



Montana Department of  
**ENVIRONMENTAL QUALITY**

Brian Schweitzer, Governor

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April 15, 2009

Tanya Ballensky  
Cremation and Funeral Gallery  
29 8<sup>th</sup> Street West  
Billings, MT 59101-2914

Dear Ms. Ballensky:

Air Quality Permit #3116-01 is deemed final as of April 15, 2009, by the Department of Environmental Quality (Department). This permit is for a human 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

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

VW:EW  
Enclosure

Montana Department of Environmental Quality  
Permitting and Compliance Division

Air Quality Permit #3116-01

Cremation and Funeral Gallery  
29 8<sup>th</sup> Street West  
Billings, MT 59101-2914

April 15, 2009



## MONTANA AIR QUALITY PERMIT

Issued To: Cremation and Funeral Gallery  
29 8<sup>th</sup> Street West  
Billings, MT 59101-2914

Permit: #3116-01  
Administrative Amendment (AA)  
Request Received: February 19, 2009  
Department Decision on AA: March 30, 2009  
Permit Final: April 15, 2009  
AFS #: 111-0031

An air quality permit, with conditions, is hereby granted to Cremation and Funeral Gallery, pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

### SECTION I: Permitted Facilities

#### A. Plant Location

A human crematorium located at 29 8<sup>th</sup> St. West in Billings, Montana. The legal description is Section 9, Township 1 South, Range 26 East in Yellowstone County, Montana. The list of permitted equipment can be found in Section I of the permit analysis.

#### B. Current Permit Action

On February 19, 2009, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a letter from Cremation and Funeral Gallery to inform the Department of a change in company ownership and a request to change the name on Montana Air Quality Permit (MAQP) #3116-00 from Cremation or Funeral Gallery to Cremation and Funeral Gallery. The current permit action changes the name on MAQP #3116-00 and updates the permit to reflect the current language and rule references used by the Department.

### SECTION II: Conditions and Limitations

#### A. Operational Requirements

1. Cremation and Funeral Gallery shall operate the 1996 B & L incinerator/crematorium as specified in their original MAQP application and all supporting documentation (ARM 17.8.749).
2. Cremation and Funeral Gallery shall not incinerate/cremate any material other than human remains and the corresponding container (ARM 17.8.749).
3. The Cremation and Funeral Gallery crematorium shall be equipped with auxiliary fuel burners. The auxiliary fuel burners shall be used to preheat the secondary chamber of the crematorium to a minimum of 1400 degrees Fahrenheit (°F) prior to igniting the primary chamber burner. The secondary chamber operating temperature shall be maintained above 1400°F during operation and for one-half hour after feed has stopped (ARM 17.8.752).

B. Emission Limitations

Cremation and Funeral Gallery 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 foot (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 testing (ARM 17.8.105).

D. Monitoring Requirements

Cremation and Funeral Gallery shall install, calibrate, maintain and operate continuous monitoring and recording equipment to measure the secondary chamber exit temperature. Cremation and Funeral Gallery shall also record the daily quantity of material incinerated/cremated and daily hours of operation. This data shall be maintained by Cremation and Funeral Gallery on site for 5 years (ARM 17.8.749).

E. Operational Reporting Requirements

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

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505). Cremation and Funeral Gallery shall submit the following information annually to the Department by March 1 of each year; the information may be submitted along with the annual emission inventory (ARM 17.8.505).

- a. Amount of material incinerated/cremated (pounds per year).
  - b. Annual hours of operation of the incinerator/crematorium.
2. Cremation and Funeral Gallery 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(1)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by Cremation and Funeral Gallery 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).

### SECTION III: General Conditions

- A. Inspection – Cremation and Funeral Gallery shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment such as continuous emission monitoring systems (CEMS) or continuous emission rate monitoring systems (CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Cremation and Funeral Gallery fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Cremation and Funeral Gallery 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 Cremation and Funeral Gallery may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Permit Analysis  
Cremation and Funeral Gallery  
Permit #3116-01

I. Introduction/Process Description

Cremation and Funeral Gallery owns and operates a human crematorium. The facility is located 29 8<sup>th</sup> Street West in Billings, Montana. The legal description is Section 9, Township 1 South, Range 26 East in Yellowstone County, Montana.

A. Permitted Equipment

1996 B & L incinerator

B. Source Description

A 1996 B & L incinerator is used as a human crematorium. The incinerator/crematorium is fired on natural gas and has a maximum rated design capacity of 150 pounds per hour (lb/hr) of human remains.

C. Permit History

On May 2, 2000 the Department of Environmental Quality – Air Resources Management Bureau (Department) received a Montana Air Quality Permit (MAQP) application for Cremation or Funeral Gallery due to the transfer of air permitting authority from Yellowstone County to the State of Montana. The facility did not change its operation or configuration, but the existing Yellowstone County permit needed to be re-issued as a MAQP. On March 1, 2001, **MAQP #3116-00** was issued and replaced all Yellowstone County air quality permits and any other air quality permits held by Cremation or Funeral Gallery for this equipment.

D. Current Permit Action

On February 19, 2009, the Department received a letter from Cremation and Funeral Gallery to inform the Department of a change in company ownership and a request to change the name on MAQP #3116-00 from Cremation or Funeral Gallery to Cremation and Funeral Gallery. The current permit action changes the name on MAQP #3116-00 and updates the permit to reflect the current language and rule references used by the Department. **MAQP #3116-01** replaces MAQP #3116-00.

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).

Cremation and Funeral Gallery 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>
11. ARM 17.8.230 Fluoride in Forage

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

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

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

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Cremation and Funeral Gallery shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
  3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
  4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
  5. ARM 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot (gr/dscf) of dry flue gas, adjusted to 12% carbon dioxide (CO<sub>2</sub>) 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 1996 B&L incinerator/ crematorium because Cremation and Funeral Gallery 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). Although the Cremation and Funeral Gallery incinerator/crematorium was constructed prior to August 17, 1971, it is not an NSPS affected source because it does not have a charging rate of 50 tons/day.
- 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. Cremation and Funeral Gallery submitted the appropriate permit application fee for the current permit action.
  2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

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



- E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:
1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
  2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year (TPY) of any pollutant. Cremation and Funeral Gallery does not have the PTE greater than 25 TPY of any pollutant; however, in accordance with the MCA 75-2-215, an air quality permit must be obtained prior to the construction and operation of any incinerator, regardless of potential incinerator emissions. Because Cremation and Funeral Gallery 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. Cremation and Funeral Gallery 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. An affidavit of publication of public notice was not required for the current permit action because the permit change is considered an administrative amendment.
  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 Best Available Control Technology (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 Cremation and Funeral Gallery 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 MCA 75-2-215.
- 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 TPY of any pollutant (excluding fugitive emissions).

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

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
  - a. PTE > 100 TPY of any pollutant;
  - b. PTE > 10 TPY of any one hazardous air pollutant (HAP), PTE > 25 TPY of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
  - c. PTE > 70 TPY of particulate matter with an aerodynamic diameter of 10 microns or less (PM<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 Air Quality Permit #3116-01 for Cremation and Funeral Gallery, the following conclusions were made:
  - a. The facility's PTE is less than 100 TPY for any pollutant.
  - b. The facility's PTE is less than 10 TPY for any one HAP and less than 25 TPY for all HAPs.
  - c. This source is not located in a serious PM<sub>10</sub> nonattainment area.
  - d. This facility is not subject to any current NSPS.
  - e. This facility is not subject to any current National Emission Standards for Hazardous Air Pollutants (NESHAP) standards.
  - f. This source is not a Title IV affected source, or a solid waste combustion unit.
  - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Cremation and Funeral Gallery 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:

1. MCA 75-2-215 requires air quality permits for all new commercial solid waste incinerators; therefore, Cremation and Funeral Gallery 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. The current permit action is an administrative amendment to the initial MAQP.
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 application. Based on the results of the emission inventory, modeling, and the health risk assessment, the Department determined at that time that Cremation and Funeral Gallery's proposal complied with this requirement. The current permit action is an administrative amendment to the initial MAQP.
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. The current permit action is an administrative amendment to the initial MAQP and does not result in a change in the expected emissions from the facility.

### III. BACT Determination

A BACT determination is required for each new or modified source. Cremation and Funeral Gallery shall install on any 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 accepts the original BACT determination done as part of Cremation and Funeral Gallery's Yellowstone County Permit.

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

### IV. Emission Inventory

This emission inventory for criteria pollutants was based on emission factors from the AIRS Facility Subsystem Source Classification Codes (AFSSCC) manual dated March 1990. The current permitting action is an administrative amendment and actual emissions from the facility will not change as a result of this action. Therefore, the Emission Inventory is unchanged from the previous version of the MAQP.

Emission Unit	TSP	PM <sub>10</sub>	SO <sub>x</sub>	NO <sub>x</sub>	VOC	CO
B & L Crematorium	2.63	1.94	2.63	0.99	0.99	0.00
Natural Gas Fuel	3.94E-2	3.94E-2	7.9E-3	1.31	6.96E-2	2.63E-1
Total Emissions	2.67	1.98	2.64	2.3	1.06	2.63E-1

NOTES:

- TSP Total Suspended Particulate
- SO<sub>x</sub> Oxides of Sulfur
- NO<sub>x</sub> Oxides of Nitrogen
- VOC Volatile Organic Compounds
- CO Carbon Monoxide

## EMISSION INVENTORY CALCULATIONS

### NOTES:

lb/ton	pounds per ton
AFSSCC	AIRS Facility Subsystem Source Classification Codes
TPY	tons per year
ton/lb	tons per pound
lb/MMBtu	pounds per million British thermal units
MMBtu/hr	million British thermal units per hour
scf	standard cubic feet
btu	British thermal unit
lb/MMscf	pounds per million standard cubic feet
lb/hr	pounds per hour
hr/yr	hours per year
lb/yr	pounds per year
g	gram
lb	pound
g/yr	grams per year
y	year
hr	hour
min	minute
s	second
g/s	grams per second

### 1996 B & L Incinerator/Crematorium

#### TSP Emissions

Emission Factor:	8.00 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 8 \text{ lb/ton} * 0.0005 \text{ ton/lb} = 2.63 \text{ TPY}$	

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

Emission Factor:	5.92 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 5.92 \text{ lb/ton} * 0.0005 \text{ ton/lb} = 1.94 \text{ TPY}$	

#### NO<sub>x</sub> Emissions

Emission Factor:	3.00 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 3.00 \text{ lb/ton} * 0.0005 \text{ ton/lb} = 0.99 \text{ TPY}$	

#### VOC Emissions

Emission Factor:	3.00 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 3.00 \text{ lb/ton} * 0.0005 \text{ ton/lb} = 0.99 \text{ TPY}$	

#### CO Emissions

Emission Factor:	0.00 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 0.00 \text{ lb/ton} * 0.0005 \text{ ton/lb} = 0.00 \text{ TPY}$	

#### SO<sub>x</sub> Emissions

Emission Factor:	8.00 lb/ton	{AFSSCC 5-02-005-05, pg 227}
Fuel Consumption:	657.00 TPY	(Maximum Rated Design)
Calculations:	$657.00 \text{ TPY} * 8.00 \text{ lb/ton} * 0.0005 \text{ tons/lb} = 2.63 \text{ TPY}$	

### Natural Gas Fuel

#### TSP Emissions

Emission Factor:	3.00 lb/MMscf	{AFSSCC 1-02-006-03, pg 23}
Fuel Consumption:	3.00 MMBtu/hr	(Maximum Rated Design)
Calculations:	$3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 3.00 \text{ lb/MMscf} = 0.0090 \text{ lb/hr}$ $0.0090 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 3.94\text{E-}2 \text{ TPY}$	

PM<sub>10</sub> Emissions  
 Emission Factor: 3.00 lb/MMscf {AFSSCC 1-02-006-03, pg 23}  
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)  
 Calculations:  $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 3.00 \text{ lb/MMscf} = 0.0090 \text{ lb/hr}$   
 $0.0090 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 3.94\text{E-}2 \text{ TPY}$

NO<sub>x</sub> Emissions  
 Emission Factor: 100.00 lb/MMscf {AFSSCC 1-02-006-03, pg 23}  
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)  
 Calculations:  $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 100 \text{ lb/MMscf} = 0.30 \text{ lb/hr}$   
 $0.30 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 1.31 \text{ TPY}$

VOC Emissions  
 Emission Factor: 5.30 lb/MMscf {AFSSCC 1-02-006-03, pg 23}  
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)  
 Calculations:  $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 5.30 \text{ lb/MMscf} = 0.0159 \text{ lb/hr}$   
 $0.0159 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 6.96\text{E-}2 \text{ TPY}$

CO Emissions  
 Emission Factor: 20.00 lb/MMscf {AFSSCC 1-02-006-03, pg 23}  
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)  
 Calculations:  $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 20.00 \text{ lb/MMscf} = 0.06 \text{ lb/hr}$   
 $0.06 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 2.63\text{E-}1 \text{ TPY}$

SO<sub>x</sub> Emissions  
 Emission Factor: 0.60 lb/MMscf {AFSSCC 1-02-006-03, pg 23}  
 Fuel Consumption: 3.00 MMBtu/hr (Maximum Rated Design)  
 Calculations:  $3.00 \text{ MMBtu/hr} * 1 \text{ scf/1000 btu} * 0.60 \text{ lb/MMscf} = 0.0018 \text{ lb/hr}$   
 $0.0018 \text{ lb/hr} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 7.9\text{E-}3 \text{ TPY}$

#### HAZARDOUS AIR POLLUTANTS

Bromoform  
 Emission Factor: 2.90 E-5 lb/ton {AFSSCC 5-02-005-05, pg 227}  
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
 Calculations:  $657.00 \text{ ton/yr} * 2.90 \text{ E-}5 \text{ lb/ton} = 1.91\text{E-}2 \text{ lb/yr}$   
 $1.91\text{E-}2 \text{ lb/yr} * 1 \text{ g/0.002205 lb} = 8.64 \text{ g/yr}$   
 $8.64 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 2.74\text{E-}7 \text{ g/s}$

Carbon Tetrachloride  
 Emission Factor: 5.74 E-5 lb/ton {AFSSCC 1-02-009-01}  
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
 Calculations:  $657.00 \text{ ton/yr} * 5.74 \text{ E-}5 \text{ lb/ton} = 3.77\text{E-}2 \text{ lb/yr}$   
 $3.77\text{E-}2 \text{ lb/yr} * 1 \text{ g/0.002205 lb} = 17.10 \text{ g/yr}$   
 $17.10 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 5.42\text{E-}7 \text{ g/s}$

Chloroform  
 Emission Factor: 5.45 E-5 lb/ton {AFSSCC 1-02-009-01}  
 Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
 Calculations:  $657.00 \text{ ton/yr} * 5.45 \text{ E-}5 \text{ lb/ton} = 3.58\text{E-}2 \text{ lb/yr}$   
 $3.58\text{E-}2 \text{ lb/yr} * 1 \text{ g/0.002205 lb} = 16.24 \text{ g/yr}$   
 $16.24 \text{ g/yr} * 1 \text{ yr/8760 hr} * 1 \text{ hr/60 min} * 1 \text{ min/60 s} = 5.15\text{E-}7 \text{ g/s}$

### 1,2-Dichloropropane

Emission Factor: 1.32 E-3 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 1.32 \text{ E-3 lb/ton} = 8.67\text{E-1 lb/yr}$   
 $8.67\text{E-1 lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 393.31 \text{ g/yr}$   
 $393.31 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 1.25\text{E-5 g/s}$

### Ethyl Benzene

Emission Factor: 1.61 E-3 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 1.61 \text{ E-3 lb/ton} = 1.06 \text{ lb/yr}$   
 $1.06 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 479.71 \text{ g/yr}$   
 $479.71 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 1.52\text{E-5 g/s}$

### Naphthalene

Emission Factor: 1.16 E-2 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 1.16 \text{ E-2 lb/ton} = 7.62 \text{ lb/yr}$   
 $7.62 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 3456.33 \text{ g/yr}$   
 $3456.33 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 1.00\text{E-4 g/s}$

### Tetrachloroethylene

Emission Factor: 4.03 E-05 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 4.03 \text{ E-05 lb/ton} = 2.65\text{E-2 lb/yr}$   
 $2.65\text{E-2 lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 12.01 \text{ g/yr}$   
 $12.01 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 3.81\text{E-7 g/s}$

### 1,1,2,2-Tetrachloroethane

Emission Factor: 1.10 E-4 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 1.10 \text{ E-4 lb/ton} = 7.23\text{E-2 lb/yr}$   
 $7.23\text{E-2 lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 32.78 \text{ g/yr}$   
 $32.78 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 1.04\text{E-6 g/s}$

### Toluene

Emission Factor: 4.62 E-3 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 4.62 \text{ E-3 lb/ton} = 3.04 \text{ lb/yr}$   
 $3.04 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 1376.57 \text{ g/yr}$   
 $1376.57 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 4.37\text{E-5 g/s}$

### Vinylidene Chloride

Emission Factor: 7.10 E-5 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 7.10 \text{ E-5 lb/ton} = 4.66\text{E-2 lb/yr}$   
 $4.66\text{E-2 lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 21.16 \text{ g/yr}$   
 $21.16 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 6.71\text{E-7 g/s}$

### Xylene

Emission Factor: 2.20 E-3 lb/ton {AFSSCC 1-02-009-01}  
Fuel Consumption: 657.00 ton/yr (Maximum Rated Design)  
Calculations:  $657.00 \text{ ton/yr} * 2.20 \text{ E-3 lb/ton} = 1.45 \text{ lb/yr}$   
 $1.45 \text{ lb/yr} * 1 \text{ g}/0.002205 \text{ lb} = 655.51 \text{ g/yr}$   
 $655.51 \text{ g/yr} * 1 \text{ yr}/8760 \text{ hr} * 1 \text{ hr}/60 \text{ min} * 1 \text{ min}/60 \text{ s} = 2.08\text{E-5 g/s}$

## V. Existing Air Quality

The facility is located at 29 8<sup>th</sup> St. West in Billings, Montana. Yellowstone County is unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants except CO and sulfur dioxide (SO<sub>2</sub>). Laurel has been designated as a nonattainment area for SO<sub>2</sub>, and Billings has been designated as a nonattainment area for CO. The current permit action is an administrative amendment and does not increase emissions from the facility.

## VI. Ambient Air Impact Analysis

The current permitting action is considered an administrative amendment and does not change the ambient air impact from the facility. During the permit analysis of the original MAQP application, the department ran SCREEN3, an Environmental Protection Agency (EPA) approved screening model, using the indicated inputs obtained from the permit application and an emission rate of 2.00E-4 grams per second, which is the sum of all the air toxic emissions. The individual 1-hour results for each pollutant were then calculated prorating the actual emission rate in grams per second against the 2.00E-4 grams per second calculated ambient impact of 0.0202 µg/m<sup>3</sup>. The maximum 1-hour concentrations were then used in the risk assessment.

### SCREEN3 Model Run

#### Simple Terrain Inputs:

Source Type	=	POINT
Emission Rate (g/s)	=	2.00E-4 g/s
Stack Height (meter [m])	=	9.14 m
Stack Inside Diameter (m)	=	0.61 m
Stack Exit Velocity (m/s)	=	5.89 m/s
Ambient Air Temperature (K)	=	293 K
Receptor Height (m)	=	0.00 m
Urban/Rural Option	=	Urban

Stack exit velocity and stack gas exit temperature were either taken from a similar source or assumed because this information was not submitted with the application.

Full meteorology, SCREEN3 automated distances, and a terrain height of 0.0 m above the stack base were used as other required model parameters. Table 2 summarizes the results of the SCREEN3 model.

Calculation Procedure	Maximum 1-Hour Concentration (µg/m <sup>3</sup> )	Distance of Maximum (m)	Terrain Height (m)
Simple Terrain	0.2021E-1	101.00	0.00

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

## VII. Health Risk Assessment

The current permitting action is considered an administrative amendment and does not change the health risk assessment of the facility. A health risk assessment was conducted for the permit analysis during the initial MAQP application to determine if the incinerator/crematorium complied with the negligible risk requirement of MCA 75-2-215. The emission inventory does not contain sufficient quantities of any pollutant on the Department's list of pollutants for which non-inhalation



impacts had to be considered; therefore, the Department determined that inhalation risk was the only pathway to consider. Only those HAPS for which there were established emission factors were considered in the emission inventory, listed in Table 3. The Department considers the risks estimated in the risk assessment (see Table 3) to comply with the requirement to demonstrate negligible risk to human health and the environment.

Chemical Compound	% of total concentration <sup>1</sup>	Annual Concentration <sup>2</sup> (µg/m <sup>3</sup> )	Cancer ELCR <sup>3</sup> Chronic	Non – Cancer Hazard Quotient (NCHQ <sup>4</sup> )	
				Chronic	Acute
Bromoform	0.14	2.83E-6	3.11E-12	0.0000	0.0000
Carbon Tetrachloride	0.27	5.46E-6	8.19E-11	1.31E-5	0.0000
Chloroform	0.26	5.25E-6	1.21E-10	1.84E-6	0.0000
1,2 Dichloropropane	6.35	1.00E-4	0.00	0.0000	0.0000
Ethyl Benzene	7.60	2.00E-4	0.00	0.0000	0.0000
Napthalene	50.00	1.00E-3	0.00	1.40E-2	0.0000
Tetrachloroethylene	0.19	3.84E-6	2.27E-11	1.00E-4	0.0000
1,1,2,2 Tetrachloroethane	0.52	1.05E-5	6.09E-10	0.0000	0.0000
Toluene	21.85	4.00E-4	0.00	1.60E-1	0.0000
Vinylidene Chloride	0.34	6.87E-6	3.44E-10	2.00E-4	0.0000
Xylene	10.45	2.00E-4	0.00	6.00E-2	0.0000
Total Risks	N/A	N/A	1.18E-9	0.2343	0.0000

<sup>1</sup> % of total concentration = emission rate each pollutant/sum of all pollutants emission rates (2.00E-4)

<sup>2</sup> annual concentration = (max 1-hr conc. from model \* 0.1 \* % of total)/100-or-(0.2021E-1 \* 0.1 \* % of total)/100

<sup>3</sup> ELCR = excess lifetime cancer risks = Annual Concentration \* Cancer Potency Factor

<sup>4</sup> NCHQ = annual concentration/Risk Factor Concentration

The criteria for determining if the facility demonstrates negligible risk are for all individual HAP cancer risks (Cancer ELCR Chronic from Table 3) to be less than 1.00E-06, the sum of all HAP cancer risks is less than 1.0E-05, and the sum of all chronic NCHQ is less than 1.0. The Department considers the risks estimated in the risk assessment to be in compliance with the requirement to demonstrate negligible risk to the public health.

### VIII. Taking or Damaging Implication Analysis

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

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

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

### 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: Ed Warner

Date: March 17, 2009