emission inventory, modeling, and the health risk assessment, the Department determined that Montana-Dakota complies with this requirement.

III. BACT Determination

A BACT determination is required for each new or modified source. Montana-Dakota shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized. The proposed LFG extraction and purification facility will have two PSA units that each produce a waste exhaust stream that requires pollution control. The primary pollutant in each of the exhaust streams is VOC.

A BACT analysis was submitted by Montana-Dakota in permit application #4479-00 addressing some available methods of controlling VOC emissions from the PSA units which exhaust Tail Gas Streams #1 and #2. The Department reviewed these methods, the Environmental Protection Agency (EPA) RACT/BACT/LAER Clearinghouse (RBLC), as well as previous BACT determinations. The following control options have been reviewed by the Department in order to make the following BACT determination.

Tail Gas Stream #1

Tail Gas Stream #1, the exhaust stream from the CO_2 PSA unit, is a low heating value exhaust gas consisting of methane, CO_2, and other trace impurities. The Department determined that incineration is the most common method of pollution control for tail gas streams and is appropriate in this application. The types of incineration include open flares and enclosed TO flares. Flaring is a VOC combustion control process in which gas streams containing VOCs are piped to a specific location and burned in a flame using a specially designed burner tip. Both open and enclosed flares are capable of achieving destruction efficiencies of 98% or more. Sometimes auxiliary fuel, steam, or air is incorporated into the flare to promote mixing and facilitate more complete combustion and destruction of the VOCs. The heating value of the Tail Gas Stream #1 is expected to be 121 Btu/scf which is too low to support unassisted combustion. Therefore, auxiliary assist fuel will be required to achieve complete combustion and maximize destruction efficiency.

Open Flares

Open flares are typically elevated and the waste gas stream is fed through a stack anywhere from 10 to 100 meters tall and is combusted at the tip of the stack. The flame is exposed to atmospheric disturbances such as wind and precipitation. Because there is no enclosure to facilitate complete mixing of the gas stream components with the auxiliary assist fuel, the open flare is less desirable for the incineration of Tail Gas Stream #1.

Enclosed TO Flares

Enclosed TO flares combust the waste gas stream at ground level within an enclosed stack. The enclosure isolates the combustion zone from atmospheric disturbances, increases the residence time of the waste gas in the combustion zone, and promotes turbulent mixing of the waste gas stream with the assist fuel to facilitate a complete oxidation reaction. Montana-Dakota has proposed a TO flare with auxiliary propane as assist fuel as BACT for the emission control of Tail Gas Stream #1. The proposed TO flare has a maximum rated combustion fuel rate of 1,579 scfm at 15% CH_4 concentration. Other incinerators permitted by the

Department pursuant to ARM 17.8.770 and MCA 75-2-215 are generally limited to 0.10 grains per dry standard cubic feet (gr/dscf) of flue gas adjusted to 12% CO_2 and calculated as if no auxiliary fuel had been used for PM and to 10% opacity averaged over six consecutive minutes. The CO_2 correction factor was originally crafted as a way to standardize combustion emissions due to the variability associated with operation such as percentage of excess air or differences in elevation. Tail Gas Stream #1 will have a high concentration of CO_2 that is not a product of combustion and the application of the correction factor would result in a greatly understated reportable PM emission rate. Therefore, the TO flare will be limited to 0.10 gr/dscf and 10% opacity without the CO_2 and auxiliary fuel correction. The Department concurs that the proposed TO flare offers excellent VOC destruction efficiency and constitutes BACT for Tail Gas Stream #1.

Tail Gas Stream #2

Tail Gas Stream #2 is the waste exhaust stream from the N_2 PSA unit. This exhaust gas stream will have a higher expected heating value of 611 Btu/scf. Combustion of the exhaust stream is again the most efficient means of destruction; however, there exists the opportunity to recover energy from the higher heat content gas through the use of gas turbines or internal combustion engines.

Flares

As with the Tail Gas Stream #1, Tail Gas Stream #2 could be destroyed through the use of a flare which could achieve VOC destruction efficiencies of 98% or more. The heating value of Tail Gas Stream #2 is high enough to facilitate combustion without the need for auxiliary assist fuel. Tail Gas Stream #2 can be combined with Tail Gas Stream #1 and combusted in the proposed TO flare, provided that the proposed TO flare has the design capacity to handle the combined exhaust gas streams.

Gas Turbines

Gas turbines at LFG extraction facilities operate by combusting the LFG in a turbine to spin a shaft which turns a generator to create electricity. Typical VOC destruction efficiencies associated with LFG gas turbines are approximately 94%. Gas turbines require a high pressure fuel supply. The fuel is pressurized with a fuel compressor which can consume a significant portion of the energy being generated. LFG gas turbines are typically used in applications for generating 3000 kW of electricity or more in a large landfill setting. Gas turbines are removed from consideration because Tail Gas Stream #2 cannot provide the fuel volume and pressure required to operate them.

Internal Combustion Engines

Internal combustion engines at LFG extraction facilities can be used to combust the LFG to power a generator for creating electricity. Typical VOC destruction efficiencies from LFG engines are 97%. LFG engines are available in a range of sizes to tailor to the fuel supply and energy requirement needs. Internal combustion engines are themselves sources of air emissions, primarily NO_x and CO. PM emissions are usually low from engines burning natural gas or LFG and are typically minimized by good combustion controls. VOCs are thermally destroyed by the combustion process. Control options for NO_x and CO from internal combustion engines are typically considered together because the NO_x and CO emissions vary conversely with each other. There are generally recognized issues related to the application of catalyst-based pollution control devices to engines combusting LFG. Specifically, add-on controls such as oxidation catalysts are not commonly used on LFG-fired engines due to the fact that LFG contains contaminants that poison the catalyst materials, or at a minimum, significantly reduce the service life of the catalysts. NO_x and CO emissions from LFG engines are typically minimized by the use of combustion controls like lean burn design, air to fuel ratio controllers, and good combustion practices.

Montana-Dakota proposes to install two 349 hp lean burn technology LFG engines driving 250 kW generators to supply base load electricity to the facility. The engines have vendor-guaranteed emission rates that meet the requirements of 40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines as they pertain to LFG engines for NO_x, CO, and VOC, which the Department considers BACT. The Department has determined that the LFG engines can achieve a high level destruction efficiency, recover usable energy from the waste exhaust stream, and utilize BACT for controlling their associated air emissions. Therefore, the Department concurs that they are BACT for destroying Tail Gas Stream #2. During times when the engines cannot combust the Tail Gas Stream #2, the gas will either be routed to the TO flare or to the utility flare.

LFG Purification System Back Up

Under normal operation, the LFG stream would be processed by the purification system which results in pipeline quality natural gas that Montana-Dakota would distribute to customers on the company's distribution system or sell on the market. A utility flare is being proposed as a back up control equipment capable of handling the LFG load from the entire purification system. The flare could achieve a VOC destruction efficiency of 98% or more. Utility flares have been permitted by similar sources for controlling LFG emissions and constitute BACT as back up control equipment for the LFG purification system.

The control options selected have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

The LFG extraction and purification facility has process restraints that will make it impossible for all of the emissions producing equipment to operate at maximum capacity simultaneously. For example, when the process is operating normally at full capacity then there is no fuel being combusted in the utility flare. Conversely, if there is a process upset and the PSA units are not operational then the full LFG stream will be routed to the utility flare and the remaining equipment will not be producing emissions. Therefore, the Department analyzed different scenarios to determine an operating schedule that results in the largest potential to emit air pollutants. The different schedules represent different percentages of a year (8,760 hours) that each piece of equipment would be producing air emissions. None of the equipment has a restriction on the allowable hours of operation. The following tables represent some of the different schedules and their associated potential emissions. The Department determined that the greatest potential emissions of a single pollutant occur when the facility is operating at normal conditions with the TO flare and generator engines operating 100% of the time and no fuel being combusted in the utility flare. This scenario is depicted in the table below titled "100% at Desired Operation." Montana-Dakota provided a predicted annual schedule that is represented in the table titled "Normal Expected Operation." The calculations found after the tables are for the Normal Expected Operation because it provides a useful demonstration of the potential to emit calculations for each emitting unit.

100% at Desired Operation			TPY					
hours/year	% of year	**Emission Source**	**PM**	**PM_{10}**	**NO_x**	**CO**	**VOC**	**SO_2**
8760	100%	Thermal Oxidizer Flare (Tail Gas #1)	0.93	0.93	2.43	2.86	0.34	0.04
8760	100%	Thermal Oxidizer Flare (propane assist)	0.16	0.16	2.88	1.66	0.18	0.07
0	0%	Utility Flare (total LFG stream)	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	Utility Flare (Tail Gas #2)	0.00	0.00	0.00	0.00	0.00	0.00
8760	100%	LFG Engine/Generator #1	0.13	0.13	10.09	16.81	3.36	7.55E-03
8760	100%	LFG Engine/Generator #2	0.13	0.13	10.09	16.81	3.36	7.55E-03
8760	100%	Fugitive LFG	--	--	--	8.10	15.30	*6.49*
		Total Emissions	**1.35**	**1.35**	**25.49**	**46.25**	**22.55**	**6.61**

100% Utility Flare			TPY					
hours/year	% of year	**Emission Source**	**PM**	**PM_{10}**	**NO_x**	**CO**	**VOC**	**SO_2**
0	0%	Thermal Oxidizer Flare (Tail Gas #1)	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	Thermal Oxidizer Flare (propane assist)	0.00	0.00	0.00	0.00	0.00	0.00
8760	100%	Utility Flare (total LFG stream)	5.11	5.11	13.28	15.67	1.87	0.20
0	0%	Utility Flare (Tail Gas #2)	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	LFG Engine/Generator #1	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	LFG Engine/Generator #2	0.00	0.00	0.00	0.00	0.00	0.00
8760	100%	Fugitive LFG	--	--	--	8.10	15.30	*6.41*
		Total Emissions	**5.11**	**5.11**	**13.28**	**23.77**	**17.17**	**6.61**

Normal Expected Operation			TPY					
hours/year	% of year	**Emission Source**	**PM**	**PM_{10}**	**NO_x**	**CO**	**VOC**	**SO_2**
8146.8	93%	Thermal Oxidizer Flare (Tail Gas #1)	0.87	0.87	2.26	2.66	0.32	0.03
8146.8	93%	Thermal Oxidizer Flare (propane assist)	0.14	0.14	2.68	1.55	0.16	0.06
613.2	7%	Utility Flare (total LFG stream)	0.36	0.36	0.93	1.10	0.13	0.01
876.0	10%	Utility Flare (Tail Gas #2)	0.03	0.03	0.09	0.10	0.01	1.36E-03
7270.8	83%	LFG Engine/Generator #1	0.11	0.11	8.37	13.96	2.79	6.27E-03
7270.8	83%	LFG Engine/Generator #2	0.11	0.11	8.37	13.96	2.79	6.27E-03
8760.0	100%	Fugitive LFG	--	--	--	8.10	15.30	*6.49*
		Total Emissions	**1.62**	**1.62**	**22.70**	**41.42**	**21.51**	**6.61**

CALCULATIONS FOR NORMAL EXPECTED OPERATION:

Fugitive LFG
Montana-Dakota conducted a LFG analysis in November 2008 as part of the project feasibility study to determine the gas concentrations found within the landfill. The LFG extraction facility will operate with an assumed collection efficiency of 85%, which means that 15% of a maximum extraction rate from all the wells of 2,824 scfm will be lost to the atmosphere through system leaks as fugitive LFG emissions. Fugitive emissions will occur continuously throughout the year.

Maximum flow from all wells = 2,824 scfm (Application information)
Collection efficiency = 85% (Application information)
Hours of Operation = 8,760 hours per year (hrs/yr)

VOC Emissions:
Non-methane VOC (as hexane) concentration = 616.67 parts per million (ppm) (Application information)
Hexane molecular weight (MW) = 86.17 pounds per pound-mole (lb/lb-mol)
Calculation: (616.67 / 1E-6)*(2,824 scfm)*(86.17 lb/lb-mol)*(60 min/hr)*(1/385.5 lb-mol/scf) = 23.35 lb/hr
Calculation: (23.35 lb/hr) * (1-85%) * (8,760 hrs/yr) * (ton/2000 lb) = 15.3 TPY

CO Emissions:
CO concentration = 0.1% volume per volume (v/v) (Application information)
CO MW = 28.01 lb/lb-mol
Calculation: (0.001 v/v) * (2,824 scfm) * (28.01 lb/lb-mol) * (60 min/hr) * (1/385.5 lb-mol/scf) = 12.31 lb/hr
Calculation: (12.31 lb/hr) * (1-85%) * (8,760 hrs/yr) * (ton/2000 lb) = 8.1 TPY

SO_2 Emissions:
No direct SO_2 emissions would occur as fugitive leaks from the LFG collection system because it is not present in LFG and is a product of combustion. However, the sulfur components found in the LFG gas were measured and represented as total reduced sulfur (TRS). It is assumed that all of the TRS will be completely converted to SO_2 during combustion, regardless of the combustion source. Therefore, the following calculation represents the amount of SO_2 that will be produced by the entire facility based on the amount of TRS extracted from the LFG and combusted in the process. The SO_2 calculations presented in the emission inventory for each emitting unit are based on AP-42 emission factors and process rates. In order to account for all of the predicted SO_2 formation, the remaining difference between the total predicted SO_2 formation and the sum of SO_2 from the combustion emission sources is represented as fugitive LFG SO_2 emissions.

TRS = 63.14 ppm as sulfur (S) (Application information)
MW of S = 32.0 lb/lb-mol
Ratio of MW of SO_2 to S = 2 SO_2/S
Calculation: (63.14 / 1E-6) * (2,824 scfm) * (32.0 lb/lb-mol) * (60 min/hr) * (1/385.5 lb-mol/scf) = 0.89 lb/hr
Calculation: (0.89 lb/hr) * (85%) * (8,760 hrs/yr) * (ton/2000 lb) = 3.3 TPY S
Calculation: (3.3 TPY S) * (2 SO_2/S) = 6.6 TPY SO_2 (regardless of combustion source)

TO Flare for Combusting Tail Gas Stream #1
Maximum TO Flare capacity = 1,579 scfm (Application information)
Hours of Operation = 8,146.8 hrs/yr
Tail Gas Stream #1 Heat Content = 121.1 British thermal units per standard cubic foot (Btu/scf) (Application information)
Methane Heat Content = 1012 Btu/scf
Methane Percentage = 15% (Application information)
Methane Component = (1579 scfm)*(15% CH_4)*(1E-6 MMscf/scf)*(60 min/hr) = 0.0142 million standard cubic feet of methane per hour (MMscf CH_4/hr)

PM Emissions from landfill gas (for flare combustion, PM=PM_{10}=$PM_{2.5}$):
Emission Factor = 15 pounds per million standard cubic feet of methane (lb/MMscf CH_4) (AP-42, Table 2.4-4 (DRAFT), 10/08)
Calculation: (15 lb/MMscf CH_4) * (0.0142 MMscf CH_4/hr) * (8146.8 hrs/yr) * (ton/2000 lb) = 0.87 TPY

CO Emissions:
Emission Factor = 46 (lb/MMscf CH_4) (AP-42, Table 2.4-4 (DRAFT), 10/08)
Calculation: (46 lb/MMscf CH_4) * (0.0142 MMscf CH_4/hr) * (8146.8 hrs/yr) * (ton/2000 lb) = 2.66 TPY

NO_x Emissions:
Emission Factor = 39 (lb/MMscf CH_4) (AP-42, Table 2.4-4 (DRAFT), 10/08)
Calculation: (39 lb/MMscf CH_4) * (0.0142 MMscf CH_4/hr) * (8146.8 hrs/yr) * (ton/2000 lb) = 2.26 TPY

SO_2 Emissions:
Emission Factor = 0.6 lb/MMscf (AP-42, Table 1.4, 7/98)
Calculation: (0.6 lb/MMscf) * (0.0142 MMscf/hr) * (8146.8 hrs/yr) * (ton/2000 lb) = 0.03 TPY

VOC Emissions:
Emission Factor = 5.5 lb/MMscf (AP-42, Table 1.4, 7/98)
Calculation: (5.5 lb/MMscf) * (0.0142 MMscf/hr) * (8146.8 hrs/yr) * (ton/2000 lb) = 0.32 TPY

TO Flare for Combusting Supplemental Propane
Propane required = 0.843 gallons per minute (gal/min) (Application information)
Hours of Operation = 8,146.8 hrs/yr (always the same as TO Flare for Tail Gas Stream #1)

PM Emissions from propane assist (for flare combustion, $PM=PM_{10}=PM_{2.5}$):
Emission Factor = 0.7 pounds per thousand gallons (lb/1000 gal) (AP-42, Table 1.5-1, 7/08)
Calculation: (0.843 gal/min)/1e3 * 60 min/hr * (8146.8 hrs/yr) * (0.7 lb/1000 gal) * (ton/2000 lb) = 0.14 TPY

NO_x Emissions from propane assist:
Emission Factor = 13 lb/1000 gal (AP-42, Table 1.5-1, 7/08)
Calculation: (0.843 gal/min) / 1e3 * 60 min/hr * (8146.8 hrs/yr) * (13 lb/1000 gal) * (ton/2000 lb) = 2.68 TPY

CO Emissions from propane assist:
Emission Factor = 7.5 lb/1000 gal (AP-42, Table 1.5-1, 7/08)
Calculation: (0.843 gal/min)/1e3 * 60 min/hr * (8146.8 hrs/yr) * (7.5 lb/1000 gal) * (ton/2000 lb) = 1.55 TPY

SO_2 Emissions from propane assist:
Emission Factor = 0.3 lb/1000 gal (AP-42, Table 1.5-1, 7/08 & Applicant info)
Calculation: (0.843 gal/min)/1e3 * 60 min/hr * (8146.8 hrs/yr) * (0.3 lb/1000 gal) * (ton/2000 lb) = 0.06 TPY

VOC Emissions from propane assist:
Emission Factor = 0.8 lb/1000 gal (AP-42, Table 1.5-1, 7/08, $VOC=TOC-CH_4$)
Calculation: (0.843 gal/min)/1e3 * 60 min/hr * (8146.8 hrs/yr) * (0.8 lb/1000 gal) * (ton/2000 lb) = 0.16 TPY

Utility Flare for Combusting Entire LFG Stream
Maximum Process Rate = 2,400 scfm (Application information, total process)
Hours of Operation = 613.2 hrs/yr (combusting entire LFG stream)
Methane Percentage = 54% (Application information)
Methane Component = (2400 scfm)*(54%) = 1296 scfm (combusting entire LFG stream)

PM Emissions (for flare combustion, $PM=PM_{10}=PM_{2.5}$):
Emission Factor = 15 lb/MMscf CH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (1296 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.08 MMscf/hr
Calculation: (0.08 MMscf/hr) * (15 lb/MMscf CH_4) * (613.2 hrs/yr) * (ton/2000 lb) = 0.36 TPY

CO Emissions:
Emission Factor = 46 lb/MMscfCH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (1296 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.08 MMscf/hr
Calculation: (0.08 MMscf/hr) * (46 lb/MMscfCH_4) * (613.2 hrs/yr) * (ton/2000 lb) = 1.10 TPY

NO_x Emissions:
Emission Factor = 39 lb/MMscfCH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (1296 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.08 MMscf/hr
Calculation: (0.08 MMscf/hr) * (39 lb/MMscfCH_4) * (613.2 hrs/yr) * (ton/2000 lb) = 0.93 TPY

SO_2 Emissions:
Emission Factor = 0.6 lb/MMscf (AP-42, Table 1.4, 7/98)
Fuel Rate = (1296 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.08 MMscf/hr
Calculation: (0.6 lb/MMscf) * (0.08 MMscf/hr) * (613.2 hrs/yr) * (ton/2000 lb) = 0.01 TPY

VOC Emissions:
Emission Factor = 5.5 lb/MMscf (AP-42, Table 1.4, 7/98)
Fuel Rate = (1296 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.08 MMscf/hr
Calculation: (5.5 lb/MMscf) * (0.08 MMscf/hr) * (613.2 hrs/yr) * (ton/2000 lb) = 0.13 TPY

Utility Flare for Combusting Tail Gas Stream #2
Tail Gas Stream #2 Rate = 160 scfm (Application information, reduced load)
Hours of Operation = 876 hrs/yr (combusting Tail Gas #2 only (generators off))
Methane Component = (160 scfm) * (54%) = 86.4 scfm (combusting Tail Gas #2 only)

PM Emissions (for flare combustion, $PM=PM_{10}=PM_{2.5}$):
Emission Factor = 15 lb/MMscf CH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (86.4 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.01 MMscf/hr
Calculation: (0.01 MMscf/hr) * (15 lb/MMscf CH_4) * (876 hrs/yr) * (ton/2000 lb) = 0.03 TPY

CO Emissions:
Emission Factor = 46 lb/MMscfCH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (86.4 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.01 MMscf/hr
Calculation: (0.01 MMscf/hr) * (46 lb/MMscfCH_4) * (876 hrs/yr) * (ton/2000 lb) = 0.10 TPY

NO_x Emissions:
Emission Factor = 39 lb/MMscfCH_4 (AP-42, Table 2.4-4 (DRAFT), 10/08)
Fuel Rate = (86.4 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.01 MMscf/hr
Calculation: (0.01 MMscf/hr) * (39 lb/MMscfCH_4) * (876 hrs/yr) * (ton/2000 lb) = 0.09 TPY

SO_2 Emissions:
Emission Factor = 0.6 lb/MMscf (AP-42, Table 1.4, 7/98)
Fuel Rate = (86.4 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.01 MMscf/hr
Calculation: (0.6 lb/MMscf) * (0.01 MMscf/hr) * (876 hrs/yr) * (ton/2000 lb) = 1.36E-3 TPY

VOC Emissions:
Emission Factor = 5.5 lb/MMscf (AP-42, Table 1.4, 7/98)
Fuel Rate = (86.4 scfm) * (60 min/hr) * (1E-6 MMscf/scf) = 0.01 MMscf/hr
Calculation: (5.5 lb/MMscf) * (0.01 MMscf/hr) * (876 hrs/yr) * (ton/2000 lb) = 0.01 TPY

LFG Engines
Operational Capacity of Engine = 349 hp
Hours of Operation = 7,270.8 hrs/yr
Tail Gas Stream #2 heating value = 610.9 Btu/scf (Application information)
Fuel gas flow rate per engine = 80 scfm (Application information)

Total PM Emissions (PM_{10}+CPM):
PM Emissions = 8.22E-4 + 0.11 = 0.11 TPY

PM_{10} Emissions ($PM_{10}=PM_{2.5}$):
Emission Factor = 7.71E-5 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Fuel Input = (610.9 btu/scf) * (80 scfm) * (60 min/hr) * (1E-6 MMBtu/Btu) = 2.93 MMBtu/hr
Calculation: (7.71E-5 lb/MMBtu) * (2.93 MMBtu/hr) * (7270.8 hrs/yr) * (1/2000 ton/lb) = 8.22E-4 TPY

CPM Emissions:
Emission Factor = 9.91E-3 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Fuel Input = (610.9 btu/scf) * (80 scfm) * (60 min/hr) * (1E-6 MMBtu/Btu) = 2.93 MMBtu/hr
Calculation: (9.91E-3 lb/MMBtu) * (2.93 MMBtu/hr) * (7270.8 hrs/yr) * (1/2000 ton/lb) = 0.11 TPY

NO_x Emissions:
Emission Factor = 3.0 g/bhp-hr (40 CFR 60, Subpart JJJJ, Table 1, LFG Lean Burn Engines < 500 hp)
Calculation: (3.0 g/bhp-hr) * (349 hp) * (7270.8 hrs/yr) * (0.0022 lb/g) * (1/2000 ton/lb) = 8.37 TPY

CO Emissions:
Emission Factor = 5.0 g/bhp-hr (40 CFR 60, Subpart JJJJ, Table 1, LFG Lean Burn Engines < 500 hp)
Calculation: (5.0 g/bhp-hr) * (349 hp) * (7270.8 hrs/yr) * (0.0022 lb/g) * (1/2000 ton/lb) = 13.96 TPY

VOC Emissions:
Emission Factor = 1.0 g/bhp-hr (40 CFR 60, Subpart JJJJ, Table 1, LFG Lean Burn Engines < 500 hp)
Calculation: (1.0 g/bhp-hr) * (349 hp) * (7270.8 hrs/yr) * (0.0022 lb/g) * (1/2000 ton/lb) = 2.79 TPY

SO_x Emissions:
Emission Factor = 0.000588 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-2, 7/00)
Fuel Input = (610.9 Btu/scf) * (80 scfm) * (60 min/hr) * (1E-6 MMBtu/Btu) = 2.93 MMBtu/hr
Calculation: (0.000588 lb/MMBtu) * (2.93 MMBtu/hr) * (7270.8 hrs/yr) * (1/2000 ton/lb) = 6.27E-3 TPY

V. Existing Air Quality

The Billings area is designated as an attainment area with a Limited Maintenance Plan for CO and an area of concern for SO_2 nonattainment. The Billings/Laurel area is currently under State Implementation Plan (SIP) provisions for SO_2 control because of the Laurel SO_2 nonattainment area and modeled violations of the SO_2 standard in Billings. In addition, some facilities are subject to Federal Implementation Plan (FIP) provisions for SO_2. The FIP is intended to complement the SIP to maintain compliance with national and state ambient air quality standards for SO_2. In the view of the Department the amount of controlled emissions from this facility, including CO and SO_2, will not violate any ambient air quality standard or contribute to any violation.

VI. Ambient Air Impact Analysis

The Department conducted SCREENVIEW, an EPA-approved screening model, using the indicated inputs obtained from the permit application and an emission rate of 2.68E-03 gram per second, which is the sum of all the hazardous air pollutant emissions for Tail Gas #1 combustion from the proposed TO flare. The individual one-hour results for each pollutant were then calculated by multiplying the modeled impact of 0.5503 $\mu g/m^3$ by the percentage of each individual HAP making up the total of the HAP emissions. The maximum 1-hour concentrations were then converted to an annual average and used in the risk assessment. The results are contained in Section VI, Health Risk Assessment, of the permit analysis

TO Flare: SCREENVIEW Model Run

Simple Terrain Inputs:

Source Type	=	POINT
Emission Rate (G/S)	=	2.68E-04
Stack Height (M)	=	8.53
Stack Inside Diam (M)	=	1.3716
Stack Exit Velocity (M/S)	=	0.51
Stack Gas Exit Temp (K)	=	1800
Ambient Air Temp (K)	=	293
Receptor Height (M)	=	0.0000
Urban/Rural Option	=	RURAL

Stack exit velocity was calculated using a volumetric flow rate of 1607 ACFM which was provided in the application.

Summary of Screen View Model Results

Calculation Procedure	Maximum 1 Hour Concentration ($\mu g/m^3$)	Distance of Maximum (M)	Terrain Height (M)
Simple Terrain	0.5503	100	0

The Department determined, based on ambient air modeling, that the impacts from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Health Risk Assessment

A health risk assessment was conducted to determine if the proposed TO Flare complies with the negligible risk requirement of MCA 75-2-215. The emission inventory did not contain sufficient quantities of any pollutant on the Department's list of pollutants for which non-inhalation impacts must be considered; therefore, the Department determined that inhalation risk was the only necessary pathway to consider. Only those hazardous air pollutants for which there were established emission factors were considered in the emission inventory.

Negligible Risk Assessment for HAPs[1]						
	HAP	Modeled Concentration ($\mu g/m^3$)	Cancer CIRF[2] $(\mu g/m^3)^{-1}$	Cancer Risk[3]	CNCREL[6] ($\mu g/m^3$)	CNCREL Hazard Quotient[7]
Tail Gas Stream #1 Combustion	2-Methylnaphthalene	6.99E-07	ND	ND	ND	ND
	3-Methylchloranthrene	5.25E-08	6.30E-03	3.30E-10	ND	ND
	7,12-Dimethylbenz(a)anthracene	4.66E-07	7.10E-02	3.31E-08	ND	ND
	Acenaphthene	5.25E-08	ND	ND	ND	ND
	Acenaphthylene	5.25E-08	ND	ND	ND	ND
	Anthracene	6.99E-08	ND	ND	ND	ND
	Benzene	6.12E-05	7.80E-06	4.77E-10	3.00E+01	2.04E-06
	Benz(a)anthracene	5.25E-08	1.10E-04	5.77E-12	ND	ND
	Benzo(a)pyrene	3.50E-08	1.10E-03	3.85E-11	ND	ND
	Benzo(b)fluoranthene	5.25E-08	1.10E-04	5.77E-12	ND	ND
	Benzo(k)fluoranthene	5.25E-08	1.10E-04	5.77E-12	ND	ND
	Benzo(g,h,i)perylene	3.50E-08	ND	ND	ND	ND
	Chrysene	5.25E-08	1.10E-05	5.77E-13	ND	ND
	Dibenzo(a,h)anthracene	3.50E-08	1.20E-03	4.20E-11	ND	ND
	Dichlorobenzene	3.50E-05	1.10E-05	3.85E-10	8.00E+02	4.371E-08
	Fluoranthene	8.74E-08	ND	ND	ND	ND
	Fluorene	8.16E-08	ND	ND	ND	ND
	Formaldehyde	2.19E-03	5.50E-09	1.20E-11	9.80E+00	0.000223
	Hexane	5.25E-02	ND	ND	7.00E+02	7.493E-05
	Indeno(1,2,3,c,d)pyrene	5.25E-08	1.10E-04	5.77E-12	ND	ND
	Naphthalene	1.78E-05	3.40E-05	6.04E-10	3.00E+00	5.925E-06
	Phenanthrene	4.95E-07	ND	ND	ND	ND
	Pyrene	1.46E-07	ND	ND	ND	ND
	Toluene	9.91E-05	ND	ND	5.00E+03	1.982E-08
	Arsenic	5.83E-06	4.30E-03	2.51E-08	3.00E-02	0.0001943
	Beryllium	3.50E-07	2.40E-03	8.39E-10	2.00E-02	1.748E-05
	Cadmium	3.21E-05	1.80E-03	5.77E-08	2.00E-02	0.0016027
	Chromium, total	4.08E-05	1.20E-02	4.90E-07	1.08E-01	0.0003777
	Cobalt	2.45E-06	ND	ND	1.00E-04	0.0244777
	Lead	1.46E-05	ND	ND	1.50E+00	9.713E-06
	Manganese	1.11E-05	ND	ND	5.00E-02	0.0002215
	Mercury	7.58E-06	ND	ND	3.00E-01	2.525E-05
	Nickel	6.12E-05	ND	ND	9.00E-02	0.0006799
	Selenium	6.99E-07	ND	ND	2.00E+01	3.497E-08
Total Risks		----------	----------	6.08E-07	----------	2.79E-02
A copy of the Screen View modeling conducted for this project is on file with the Department.						

(1) Source of chronic dose-response values is from Table 1: Prioritized Chronic Dose Response Values for Screening Risk Assessments (www.epa.gov/ttn/atw/toxsource/table1.pdf, 6/12/07).
(2) Cancer Chronic Inhalation Risk Factor ($1/\mu g/m^3$).
(3) Cancer Risk is unitless and is calculated by multiplying the predicted concentration by the CIRF.
(4) AKA Propylene dichloride.
(5) AKA Tetrachloroethene, Perchloroethylene.
(6) Chronic Noncancer Reference Exposure Level.
(7) The CNCREL hazard quotient is determined by calculating the modeled HAP concentration by the CNCREL.
ND Not Determined because no value is provided in Table 1: Prioritized Chronic Dose Response Values for Screening Risk Assessments (www.epa.gov/ttn/atw/toxsource/table1.pdf, 6/12/07).

The Department determined that the risks estimated in the risk assessment for the TO Flare are in compliance with the requirement to demonstrate negligible risk to human health and the environment. As documented in the above table and in accordance with the negligible risk requirement, no single HAP concentration results in Cancer Risk greater than 1.00E-06 and the sum of all HAPs results in a Cancer Risk of less than 1.00E-05. Further, the sum of the Chronic Noncancer Reference Exposure Level (CNCREL) hazard quotient is 2.79E-02, which is less than 1.0 as required to demonstrate compliance with the negligible risk requirement.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Montana-Dakota Utilities Co.

Montana Air Quality Permit Number: 4479-00

Preliminary Determination Issued: 11/13/09
Department Decision Issued: 12/18/09
Permit Final: 1/5/10

1. *Legal Description of Site*: SW¼ of Section 29, Township 1 South, Range 26 East, in Yellowstone County

2. *Description of Project*: Montana-Dakota proposes to operate a LFG extraction and purification facility at the City of Billings Municipal Solid Waste Landfill. The facility will collect the LFG from wells, purify it, and distribute it to customers on the company's distribution system or sell the purified product as pipeline quality natural gas. Tail gas streams from the purification process will be combusted either in flares or RICE-driven electric generators. A utility flare will serve as a backup pollution control device capable of combusting the entire LFG stream in instances where the facility cannot purify the LFG.

3. *Objectives of Project*: The objective of the project is to capture the LFG gas that is produced from decomposing landfill waste, purify it, and sell it as pipeline quality natural gas.

4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because Montana-Dakota demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in MAQP #4479-00.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources				X		Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats
B. Water Quality, Quantity and Distribution
C. Geology and Soil Quality, Stability and Moisture
D. Vegetation Cover, Quantity, and Quality

The Montana-Dakota LFG extraction facility would be considered a minor source of emissions and would result in a slight increase in NO_x, CO, VOC, SO_2, and PM_{10}. However, the facility would be located within and immediately adjacent to an existing landfill and would encompass approximately 25-30 acres of the 120 acre landfill site. Therefore, only minor effects on terrestrial and aquatic life and habitats, water quality, quantity and distribution, geology and soil quality, stability, and moisture, and vegetation cover, quantity, and quality would be expected as a result of the proposed facility.

E. Aesthetics

The proposed facility would require some construction of buildings and equipment that would be visible. However, the facility would be located within and immediately adjacent to the boundaries of an existing landfill and would encompass approximately 25-30 acres of the 120 acre landfill site. The generator engines would create additional noise in the area. The nearest residential buildings to the initial phase of the proposed site (gas extraction wells) would be approximately 1,000 feet to the west. The future expansion of the proposed facility would be approximately 621 feet from a residential trailer park community. The process equipment location would be approximately 3,675 feet from the nearest residential building. Therefore, only minor effects on aesthetics would be expected as a result of the proposed facility.

F. Air Quality

The air quality impacts from the facility would be minor because MAQP #4479-00 would include conditions limiting emissions of regulated pollutants. The facility would be located at an existing landfill and would encompass approximately 25-30 acres of the 120 acre landfill

site. In addition, the facility would be considered a minor source of air pollution by industrial standards and would be located in an area where good air dispersion would occur. Therefore, air quality impacts would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The applicant contacted the Montana Natural Heritage Program (MNHP) to identify any species of concern in the vicinity of the City of Billings Municipal Solid Waste Landfill. The MNHP identified six species of concern that could potentially occupy the same area as the proposed LFG extraction facility. These are the bald eagle, spotted bat, spiny softshell turtle, greater short-horned lizard, western hog-nosed snake, and milksnake. However, the proposed site of the LFG extraction system would be within and immediately adjacent to the City of Billings Municipal Solid Waste Landfill which is owned by the city of Billings and is currently an industrial site. The site is an active landfill and no native wildlife habitat exists within the landfill. Some equipment would be installed on one acre of undisturbed land adjacent to the landfill. Considering that the proposed facility would be a minor source of emissions and be located primarily on an existing industrial site with no native wildlife habitat, no impacts to any unique endangered, fragile, or limited environmental resources are expected.

H. Demands on Environmental Resource of Water, Air and Energy

The proposed facility would require that three-phase 480-volt power be brought into the site to power 2,100 amps of service. The facility could also potentially utilize some water for dust control on access roads. Part of the project objective would be to use some tail gas exhaust from the LFG purification process to operate RICE-driven electric generators to reduce the demand for energy. The demands on environmental resources of water, air, and energy would be minor because the project would be considered small by industrial standards and would be producing a portion of its own energy requirements during normal operation.

I. Historical and Archaeological Sites

The Department contacted the Montana Historical Society for a cultural resource file search for the area of the proposed project location. According to their records there are no previously recorded sites in the area of the proposed project location. The location is a currently active landfill and no new historical or archaeological sites are expected to be found within the proposed project area.

J. Cumulative and Secondary Impacts

Cumulative or secondary impacts are expected to be minor as a result of the proposed project. There will be some increase in air pollutant emissions in the area. The facility will require the construction of some buildings and equipment, along with the installation of electric service. The facility would be considered a minor source of emissions by industrial standards and not expected to have more than a minor cumulative and secondary impacts.

8. The following table summarizes the potential economic and social effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population				X		Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The operation would cause no disruption to the native or traditional lifestyles or communities of the area because the facility would be located within and immediately adjacent to an existing landfill. No current native or traditional lifestyles or communities exist at the proposed site location.

B. Cultural Uniqueness and Diversity

The operation would have no impact on the cultural uniqueness and diversity of the area because the facility would be located within and immediately adjacent to an existing landfill. No current culturally unique or diverse activities are occurring at the proposed site location.

C. Local and State Tax Base and Tax Revenue

The project would have a minor effect on the local and state tax base and revenue due to the taxes generated from the purchase of supplies and the employee payroll.

D. Agricultural or Industrial Production

The proposed project would not displace or otherwise affect any agricultural land or practices because the facility would be located within and immediately adjacent to an existing landfill. The proposed operations would have a minor affect on the local industrial production of pipeline quality natural gas.

E. Human Health

Permit #4479-00 would incorporate conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed operations would not affect any access to or aesthetic attribute of recreational and wilderness activities in the area.

G. Quantity and Distribution of Employment

The proposed project would employ two full time employees to operate and maintain the proposed system. The impact to the quantity and distribution of employment in the local community would be minor.

H. Distribution of Population

The proposed operations would not disrupt the normal population distribution in the area because the facility would be located within and immediately adjacent to an existing landfill. No current population exists on the existing landfill or on the proposed development site adjacent to the landfill.

I. Demands for Government Services

Government services would be required for acquiring the appropriate permits from government agencies. In addition, the permitted sources of emissions would be subject to periodic inspections by government personnel. Demands for government services would be minor.

J. Industrial and Commercial Activity

The level of industrial or commercial activity would experience a minor increase as a result of the proposed facility's intent to recover natural gas and distribute it to customers on the company's distribution system or sell it on the market.

K. Locally Adopted Environmental Plans and Goals

The Billings area is designated as an attainment area with a Limited Maintenance Plan for CO and certain industrial sources are subject to control provisions under the Billings/Laurel SO_2 control plan. The Department believes that Montana-Dakota would be expected to operate in compliance with all applicable state rules and regulations as outlined in MAQP #4479-00 which are designed to be protective of air quality standards. The proposed facility is a minor source of all regulated air pollutants and would not be expected to interfere with the CO and SO_2 plans in the area.

L. Cumulative and Secondary Impacts

Overall, the revenue generated with this project would result in minor cumulative or secondary impacts that affect the economic and social environment in the immediate area. Air pollution from the facility would be controlled by Department determined BACT and conditions in MAQP #4479-00. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as outlined in MAQP #4479-00.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of LFG extraction and purification facility. MAQP #4479-00 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Ed Warner
Date: 10/29/09