

May 18, 2023

Derek Kramer, Chief Operating Officer
Lightning Renewables, LLC.
Missoula RNG
4444 Westheimer Road, Suite G450
Houston, TX 77027

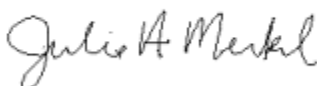
Sent via email: dkramer@archaea.energy

RE: Final Decision for MAQP #5286-00

Dear Mr. Kramer:

Montana Air Quality Permit (MAQP) #5286-00 is deemed final as of May 18, 2023, by DEQ. This permit is for a landfill gas processing system. All conditions of the Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For DEQ,



Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626



John P. Proulx
Air Quality Engineer
Air Quality Bureau
(406) 444-5391

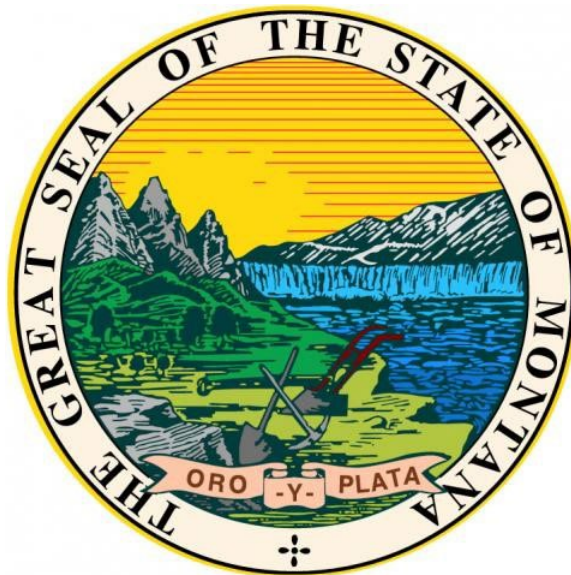
Enclosures

**Montana Department of Environmental Quality
Air, Energy & Mining Division
Air Quality Bureau**

Montana Air Quality Permit #5286-00

Lightning Renewables, LLC.
Missoula RNG
4444 Westheimer Road, Suite G450
Houston, TX 77027

May 18, 2023



MONTANA AIR QUALITY PERMIT

Issued To: Lightning Renewables, LLC
dba Lightning Renewables -
Missoula RNG Facility
3737 Coal Mine Rd
Missoula, MT 59802

MAQP: #5286-00
Application Complete: 02/21/2023
Preliminary Determination Issued: 03/29/2023
Department's Decision Issued: 05/02/2023
Permit Final: 05/18/2023

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Lightning Renewables, LLC dba Lightning Renewables – Missoula RNG facility (Lightning Renewables), 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

Lightning Renewables proposes to install and operate a landfill gas processing system for the purpose of collecting, refining, and injecting renewable natural gas from an existing landfill into an existing natural gas transmission pipeline. Proposed equipment includes:

- Thermal recuperative oxidizer (TRO)
- Shrouded Backup flare
- 324 horsepower (hp) diesel generator
- Associated equipment including a closed system processing treatment train (treatment train) which conditions the waste gas received from the landfill allowing for the methane to be recovered and for the waste gases to be combusted either in the TRO or Backup flare.

B. Plant Location

The Lightning Renewables landfill gas collection system will be located approximately 0.6 miles from the nearest commercial facility and 0.44 miles from the nearest private farmstead which is located directly east of the proposed pad for the new equipment. The proposed pad will be located within Section 5, Township 13 North and Range 19 West. The surrounding area property is generally identified as “landfill” with legal parcels both under the ownership of Allied Waste and BFI Waste Systems. Existing ownership of Allied Waste and BFI Waste Systems are within Sections 5, 8, and 9 within Township 13 North and Range 19 West. Gas collection will occur in those areas producing enough methane from decomposing waste. The physical address of Lightning Renewables is 3737 Coal Mine Road, Missoula MT. The physical pad site is located within a legal parcel owned and operated as a landfill by Allied Waste Systems of Montana, LLC. Lightning Renewables will operate independent of the landfill.

Section II: Conditions and Limitations

A. Emission Limitations

1. Lightning Renewables shall install and continuously operate process instrumentation to demonstrate that a minimum temperature of 1500 F (on a 15-minute rolling average) is being maintained whenever waste gas is being combusted in the TRO (ARM 17.8.749 and ARM 17.8.752).
2. Lightning Renewables shall not send waste gases to the TRO until the TRO temperatures have achieved 1500 degrees Fahrenheit (°F) and stabilized according to permit condition Section II.A.1 (ARM 17.8.749).
3. Lightning Renewables shall use pipeline quality natural gas as supplemental fuel for the backup flare and TRO and maintain good combustion practices to minimize emissions (ARM 17.8.749 and ARM 17.8.752).
4. Lightning Renewables shall install a TRO with design specifications for no less than 99.0 percent destruction efficiency or 20 parts per million volume (ppmv) as hexane (ARM 17.8.749 and ARM 17.8.752).
5. Lightning Renewables shall install a shrouded flare with design specifications for no less than 98.0 percent destruction efficiency (ARM 17.8.749 and ARM 17.8.752).

6. Emissions from TRO shall not exceed the following based on a 1-hour average (ARM 17.8.749 and ARM 17.8.752):

Oxides of Nitrogen (NO_x) – 1.2 lb/hr

Carbon Monoxide (CO) – 2.4 pounds per hour (lb/hr)

Volatile Organic Compounds (VOC) – 1.5 lb/hr

Sulphur Dioxide (SO₂) – 0.81 lb/hr

Hazardous Air Pollutants (HAPs) – . 4 lb/hr

Total Particulate Matter (PM_{Tot}) – 0.3 lb/hr

Filterable and Condensable PM with an aerodynamic diameter of 10 microns or less (PM₁₀) – 0.3 lb/hr

Filterable and Condensable PM with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}) – 0.3 lb/hr

7. Lightning Renewables shall install, operate, and maintain a shrouded “backup” flare to control emissions while the TRO is nonoperational (ARM 17.8.749 and ARM 17.8.752).
8. Emissions from backup flare shall not exceed the following based on a 1-hour average (ARM 17.8.749):

Oxides of Nitrogen (NO_x) – 5.6 lb/hr

Carbon Monoxide (CO) – 24.3 pounds per hour (lb/hr)

Volatile Organic Compounds (VOC) – 0.52 lb/hr

Sulphur Dioxide (SO₂) – 0.81 lb/hr

Hazardous Air Pollutants (HAPs) – .42 lb/hr
Total Particulate Matter (PM) – 1.5 lb/hr
Filterable and Condensable PM with an aerodynamic diameter of 10 microns or less (PM₁₀) – 1.5 lb/hr
Filterable and Condensable PM with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}) – 1.5 lb/hr

9. Lightning Renewables shall limit heat input to the backup flare to 513,179 MMBtu/yr within a calendar year (or on a rolling 12-month basis if better approach) (ARM 17.8.749).
10. Lightning Renewables shall monitor and record the heat input to the backup flare in units of MMBtu/yr to facilitate compliance with condition Section II.A.9 (ARM 17.8.749).
11. Lightning Renewables shall limit the hours of operation of the backup flare to 7,000 hours per calendar year (hr/yr) (ARM 17.8.1204).
12. Lightning Renewables shall record and maintain the individual hours of operation of the TRO and backup flare (ARM 17.8.749 and ARM 17.8.1212).
13. Lightning Renewables shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and 40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, for any applicable diesel engine (ARM 17.8.340; 40 CFR 60, Subpart IIII; ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).
14. Lightning Renewables shall not cause or authorize emissions to be discharged into the outdoor atmosphere from the TRO or shrouded flare that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.316).
15. Lightning Renewables 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).
16. Lightning Renewables 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).

B. Testing Requirements

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

2. Lightning Renewables shall conduct initial source testing within 180 days of the initial startup of the TRO to demonstrate the destruction efficiency of the TRO to demonstrate compliance with the minimum destruction efficiency of either 99.0 percent or an outlet concentration of 20 ppmv of hexane.

Lightning Renewables shall utilize EPA Methods 25A, 7E, & 10 and/or equivalent methods to determine/validate VOC, NO_x, & CO destruction performance respectively. Testing for NO_x and CO shall occur concurrently (ARM 17.8.749).

3. Lightning Renewables shall conduct weekly observations for visible opacity of the TRO or flare, whichever is in operation. If visible opacity is observed, Lightning Renewables shall conduct an EPA Method 9 Visible Opacity determination to confirm opacity limits in Section II.A.14 (ARM 17.8.749).
4. In lieu of testing on the backup flare, Lightning Renewables shall submit the final design specifications for the backup flare installed for the project with an intended minimum design of 98.0 percent destruction efficiency. Design specifications shall include the calculations to support the calculated residence time and design minimum operating temperature (ARM 17.8.749).
5. The Department of Environmental Quality (DEQ) may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Lightning Renewables 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). Lightning Renewables shall submit the following information annually to DEQ by March 1 of each year; the information may be submitted along with the annual emission inventory (ARM 17.8.505).

- a. hours of operation of the TRO
 - b. hours of operation of the backup flare
 - c. weekly opacity observations
 - d. EPA Method 9 Test results
2. Lightning Renewables 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 DEQ, 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 Lightning Renewables 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. These records may be stored at a location other than the plant site upon approval by the Department (ARM 17.8.749).
4. Lightning Renewables shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.749 and ARM 17.8.1204).

D. Notifications

Lightning Renewables shall provide the Department with written notification of the following information within the specified time periods (ARM 17.8.749):

Start-up date of the TRO and backup flare within 15 working days of the start-up date of each unit

SECTION III: General Conditions

- A. Inspection – Lightning Renewables 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 such as Continuous Emission Monitoring Systems (CEMS) or Continuous Emission Rate Monitoring Systems (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 Lightning Renewables fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Lightning Renewables 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 Lightning Renewables 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).

Montana Air Quality Permit Analysis
Lightning Renewables, LLC
MAQP #5286-00

I. Introduction/Process Description

Lightning Renewables, LLC dba Lightning Renewables – Missoula RNG Facility (Lightning Renewables) proposes to install and operate a landfill gas (LFG) processing system. The legal address of the facility is Section 5, Township 13 North, and Range 19 West. The physical address is 3737 Cole Mine Road, Missoula MT. The LFG processing facility will be located at an existing municipal solid waste landfill owned and operated by Allied Waste Systems of Montana, LLC (Allied Waste). Lightning Renewables will operate independent of the landfill.

A. Permitted Equipment

Lightning Renewables proposes to install and operate a landfill gas processing system for the purpose of collecting, refining, and injecting renewable natural gas from an existing landfill into an existing natural gas pipeline. Proposed equipment include:

- Thermal recuperative oxidizer (TRO)
- Shrouded Backup flare
- 324 horsepower (hp) diesel generator
- Associated equipment including a closed system processing treatment train (treatment train) which conditions the waste gas received from the landfill allowing for the methane to be recovered and for the waste gases to be combusted either in the TRO or Backup flare.

B. Source Description

Lightening Renewables Missoula RNG plant will utilize landfill gas (LFG) generated from the Allied Waste as feedstock. The LFG received at Missoula RNG will undergo processing, consisting of dewatering/moisture removal, sulfur compound removal, filtration, temperature swing adsorption, membrane separation, and pressure swing adsorption. The refined RNG will consist of greater than 95% methane, that will be compressed and injected into a nearby natural gas transmission pipeline. The project proposes thermal oxidizer pollution control equipment, a backup flare, and a diesel-fired emergency generator.

Currently, all landfill gases are collected at Allied Waste and are vented to an existing flare where they are combusted without the ability to recover any of the methane for beneficial use. The Allied Waste flare will continue to remain as a secondary backup for the new Lightning Renewables facility should Lightning Renewables suffer process upsets where waste gases are unable to be combusted by the new Lightning Renewables backup flare. Allied Waste currently holds an existing Title V Operating Permit (#OP2831-07) which authorizes the operation of the gas collection system and existing flare. The Title V Operating Permit for Allied Waste will remain in effect regardless of the status of this Montana Air Quality Permit (MAQP) being issued for Lightning Renewables.

The Lightning Renewables backup flare has 4 feasible modes of operation:

Mode 1: Land Fill Gas (LFG) from the landfill that is received during a Lightning Renewables power outage and, consequently is sent to the flare after sulfur removal but prior to refinement.

Mode 2: LFG that is flared post-CO₂ removal due to process upset.

Mode 3: Off-specification product RNG of up to 97.5% CH₄ that is rejected by the pipeline for various reasons.

Mode 4: Temperature swing adsorption blowdown or vessel purge

C. Additional Information (Changes to an existing permit)

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

D. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
Archaea Energy	MAQP, Section II.A.1-2	Request minimum temperature align with manufacturer specifications provided in the application that states 1500 F (not 1800 F) for the TRO.	DEQ made the requested changes to the MAQP.
	MAQP, Section II.A.4	Request that the TRO limit allow 99.0 percent destruction efficiency or outlet concentration of 20 ppmv as hexane. This is in alignment with the manufacturer's guarantee and the emission calculations provided in the application. Section II.A.6, 8 – Comments on emission rates listed in the permit based on emission calculations submitted.	DEQ made the requested changes to the MAQP.

	MAQP, Section II.A.6, 8	Comments on emission rates listed in the permit based on emission calculations submitted.	DEQ made the requested changes to the MAQP.
	MAQP, Section II.A.10	Tracking of MMBtu on an annual basis	DEQ made the requested changes to the MAQP.
	MAQP, Section II.A.11-12	With the limit on MMBtu/yr in Condition 9, the hours of operation limit is redundant and not necessary. Lightning Renewables would prefer to [have] a single MMBtu/yr limit for the backup flare.	DEQ did not make the requested changes because they are Federally enforceable limits to maintain synthetic minor classification.
	MAQP, Section II.B.2	Based on the proposed revised language for Condition II.A.4, Lightning Renewables request the option to test for destruction efficiency or outlet concentration.	DEQ made the requested changes to the MAQP.
	MAQP Analysis, Section I.A-B	Introduction/Process Description and Source Description—wording edits proposed.	DEQ made the requested changes to the MAQP Analysis
	MAQP Analysis, Section IV	Emission Inventory – a comments on typos with respect to emission rates listed.	DEQ made the requested changes to the MAQP Analysis

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).

Lightning Renewables 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 PM₁₀
11. ARM 17.8.230 Fluoride in Forage

Lightning Renewables 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. (2) Under this rule, Lightning Renewables 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 particulate matter 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.
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). Lightning Renewables 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 17.8.341 Emission Standards for Hazardous Air Pollutants. This source shall comply with the standards and provisions of 40 CFR Part 61, as appropriate.

- a. 40 CFR 61, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAP Subpart as listed below:
 - b. 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 IIII 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. Lightning Renewables 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 of any pollutant. Lightning Renewables has a PTE greater than 25 tons per year of 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. Lightning Renewables 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.

Lightning Renewables submitted an affidavit of publication of public notice for the December 20, 2022, February 1, and the February 8, 2023, issues of The Missoulian, a newspaper of general circulation in the City of Missoula in Missoula 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 Lightning Renewables 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 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.
12. 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.

13. 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).
14. 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.
15. 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.
16. 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).
17. ARM 17.8.771 Mercury Emission Standards for Mercury-Emitting Generating Units. This rule identifies mercury emission limitation requirements, mercury control strategy requirements, and application requirements for mercury-emitting generating units.

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 tons/year of any pollutant;
 - b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ 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 #5286-00 for Lightning Renewables, the following conclusions were made:
 - a. The facility's PTE is less than 100 tons/year for any pollutant.
 - b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is subject to any current NSPS (40 CFR 60, Subparts A and IIII).
 - e. This facility is not subject to any current NESHAP standards (40 CFR 63, Subpart A and ZZZZ).
 - 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.
 - h. As allowed by ARM 17.8.1204(3), DEQ may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations which limit that source's potential to emit.
 - i. In applying for an exemption under this section, the owner or operator of the source shall certify to DEQ that the source's potential to emit, does not require the source to obtain an air quality operating permit.
 - ii. Any source that obtains a federally enforceable limit on potential to emit shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

Lightning Renewables has taken federally enforceable permit limits to keep potential emissions below major source permitting thresholds. Therefore, the facility is not a major source and, thus a Title V operating permit is not required.

DEQ determined that the annual reporting requirements contained in the permit are sufficient to satisfy this requirement.

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness.

Lightning Renewables shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

Based on these facts, the Department determined that Lightning Renewables will be a minor source of emissions as defined under Title V based on a requested federally enforceable permit limit.

III. BACT Determination

A BACT determination is required for each new or modified source. Lightning Renewables 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.

A BACT analysis was submitted by Lightning Renewables in permit application #5286-00, addressing some available methods of controlling emissions from landfill gasses. The Department reviewed these methods, as well as previous BACT determinations. The following control options have been reviewed by the Department in order to make the following BACT determination.

Control of Volatile Organic Compounds

Thermal Oxidation - A thermal oxidizer converts VOCs to the oxidation byproducts of CO₂ and water in a combustion chamber. Since the inlet waste gas stream temperature is generally much lower than that required for combustion, energy must be supplied to the thermal oxidizer to raise the waste gas temperature. Auxiliary fuel, such as natural gas, is used to ensure complete combustion of waste gases. This project proposes a TRO, where waste heat is captured in a heat exchanger and used to heat the inlet waste gas stream, thereby reducing auxiliary fuel input. A back-up flare is also proposed for startup, shutdown, and malfunction (SSM) situations. Thermal oxidizers are typically designed to meet a minimum of 98% VOC destruction efficiency.

Waste Gas Reduction Best Practices - A practical strategy to reduce the amount of waste gas emissions is to minimize the amount of waste gas produced. The RNG Plant is designed for continuous operation with routine maintenance performed to retain system uptime. Maintaining the RNG plant according to the manufacturers recommendations reduces the frequency, magnitude, and duration of flaring events. Use of the proposed back-up flare would be in startup, shutdown, and malfunction situations only.

Control of PM_{Tot}, PM₁₀, & PM_{2.5}

Total Particulate Matter (PM_{Tot}), Particulate Matter with an aerodynamic diameter of 10 microns or less (PM₁₀), PM with an aerodynamic diameter of 2.5 microns or less that are filterable and condensable (PM_{2.5Fil} and PM_{2.5Cond}), and Sulphur Dioxide(SO₂) are also generated as byproducts of combustion in the proposed thermal oxidizer natural gas burners. The following control

technologies are identified for control of PM_{Tot}, PM₁₀ and PM_{2.5}, and SO₂ emissions from similar natural gas combustion sources.

Use of Pipeline Quality Natural Gas – Limiting combustion in the thermal oxidizer burners to only pipeline quality natural ensures the fuel is free of impurities that can cause the formation of excess air pollutants. Lightning Renewables proposes to use only pipeline quality natural gas to operate the thermal oxidizer burners.

Good Combustion Practices – Good combustion practices refer to the operation of the proposed thermal oxidizers at high combustion efficiency, which reduces the products of incomplete combustion. The thermal oxidizers are designed to achieve maximum combustion efficiency. The manufacturer has provided operation and maintenance manuals that detail the required methods to achieve the highest levels of combustion efficiency. Lightning Renewables will operate and maintain the thermal oxidizers in accordance with the manufacturer provided instructions and best industry practices.

Lightning Renewables has proposed the use of a thermal oxidizer, flare, and good combustion practices as BACT. DEQ has reviewed the selected control options and compared them to other recently permitted, similar sources and concur that the thermal oxidizer and good combustion practices combined with pipeline quality natural gas constitutes BACT for the control of VOCs and HAPs.

IV. Emission Inventory

CONTROLLED Emission Source	tons/year							
	PM_{Tot}	PM₁₀	PM_{2.5}	NO_x	CO	VOC	SO₂	HAPs
Thermal Recuperative Oxidizer	0.87	0.87	0.87	5.19	10.38	6.18	3.55	1.75
Flare	5.14	5.15	5.15	18.71	85.28	1.82	2.84	1.46
Natural Gas Emissions – TRO	0.250	0.250	0.250	--	--	0.180	0.020	0.062
Natural Gas Emissions – Flare	0.003	0.003	0.003	0.003	0.035	0.002	0.000	0.001
Emergency Generator	0.015	0.015	0.015	0.532	0.134	0.532	0.001	0.532
Total Emissions	6.27	6.27	6.27	23.90	95.70	8.17	6.40	3.28

Notes:

1. Values in table reflect "controlled" cells from subsequent worksheets
2. The Flare calculations represent landfill gas emissions with no refinement
3. NO_x and CO TRO natural gas emissions are included in WG emissions factor, vender outlet guarantee.
4. PM emissions for the TRO and Flare are assumed to be PM_{2.5} Fil. and Cond.

Thermal Recuperative Oxidizer

Hours of Operation = 8,760.00 hours 8760 **hours**
pounds per ton = 0.000500 lb/ton 0.0005 **lb/ton**

PM Emissions:
PM Emissions = 0.872 ton/yr AP 42, Table 2.4-5 0.87 **ton/yr**

PM-10 Emissions:
Emission Factor = 0.199 lb/hr (Assume All PM is PM_{total}) 0.20 **lb/hr**
Calculation: ((8,760.00 hours) * (0.20 lb/hr) * (ton/2000 lb) = 0.872 ton/yr 0.87 **ton/yr**

PM2.5 Emissions

Emission Factor = 0.199 lb/hr (Assume All PM is PMTotal)	0.20	lb/hr
Calculation: ((8,760.00 hours) * (0.20 lb/hr) * (ton/2000 lb) = 0.872 ton/yr	0.87	ton/yr

NOx Emissions:

Emission Factor = 1.185 lb/hr Vendor Guarantee	1.185	lb/hr
Calculation: ((1.19 hours) * (0.20 lb/hr) * (ton/2000 lb) = 5.190 ton/yr	5.19	ton/yr

CO Emissions:

Emission Factor = 2.371 lb/hr Vendor Guarantee	2.371	lb/hr
Calculation: ((8,760.00 hours) * (2.37 lb/hr) * (ton/2000 lb) = 10.385 ton/yr	10.38	ton/yr

VOC Emissions:

Emission Factor = 1.41 lb/hr Vendor Guarantee	1.41	lb/hr
Calculation: ((8,760.00 hours) * (1.41 lb/hr) * (ton/2000 lb) = 6.176 ton/yr	6.18	ton/yr

SOx Emissions:

Emission Factor = 0.81 lb/hr Mass Balance/process design	0.81	lb/hr
Calculation: ((8,760.00 hours) * (0.810000 lb/hr) * (ton/2000 lb) = 3.548 ton/yr	3.54	ton/yr

HAPs Emissions:

Emission Factor = 0.4 lb/hr Sampling Data	0.4	lb/hr
Calculation: ((8,760 hours) * (0.4000 lb/hr) * (ton/2000 lb) = 1.752 ton/yr	1.75	ton/yr

Shrouded Flare

Hours of Operation = 7,000.00 hours	7000	hours
pounds per ton = 0.000500 lb/ton	0.0005	lb/ton

PM Emissions:

PM Emissions = 5.142 ton/yr (AP-42, Table 2.4-4)	5.14	ton/yr
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PM₁₀ Emissions:

Emission Factor = 1.469 lb/hr (Assume all PM is PM _{2.5})	1.47	lb/hr
Calculation: ((7,000.00 hours) * (1.47 lb/hr) * (ton/2000 lb) = 5.142 ton/yr	5.14	ton/yr

PM_{2.5} Emissions

Emission Factor = 1.47 lb/hr (Assume all PM is PM _{2.5})	1.47	lb/hr
Calculation: ((7,000.00 hours) * (1.47 lb/hr) * (ton/2000 lb) = 5.145 ton/yr	5.15	ton/yr

NO_x Emissions:

Emission Factor = 5.345 lb/hr AP 42, Section 13.5	5.345	lb/hr
Calculation: ((5.35 hours) * (1.47 lb/hr) * (ton/2000 lb) = 18.708 ton/yr	18.71	ton/yr

CO Emissions:

Emission Factor = 24.366 lb/hr AP 42, Section 13.5	24.366	lb/hr
Calculation: ((7,000.00 hours) * (24.37 lb/hr) * (ton/2000 lb) = 85.281 ton/yr	85.28	ton/yr

VOC Emissions:

Emission Factor = 0.519 lb/hr AP 42, Section 2.4.4.1	0.519	lb/hr
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Calculation: $((5.35 \text{ hours}) * (1.47 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 1.817 \text{ ton/yr}$ 1.82 ton/yr

SO_x Emissions:

Emission Factor = 0.81 lb/hr Mass Balance 8.10E-01 lb/hr

Calculation: $((5.35 \text{ hours}) * (1.47 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 2.835 \text{ ton/yr}$ 2.84 ton/yr

HAPs Emissions:

Emission Factor = 0.418 lb/hr Sampling Data 0.418 lb/hr

Calculation: $((7,000 \text{ hours}) * (0.4180 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 1.463 \text{ ton/yr}$ 1.46 ton/yr

Natural Gas Emissions - TRO

Hours of Operation = 8,760.00 hours 8760 hours

pounds per ton = 0.000500 lb/ton 0.0005 lb/ton

PM Emissions:

PM Emissions = 0.250 ton/yr Manufacturers Emission 0.25 ton/yr

PM₁₀ Emissions:

Emission Factor = 0.057 lb/hr Manufacturers Emission 0.06 lb/hr

Calculation: $((8,760.00 \text{ hours}) * (0.06 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.250 \text{ ton/yr}$ 0.25 ton/yr

PM_{2.5} Emissions

Emission Factor = 0.057 lb/hr Manufacturers Emission 0.06 lb/hr

Calculation: $((8,760.00 \text{ hours}) * (0.06 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.250 \text{ ton/yr}$ 0.25 ton/yr

NO_x Emissions:

Emission Factor = 1.185 lb/hr Vendor Guarantee 1.185 lb/hr

Calculation: $((1.19 \text{ hours}) * (0.66 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 5.190 \text{ ton/yr}$ 5.19 ton/yr

VOC Emissions:

Emission Factor = 0.041 lb/hr Vendor Guarantee 0.04 lb/hr

Calculation: $((8,760.00 \text{ hours}) * (0.04 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.180 \text{ ton/yr}$ 0.18 ton/yr

SO_x Emissions:

Emission Factor = 0.0045 lb/hr Mass Balance/process design 0.004500 lb/hr

Calculation: $((8,760.00 \text{ hours}) * (0.004500 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.020 \text{ ton/yr}$ 0.0197 ton/yr

HAPs Emissions:

Emission Factor = 0.0142 lb/hr Sampling Data 1.42E-02 lb/hr

Calculation: $((8,760 \text{ hours}) * (0.0142 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.062 \text{ ton/yr}$ 0.062 ton/yr

Natural Gas Emissions - Flare

Hours of Operation = 7,000.00 hours 7000 hours

pounds per ton = 0.000500 lb/ton 0.0005 lb/ton

PM Emissions:

PM Emissions = 0.003 ton/yr (Assume all PM < 1.0 um) 0.00266 ton/yr

PM₁₀ Emissions:

Emission Factor = 0.00076 lb/hr (AP-42, Table 2.4-4) 0.00076 lb/hr

Calculation: $((7,000.00 \text{ hours}) * (0.00 \text{ lb/hr}) * (\text{ton}/2000 \text{ lb})) = 0.003 \text{ ton/yr}$ 0.00266 ton/yr

PM_{2.5} Emissions		
Emission Factor = 0.00076 lb/hr (AP-42, Table 2.4-4)	0.00076	lb/hr
Calculation: ((7,000.00 hours) * (0.00 lb/hr) * (ton/2000 lb) = 0.003 ton/yr	0.00266	ton/yr
NO_x Emissions:		
Emission Factor = 0.00076 lb/hr Vendor Guarantee	0.00076	lb/hr
Calculation: ((0.00 hours) * (0.00 lb/hr) * (ton/2000 lb) = 0.003 ton/yr	0.00266	ton/yr
CO Emissions:		
Emission Factor = 0.01 lb/hr Vendor Guarantee	0.01	lb/hr
Calculation: ((7,000.00 hours) * (0.01 lb/hr) * (ton/2000 lb) = 0.035 ton/yr	0.035	ton/yr
VOC Emissions:		
Emission Factor = 0.00055 lb/hr Vendor Guarantee	0.00055	lb/hr
Calculation: ((7,000.00 hours) * (0.00 lb/hr) * (ton/2000 lb) = 0.002 ton/yr	0.00193	ton/yr
SO_x Emissions:		
Emission Factor = 0.00006 lb/hr Mass Balance/process design	0.000060	lb/hr
Calculation: ((7,000.00 hours) * (0.000060 lb/hr) * (ton/2000 lb) = 0.000 ton/yr	0.0002	ton/yr
HAPs Emissions:		
Emission Factor = 0.000189 lb/hr Sampling Data	1.89E-04	lb/hr
Calculation: ((7,000 hours) * (0.0002 lb/hr) * (ton/2000 lb) = 0.001 ton/yr	0.0006615	ton/yr

Emergency Diesel Engine

Note: Emissions are based on the power output of the engine (324 hp).

Operational Capacity of Engine = 324 hp	324	hp
Hours of Operation = 500.00 hours	500	hours
grams per pound = 0.002205 g/lb	0.00220	g/lb
	5	
PM Emissions:		
PM Emissions = 0.015 ton/yr (AP-42, Table 1.4-2)	0.0146	ton/yr
PM₁₀ Emissions:		
Emission Factor = 0.082 g/bhp-hr (Assumed all PM is PM _{2.5})	8.20E-02	g/bhp-hr
Calculation: (0.082 g/bhp-hr) * (324.0 hp) * (324 hp) * (0.002205 g/lb) * (0.0820 g/bhp-hr) * (ton/2000 lb) = 0.01 ton/yr	0.0146	ton/yr
PM_{2.5} Emissions		
Emission Factor = 0.082 g/bhp-hr (Assumed all PM is PM _{2.5})	8.20E-02	g/bhp-hr
Calculation: (0.082 g/bhp-hr) * (324.0 hp) * (324 hp) * (0.002205 g/lb) * (0.0820 g/bhp-hr) * (ton/2000 lb) = 0.01 ton/yr	0.0146	ton/yr
NO_x & VOC Emissions:		
Emission Factor = 2.98 g/bhp*hr Manufactures Emissions	2.98	g/bhp*hr
Calculation: (2.98 g/bhp*hr) * (324 hp) * (500 hours) * (0.002205 g/lb) * (ton/2000 lb) = 0.53 ton/yr	0.53	ton/yr
CO Emissions:		
Emission Factor = 0.75 g/bhp*hr Manufactures Emissions	0.75	g/bhp*hr

Calculation: $(0.75 \text{ g/bhp*hr}) * (324 \text{ hp}) * (500 \text{ hours}) * (0.002205 \text{ g/lb}) * (\text{ton}/2000 \text{ lb}) = 0.13 \text{ ton/yr}$ 0.13 **ton/yr**

VOC Emissions:

Emission Factor = 2.98 g/bhp*hr Manufactures Emissions 2.98 **g/bhp*hr**

Calculation: $(2.98 \text{ g/bhp*hr}) * (324 \text{ hp}) * (500 \text{ hours}) * (0.002205 \text{ g/lb}) * (\text{ton}/2000 \text{ lb}) = 0.53 \text{ ton/yr}$ 0.53 **ton/yr**

SO_x Emissions:

Emission Factor = 0.00152 lbs/MMBtu (AP-42, Table 1.4-2) 1.52E-03 **lbs/mmBtu**

Calculation: $(0.0015 \text{ lbs/MMBtu}) * (28 \text{ gal/hr}) * (0.137 \text{ MMBtu/gal}) * (500 \text{ hr/yr}) * (\text{ton}/2000 \text{ lb}) = 0.00 \text{ ton/yr}$ 0.00146 **ton/yr**

V. Existing Air Quality

The Lightning Renewables facility is located within an area of Missoula County that is designated as an Unclassifiable/Attainment area for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants with the exception of PM₁₀ and CO. The area where the facility is proposed to be located is considered a maintenance area for PM₁₀ and CO. Missoula maintains control of the measures for PM₁₀ and CO under their SIP approved Air Quality County Program. The CO and PM₁₀ emissions associated with the proposed action will not trigger any violations of the current Missoula County maintenance plan.

DEQ has determined that there will be no significant impacts to the NAAQS because the proposed equipment will be installed and operated in an already existing Municipal Solid Waste Landfill that currently burns the waste gas in a flare.

VI. Ambient Air Impact Analysis

Lightning Renewables potential to emit is less than 100 tons per year of NO_x and CO and below 50 tons per year for PM₁₀ and SO₂. Per DEQ guidance, air dispersion modeling is not required for the permit.

Missoula County maintains jurisdiction of the maintenance areas for PM₁₀ and CO thru their SIP approved air quality program. The proposed permit action would not trigger a violation of ambient air quality standards.

VII. Health Risk Assessment

A health risk assessment was conducted using AERSCREEN, an EPA approved screening model using indicated inputs for landfill gas analysis to determine if the proposed thermal oxidizer and shrouded flare comply 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, DEQ 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.

DEQ determined that the risks estimated in the risk assessment for the thermal oxidizer and the shrouded flare are in compliance with the requirement to demonstrate negligible risk to human health and the environment. As documented in the health risk assessment, 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 Chronic Noncancer Reference Exposure Level (CNCREL) hazard quotient is less than 1.0 as required to demonstrate compliance with the negligible risk requirement.

Health Risk Assessment:

AERSCREEN 21112 / AERMOD 22112

12/06/22

15:34:45

TITLE: ARCHAEA MISSOULA TRO SCENARIO

***** STACK PARAMETERS *****

SOURCE EMISSION RATE:	0.0522 g/s	0.414 lb/hr
STACK HEIGHT:	18.29 meters	60.00 feet
STACK INNER DIAMETER:	0.965 meters	38.00 inches
PLUME EXIT TEMPERATURE:	699.8 K	800.0 Deg F
PLUME EXIT VELOCITY:	8.099 m/s	26.57 ft/s
STACK AIR FLOW RATE:	12557 ACFM	
RURAL OR URBAN:	RURAL	

INITIAL PROBE DISTANCE =	5025. meters	16486. feet
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***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 15. meters - 5025. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	0.100	1.234	200.0	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 394.3 / 427.6 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Summer

ALBEDO: 0.18
BOWEN RATIO: 0.80
ROUGHNESS LENGTH: 0.100 (meters)

SURFACE FRICTION VELOCITY (U*) NOT

ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 06 15 15 01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS
-46.81	0.863	-9.000	0.020	-999.	1845.			1805.8	0.100	0.80	0.18	10.00

HT	REF	TA	HT
10.0	427.6		2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 11.3 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 16.8 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 3.4 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 20.2 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

10 01 05 15 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O	LEN	Z0	BOWEN	ALBEDO	REF	WS	
304.87	0.103	1.200	0.020	633.				76.	-1.0	0.100	0.80	0.18	0.50

HT	REF	TA	HT
10.0	394.3		2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 0.6 m/s
 STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 18.3 meters
 ESTIMATED FINAL PLUME RISE (non-downwash): 71.4 meters
 ESTIMATED FINAL PLUME HEIGHT (non-downwash): 89.7 meters

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
15.24	0.2054	2525.00	0.3296
25.00	0.4816	2550.00	0.3278
50.00	0.7247	2575.00	0.3259
75.00	0.7010	2600.00	0.3240
100.00	0.8740	2625.00	0.3221
125.00	0.9595	2650.00	0.3202
150.00	1.036	2675.00	0.3184
175.00	1.186	2700.00	0.3165
200.00	1.234	2725.00	0.3146
225.00	1.207	2750.00	0.3127
250.00	1.150	2775.00	0.3108
275.00	1.145	2800.00	0.3090
300.00	1.112	2825.00	0.3071
325.00	1.064	2850.00	0.3052
350.00	1.008	2875.00	0.3033
375.00	0.9624	2900.00	0.3015
400.00	0.9347	2925.00	0.2996
425.00	0.9014	2950.00	0.2978
450.00	0.8686	2975.00	0.2960
475.00	0.8400	3000.00	0.2941
500.00	0.8092	3025.00	0.2923
525.00	0.7772	3050.00	0.2917
550.00	0.7451	3075.00	0.2913
575.00	0.7133	3100.00	0.2910
600.00	0.6823	3125.00	0.2906
625.00	0.6523	3150.00	0.2902
650.00	0.6345	3175.00	0.2897
675.00	0.6310	3200.00	0.2893
700.00	0.6260	3225.00	0.2888
725.00	0.6193	3250.00	0.2883
750.00	0.6113	3275.00	0.2878
775.00	0.6022	3300.00	0.2873

800.00	0.5923	3325.00	0.2868
825.00	0.5818	3350.00	0.2862
850.00	0.5708	3375.00	0.2856
875.00	0.5595	3400.00	0.2850
900.00	0.5480	3425.00	0.2844
925.00	0.5365	3450.00	0.2838
950.00	0.5249	3475.00	0.2832
975.00	0.5134	3500.00	0.2825
1000.00	0.5114	3525.00	0.2819
1025.00	0.5099	3550.00	0.2812
1050.00	0.5079	3575.00	0.2805
1075.00	0.5053	3600.00	0.2798
1100.00	0.5023	3625.00	0.2791
1125.00	0.4989	3650.00	0.2784
1150.00	0.4951	3675.00	0.2777
1175.00	0.4911	3700.00	0.2769
1200.00	0.4867	3725.00	0.2762
1225.00	0.4822	3750.00	0.2754
1250.00	0.4775	3775.00	0.2747
1275.00	0.4726	3800.00	0.2739
1300.00	0.4676	3825.00	0.2732
1325.00	0.4625	3850.00	0.2724
1350.00	0.4574	3875.00	0.2716
1375.00	0.4521	3900.00	0.2708
1400.00	0.4468	3925.00	0.2700
1425.00	0.4415	3950.00	0.2692
1450.00	0.4362	3975.00	0.2684
1475.00	0.4309	4000.00	0.2676
1500.00	0.4256	4025.00	0.2668
1525.00	0.4203	4050.00	0.2660
1550.00	0.4150	4075.00	0.2652
1575.00	0.4098	4100.00	0.2644
1600.00	0.4046	4125.00	0.2636
1625.00	0.3994	4150.00	0.2627
1650.00	0.3943	4175.00	0.2619
1675.00	0.3892	4200.00	0.2611
1700.00	0.3842	4225.00	0.2602
1725.00	0.3799	4250.00	0.2594
1750.00	0.3775	4275.00	0.2586
1775.00	0.3750	4300.00	0.2577
1800.00	0.3725	4325.00	0.2569
1825.00	0.3701	4350.00	0.2561
1850.00	0.3695	4375.00	0.2552
1875.00	0.3688	4400.00	0.2544
1900.00	0.3679	4425.00	0.2535
1925.00	0.3670	4450.00	0.2527
1950.00	0.3660	4475.00	0.2519
1975.00	0.3650	4500.00	0.2510
2000.00	0.3638	4525.00	0.2502
2025.00	0.3626	4550.00	0.2493

2050.00	0.3613	4575.00	0.2485
2075.00	0.3600	4600.00	0.2476
2100.00	0.3586	4625.00	0.2468
2125.00	0.3571	4650.00	0.2460
2150.00	0.3556	4675.00	0.2451
2175.00	0.3541	4700.00	0.2443
2200.00	0.3525	4725.00	0.2435
2225.00	0.3509	4750.00	0.2426
2250.00	0.3492	4775.00	0.2418
2275.00	0.3476	4800.00	0.2410
2300.00	0.3459	4825.00	0.2401
2325.00	0.3441	4850.00	0.2393
2350.00	0.3424	4875.00	0.2385
2375.00	0.3406	4900.00	0.2376
2400.00	0.3388	4925.00	0.2368
2425.00	0.3370	4950.00	0.2360
2450.00	0.3352	4975.00	0.2352
2475.00	0.3333	5000.00	0.2343
2500.00	0.3315	5025.00	0.2335

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	1.234	1.234	1.111	0.7407	0.1234

DISTANCE FROM SOURCE 201.00 meters

IMPACT AT THE AMBIENT BOUNDARY	0.2054	0.2054	0.1848
	0.1232	0.2054E-01	DISTANCE FROM SOURCE 15.24 meters

TITLE: ARCHAEA MISSOULA FLARE SCENARIO - HOURLY

***** FLARE PARAMETERS *****

SOURCE EMISSION RATE:	0.0528 g/s	0.419 lb/hr
FLARE HEIGHT:	12.192 meters	40.00 feet
EFF RELEASE HEIGHT:	19.799 meters	64.96 feet
HEAT RELEASE RATE:	0.5509E+07 cal/sec	
HEAT LOSS FRACTION:	0.550	
EFF STACK DIAMETER:	1.556 meters	61.24 inches
EFF EXIT TEMPERATURE:	1273.0 K	1831.7 Deg F
EFF EXIT VELOCITY:	20.000 m/s	65.62 ft/s
RURAL OR URBAN:	RURAL	
INITIAL PROBE DISTANCE =	5025. meters	16486. feet

***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 15. meters - 5025. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	0.100	0.5127	225.0	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 394.3 / 427.6 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland

DOMINANT CLIMATE TYPE: Average Moisture

DOMINANT SEASON: Summer

ALBEDO: 0.18

BOWEN RATIO: 0.80

ROUGHNESS LENGTH: 0.100 (meters)

SURFACE FRICTION VELOCITY (U*) NOT

ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 06 21 21 01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-64.00	1.561	-9.000	0.020	-999.	4000.	7809.7	0.100	0.80	0.18	18.00
HT	REF TA	HT								
10.0	427.6	2.0								

WIND SPEED AT STACK HEIGHT (non-downwash):	20.7 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT:	18.1 meters
ESTIMATED FINAL PLUME RISE (non-downwash):	5.2 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):	23.3 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

10 01 16 21 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
726.07	0.115	1.800	0.020	1541.	89.	-1.0	0.100	0.80	0.18	0.50

HT	REF TA	HT

10.0	427.6	2.0

WIND SPEED AT STACK HEIGHT (non-downwash):	0.7 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT:	19.8 meters
ESTIMATED FINAL PLUME RISE (non-downwash):	566.6 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash):	586.4 meters

***** AERSCREEN AUTOMATED DISTANCES *****
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
-----		-----	
15.24	0.3806E-01	2525.00	0.7078E-01
25.00	0.8596E-01	2550.00	0.7009E-01
50.00	0.1207	2575.00	0.6941E-01
75.00	0.1209	2600.00	0.6873E-01
100.00	0.1297	2625.00	0.6807E-01
125.00	0.1517	2650.00	0.6741E-01
150.00	0.2382	2675.00	0.6676E-01
175.00	0.4052	2700.00	0.6612E-01
200.00	0.4881	2725.00	0.6548E-01
225.00	0.5127	2750.00	0.6485E-01
250.00	0.5099	2775.00	0.6423E-01
275.00	0.4909	2800.00	0.6362E-01
300.00	0.4642	2825.00	0.6301E-01
325.00	0.4531	2850.00	0.6241E-01
350.00	0.4355	2875.00	0.6182E-01
375.00	0.4143	2900.00	0.6128E-01
400.00	0.3916	2925.00	0.6103E-01
425.00	0.3686	2950.00	0.6078E-01
450.00	0.3648	2975.00	0.6053E-01
475.00	0.3602	3000.00	0.6028E-01
500.00	0.3529	3025.00	0.6002E-01
525.00	0.3437	3050.00	0.5976E-01
550.00	0.3334	3075.00	0.5950E-01
575.00	0.3223	3100.00	0.5924E-01
600.00	0.3108	3125.00	0.5897E-01
625.00	0.2991	3150.00	0.5871E-01
650.00	0.2875	3175.00	0.5844E-01
675.00	0.2761	3200.00	0.5817E-01
700.00	0.2650	3225.00	0.5790E-01
725.00	0.2543	3250.00	0.5762E-01

750.00	0.2499	3275.00	0.5735E-01
775.00	0.2482	3300.00	0.5708E-01
800.00	0.2458	3325.00	0.5680E-01
825.00	0.2430	3350.00	0.5653E-01
850.00	0.2396	3375.00	0.5625E-01
875.00	0.2360	3400.00	0.5597E-01
900.00	0.2320	3425.00	0.5570E-01
925.00	0.2279	3450.00	0.5542E-01
950.00	0.2236	3475.00	0.5514E-01
975.00	0.2192	3500.00	0.5486E-01
1000.00	0.2147	3525.00	0.5459E-01
1025.00	0.2102	3550.00	0.5431E-01
1050.00	0.2057	3575.00	0.5403E-01
1075.00	0.2012	3600.00	0.5376E-01
1100.00	0.1968	3625.00	0.5348E-01
1125.00	0.1924	3650.00	0.5321E-01
1150.00	0.1880	3675.00	0.5293E-01
1175.00	0.1838	3700.00	0.5266E-01
1200.00	0.1796	3725.00	0.5238E-01
1225.00	0.1755	3750.00	0.5211E-01
1250.00	0.1718	3775.00	0.5184E-01
1275.00	0.1683	3800.00	0.5157E-01
1300.00	0.1649	3825.00	0.5130E-01
1325.00	0.1615	3850.00	0.5103E-01
1350.00	0.1582	3875.00	0.5076E-01
1375.00	0.1550	3900.00	0.5049E-01
1400.00	0.1518	3925.00	0.5023E-01
1425.00	0.1487	3950.00	0.4996E-01
1450.00	0.1457	3975.00	0.4970E-01
1475.00	0.1428	4000.00	0.4944E-01
1500.00	0.1399	4025.00	0.4917E-01
1525.00	0.1371	4050.00	0.4891E-01
1550.00	0.1344	4075.00	0.4865E-01
1575.00	0.1317	4100.00	0.4839E-01
1600.00	0.1292	4125.00	0.4814E-01
1625.00	0.1266	4150.00	0.4788E-01
1650.00	0.1242	4175.00	0.4763E-01
1675.00	0.1218	4200.00	0.4737E-01
1700.00	0.1194	4225.00	0.4712E-01
1725.00	0.1172	4250.00	0.4687E-01
1750.00	0.1149	4275.00	0.4662E-01
1775.00	0.1128	4300.00	0.4638E-01
1800.00	0.1107	4325.00	0.4613E-01
1825.00	0.1086	4350.00	0.4588E-01
1850.00	0.1066	4375.00	0.4564E-01
1875.00	0.1047	4400.00	0.4540E-01
1900.00	0.1028	4425.00	0.4516E-01
1925.00	0.1010	4450.00	0.4492E-01
1950.00	0.9917E-01	4475.00	0.4468E-01
1975.00	0.9742E-01	4500.00	0.4444E-01

2000.00	0.9572E-01	4525.00	0.4421E-01
2025.00	0.9405E-01	4550.00	0.4397E-01
2050.00	0.9243E-01	4575.00	0.4374E-01
2075.00	0.9086E-01	4600.00	0.4351E-01
2100.00	0.8932E-01	4625.00	0.4328E-01
2125.00	0.8781E-01	4650.00	0.4305E-01
2150.00	0.8635E-01	4675.00	0.4283E-01
2175.00	0.8492E-01	4700.00	0.4260E-01
2200.00	0.8353E-01	4725.00	0.4238E-01
2225.00	0.8217E-01	4750.00	0.4216E-01
2250.00	0.8085E-01	4775.00	0.4194E-01
2275.00	0.7955E-01	4800.00	0.4172E-01
2300.00	0.7829E-01	4825.00	0.4150E-01
2325.00	0.7706E-01	4850.00	0.4128E-01
2350.00	0.7585E-01	4875.00	0.4107E-01
2375.00	0.7506E-01	4900.00	0.4085E-01
2400.00	0.7433E-01	4925.00	0.4064E-01
2425.00	0.7360E-01	4950.00	0.4043E-01
2450.00	0.7289E-01	4975.00	0.4022E-01
2475.00	0.7218E-01	5000.00	0.4001E-01
2500.00	0.7147E-01	5025.00	0.3981E-01

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.5142	0.5142	0.4628	0.3085	0.5142E-01

DISTANCE FROM SOURCE 234.00 meters

IMPACT AT THE
AMBIENT BOUNDARY 0.3806E-01 0.3806E-01 0.3426E-01 0.2284E-01 0.3806E-02

DISTANCE FROM SOURCE 15.24 meters

AERSCREEN 21112 / AERMOD 22112 12/06/22

15:36:56

TITLE: ARCHAEA MISSOULA FLARE SCENARIO - Annual

***** FLARE PARAMETERS *****

SOURCE EMISSION RATE: 0.0393 g/s 0.312 lb/hr
 FLARE HEIGHT: 12.192 meters 40.00 feet
 EFF RELEASE HEIGHT: 19.799 meters 64.96 feet
 HEAT RELEASE RATE: 0.5509E+07 cal/sec
 HEAT LOSS FRACTION: 0.550
 EFF STACK DIAMETER: 1.556 meters 61.24 inches
 EFF EXIT TEMPERATURE: 1273.0 K 1831.7 Deg F
 EFF EXIT VELOCITY: 20.000 m/s 65.62 ft/s
 RURAL OR URBAN: RURAL

INITIAL PROBE DISTANCE = 5025. meters 16486. feet

***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 15. meters - 5025. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	0.100	0.3818	225.0	SUM

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 394.3 / 427.6 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
 DOMINANT CLIMATE TYPE: Average Moisture
 DOMINANT SEASON: Summer

ALBEDO: 0.18
 BOWEN RATIO: 0.80
 ROUGHNESS LENGTH: 0.100 (meters) SURFACE

FRICITION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 06 21 21 01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	
-64.00	1.561	-9.000	0.020	-999.	4000.		7809.7	0.100	0.80	0.18	18.00

HT	REF TA	HT
10.0	427.6	2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 20.7 m/s
 STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 18.1 meters
 ESTIMATED FINAL PLUME RISE (non-downwash): 5.2 meters
 ESTIMATED FINAL PLUME HEIGHT (non-downwash): 23.3 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

10 01 16 21 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	
726.07	0.115	1.800	0.020	1541.		89.	-1.0	0.100	0.80	0.18	0.50

HT	REF TA	HT
10.0	427.6	2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 0.7 m/s
 STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 19.8 meters
 ESTIMATED FINAL PLUME RISE (non-downwash): 566.6 meters
 ESTIMATED FINAL PLUME HEIGHT (non-downwash): 586.4 meters

***** AERSCREEN AUTOMATED DISTANCES *****
 OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
15.24	0.2834E-01	2525.00	0.5270E-01
25.00	0.6401E-01	2550.00	0.5219E-01
50.00	0.8986E-01	2575.00	0.5168E-01
75.00	0.9003E-01	2600.00	0.5118E-01
100.00	0.9657E-01	2625.00	0.5069E-01
125.00	0.1129	2650.00	0.5020E-01
150.00	0.1774	2675.00	0.4971E-01
175.00	0.3017	2700.00	0.4923E-01
200.00	0.3635	2725.00	0.4876E-01
225.00	0.3818	2750.00	0.4829E-01
250.00	0.3797	2775.00	0.4783E-01
275.00	0.3655	2800.00	0.4737E-01
300.00	0.3457	2825.00	0.4692E-01
325.00	0.3374	2850.00	0.4648E-01
350.00	0.3243	2875.00	0.4604E-01
375.00	0.3085	2900.00	0.4563E-01
400.00	0.2916	2925.00	0.4545E-01
425.00	0.2744	2950.00	0.4526E-01
450.00	0.2717	2975.00	0.4508E-01
475.00	0.2682	3000.00	0.4489E-01
500.00	0.2628	3025.00	0.4470E-01
525.00	0.2560	3050.00	0.4450E-01
550.00	0.2483	3075.00	0.4431E-01
575.00	0.2400	3100.00	0.4411E-01
600.00	0.2314	3125.00	0.4392E-01
625.00	0.2227	3150.00	0.4372E-01
650.00	0.2141	3175.00	0.4352E-01
675.00	0.2056	3200.00	0.4331E-01
700.00	0.1974	3225.00	0.4311E-01
725.00	0.1894	3250.00	0.4291E-01

750.00	0.1861	3275.00	0.4271E-01
775.00	0.1848	3300.00	0.4250E-01
800.00	0.1831	3325.00	0.4230E-01
825.00	0.1809	3350.00	0.4209E-01
850.00	0.1784	3375.00	0.4189E-01
875.00	0.1757	3400.00	0.4168E-01
900.00	0.1728	3425.00	0.4147E-01
925.00	0.1697	3450.00	0.4127E-01
950.00	0.1665	3475.00	0.4106E-01
975.00	0.1632	3500.00	0.4085E-01
1000.00	0.1599	3525.00	0.4065E-01
1025.00	0.1565	3550.00	0.4044E-01
1050.00	0.1532	3575.00	0.4024E-01
1075.00	0.1498	3600.00	0.4003E-01
1100.00	0.1465	3625.00	0.3983E-01
1125.00	0.1433	3650.00	0.3962E-01
1150.00	0.1400	3675.00	0.3942E-01
1175.00	0.1368	3700.00	0.3921E-01
1200.00	0.1337	3725.00	0.3901E-01
1225.00	0.1307	3750.00	0.3881E-01
1250.00	0.1279	3775.00	0.3860E-01
1275.00	0.1253	3800.00	0.3840E-01
1300.00	0.1228	3825.00	0.3820E-01
1325.00	0.1203	3850.00	0.3800E-01
1350.00	0.1178	3875.00	0.3780E-01
1375.00	0.1154	3900.00	0.3760E-01
1400.00	0.1131	3925.00	0.3740E-01
1425.00	0.1108	3950.00	0.3720E-01
1450.00	0.1085	3975.00	0.3701E-01
1475.00	0.1063	4000.00	0.3681E-01
1500.00	0.1042	4025.00	0.3662E-01
1525.00	0.1021	4050.00	0.3642E-01
1550.00	0.1001	4075.00	0.3623E-01
1575.00	0.9810E-01	4100.00	0.3604E-01
1600.00	0.9617E-01	4125.00	0.3585E-01
1625.00	0.9429E-01	4150.00	0.3566E-01
1650.00	0.9246E-01	4175.00	0.3547E-01
1675.00	0.9067E-01	4200.00	0.3528E-01
1700.00	0.8894E-01	4225.00	0.3509E-01
1725.00	0.8724E-01	4250.00	0.3490E-01
1750.00	0.8559E-01	4275.00	0.3472E-01
1775.00	0.8399E-01	4300.00	0.3453E-01
1800.00	0.8242E-01	4325.00	0.3435E-01
1825.00	0.8090E-01	4350.00	0.3417E-01
1850.00	0.7941E-01	4375.00	0.3399E-01
1875.00	0.7797E-01	4400.00	0.3381E-01
1900.00	0.7656E-01	4425.00	0.3363E-01
1925.00	0.7518E-01	4450.00	0.3345E-01
1950.00	0.7385E-01	4475.00	0.3327E-01
1975.00	0.7254E-01	4500.00	0.3309E-01

2000.00	0.7127E-01	4525.00	0.3292E-01
2025.00	0.7004E-01	4550.00	0.3275E-01
2050.00	0.6883E-01	4575.00	0.3257E-01
2075.00	0.6766E-01	4600.00	0.3240E-01
2100.00	0.6651E-01	4625.00	0.3223E-01
2125.00	0.6539E-01	4650.00	0.3206E-01
2150.00	0.6430E-01	4675.00	0.3189E-01
2175.00	0.6324E-01	4700.00	0.3172E-01
2200.00	0.6220E-01	4725.00	0.3156E-01
2225.00	0.6119E-01	4750.00	0.3139E-01
2250.00	0.6020E-01	4775.00	0.3123E-01
2275.00	0.5924E-01	4800.00	0.3106E-01
2300.00	0.5830E-01	4825.00	0.3090E-01
2325.00	0.5738E-01	4850.00	0.3074E-01
2350.00	0.5648E-01	4875.00	0.3058E-01
2375.00	0.5589E-01	4900.00	0.3042E-01
2400.00	0.5535E-01	4925.00	0.3026E-01
2425.00	0.5481E-01	4950.00	0.3011E-01
2450.00	0.5427E-01	4975.00	0.2995E-01
2475.00	0.5375E-01	5000.00	0.2980E-01
2500.00	0.5322E-01	5025.00	0.2964E-01

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	0.3829	0.3829	0.3446	0.2297	0.3829E-01

DISTANCE FROM SOURCE 234.00 meters

IMPACT AT THE
AMBIENT BOUNDARY 0.2834E-01 0.2834E-01 0.2551E-01 0.1701E-01 0.2834E-02

DISTANCE FROM SOURCE 15.24 meters

Archaea Missoula RNG - Human Health Risk Assessment

Appendix D-1. Thermal Oxidizer Toxic Risk Assessment

Human Health Risk Assessment for the TOX

Cancer and Noncancer Chronic Modeled Concentration	1.23E-01	ug/m3 / lb/hr Total Hap Emission Rate
Noncancer Acute Modeled Concentration	1.23E+00	ug/m3 / lb/hr Total Hap Emission Rate

Stack Parameters (Exhaust Stack)

Stack Height (ft)	Stack Diameter (in)	Stack Temp (F)	Stack Flow Rate (acfm)	Total HAP Hourly Emission Rate (lb/hr)
60	38	800	12,557	0.414

HAP Category / Pollutant Name	CAS #	Annual Fraction of all HAPS	Calculated Annual HAP Concentration (ug/m3)	1 hr Fraction of all HAPS	Calculated 1 hr HAP Concentration (ug/m3)	ARM 17.8.770 De Minimis Levels			Exceed ARM 17.8.770 Table 1?	Exceed ARM 17.8.770 Table 2 Chronic?	Exceed ARM 17.8.770 Table 2 Acute?
						Table 1 Cancer Annual (ug/m3)	Table 2 Noncancer Chronic Annual (ug/m3)	Table 2 Noncancer Acute Annual (ug/m3)			
1,1,1-Trichloroethane	71556	2.53E-05	3.12E-06	2.53E-05	3.12E-05	N/A	3.2000E+00	1.9000E+03	No	No	No
1,1,2,2-Tetrachloroethane	79345	3.08E-06	3.80E-07	3.08E-06	3.80E-06	1.7241E-03	N/A	N/A	No	No	No
1,1,2-Trichloroethane	79005	2.44E-06	3.02E-07	2.44E-06	3.02E-06	6.2500E-03	N/A	N/A	No	No	No
1,1-Dichloroethane	75343	1.14E-04	1.40E-05	1.14E-04	1.40E-04	N/A	N/A	N/A	No	No	No
1,1-Dichloroethene	75354	1.78E-06	2.19E-07	1.78E-06	2.19E-06	2.0000E-03	3.2000E-01	N/A	No	No	No
1,2,4-Trichlorobenzene	120821	9.31E-06	1.15E-06	9.31E-06	1.15E-05	N/A	N/A	N/A	No	No	No
1,2-Dichloroethane	107062	2.90E-04	3.58E-05	2.90E-04	3.58E-04	3.8462E-03	9.5000E-01	N/A	No	No	No
1,2-Dichloropropane	78875	3.52E-05	4.34E-06	3.52E-05	4.34E-05	N/A	4.0000E-02	N/A	No	No	No
1,3-Butadiene	106990	3.24E-05	4.00E-06	3.24E-05	4.00E-05	3.5714E-04	N/A	N/A	No	No	No
1,4-Dichlorobenzene	106467	2.16E-04	2.66E-05	2.16E-04	2.66E-04	9.0909E-03	8.0000E+00	N/A	No	No	No
2-Butanone	78933	2.07E-03	2.56E-04	2.07E-03	2.56E-03	N/A	1.0000E+01	N/A	No	No	No
2-Methylnaphthalene	91576	4.35E-07	5.36E-08	4.35E-07	5.36E-07	N/A	N/A	N/A	No	No	No
3-Methylcholanthrene	56495	3.26E-08	4.02E-09	3.26E-08	4.02E-08	N/A	N/A	N/A	No	No	No
7,12-Dimethylbenz(a)anthracene	57976	2.90E-07	3.58E-08	2.90E-07	3.58E-07	N/A	N/A	N/A	No	No	No
Acenaphthene	83329	3.26E-08	4.02E-09	3.26E-08	4.02E-08	N/A	N/A	N/A	No	No	No
Acenaphthylene	208968	3.26E-08	4.02E-09	3.26E-08	4.02E-08	N/A	N/A	N/A	No	No	No
Acetone	67641	2.84E-03	3.50E-04	2.84E-03	3.50E-03	N/A	N/A	N/A	No	No	No
Acrylonitrile	107131	1.36E-04	1.68E-05	1.36E-04	1.68E-04	1.4706E-03	2.0000E-02	N/A	No	No	No
Anthracene	120127	4.35E-08	5.36E-09	4.35E-08	5.36E-08	N/A	N/A	N/A	No	No	No
Arsenic	7440382	4.35E-06	5.36E-07	4.35E-06	5.36E-06	2.3256e-05	5.0000E-03	N/A	No	No	No
Benz(a)anthracene	56553	3.26E-08	4.02E-09	3.26E-08	4.02E-08	5.8824E-05	N/A	N/A	No	No	No
Benzene	71432	9.88E-04	1.22E-04	9.88E-04	1.22E-03	1.2048E-02	7.1000E-01	N/A	No	No	No
Benzo(a)pyrene	50328	2.17E-08	2.68E-09	2.17E-08	2.68E-08	5.8824E-05	N/A	N/A	No	No	No
Benzo(b)fluoranthene	205992	3.26E-08	4.02E-09	3.26E-08	4.02E-08	5.8824E-05	N/A	N/A	No	No	No
Benzo(g,h,i)perylene	191242	2.17E-08	2.68E-09	2.17E-08	2.68E-08	N/A	N/A	N/A	No	No	No
Benzo(k)fluoranthene	207089	3.26E-08	4.02E-09	3.26E-08	4.02E-08	5.8824E-05	N/A	N/A	No	No	No
Benzyl Chloride	100447	5.72E-06	7.06E-07	5.72E-06	7.06E-06	N/A	1.2000E-01	5.0000E-01	No	No	No
Beryllium	7440417	2.17E-07	2.68E-08	2.17E-07	2.68E-07	4.1667E-05	4.8000E-05	N/A	No	No	No
Bromodichloromethane	75274	3.00E-06	3.70E-07	3.00E-06	3.70E-06	N/A	N/A	N/A	No	No	No
Bromoform	75252	9.26E-06	1.14E-06	9.26E-06	1.14E-05	9.0909E-02	N/A	N/A	No	No	No
Bromomethane	74839	2.00E-06	2.46E-07	2.00E-06	2.46E-06	N/A	5.0000E-02	N/A	No	No	No
Cadmium	7440439	2.54E-05	3.13E-06	2.54E-05	3.13E-05	5.5556E-05	3.5000E-02	N/A	No	No	No
Carbon Disulfide	75150	5.26E-05	6.48E-06	5.26E-05	6.48E-05	N/A	7.0000E+00	N/A	No	No	No
Carbon Tetrachloride	56235	2.82E-06	3.48E-07	2.82E-06	3.48E-06	6.6667E-03	2.4000E-02	1.9000E+00	No	No	No
Carbonyl Sulfide	463581	2.64E-05	3.26E-06	2.64E-05	3.26E-05	N/A	N/A	N/A	No	No	No
Chlorobenzene	108907	2.06E-06	2.55E-07	2.06E-06	2.55E-06	N/A	7.0000E-01	N/A	No	No	No

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Chloroethane	75003	1.89E-04	2.33E-05	1.89E-04	2.33E-04	N/A	1.0000E+02	N/A	No	No	No
Chloroform	67663	2.19E-06	2.70E-07	2.19E-06	2.70E-06	4.3478E-03	3.5000E-01	N/A	No	No	No
Chloromethane	74873	3.24E-05	4.00E-06	3.24E-05	4.00E-05	N/A	N/A	N/A	No	No	No
Chromium	18540299	2.54E-05	3.13E-06	2.54E-05	3.13E-05	8.3333E-06	2.0000E-05	N/A	No	No	No
Chrysene	218019	3.26E-08	4.02E-09	3.26E-08	4.02E-08	N/A	N/A	N/A	No	No	No
cis-1,3-Dichloropropene	542756	2.03E-06	2.51E-07	2.03E-06	2.51E-06	N/A	2.0000E-01	N/A	No	No	No
Cobalt	7440484	1.52E-06	1.88E-07	1.52E-06	1.88E-06	N/A	N/A	N/A	No	No	No
Dibenzo(a,h)anthracene	53703	2.17E-08	2.68E-09	2.17E-08	2.68E-08	5.8824E-05	N/A	N/A	No	No	No
Dichlorobenzene	541731	2.35E-05	2.91E-06	2.35E-05	2.91E-05	N/A	N/A	N/A	No	No	No
Dichlorodifluoromethane	75718	5.32E-04	6.56E-05	5.32E-04	6.56E-04	N/A	N/A	N/A	No	No	No
Dichloromethane	75092	9.18E-04	1.13E-04	9.18E-04	1.13E-03	2.1277E-01	3.0000E+01	3.5000E+01	No	No	No
Dimethyl Sulfide	75183	6.19E-04	7.63E-05	6.19E-04	7.63E-04	N/A	N/A	N/A	No	No	No
Ethylbenzene	100414	4.34E-03	5.36E-04	4.34E-03	5.36E-03	N/A	1.0000E+01	N/A	No	No	No
Ethylene Dibromide	106934	3.44E-06	4.25E-07	3.44E-06	4.25E-06	4.5455E-04	4.6000E-02	N/A	No	No	No
Fluoranthene	206440	5.43E-08	6.70E-09	5.43E-08	6.70E-08	N/A	N/A	N/A	No	No	No
Fluorene	86737	5.07E-08	6.26E-09	5.07E-08	6.26E-08	N/A	N/A	N/A	No	No	No
Formaldehyde	50000	1.36E-03	1.68E-04	1.36E-03	1.68E-03	7.6923E-03	3.6000E-02	3.7000E+00	No	No	No
Hexachlorobutadiene	87683	9.56E-06	1.18E-06	9.56E-06	1.18E-05	4.5455E-03	N/A	N/A	No	No	No
Hexane	110543	3.57E-02	4.41E-03	3.57E-02	4.41E-02	N/A	2.0000E+00	N/A	No	No	No
Hydrogen Chloride	7647010	8.57E-01	1.06E-01	8.57E-01	1.06E+00	N/A	2.0000E-01	3.0000E+01	No	No	No
Hydrogen Fluoride	7664393	6.36E-02	7.85E-03	6.36E-02	7.85E-02	N/A	5.9000E-02	5.8000E+00	No	No	No
Hydrogen Sulfide	7783064	2.75E-04	3.39E-05	2.75E-04	3.39E-04	N/A	N/A	N/A	No	No	No
Indeno(1,2,3-cd)pyrene	193395	3.26E-08	4.02E-09	3.26E-08	4.02E-08	5.8824E-05	N/A	N/A	No	No	No
Lead	7439921	9.05E-06	1.12E-06	9.05E-06	1.12E-05	N/A	1.5000E-02	N/A	No	No	No
Manganese	7439965	6.88E-06	8.49E-07	6.88E-06	8.49E-06	N/A	5.0000E-04	N/A	No	No	No
Mercury	7439976	1.17E-05	1.44E-06	1.17E-05	1.44E-05	N/A	3.0000E-03	3.0000E-01	No	No	No
Methyl Isobutyl Ketone	108101	4.53E-04	5.59E-05	4.53E-04	5.59E-04	N/A	N/A	N/A	No	No	No
Methyl Mercaptan	74931	1.29E-04	1.60E-05	1.29E-04	1.60E-04	N/A	N/A	N/A	No	No	No
Methyl Tert Butyl Ether	1634044	7.38E-05	9.10E-06	7.38E-05	9.10E-05	N/A	3.0000E+01	N/A	No	No	No
Naphthalene	91203	1.10E-05	1.36E-06	1.10E-05	1.36E-05	N/A	1.4000E-01	N/A	No	No	No
Nickel	7440020	3.80E-05	4.69E-06	3.80E-05	4.69E-05	3.8462E-04	2.4000E-03	1.0000E-02	No	No	No
Phenanthrene	85018	3.08E-07	3.80E-08	3.08E-07	3.80E-07	N/A	N/A	N/A	No	No	No
Pyrene	129000	9.05E-08	1.12E-08	9.05E-08	1.12E-07	N/A	N/A	N/A	No	No	No
Selenium	7782492	4.35E-07	5.36E-08	4.35E-07	5.36E-07	N/A	5.0000E-03	2.0000E-02	No	No	No
Styrene	100425	4.01E-04	4.95E-05	4.01E-04	4.95E-04	N/A	1.0000E+01	N/A	No	No	No
t-1,2-Dichloroethene	156605	6.69E-05	8.26E-06	6.69E-05	8.26E-05	N/A	N/A	N/A	No	No	No
t-1,3-Dichloropropene	542756	2.03E-06	2.51E-07	2.03E-06	2.51E-06	N/A	2.0000E-01	N/A	No	No	No
Tetrachloroethene	127184	7.70E-04	9.50E-05	7.70E-04	9.50E-04	1.6949E-02	3.5000E-01	6.8000E+01	No	No	No
Toluene	108883	1.41E-02	1.74E-03	1.41E-02	1.74E-02	N/A	4.0000E+00	N/A	No	No	No
Trichloroethene	79016	3.85E-04	4.75E-05	3.85E-04	4.75E-04	5.0000E-02	6.4000E+00	N/A	No	No	No
Vinyl Acetate	108054	2.10E-06	2.60E-07	2.10E-06	2.60E-06	N/A	2.0000E+00	N/A	No	No	No
Vinyl Chloride	75014	5.04E-04	6.22E-05	5.04E-04	6.22E-04	1.2821E-03	N/A	N/A	No	No	No
Xylenes	1330207	1.10E-02	1.35E-03	1.10E-02	1.35E-02	N/A	3.0000E+00	4.4000E+01	No	No	No

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Trinity Consultants

Human Health Risk Assessment for the Flare Mode #2

Cancer and Noncancer Chronic Modeled Concentration	3.83E-02 ug/m3
Noncancer Acute Modeled Concentration	5.14E-01 ug/m3

Stack Height (ft)	Heat Release (cal/s)	Radiative Heat Loss Fraction	Total HAP Hourly Emission Rate (lb/hr)	Total HAP Annual Emission Rate (lb/hr)
40	5,509,047	0.55	0.419	0.312

HAP Category / Pollutant Name	CAS #	Annual Fraction of all HAPS	Calculated Annual HAP Concentration (ug/m3)	1 hr Fraction of all HAPS	Calculated 1 hr HAP Concentration (ug/m3)	ARM 17.8.770 De Minimis Levels		
						Table 1 Cancer Annual (ug/m3)	Table 2 Noncancer Chronic Annual (ug/m3)	Table 2 Noncancer Acute Annual (ug/m3)
1,1,1-Trichloroethane	71556	5.00E-05	1.91E-06	5.00E-05	2.57E-05	N/A	3.2000E+00	1.9000E+03
1,1,2,2-Tetrachloroethane	79345	6.09E-06	2.33E-07	6.09E-06	3.13E-06	1.7241E-03	N/A	N/A
1,1,2-Trichloroethane	79005	4.84E-06	1.85E-07	4.84E-06	2.49E-06	6.2500E-03	N/A	N/A
1,1-Dichloroethane	75343	2.25E-04	8.61E-06	2.25E-04	1.16E-04	N/A	N/A	N/A
1,1-Dichloroethene	75354	3.51E-06	1.35E-07	3.51E-06	1.81E-06	2.0000E-03	3.2000E-01	N/A
1,2,4-Trichlorobenzene	120821	1.84E-05	7.05E-07	1.84E-05	9.47E-06	N/A	N/A	N/A
1,2-Dichloroethane	107062	5.74E-04	2.20E-05	5.74E-04	2.95E-04	3.8462E-03	9.5000E-01	N/A
1,2-Dichloropropane	78875	6.96E-05	2.67E-06	6.96E-05	3.58E-05	N/A	4.0000E-02	N/A
1,3-Butadiene	106990	6.41E-05	2.45E-06	6.41E-05	3.29E-05	3.5714E-04	N/A	N/A
1,4-Dichlorobenzene	106467	4.26E-04	1.63E-05	4.26E-04	2.19E-04	9.0909E-03	8.0000E+00	N/A
2-Butanone	78933	4.10E-03	1.57E-04	4.10E-03	2.11E-03	N/A	1.0000E+01	N/A
2-Methylnaphthalene	91576	5.73E-09	2.19E-10	5.73E-09	2.95E-09	N/A	N/A	N/A
3-Methylcholanthrene	56495	4.30E-10	1.65E-11	4.30E-10	2.21E-10	N/A	N/A	N/A
7,12-Dimethylbenz(a)anthracene	57976	3.82E-09	1.46E-10	3.82E-09	1.97E-09	N/A	N/A	N/A
Acenaphthene	83329	4.30E-10	1.65E-11	4.30E-10	2.21E-10	N/A	N/A	N/A
Acenaphthylene	208968	4.30E-10	1.65E-11	4.30E-10	2.21E-10	N/A	N/A	N/A
Acetone	67641	5.62E-03	2.15E-04	5.62E-03	2.89E-03	N/A	N/A	N/A
Acrylonitrile	107131	2.69E-04	1.03E-05	2.69E-04	1.39E-04	1.4706E-03	2.0000E-02	N/A
Anthracene	120127	5.73E-10	2.19E-11	5.73E-10	2.95E-10	N/A	N/A	N/A
Arsenic	7440382	5.73E-08	2.19E-09	5.73E-08	2.95E-08	N/A	N/A	N/A
Benz(a)anthracene	56553	4.30E-10	1.65E-11	4.30E-10	2.21E-10	5.8824E-05	N/A	N/A
Benzene	71432	1.88E-03	7.19E-05	1.88E-03	9.66E-04	1.2048E-02	7.1000E-01	N/A
Benzo(a)pyrene	50328	2.87E-10	1.10E-11	2.87E-10	1.47E-10	5.8824E-05	N/A	N/A
Benzo(b)fluoranthene	205992	4.30E-10	1.65E-11	4.30E-10	2.21E-10	5.8824E-05	N/A	N/A
Benzo(g,h,i)perylene	191242	2.87E-10	1.10E-11	2.87E-10	1.47E-10	N/A	N/A	N/A
Benzo(k)fluoranthene	207089	4.30E-10	1.65E-11	4.30E-10	2.21E-10	5.8824E-05	N/A	N/A
Benzyl Chloride	100447	1.13E-05	4.33E-07	1.13E-05	5.82E-06	N/A	1.2000E-01	5.0000E-01
Beryllium	7440417	2.87E-09	1.10E-10	2.87E-09	1.47E-09	4.1667E-05	4.8000E-05	N/A
Bromodichloromethane	75274	5.94E-06	2.27E-07	5.94E-06	3.05E-06	N/A	N/A	N/A
Bromoform	75252	1.83E-05	7.02E-07	1.83E-05	9.42E-06	9.0909E-02	N/A	N/A
Bromomethane	74839	3.95E-06	1.51E-07	3.95E-06	2.03E-06	N/A	5.0000E-02	N/A
Cadmium	7440439	3.34E-07	1.28E-08	3.34E-07	1.72E-07	5.5556E-05	3.5000E-02	N/A
Carbon Disulfide	75150	1.04E-04	3.98E-06	1.04E-04	5.35E-05	N/A	7.0000E+00	N/A
Carbon Tetrachloride	56235	5.58E-06	2.14E-07	5.58E-06	2.87E-06	6.6667E-03	2.4000E-02	1.9000E+00
Carbonyl Sulfide	463581	5.23E-05	2.00E-06	5.23E-05	2.69E-05	N/A	N/A	N/A
Chlorobenzene	108907	4.08E-06	1.56E-07	4.08E-06	2.10E-06	N/A	7.0000E-01	N/A

[illegible]

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Chloroethane	75003	3.74E-04	1.43E-05	3.74E-04	1.92E-04	N/A	1.0000E+02	N/A	No	No	No
Chloroform	67663	4.33E-06	1.66E-07	4.33E-06	2.23E-06	4.3478E-03	3.5000E-01	N/A	No	No	No
Chloromethane	74873	6.41E-05	2.45E-06	6.41E-05	3.29E-05	N/A	N/A	N/A	No	No	No
Chromium	18540299	3.34E-07	1.28E-08	3.34E-07	1.72E-07	8.3333E-06	2.0000E-05	N/A	No	No	No
Chrysene	218019	4.30E-10	1.65E-11	4.30E-10	2.21E-10	N/A	N/A	N/A	No	No	No
cis-1,3-Dichloropropene	542756	4.02E-06	1.54E-07	4.02E-06	2.07E-06	N/A	2.0000E-01	N/A	No	No	No
Cobalt	7440484	2.01E-08	7.68E-10	2.01E-08	1.03E-08	N/A	N/A	N/A	No	No	No
Dibenzo(a,h)anthracene	53703	2.87E-10	1.10E-11	2.87E-10	1.47E-10	5.8824E-05	N/A	N/A	No	No	No
Dichlorobenzene	541731	3.11E-07	1.19E-08	3.11E-07	1.60E-07	N/A	N/A	N/A	No	No	No
Dichlorodifluoromethane	75718	1.05E-03	4.03E-05	1.05E-03	5.41E-04	N/A	N/A	N/A	No	No	No
Dichloromethane	75092	1.82E-03	6.96E-05	1.82E-03	9.34E-04	2.1277E-01	3.0000E+01	3.5000E+01	No	No	No
Dimethyl Sulfide	75183	1.22E-03	4.69E-05	1.22E-03	6.29E-04	N/A	N/A	N/A	No	No	No
Ethylbenzene	100414	8.60E-03	3.29E-04	8.60E-03	4.42E-03	N/A	1.0000E+01	N/A	No	No	No
Ethylene Dibromide	106934	6.81E-06	2.61E-07	6.81E-06	3.50E-06	4.5455E-04	4.6000E-02	N/A	No	No	No
Fluoranthene	206440	7.17E-10	2.74E-11	7.17E-10	3.68E-10	N/A	N/A	N/A	No	No	No
Fluorene	86737	6.69E-10	2.56E-11	6.69E-10	3.44E-10	N/A	N/A	N/A	No	No	No
Formaldehyde	50000	1.79E-05	6.86E-07	1.79E-05	9.21E-06	7.6923E-03	3.6000E-02	3.7000E+00	No	No	No
Hexachlorobutadiene	87683	1.89E-05	7.24E-07	1.89E-05	9.72E-06	4.5455E-03	N/A	N/A	No	No	No
Hexane	110543	6.57E-03	2.52E-04	6.57E-03	3.38E-03	N/A	2.0000E+00	N/A	No	No	No
Hydrogen Chloride	7647010	8.48E-01	3.25E-02	8.48E-01	4.36E-01	N/A	2.0000E-01	3.0000E+01	No	No	No
Hydrogen Fluoride	7664393	6.29E-02	2.41E-03	6.29E-02	3.24E-02	N/A	5.9000E-02	5.8000E+00	No	No	No
Hydrogen Sulfide	7783064	5.44E-04	2.08E-05	5.44E-04	2.80E-04	N/A	N/A	N/A	No	No	No
Indeno(1,2,3-cd)pyrene	193395	4.30E-10	1.65E-11	4.30E-10	2.21E-10	5.8824E-05	N/A	N/A	No	No	No
Lead	7439921	1.19E-07	4.57E-09	1.19E-07	6.14E-08	N/A	1.5000E-02	N/A	No	No	No
Manganese	7439965	9.08E-08	3.48E-09	9.08E-08	4.67E-08	N/A	5.0000E-04	N/A	No	No	No
Mercury	7439976	6.96E-06	2.67E-07	6.96E-06	3.58E-06	N/A	3.0000E-03	3.0000E-01	No	No	No
Methyl Isobutyl Ketone	108101	8.96E-04	3.43E-05	8.96E-04	4.61E-04	N/A	N/A	N/A	No	No	No
Methyl Mercaptan	74931	2.56E-04	9.80E-06	2.56E-04	1.32E-04	N/A	N/A	N/A	No	No	No
Methyl Tert Butyl Ether	1634044	1.46E-04	5.59E-06	1.46E-04	7.50E-05	N/A	3.0000E+01	N/A	No	No	No
Naphthalene	91203	1.46E-07	5.58E-09	1.46E-07	7.49E-08	N/A	1.4000E-01	N/A	No	No	No
Nickel	7440020	5.02E-07	1.92E-08	5.02E-07	2.58E-07	3.8462E-04	2.4000E-03	1.0000E-02	No	No	No
Phenanthrene	85018	4.06E-09	1.55E-10	4.06E-09	2.09E-09	N/A	N/A	N/A	No	No	No
Pyrene	129000	1.19E-09	4.57E-11	1.19E-09	6.14E-10	N/A	N/A	N/A	No	No	No
Selenium	7782492	5.73E-09	2.19E-10	5.73E-09	2.95E-09	N/A	5.0000E-03	2.0000E-02	No	No	No
Styrene	100425	7.93E-04	3.04E-05	7.93E-04	4.08E-04	N/A	1.0000E+01	N/A	No	No	No
t-1,2-Dichloroethene	156605	1.32E-04	5.07E-06	1.32E-04	6.81E-05	N/A	N/A	N/A	No	No	No
t-1,3-Dichloropropene	542756	4.02E-06	1.54E-07	4.02E-06	2.07E-06	N/A	2.0000E-01	N/A	No	No	No
Tetrachloroethene	127184	1.52E-03	5.83E-05	1.52E-03	7.83E-04	1.6949E-02	3.5000E-01	6.8000E+01	No	No	No
Toluene	108883	2.78E-02	1.07E-03	2.78E-02	1.43E-02	N/A	4.0000E+00	N/A	No	No	No
Trichloroethene	79016	7.62E-04	2.92E-05	7.62E-04	3.92E-04	5.0000E-02	6.4000E+00	N/A	No	No	No
Vinyl Acetate	108054	4.16E-06	1.59E-07	4.16E-06	2.14E-06	N/A	2.0000E+00	N/A	No	No	No
Vinyl Chloride	75014	9.97E-04	3.82E-05	9.97E-04	5.13E-04	1.2821E-03	N/A	N/A	No	No	No
Xylenes	1330207	2.17E-03	8.20E-04	2.17E-03	1.11E-02	N/A	2.0000E+00	4.4000E+01	No	No	No

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Appendix D-3. Thermal Oxidizer and Back-Up Flare Toxic Risk Assessment

Human Health Risk Assessment for the TOX + Flare Combined Operation

HAP Category / Pollutant Name	CAS #	Calculated Annual HAP Concentration (ug/m3)	Calculated 1 hr HAP Concentration (ug/m3)	ARM 17.8.770 De Minimis Levels			Exceed ARM 17.8.770 Table 1?	Exceed ARM 17.8.770 Table 2 Chronic?	Exceed ARM 17.8.770 Table 2 Acute?
				Table 1 Cancer Annual (ug/m3)	Table 2 Noncancer Chronic Annual (ug/m3)	Table 2 Noncancer Acute Annual (ug/m3)			
1,1,1-Trichloroethane	71556	5.03E-06	5.69E-05	N/A	3.2000E+00	1.9000E+03	No	No	No
1,1,2,2-Tetrachloroethane	79345	6.13E-07	6.93E-06	1.7241E-03	N/A	N/A	No	No	No
1,1,2-Trichloroethane	79005	4.87E-07	5.50E-06	6.2500E-03	N/A	N/A	No	No	No
1,1-Dichloroethane	75343	2.26E-05	2.56E-04	N/A	N/A	N/A	No	No	No
1,1-Dichloroethene	75354	3.54E-07	4.00E-06	2.0000E-03	3.2000E-01	N/A	No	No	No
1,2,4-Trichlorobenzene	120821	1.85E-06	2.10E-05	N/A	N/A	N/A	No	No	No
1,2-Dichloroethane	107062	5.78E-05	6.53E-04	3.8462E-03	9.5000E-01	N/A	No	No	No
1,2-Dichloropropane	78875	7.01E-06	7.92E-05	N/A	4.0000E-02	N/A	No	No	No
1,3-Butadiene	106990	6.45E-06	7.29E-05	3.5714E-04	N/A	N/A	No	No	No
1,4-Dichlorobenzene	106467	4.29E-05	4.85E-04	9.0909E-03	8.0000E+00	N/A	No	No	No
2-Butanone	78933	4.13E-04	4.67E-03	N/A	1.0000E+01	N/A	No	No	No
2-Methylnaphthalene	91576	5.39E-08	5.39E-07	N/A	N/A	N/A	No	No	No
3-Methylcholanthrene	56495	4.04E-09	4.04E-08	N/A	N/A	N/A	No	No	No
7,12-Dimethylbenz(a)anthracene	57976	3.59E-08	3.60E-07	N/A	N/A	N/A	No	No	No
Acenaphthene	83329	4.04E-09	4.04E-08	N/A	N/A	N/A	No	No	No
Acenaphthylene	208968	4.04E-09	4.04E-08	N/A	N/A	N/A	No	No	No
Acetone	67641	5.65E-04	6.39E-03	N/A	N/A	N/A	No	No	No
Acrylonitrile	107131	2.71E-05	3.07E-04	1.4706E-03	2.0000E-02	N/A	No	No	No
Anthracene	120127	5.39E-09	5.39E-08	N/A	N/A	N/A	No	No	No
Arsenic	7440382	5.39E-07	5.39E-06	2.3256E-05	5.0000E-03	N/A	No	No	No
Benz(a)anthracene	56553	4.04E-09	4.04E-08	5.8824E-05	N/A	N/A	No	No	No
Benzene	71432	1.94E-04	2.18E-03	1.2048E-02	7.1000E-01	N/A	No	No	No
Benzo(a)pyrene	50328	2.69E-09	2.70E-08	5.8824E-05	N/A	N/A	No	No	No
Benzo(b)fluoranthene	205992	4.04E-09	4.04E-08	5.8824E-05	N/A	N/A	No	No	No
Benzo(g,h,i)perylene	191242	2.69E-09	2.70E-08	N/A	N/A	N/A	No	No	No
Benzo(k)fluoranthene	207089	4.04E-09	4.04E-08	5.8824E-05	N/A	N/A	No	No	No
Benzyl Chloride	100447	1.14E-06	1.29E-05	N/A	1.2000E-01	5.0000E-01	No	No	No
Beryllium	7440417	2.69E-08	2.70E-07	4.1667E-05	4.8000E-05	N/A	No	No	No
Bromodichloromethane	75274	5.98E-07	6.76E-06	N/A	N/A	N/A	No	No	No
Bromoform	75252	1.84E-06	2.09E-05	9.0909E-02	N/A	N/A	No	No	No
Bromomethane	74839	3.98E-07	4.50E-06	N/A	5.0000E-02	N/A	No	No	No
Cadmium	7440439	3.14E-06	3.15E-05	5.5556E-05	3.5000E-02	N/A	No	No	No
Carbon Disulfide	75150	1.05E-05	1.18E-04	N/A	7.0000E+00	N/A	No	No	No
Carbon Tetrachloride	56235	5.61E-07	6.35E-06	6.6667E-03	2.4000E-02	1.9000E+00	No	No	No
Carbonyl Sulfide	463581	5.26E-06	5.95E-05	N/A	N/A	N/A	No	No	No
Chlorobenzene	108907	4.11E-07	4.64E-06	N/A	7.0000E-01	N/A	No	No	No
Chloroethane	75003	3.77E-05	4.26E-04	N/A	1.0000E+02	N/A	No	No	No
Chloroform	67663	4.36E-07	4.93E-06	4.3478E-03	3.5000E-01	N/A	No	No	No
Chloromethane	74873	6.45E-06	7.29E-05	N/A	N/A	N/A	No	No	No

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Chromium	18540299	3.14E-06	3.15E-05	8.3333E-06	2.0000E-05	N/A	No	No	No
Chrysene	218019	4.04E-09	4.04E-08	N/A	N/A	N/A	No	No	No
cis-1,3-Dichloropropene	542756	4.05E-07	4.58E-06	N/A	2.0000E-01	N/A	No	No	No
Cobalt	7440484	1.88E-07	1.89E-06	N/A	N/A	N/A	No	No	No
Dibenzo(a,h)anthracene	53703	2.69E-09	2.70E-08	5.8824E-05	N/A	N/A	No	No	No
Dichlorobenzene	541731	2.92E-06	2.92E-05	N/A	N/A	N/A	No	No	No
Dichlorodifluoromethane	75718	1.06E-04	1.20E-03	N/A	N/A	N/A	No	No	No
Dichloromethane	75092	1.83E-04	2.07E-03	2.1277E-01	3.0000E+01	3.5000E+01	No	No	No
Dimethyl Sulfide	75183	1.23E-04	1.39E-03	N/A	N/A	N/A	No	No	No
Ethylbenzene	100414	8.65E-04	9.78E-03	N/A	1.0000E+01	N/A	No	No	No
Ethylene Dibromide	106934	6.86E-07	7.75E-06	4.5455E-04	4.6000E-02	N/A	No	No	No
Fluoranthene	206440	6.73E-09	6.74E-08	N/A	N/A	N/A	No	No	No
Fluorene	86737	6.28E-09	6.29E-08	N/A	N/A	N/A	No	No	No
Formaldehyde	50000	1.68E-04	1.69E-03	7.6923E-03	3.6000E-02	3.7000E+00	No	No	No
Hexachlorobutadiene	87683	1.90E-06	2.15E-05	4.5455E-03	N/A	N/A	No	No	No
Hexane	110543	4.66E-03	4.74E-02	N/A	2.0000E+00	N/A	No	No	No
Hydrogen Chloride	7647010	1.38E-01	1.49E+00	N/A	2.0000E-01	3.0000E+01	No	No	No
Hydrogen Fluoride	7664393	1.03E-02	1.11E-01	N/A	5.9000E-02	5.8000E+00	No	No	No
Hydrogen Sulfide	7783064	5.48E-05	6.19E-04	N/A	N/A	N/A	No	No	No
Indeno(1,2,3-cd)pyrene	193395	4.04E-09	4.04E-08	5.8824E-05	N/A	N/A	No	No	No
Lead	7439921	1.12E-06	1.12E-05	N/A	1.5000E-02	N/A	No	No	No
Manganese	7439965	8.53E-07	8.54E-06	N/A	5.0000E-04	N/A	No	No	No

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Mercury	7439976	1.71E-06	1.80E-05	N/A	3.0000E-03	3.0000E-01	No	No	No
Methyl Isobutyl Ketone	108101	9.02E-05	1.02E-03	N/A	N/A	N/A	No	No	No
Methyl Mercaptan	74931	2.58E-05	2.91E-04	N/A	N/A	N/A	No	No	No
Methyl Tert Butyl Ether	1634044	1.47E-05	1.66E-04	N/A	3.0000E+01	N/A	No	No	No
Naphthalene	91203	1.37E-06	1.37E-05	N/A	1.4000E-01	N/A	No	No	No
Nickel	7440020	4.71E-06	4.72E-05	3.8462E-04	2.4000E-03	1.0000E-02	No	No	No
Phenanthrene	85018	3.81E-08	3.82E-07	N/A	N/A	N/A	No	No	No
Pyrene	129000	1.12E-08	1.12E-07	N/A	N/A	N/A	No	No	No
Selenium	7782492	5.39E-08	5.39E-07	N/A	5.0000E-03	2.0000E-02	No	No	No
Styrene	100425	7.98E-05	9.02E-04	N/A	1.0000E+01	N/A	No	No	No
t-1,2-Dichloroethene	156605	1.33E-05	1.51E-04	N/A	N/A	N/A	No	No	No
t-1,3-Dichloropropene	542756	4.05E-07	4.58E-06	N/A	2.0000E-01	N/A	No	No	No
Tetrachloroethene	127184	1.53E-04	1.73E-03	1.6949E-02	3.5000E-01	6.8000E+01	No	No	No
Toluene	108883	2.81E-03	3.18E-02	N/A	4.0000E+00	N/A	No	No	No
Trichloroethene	79016	7.67E-05	8.67E-04	5.0000E-02	6.4000E+00	N/A	No	No	No
Vinyl Acetate	108054	4.19E-07	4.74E-06	N/A	2.0000E+00	N/A	No	No	No
Vinyl Chloride	75014	1.00E-04	1.13E-03	1.2821E-03	N/A	N/A	No	No	No
Xylenes	1330207	2.18E-03	2.47E-02	N/A	3.0000E+00	4.4000E+01	No	No	No

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VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted a private property taking and damaging assessment which is located in the attached environmental assessment.

IX. Environmental Assessment

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

**Lightning Renewables, LLC dba
Lightning Renewables Missoula RNG Facility**

**DRAFT Environmental Assessment for the
Preliminary Montana Air Quality Permit #5286-00**

Montana Department of Environmental Quality
Air Quality Bureau
Air Permitting Services Section
ENVIRONMENTAL ASSESSMENT

APPLICANT: Lightning Renewables		
SITE NAME: Missoula RNG Facility		
PROPOSED PERMIT NUMBER: Montana Air Quality Permit Number 5286-00		
APPLICATION DATE: February 2, 2023		
APPLICATION COMPLETE DATE: February 21, 2023		
LOCATION: Section 5, Township 13 North, Range 19 West		COUNTY: Missoula
PROPERTY OWNERSHIP:	FEDERAL ____ STATE ____ PRIVATE <u>X</u> ____	
EA PREPARER:	John P. Proulx – Environmental Scientist 2	
EA Draft Date	EA Final Date	Permit Final Date
March 29, 2022	May 2, 2023	May 18, 2023

COMPLIANCE WITH THE MONTANA ENVIRONMENTAL POLICY ACT

The Montana Department of Environmental Quality (DEQ) prepared this Environmental Assessment (EA) in accordance with requirements of the Montana Environmental Policy Act (MEPA). An EA functions to determine the need to prepare an EIS through an initial evaluation and determination of the significance of impacts associated with the proposed action. However, an agency is required to prepare an EA whenever statutory requirements do not allow sufficient time for the agency to prepare an EIS. This document may disclose impacts over which DEQ has no regulatory authority.

COMPLIANCE WITH THE CLEAN AIR ACT OF MONTANA

The state law that regulates air quality permitting in Montana is the Clean Air Act of Montana (§ 75-2-201, et seq., Montana Code Annotated (MCA)). DEQ may not approve a proposed project contained in an application for an air quality permit unless the project complies with the requirements set forth in the Clean Air Act of Montana and the administrative rules adopted thereunder. DEQ's approval of an air quality permit application does not relieve Lightning Resources, LLC. (Lightning Renewables) – Missoula RNG facility (from complying with any other applicable federal, state, or county laws, regulations, or ordinances. Lightning Renewables is responsible for obtaining any other permits, licenses, approvals, that are required for any part of the proposed project. DEQ will decide whether to approve the permit in accordance with the requirements of the Clean Air Act of Montana. DEQ may not withhold, deny, or impose conditions on the permit based on the information contained in this Environmental Assessment. § 75-1-201(4), MCA.

SUMMARY OF THE PROPOSED ACTION: Lightning Renewables has applied for a new Montana Air Quality Permit under the Clean Air Act of Montana for the installation of one (1) thermal recuperative oxidizer, one (1) backup flare, and one (1) emergency generator. The proposed action would be located in Section 5, Township 13 North, Range 19 West, Missoula County. All information included in the EA is derived from the permit application, discussions with the applicant, analysis of aerial photography, topographic maps, and other research tools.

PURPOSE AND BENEFIT FOR PROPOSED ACTION: DEQ's purpose in conducting this environmental review is to act upon Lightning Renewables air quality permit application to authorize one (1) thermal recuperative oxidizer, one (1) backup flare, and one (1) emergency generator, and the associated air emissions. DEQ's action on the permit application is governed by the Clean Air Act of Montana, § 75-2-201, et seq., MCA and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*

The benefits of the proposed action include: The proposed permit action will collect landfill gas that is produced from the decomposition of organic matter from the existing Allied Waste landfill. After collection, the gas will be put through a closed loop dehydrator to remove water, and then scrubbed to remove any contaminants. The refined gas will then be pressurized and injected into a high-pressure pipeline for consumer use.

REGULATORY RESPONSIBILITIES: In accordance with ARM 17.4.609(3)(c), DEQ must list any federal, state, or local authorities that have concurrent or additional jurisdiction or environmental review responsibility for the proposed action and the permits, licenses, and other authorizations required.

Lightning Renewables must conduct its operations according to the terms of its permit. Lightning Renewables further agrees to be legally bound by the permit, The Clean Air Act of § 75-2-201, et seq., MCA and ARM 17.8.740, *et seq.*

Lightning Renewables must cooperate fully with, and follow the directives of any federal, state, or local entity that may have authority over Lightning Renewables' generating operations. These permits, licenses, and other authorizations may include: Missoula County and DEQ Air Quality Bureau (AQB). Missoula County operates an approved air quality program adopted into the Montana State Implementation Plan and has authority to regulate minor sources of regulated pollutants. For this permit since the air quality permit being issued is a synthetic minor and avoids becoming a major source, Montana DEQ has jurisdiction to issue this permit. However, Missoula County does operate the maintenance plans associated with PM₁₀ and CO and multi-jurisdictional roles are present. The CO and PM₁₀ emissions associated with the proposed action will not trigger any violations of the current Missoula County maintenance plan.

Table 1: Proposed Action Details

Summary of Proposed Action	
General Overview	<p>The Lightning Renewables air quality permit application consists of the following equipment:</p> <ul style="list-style-type: none"> One (1) thermal recuperative oxidizer One (1) backup flare, One (1) emergency generator Closed Loop Treatment Train; and associated equipment <p>The facility would be permitted to operate until Lightning Renewables requested permit revocation or until the permit were revoked by DEQ due to gross non-compliance with the permit conditions.</p>
Proposed Action Estimated Disturbance	
Disturbance	<p>The project requires the construction of a small building and pad to support the proposed equipment. The disturbance is within a parcel currently owned by Allied Waste. The disturbance area is considered minimal.</p>
Proposed Action	
Duration	<p>Construction: Construction or commencement would start within three years of issuance of the final air quality permit.</p> <p>Construction Period: The construction period could begin as soon as the air quality permit (and any other permits identified in this EA) were in place.</p> <p>Operation Life: Until permit is either revoked at the request of the permittee or DEQ has determined the need for revocation.</p>
Construction Equipment	<p>Cranes, delivery trucks, various other types of smaller equipment</p>
Personnel Onsite	<p>Construction: Various number of installation personnel depending on which piece of equipment is being installed.</p> <p>Operations: 2-5 employees when fully operational</p>
Location and Analysis Area	<p>Location: The new processing equipment would be located in Section 5, Township 13 North and Range 19 West. Vapor collection system supplying the new facility may originate in Sections 5, 8 & 9, Township 13 North, Range 19 West, in Missoula County, MT</p> <p>Analysis Area: The area being analyzed as part of this environmental review includes the immediate project area (Figure 1), as well as neighboring lands</p>

	surrounding the analysis area, as reasonably appropriate for the impacts being considered.
Air Quality	This EA will be attached to the Air Quality Permit which would include all enforceable conditions for operation of the emitting units
Conditions incorporated into the Proposed Action	The conditions developed in the Preliminary Determination of the Montana Air Quality Permit dated March 29, 2023, set forth in Sections II.A-D, and updated in the Decision Air Quality Permit if needed.

Figure 1: Map of general location of the proposed project.



EVALUATION AND SUMMARY OF POTENTIAL IMPACTS TO THE PHYSICAL AND HUMAN ENVIRONMENT IN THE AREA AFFECTED BY THE PROPOSED PROJECT:

The impact analysis will identify and evaluate direct and secondary impacts. Direct impacts are those that occur at the same time and place as the action that triggers the effect. Secondary impacts means “a further impact to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action.” ARM 17.4.603(18). Where impacts are expected to occur, the impacts analysis estimates the duration and intensity of the impact.

The duration of an impact is quantified as follows:

- **Short-term:** Short-term impacts are defined as those impacts that would not last longer than the proposed operation of the site.
- **Long-term:** Long-term impacts are defined as impacts that would remain or occur following shutdown of the proposed facility.

The severity of an impact is measured using the following:

- **No impact:** There would be no change from current conditions.
- **Negligible:** An adverse or beneficial effect would occur but would be at the lowest levels of detection.
- **Minor:** The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate:** The effect would be easily identifiable and would change the function or integrity of the resource.
- **Major:** The effect would alter the resource.

1. TOPOGRAPHY, GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

The site is located on a downward slope at an elevation of approximately 3412 ft about sea level. The Clark Fork River is approximately 1.5 miles southeast at its closest point. The climatology is humid continental climate with cold and moderately snowy winters with an average rainfall of 27.3 inches per year. The project will take place on privately owned land that is already developed for use as a municipal solid waste landfill. Construction activities would involve vehicle travel, some grading, well boring and casing, and possible entrenching work to bury natural gas transport pipelines. Well boring and casing would be primarily done in the actual landfill through putrescible material and would not extend beyond the landfill.

The geology of the site is part of the McNamara Formation: Dense green and red siltite and argillite in mud cracked couplets containing diagnostic chert beds and rip-up clasts. Thickness as much as 1,650 m (5,413 ft). Bonner Formation: Pink, cross-bedded, feldspathic, medium- to coarse grained quartzite. Thickness as much as 580 m (1,903 ft). Mount Shields Formation: Upper part: red quartzite, siltite, and argillite in mud-cracked couples and couplets with abundant salt casts. Lower part: light gray, flat-laminated, feldspathic, fine-grained quartzite. Thickness as much as 2,000 m (6,562 ft).

Access to the site will be from already developed roadways. A 30 foot by 50-foot area would need to be developed for the TRO to be installed on. As the landfill grows, new wells would need to be bored and cased and transmission lines installed.

Direct Impacts:

Proposed Action: The information provided above is based on the information that DEQ had available to it at the time of completing this EA and provided by the applicant (Trinity, 2023). Available information includes the permit application, analysis of aerial photography, topographic maps, and other research tools. Impacts to topography would be minor and long-term.

Secondary Impacts:

Proposed Action: No secondary impacts to topography, geology, stability, and moisture are anticipated with the proposed action.

2. WATER QUALITY, QUANTITY, AND DISTRIBUTION:

Once the gas is collected from the landfill material, it is sent through an electrically driven mechanical chiller along with a tube and shell heat exchanger where a propylene glycol mixture is used to reduce the inlet temperature to “knock-out” condensate prior to the refining process. The condensate is then collected and stored onsite in collection tanks. The condensate is analyzed for waste characterization, if the sample analysis shows that the condensate is non-hazardous, it is returned to the landfills existing leachate collection system. If the analysis shows that the condensate is hazardous, it is transported off-site to an appropriate disposal facility.

Direct Impacts:

Proposed Action: No primary impacts to water quality, quantity, and distribution would be expected because the proposed project does not involve the use of water in any of the processes.

Secondary Impacts:

Proposed Action: No secondary impacts are anticipated with the proposed action.

3. AIR QUALITY:

Direct Impacts:

The U.S. Environmental Protection Agency (EPA) designated Missoula, Montana as a moderate nonattainment area for the 24-hour NAAQS for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀) upon enactment of the federal Clean Air Act Amendments of 1990 (56 FR 56694, November 6, 1991).

The nonattainment classification was based on violations of the 24-hour standard that occurred throughout the 1980s. The EPA fully approved Montana’s moderate PM₁₀ nonattainment area plan as a State Implementation Plan (SIP) revision for the Missoula PM₁₀ nonattainment area in 1995 (60 FR 45051). There has been no measured violation of the PM₁₀ standard since 1989.

As a result of the 1977 amendments to the Clean Air Act (CAA), Missoula was designated nonattainment for carbon monoxide (CO) by the U.S. Environmental Protection Agency (EPA) in the Federal Register (FR) notice (43 FR 9010) on March 3, 1978. The National Ambient Air Quality Standard (NAAQS) for CO is 9 parts per million (ppm) for an 8-hour average concentration, not to be exceeded more than once per calendar year. Missoula’s violations of the CO NAAQS were attributed primarily to motor vehicle emissions and residential wood combustion. The community took several steps to reduce the ambient levels of CO, including reconfiguring traffic intersections to relieve congestion and implementing rules to limit emissions from residential wood combustion and outdoor burning. Missoula continued to violate the NAAQS until the early 1990s.

Following the promulgation of the Clean Air Act Amendments of 1990, EPA classified Missoula as a moderate nonattainment area for CO (56 FR 56694) based on a design value of 9.7 for 1987 through 1989. This designation required Missoula to develop a new base year inventory for 1990 and establish an oxygenated fuel program by November 1992. In June 1992, Missoula incorporated an oxygenated fuels program into the Missoula City-County Air Pollution Control Program. It was approved by the Montana Board of Environmental Review (BER) in September 1992, and implemented that November. On November 6, 1992, the Governor of Montana submitted the oxygenated fuels program to EPA for approval. Since implementing the oxygenated fuels program, Missoula has not violated the CO NAAQS.

There have been several SIP updates since Missoula was first declared nonattainment for CO. The EPA approved the Missoula CO nonattainment area plan on January 16, 1986 (51 FR 2397). Subsequent revisions were approved on November 8, 1994 (59 FR 55585) regarding the oxygenated gasoline program in Missoula; December 13, 1994 (59 FR 64133) regarding CO contingency measures; December 6, 1999 ([64 FR 68034](#)) regarding an update to the SIP narrative; and November 15, 2001 (66 FR 57391) regarding revisions to the Missoula Air Pollution Control Program that included extensive renumbering, reorganization and rule revisions.

In 2005, the Missoula City-County Health Department developed a redesignation request and maintenance plan for CO with guidance based on the 1990 amendments to the CAA and a September 4, 1992, EPA memo from John Calgani to the EPA Regional Air Directors. The Governor of Montana submitted the redesignation request to EPA on May 27, 2005, and EPA approved it in an FR notice on August 17, 2007 (72 FR 46158). The redesignation request addressed the five criteria required by Section 107(d)(3)(E) of the CAA, as follows:

The 2005 Missoula CO Redesignation Request included a full maintenance plan as required by the CAA for moderate nonattainment areas. However, CO levels in Missoula have dropped precipitously since the area was classified as a “moderate” nonattainment area. Between 2006 and 2011 (the most recent 5 years of CO data), the maximum CO 8-hour concentration was 4.1 ppm – well below the NAAQS.

The Missoula CO maintenance area includes the following (Range and Township) sections: R19W T14N – sections: 29 and 32; R19W T13N – sections: 2, 5, 7, 8, 11, 14 through 24, and 26 through 34; R19W T12N – sections: 4 through 7; R20W T13N – sections: 23 through 26, 35 and 36.

Missoula County maintains jurisdiction of the maintenance areas for PM₁₀ and CO through their SIP approved air quality program. Montana DEQ maintains jurisdiction over major sources and those sources taking limits to avoid major status. Lightning Renewables has taken limits to avoid being a major source. Both DEQ and Missoula County have shared jurisdiction over issues involving Lightning Renewables. The CO and PM₁₀ emissions associated with the proposed action will not trigger any violations of the current Missoula County maintenance plan.

Proposed Action: Installation of the equipment listed in this EA will refine the collected gas and inject it into the high-pressure pipeline instead of routing it to a flare. The result of the scrubbing and refining the gas will cause a decrease in CO and PM₁₀ emissions from the landfill. In the event that the gas is not capable of being refined and injected into the pipeline, it would be sent to the backup flare for destruction. The site currently has an operating flare resulting in a neutral impact on the existing air quality.

A detailed emission inventory is included in Section IV of the permit. Regulated emissions from Lightning Renewables include CO, PM_{Tot}, PM₁₀, PM_{2.5}, NO_x, SO₂ and VOCs. Lightning Renewables will also release hazardous air pollutants (HAPs) but remains a minor source of HAPs. Lightning Renewables has taken federally enforceable limits for CO to stay below 100 tpy of emissions.

Secondary Impacts:

Proposed Action: In the event of a complete failure of Lightning Renewables to collect and treat landfill gases, the system design will divert to the current flare operated by Allied until such time as Lightning Renewables can restart and safely begin collecting and refining waste gas. Negligible impacts could be expected with the proposed action in the event of equipment malfunction.

4. VEGETATION COVER, QUANTITY AND QUALITY:

As the landfill continues to grow, new wells will need to be bored into the landfill body. These wells are small in diameter and will not present a large impact on vegetative cover that may be present on the landfill. Review of satellite imagery shows approximately 0.91 acres of vegetative cover on the northwest corner of the landfill body.

Direct Impacts:

Proposed Action: No primary impacts to vegetative cover, quantity, and quality would be expected because the proposed project is located in an already existing and fully developed site.

Secondary Impacts:

Proposed Action: Negligible impacts to land disturbance at the site may result in propagation of noxious weeds.

5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:**Direct Impacts:**

Proposed Action: No primary impacts to terrestrial, avian, and aquatic habitats would be expected because the proposed project is located in an already existing and fully developed site.

Secondary Impacts:

Proposed Action: No secondary impacts to terrestrial, avian and aquatic life and habitats stimulated or induced by the direct impacts analyzed above would be anticipated for the proposed action.

6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:**Direct Impacts:**

Proposed Action: According to a Montana Natural Heritage Program, there are twenty-nine (29) species of concern;

Bird – Evening Grosbeak, Lewis’s Woodpecker, Great Blue Heron, Veery, Black-backed Woodpecker, Cassin’s Finch, Clark’s Nutcracker, Brewer’s Sparrow, Bobolink, Flammulated Owl, Brown Creeper, Gray-crowned Rosy-Finch, Pacific Wren, Pileated Woodpecker, Varied Thrush

Fish – Bull Trout, Westslope Cutthroat Trout

Invertebrates – Suckley Cuckoo Bumble Bee, A subterranean Amphipod

Mammals – Long-legged Myotis, Hoary Bat, Long-eared Myotis, Fringed Myotis, Grizzly Bear

Reptiles – Western Skink

Vascular Plants – Alpine Collomia, Missoula Phlox, Spiny-spore Quillwort, Stalk-leaved Monkey Flower

No impacts to unique, endangered, fragile, or limited environmental resources would be expected because the proposed project is located in an already existing and fully developed site with minimal possible new disturbances occurring.

Secondary Impacts:

7. HISTORICAL AND ARCHAEOLOGICAL SITES:

The Montana State Historic Preservation Office (SHPO) was notified of the application. SHPO conducted a file search and provided a letter dated March 14, 2023.

Montana State Historical Preservation office has identified two (2) sites in the area of the proposed project. The first site is a historic pipeline owned by the Forrest Service that is ineligible for National Register Status. The second site is a Precontact Rock Cairn(s) that is owned by a private owner with an unresolved National Register Status.

Direct Impacts:

Proposed Action: It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are within the Area of Potential Effect, and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place. The Lightning Renewables facility is less than 50 years old and there is no disturbance outside the landfill property boundary or alteration to structures over fifty years of age.

Secondary Impacts: : No secondary impacts to historical and archaeological sites are anticipated.

8. SAGE GROUSE EXECUTIVE ORDER:

The project would not be in core, general or connectivity sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program (Program) at: <http://sagegrouse.mt.gov>.

Direct Impacts:

Proposed Action: The proposed action is not located within Sage Grouse habitat, no direct impacts would occur.

Secondary Impacts:

Proposed Action: No secondary impacts to sage grouse or sage grouse habitat would be expected.

9. AESTHETICS:

The approximate equipment footprint is 30 feet by 50 feet with an exhaust stack that is 60 feet tall with gray with yellow ladder and walkways. Similar equipment at other facilities have a sound rating of approximately 95 decibels. Most of the existing landfill operations are shielded from the general public by Interstate 90 due south of the private parcels owned by the landfill.

Direct Impacts:

Proposed Action: Minor impacts are expected with the installation of the proposed equipment. The addition of the thermal oxidizer and backup flare would be visible to the surrounding areas. The area is located at a higher elevation with regards to the city of Missoula and would be mostly concealed from eyesight. The sound attenuation for the TRO at the nearest commercial facility is approximately 19.4 decibels located approximately 0.6 miles to the southwest and 24.4 decibels at the nearest residential site approximately 0.4 miles to the east. The area between the proposed facility and the nearest residential property is separated by a ridge with the residential structure located at a lower elevation on the west side of the ridge, creating a natural sound barrier.

Secondary Impacts:

Proposed Action: No secondary impacts to aesthetics and noise are anticipated with the proposed action.

10. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Both the proposed TRO and backup flare use natural gas as an energy source while diesel fuel is used for the emergency generator.

Direct Impacts:

Proposed Action: No primary on environmental resources of land, water, or air. Minor impacts to energy would be expected due to the TRO and flare utilizing pipeline quality natural gas as a fuel source and diesel fuel for the emergency generator. Recovery of the methane and injection into an existing natural gas transmission pipeline will serve to reduce the need for natural gas from other energy producing sources.

Secondary Impacts:

Proposed Action: No secondary impacts to land, water, air or energy resources are anticipated with the proposed action.

11. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:

Direct Impacts:

Proposed Actions: The Lightning Renewables facility will be located in an existing, developed facility and the current permit action will not have any impacts on environmental resources outside those already identified in this EA.

Secondary Impacts:

Proposed Action: No secondary impacts to other environmental resources are anticipated as a result of the proposed action.

12. HUMAN HEALTH AND SAFETY:

Direct Impacts:

Proposed Action: Impacts to human health and safety are anticipated to be short-term and minor as a result of this project.

Secondary Impacts:

Proposed Action: No secondary impacts to human health and safety are anticipated as a result of the proposed action.

13. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

Direct Impacts:

Proposed Action: Minor impacts are expected with the proposed permit action. The Lightning Renewables facility will be located in an existing, fully developed area and the proposed action will not require agricultural activities. Minor industrial and commercial impacts would be expected due to well boring and casing and installation of the well gas transmission lines and the TRO and flare units.

Secondary Impacts:

Proposed Action: No secondary impacts to industrial, commercial, water conveyance structures, and agricultural activities and production are anticipated as a result of the proposed action.

14. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Direct Impacts:

Once the facility is operational, 2 to 5 personnel are expected to operate the equipment.

Proposed Action: Minor impacts to quantity and distribution of employment are anticipated for the proposed action because the site is an unoccupied gas collection system.

Secondary Impacts:

Proposed Action: Negligible increases in in distribution of employment are anticipated as a result of the proposed action.

15. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Direct Impacts:

Proposed Action: Local, state and federal governments would be responsible for appraising the property, setting tax rates, collecting taxes, from the companies, employees, or landowners benefitting from this operation.

Secondary Impacts:

Proposed Action: No secondary impacts to local and state tax base and tax revenues are anticipated as a result of the proposed action.

16. DEMAND FOR GOVERNMENT SERVICES:

Direct Impacts:

Proposed Action: Minor impacts are anticipated for demand for government services. The air quality permit and physical site associated with the current permit action would require inspections from state government representatives to ensure the facility is operating within the limits and conditions listed in the air quality permit. The facility would be available for inspection at the same time as the currently permitted municipal solid waste landfill by both State and County officials.

Secondary Impacts:

Proposed Action: No secondary impacts are anticipated with the proposed action.

17. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

Missoula County has a PM₁₀ Redesignation Request and Limited Maintenance Plan.

Direct Impacts:

Proposed Action: No primary impacts to the locally adopted environmental plans and goals are anticipated as a result of the proposed action.

Secondary Impacts:

Proposed Action: No secondary impacts to the locally adopted environmental plans and goals are anticipated as a result of the proposed action.

18. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Direct Impacts:

Proposed Action: No primary impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed action. The Lightning Renewables facility is surrounded on three (3) sides by undeveloped, single owner private land and the City of Missoula on the 4th side with Interstate 90 as a barrier between the two.

Secondary Impacts:

Proposed Action: No secondary impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed action.

19. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Direct Impacts:

Proposed Action: No primary impacts to density and distribution of population and housing are anticipated as a result of the current permit action.

Secondary Impacts:

Proposed Action: No secondary impacts to density and distribution of population and housing are anticipated as a result of the proposed action.

20. SOCIAL STRUCTURES AND MORES:

Direct Impacts:

Proposed Action: No primary impacts anticipated to social structures and mores are anticipated as a result of the current permit action.

Secondary Impacts:

Proposed Action: No secondary impacts to social structures and mores are anticipated as a result of the proposed action.

21. CULTURAL UNIQUENESS AND DIVERSITY:

Direct Impacts:

Proposed Action: No primary impacts anticipated to cultural uniqueness and diversity are anticipated from the current permit action.

Secondary Impacts:

Proposed Action: No secondary impacts to cultural uniqueness and diversity are anticipated as a result of the proposed action.

22. PRIVATE PROPERTY IMPACTS:

The proposed processing equipment would be located in Section 5, Township 13 North, and Range 19 West. This is within a 144-acre parcel owned by Allied Waste. Directly to the south is a 27.43-acre parcel owned by BFI Waste Systems which is presumed to be associated with the Allied Waste landfill as well as a 119.4 acre parcel also owned by BFI Waste Systems (to the southeast. The property located due east of the 144-acre parcel is owned by a private residence which is a 199.8 acre parcel appearing to be an existing farmstead. The residence is estimated at approximately 0.44 miles from the planned location of the processing equipment.

The proposed action would take place on privately-owned land. The analysis below in response to the Private Property Assessment Act indicates no impact. DEQ does not plan to deny the application or impose conditions that would restrict the regulated person's use of private property so as to constitute a taking. Further, if the application is complete, DEQ must take action on the permit pursuant to § 75-2-218(2), MCA. Therefore, DEQ does not have discretion to take the action in another way that would have less impact on private property—its action is bound by a statute.

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

YES	NO	
		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)

23. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Due to the nature of the proposed action, no further direct or secondary impacts are anticipated from this project.

ADDITIONAL ALTERNATIVES CONSIDERED:

No Action Alternative: In addition to the proposed action, DEQ is considering a "no action" alternative. The "no action" alternative would deny the approval of the proposed action. The applicant would lack the authority to conduct the proposed activity. Any potential impacts that would result from the proposed action would not occur. The no action alternative forms the baseline from which the impacts of the proposed action can be measured.

If the applicant demonstrates compliance with all applicable rules and regulations as required for approval, the "no action" alternative would not be appropriate. Pursuant to, § 75-1-201(4)(a), (MCA) DEQ "may not withhold, deny, or impose conditions on any permit or other authority to act based on" an environmental assessment.

CUMULATIVE IMPACTS:

Cumulative impacts are the collective impacts on the human environment within the borders of Montana of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location and generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through preimpact statement studies, separate impact statement evaluation, or permit processing procedures.

This environmental review analyzes the proposed action submitted by Lightning Renewables.

DEQ considered potential impacts related to this project and potential secondary impacts. Due to the limited activities in the analysis area, cumulative impacts related to this project would be minor and short-term.

PUBLIC INVOLVEMENT:

Scoping for this proposed action consisted of internal efforts to identify substantive issues and/or concerns related to the proposed operation. Internal scoping consisted of internal review of the environmental assessment document by DEQ Air Permitting staff.

Internal efforts also included queries to the following websites/ databases/ personnel:

- Montana State Historic Preservation Office
- Montana Department of Environmental Quality (DEQ)
- Montana Natural Heritage Program
- Missoula County Air Quality Division

OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION:

The proposed project would be fully located on privately-owned land. All applicable local, state, and federal rules must be adhered to, which, at some level, may also include other local, state, federal, or tribal agency jurisdiction. Other governmental agencies which may have overlapping or sole jurisdiction include, but may not be limited to: Missoula County, OSHA (worker safety), DEQ AQB (air quality) and Water Protection Bureau (groundwater and surface water discharge; stormwater), DNRC (water rights), and MDT (road access).

NEED FOR FURTHER ANALYSIS AND SIGNIFICANCE OF POTENTIAL IMPACTS

Under ARM 17.4.608, DEQ is required to determine the significance of impacts associated with the proposed action. This determination is the basis for the agency's decision concerning the need to prepare an environmental impact statement and also refers to DEQ's evaluation of individual and cumulative impacts. DEQ is required to consider the following criteria in determining the significance of each impact on the quality of the human environment:

1. The severity, duration, geographic extent, and frequency of the occurrence of the impact;

“Severity” is analyzed as the density of the potential impact while “extent” is described as the area where the impact is likely to occur. An example could be that a project may propagate ten noxious weeds on a surface area of 1 square foot. In this case, the impact may be a high severity over a low extent. If those ten noxious weeds were located over ten acres there may be a low severity over a larger extent.

“Duration” is analyzed as the time period in which the impact may occur while “frequency” is analyzed as how often the impact may occur. For example, an operation that occurs throughout the night may have impacts associated with lighting that occur every night (frequency) over the course of the one season project (duration).

2. The probability that the impact will occur if the proposed action occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur;
3. Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts;
4. The quantity and quality of each environmental resource or value that would be affected,

including the uniqueness and fragility of those resources and values;

5. The importance to the state and to society of each environmental resource or value that would be affected;
6. Any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions; and
7. Potential conflict with local, state, or federal laws, requirements, or formal plans.

The significance determination is made by giving weight to these criteria in their totality. For example, impacts with moderate or major severity may be determined to be not significant if the duration of the impacts is considered to be short-term. As another example, however, moderate or major impacts of short-term duration may be considered to be significant if the quantity and quality of the resource is limited and/or the resource is considered to be unique or fragile.

As a final example, moderate or major impacts to a resource may be determined to be not significant if the quantity of that resource is high or the quality of the resource is not unique or fragile.

Pursuant to ARM 17.4.607, preparation of an environmental assessment is the appropriate level of environmental review under MEPA if statutory requirements do not allow sufficient time for an agency to prepare an environmental impact statement. An agency determines whether sufficient time is available to prepare an environmental impact statement by comparing statutory requirements that establish when the agency must make its decision on the proposed action with the time required to obtain public review of an environmental impact statement plus a reasonable period to prepare a draft environmental review and, if required, a final environmental impact statement.

SIGNIFICANCE DETERMINATION

The severity, duration, geographic extent and frequency of the occurrence of the impacts associated with the proposed action would be limited. Lightning Renewables proposes to construct and operate the proposed action on private land located in Section 5, Township 13 North, Range 19 West, in Missoula County, Montana.

DEQ has not identified any significant impacts associated with the proposed action for any environmental resource. Approving Lightning Renewables' Air Quality Application would not set precedent that commits DEQ to future actions with significant impacts or a decision in principle about such future actions. If Lightning Renewables submits another permit application, DEQ is not committed to approve those applications. DEQ would conduct a new environmental review for any subsequent air quality permit applications sought by Lightning Renewables. DEQ would make a decision on Lightning Renewables' subsequent application based on the criteria set forth in the Clean Air Act of Montana.

DEQ's issuance of an Air Quality Permit to Lightning Renewables for this proposed operation does not set a precedent for DEQ's review of other applications, including the level of environmental review. The level of environmental review decision is made based on a case-specific consideration of the criteria set forth in ARM 17.4.608.

DEQ does not believe that the proposed action has any growth-inducing or growth-inhibiting aspects or that it conflicts with any local, state, or federal laws, requirements, or formal plans. Based on a consideration of the criteria set forth in ARM 17.4.608, the proposed state action is not predicted to significantly impact the quality of the human environment. Therefore, at this time, preparation of an environmental assessment is determined to be the appropriate level of environmental review under the Montana Environmental Protection Act.

Environmental Assessment and Significance Determination Prepared By:

<u>John P. Proulx</u>	<u>Air Quality Engineer</u>
Name	Title

EA Reviewed By:

<u>Julie Merkel</u>	<u>Air Permitting Section Supervisor</u>
Name	Title

References

Montana Air Quality Permit Application 5286-00_2023_02_02_APP

State Historical Preservation Office

Montana Natural Heritage Program, <https://mtnhp.org/mapviewer/?t=4>

AP-42, <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors>

Missoula Public Health, <https://www.missoulacounty.us/government/health/health-department/home-environment/air-quality/pm10-redesignation-request-and-limited-maintenance-plan>

Missoula County Air Quality Division, Missoula City-Count Air Quality Permit MC2831-03

Add OP Permit here for Allied

Montana Cadastral - <http://svc.mt.gov/msl/mtcadastral>