Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
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April 15, 2011

Ross Woerner
General Manager
Laurel East Veterinary Services
Faithful Friend Pet Memorial Service
1310 Allendale Road
Laurel, MT 59044

Dear Mr. Woerner:

Montana Air Quality Permit #2915-02 is deemed final as of April 15, 2011, by the Department of Environmental Quality (Department). This permit is for animal crematorium. 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

Doug Kuenzli
Environmental Science Specialist
Air Resources Management Bureau
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VW:DCK
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #2915-02

Laurel East Veterinary Services
Faithful Friend Pet Memorial Service
1310 Allendale Road
Laurel, MT 59044

April 15, 2011

MONTANA AIR QUALITY PERMIT

Issued To: Laurel East Veterinary Services
Faithful Friend Pet Memorial Service
1310 Allendale Road
Laurel, MT 59044

MAQP: #2915-02
Administrative Amendment (AA)
Received: 01/26/2011
Department's Decision on AA: 03/30/2011
Permit Final: 04/15/2011
AFS: #030-111-0025

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Laurel East Veterinary Services – Faithful Friend Pet Memorial Service (Laurel East), 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

Laurel East operates an animal crematorium located at 1310 Allendale Road in Laurel, Montana. The legal description is Section 1, Township 2 South, Range 24 East, Yellowstone County. The plant consists of a 2003 natural gas fired IEE Company animal crematorium and associated equipment.

B. Current Permit Action

On January 26, 2011, the Montana Department of Environmental Quality (Department) received a request from Laurel East to administratively amend their permit to permanently remove the 1995 Shenandoah P16-2GNT pathological waste incinerator. The permit was also updated to reflect the current language and rule references used by the Department.

SECTION II: Conditions and Limitations

A. Operational Requirements

1. Laurel East shall operate the IEE Company animal crematorium as specified in their application for MAQP #2915-01 and all supporting documentation (ARM 17.8.749).

2. Laurel East shall not incinerate/cremate any material other than animal remains and associated containers, unless otherwise approved, in writing, by the Department (ARM 17.8.749).

3. Laurel East 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).

4. The secondary chamber for the incinerator shall be maintained at a temperature above 1500°F for any one-hour averaging period with no single reading less than 1400°F. The operating temperatures shall be maintained during operation and for one-half hour after waste feed has stopped (ARM 17.8.752).

5. The Department must be notified promptly by phone 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. Bypassing any pollutant control device during operation except as expressly provided for in ARM 17.8.110. Malfunctions may be grounds for permit revocation (ARM 17.8.110).

B. Emission Limitations

Laurel East shall not cause or authorize to be discharged into the atmosphere from the IEE Company animal crematorium (ARM 17.8.752):

1. Visible emissions that exhibit an opacity of 10% or greater; and

2. Any particulate emissions in excess of 0.10 gr/dscf corrected to 12% CO_2.

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 testing (ARM 17.8.105).

D. Monitoring Requirements

1. Laurel East shall install, calibrate, maintain, and operate continuous monitoring and recording equipment on the IEE Company animal crematorium to measure the secondary chamber exit gas temperature (ARM 17.8.749).

2. Laurel East shall also record the daily quantity of material incinerated/cremated and the daily hours of operation from the IEE Company animal crematorium (ARM 17.8.749).

E. Operational Reporting Requirements

1. Laurel East 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 covered by this permit.

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). (ARM 17.8.505).

2. Laurel East 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 or the addition of a new emissions unit. The notice must be submitted to the Department in writing 10 days prior to start up 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(1)(d) (ARM 17.8.745).

3. The records compiled in accordance with this permit shall be maintained by Laurel East as a permanent business record for at least 5 years following the date of the measurement, shall be submitted to the Department upon request, and shall be available at the facility site for inspection by the Department (ARM 17.8.749).

F. Notification

Laurel East shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

1. Commencement of construction of the IEE Company incinerator within 30 days after commencement of construction.

2. Actual start-up date of the IEE Company incinerator within 15 days after the actual start-up date.

SECTION III: General Conditions

A. Inspection – Laurel East 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 Laurel East fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Laurel East 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 therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay 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 the Billings Animal Control 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
Laurel East Veterinary Service – Faithful Friend Pet Memorial Services
MAQP #2915-02

I. Introduction/Process Description

A. Permitted Equipment

Laurel East Veterinary Service – Faithful Friend Pet Memorial Services (Laurel East) operates a 2003 natural gas fired IEE Company animal crematorium and associated equipment.

B. Source Description

The facility is a veterinary service incorporating the above-cited animal crematorium. The facility is located at 1310 Allendale Road in Laurel, Montana. The legal description is Section 1, Township 2 South, Range 24 East, Yellowstone County.

C. Permit History

On April 19, 1996, the Montana Department of Environmental Quality (Department) issued final **MAQP #2915-00** for the installation and operation of a 1995 natural gas fired Shenandoah P16-2GNT animal crematorium and associated equipment.

On January 21, 2003, the Department received a complete application for proposed changes to MAQP #2915-00 from Laurel East. Specifically, the current permit action adds a 2003 IEE Company animal crematorium to the other permitted equipment at the facility. **MAQP #2915-01** replaces MAQP #2915-00.

D. Current Permit Action

On January 26, 2011, the Department received a request from Laurel East to administratively amend their permit to permanently remove the 1995 Shenandoah P16-2GNT pathological waste incinerator. The permit was also updated to reflect the current language used by the Department. **MAQP #2915-02** replaces MAQP #2915-01.

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 test, 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).

   Laurel East 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:

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

Laurel East must comply with all applicable ambient air quality standards. As part of the risk assessment required for issuance of the initial MAQP, the Department conducted SCREENVIEW modeling, an Environmental Protection Agency (EPA)-approved air dispersion model. Based on permit screening analysis demonstration the Laurel East facility would comply with all applicable ambient air quality standards and present negligible risk to human health.

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 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 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. This rule does not apply to the IEE Company animal crematorium because Laurel East has applied for and received an air quality permit in accordance with ARM 17.8.770 and MCA 75-2-215.

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 any NSPS subpart defined in 40 CFR Part 60.

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

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. A permit fee is not required for the current permit action because the permit action is considered an administrative permit change.

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. The Laurel East does not have the potential to emit more than 25 tons per year of any pollutant; however, in accordance with MCA 75-2-215, an air quality permit must be obtained prior to incinerator construction and operation, regardless of potential incinerator emissions. Because Laurel East 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 MAQP 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 MAQP 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, alteration, or use of a source. Laurel East was not required to submit a permit application for the current permit action because the current permit action is considered an administrative 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. An affidavit of publication of public notice was not required for the current permit action because the permit change is considered an administrative permit change.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by 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 MAQPs 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 Laurel East of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

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

11. ARM 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.

12. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered 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 one year after the permit is issued.

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

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

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

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

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 Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

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

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

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

a. Potential to Emit (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 PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #2915-02 for Laurel East, 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_{10} 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 Laurel East will be a minor source of emissions as defined under Title V.

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, including, but not limited to the following requirements:

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

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

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

4. MCA 75-2-215 requires the application of pollution control equipment or procedures that meet or exceed BACT. The current permit action is administrative and no modifications to existing equipment, addition of sources, or changes in emissions occurred. Therefore, a BACT determination is not required.

III. BACT Determination

A BACT determination is required for each new or altered source. Laurel East shall install on the new or altered 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.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative amendment.

IV. Emission Inventory

An emission inventory was previously completed for MAQP #2915-01 with the initial proposal to install and operate the 2003 IEE Company pathological incinerator. The emission inventory has been updated to reflect current operating conditions. The emission inventory for criteria pollutants is based on emission factors from the online AIRS FACILITY SUBSYSTEM SOURCE CLASSIFICATION CODES (AFSSCC) manual. 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 estimating emissions resulting from the combustion of natural gas.

The Department developed a hazardous air pollutant emission inventory using those emission factors contained in FIRE (the EPA emission factor repository) for Source Code Classification (SCC) code 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.

Criteria Pollutant Emissions						
tons/year						
Source	**PM**	**PM_{10}**	**NO_x**	**VOC**	**CO**	**SO_x**
IEE Company Incinerator/Crematorium	2.63	1.94	0.99	0.99	0.00	2.63
IEE Natural Gas Combustion	NA	0.07	0.96	0.05	0.81	0.01
Total Criteria Pollutant Emissions	**2.63**	**2.01**	**1.95**	**1.04**	**0.81**	**2.64**

IEE HAP Emissions	**tons/year**
Bromoform	0.00001
Carbon Tetrachloride	0.00002
Chloroform	0.00002
1,2-Dichloropropane	0.00043
Ethyl Benzene	0.00053
Naphthalene	0.00381
Tetrachloroethylene	0.00001
1,1,2,2-Tetrachloroethane	0.00004
Toluene	0.00152
Vinylidine Chloride	0.00002
Xylene	0.00072
Total HAP Emissions	**0.00713**

PM, particulate matter
PM10, particulate matter with an aerodynamic diameter less than 10 microns.
NOx, oxides of nitrogen
VOC, volatile organic compounds
CO, carbon monoxide
SOx, oxides of sulfur
HAP, hazardous air pollutants
MMBtu, million British thermal units
MMscf, million standard cubic feet

CRITERIA POLLUTANT EMISSION CALCULATIONS

IEE Company Incinerator/Crematorium

Maximum Rated Design Capacity Throughput: 150 lb/hr
Operating Hours: 8760 hr/yr
Conversion: 150 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 657 ton/yr

PM Emissions

Emission Factor:	8.00 lbs/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 8 lb/ton * 0.0005 ton/lb =	2.63 ton/yr

PM_{10} Emissions:

Emission Factor:	5.92 lb/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 5.92 lb/ton * 0.0005 ton/lb =	1.94 ton/yr

NO_X Emissions:

Emission Factor:	3.00 lb/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 3 lb/ton * 0.0005 ton/lb =	0.99 ton/yr

VOC Emissions:

Emission Factor:	3.00 lb/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 3 lb/ton * 0.0005 ton/lb =	0.99 ton/yr

CO Emissions:

Emission Factor:	0.00 lb/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 0 lb/ton * 0.0005 ton/lb =	0.00 ton/yr

SO_X Emissions:

Emission Factor:	8.00 lb/ton (AFSSCC 5-02-005-05)	
Fuel Consumption:	657 ton/year (Maximum Rated Design)	
Calculations:	657 ton/year * 8 lb/ton * 0.0005 ton/lb =	2.63 ton/yr

IEE Company Incinerator/Crematorium Natural Gas Combustion

Hours of Operation:	8760 hr/yr
Maximum Fuel Combustion Rate:	2.2 MMBtu/hr
Fuel Heating Value:	0.001 MMscf/MMBtu

PM Emissions

Assume all PM emissions resulting from natural gas combustion are PM_{10}

PM_{10} Emissions

Emission Factor:	7.6 lb/MMscf (AP-42, Table 1.4-2)	
Calculations:	7.6 lb/MMscf * 2.2 MMBtu/hr * 0.001 MMscf/MMBtu =	0.02 lb/hr
	0.02 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	0.07 ton/yr

NO_x Emissions

Emission Factor:	100 lb/MMscf (AP-42, Table 1.4-2)	
Calculations:	100 lb/MMscf * 2.2 MMBtu/hr * 0.001 MMscf/MMBtu =	0.22 lb/hr
	0.10 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	0.96 ton/yr

VOC Emissions

Emission Factor:	5.5 lb/MMscf (AP-42, Table 1.4-2)	
Calculations:	5.5 lb/MMscf * 2.2 MMBtu/hr * 0.001 MMscf/MMBtu =	0.01 lb/hr
	0.01 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	0.05 ton/yr

CO Emissions

Emission Factor:	84 lb/MMscf (AP-42, Table 1.4-2)	
Calculations:	84 lb/MMscf * 2.2 MMBtu/hr * 0.001 MMscf/MMBtu =	0.18 lb/hr
	0.08 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	0.81 ton/yr

SO_x Emissions

Emission Factor:	0.6 lb/MMscf (AP-42, Table 1.4-2)	
Calculations:	0.6 lb/MMscf * 2.2 MMBtu/hr * 0.001 MMscf/MMBtu =	0.00 lb/hr
	0.00 lb/hr * 8760 hr/yr * 0.0005 ton/lb =	0.01 ton/yr

HAZARDOUS AIR POLLUTANT EMISSION CALCULATIONS

IEE Company Incinerator/Crematorium HAP Emissions

Bromoform
- Emission Factor: 2.90E-05 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 2.90E-05 lb/ton * 0.0005 ton/lb = 9.53E-06 ton/yr

Carbon Tetrachloride
- Emission Factor: 5.74E-05 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 5.74E-05lb/ton * 0.0005 ton/lb = 1.89E-05 ton/yr

Chloroform
- Emission Factor: 5.45E-05 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 5.45E-05 lb/ton * 0.0005 ton/lb = 1.79E-05 ton/yr

1,2-Dichloropropane
- Emission Factor: 1.32E-03 lb/ton (AFSSCC 1-02-009-01) (Salt laden wood)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 1.32E-03 lb/ton * 0.0005 ton/lb = 4.34E-04 ton/yr

Ethyl Benzene
- Emission Factor: 1.61E-03 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 1.61E-03 lb/ton * 0.0005 ton/lb = 5.29E-04 ton/yr

Naphthalene
- Emission Factor: 1.16E-02 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 1.16E-02 lb/ton * 0.0005 ton/lb = 3.81E-03 ton/yr

Tetrachloroethylene
- Emission Factor: 4.03E-05 lb/ton (AFSSCC 1-02-009-01)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 4.03E-05 lb/ton * 0.0005 ton/lb = 1.32E-05 ton/yr

1,1,2,2-Tetrachloroethane
- Emission Factor: 1.10E-04 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 1.10E-04 lb/ton * 0.0005 ton/lb = 3.61E-05 ton/yr

Toluene
- Emission Factor: 4.62E-03 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 4.62E-03 lb/ton * 0.0005 ton/lb = 1.52E-03ton/yr

Vinylidene Chloride
- Emission Factor: 7.10E-05 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 7.10E-05 lb/ton * 0.0005 ton/lb = 2.33E-05 ton/yr

Xylenes
- Emission Factor: 2.20E-03 lb/ton (AFSSCC 5-02-005-05)
- Fuel Consumption: 657 ton/yr (Maximum Rated Design)
- Calculations: 657 ton/yr * 2.20E-03 lb/ton * 0.0005 ton/lb = 7.23E-04 ton/yr

V. Existing Air Quality

Screening analysis performed during the initial MAQP application 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 #2915-02 contains operating and monitoring requirements to ensure proper operation of the facility and prevent air emissions that violate any ambient air quality standards.

VI. Air Quality Impact Analysis

The Department previously ran SCREENVIEW, an EPA-approved screening model, using the indicated inputs obtained from the permit application and an emission rate of 2.05E-04 gram per second for the proposed IEE Company animal crematorium, which is the sum of all the hazardous air pollutant emissions from this source. The individual one-hour results for each pollutant were then calculated by multiplying the modeled impact of 1.88E-02 micrograms / cubic meter ($\mu g/m^{3)}$ by the percentage of each individual HAP making up the total of the HAP emissions. The maximum one-hour concentrations were then converted to an annual average and used in the risk assessment. The results are contained in Section VII, Health Risk Assessment, of the permit analysis.

SCREENVIEW Model Run: IEE Company Incinerator @ 150 pounds per hour

Simple Terrain Inputs:

Source Type	=	POINT
Emission Rate (G/S)	=	.205E-03
Stack Height (M)	=	5.2000
Stack Inside Dia. (M)	=	0.5200
Stack Exit Velocity (M/S)	=	13.210
Stack Gas Exit Temp (K)	=	977.60
Ambient Air Temp (K)	=	293.00
Receptor Height (M)	=	1.0000
Urban/Rural Option	=	RURAL
Building Height (M)	=	0.0000
Minimum Horizontal Building Dimension (M)	=	0.0000
Maximum Horizontal Building Dimension (M)	=	0.0000

Stack exit velocity was calculated using a volumetric flow rate of 2600 actual cubic feet per minute (acfm).

Summary of SCREENVIEW Model Run

Calculation Procedure	Maximum 1 Hour Concentration ($\mu g/m^3$)	Distance of Maximum (M)	Terrain Height (M)
Simple Terrain	0.0188	129	0

VII. Health Risk Assessment

A health risk assessment was conducted to determine if operation of the IEE Company animal crematorium complies with the negligible risk requirement of MCA 75-2-215. The emission inventory for the source 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 HAPs for which there are established emission factors were considered in the emission inventory.

IEE Company Incinerator/Crematorium					
HAP	**Modeled Concentration (ug/m^3)**	**Cancer Potency Factor**	**Cancer ELCR**	**Non-Cancer RFC Factor**	**Non-Cancer Hazard Quotient**
Bromoform	2.51E-06	1.10E-06	2.76E-12	ND	ND
Carbon Tetrachloride	4.96E-06	1.50E-05	7.44E-11	ND	ND
Chloroform	4.71E-06	2.30E-05	1.08E-10	ND	ND
1,2-Dichloropropane	1.14E-04	ND	ND	ND	ND
Ethylbenzene	1.39E-04	ND	ND	1.00E+03	1.39E-07
Naphthalene	1.00E-03	ND	ND	ND	ND
Tetrachloroethylene	3.48E-06	5.90E-06	2.05E-11	ND	ND
1,1,2,2-Tetrachloroethane	9.51E-06	5.80E-05	5.52E-10	ND	ND
Toluene	3.99E-04	ND	ND	4.00E+2	9.98E-07
Vinylidine Chloride	6.14E-06	5.00E-05	3.07E-10	ND	ND
Xylene	1.90E-04	ND	ND	ND	ND
Totals	**1.88E-03**		**1.06E-09**		**1.14E-06**
ELCR = Excess lifetime cancer risks					
ND = Not Determined, No Available Information					
A copy of the SCREENVIEW modeling conducted for Permit #2915-01 is on file with the Department.					

The Department modeled HAP emissions from the IEE Company animal crematorium for the purpose of demonstrating compliance with the negligible risk requirements under MCA 75-2-215. The Department determined that the risks estimated in the risk assessment are in compliance with the requirement to demonstrate negligible risk to human health and the environment. As demonstrated in the above table, and in accordance with the negligible risk requirement, no single HAP concentration results in an ELCR greater than 1.00E-06 and the sum of all HAPs results in an ELCR of less than 1.00E-05. Further, the sum of the non-cancer hazard quotient is 1.14E-06, which is less than 1.00 as required to demonstrate compliance with the negligible risk requirement.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted a 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)].
	X	5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
	X	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.

IX. Environmental Assessment

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

Analysis Prepared By: D. Kuenzli
Date: March 10, 2011