



Montana Department of  
**ENVIRONMENTAL QUALITY**

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March 1, 2011

Ms. Hilary Tone  
All Paws Great & Small Pet Crematory, Inc.  
81590 Gallatin Rd.  
Bozeman, MT 59718

Dear Ms. Tone:

Montana Air Quality Permit #3236-01 is deemed final as of March 1, 2011, by the Department of Environmental Quality (Department). This permit is for an animal crematory. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

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

Deanne Fischer, P.E.  
Environmental Engineer  
Air Resources Management Bureau  
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VW:DF  
Enclosure

Montana Department of Environmental Quality  
Permitting and Compliance Division

Montana Air Quality Permit #3236-01

All Paws Great & Small Pet Crematory, Inc.  
81590 Gallatin Rd.  
Bozeman, MT 59718

March 1, 2011



## MONTANA AIR QUALITY PERMIT

Issued to: All Paws Great & Small Pet Crematory, Inc.  
81590 Gallatin Road  
Bozeman, MT 59718

MAQP #3236-01  
Application Complete: 11/30/2010  
Preliminary Determination Issued: 01/07/2011  
Department Decision Issued: 02/11/2011  
Permit Final: 03/01/2011  
AFS #031-0018

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to All Paws Great & Small Pet Crematory, Inc. (All Paws), 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

All Paws owns and operates an animal crematory (crematorium) located in the Southwest ¼ of the Northwest ¼, of Section 13, Township 2 South, Range 4 East, in Gallatin County, Montana. The physical address is 81590 Gallatin Road, Bozeman, Montana 59718. A complete list of the permitted equipment can be found in the permit analysis.

#### B. Current Permit Action

On November 30, 2010, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a request to add a second cremation unit at the All Paws facility. In addition to adding the new equipment to the list of permitted equipment, this permit action updates the permit to reflect current permit language and rule references used by the Department.

### SECTION II: Conditions and Limitations

#### A. Operational Limitations

1. All Paws shall not incinerate/cremate any material other than animal remains and/or any corresponding container unless otherwise approved by the Department (ARM 17.8.749).
2. All Paws shall provide written notice to the Department and obtain approval from the Department if material other than what would normally be termed “animal remains, or its container” is to be incinerated (ARM 17.8.749).
3. The cremation units shall be equipped with auxiliary fuel burners. The auxiliary fuel burners shall be used to preheat the secondary chambers of the cremation units to the minimum required operating temperature prior to igniting the primary chamber burners. The operating temperatures shall be maintained during operation and for one-half hour after waste feed has stopped (ARM 17.8.752).
4. The operating temperature of the secondary chamber in each cremation unit shall be maintained above 1500 degrees Fahrenheit (°F) for any one-hour averaging period with no single reading less than 1400°F (ARM 17.8.752).

5. All Paws shall operate the cremation units as specified in the applications for MAQP #3236-00 and #3236-01. Further, All Paws shall develop cremation unit operation procedures, print those procedures in a crematorium operation procedures manual and require all personnel who operate the cremation units to familiarize themselves with the operating procedures. Upon request, a copy of this manual shall be supplied to the Department (ARM 17.8.752).

B. Emission Limitations

All Paws 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); and
2. Any particulate emissions in excess of 0.10 grains per dry standard cubic feet (gr/dscf) corrected to 12% carbon dioxide (CO<sub>2</sub>) (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. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirement

1. All Paws 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 units as 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).

3. All Paws shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include *the addition of a new emissions unit*, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).
4. All records compiled in accordance with this permit must be maintained by All Paws as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749)).

E. Monitoring Requirements

1. All Paws shall install, calibrate, maintain, and operate continuous monitoring and recording equipment on each cremation unit to measure the secondary chamber exit gas temperature (ARM 17.8.749).
2. All Paws shall record the daily quantity of material incinerated/cremated and the daily hours of operation of the crematorium (ARM 17.8.749).

F. Notification

All Paws shall provide the Department with written notification of the actual start-up date of the cremation unit associated with MAQP application #3236-01 within 15 days after the actual start-up date (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – All Paws shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if All Paws fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving All Paws 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 All Paws 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 Paws Great & Small Pet Crematory, Inc.  
MAQP #3236-01

I. Introduction/Process Description

All Paws Great & Small Pet Crematory, Inc. (All Paws) owns and operates a 2002 Thermtec Model S27P pathological animal cremation unit and a 2011 Thermtec Model S27 pathological animal cremation unit. The facility is located in the Southwest ¼ of the Northwest ¼, of Section 13, Township 2 South, Range 4 East, in Gallatin County, Montana. The physical address is 81590 Gallatin Road, Bozeman, Montana 59718.

A. Permitted Equipment

All Paws owns and operates a 2002 Thermtec Model S27P pathological animal cremation unit and a 2011 Thermtec Model S27 pathological animal cremation unit.

B. Source Description

The cremation units are fired on natural gas and are capable of incinerating up to 85 pounds per hour (lb/hr) each (170 lb/hr total) of animal remains and/or any associated containers.

C. Permit History

On January 21, 2003, All Paws submitted a complete application for a MAQP to install and operate a 2002 Thermtec Model S27P pathological animal cremation unit. **MAQP #3236-00** was issued on March 20, 2003, to All Paws.

D. Current Permit Action

On November 30, 2010, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a complete application from All Paws to modify their air quality permit to include a second cremation unit. **MAQP 3236-01** replaces MAPQ #3236-00.

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 the 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).

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

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

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

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

All Paws must maintain compliance with the applicable ambient air quality standards. As part of the risk assessment required for this project, the Department conducted Screen

View modeling, an Environmental Protection Agency (EPA) approved air dispersion model. The modeling analysis demonstrated that the proposed project would comply with all applicable ambient air quality standards 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 (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.  
  
While All Paws is required to comply with the Emission Limitations specified in Section II.B of MAQP #3236-01, this particular rule does not apply to the crematorium because All Paws has applied for and will operate under an MAQP in accordance with ARM 17.8.770 and MCA 75-2-215 for these units.
  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 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 an affected facility under any NSPS subpart defined in 40 CFR 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 the Department. All Paws 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. All Paws does not have the PTE greater than 25 tons per year of any pollutant; however, in accordance with the Montana Code Annotated (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 All Paws 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. All Paws 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. All Paws submitted an affidavit of publication of public notice for the November 17, 2010, issue of the *Bozeman Daily Chronicle*, a newspaper of general circulation in the Town of Bozeman, Montana in Gallatin 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 All Paws of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department
  15. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to the Department for incineration facilities subject to 75-2-215, Montana Code Annotated (MCA).
- F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:
1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
  2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications-- Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

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

- G. ARM 17.8, Subchapter 12, Operating Permit Program Applicability, including, but not limited to:
1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
    - a. PTE > 100 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 (PM<sub>10</sub>) in a serious PM<sub>10</sub> 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 #3236-01 for All Paws, 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 PM<sub>10</sub> nonattainment area;
    - d. This facility is not subject to any current NSPS;
    - e. This facility is not subject to any current NESHAP standards;

- f. This source is not a Title IV affected source, nor a solid waste combustion unit;
- g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that All Paws will be a minor source of emissions as defined under the Title V operating permit program and will not require a Title V operating permit.

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 commercial solid waste incinerators; therefore, All Paws must obtain an air quality permit.
- 2. MCA 75-2-215 requires the applicant to provide, to the Department's satisfaction, a characterization and estimate of emissions and ambient concentrations of air pollutants, including hazardous air pollutants from the incineration of solid waste. The Department determined that the information submitted in this application for MAQP #3236-01 is sufficient to fulfill this requirement.
- 3. MCA 75-2-215 requires that the Department reach a determination that the projected emissions and ambient concentrations constitute a negligible risk to public health, safety, and welfare. The Department completed a health risk assessment based on an emissions inventory and ambient air quality modeling for this proposal. Based on the results of the emission inventory, modeling, and the health risk assessment, the Department determined that All Paws' proposal under MAQP #3236-01 complies with this requirement.
- 4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. The Department determined that the proposed incinerator constitutes BACT.

### III. BACT Determination

A BACT determination is required for each new or modified source. All Paws 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. In addition, MCA 75-2-215 requires a BACT determination for all pollutants, not just criteria pollutants.

The Department reviewed other BACT analyses as part of this analysis. All Paws proposes to control the emissions from the incinerator with a secondary chamber designed specifically to reduce the amount of pollutants, including hazardous air pollutants, emitted from the incinerator. Previous research conducted by the Department indicates very few crematoriums have been required to install additional air pollution control equipment beyond that provided by the design of the incinerator. With the estimated particulate matter emissions being 1.49 tons per year, the

incremental cost per ton of additional control would be very high and would not be in line with control costs of other similar sources. In addition, the incinerator is limited by permit to 0.10 grains per dry standard cubic foot (gr/dscf) for particulate matter and to 10% opacity. Therefore, the Department determined that compliance with the particulate matter and opacity emission limits, with no additional controls required, constitutes BACT for this source.

BACT for products of combustion (CO, NO<sub>x</sub>, SO<sub>x</sub> VOCs) and HAPs is good combustion including the requirement that the secondary chamber must be maintained at an operating temperature, which exceeds 1500 degrees Fahrenheit (°F) on an hourly average with no single reading less than 1400°F. The operating procedures and minimum temperature requirements contained in MAQP #3236-01 will ensure good combustion and will constitute BACT for this source.

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

#### IV. Emission Inventory

An emission inventory was completed for the All Paw's proposal. This emission inventory for criteria pollutants was based on emission factors from the AIRS FACILITY SUBSYSTEM SOURCE CLASSIFICATION CODES (AFSSCC) manual dated March 1990 and AP-42 Fifth Edition Compilation of Air Pollutant Emission Factors (AP-42). The application indicated that the fuel used would be natural gas; therefore, the Department also used emission factors from AP-42, Section 1.4, Natural Gas Combustion, for the fuel combustion of natural gas.

The Department developed a HAP emission inventory using those emission factors contained in FIRE (the EPA emission factor repository) under SCC 5-02-005-05, pathological incineration. The Department considered only those HAPs for which an emission factor was available and that have been analyzed for other permitted similar sources.

<b>Criteria Pollutant Emissions (tons/year)</b>						
<b>Source</b>	<b>PM</b>	<b>PM<sub>10</sub></b>	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>SO<sub>x</sub></b>
Cremation Unit 1 (existing)	1.49	1.10	0.56	0.56	0.00	1.49
Natural Gas Fuel Combustion– Cremation Unit 1 (existing)	<b>0.05</b>	<b>0.05</b>	<b>0.70</b>	<b>0.04</b>	<b>0.59</b>	<b>0.00</b>
Cremation Unit 2	1.49	1.10	0.66	0.56	0.55	1.49
Cremation Unit 2 (Natural Gas Fuel Combustion )	<b>0.05</b>	<b>0.05</b>	<b>0.70</b>	<b>0.04</b>	<b>0.59</b>	<b>0.00</b>
<b>Total Criteria Pollutant Potential Emissions</b>	<b>3.09</b>	<b>2.31</b>	<b>2.62</b>	<b>1.20</b>	<b>1.73</b>	<b>2.99</b>

#### **UNIT 1 – EXISTING CREMATION UNIT: Criteria Pollutant Emission Calculations**

Maximum Rated Design Capacity: 85 lb/hr  
 Operating Hours: 8760 hr/yr  
 Conversion: 85 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 372.30 ton/yr

#### PM Emissions

Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

#### PM<sub>10</sub> Emissions:

Emission Factor: 5.92 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 5.92 lb/ton \* 0.0005 ton/lb = 1.10 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

VOC Emissions:  
 Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

CO Emissions:  
 Emission Factor: 0.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 0 lb/ton \* 0.0005 ton/lb = 0.00 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

**UNIT 1 – EXISTING CREMATION UNIT:**

**NATURAL GAS FUEL COMBUSTION: Criteria Pollutant Emission Calculations**

Hours of Operation: 8760 hr/yr  
 Maximum Rated Design Capacity: 0.0016 MMScf/MMBtu (Company Information)

PM Emissions:  
 All PM emissions assumed to be PM<sub>10</sub> emissions (AP-42, Table 1.4-2, 07/98)

PM<sub>10</sub> Emissions:  
 Emission Factor: 7.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 7.6 lbs/MMscf \* 0.0016 MMscf/hr == 0.012lb/hr  
 0.012 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.05 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 100 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 100 lbs/MMscf \* 0.0016 MMscf/hr == 0.16 lb/hr  
 0.16 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb == 0.701 ton/yr

VOC Emissions:  
 Emission Factor: 5.5 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 5.5 lbs/MMscf \* 0.0016 MMscf/hr = 0.009lb/hr  
 0.009 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.0385 ton/yr

CO Emissions:  
 Emission Factor: 84 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 84 lbs/MMscf \* 0.0016 MMscf/hr = 0.134lb/hr  
 0.134 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.589 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 0.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 0.6 lbs/MMscf \* 0.0016 MMscf/hr = 0.00096 lb/hr  
 0.00096 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = 0.0042 ton/yr

**UNIT 2 – CREMATION UNIT: Criteria Pollutant Emission Calculations**

Maximum Rated Design Capacity: 85 lb/hr  
 Operating Hours: 8760 hr/yr  
 Conversion: 85 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 372.30 ton/yr

PM Emissions  
 Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

PM<sub>10</sub> Emissions:  
 Emission Factor: 5.92 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 5.92 lb/ton \* 0.0005 ton/lb = 1.10 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 3.56 lb/ton (AP-42 Table 2.3-1, 07/93)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* .563 lb/ton \* 0.0005 ton/lb = 0.66 ton/yr

VOC Emissions:  
 Emission Factor: 3.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 3 lb/ton \* 0.0005 ton/lb = 0.56 ton/yr

CO Emissions:  
 Emission Factor: 2.95 lb/ton (AP-42 Table 2.3-1, 07/93)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 2.95 lb/ton \* 0.0005 ton/lb = 0.55 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 8.00 lb/ton (AFSSCC 5-02-005-05, 03/90, Page 227)  
 Fuel Consumption: 372.30 ton/year (Maximum Rated Design)  
 Calculations: 372.30 ton/year \* 8 lb/ton \* 0.0005 ton/lb = 1.49 ton/yr

**UNIT 2 – CREMATION UNIT NATURAL GAS FUEL COMBUSTION:  
 Criteria Pollutant Emission Calculations**

Heat Input Value: 1.0 MMBtu/hr (Company Information)  
 Hours of Operation: 8760 hr/yr  
 Fuel Heating Value: 0.001 MMScf/MMBtu

PM Emissions:  
 All PM emissions assumed to be PM<sub>10</sub> emissions (AP-42, Table 1.4-2, 07/98)

PM<sub>10</sub> Emissions:  
 Emission Factor: 7.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 7.6 lb/MMScf \* 0.0016 lb/MMScf = 0.0012 lb/hr  
 0.0012 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.05 ton/yr

NO<sub>x</sub> Emissions:  
 Emission Factor: 100 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 100 lb/MMScf \* 0.0016 lb/MMScf = 0.16 lb/hr  
 0.16 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.701 ton/yr

VOC Emissions:  
 Emission Factor: 5.5 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 5.5 lb/MMScf \* 0.0016 lb/MMScf = 0.009 lb/hr  
 0.009 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.0385 ton/yr

CO Emissions:  
 Emission Factor: 84 lb/MMScf (AP42, Table 1.4-1, 07/98)  
 Calculations: 84 lb/MMScf \* 0.0016 lb/MMScf = 0.134 lb/hr  
 0.134 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.589 ton/yr

SO<sub>x</sub> Emissions:  
 Emission Factor: 0.6 lb/MMScf (AP42, Table 1.4-2, 07/98)  
 Calculations: 0.6 lb/MMScf \* 0.0016 lb/MMScf = 0.00096 lb/hr  
 0.00096 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 0.0042 ton/yr

**HAZARDOUS AIR POLLUTANT EMISSIONS CALCULATIONS**

EXISTING CREMATION UNIT No. 1 HAP Emissions (Animal Remains)	
HAP	tons/year
Bromoform	5.39E-06
Carbon Tetrachloride	1.07E-05
Chloroform	1.01E-05
1,2-Dichloropropane	2.00E-04
Ethyl Benzene	3.00E-04
Naphthalene	2.20E-03
Tetrachloroethylene	7.50E-06
1,1,2,2-Tetrachloroethane	2.05E-05
Toluene	9.00E-04
Vinylidene Chloride	1.32E-05
Xylene	4.00E-04
<b>Total HAP Potential Emissions</b>	<b>4.10E-03</b>

**UNIT 1 – EXISTING CREMATION UNIT: Hazardous Air Pollutant Emission Calculations**

**Bromoform**

Emission Factor: 2.90E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.90 \text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 1.55\text{E-}07 \text{ g/sec}$   
 $1.55\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.23\text{E-}06 \text{ lb/hr}$   
 $1.23\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{5.39\text{E-}06 \text{ ton/yr}}$

**Carbon Tetrachloride**

Emission Factor: 5.74E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $5.74\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 3.07\text{E-}07 \text{ g/sec}$   
 $3.07\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.44\text{E-}06 \text{ lb/hr}$   
 $2.44\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.07\text{E-}05 \text{ ton/yr}}$

**Chloroform**

Emission Factor: 5.45E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $5.45\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.92\text{E-}07 \text{ g/sec}$   
 $2.92\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.32\text{E-}06 \text{ lb/hr}$   
 $2.32\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.01\text{E-}05 \text{ ton/yr}}$

**1,2-Dichloropropane**

Emission Factor: 1.32E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.32\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 7.07\text{E-}06 \text{ g/sec}$   
 $7.07\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.00\text{E-}04 \text{ ton/yr}}$

**Ethyl Benzene**

Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.61\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 8.62\text{E-}06 \text{ g/sec}$   
 $8.62\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{3.00\text{E-}04 \text{ ton/yr}}$

**Naphthalene**

Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.16\text{E-}02 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 6.21\text{E-}05 \text{ g/sec}$   
 $1.00\text{E-}04 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 5.00\text{E-}04 \text{ lb/hr}$   
 $5.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.20\text{E-}03 \text{ ton/yr}}$

Tetrachloroethylene  
 Emission Factor: 4.03E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $4.03E-05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 2.16E-07 \text{ g/sec}$   
 $2.16E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.71E-06 \text{ lb/hr}$   
 $1.71E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{7.50E-06 \text{ ton/yr}}$

1,1,2,2-Tetrachloroethane  
 Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $1.10E-04 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 5.89E-07 \text{ g/sec}$   
 $5.89E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 4.68E-06 \text{ lb/hr}$   
 $4.68E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.05E-05 \text{ ton/yr}}$

Toluene  
 Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $4.62E-03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 2.47E-05 \text{ g/sec}$   
 $2.47E-05 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 2.00E-04 \text{ lb/hr}$   
 $2.00E-04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{9.00E-4 \text{ ton/yr}}$

Vinylidene Chloride  
 Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $7.10E-05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 3.80E-07 \text{ g/sec}$   
 $3.80E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 3.02E-06 \text{ lb/hr}$   
 $3.02E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.32E-05 \text{ ton/yr}}$

Xylene  
 Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.20E-03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 1.18E-05 \text{ g/sec}$   
 $1.32E-05 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.00E-04 \text{ lb/hr}$   
 $1.00E-04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{4.00E-04 \text{ ton/yr}}$

CREMATION UNIT No. 2 HAP Emissions (Animal Remains)	
HAP	tons/year
Bromoform	5.39E-06
Carbon Tetrachloride	1.07E-05
Chloroform	1.01E-05
1,2-Dichloropropane	2.46E-04
Ethyl Benzene	3.00E-04
Naphthalene	2.16E-03
Tetrachloroethylene	7.50E-06
1,1,2,2-Tetrachloroethane	2.05E-05
Toluene	8.60E-04
Vinylidene Chloride	1.32E-05
Xylene	4.10E-04
<b>Total HAP Potential Emissions</b>	<b>4.04E-03</b>

**UNIT 2 – CREMATION UNIT: Hazardous Air Pollutant Emission Calculations**

Bromoform  
 Emission Factor: 2.90E-05 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations:  $2.90 \text{ E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr}/3600 \text{ sec} = 1.55E-07 \text{ g/sec}$   
 $1.55E-07 \text{ g/sec} * 1 \text{ lb}/453.6 \text{ g} * 3600 \text{ sec/hr} = 1.23E-06 \text{ lb/hr}$   
 $1.23E-06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{5.39E-06 \text{ ton/yr}}$

Carbon Tetrachloride  
Emission Factor: 5.74E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $5.74\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 3.07\text{E-}07 \text{ g/sec}$   
 $3.07\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.44\text{E-}06 \text{ lb/hr}$   
 $2.44\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.07\text{E-}05 \text{ ton/yr}}$

Chloroform  
Emission Factor: 5.45E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $5.45\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.92\text{E-}07 \text{ g/sec}$   
 $2.92\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.32\text{E-}06 \text{ lb/hr}$   
 $2.32\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.01\text{E-}05 \text{ ton/yr}}$

1,2-Dichloropropane  
Emission Factor: 1.32E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.32\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 7.07\text{E-}06 \text{ g/sec}$   
 $7.07\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.00\text{E-}04 \text{ ton/yr}}$

Ethyl Benzene  
Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.61\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 8.62\text{E-}06 \text{ g/sec}$   
 $8.62\text{E-}06 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.00\text{E-}04 \text{ lb/hr}$   
 $1.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{3.00\text{E-}04 \text{ ton/yr}}$

Naphthalene  
Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.16\text{E-}02 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 6.21\text{E-}05 \text{ g/sec}$   
 $1.00\text{E-}04 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 5.00\text{E-}04 \text{ lb/hr}$   
 $5.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.20\text{E-}03 \text{ ton/yr}}$

Tetrachloroethylene  
Emission Factor: 4.03E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $4.03\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.16\text{E-}07 \text{ g/sec}$   
 $2.16\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 1.71\text{E-}06 \text{ lb/hr}$   
 $1.71\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{7.50\text{E-}06 \text{ ton/yr}}$

1,1,2,2-Tetrachloroethane  
Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $1.10\text{E-}04 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 5.89\text{E-}07 \text{ g/sec}$   
 $5.89\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 4.68\text{E-}06 \text{ lb/hr}$   
 $4.68\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{2.05\text{E-}05 \text{ ton/yr}}$

Toluene  
Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $4.62\text{E-}03 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 2.47\text{E-}05 \text{ g/sec}$   
 $2.47\text{E-}05 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 2.00\text{E-}04 \text{ lb/hr}$   
 $2.00\text{E-}04 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{9.00\text{E-}4 \text{ ton/yr}}$

Vinylidene Chloride  
Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05)  
Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
Calculations:  $7.10\text{E-}05 \text{ lb/ton} * 0.0425 \text{ ton/hr} * 453.6 \text{ g/lb} * 1 \text{ hr/3600 sec} = 3.80\text{E-}07 \text{ g/sec}$   
 $3.80\text{E-}07 \text{ g/sec} * 1 \text{ lb/453.6 g} * 3600 \text{ sec/hr} = 3.02\text{E-}06 \text{ lb/hr}$   
 $3.02\text{E-}06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = \underline{1.32\text{E-}05 \text{ ton/yr}}$

Xylene

Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05)  
 Operating Capacity: 85 lb/hr or 0.0425 ton/hr  
 Calculations: 2.20E-03 lb/ton \* 0.0425 ton/hr \* 453.6 g/lb \* 1 hr/3600 sec = 1.18E-05 g/sec  
 1.32E-05 g/sec \* 1 lb/453.6 g \* 3600 sec/hr = 1.00E-04 lb/hr  
 1.00E-04 lb/hr \* 8760 hr/yr \* 0.0005 ton/lb = 4.00E-04 ton/yr

**UNIT 2 – CREMATION UNIT – NATURAL GAS FUEL COMBUSTION: Hazardous Air Pollutant Emission Calculations**

CREMATION UNIT No. 2 HAP Emissions (Natural Gas Fuel Combustion)	
HAP	tons/year
2-Methylnaphthalene	1.68E-07
3-Methylchloranthrene	1.26E-08
7,12-Dimethylbenz(a)anthracene	1.12E-07
Acenaphthene	1.26E-08
Acenaphthylene	1.26E-08
Anthracene	1.68E-08
Benzene	1.47E-05
Benz(a)anthracene	1.26E-08
Benzo(a)pyrene	8.41E-09
Benzo(b)fluoranthene	1.26E-08
Benzo(k)fluoranthene	1.26E-08
Benzo(g,h,i)perylene	8.41E-09
Chrysene	1.26E-08
Dibenzo(a,h)anthracene	8.41E-09
1,4-Dichlorobenzene (p)	8.41E-06
Fluoranthene	2.10E-08
Fluorene	1.96E-08
Formaldehyde	5.26E-04
Hexane	1.26E-02
Indeno(1,2,3,c,d)pyrene	1.26E-08
Naphthalene	4.27E-06
Phenanthrene	1.19E-07
Pyrene	3.50E-08
Toluene	2.38E-05
Arsenic	1.40E-06
Beryllium	8.41E-08
Cadmium	7.71E-06
Chromium, total	9.81E-06
Cobalt	5.89E-07
Lead	2.66E-06
Manganese	1.82E-06
Mercury	1.47E-05
Nickel	1.68E-07
Selenium	1.32E-02
Total Risks	1.68E-07

**UNIT 2 – CREMATION UNIT – NATURAL GAS FUEL COMBUSTION: Hazardous Air Pollutant Emission Calculations**

Hours of Operation 8760 hrs/yr  
 Max. Rated Design capacity 0.0016 MMscf/hr (applicant's information)  
 2-Methylnaphthalene  
 Emission Factor 2.40E-05 lbs/MMscf (AP42, Table 1.4-3, 7/98)  
 Calculations 0.000024 lbs/MMscf \* 0.0016 MMscf/hr = 3.84E-08 lbs/hr  
 0.000000384 lbs/hr \* 8760 hrs/yr \* 0.0005 tons/lb = **1.68E-07** TPY

3-Methylchloranthrene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
7,12-				
Dimethylbenz(a)anthracene				
Emission Factor	1.60E-05	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.000016	lbs/MMscf * 0.0016	MMscf/hr =	2.56E-08 lbs/hr
	0.0000000256	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.12E-07</b> TPY
Acenaphthene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
Acenaphthylene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
Anthracene				
Emission Factor	2.40E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000024	lbs/MMscf * 0.0016	MMscf/hr =	3.84E-09 lbs/hr
	0.00000000384	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.68E-08</b> TPY
Benzene				
Emission Factor	2.10E-03	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0021	lbs/MMscf * 0.0016	MMscf/hr =	3.36E-06 lbs/hr
	0.00000336	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.47E-05</b> TPY
Benz(a)anthracene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
Benzo(a)pyrene				
Emission Factor	1.20E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000012	lbs/MMscf * 0.0016	MMscf/hr =	1.92E-09 lbs/hr
	0.00000000192	lbs/hr * 8760	hrs/yr * 0.0005	<b>8.41E-09</b> TPY
Benzo(b)fluoranthene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
Benzo(k)fluoranthene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY
Benzo(g,h,i)perylene				
Emission Factor	1.20E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000012	lbs/MMscf * 0.0016	MMscf/hr =	1.92E-09 lbs/hr
	0.00000000192	lbs/hr * 8760	hrs/yr * 0.0005	<b>8.41E-09</b> TPY
Chrysene				
Emission Factor	1.80E-06	lbs/MMscf	(AP42, Table 1.4-3, 7/98)	
Calculations	0.0000018	lbs/MMscf * 0.0016	MMscf/hr =	2.88E-09 lbs/hr
	0.00000000288	lbs/hr * 8760	hrs/yr * 0.0005	<b>1.26E-08</b> TPY

Dibenzo(a,h)anthracene	Emission Factor	1.20E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-09 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-09</b> TPY	
Dichlorobenzene	Emission Factor	1.20E-03 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-06 lbs/hr	
		0.00000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-06</b> TPY	
Fluoranthene	Emission Factor	3.00E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000003 lbs/MMscf * 0.0016 MMscf/hr =	4.80E-09 lbs/hr	
		0.000000048 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.10E-08</b> TPY	
Fluorene	Emission Factor	2.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000028 lbs/MMscf * 0.0016 MMscf/hr =	4.48E-09 lbs/hr	
		0.0000000448 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.96E-08</b> TPY	
Formaldehyde	Emission Factor	7.50E-02 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.075 lbs/MMscf * 0.0016 MMscf/hr =	1.20E-04 lbs/hr	
		0.00012 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>5.26E-04</b> TPY	
Hexane	Emission Factor	1.80E+00 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	1.8 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-03 lbs/hr	
		0.00288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-02</b> TPY	
Indeno(1,2,3,c,d)pyrene	Emission Factor	1.80E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0000018 lbs/MMscf * 0.0016 MMscf/hr =	2.88E-09 lbs/hr	
		0.0000000288 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.26E-08</b> TPY	
Naphthalene	Emission Factor	6.10E-04 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.00061 lbs/MMscf * 0.0016 MMscf/hr =	9.76E-07 lbs/hr	
		0.000000976 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>4.27E-06</b> TPY	
Phenanthrene	Emission Factor	1.70E-05 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000017 lbs/MMscf * 0.0016 MMscf/hr =	2.72E-08 lbs/hr	
		0.000000272 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.19E-07</b> TPY	
Pyrene	Emission Factor	5.00E-06 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.000005 lbs/MMscf * 0.0016 MMscf/hr =	8.00E-09 lbs/hr	
		0.00000008 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>3.50E-08</b> TPY	
Toluene	Emission Factor	3.40E-03 lbs/MMscf (AP42, Table 1.4-3, 7/98)		
	Calculations	0.0034 lbs/MMscf * 0.0016 MMscf/hr =	5.44E-06 lbs/hr	
		0.00000544 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.38E-05</b> TPY	
Arsenic	Emission Factor	2.00E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0002 lbs/MMscf * 0.0016 MMscf/hr =	3.20E-07 lbs/hr	
		0.00000032 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.40E-06</b> TPY	

Beryllium	Emission Factor	1.20E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.000012 lbs/MMscf * 0.0016 MMscf/hr =	1.92E-08 lbs/hr	
		0.0000000192 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>8.41E-08</b> TPY	
Cadmium	Emission Factor	1.10E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0011 lbs/MMscf * 0.0016 MMscf/hr =	1.76E-06 lbs/hr	
		0.00000176 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>7.71E-06</b> TPY	
Chromium, total	Emission Factor	1.40E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0014 lbs/MMscf * 0.0016 MMscf/hr =	2.24E-06 lbs/hr	
		0.00000224 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>9.81E-06</b> TPY	
Cobalt	Emission Factor	8.40E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.000084 lbs/MMscf * 0.0016 MMscf/hr =	1.34E-07 lbs/hr	
		0.0000001344 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>5.89E-07</b> TPY	
Lead	Emission Factor	5.00E-04 lbs/MMscf (AP42, Table 1.4-2, 7/98)		
	Calculations	0.0005 lbs/MMscf * 0.0016 MMscf/hr =	8.00E-07 lbs/hr	
		0.0000008 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>3.50E-06</b> TPY	
Manganese	Emission Factor	3.80E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.00038 lbs/MMscf * 0.0016 MMscf/hr =	6.08E-07 lbs/hr	
		0.000000608 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>2.66E-06</b> TPY	
Mercury	Emission Factor	2.60E-04 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.00026 lbs/MMscf * 0.0016 MMscf/hr =	4.16E-07 lbs/hr	
		0.000000416 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.82E-06</b> TPY	
Nickel	Emission Factor	2.10E-03 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.0021 lbs/MMscf * 0.0016 MMscf/hr =	3.36E-06 lbs/hr	
		0.00000336 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.47E-05</b> TPY	
Selenium	Emission Factor	2.40E-05 lbs/MMscf (AP42, Table 1.4-4, 7/98)		
	Calculations	0.000024 lbs/MMscf * 0.0016 MMscf/hr =	3.84E-08 lbs/hr	
		0.0000000384 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =	<b>1.68E-07</b> TPY	

## V. Existing Air Quality

All Paws is located at 81590 Gallatin Road, Bozeman, Montana, in Gallatin County, Montana. The screening analysis performed during the MAQP process demonstrated that the facility complies with all applicable ambient air quality standards and poses a negligible risk to human health as required for permit issuance. Additionally, MAQP #3236-01 contains operating and monitoring requirements to ensure that proper operation of the facility would not result in air emissions that violate any ambient air quality standards.

## VI. Ambient Air Impact Analysis

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

## VII. Air Quality Impacts

The Department ran Screen View, an EPA-approved screening model, for each of the All Paws cremation units, using the indicated inputs obtained from the permit applications, and a calculated total HAPs emission rate of 0.116E-03 grams per second. The HAPs emission rate represents the sum of all the hazardous air pollutant emissions from each of the proposed crematoriums.

The HAPs emission rate was input in the Screen View model to determine the maximum one-hour modeled concentration. The one-hour modeled maximum concentration was then converted to the annual maximum concentration and used to calculate the speciated concentration of each HAP pollutant emitted from the crematoriums. For Unit 1, the modeled annual maximum concentration was 0.02569 $\mu\text{g}/\text{m}^3$ . Input parameters were slightly different for Unit 2 and the modeled annual maximum concentration is 0.02091 $\mu\text{g}/\text{m}^3$ . Speciated concentrations of each HAP was calculated by multiplying the modeled maximum annual concentration by the percentage of each individual HAP making up the total of the HAP emissions. The calculated individual annual HAP concentrations were then used in the risk assessment. The results are contained in Section VIII, Health Risk Assessment of the permit analysis.

This process was repeated for the risk assessment of the HAPs emitted from the combustion of natural gas in the proposed Cremation Unit 2. The total HAP emission rate from natural gas combustion in Cremation Unit 2 is 3.81E-04 grams per second and the SCREEN3 modeled impact was 0.0685  $\mu\text{g}/\text{m}^3$ . This value was used to calculate the speciated concentrations of each HAP emitted from the combustion of natural gas in the cremation unit and used in the risk assessment.

As shown in the Health Risk Assessment of the following Section VIII, the Department determined that there is a negligible human health risk associated with the proposed project. With consideration of the modeling accomplished for the Health Risk Assessment, and the small potential to emit of criteria pollutants, the Department determined that the impacts from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

## VIII. Health Risk Assessment

A health risk assessment was conducted to determine if the proposed All Paws incinerators/crematoriums comply with the negligible risk requirement of MCA 75-2-215. 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 the Department 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.

All Paws incinerators have stack heights of 24 feet- 1 inch, stack exit temperatures exceeding 1500 degrees Fahrenheit ( $^{\circ}\text{F}$ ) on hourly average flow rates of 1250 actual cubic feet per minute (ACFM). Both crematory stacks are 1.0 foot in diameter. 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 hazardous air pollutants identified in the potential to emit calculations of Section IV. The emissions inventory did not

contain sufficient quantities of any pollutant on the Department's list of pollutants for which non-inhalation impacts must be considered; therefore, the Department determined that inhalation risk was the only necessary pathway to consider. Only those hazardous air pollutants for which there were established emission factors were considered in the emission inventory. No pollutants exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770. The Screen 3 Modeling results are shown below

**SCREEN3 Model Run  
Simple Terrain Inputs:**

Source Type (Point)	Unit 1 Cremation unit	Unit 2 Cremation unit	Unit 2 Natural Gas
Emission Rate (G/S)	0.116E-03	0.116E-03	0.381E-03
Stack Height (M)	7.35	7.34	7.34
Stack Inside Diameter (M)	0.30	0.305	0.305
Stack Exit Velocity (M/S)	6.35	8.085	8.085
Stack Gas Exit Temp (K)	815.6	1088.7	1088.7
Ambient Air Temp (K)	293	293	293
Receptor Height (M)	1.0000	0.00	0.00
Urban/Rural Option	RURAL	RURAL	RURAL
Building Height (M)	0.0000	0.0000	0.0000
Minimum Horizontal Building Dimension (M)	0.0000	0.0000	0.0000
Maximum Horizontal Building Dimension (M)	0.0000	0.0000	0.0000

Summary of Screen View Model Results				
Source	Calculation Procedure	Maximum 1 Hour Concentration (µg/m <sup>3</sup> )	Distance of Maximum (M)	Terrain Height (M)
Cremation Unit 1	Simple Terrain	0.0257	138	0
Cremation Unit 2	Simple Terrain	0.0209	133	0
Cremation Unit 2 Natural Gas Combustion	Simple Terrain	0.0685	133	0

Existing Cremation Unit 1 NEGLECTIBLE RISK ASSESSMENT					
Hazardous Air Pollutant	Modeled Concentration	Cancer Potency Factor	Cancer ELCR	Non-Cancer RFC Factor	Non-Cancer Hazard Quotient
Bromoform	3.43E-06	1.10E-06	3.77E-12	ND	ND
Carbon Tetrachloride	6.79E-06	1.50E-05	1.02E-10	2.40E00	2.83E-06
Chloroform	6.45E-06	2.30E-05	1.48E-10	3.5E01	1.84E-07
1,2-Dichloropropane	1.56E-04	ND	ND	ND	ND
Ethyl Benzene	1.90E-04	ND	ND	1.00E03	1.90E-07
Naphthalene	1.37E-03	ND	ND	1.4E01	9.80E-05
Tetrachloroethylene	4.77E-06	5.90E-06	2.81E-11	3.50E01	1.36E-07
1,1,2,2-Tetrachloroethane	1.30E-05	5.80E-05	7.55E-10	ND	ND
Toluene	5.47E-4	ND	ND	4.00E2	1.37E-06
Vinylidene Chloride	8.40E-06	5.00E-05	4.20E-10	2.6E01	3.23E-07
Xylene	2.60E-04	ND	ND	3.00E02	8.68E-07
Total Risks	2.57E-03	-----	1.46E-09	-----	1.04E-04

ELCR = Excess Lifetime Cancer Risks

ND = Not Determined, No Available Information

- A copy of the Screen View modeling conducted for this project is on file with the Department.

Cremation Unit 2 Combined Crematory and Natural Gas Combustion Negligible Risk Assessment <sup>1</sup>						
HAP	Modeled HAP Concentration $\mu\text{g}/\text{m}^3$	Cancer URF(2) ( $\mu\text{g}/\text{m}^3$ )-1	Cancer Risk(3)	CNCREL(6) $\mu\text{g}/\text{m}^3$	CNCREL Quotient(7)	Notes
<b>Animal Remains</b>						
Bromoform	2.79E-06	1.10E-06	3.07E-12	ND	NA	(AFSSCC 5-02-005-05)
Carbon Tetrachloride	5.53E-06	6.00E-06	3.32E-11	1.00E+02	5.53E-08	(AFSSCC 5-02-005-05)
Chloroform	5.25E-06	ND	ND	9.80E+01	5.36E-08	(AFSSCC 5-02-005-05)
1,2-Dichloropropane <sup>(4)</sup>	1.27E-04	1.90E-05	2.42E-09	4.00E+00	3.18E-05	(AFSSCC 5-02-005-05)
Ethyl Benzene	1.55E-04	2.50E-06	ND	1.00E+03	1.55E-07	(AFSSCC 5-02-005-05)
Naphthalene	1.12E-03	3.40E-05	3.80E-08	3.00E+00	3.72E-04	(AFSSCC 5-02-005-05)
Tetrachloroethylene <sup>(5)</sup>	3.88E-06	5.90E-06	2.29E-11	2.70E+02	1.44E-08	(AFSSCC 5-02-005-05)
1,1,2,2-Tetrachloroethane	1.06E-05	5.80E-05	6.14E-10	ND	NA	(AFSSCC 5-02-005-05)
Toluene	4.45E-04	ND	ND	5.00E+03	8.90E-08	(AFSSCC 5-02-005-05)
Vinylidene Chloride	6.84E-06	ND	ND	2.00E+02	3.42E-08	(AFSSCC 5-02-005-05)
Xylene	2.12E-04	ND	ND	1.00E+02	2.12E-06	(AFSSCC 5-02-005-05)
<b>Natural Gas Combustion</b>						
2-Methylnaphthalene	8.71E-08	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
3-Methylchloranthrene	6.53E-09	0.0063	4.11E-11	ND	ND	(AP42, Table 1.4-3, 7/98)
7,12-Dimethylbenz(a)anthracene	5.80E-08	0.071	4.12E-09	ND	ND	(AP42, Table 1.4-3, 7/98)
Acenaphthene	6.53E-09	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Acenaphthylene	6.53E-09	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Anthracene	8.71E-09	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Benzene	7.62E-06	0.0000078	5.94E-11	3.00E+01	2.539E-07	(AP42, Table 1.4-3, 7/98)
Benzo(a)anthracene	6.53E-09	0.00011	7.18E-13	ND	ND	(AP42, Table 1.4-3, 7/98)
Benzo(a)pyrene	4.35E-09	0.0011	4.79E-12	ND	ND	(AP42, Table 1.4-3, 7/98)
Benzo(b)fluoranthene	6.53E-09	0.00011	7.18E-13	ND	ND	(AP42, Table 1.4-3, 7/98)
Benzo(k)fluoranthene	6.53E-09	0.00011	7.18E-13	ND	ND	(AP42, Table 1.4-3, 7/98)
Benzo(g,h,i)perylene	4.35E-09	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Chrysene	6.53E-09	0.000011	7.18E-14	ND	ND	(AP42, Table 1.4-3, 7/98)
Dibenz(a,h)anthracene	4.35E-09	0.0012	5.22E-12	ND	ND	(AP42, Table 1.4-3, 7/98)
1,4-Dichlorobenzene(p)	4.35E-06	0.000011	4.79E-11	8.00E+02	5.441E-09	(AP42, Table 1.4-3, 7/98)
Fluoranthene	1.09E-08	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Fluorene	1.02E-08	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Formaldehyde	2.72E-04	1.30E-05	3.54E-09	9.80E+00	2.776E-05	(AP42, Table 1.4-3, 7/98)
Hexane	6.53E-03	ND	ND	7.00E+02	9.327E-06	(AP42, Table 1.4-3, 7/98)
Indeno(1,2,3,c,d)pyrene	6.53E-09	0.00011	7.18E-13	ND	ND	(AP42, Table 1.4-3, 7/98)
Naphthalene	2.21E-06	0	0.00E+00		ND	included in crematorium portion
Phenanthrene	6.17E-08	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Pyrene	1.81E-08	ND	ND	ND	ND	(AP42, Table 1.4-3, 7/98)
Toluene	1.23E-05	ND	ND	5.00E+03	2.467E-09	(AP42, Table 1.4-3, 7/98)
Arsenic	7.25E-07	0.0043	3.12E-09	1.50E-02	4.84E-05	(AP42, Table 1.4-4, 7/98)
Beryllium	4.35E-08	0.0024	1.04E-10	2.00E-02	2.176E-06	(AP42, Table 1.4-4, 7/98)
Cadmium	3.99E-06	0.0018	7.18E-09	1.00E-02	0.000399	(AP42, Table 1.4-4, 7/98)
Chromium, total	5.08E-06	0.012	6.09E-08	1.08E-01	4.702E-05	
Cobalt	3.05E-07	ND	ND	1.00E-04	0.0030469	(AP42, Table 1.4-4, 7/98)
Lead	1.81E-06	ND	ND	1.50E+00	1.209E-06	(AP42, Table 1.4-2, 7/98)
Manganese	1.38E-06	ND	ND	5.00E-02	2.757E-05	(AP42, Table 1.4-4, 7/98)
Mercury	9.43E-07	ND	ND	3.00E-01	3.144E-06	(AP42, Table 1.4-4, 7/98)
Nickel	7.62E-06	ND	ND	9.00E-02	8.464E-05	(AP42, Table 1.4-4, 7/98)
Selenium	8.71E-08	ND	ND	2.00E+01	4.353E-09	(AP42, Table 1.4-4, 7/98)
<b>TOTAL RISK</b>			1.20E-07		3.88E-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](http://www.epa.gov/ttn/atw/toxsource/table1.pdf).

(2) Cancer Chronic Inhalation Unit Risk Factor, units  $1/\mu\text{g}/\text{m}^3$

(3) Cancer Risk is unitless and is calculated by multiplying the predicted concentration by the URF.

(4) AKA Propylene dichloride

(5) AKA Tetrachloroethene, perchloroethylene.

(6) Chronic Noncancer Reference Exposure Level

(7) CNCREL Quotient Value is calculated by dividing the modeled HAP concentration by the CNCREL.

Although no pollutants for which emissions factors are established exceeded the levels specified in Table 1 or Table 2 of ARM 17.8.770, the Department conducted a full risk assessment. The Department determined that the calculated Cancer Risks demonstrate a negligible risk to human health and the environment. As documented in the tables above and in accordance with the Department'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.

IX. Taking or Damaging Implication Analysis

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

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

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

X. Environmental Assessment

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

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Permitting and Compliance Division  
Air Resources Management Bureau  
1520 East Sixth Avenue  
P.O. Box 200901, Helena, Montana 59620-0901  
(406) 444-3490

**FINAL ENVIRONMENTAL ASSESSMENT (EA)**

Issued to: All Paws Great & Small Pet Crematory, Inc.  
81590 Gallatin Road  
Bozeman, MT 59718

Montana Air Quality Permit Number: 3236-01

*Preliminary Determination Issued:* January 7, 2011

*Department Decision Issued:* February 11, 2011

*Permit Final:* March 1, 2011

1. *Legal Description of Site:* The facility is located in the Southwest ¼ of the Northwest ¼, of Section 13, Township 2 South, Range 4 East, in Gallatin County, Montana. The physical address would be 81590 Gallatin Road, Bozeman, Montana 59718.
2. *Description of Project:* All Paws owns and operates a 2002 Thermtec, Inc. pathological animal cremation unit and proposed to install a 2011 Thermtec, Inc. pathological animal cremation unit. Each of the cremation units are fired on natural gas and would be capable of incinerating up to 85 pounds per hour of animal remains.
3. *Objectives of Project:* The project would allow All Paws to safely dispose of animal remains while maintaining compliance with negligible risk requirements as discussed in Section VIII of the permit analysis. Further, the project would result in business and revenue for the company.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the “no-action” alternative. The “no-action” alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the “no-action” alternative to be appropriate because All Paws demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the “no-action” alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #3236-01.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

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

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

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

**A. Terrestrial and Aquatic Life and Habitats:**

Emissions from the proposed project would affect terrestrial and aquatic life and habitats in the proposed project area. However, as detailed in Section VI, VII, and VIII of the permit analysis, any emissions and resulting impacts from the project would be minor due to the low concentration of the pollutants emitted.

The crematorium would operate within an existing building and only a limited amount of new construction or ground disturbance to the area would be required. Overall, any impact to the terrestrial and aquatic life and habitats of the proposed project area would be minor.

**B. Water Quality, Quantity and Distribution:**

The proposed project would not affect water quantity or distribution in the proposed project area. The crematorium would operate within a building and would not discharge or use water as part of the project.

Emissions from the proposed project would affect water quality in the proposed project area. However, as detailed in Sections VI, VII, and VIII of the permit analysis any emissions and resulting deposition impacts from the project would be minor due to the low concentration of the pollutants emitted and dispersion characteristics of pollutants and the atmosphere.

**C. Geology and Soil Quality, Stability, and Moisture:**

The proposed project would affect the geology, soil quality, stability, and moisture of the proposed project area. However, the crematorium would operate within an existing building and only a limited amount of new construction or ground disturbance to the area would be required.

Further, as described in Sections VI, VII and VIII of the permit analysis, the crematorium would result in minor air pollution emissions to the ambient environment. These pollutants would deposit on the soils in the surrounding area. Any impact from deposition of these pollutants would be minor due to dispersion characteristics of pollutants and the atmosphere and the low concentration of the pollutants emitted.

D. Vegetation Cover, Quantity, and Quality:

Emissions from the proposed project would affect vegetation cover, quantity, and quality in the proposed project area. However, as detailed in Sections VI, VII, and VIII of the permit analysis, any emissions and resulting impacts from the project would be minor.

Further, the crematorium would operate within an existing building and only a limited amount of new construction or ground disturbance to the area would be required. Therefore, any impact to vegetation cover, quantity, and quality from facility construction would be minor. Overall, any impact to the vegetation cover, quantity, and quality of the proposed project area would be minor.

E. Aesthetics:

The proposed project would have minor, if any, impacts on the aesthetic nature of the proposed project area because the crematorium would operate within an existing building and only minor, if any, modifications to the building would be required for the construction project. In addition, visible emissions from the source would be limited to 10% opacity and the permit would include emission control requirements. Further, noise generated by the crematorium would be minor due to the nature of the business. Overall, the crematorium would have only minor impacts to the aesthetics of the proposed project area.

F. Air Quality:

The proposed project would result in the emission of various criteria pollutants and HAPs to the ambient air in the proposed project area. However, as detailed in Sections VI, VII, and VIII of the permit analysis, the Department demonstrated, through air dispersion modeling, that any air quality impacts from the proposed project would be minor.

The Department conducted air dispersion modeling to determine the ambient air quality impacts that would be generated from HAPs that would be emitted by the crematorium. The Screen View model was used for the air dispersion modeling. The full meteorology option was selected to provide a conservative result. Receptors were placed from 0 to 5000 meters in a simple terrain array. Simple terrain receptors were used to represent the topography of the project area.

Stack parameters and emission rates used in the Screen View model are contained in Section VII of the permit analysis and are on file with the Department. Stack velocity was taken from data provided by the manufacturer of the crematorium and exit gas temperature was based on the minimum operating temperature that was determined through the BACT analysis. Due to dispersion characteristics of pollutants and the atmosphere and the low levels of pollutants that would be emitted from the proposed project, the Department determined that any impacts to air quality would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources:

In an effort to identify any unique endangered, fragile, or limited environmental resources in the area, the Department contacted the Montana Natural Heritage Program, Natural Resource Information System (NRIS). The NRIS search identified two species of special concern (Dwarf Purple Monkey Flower and Slender Wedgegrass) in the vicinity of the project area. In this case, the area was defined by the section, township, and range of the proposed location with an additional 1-mile buffer zone. Due to the minor amounts of construction that would be required, the low levels of pollutants that would be emitted by the proposed project, dispersion characteristics of pollutants and the atmosphere, and conditions that would be placed in MAQP #3236-01, the Department determined that the chance of the project impacting any species of special concern would be minor.

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

The proposed project would result in minor demands on environmental resources of water and air as discussed in Sections 7.B and 7.F of this EA. In addition, as summarized in Section 7.F of this EA and detailed in Sections VI, VII, and VIII of the permit analysis, the project's impacts on air resources in the proposed project area would be minor due to dispersion characteristics of pollutants and the atmosphere and the low concentration of pollutants emitted. Finally, because the project is small by industrial standards, little energy would be required for operation, and the resulting impact on energy resources would be minor. Overall, the demands on the environmental resources of water, air, and energy would be minor.

I. Historical and Archaeological Sites:

In an effort to identify any historical and archaeological sites near the proposed project area, the Department contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to the SHPO records, there have not been any previously recorded historic or archaeological sites within the proposed area. SHPO stated that if the building is over 50 years old that it could be considered a historic building and that the project would impact its historic integrity. However, SHPO stated that if the building were not over 50 years old, there would be low likelihood that the project would impact cultural properties. The building was originally constructed in 1977; therefore, the Department determined that the project would have no impact on historical and archaeological sites in the area.

J. Cumulative and Secondary Impacts:

Overall, the cumulative and secondary impacts on the physical and biological aspects of the human environment in the immediate area would be minor due to the relatively small size of the operation. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as outlined in MAQP #3236-01.

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

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

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

**A. Social Structures and Mores:**

The proposed project would not have any effect on any native or traditional lifestyles or communities (social structures or mores) of the proposed area of operation because the project is small by industrial standards. The predominant use of the surrounding area would not change as a result of the proposed project.

**B. Cultural Uniqueness and Diversity:**

The proposed project would not have any affect on cultural uniqueness and diversity of the proposed area of operation because the project is small by industrial standards. The predominant use of the surrounding area would not change as a result of the proposed project.

**C. Local and State Tax Base and Tax Revenue:**

The proposed project would have a minor impact on the local and state tax base and tax revenue. The project is small by industrial standards; thus, any economic impact to the area would be minor. Further, the project would require only minor, if any, amounts of construction and a limited amount of employees/operators for normal operations.

**D. Agricultural or Industrial Production:**

Because the proposed project would operate within an existing building, the project would not displace any land used for agricultural production and would require only limited, if any, amounts of additional industrial construction. Further, the nature of the project would dictate that no additional industrial production would result from the proposed project.

E. Human Health:

The peak annual ambient impact from the operation of cremation Unit 1 would be 0.0025  $\mu\text{g}/\text{m}^3$ . The peak annual ambient impact from the operation of cremation Unit 2 would be 0.0021  $\mu\text{g}/\text{m}^3$ . The predicted annual ambient impact of each individual HAP was determined by multiplying the peak annual ambient concentration by the emission rate of the HAP. The impacts calculated for each HAP are compared to the cancer and non-cancer levels specified in Tables 1 and 2 of ARM 17.8.770(1)(i). If the predicted ambient impact of a particular HAP is less than the level specified in the table and the inhalation pathway is the only appropriate pathway, that HAP can be excluded from the human health risk assessment. The table summarized in Section VIII of the permit analysis indicates the calculated ambient impacts of the HAPs, the cancer and non-cancer levels, and whether or not each HAP passes the screening criteria.

As detailed in Section VIII of the permit analysis, a health risk assessment was conducted to determine if the proposed crematorium would comply with the negligible risk requirement of MCA 75-2-215 and ARM 17.8.770. The emission inventory did not contain sufficient quantities of any pollutant on the Department's list of pollutants for which non-inhalation impacts must be considered; therefore, the Department determined that inhalation risk would be the only necessary pathway to consider. As defined in ARM 17.8.740(16), negligible risk is “*an increase in excess lifetime cancer risk of less than  $1.0 \times 10^{-6}$  for any individual pollutant, and  $1.0 \times 10^{-5}$  for the aggregate of all pollutants, and an increase in the sum of the non-cancer hazard quotients for all pollutants with similar toxic effects of less than 1.0 as determined by a human health risk assessment conducted according to ARM 17.8.767*”. For the purposes of determining the negligible risk of the crematorium, all pollutants were included in the human health risk assessment.

All of the individual pollutant concentrations for the ELCR meet the acceptable risk limit because they are less than 1.00E-06 for each pollutant and less than 1.00E-05 for the aggregate of all pollutants. Further, the sums of the chronic and acute non-cancer hazard quotients are less than 1.0. Therefore, the cremation units proposed for the All Paws facility meet the criteria of ARM 17.8.770 and operation of the incinerator would be considered a negligible risk to public health, safety, welfare, and to the environment. Overall, any impacts to human health in the proposed project area would be minor.

F. Access to and Quality of Recreational and Wilderness Activities:

Because the proposed project would operate within an existing building, the project would not affect any access to or quality of any recreation or wilderness activities in the area.

G. Quantity and Distribution of Employment:

The proposed project would require a limited amount of new employment in the area. The project would require only a single operator and possibly a support employee. Therefore, the proposed project would have only a minor impact on the quantity and distribution of employment in the area.

H. Distribution of Population:

The proposed project would require a limited amount of **new employment** in the area. The project would require only a single operator and possibly a support employee. Therefore, the proposed project would have only a minor impact on the distribution of population in the proposed project area.

I. Demands for Government Services:

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

J. Industrial and Commercial Activity:

The proposed project would result in only a minor impact on local industrial and commercial activity because the proposed project would operate in an existing building, would require only limited, if any, amounts of additional industrial construction, and would not result in additional industrial production.

K. Locally Adopted Environmental Plans and Goals:

The Department is not aware of any locally adopted environmental plans or goals in the immediate area affected by the proposed project. The state standards would be protective of the proposed project area.

L. Cumulative and Secondary Impacts:

Overall, cumulative and secondary impacts from this project would result in minor impacts to the economic and social aspects of the human environment in the immediate area due to the relatively small size of the operation. Due to the relatively small size of the project, the industrial production, employment, and tax revenue (etc.) would not be significantly impacted by the proposed project. In addition, the Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in MAQP #3236-01.

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

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of a crematorium. MAQP #3236-01 includes conditions and limitations to ensure that the facility would operate in compliance with all applicable rules and regulations. In addition, as detailed in the above EA there are no significant impacts associated with this proposal.

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

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

EA prepared by: Deanne Fischer

Date: December 20, 2010