

January 4th, 2024

Brianne Mulvaney
All Montana Crematory, LLC
107 Oak Street
Anaconda, MT 59711

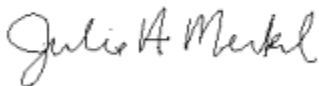
Sent via email: info@anacondafuneralhome.com

RE: Final Permit Issuance for MAQP #4735-01

Dear Ms. Mulvaney:

Montana Air Quality Permit (MAQP) #4735-01 is deemed final as of January 4th, 2024, by DEQ. This permit is for All Montana Crematory, a human remains crematorium. 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



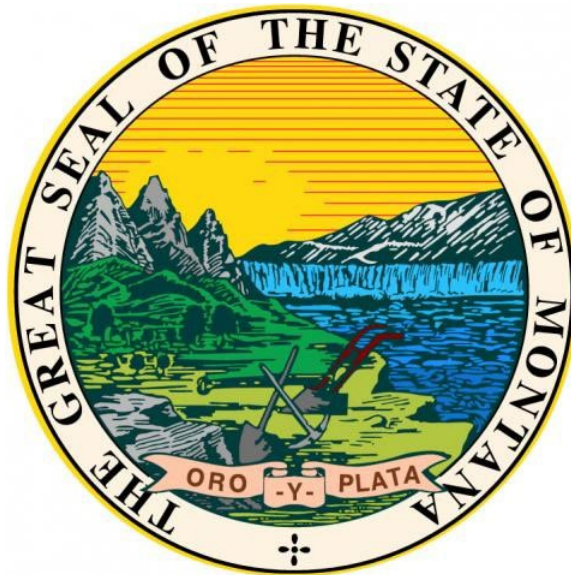
Tim Gauthier
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Montana Department of Environmental Quality
Air, Energy & Mining Division
Air Quality Bureau

Montana Air Quality Permit #4735-01

All Montana Crematory
107 Oak Street
Anaconda, MT 59711

January 04, 2024



MONTANA AIR QUALITY PERMIT

Issued To: All Montana Crematory
107 Oak Street
Anaconda, MT 59711

Montana Air Quality Permit: #4735-01
Administrative Amendment (AA)
Request Received: 11/22/2023
Department's Decision Issued: 12/19/2023
Permit Final: 01/04/2024

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to All Montana Crematory. (AMC), pursuant to Sections 75-2-204, 211, and 215 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. Plant Location

AMC is physically located at 107 Oak Street, Anaconda, MT 59711. The legal description of the facility is Section 3, Township 4 North, Range 11 West, Block 26, Lots 11-12 in Deer Lodge County, Montana.

B. Current Permit Action

On November 20th, 2023, the Department of Environmental Quality, Air Quality Bureau (DEQ) received a request to transfer ownership of the AMC facility. The current company owner (responsible official) is David Mahn, and the new company owner (responsible official) is Brianne Mulvaney. The new company mailing address is 107 Oak Street, Anaconda, MT 59711. **MAQP #4735-01 replaces MAQP #4735-00.**

SECTION II: Conditions and Limitations

A. Operational Requirements

1. AMC shall not incinerate/cremate any material other than human remains and/or any corresponding container unless otherwise approved by the DEQ in writing (ARM 17.8.749).
2. The operating mode shall rely on a programmable logic controller (PLC) based control which uses temperature control, a primary burner temperature interlock, and timers to insure proper operation for each cremation cycle (ARM 17.8.752).
3. The secondary chamber burner shall be used to preheat the secondary chamber of the crematorium to the minimum required operating temperature prior to igniting the primary chamber burner. The secondary chamber operating temperature of the crematorium shall be maintained above 1600 degrees Fahrenheit (°F) with no single reading less than 1575 °F. The operating temperatures shall be maintained during operation and for one-half hour after waste feed has stopped (ARM 17.8.752).

4. Burners shall be monitored with continuous ultraviolet (UV) detection for detection of loss of flame and an opacity sensor which temporarily suspends operation of the primary chamber burner (ARM 17.8.752).
5. AMC shall operate the crematorium as specified in the application for MAQP #4735-01 including all correspondence related to the application.

Further, AMC shall develop crematorium operation procedures for the crematorium, print those procedures in a crematorium operation procedures manual, and require all personnel who operate the unit to familiarize themselves with the operating procedures. The operating procedures manual shall be readily available to all personnel who operate the unit. A copy of this manual shall be supplied to DEQ upon request (ARM 17.8.752).

6. The incinerator exhaust stack shall be a vertical orientation and not horizontal as submitted in the original application. DEQ confirmed the vertical design intention with the applicant and considers all correspondence related to the application, part of the application itself (ARM 17.8.749).

B. Emission Limitations

AMC shall not cause or authorize to be discharged into the atmosphere from the crematorium:

1. Visible emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes (ARM 17.8.752).
2. Any particulate emissions in excess of 0.10 grains per dry standard cubic foot (gr/dscf) corrected to 12% carbon dioxide (CO₂) (ARM 17.8.752).

C. 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. DEQ may require further testing (ARM 17.8.105).

D. Monitoring Requirements

1. AMC shall install, calibrate, maintain, and operate continuous monitoring and recording equipment on the crematorium to measure the secondary chamber exit gas temperature (ARM 17.8.749).
2. AMC shall also record the daily quantity of material incinerated/cremated and the daily hours of operation of the crematorium (ARM 17.8.749).
3. AMC shall maintain on site a log of maintenance activities for the crematorium and temperature monitoring equipment. The log shall be submitted to DEQ upon request (ARM 17.8.749).

E. Operational Reporting Requirements

1. AMC shall supply DEQ with annual production information for all emission points, as required by DEQ 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 DEQ by the date required in the emission inventory request. Information shall be in the units required by DEQ. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. AMC shall notify DEQ 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 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 AMC 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 DEQ, and must be submitted to DEQ upon request (ARM 17.8.749).

F. Notification

AMC shall provide DEQ with written notification of the actual start-up date of the crematorium within 15 days after the actual start-up date (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – AMC shall allow DEQ’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 (continuous emissions monitoring system (CEMS) or continuous emissions rate monitoring system (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 AMC fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving AMC 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 DEQ’s decision may request, within 15 days after DEQ renders its decision, upon affidavit setting forth the grounds therefore, 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 DEQ’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 DEQ’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, DEQ’s decision on the application is final 16 days after DEQ’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 DEQ at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by AMC 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 (MAQP) Analysis
All Montana Crematory
MAQP #4735-01

I. Introduction/Process Description

All Montana Crematory (AMC) owns and operates a human crematory (crematorium) with a maximum incineration capacity of 200 pounds per hour (lb/hr). AMC is located at 107 Oak Street, Anaconda, Montana. The legal description of the facility is Section 3, Township 4 North, Range 11 West, Block 26, Lots 11-12 in Deer Lodge County, Montana.

A. Permitted Equipment

AMC proposes to operate a 2012 U.S. Equipment “Classic” multiple chamber human cremation unit with a maximum incineration capacity of 200 pounds per hour (lb/hr), and associated equipment.

B. Source Description

The crematory is fired on natural gas and is capable of incinerating up to 200 lb/hr of human remains. The operating mode shall rely on automatic programmable logic control (PLC) based control which uses temperature control, a primary burner temperature interlock, and PLC based timers to insure proper operation for each cremation cycle. The secondary chamber burner shall be used to preheat the secondary chamber of the crematorium to the minimum required operating temperature prior to igniting the primary chamber burner. The secondary chamber operating temperature of the crematorium shall be maintained above 1600 degrees Fahrenheit (°F) with no single reading less than 1575 °F. Burners are also monitored with continuous ultraviolet (UV) detection for detection of loss of flame and an opacity sensor which temporarily suspends operation of the primary chamber burner when the opacity gets too high. Residence time in the secondary chamber is in excess of 1.0 second to achieve a high level of destruction efficiency

Initial and supplementary combustion is provided by two burners, one in the primary chamber and one in the secondary chamber, with a total maximum rated design capacity of 2,000,000 British thermal units per hour (Btu/hr).

C. Permit History

AMC received a final permit **#4735-00** on June 5, 2012. That permit was for the installation and operation of a natural gas fired 2012 U.S. Equipment “Classic” batch load human remains crematorium with a maximum incineration design capacity of 200 pounds per hour (lb/hr) or 750 lbs per batch.

D. Current Permit Action

On November 20th, 2023, the Department of Environmental Quality, Air Quality Bureau (DEQ) received a request to transfer ownership of the AMC facility. The current company owner (responsible official) is David Mahn, and the new company owner (responsible

official) is Brianne Mulvaney. The new company mailing address is 107 Oak Street, Anaconda, MT 59711. **MAQP #4735-01 replaces MAQP #4735-00.**

E. Additional Information

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.

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 DEQ. Upon request, DEQ 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 DEQ, 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 DEQ.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by DEQ, 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).

AMC 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 DEQ upon request.

4. ARM 17.8.110 Malfunctions. (2) DEQ 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

AMC must maintain compliance with the applicable ambient air quality standards. As part of the risk assessment required for this project, DEQ conducted SCREEN3 modeling, an Environmental Protection Agency (EPA)-approved air dispersion model. The screening analysis demonstrated that the proposed project would comply with all applicable ambient air quality standards and demonstrated negligible risk to human health as required for permit issuance.

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.
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 (gr/dscf) 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 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR Part 60.
- 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 DEQ. AMC 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 DEQ by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by DEQ. 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. DEQ 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. AMC does not have a PTE greater than 25 tons per year of any pollutant; however, in accordance with the MCA 75-2-215, an air quality permit must be obtained prior to the construction and operation of any incinerator, regardless of potential incinerator emissions. Because AMC must obtain an air quality permit, all normally applicable requirements apply in this case.
 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. A permit application was not required for the current permit action because the permit change is considered an administrative permit change. (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. An affidavit of publication of public notice was not required for the current permit action because the permit change is considered an administrative permit change.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by DEQ 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 Best Available Control Technology (BACT) shall be utilized. BACT analysis was not required because the current permit action is considered an administrative change to the permit.
8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by DEQ 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 AMC 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 DEQ's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules

adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.
14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to DEQ.
15. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to DEQ for incineration facilities subject to 75-2-215, MCA.

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

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

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

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 DEQ 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 #4735-01 for All Montana Crematory, 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 not subject to any current NSPS.
 - e. This facility is not subject to any current National Emission Standards for Hazardous Air Pollutants (NESHAP) standards.
 - f. This source is not a Title IV affected source, or a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, DEQ determined that AMC will be a minor source of emissions as defined under the Title V operating permit program.

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

- 1. "Incinerator" means any single or multiple-chambered combustion device that burns combustible material, alone or with a supplemental fuel or catalytic combustion assistance, primarily for the purpose of removal, destruction, disposal, or volume reduction of all or any portion of the input material.
- 2. "Solid waste" means all putrescible and nonputrescible solid, semisolid, liquid, or gaseous wastes, including, but not limited to air pollution control facilities...

I. MCA 75-2-215, Solid or Hazardous Waste Incineration - Additional permit requirements:

- 1. MCA 75-2-215 requires air quality permits for all new solid waste incinerators; therefore, AMC must obtain an air quality permit.
- 2. MCA 75-2-215 requires the applicant to provide, to DEQ's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants, from the incineration of solid waste. The information in the initial permit application fulfilled this requirement.
- 3. MCA 75-2-215 requires that DEQ reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety, and welfare. DEQ completed a health risk assessment, based on an emissions inventory

and ambient air quality modeling, for this MAQP application. Based on the results of the emission inventory, modeling, and the health risk assessment, DEQ determined that AMC complies with this requirement.

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. DEQ determined that the operating the proposed incinerator (crematorium) according to the manufacturer-recommended operation procedures constitutes BACT.

III. BACT Determination

A BACT determination is required for each new or modified source. AMC 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 not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

Criteria Pollutant Emission Source	Emissions Tons/Year [PTE]							
	PM	PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	Lead
Crematorium	2.05	0.49	0.49	1.56	1.29	0.95	1.31	0.03
Natural Gas Combustion	0.07	0.07	0.07	0.86	0.72	0.01	0.05	0.00
TOTAL EMISSIONS >	2.11	0.56	0.56	2.42	2.01	0.96	1.36	0.03

PM, particulate matter

PM₁₀, particulate matter with an aerodynamic diameter of 10 microns or less

PM_{2.5}, particulate matter with an aerodynamic diameter of 2.5 microns or less

NO_x, oxides of nitrogen

CO, carbon monoxide

SO₂, oxides of sulfur

VOC, volatile organic compounds

Lead, Lead emissions

MMscf, Million standard cubic feet

All Montana Crematory

Criteria Pollutant from Crematory

Maximum Process Rate:	200.0 lbs/hr	(Note: Equipment submittal says 150-200 lbs/hr)
Operating Hours	8760 hours/year	
Annual Capacity	(200.00 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =	876 tons/yr

PM Emissions:

Emission Factor	4.67 lbs/ton	(AP42 Table 2.3-2. 07/93)	
Calculations	(4.67 lbs/ton) * (876.00 tons/yr) * (0.0005) =		2.05 tons/yr

PM₁₀

Emissions:

Emission Factor	1.13 lbs/ton	FIRE	
Calculations	(1.13 lbs/ton) * (876.00 tons/yr) * (0.0005) =		0.49 tons/yr

PM_{2.5}

Emissions:

(Assumed to be equivalent to PM₁₀)

NO_x Emissions

Emission Factor	3.56 lbs/ton	(AP42 Table 2.3-1. 07/93)	
Calculations	(3.56 lbs/ton) * (876.00 tons/yr) * (0.0005) =		1.56 tons/yr

CO

Emissions

Emission Factor	2.95 lbs/ton	(AP42 Table 2.3-1. 07/93)	
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Calculations	$(2.95 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$	1.29	tons/yr
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SO_x

Emission Factor	2.17 lbs/ton	(AP42 Table 2.3-1. 07/93)	
Calculations	$(2.17 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$	0.95	tons/yr

VOC Emissions

Emission Factor	3 lbs/ton	AFSSCC 5-02-005-05, 3/90	
Calculations	$(3 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$	1.31	tons/yr

Lead Emissions

Emission Factor	0.0728 lbs/ton	AP42 Table 2.3-2, 07/93	
Calculations	$(0.0728 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$	0.0318864	tons/yr

Criteria Pollutants from Natural Gas Combustion

Hours of Operation	8760 hrs/yr		
Max Fuel Combustion	0.00196	Converted Using 1020 BTU/scf from AP42	2,000,000 BTU/hr Applicant Submittal

PM Emissions:

Emission Factor	7.60 lbs/MMSCF	AP42 Table 1.4-1, 07/98	
Calculations	$(7.6 \text{ lbs/MMSCF}) * (0.002 \text{ MMSCF/hour}) =$	0.015	lbs/hr
	$(0.01 \text{ lbs/hr}) * (8760 \text{ hrs/yr}) * (0.0005 \text{ tons/lb}) =$	0.07	TPY

PM₁₀ and PM_{2.5} Emissions assumed equal to PM

NO_x Emissions

Emission Factor	100.00 lbs/MMSCF	AP42 Table 1.4-1, 07/98	
Calculations	$(100 \text{ lbs/MMSCF}) * (0.002 \text{ MMSCF/hour}) =$	0.196	lbs/hr
	$(0.20 \text{ lbs/hr}) * (8760 \text{ hrs/yr}) * (0.0005 \text{ tons/lb}) =$	0.86	TPY

CO Emissions:

Emission Factor	84.00 lbs/MMSCF	AP42 Table 1.4-1, 07/98	
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Calculations (84 lbs/MMSCF) * (0.002 MMSCF/hour) = 0.165 lbs/hr
 (0.16 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) = 0.72 TPY

SO_x Emissions

Emission Factor 0.60 lbs/MMSCF AP42 Table 1.4-1, 07/98

Calculations (0.6 lbs/MMSCF) * (0.002 MMSCF/hour) = 0.001 lbs/hr
 (0.00 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) = 0.01 TPY

VOC Emissions

Emission Factor 5.50 lbs/MMSCF AP42 Table 1.4-1, 07/98

Calculations (5.5 lbs/MMSCF) * (0.002 MMSCF/hour) = 0.011 lbs/hr
 (0.01078 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) = 0.05 TPY

Lead Emissions:

Emission Factor 0.0005 lbs/MMSCF AP42 Table 1.4-1, 07/98

Calculations (0.0005 lbs/MMSCF) * (0.002 MMSCF/hour) = 9.8039E-07 lbs/hr
 (0.000001 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) = 0.00000 TPY

HAP Emissions from Crematorium	
HAP	TPY
Bromoform	1.27E-05
Carbon Tetrachloride	2.51E-05
Chloroform	2.39E-05
1,2- Dichloropropane	5.78E-04
Ethyl Benzene	7.05E-04
Napthalene	5.08E-03
Tetrachloroethylene	1.77E-05
1,1,2-tetrachlorethane	4.82E-05
Toluene	2.02E-03
Vinylidene chloride	3.11E-05
Xylene	9.64E-04
Total HAP Potential Emissions	9.51E-03

2.74E-04 grams/sec

HAP Emission Inventory: Crematorium (Montana DEQ Policy)

HAP Emissions from Crematorium (Montana DEQ Policy)				
Annual Capacity	$(200.00 \text{ lbs/hr}) * (8760 \text{ hrs/yr}) * (0.0005 \text{ tons/lb}) =$	876	tons/yr	
Bromoform				
Emission Factor	0.000029 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.000029 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		1.27E-05	tons/yr
Carbon Tetrachloride				
Emission Factor	0.0000574 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.0000574 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		2.51E-05	tons/yr
Chloroform				
Emission Factor	0.0000545 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.0000545 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		2.39E-05	tons/yr
1,2- Dichloropropane				
Emission Factor	0.00132 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.00132 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		5.78E-04	tons/yr
Ethyl Benzene				
Emission Factor	0.00161 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.00161 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		7.05E-04	tons/yr
Napthalene				
Emission Factor	0.0116 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.0116 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		5.08E-03	tons/yr
Tetrachloroethylene				
Emission Factor	0.0000403 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.0000403 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		1.77E-05	tons/yr

1,1,2,2-tetrachlorethane

Emission Factor	0.00011 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.00011 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		4.82E-05	tons/yr

Toluene

Emission Factor	0.00462 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.00462 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		2.02E-03	tons/yr

Note: Those have been copied in here from workbook.

Vinylidene chloride

Emission Factor	0.000071 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.000071 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		3.11E-05	tons/yr

Xylene

Emission Factor	0.0022 lbs/ton	AFSSCC 5-02-005-05		
Calculations	$(0.0022 \text{ lbs/ton}) * (876.00 \text{ tons/yr}) * (0.0005) =$		9.64E-04	tons/yr

HAP Emissions from Natural Gas Combustion		
HAP	TPY	
2-Methylnaphthalene	2.06E-07	
3-Methylchloranthrene	1.55E-08	
7,12-Dimethylbenz(a)anthracene	1.37E-07	
Acenaphthene	1.55E-08	
Acenaphthylene	1.55E-08	
Anthracene	2.06E-08	
Benzene	1.80E-05	
Benzo(a)anthracene	1.55E-08	
Benzo(a)pyrene	1.03E-08	
Benzo(b)fluoranthene	1.55E-08	
Benzo(k)fluoranthene	1.55E-08	
Benzo(g,h,i)perylene	1.03E-08	
chrysene	1.55E-08	
Dibenzo(a,h)anthracene	1.03E-08	
Dichlorobenzene	1.03E-05	
Fluoranthene	2.58E-08	
Fluorene	2.40E-08	
Formaldehyde	6.44E-04	
Hexane	1.55E-02	
Indeno(1,2,3,d,d)pyrene	1.55E-08	
Naphthalene	5.24E-06	
Phenanthrene	1.46E-07	
Pyrene	4.29E-08	
Toluene	2.92E-05	
Arsenic	1.72E-06	
Beryllium	1.03E-07	
Cadmium	9.45E-06	
Chromium, Total	1.20E-05	
Cobalt	7.21E-07	
Lead	4.29E-06	
Manganese	3.26E-06	
Mercury	2.23E-06	
Nickel	1.80E-05	
Selenium	2.06E-07	
Total HAP Potential Emissions	1.62E-02	4.67E-04 g/s

HAP Emissions from Natural Gas Combustion**Hours of Operation**

8760 hrs/yr

Maximum Rated Design Capacity

0.001960784 MMscf/hr

2-Methylnaphthalene

Emission Factor	2.4000E-05 lbs/MMscf	[AP-42 Table 1.4-3, 7/98	MMscf/hr	4.706E-08	lbs/hr
Calculations	(0.000024 lbs/MMscf) * (0.002 MMscf/hour) =			2.06E-07	TPY
	(0.00000005 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

3-Methylchloranthrene

Emission Factor	1.8000E-06 lbs/MMscf	[AP-42 Table 1.4-3, 7/98		3.529E-09	lbs/hr
Calculations	(0.0000018 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-08	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

7,12-Dimethylbenz(a) anthracene

Emission Factor	1.6000E-05 lbs/MMscf	[AP-42 Table 1.4-3, 7/98		3.137E-08	lbs/hr
Calculations	(0.000016 lbs/MMscf) * (0.002 MMscf/hour) =			1.37E-07	TPY
	(0.00000003 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

Acenaphthene

Emission Factor	1.8000E-06 lbs/MMscf	[AP-42 Table 1.4-3, 7/98		3.529E-09	lbs/hr
Calculations	(0.0000018 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-08	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

Acenaphthylene

Emission Factor	1.8000E-06 lbs/MMscf	[AP-42 Table 1.4-3, 7/98		3.529E-09	lbs/hr
Calculations	(0.0000018 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-08	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

Anthracene

Emission Factor	2.4000E-06 lbs/MMscf	[AP-42 Table 1.4-3, 7/98		4.706E-09	lbs/hr
Calculations	(0.0000024 lbs/MMscf) * (0.002 MMscf/hour) =			2.06E-08	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =				

Benzene					
Emission Factor	2.1000E-03	lbs/MMscf	[AP-42 Table	4.118E-	lbs/hr
		1.4-3, 7/98		06	
Calculations	(0.0021 lbs/MMscf) * (0.002			1.80E-	TPY
	MMscf/hour) =			05	
	(0.00000412 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				
Benz(a)anthracene					
Emission Factor	1.8000E-06	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000018 lbs/MMscf) * (0.002			1.55E-	TPY
	MMscf/hour) =			08	
	(0.00000000 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				
Benzo(a)pyrene					
Emission Factor	1.2000E-06	lbs/MMscf	[AP-42 Table	2.353E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000012 lbs/MMscf) * (0.002			1.03E-	TPY
	MMscf/hour) =			08	
	(0.00000000 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				
Benzo(b)fluoranthene					
Emission Factor	1.8000E-06	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000018 lbs/MMscf) * (0.002			1.55E-	TPY
	MMscf/hour) =			08	
	(0.00000000 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				
Benzo(k)fluoranthene					
Emission Factor	1.8000E-06	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000018 lbs/MMscf) * (0.002			1.55E-	TPY
	MMscf/hour) =			08	
	(0.00000000 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				
Benzo(g,h,i) perylene					
Emission Factor	1.2000E-06	lbs/MMscf	[AP-42 Table	2.353E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000012 lbs/MMscf) * (0.002			1.03E-	TPY
	MMscf/hour) =			08	
	(0.00000000 lbs/hr) * (8760 hrs/yr)				
	*(0.0005 tons/lb) =				

Chrysene					
Emission Factor	1.8000E-06	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000018 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			08	
Dibenzo(a,h,)anthracene					
Emission Factor	1.2000E-06	lbs/MMscf	[AP-42 Table	2.353E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000012 lbs/MMscf) * (0.002 MMscf/hour) =			1.03E-	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			08	
Dichlorobenzene					
Emission Factor	1.2000E-03	lbs/MMscf	[AP-42 Table	2.353E-	lbs/hr
		1.4-3, 7/98		06	
Calculations	(0.0012 lbs/MMscf) * (0.002 MMscf/hour) =			1.03E-	TPY
	(0.00000235 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			05	
Fluoranthene					
Emission Factor	3.0000E-06	lbs/MMscf	[AP-42 Table	5.882E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.000003 lbs/MMscf) * (0.002 MMscf/hour) =			2.58E-	TPY
	(0.00000001 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			08	
Fluorene					
Emission Factor	2.8000E-06	lbs/MMscf	[AP-42 Table	5.490E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000028 lbs/MMscf) * (0.002 MMscf/hour) =			2.40E-	TPY
	(0.00000001 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			08	
Formaldehyde					
Emission Factor	7.5000E-02	lbs/MMscf	[AP-42 Table	1.471E-	lbs/hr
		1.4-3, 7/98		04	
Calculations	(0.075 lbs/MMscf) * (0.002 MMscf/hour) =			6.44E-	TPY
	(0.00014706 lbs/hr) * (8760 hrs/yr) *(0.0005 tons/lb) =			04	

Hexane					
Emission Factor	1.8000E+00	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		03	
Calculations	(1.8 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-	TPY
	(0.00352941 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			02	
Indeno(1,2,3-cd)pyrene					
Emission Factor	1.8000E-06	lbs/MMscf	[AP-42 Table	3.529E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.0000018 lbs/MMscf) * (0.002 MMscf/hour) =			1.55E-	TPY
	(0.00000000 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			08	
Naphthalene					
Emission Factor	6.1000E-04	lbs/MMscf	[AP-42 Table	1.196E-	lbs/hr
		1.4-3, 7/98		06	
Calculations	(0.00061 lbs/MMscf) * (0.002 MMscf/hour) =			5.24E-	TPY
	(0.00000120 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			06	
Phenanthrene					
Emission Factor	1.7000E-05	lbs/MMscf	[AP-42 Table	3.333E-	lbs/hr
		1.4-3, 7/98		08	
Calculations	(0.000017 lbs/MMscf) * (0.002 MMscf/hour) =			1.46E-	TPY
	(0.00000003 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			07	
Pyrene					
Emission Factor	5.0000E-06	lbs/MMscf	[AP-42 Table	9.804E-	lbs/hr
		1.4-3, 7/98		09	
Calculations	(0.000005 lbs/MMscf) * (0.002 MMscf/hour) =			4.29E-	TPY
	(0.00000001 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			08	
Toluene					
Emission Factor	3.4000E-03	lbs/MMscf	[AP-42 Table	6.667E-	lbs/hr
		1.4-3, 7/98		06	
Calculations	(0.0034 lbs/MMscf) * (0.002 MMscf/hour) =			2.92E-	TPY
	(0.00000667 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb) =			05	
Arsenic					
Emission Factor	2.0000E-04	lbs/MMscf	[AP-42 Table	3.922E-	lbs/hr
		1.4-4, 7/98		07	

Calculations	(0.0002 lbs/MMscf) * (0.002 MMscf/hour) =		1.72E-	TPY
	(0.00000039 lbs/hr) * (8760 hrs/yr)		06	
	*(0.0005 tons/lb) =			

Beryllium

Emission Factor	1.2000E-05 lbs/MMscf [AP-42 Table 1.4-4, 7/98		2.353E-	lbs/hr
			08	
Calculations	(0.000012 lbs/MMscf) * (0.002 MMscf/hour) =		1.03E-	TPY
	(0.00000002 lbs/hr) * (8760 hrs/yr)		07	
	*(0.0005 tons/lb) =			

Cadmium

Emission Factor	1.1000E-03 lbs/MMscf [AP-42 Table 1.4-4, 7/98		2.157E-	lbs/hr
			06	
Calculations	(0.0011 lbs/MMscf) * (0.002 MMscf/hour) =		9.45E-	TPY
	(0.00000216 lbs/hr) * (8760 hrs/yr)		06	
	*(0.0005 tons/lb) =			

Chromium, Total

Emission Factor	1.4000E-03 lbs/MMscf [AP-42 Table 1.4-4, 7/98		2.745E-	lbs/hr
			06	
Calculations	(0.0014 lbs/MMscf) * (0.002 MMscf/hour) =		1.20E-	TPY
	(0.00000275 lbs/hr) * (8760 hrs/yr)		05	
	*(0.0005 tons/lb) =			

Cobalt

Emission Factor	8.4000E-05 lbs/MMscf [AP-42 Table 1.4-4, 7/98		1.647E-	lbs/hr
			07	
Calculations	(0.000084 lbs/MMscf) * (0.002 MMscf/hour) =		7.21E-	TPY
	(0.00000016 lbs/hr) * (8760 hrs/yr)		07	
	*(0.0005 tons/lb) =			

Lead

Emission Factor	5.0000E-04 lbs/MMscf [AP-42 Table 1.4-4, 7/98		9.804E-	lbs/hr
			07	
Calculations	(0.0005 lbs/MMscf) * (0.002 MMscf/hour) =		4.29E-	TPY
	(0.00000098 lbs/hr) * (8760 hrs/yr)		06	
	*(0.0005 tons/lb) =			

Manganese

Emission Factor	3.8000E-04 lbs/MMscf [AP-42 Table 1.4-4, 7/98		7.451E-	lbs/hr
			07	
Calculations	(0.00038 lbs/MMscf) * (0.002 MMscf/hour) =		3.26E-	TPY
	(0.00000075 lbs/hr) * (8760 hrs/yr)		06	
	*(0.0005 tons/lb) =			

Mercury

Emission Factor	2.6000E-04 lbs/MMscf	[AP-42 Table	5.098E-	lbs/hr
	1.4-4, 7/98		07	
Calculations	(0.00026 lbs/MMscf) * (0.002		2.23E-	TPY
	MMscf/hour) =		06	
	(0.00000051 lbs/hr) * (8760 hrs/yr)			
	*(0.0005 tons/lb) =			

Nickel

Emission Factor	2.1000E-03 lbs/MMscf	[AP-42 Table	4.118E-	lbs/hr
	1.4-4, 7/98		06	
Calculations	(0.0021 lbs/MMscf) * (0.002		1.80E-	TPY
	MMscf/hour) =		05	
	(0.00000412 lbs/hr) * (8760 hrs/yr)			
	*(0.0005 tons/lb) =			

Selenium

Emission Factor	2.4000E-05 lbs/MMscf	[AP-42 Table	4.706E-	lbs/hr
	1.4-4, 7/98		08	
Calculations	(0.000024 lbs/MMscf) * (0.002		2.06E-	TPY
	MMscf/hour) =		07	
	(0.00000005 lbs/hr) * (8760 hrs/yr)			
	*(0.0005 tons/lb) =			

V. Existing Air Quality

The AMC facility is located within an area that is classified as attainment for all pollutants for EPA-established National Ambient Air Quality Standards (NAAQS).

The limitations and conditions in MAQP #4735-01 ensure the facility would not cause or contribute to a violation of the NAAQS.

VI. Air Quality Impacts

This permit contains conditions and limitations that would protect air quality for the site and surrounding area.

VII. Ambient Air Impact Analysis

DEQ determined that there would be no impact from this permitting action because it is an administrative amendment. DEQ believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Health Risk Assessment

A health risk assessment is not required because the current action is considered an administrative change to the permit. However, a health risk assessment was conducted to

determine if the crematorium complied with the negligible risk requirement of MCA 75-2-215 and remains valid.

The environmental effects unrelated to human health were not considered in determining compliance with the negligible risk standard, but were evaluated as required by the Montana Environmental Policy Act, in determining compliance with all applicable rules or other requirements requiring protection of public health, safety, and welfare and the environment.

Pursuant to ARM 17.8.770(1)(c), pollutants may be excluded from the human health risk assessment if DEQ determines that exposure from inhalation is the only appropriate pathway to consider in the human health risk assessment and if the ambient concentrations of the pollutants (calculated using the potential to emit; enforceable limits or controls may be considered) are less than the levels specified in Table 1 or Table 2 of ARM 17.8.770.

AMC's proposed incinerator has a stack height of 17 feet with vertical discharge, a stack exit temperature of 1000 °F, and a flow rate of 2,827 actual cubic feet per minute (ACFM) with a 1.8 foot diameter stack. Ambient air modeling was accomplished using SCREEN3 software; an EPA approved ambient air modeling software used for conservative modeling. Ambient air impacts were modeled for the HAPs identified in the PTE calculations of Section IV. The emission inventory did not contain sufficient quantities of any pollutant on DEQ'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. No pollutants exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770. The SCREEN3 Modeling results are shown below:

Crematorium HAPs Emissions Modeling

SIMPLE	TERRAIN	INPUTS:							
SOURCE	TYPE	=	POINT						
EMISSION	RATE	(G/S)	=	2.74E-04					
STACK	HEIGHT	(M)	=	5.1816					
STK	INSIDE	DIAM	(M)	=	0.5486				
STK	EXIT	VELOCITY	(M/S)=	5.6436					
STK	GAS	EXIT	TEMP	(K)	=	810.9278			
AMBIENT	AIR	TEMP	(K)	=	293				
RECEPTOR	HEIGHT	(M)	=	0					
URBAN/RURAL	OPTION	=	URBAN						
BUILDING	HEIGHT	(M)	=	0					
MIN	HORIZ	BLDG	DIM	(M)	=	0			
MAX	HORIZ	BLDG	DIM	(M)	=	0			
STACK	EXIT	VELOCITY	WAS	CALCULATE	FROM				
VOLUME	FLOW	RATE	=	1.334194	(M**3/S)				
BUOY.	FLUX	=	2.66	M**4/S**3	MOM.	FLUX	=	0.866	M**4/S**2.
***	FULL	METEOROL	***						
DIST	CONC	U10M	USTK	MIX	HT	PLUME	SIGMA	SIGMA	
(M)	(UG/M**3)	STAB	(M/S)	(M/S)	(M)	HT	(M)	Y	(M)
-----	-----	----	-----	-----	-----	-----	-----	-----	-----
1	0	1	1	1	320	49.8	0.71	0.68	NO
100	4.98E-02	4	4	4	1280	16.24	16.01	14.16	NO
200	3.06E-02	4	2	2	640	27.49	31.44	27.93	NO
300	2.50E-02	6	1	1	10000	39.36	32.67	22.19	NO
MAXIMUM	1-HR	CONCENTR/	AT	OR	BEYOND	1	M:		
30	7.91E-02	3	10	10	3200	8.62	6.81	6.23	NO
DWASH=	MEANS	NO	CALC	MADE	(CONC	=	0.0)		
DWASH=NO	MEANS	NO	BUILDING	DOWNWAS	USED				
DWASH=HS	MEANS	HUBER-SNY	DOWNWAS	USED					
DWASH=SS	MEANS	SCHULMAN	DOWNWAS	USED					
DWASH=NA	MEANS	DOWNWAS	NOT	APPLICABLE	X<3*LB				

***	SUMMARY	OF	SCREEN	MODEL	RESULTS	***			

CALCULATION	MAX	CONC	DIST	TO	TERRAIN				
PROCEDURE	(UG/M**3)	MAX	(M)	HT	(M)				
-----	-----	-----	-----						
SIMPLE	TERRAIN	7.91E-02	30	0					

Natural Gas HAPs Emissions Modeling

All input parameters remained the same except the emissions rate shown below:

EMISSION RATE (Gram/Second) = 4.67E-04

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 5 Meters: 1.35E-01 ug/m³ at 30 meters.

RISK ASSESSMENT

Although no pollutants for which emissions factors are established exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770, DEQ conducted a full risk assessment. DEQ determined that the calculated Cancer Risks demonstrate a negligible risk to human health and the environment. As documented in the table below and in accordance with DEQ's negligible risk requirement, no single HAP concentration results in a Cancer Risk greater than 1.00E-06 and the sum of all Cancer Risks are less than 1.00E-05. Further, the sum of the Chronic Non-cancer Reference Exposure Level (CNCREL) hazard quotients is less than 1.0 as required to demonstrate compliance with the negligible risk requirement.

NEGLECTIBLE RISK ASSESSMENT ⁽¹⁾							
HAP	Modeled		Cancer URF ⁽²⁾	Cancer Risk ⁽³⁾	CNCREL ⁽⁶⁾	CNCREL Quotient ⁽⁷⁾	Notes
Crematorium Process Emissions	HAP Concentration		(ug/m ³) ⁻¹		(ug/m ³)		
Bromoform	8.45E-06	ug/m ³	1.10E-06	9.29E-12	ND	NA	(AFSSCC 5-02-005-05)
Carbon Tetrachloride	1.67E-05	ug/m ³	6.00E-06	1.00E-10	1.00E+02	1.67E-07	(AFSSCC 5-02-005-05)
Chloroform	1.59E-05	ug/m ³	ND	ND	9.80E+01	1.62E-07	(AFSSCC 5-02-005-05)
1,2-Dichloropropane ⁽⁴⁾	3.85E-04	ug/m ³	1.90E-05	7.31E-09	4.00E+00	9.62E-05	(AFSSCC 5-02-005-05)
Ethyl Benzene	4.69E-04	ug/m ³	2.50E-06	1.17E-09	1.00E+03	4.69E-07	(AFSSCC 5-02-005-05)
Naphthalene ⁸	3.38E-03	ug/m ³	3.40E-05	1.15E-07	3.00E+00	1.13E-03	(AFSSCC 5-02-005-05)
Tetrachloroethylene ⁽⁵⁾	1.17E-05	ug/m ³	5.90E-06	6.93E-11	2.70E+02	4.35E-08	(AFSSCC 5-02-005-05)
1,1,2,2-Tetrachloroethane	3.21E-05	ug/m ³	5.80E-05	1.86E-09	ND	NA	(AFSSCC 5-02-005-05)
Toluene ⁹	1.35E-03	ug/m ³	ND	ND	5.00E+03	2.69E-07	(AFSSCC 5-02-005-05)
Vinylidene Chloride	2.07E-05	ug/m ³	ND	ND	2.00E+02	1.03E-07	(AFSSCC 5-02-005-05)

Xylene	6.41E-04	µg/m ³	ND	ND	1.00E+02	6.41E-06	(AFSSCC 5-02-005-05)
Natural Gas Emissions							
2-Methylnaphthalene	1.71E-07	µg/m ³	ND	ND	ND	ND	Table 1. Prioritized Chronic Dose-Response Values
3-Methylchloranthrene	1.28E-08	µg/m ³	0.0063	8.09E-11	ND	ND	Same as above
7,12-Dimethylbenz(a)anthracene	1.14E-07	µg/m ³	0.071	8.11E-09	ND	ND	Same as above
Acenaphthene	1.28E-08	µg/m ³	ND	ND	ND	ND	Same as above
Acenaphthylene	1.28E-08	µg/m ³	ND	ND	ND	ND	Same as above
Anthracene	1.71E-08	µg/m ³	ND	ND	ND	ND	Same as above
Benzene	1.50E-05	µg/m ³	0.0000078	1.17E-10	3.00E+01	5.00E-07	Same as above
Benzo(a)anthracene	1.28E-08	µg/m ³	0.00011	1.41E-12	ND	ND	Same as above
Benzo(a)pyrene	8.57E-09	µg/m ³	0.0011	9.42E-12	ND	ND	Same as above
Benzo(b)fluoranthene	1.28E-08	µg/m ³	0.00011	1.41E-12	ND	ND	Same as above
Benzo(k)fluoranthene	1.28E-08	µg/m ³	0.00011	1.41E-12	ND	ND	Same as above
Benzo(g,h,i)perylene	8.57E-09	µg/m ³	ND	ND	ND	ND	Same as above
Chrysene	1.28E-08	µg/m ³	0.000011	1.41E-13	ND	ND	Same as above
Dibenz(a,h)anthracene	8.57E-09	µg/m ³	0.0012	1.03E-11	ND	ND	Same as above
1,4-Dichlorobenzene(p)	8.57E-06	µg/m ³	0.000011	9.42E-11	8.00E+02	1.07E-08	Same as above
Fluoranthene	2.14E-08	µg/m ³	ND	ND	ND	ND	Same as above
Fluorene	2.00E-08	µg/m ³	ND	ND	ND	ND	Same as above
Formaldehyde	5.35E-04	µg/m ³	0.000013	6.96E-09	9.80E+00	5.46E-05	Same as above
Hexane	1.28E-02	µg/m ³	ND	ND	7.00E+02	1.84E-05	Same as above
Indeno(1,2,3-cd)pyrene	1.28E-08	µg/m ³	0.00011	1.41E-12	ND	ND	Same as above
Naphthalene	4.35E-06	µg/m ³	0.000034	1.48E-10	ND	ND	Same as above
Phenanthrene	1.21E-07	µg/m ³	ND	ND	ND	ND	Same as above
Pyrene	3.57E-08	µg/m ³	ND	ND	ND	ND	Same as above
Toluene	2.43E-05	µg/m ³	ND	ND	5.00E+03	4.85E-09	Same as above
Arsenic	1.43E-06	µg/m ³	0.0043	6.14E-09	1.50E-02	9.52E-05	Same as above

Beryllium	8.57E-08	µg/m ³	0.0024	2.06E-10	2.00E-02	4.28E-06	Same as above
Cadmium	7.85E-06	µg/m ³	0.0018	1.41E-08	1.00E-02	7.85E-04	Same as above
Chromium, total	9.99E-06	µg/m ³	0.012	1.20E-07	1.08E-01	9.25E-05	Same as above
Cobalt	6.00E-07	µg/m ³	ND	ND	1.00E-01	6.00E-06	Same as above
Lead	3.57E-06	µg/m ³	ND	ND	1.50E-01	2.38E-05	Same as above
Manganese	2.71E-06	µg/m ³	ND	ND	5.00E-02	5.42E-05	Same as above
Mercury	1.86E-06	µg/m ³	ND	ND	3.00E-01	6.19E-06	Same as above
Nickel	1.50E-05	µg/m ³	ND	ND	9.00E-02	1.67E-04	Same as above
Selenium	1.71E-07	µg/m ³	ND	ND	2.00E+01	8.57E-09	Same as above
TOTAL RISK				2.82E-07		2.54E-03	
(1) Source of chronic dose-response values is from Table 1: Prioritized Chronic Dose-Response Values for Screening Risk Assessments (4/27/2010), from www.epa.gov/ttn/atw/toxsource/table1.pdf .							
(2) Cancer Chronic Inhalation Unit Risk Factor from reference "1", units 1/ug/m ³							
(3) Cancer Risk is unitless and is calculated by multiplying the predicted concentration by the URF.							
(4) Also known as Propylene dichloride							
(5) Also known as Tetrachloroethene, perchloroethylene.							
(6) Chronic Noncancer Reference Exposure Level from reference "1".							
(7) CNCREL Quotient Value is calculated by dividing the modeled HAP concentration by the CNCREL.							
(8) Naphthalene contribution from natural gas is summed in the crematorium process.							
(9) Toluene contribution from natural gas is summed in the crematorium process.							

VIII. Taking or Damaging Implication Analysis

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

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

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

IX. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an Environmental Assessment is not required.

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