AIR QUALITY PERMIT

Issued To: Montana Ethanol Project, LLC 511 Central Avenue West, Suite 3 Great Falls, MT 59404-2848	Permit #2835-06 Application Complete: 7/17/06 Preliminary Determination Issued: 7/27/06 Department Decision Issued: 8/29/06 Permit Final: 09/14/06 AFS #013-0026

An air quality permit, with conditions, is hereby granted to Montana Ethanol Project, LLC (MEP), pursuant to Sections 75-2-204, 211, and 215, 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

MEP submitted Permit Application #2835 to construct an ethanol production facility approximately ½ mile northeast of Great Falls, Montana, in parcel 4, in the NE¼ of the NW¼ of Section 3, Township 20 North, Range 4 East, Cascade County, Montana. MEP's proposed facility will produce wheat gluten, wheat and barley meal, food grade carbon dioxide (CO_2), and fuel grade ethanol. A complete list of permitted equipment for the ethanol production facility is contained in the permit analysis.

B. Current Permit Action

On June 23, 2006, the Department of Environmental Quality (Environment) received a resubmittal of a previous Montana Air Quality Permit (MAQP) application that was submitted on May 16, 2006, and subsequently withdrawn. The application requested a modification to the current permit to change the company name from AgriTech to Montana Ethanol Project, LLC (MEP) and to update the facility's nominal fuel-grade ethanol production capacity from 100 million gallons per year (MMGal/yr) to 125 MMGal/yr. In addition, the facility requested to modify the emissions control system for the distillers dried grains with solubles (DDGS) dryers, to add two new barley hammermills, and to update the facility wide emissions inventory to reflect these changes and changes in certain vendor-provided emission factors.

Section II: Conditions and Limitations

A. Operational Conditions

1. All grain receiving areas, all grain cleaning, and the DDGS loadout areas must be fully enclosed (ARM 17.8.752).

2. MEP may not cause or authorize to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, emissions that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

3. MEP may not cause or authorize the production, handling, transportation, or storage of any material unless reasonable precautions are taken to control

emissions of airborne particulate matter. Such emissions shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.308).

4. MEP may not cause or authorize the use of any street, road, or parking lot under its control without taking reasonable precautions, such as flushing paved sources with water, to control emissions of airborne particulate matter (ARM 17.8.308).

5. MEP shall not cause or authorize particulate matter caused by the combustion of fuel to be discharged from any stack or chimney into the outdoor atmosphere in excess of the maximum allowable emissions of particulate matter for new fuel burning equipment, calculated using the following equation:

   For new fuel burning equipment (installed on or after November 23, 1968):
   $E = 1.026 * H^{-0.233}$

   Where H is the heat input capacity in million BTU (MMBtu) per hour and E is the maximum allowable particulate emissions rate in pounds per MMBtu (ARM 17.8.309).

6. MEP shall not cause or authorize particulate matter to be discharged from any operation, process, or activity into the outdoor atmosphere in excess of the maximum hourly allowable emissions of particulate matter, calculated using the following equations:

   For process weight rates up to 30 tons per hour: $E = 4.10 * P^{0.67}$
   For process weight rates in excess of 30 tons per hour: $E = 55.0 * P^{0.11} – 40$

   Where E is the rate of emissions in pounds per hour and P is the process weight rate in tons per hour (ARM 17.8.310).

7. MEP shall not burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions, unless otherwise specified by rule or in this permit (ARM 17.8.322(5)).

B. Conditions and Limitations for Individual Sources

1. Sources 1-15, 17-20, 32, 33, and 37-43 as identified in Section I.A, of the Permit Analysis

   a. MEP shall install, operate, and maintain baghouses at the facility on sources 1-15, 17-20, 32, 33, and 37-43 (ARM 17.8.752).

   b. Emissions may not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

   c. Total particulate matter emissions from the baghouses that control sources 1-15, 17-20, 32, 33, and 37-43 shall not exceed the following limits (ARM 17.8.752):

Source #	Particulate Matter Limit (lb/hr)
1	4.62
2	0.13
3	0.30
4	0.09
5	0.225
8	0.074
10	0.277
11	2.36
15	0.111
17	0.049
18	0.042
19	0.170
20	0.039
32	0.068
33	0.062
37	0.015
38	0.014
39	0.068
41a	0.411
41b	0.411
42	0.023
43	0.023

2. Gluten Dryers

   a. MEP shall use only natural gas to fire the Gluten Dryers (ARM 17.8.752).

   b. MEP shall install, operate, and maintain baghouses at the facility on the Gluten Dryers (ARM 17.8.752).

   c. Emissions shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

   d. Total particulate matter emissions from each Gluten Dryer baghouse may not exceed 2.16 lb/hr (ARM 17.8.752).

3. DDGS Dryer System

   a. MEP shall use only natural gas to fire the DDGS Dryer (ARM 17.8.752).

   b. NO_x emissions from the DDGS Dryer/Regenerative Thermal Oxidizer (RTO) System shall not exceed 12.16 lb/hr and 0.04 lb/MMBtu (ARM 17.8.752).

   c. MEP shall install, operate, and maintain the RTO's at the facility on the DDGS dryers (ARM 17.8.752).

d. MEP shall maintain the operating temperature of the RTO's at a minimum of 1500º F for any one-hour averaging period with no single reading less than 1400º F (ARM 17.8.752).

e. MEP shall install, operate, and maintain low nitrogen oxides (NO_x) burners (LNB) on the DDGS Dryer (ARM 17.8.752).

f. Total particulate matter emissions from the DDGS Dryer System combined may not exceed 11.42 lb/hr (ARM 17.8.752).

g. Emissions shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

4. Utility Boiler

a. MEP shall use only natural gas to fire the utility boiler (ARM 17.8.752).

b. MEP shall install, operate, and maintain the flue gas recirculation (FGR) system and LNBs on the utility boiler (ARM 17.8.752).

c. Emissions from the utility boiler shall not exceed the following(ARM 17.8.752):

NO_x	29.7 lb/hr on a 30-day rolling average
Carbon monoxide (CO)	17.9 lb/hr

d. Emissions from the utility boiler shall not exceed the following (ARM 17.8.752):

NO_x	0.08 lb/MMBtu on a 30-day rolling average
CO	0.05 lb/MMBtu

5. Ethanol Check Tanks, Ethanol Product Tank, Gasoline Tank, Off-Spec Ethanol Tank

a. MEP shall install, operate, and maintain the following tanks with internal floating roofs that meets the standards specified in 40 CFR Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (ARM 17.8.752, ARM 17.8.340, and 40 CFR Part 60, Subpart Kb).

- Ethanol check tanks (2)
- Ethanol product tank
- Gasoline tank, and
- Off-spec ethanol tank

b. MEP shall utilize submerged loading and install, operate, and maintain 2 water scrubbers to control 95% of VOC emissions while the fixed roof tanks are being filled or emptied (ARM 17.8.752).

c. MEP shall comply with the testing procedures, reporting and recordkeeping, and monitoring of operation requirements for these sources as specified in 40 CFR Part 60, NSPS, Subpart Kb, Standards of

Performance for Volatile Organic Liquid Storage Vessels (ARM 17.8.340 and 40 CFR Part 60, Subpart Kb).

6. Ethanol Product Loading Rack to Trucks and Railcars and Fugitive Sources (i.e. valves, flanges, pumps)

   a. MEP shall utilize submerged loading and install, operate, and maintain two water scrubbers to control 95% of Volatile Organic Compounds (VOC) emissions while loading ethanol product into trucks or railcars (ARM 17.8.752).

   b. MEP shall comply with the standards, test methods and procedures, recordkeeping requirements, and reporting requirements as specified in 40 CFR Part 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry. This requirement shall apply to each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, flange or other connector in VOC service (ARM 17.8.752, ARM 17.8.340, and 40 CFR Part 60, Subpart VV).

7. Fermentation System

   a. MEP shall install, operate, and maintain two water scrubbers in series that have a combined control of 99.75% of VOC emissions from the fermentation system. MEP shall operate both scrubbers any time fermentation system emissions are vented to atmosphere (ARM 17.8.752).

   b. Emissions from the fermentation system shall not exceed 1.74 lb/hr (ARM 17.8.752).

C. Testing Requirements

1. Compliance with the limits in Section II.B.1.b for sources 1-15, 17-20, 32, 33, and 37-43 shall be monitored by an initial Method 9 performance source test conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup. After the initial source test, testing shall continue as required by the Department (ARM 17.8.105 and ARM 17.8.749).

2. Compliance with the limits in Section II.B.1.c for sources 1 and 11 shall be monitored by an initial performance source test, in conjunction with the initial Method 9 test required in Section II.C.1, conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup (ARM 17.8.105 and ARM 17.8.749).

3. Compliance with the opacity limit in Section II.B.2.c for the baghouses controlling the Gluten Dryers shall be monitored by an initial Method 9 performance source test conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup. After the initial source test, testing shall continue as required by the Department (ARM 17.8.105 and ARM 17.8.749).

4. Compliance with the limits in Section II.B.2.d for the baghouses controlling the Gluten Dryers shall be monitored by a performance source test, in conjunction with the Method 9 test, conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup (ARM 17.8.105 and ARM 17.8.749).

5. Compliance with the opacity limit in Section II.B.3.g for the two DDGS Dryer/RTO System stacks shall be monitored by an initial Method 9 performance source test conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup. After the initial source test, testing shall continue on an every 2-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).

6. Compliance with the limit in Section II.B.3.f for the DDGS Dryer/RTO System shall be monitored by an initial performance source test, in conjunction with the initial Method 9 test required in Section II.C.5, conducted within 60 days of achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup (ARM 17.8.105 and ARM 17.8.749).

7. MEP shall meet all compliance and performance test methods and procedures, emission monitoring, and reporting and recordkeeping requirements as specified in 40 CFR 60, Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators (ARM 17.8.340 and 40 CFR 60, Subpart D).

8. MEP shall meet all compliance and performance test methods and procedures, emission monitoring, and reporting and recordkeeping requirements as specified in 40 CFR 60, Subpart Db, Standards of Performance for Industrial Commercial - Institutional Steam Generating Units (ARM 17.8.340 and 40 CFR Part 60, Subpart Db).

9. MEP shall conduct an initial source test on the utility boiler for NO_x and CO, concurrently, and demonstrate compliance with the limitations contained in Section II.B.4.c and II.B.4.d within 60 days after achieving the maximum boiler production rate, but not later than 180 days after initial boiler start up. The testing and compliance demonstrations shall continue every other year thereafter or according to another testing/monitoring schedule/demonstration as may be approved by the Department (ARM 17.8.105, ARM 17.8.749, ARM 17.8.340, and 40 CFR 60, Subparts D and Db).

10. MEP shall install, calibrate, maintain, and operate a CEMS on the utility boiler for measuring NO_x emissions as specified in 40 CFR 60, Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators and 40 CFR Part 60, Subpart Db, Standards of Performance for Industrial Commercial - Institutional Steam Generating Units. This CEM shall conform to 40 CFR Part 60, Appendix B, Performance Specification 2 and Appendix F, Quality Assurance Procedures (ARM 17.8.340 and 40 CFR Part 60, Subparts D and Db).

11. All compliance source tests must be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

12. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting and Recordkeeping Requirements:

1. All records compiled in accordance with this permit must be maintained by MEP as a permanent business record for at least 5 years following the date of the measurement, must be available for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

2. MEP shall submit excess emission reports for the utility boiler continuous emission monitor as specified by 40 CFR 60, Subparts D and Db (ARM 17.8.340 and 40 CFR 60, Subparts D and Db).

3. MEP 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 and sources identified in Section I of 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).

4. MEP shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745 that would include a 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 emission 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).

E. Notification

1. MEP shall supply the Department with the final overall plot plan showing the location, dimensions, and heights of the structures at the facility, within 15 days of completing the final plot plan. If the final plot plan varies significantly from the preliminary plot plan, MEP may have to apply for an alteration to Permit #2835-06 (ARM 17.8.749).

2. MEP shall provide the Department with written notification of the following dates within the specified time periods for the sources listed in Section I.A of the permit analysis (including the group of all affected equipment as defined in 40 CFR 60, Subpart VV):

   a. Date of construction commencement no later than 30 days after construction commencement (ARM 17.8.749, ARM 17.8.340, and 40 CFR 60.7 for NSPS-applicable sources).

   b. Anticipated start-up date postmarked not more than 60 days nor less than 30 days prior to start up (ARM 17.8.749, ARM 17.8.340, and 40 CFR 60.7 for NSPS-applicable sources).

c. Actual start-up date postmarked within 15 days after the actual start-up date (ARM 17.8.749, ARM 17.8.340, and 40 CFR 60.7 for NSPS-applicable sources).

3. Within 30 days of the actual facility start-up date, MEP shall supply the Department with the following (ARM 17.8.749):

   a. For each source listed in Section I.A of the permit analysis, the make, model, type, serial number, year of manufacture, stack height (if applicable), stack diameter (if applicable), stack type (if applicable), and stack lining (if applicable);

   b. For each piece of control equipment listed in Section I.A of the permit analysis, the make, model, type, serial number, and year of manufacture.

   c. For the continuous emission monitor on the utility boiler, the make, model, serial number, automatic calibration value zero, and automatic calibration value span.

   d. Drawings showing the location of each source and associated stacks (if applicable) listed in Section I.A of the permit analysis.

Section III: General Conditions

A. Inspection – MEP 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 MEP fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving MEP 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). 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, as amended by the 1991 Legislature, failure to pay the annual operation fee by MEP may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Construction Commencement – Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked. This permit will expire 3 years after the date of permit issuance unless construction commences within that time period (ARM 17.8.762).

Permit Analysis
Montana Ethanol Project, LLC
Permit #2835-06

I. Introduction/Process Description

A. Permitted Equipment

Montana Ethanol Project, LLC (MEP) proposed to construct and operate an ethanol production facility at approximately ½ mile northeast of Great Falls, Montana, in parcel 4, in the NE¼ of the NW¼ of Section 3, Township 20 North, Range 4 East, Cascade County, Montana. The following equipment is permitted for this facility:

ID #	Emission Point
1	Grain Receiving Baghouse
2	Wheat Pneumatic Transfer
3	Wheat Mill General Aspiration
4	Wheat Mill Cleaning System
5	Wheat Mill Pneumatic System
8	Bran/Dust Receiver-Dust from Receiving and Mill
10	Barley Surge Bin Filter Receiver
11	Barley Hammermills (8)
15	Flour Day Bins (2)
16.1	Gluten Dryer
16.2	Gluten Dryer
17	Blended Gluten Storage Bin Dust Filter
18	Packaging Surge Bins (2)
19	Gluten Packaging Aspiration Receiver
20	Bran/Dust Transfer Filter Receiver
21	Distillation Area CO_2 Scrubber
23	Ethanol Check Tank – Internal Floating Roof
24	Ethanol Check Tank – Internal Floating Roof
25	Ethanol Product Tank – Internal Floating Roof
26	Gasoline Tank – Internal Floating Roof
27	Rework Tank – Internal Floating Roof
28	Alcohol Area Fugitives
29	Alcohol Loadout (2 scrubbers)
30	DDGS Dryers/RTOs (4)
32	DDGS Loadout
33	Supplement Tank
34	Utility Boiler
35	Cooling Tower
37	Gluten Blending Surge Bin (2)
38	Central Vacuum System
39	Flour Bin Dust Collector
41.1	Gluten Mill Dust Collector
41.2	Gluten Mill Dust Collector
42	Gluten Bag Dump
43	Gluten Bulk Bag Filler Vent Filter
44	Fermentation System

B. Source Description

The primary products of MEP's proposed facility will include wheat gluten, wheat and barley meal, food-grade carbon dioxide (CO_2) (of high enough purity to be used in food manufacturing processes), and fuel grade ethanol. The plant can be divided into 11 major process areas: wheat/barley receiving, barley milling, wheat cleaning and tempering, wheat milling, wheat gluten plant, starch conversion, fermentation, distillation, distillers dried grain with solubles (DDGS) production from stillage, tank storage and product loadout, and a natural gas utility boiler. The following is a brief description of each of these process areas.

Wheat/Barley Receiving: Grain haul trucks entering the plant are weighed and their grain is quality tested prior to unloading. The wheat and barley are then transported to the unloading facility where each type of grain is handled in a parallel process line. Grain is transferred into two wheat storage silos or two barley storage silos. After the wheat storage bins, the wheat is pre-cleaned or rough scalped prior to its transfer into the wheat day bins. Reject "overs" material from grain cleaning is dropped into a dumpster for disposal. Bucket elevators and conveyors move the grain through this part of the process. Particulate emissions are controlled by the Receiving Transfer Baghouse.

Barley Milling: Barley is transferred from the storage silos to a pre-cleaning system that removes over-size particles, iron particles, small stones, and sand. Overs waste material from the barley scalper is collected in the dumpster for disposal. The scalped barley is pneumatically conveyed to and stored in a surge bin, which is vented to the atmosphere through a baghouse. Barley from the surge bin is conveyed and metered into a number of destoners where stones and trash that bypassed initial scalping are removed from the process for disposal. Any aspirated dust and fines from the destoner operation are recycled and discharged into the conveyor that feeds the barley milling and sizing system.

The destoned barley is conveyed and metered into a number of hammermills where it is approximately sized to meet process requirements. Each of the eight hammermills/conveyor units is vented to the atmosphere through a common baghouse. The sized barley meal then passes across a number of vibratory screeners where "unders" or approved process sized meal are mechanically conveyed and discharged to a weigh belt conveyer before the meal is introduced to the ethanol hydrolysis process step. The screened "overs" are collected by a baghouse and recycled back to the barley milling process.

Wheat Cleaning and Tempering: Wheat from grain receiving is pneumatically conveyed to one of several raw wheat day bins before cleaning. This system is vented to the atmosphere through a baghouse.

In the first cleaning stage, the wheat is cleaned, classified, and destoned. The clean wheat is tempered with water to increase its moisture to the desired level and then held in a tempering bin to allow the water to penetrate consistently throughout all the kernels.

After full tempering has been achieved, the wheat is further cleaned. It first passes through a magnet to remove any ferrous materials and is then aspirated to remove dust. After aspiration, the wheat passes through a final magnet before entering the milling process. Waste from the aspirator is conveyed to a dumpster for disposal. Particulate emissions from wheat cleaning, including bucket elevators and screw conveyors, as well as the aspirator and the above cleaning equipment, are controlled by baghouse.

Wheat Milling: Several series of roller mills grind incoming wheat. After each milling step, a sifter classifies the material as flour, material requiring further grinding, and material requiring further processing in one of the facility's bran finishers. Dividers and cyclones are also used during various parts of the process to classify the material. The final finished flour from the milling process is transferred to a flour maturation (residence) bin before being pneumatically conveyed to the gluten/starch separation area. Particulate emissions from the flour bins are controlled by the milling system aspiration system described above. Bran and dust from the wheat milling process, along with fines from the grain receiving system, are pneumatically conveyed to the bran/dust transfer bin, which is vented to the atmosphere through a fabric filter baghouse. Finally the bran is combined with milled barley, weighed, and fed to the DDGS drying process. Particulate emissions from these operations are controlled by a baghouse.

Wheat Gluten Plant: Wheat flour is pneumatically conveyed from the flour mill maturation bins to a set of flour day bins that feed the gluten and starch separation process. These bins are exhausted to the atmosphere through two baghouses. The flour is then fed into parallel processing lines where it is weighed and conveyed to the wet section.

Warm water and flour are mixed together, homogenized in a high-speed disintegrator, and separated into an A-starch stream and a B-starch-gluten stream by a decanter. The A-starch stream is re-slurried in a cyclone and pumped to starch conversion. The B-starch-gluten stream is further processed to separate the gluten from the starch. The recovered starch is pumped to starch conversion. The gluten slurry is dewatered, dried, and recovered in one of two dust collectors. The dried gluten is then pneumatically conveyed, sifted, and milled. The Gluten Mill Dust Collectors control particulate emissions from the mill.

The wheat gluten is then pneumatically conveyed to gluten blending where it is blended with wheat flour from the flour surge bin or conveyed to the gluten blending bypass system. Finally, the gluten is conveyed to product handling where it is collected in surge bins prior to packaging in either 50-pound bags or FIBCs (supersacks). The blending system is controlled by two fabric filter baghouses. The flour surge bin, the gluten blending bypass system (consisting of the gluten storage bins), and the supersack and 50-pound bag packaging surge bins are exhausted through fabric filter baghouses.

Gluten diverted to the 50-pound bag surge hopper is fed into a set of 50-pound bag filling stations. A dust collector controls particulate emissions from the aspiration of the bag filling line and valve sealer station. A central vacuum system has been provided for this area with fixed pickup points to clean up spills of dry gluten. This system is exhausted to the atmosphere via a baghouse that also controls the intermittent emissions from the Gluten Bulk Bag Filler.

Starch Conversion: The starch conversion process converts the starch to a fermentable stream, traditionally called mash. Barley flour and wheat starch are mixed in a series of process steps with the following: alpha-amylase, phosphoric acid, saccharification enzymes, and sulfuric acid. No emissions are created in this process.

Fermentation: Fermentation is a continuous process consisting of two parallel trains of fermentation tanks and a beer well tank. Mash and yeast are combined in the first tank to start the fermentation process. This process eventually yields CO_2 and mash containing 9% ethanol by volume. CO_2 produced in this process is collected and scrubbed to remove volatilized ethanol using two water scrubbers (with a combined efficiency of 99.75%). Following those scrubbers, the CO_2 (and any residual ethanol) will either be transmitted to a CO_2 purification and storage facility or vented to the atmosphere. Ethanol removed in the scrubbing process is recycled to the starch-conversion mixing tank.

Distillation: The distillation process consists of a beer column, rectification column, and zeolite molecular sieve beds. The beer column distills ethanol from the mash to form 100 proof ethanol. The solids and a large portion of the water entering in the beer leave the column at the bottom as whole stillage, which is pumped to the stillage processing section. The dilute 100 proof ethanol is fed to the rectification column to further concentrate the ethanol to 190 proof. Finally, a molecular sieve bed dehydrates the ethanol vapor to a 199 proof ethanol product. Residual gases produced in this process, primarily CO_2, are drawn off from the column overheads by the vacuum system to be scrubbed. Process streams that contain Volatile Organic Compounds (VOC) are vented to the atmosphere from the CO_2 scrubber.

DDGS Production from Stillage: Stillage is held in the Whole Stillage Tank prior to being pumped to a Whole Stillage Decanter centrifuge for dewatering and solids recovery. The resulting filtrate, called Thin Stillage, is pumped to the Thin Stillage Tank where it is held until being fed to the Thin Stillage Evaporator for concentration. The Stillage Evaporator system is a multiple effect evaporator that concentrates the solids of the Thin Stillage. The resulting concentrate is called Syrup.

Dewatered cake from the Whole Stillage Decanter centrifuges is conveyed to the DDGS drying units or discharged to a wet DDGS slab for recycling. This mixture is dried to a final moisture content of 10 percent. The portion of this dried mixture that is not recycled through the dryer is transferred to a fluidized bed cooler, discharged, and mechanically conveyed to storage piles via distribution gates. Front-end loaders arrange the piles to maximize storage area. A conveying system transports the stored material to one of two combination rail or truck load-out and scale stations. The load-out system incorporates a retractable aspiration spout that aspirates and recycles the collected dust back into the load-out spout.

The design of the dryers will incorporate cyclonic separators to remove airborne particulate matter and return it to the process. Exhaust gases from each of the DDGS drying units is routed through a dedicated regenerative thermal oxidizer (RTO) for final control of particulate, CO, and VOC emissions. The four RTOs vent through two exhaust stacks, with two RTOs sharing a single stack.

Tank Storage and Product Loadout: Ethanol produced in the distillation process is pumped into two ethanol check tanks for sampling and testing. From there, the ethanol is sent either to the finished product ethanol tank or the rework ethanol tank. Before the finished product is stored, unleaded gasoline is added to it. All of these tanks are enclosed with internal floating, welded deck roofs. Loading arms load the ethanol product into trucks or railcars. VOC emissions from truck and rail loading are controlled by water scrubbers.

Sodium hydroxide, sulfuric acid, calcium chloride and phosphoric acid are used throughout the process. Additional chemicals are used in the process or for various utilities such as boiler water treatment, etc. These chemicals include various enzymes, antifoam, sodium sulfite, sodium bisulfite, phosphate, and amines. No air pollutants are emitted from these storage tanks.

Natural Gas Boiler: A natural gas-fired boiler generates the steam used in the wheat gluten plant, starch conversion, distillation, and stillage handling processes. Flue gas recirculation (FGR) and low oxides of nitrogen (NO_x) burners control NO_x emissions from the boiler.

C. Permit History

On April 5, 1995, American Ethanol Corporation (American Ethanol) submitted a complete permit application to operate an ethanol plant to produce fuel grade ethanol, DDGS, gluten, and CO_2. The plant was permitted to locate approximately ½ mile northeast of Great Falls, in Parcel 4, in the NE¼ of the NW¼ of Section 3, Township 20 North, Range 4 East, Cascade County, Montana.

On May 25, 1995, the Environmental Protection Agency (EPA) commented that American Ethanol's ethanol plant was a chemical processing plant and, as such, was a Prevention of Significant Deterioration (PSD) 100-ton-per-year listed source. On August 21, 1995, American Ethanol submitted additional information that allowed the Department of Environmental Quality (Department) to limit their emissions to below the 100 ton per year PSD threshold by incorporating federally enforceable limitations in the permit for the facility. Permit **#2835-00** was issued on September 24, 1995.

Permit **#2835-01** was issued on May 6, 1998. The permitting action was a modification to the existing permit to account for a name change from American Ethanol Corporation to American Agri-Technology of Montana, Inc. In addition, the rule references were updated and the permitting language was changed to reflect the current methods used for writing permits. Permit #2835-01 replaced Permit #2835-00.

Permit **#2835-02** was issued on October 1, 1998. The permit action was a modification to the existing permit to re-authorize American Agri-Technology of Montana Inc.'s ability to commence construction of the facility. The original Permit #2835-00 was issued on September 24, 1995, and included a requirement in Section III.G. for construction to begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked. As of September 10, 1998, American Agri-Technology of Montana, Inc. had not begun construction at the site. However, American Agri-Technology intended to construct the facility and requested that the permit be re-authorized for another 3 years. American Agri-Technology of Montana, Inc. stated that no significant changes in plant design or equipment usage were intended since the original permit application was submitted. The Department determined that the Department's original analysis, which established conditions and limitations necessary to demonstrate compliance with applicable requirements, including the Best Available Control Technology (BACT) determination, remained accurate. Therefore, the Department issued Permit #2835-02 to allow American Agri-Technology of Montana, Inc. an additional 3 years to construct the facility.

In addition, this permitting action changed the name from American Agri-Technology of Montana, Inc. to American Agri-Technology Operating, LLC. Permit #2835-02 replaced Permit #2835-01.

Permit **#2835-03** was issued on November 6, 2001. The permit action was an alteration to the existing permit for a revised facility design. The proposed facility design had undergone significant changes since the previous permit was issued (construction had not yet commenced on the previously permitted facility), including increasing the potential production capacity and consequently the criteria pollutant emissions. Increases in NO_x, carbon monoxide (CO), particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), VOC, and sulfur dioxide (SO_2) would result from the increased fuel combustion in the two gluten dryers, the DDGS dryer, and the utility boiler. Increases in fugitive PM, PM_{10}, and VOC emissions would result from increased production and grain handling. Because the increase in potential plant-wide emissions would exceed 100 tons per year for some criteria pollutants (including PM, PM_{10}, NO_x, and CO), the facility is considered a "listed major stationary source" as defined by the PSD of Air Quality Regulations (40 CFR 52.21 and ARM 17.8.818). Thus, this permit application constituted a PSD application. In addition, this permitting action changed the name from American Agri-Technology Operating, LLC to Agri-Technology Corporation. Following the issuance of the Preliminary Determination, the facility requested that the name be changed to AgriTechnology Montana, LLC (AgriTech). Permit **#2835-03** replaced Permit #2835-02.

On October 10, 2003, the Department received a request from AgriTech to modify the currently permitted plant configuration identified in Permit #2835-03. In Permit #2835-03, the fermentation system (including a water scrubber) was not an emitting unit, as the CO_2/VOC stream would be routed off-site for processing. Therefore, no emissions were accounted for from the fermentation system. AgriTech requested to be permitted for the alternative scenario of venting the fermentation system to the atmosphere. AgriTech proposed adding another water scrubber to the existing water scrubber for VOC (ethanol) recovery and to limit the amount of VOCs emitted from the fermentation system when it is vented to atmosphere. Permit **#2835-04** replaced Permit #2835-03.

On May 16, 2006, the Department received a request from AgriTech for a modification of Permit #2835-04. The application was assigned Permit **#2835-05**. However, the permit application was subsequently withdrawn and no permit was issued.

D. Current Permit Action

On June 23, 2006, the Department received an application requesting a modification to the current permit to change the company name from AgriTech to Montana Ethanol Project, LLC (MEP) and to update the facility's nominal fuel-grade ethanol production capacity from 100 million gallons per year (MMGAL/yr) to 125 MMGal/yr. In addition, the facility requested to modify the emissions control system for the DDGS dryers, to add two new barley hammermills, and to update the facility wide emissions inventory to reflect these changes and changes in certain vendor-provided emission factors. Permit **#2835-06** will replace Permit #2835-05.

E. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, is included in the permit 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 locations 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 is 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. The Department determined, for the current permit action, that initial testing is necessary.

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).

MEP shall comply with all 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 in 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 that a public nuisance is created.

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 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
6. ARM 17.8.221 Ambient Air Quality Standard for Visibility
7. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

MEP must maintain compliance with the applicable ambient air quality standards.

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

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

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate. (2) Under this rule, MEP 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 section.

4. ARM 17.8.310 Particulate Matter, Industrial Processes. 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 section.

5. ARM 17.8.322 Sulfur Oxide Emissions - Sulfur in Fuel. Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. The natural gas combusted in MEP's DDGS Dryers, Gluten Dryers, and Boilers will comply with the sulfur-in-fuel requirements.

6. ARM 17.8.324 Hydrocarbon Emissions- Petroleum Products. No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule. This rule applies to the gasoline storage tank, but 40 CFR 60, Subpart Kb is more stringent and supersedes this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. The owner or operator of any stationary source or modification, as defined and applied in 40 CFR Part 60, shall comply with the standards and provisions of 40 CFR Part 60.

   40 CFR 60, Subpart D - Standards of Performance for Fossil Fuel Fired Steam Generators applies to the utility gas boiler because it has a heat input capacity greater than 100 MMBtu/hr, is fired with a fossil fuel, and produces steam. Although the DDGS Dryer also has a heat input capacity greater than 100 MMBtu/hr and is fired with a fossil fuel, it does not produce steam; therefore, it is excluded from Subpart D.

   40 CFR 60, Subpart Db - Standards of Performance for Industrial Commercial-Institutional Steam Generating Units applies to the utility boiler because it has a heat input capacity greater than 100 MMBtu/hr. Although the DDGS Dryer also has a heat input capacity greater than 100 MMBtu/hr, it is excluded from Subpart Db according to an EPA memo dated November 17, 1992. The memo states that, "Subparts Db and Dc do not apply to process dryers or kilns," of which the DDGS Dryer is a process dryer.

   40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels applies to the two ethanol check tanks, the ethanol product tank, the gasoline tank, and the off-spec ethanol tank because they each have a storage capacity greater than 151 cubic meters and contain VOCs with a maximum true vapor pressure greater than 3.5 kiloPascals (kPa).

   40 CFR 60, Subpart DD - Standards of Performance for Grain Elevators does not apply to the MEP facility. Subpart DD applies only to grain terminal elevators or grain storage elevators, both of which are defined in part by storage capacity. MEP's grain storage units are sized well below the defined threshold capacities.

   40 CFR 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry applies to this facility because the facility produces ethanol (a listed chemical) as a final product and operates equipment (i.e., pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, and flanges) that contains or contacts process fluids that are at least 10% VOC by weight.

   40 CFR 60, Subpart NNN - Standards of Performance for Volatile Organic Compounds Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations does not apply to the MEP facility. The facility is not subject because it manufactures ethanol using biomass rather than a synthetic process.

40 CFR 60, Subpart RRR - VOC Emissions from SOCMI Reactor Processes does not apply to the MEP facility. The facility is not subject because it manufactures ethanol using biomass rather than a synthetic process.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This rule incorporates, by reference, 40 CFR Part 63, NESHAP for Source Categories. Since the emissions of Hazardous Air Pollutants (HAPs) from the MEP ethanol facility are less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs combined, the MEP facility is not subject to the provisions of 40 CFR Part 63.

D. ARM 17.8, Subchapter 4, Stack Height and Dispersion Techniques, including, but not limited to:

1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.402 Requirements. MEP must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). MEP demonstrated, through the air quality modeling and downwash review, that the new stack heights are consistent with GEP.

E. 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. MEP 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.

   The annual assessment and collection of the air quality operation fee, as 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 which pro-rate the required fee amount.

F. 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 alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. MEP has the potential to emit more than 25 tons per year of

particulate matter, PM_{10}, NO_x, CO, and VOCs; therefore, a permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. MEP 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. MEP submitted an affidavit of publication of public notice for the July 4, 2006, issue of the *Great Falls Tribune*, a newspaper of general circulation in the Town of Great Falls in Cascade 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 MEP 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 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 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).

G. 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 Modification--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.

   The MEP ethanol production facility is defined as a "major stationary source" because it is a listed source (chemical processing plant) with the PTE more than 100 tons per year of PM, PM_{10}, NO_x, and CO. This permit action is a major PSD modification for PM and PM_{10}.

H. 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 stationary source having:

   a. PTE > 100 tons/year of any pollutant;

   b. PTE > 10 tons/year of any one 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 Applicability. 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 #2835-06 for MEP, the following conclusions were made:

a. The facility's PTE is greater than 100 tons/year for several criteria pollutants.
b. The facility's PTE is less than 10 tons/year of any one HAP and less than 25 tons/year of all HAPs.

c. This facility is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to several current NSPS standards (40 CFR 60, Subparts D, Db, Kb, and VV).

e. This facility is not subject to a current NESHAP standard.

f. This facility is not a Title IV affected source.

g. This facility is not an EPA designated Title V source.

Based on the above information, the MEP facility is a major source for Title V and, thus, a Title V Operating Permit is required.

I. MCA 75-2-103, Definitions provides, in part, as follow:

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…

J. 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, MEP 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 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. MEP 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 MEP's proposal 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 altered source. MEP shall install on the new source the maximum air pollution control capability that is technically practicable and economically feasible, except that the BACT shall be utilized. A BACT analysis was submitted by MEP in MAQP #2835-06. The BACT analysis addresses some available methods of controlling VOC, CO, NO_x, and total particulate emissions for the DDGS dryer system and the new barley hammermills.

The Department reviewed the proposed control methods, previous BACT determinations (via the RACT/BACT/LAER Clearinghouse, other federal agency databases, and state agency decisions), and ongoing control proposals (via federal agencies and state agencies), prior to making the following BACT determination.

For the current permitting action, a BACT review was required for the DDGS Dryer System and the two proposed Barley Hammermills.

A. Pollutant Specific Control Technology

1. VOC Emission Control Technology - The Department evaluated several types of VOC control technologies including thermal oxidizers, flares, routing emissions for use as combustion air, refrigeration condensers, carbon adsorption, wet scrubbers, catalytic oxidizers, internal floating roof (storage tanks only), vapor balancing (storage tanks only), and vapor recovery. The following analysis explains and summarizes the available VOC control options/strategies for the proposed project. Individual BACT determinations are in a subsequent section.

   a. Carbon Adsorption

   Carbon adsorption is a control technology often used to remove organic compounds from gaseous or liquid streams. Carbon adsorption uses a contact vessel to pass the waste gas stream through an activated carbon bed. The organic compounds in the waste gas stream are collected at the interface of the activated carbon by intermolecular forces creating a VOC-rich carbon. The VOC-rich carbon is then removed from the carbon bed and new or "clean", activated carbon is added to the bed. The VOC-rich carbon is reclaimed (i.e. converted back to "clean" carbon) by separating the VOC's from the carbon. This separation process is typically achieved by stripping the carbon in an oxygen-deficient environment usually using steam as the stripping media to vaporize the organic material without burning the carbon or the VOC's.

   b. Routing for use as Combustion Air

   Dilute VOC streams with significant oxygen content (i.e. similar to the oxygen concentration of air) can be routed for use as combustion air in a boiler. Since the air will go through a combustion zone, VOCs will be oxidized along with whatever fuel is being combusted in the boiler. This control, if feasible by the design and operation of the boiler, is presumed equivalent to thermal oxidation by a dedicated control device.

   c. Thermal Oxidizers

   Thermal oxidizers are refractory lined enclosures with one or more burners in which the waste gas stream is routed through a high temperature combustion zone where the waste gas stream is heated and the combustible materials are burned. Thermal oxidizers typically operate at 1200 to 2100 degrees Fahrenheit (ºF), depending on the compounds in the waste gas stream being controlled. The residence time for a thermal oxidizer typically ranges from 0.5 to 2 seconds. With such high operating temperatures and long residence times, thermal oxidizers are capable of efficiently controlling VOC emissions from a variety of waste streams. There are two general types of thermal oxidation units: heat recovery and direct-flame. Heat recovery type thermal oxidizers recover the heat generated by the combustion of the VOC laden waste gas stream to assist in the thermal oxidizer operation. There are two types of heat-recovery thermal oxidizers: recuperative and regenerative. Direct-flame oxidizers heat the exhaust stream to destruction temperature and vent the hot gas. Direct-flame thermal oxidizers do not preheat the inlet gas stream but energy can be recovered from the thermal oxidizer by using the hot exhaust gas to generate steam or hot water for the facility.

d. Wet Scrubbers

Wet Scrubbers designed for VOC control are designed primarily for creating intimate contact to promote absorption of soluble compounds. Absorption scrubbers typically consist of a contact tower with high surface area material (mass transfer material) in the middle. A scrubbing liquid is sprayed down the tower covering the mass transfer material as waste gas is blown in the bottom of the tower, creating intimate contact between liquid and gas. The soluble gaseous compound(s) then dissolves in the scrubbing liquid. The scrubbing liquid is then removed from the bottom of the tower and treated. The two predominant types of absorption scrubbers are packed and plate towers. Packed towers are vertical vessels that are filled with a packing material such as raschig rings or “saddle” shaped pieces of material. This packing creates significant surface area for the liquid and gas to contact. Plate towers are vertical vessels with horizontal sieve plates in the middle. The scrubbing liquid is sent down the tower filling the plate and the gas passes through the plate holes generating contact with the scrubbing liquid.

e. Flares

Flares are used to oxidize combustible organic materials at high temperatures. There are two types of flares; elevated and ground flares. Elevated flares are simple flares in which the waste gas stream is sent up a stack (usually 10 to 100 meters in height) and burned at the tip of the stack. Elevated flares burn supplemental fuel at the tip of the flare stack using a pilot flame to create a high-temperature combustion zone for the waste gas to burn.

Waste streams controlled by elevated flares must have 200 to 300 British thermal units (Btu) of combustible constituents per cubic foot (CF) of waste gas. Except for the ethanol loadout exhaust stream, the VOC sources at MEP contain relatively low concentrations of combustible material. As a result, fuel would need to be added to these waste gas streams prior to venting at elevated flares. This would require several million Btus per hour of natural gas to enrich each waste gas stream prior to venting at an elevated flare.

Ground flares are more complex than elevated flares. Ground flares consist of multiple burners in refractory-lined enclosures that allow for longer residence time and higher destruction efficiency. Ground flares are similar, in terms of level of control and enclosure design, to thermal oxidization units; however, ground flares do not maintain a constant combustion zone temperature. Therefore, ground flares require supplemental natural gas to “enrich” the waste gas stream just as elevated flares.

f. Refrigeration Condensers

Refrigeration condensers are used to separate materials from gaseous streams by cooling and, in some cases, pressurizing a gas stream to cause some of the constituents to condense to liquid form. Condensers are designed to separate constituents based on the difference in dew points of the compounds that are targeted for separation. For example, a stream of benzene and oxygen could be separated by cooling the stream until the benzene condenses because oxygen (dew point –183 degrees Celsius (ºC) has a much lower dew point than benzene (dew point 80 ºC).

g. Catalytic Oxidizers

Catalytic oxidizers work on a similar principle as thermal oxidizers, but they include a catalyst that allows the oxidation reaction to occur at lower temperatures.

2. Total Particulate Control Technologies

Control technologies evaluated for total particulate included baghouses, cyclones, wet scrubbers, electrostatic precipitators (ESP).

a. Baghouses, or fabric filters are typically used to control total particulate emissions from facilities located in densely populated areas. Baghouses remove dust from a gas stream by passing the stream through a porous fabric. Particles form a cake on the fabric that will act as the filtration device. This porous cake is occasionally removed by a pulsed jet of compressed air or by reversed air flow through the fabric. In both cases, the particles are collected in a hopper. Baghouses are highly efficient for controlling filterable PM, but are not designed to remove condensable PM. Baghouses are subject to failure if they area not properly operated and maintained. Baghouse control efficiencies range from 97 to 99 percent or more in most applications.

b. Cyclones are used to collect large particulates using mechanical operations. Particles enter the cyclone suspended in a gas stream, which is forced into a vortex by the shape of the cyclone. The particles resist the change in direction of the gas and are moved radially outward to the outer wall of the cyclone. The gas stream continues to spiral in the conical tube downward. Particles are forced to the outer wall of the cyclone where they are caught in the laminar layer of air next to the wall and are carried downward by gravity to a hopper. Cyclone collectors can achieve acceptable performance in select situations, but are subject to failure if they are not properly operated and maintained. Cyclones are less efficient than standard fabric filter systems.

c. Electrostatic Precipitator (ESP) technology is applicable to a variety of particulate matter sources. Electrostatic precipitators (ESP) use electrical forces to move particles out of the gas stream and onto collector plates. Particles are given an electric charge by forcing them to pass through a region of gaseous ions. Once the particles have been collected on the plates, they must be removed without re-entraining them into the gas stream. Particles are either removed by knocking them loose from the plates and allowing the collected mass to slide into a hopper or by spraying water down the collector plates and draining contaminated water to a collection tank for treatment or shipment. ESP performance is influenced by particulate loading, particulate size distribution, particulate electrical resistivity, and precipitator voltage and current. ESPs show the highest control efficiencies with fine and course particles (less than 0.1 micrometer or greater than 10 micrometers).

3. NO_x Control Technologies

For the purpose of NO_x control technology, the Department evaluated proper burner design and operation with no add-on controls, fuel selection, FGR, selective catalytic reduction, and low NO_x burners.

a. Fuel Selection can influence NO_x production in two ways: the amount of chemically bound nitrogen in the fuel helps determine the fuel's direct contribution to NO_x emissions, and the fuel's combustion characteristics help determine the amount of thermal NO_x created. The two most common fuels used in industrial burner applications are coal and natural gas. EPA emission factors published in document AP-42 indicate that NO_x emissions from coal combustion can be significantly higher than from natural gas combustion, though values can vary substantially depending on fuel heat content and specific burner design.

b. Flue Gas Recirculation – In a FGR system, a portion of the flue gas is recycled from the stack to the burner windbox. Upon entering the windbox, the re-circulated gas is mixed with combustion air prior to being fed to the burner. The recycled flue gas consists of combustion products which act as inerts during combustion of the fuel/air mixture. FGR reduces NO_x emissions by diluting the combustion gases to reduce combustion temperatures, thus suppressing the thermal NO_x mechanism, and by lowering the oxygen concentration in the primary flame zone, thus reducing thermal NO_x formation.

c. Selective Catalytic Reduction – SCR is a post combustion gas treatment technique that uses a catalyst to reduce NO_x and nitrogen dioxide (NO_2) to molecular nitrogen, water, and oxygen. Ammonia (NH_3) vaporized and injected into the flue gas upstream of the catalyst bed combines with NO_x at the catalyst surface to form an ammonium salt intermediate. The ammonium salt intermediate then decomposes to produce elemental nitrogen and water. The catalyst lowers the temperature required for the chemical reaction between NO_x and NH_3. Catalysts used for the NO_x reduction include base metals, precious metals, and zeolites. Commonly, the catalyst of choice for the reaction is a mixture of titanium and vanadium oxides. An attribute common to all catalysts is the narrow "window" of acceptable system temperatures. In this case, the temperature window is approximately 480 and 800 ºF. At temperatures below 575 ºF, the NO_x reduction reaction will not proceed, while operation at temperatures exceeding 800 ºF will shorten catalyst life and can lead to the oxidation of NH_3 to either nitrogen oxides (thereby increasing NO_x emissions) or possibly generating explosive levels of ammonium nitrate in the exhaust gas stream. The stack temperature for the boiler is approximately 300 ºF making the use of SCR technically difficult. Other factors impacting the effectiveness of SCR include catalyst reactor design, operating temperature, type of fuel fired, sulfur content of the fuel, design of NH_3 injection system, and the potential for catalyst poisoning.

d. Selective Non-Catalytic Reduction Selective non-catalytic reduction (SNCR) is a post-combustion technology that may be applied to combustion devices to reduce NO_x emissions. The SNCR systems inject NH_3 or urea into combustion gases to reduce NO_x emissions to nitrogen and water vapor. The NH_3/urea injection must take place when the gas is between 1600º and 2100º F. Higher temperatures will cause the reagent to oxidize creating more NO_x and lower temperatures will result in significant reagent slip. The capital cost for SNCR controls are relatively low, however, it is challenging in practice to design and build a system that is reliable and effective. SNCR systems typically achieve 30 to 60% reduction in practice.

e. Low NO_x Burners (LNB) reduce NO_x by accomplishing the combustion process in stages. The two most common types of low NO_x burners being applied to natural gas-fired boilers are staged air burners and staged fuel burners. Staging partially delays the combustion process, resulting in a cooler flame, which suppresses thermal NO_x formation. NO_x emission reductions of 40 to 85 percent have been observed with LNB.

f. Proper burner design and operation – Burners basically operate by mixing appropriate amounts of fuel and air to achieve combustion that produces optimum temperatures, heat release rate, and fuel efficiency. Modern burners balance these factors to achieve optimum performance and efficiency. Burner designs typically include monitoring and control systems that allow the maintenance of optimum operating conditions.

4. CO Control Technologies

The following technologies were evaluated for controlling CO emissions: Oxidation Catalyst, Thermal Oxidizer, and proper combustion practices utilizing natural gas.

a. Oxidation Catalyst systems are subject to fouling by the heavy particulate loading from a grain dryer. They must also be located within the exhaust system at a location with a sufficiently high gas temperature. To overcome the particulate fouling concerns, a particulate control system would have to be located upstream of the catalyst bed. The only technically feasible technologies for removal of particulate from the DDGS dryer exhaust are wet scrubbers and cyclones. Wet scrubbers would not remove enough particulate and they would reduce the gas temperature to below the catalyst operating range. Cyclones are not efficient enough to produce an acceptable particulate loading for catalytic oxidizers. Catalytic oxidizer systems have not been demonstrated on grain dryers and are not technically feasible.

b. Thermal oxidizers are primarily employed for reduction of VOC emissions, they potentially control CO emissions as well by oxidizing CO to CO_2.

c. Proper combustion practices can reduce CO by using a good burner design and burning natural gas. CO is the result of incomplete combustion. Several design modifications have been made in recent decades to reduce the CO formation in combustion devices. However, the challenging task has been to decrease CO without increasing the formation of NO_x. Modern combustion devices such as boilers are designed to maximize the residence time or the combustion gas, increase turbulence of mixing with combustion air and maintain a steady combustion temperature throughout the combustion zone while keeping the flame temperature down.

B. Source Specific BACT Summary

1. Barley Hammermilling

PM BACT Summary - The pollutant of concern in the hammermilling process is PM/PM_{10}. ESPs are eliminated as a feasible option for controlling hammermilling particulate emissions because it is a safety hazard. Particulate dust has the potential to explode if exposed to an ignition source such as a spark between the charged ESP plates. The remaining control technologies were ranked by effectiveness

Fabric filters are the most effective control technology available for controlling the hammermilling PM/PM_{10} emissions. The Department determined BACT for the hammermilling process is 99% control of PM/PM_{10} emissions or a maximum of 0.0045 grains of PM/PM_{10} per dry standard cubic foot of exhaust (gr/dscf). MEP will be required to install and operate a baghouse on each of the hammermilling process.

2. DDGS Dryers

PM BACT Summary - Baghouses were eliminated as technologically feasible because the DDGS dryer will have a moisture content of approximately 40 percent. The high moisture content could cause particulate caking and clogging of the fabric filters over time. Wet scrubbing is also ineffective due to the temperature of the dryer exhaust and the low PM loading of the DDGS dryer system exhaust.

ESPs create electric fields that capture particulate using the principle of electrostatic attraction. The particulate matter in this application, a combustible organic material, creates a heightened potential for dust explosion. ESPs present an unacceptable risk of sparking that could result in explosion in this type of application. As such, an ESP will be ineffective at controlling the condensable PM emissions from this and is therefore, not a technologically feasible control for the DDGS dryers.

MEP proposed to employ a combination of cyclones and thermal oxidation to control particulate matter emissions from the DDGS dryers. Because this combination of controls is the most effective alternative, no further analysis is necessary. This serves as a VOC, and CO control as well as a PM/PM_{10} control.

The Department determined BACT for the DDGS Dryer's particulate matter emissions is the combination of cyclones and thermal oxidation, providing an effective control efficiency of 99.9 percent. The emission rate is limited to 2.86 lb/hr of PM/PM_{10} per each dryer.

VOC BACT Summary – Control technology evaluated for VOC emissions from the DDGS Dryers include flares, refrigeration condensers, carbon adsorption, catalytic oxidizer, routing emissions for use as combustion air, thermal oxidation, and wet scrubbers.

Flares require supplemental natural gas to enrich the waste gas stream if the VOC concentration is low. In order to increase the heat value of the DDGS dryers, several hundred MMBtu's of natural gas would need to be added to the exhaust prior to flaring. Thermal oxidation provides similar control but with greater efficiency. Because of their relative lack of control, a flare would be ineffective at reducing VOC emissions from the DDGS dryer exhaust stream. It would also require substantial additional fuel and would result in high NO_x and CO emissions. Therefore, flares are determined to be environmentally infeasible and not the best technical option for VOC emission control on the DDGS drying system.

The DDGS dryer system exhaust characteristics make controlling VOC emissions with a refrigeration condenser ineffective. The DDGS dryer exhaust stream has a low VOC concentration, a high volumetric flow, a high temperature, and a high moisture content. The dew points of many of the constituents in the process exhaust gas also would tend to make refrigeration condensation ineffective. Therefore, condensers are ineffective and technologically infeasible for the DDGS dryer emissions.

Carbon adsorption uses intermolecular forces to accumulate organic material at the surface of an absorbent (typically activated carbon). These intermolecular forces include van der Waals interactions. Van der Waals interactions are the forces that exist between non-polar molecules when the movement of electrons within molecular bonds creates small momentary dipoles. These dipoles then induce a dipole of opposite orientation in another molecule creating an attraction between the molecules. The number of van der Waals interactions increases with larger molecules because there are more bonds within the molecules. For this reason, carbon adsorption is most effective for large molecules. The VOC compounds emitted from the DDGS dryer system include several small molecules, such as ethanol (molecular weight (MW) = 46), acetaldehyde (MW = 44), and formaldehyde (MW = 30). Since the VOC compounds emitted from the DDGS system are small molecules, the van der Waals interactions in these compounds are weak. Since carbon adsorption typically requires a VOC concentration of at least 200 to 1000 ppmv and average VOC molecular weights of at least 50 to 60 atomic units, carbon adsorption is technologically infeasible for controlling the VOC emissions from the DDGS dryer system.

Catalytic oxidizers use a catalyst to lower the operating temperature of the oxidation unit. The catalyst must remain effective during operation. Otherwise, the control efficiency of the unit at standard operating temperature would decrease rapidly as the catalyst is fouled. The catalyst material used for catalytic oxidation has small channels for the waste gas stream to flow. As a result the particulate matter in the DDGS dryer system exhaust would accumulate on the catalyst material, fouling the catalyst and reducing the control efficiency. When the catalyst is fouled, the catalytic oxidizer must be taken off-line and cleaned. In fact, the catalyst must often be replaced. Therefore, catalytic oxidation is unreliable for this stream and does not offer cost savings over thermal oxidation. Engineering firms and equipment vendors do not recommend the use of catalytic oxidizers for this type of waste gas stream. For this control technology analysis, catalytic oxidation is not a technologically feasible option.

Thermal oxidizers have a control efficiency of 95% and wet scrubbers have a control efficiency of 70% of VOC emissions. The Department determined BACT for VOC emissions from the DDGS dryer is thermal oxidation. This will control approximately 95% of VOC emissions from the DDGS dryer system.

NO_x BACT Summary

The proposed project's preliminary design is based on the use of natural gas as the primary fuel for the facility. Switching to an alternative fuel, such as coal, would fundamentally change the nature of the project; however, selection of certain alternative fuels is technically feasible. Switching from natural gas to coal for the DDGS dryers may not reduce NO_x emissions, and has the potential to increase NO_x emissions. For this reason, alternative fuel selection will not be considered further in this analysis.

While control of NO_x emissions using FGR techniques is theoretically possible for a dryer furnace, it is not technically feasible for application to a direct-contact dryer such as proposed for the MEP DDGS dryers. The dryer's exhaust will contain approximately 70 percent moisture by weight. Because the dryer's purpose is to remove moisture from the DDGS, adding a moisture-laden air stream to the burner would reduce the dryer's effectiveness. To compensate, the dryer would require more dry air, which in turn would require more fuel combustion and result in increased pollutant emissions.

SNCR is not technically feasible for use with the MEP DDGS dryers. Because a temperature of 1600 to 2100º F is required for the reduction reaction to proceed, ammonia or urea would have to be injected within the burner. The dryers operate by bringing the hot combustion gases into direct contact with the DDGS. Effective operation of the SNCR would lead to some unreacted ammonia or urea in the process gas. These compounds would contaminate the DDGS and make it unfit for its intended use as animal feed.

Total capital investment for an SCR unit to control NO_x emissions from two DDGS dryers is estimated to be $2.28 million. Estimated total annual costs are $462,000. Cost-effectiveness for SCR control in this application is $16,500 per ton of NO_x removed. The analysis assumes exhaust gases enter the SCR unit at a temperature near the optimum temperature for the unit's design. It is likely that application on the DDGS dryer/RTO system would require reheating with additional costs for a duct burner unit and natural gas supply.

SCR presents several potential adverse environmental impacts. First, unreacted ammonia in the flue gas (ammonia slip) and the products of side reactions between ammonia and other species present in the flue gas will be emitted to the atmosphere. Second, transportation storage, and handling of ammonia are potentially hazardous. Third, employing SCR on the DDGS dryer/RTO system may require the combustion of additional fuel to increase gas temperatures to acceptable levels. This combustion will increase NO_x emissions as well as emissions of other criteria pollutants including CO and VOCs. Finally, disposal of spent catalysts from the SCR unit is a potential environmental hazard.

SCR application to the kiln exhaust stream may require additional energy to raise the inlet gas temperature to the required temperature range.

Although SCR has been employed as BACT for combustion processes in many applications, MEP proposed to eliminate it from consideration as BACT for NO_x emissions from the DDGS dryer/RTO system. Economic impacts as well as concern of potential technical incompatibilities with direct contact drying applications, potential environmental impacts, health and safety risks, and energy usage are factors used to establish the proposal.

The Department agrees with MEP that FGR, SCR, and SNCR technologies are inappropriate for controlling NO_x burner technology. Recently permitted similar sources in RBLC are using LNB and achieving 85% control of NO_x emissions. The Department determined that a NO_x emission rate of 0.04 lb/MMBtu, achieved through the LNB technology, is BACT for this application.

IV. Emissions Inventory -- Permit #2835-06

				Ton/Year			
Source		**PM**	**PM_{10}**	**NO_X**	**SO_2**	**VOC**	**CO**
1	Grain Receiving Baghouse	20.2	20.2				
2	Wheat Pneumatic Transfer	0.56	0.56				
3	Wheat Mill General Aspiration	1.31	1.31				
4	Wheat Mill Cleaning System	0.39	0.39				
5	Wheat Mill Pneumatic System	0.99	0.99				
8	Bran/Dust Receiver-Dust from Receiving and Mill	0.32	0.32				
10	Barley Surge Bin Filter Receiver	1.21	1.21				
11	Barley Hammermills (8)		10.4	10.4			
15	Flour Day Bins (2)	0.49	0.49				
16.1	Gluten Dryer	9.46	9.46	2.75		2.00	14.3
16.2	Gluten Dryer	9.46	9.46	2.75		2.00	14.3
17	Blended Gluten Storage Bin Dust Filter	0.215	0.215				
18	Packaging Surge Bins (2)	0.184	0.184				
19	Gluten Packaging Aspiration Receiver	0.745	0.745				
20	Bran/Dust Transfer Filter Receiver	0.171	0.171				
21	Distillation Area CO_2 Scrubber	0.127	0.127			5.69	
23	Ethanol Check Tank – Internal Floating Roof					0.320	
24	Ethanol Check Tank – Internal Floating Roof					0.320	
25	Ethanol Product Tank – Internal Floating Roof					0.342	
26	Gasoline Tank – Internal Floating Roof					0.935	
27	Rework Tank – Internal Floating Roof					0.077	
28	Alcohol Area Fugitives					26.718	
29	Alcohol Loadout (2 scrubbers)					3.61	
30	DDGS Dryer/RTOs	50.0	50.0	53.0	10.00	40.10	47.4
32	DDGS Loadout	0.30	0.30				
33	Supplement Tank	0.27	0.27				
34	Utility Boiler	11.8	11.8	130.1	0.924	6.272	78.402
35	Cooling Tower	15.0	15.0				
36	Traffic Road Dust	45.1	8.8				
37	Gluten Blending Surge Bin (2)	0.07	0.07				
38	Central Vacuum System		0.06	0.06			
39	Flour Bin Dust Collector	0.30	0.30				
41.1	Gluten Mill Dust Collector	1.8	1.8				
41.2	Gluten Mill Dust Collector	1.8	1.8				
42	Gluten Bag Dump	0.10	0.10				
43	Gluten Bulk Bag Filler Vent Filter	0.10	0.10				
44	Fermentation System					7.6	
Total		**183**	**147**	**189**	**10.93**	**96.0**	**154**

The complete emission inventory is on file with the Department

V. Existing Air Quality and Impacts

Existing Air Quality

The *Federal Register* (September 9, 1980, 45 FR 59315) designated a corridor along 10th Avenue South as nonattainment for CO based upon air quality data gathered at the intersection of 10th Avenue South and 9th Street. The 1990 Clean Air Act Amendments listed Great Falls as an unclassified nonattainment area for CO. This was based on the 1988 and 1989 data in which no violations of either the one-hour or eight-hour standards were recorded.

Montana previously submitted to EPA a CO control strategy for Great Falls that relied upon significant emission reductions at the Montana Refining Company refinery (formerly Phillips Petroleum and Simmons Refinery) and federal automobile emission standards. On May 9, 2002, Great Falls was redesignated to attainment for CO under a Limited Maintenance Plan.

Air Quality Impacts

MEP is a chemical process plant which is subject to PSD. It is a listed source (40CFR52.21 and ARM17.8.818) and has the PTE more than 100 tpy of at least one regulated pollutant. MEP's proposed potential emissions of regulated pollutants are: 189 tpy of NO_x, 10.9 tpy of SO_2, 212 tpy of PM_{10}, 96 tpy of VOCs, 154 tpy of CO and <0.000 tpy lead (Pb).

The air quality classification for the MEP project area is "Unclassifiable or Better than National Standards" (40CFR81.327) for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants. There are no nonattainment areas within 50 km of the project site. The closest Class I area is the Gates of the Mountains Wilderness Area, approximately 78 km southwest of the site.

CLASS II AREA MODELING PARAMETERS

Emissions of NO_X, SO_2, CO, and PM_{10} were modeled to demonstrate compliance with the Montana Ambient Air Quality Standards (MAAQS), NAAQS, and the PSD increments. The modeling was performed in accordance with the methodology outlined in the New Source Review Workshop Manual, EPA, Draft October 1990 and Appendix W of 40CFR51, Guideline on Air Quality Models (revised), November 9, 2005.

EPA's Industrial Source Complex (ISC3) model was used along with EPA's BPIP - PRIME downwash algorithm. Downwash effects were modeled for point sources at other facilities as well as the MEP point sources for the Class II analysis. The Department re-ran the ISC-PRIME modeling files obtained from Bison to verify the modeling results.

MEP's modeling used five years of surface meteorological data (1985-1989) collected at the Great Falls Airport National Weather Service (NWS) station. Surface met data was processed with corresponding upper air data from the Great Falls NWS station.

The Class II modeling used a Cartesian grid and boundary receptor system with the following intervals and orientation:

- 100 meter (m) spacing along the facility's property boundary (fenceline);
- 100 m spacing from the proposed fenceline out to 1 kilometer (km);
- 250 m spacing from 1 km to 5.4 km.

The receptor grid was generated from digital elevation model (DEM) files using the using 7.5-

minute United States Geological Survey (USGS) topographical maps.
CLASS II PSD INCREMENT COMPLIANCE DEMONSTRATION

MEP submitted a significant impact analysis to determine whether additional ambient impact analyses were needed. MEP's model results are compared to the applicable Class II significant impact levels (SIL's) in Table 1. MEP's impacts exceed the SIL's for 24-hour and annual PM_{10}. Impacts of NOx and SO_2 were below the SIL's. The radius of impact (ROI) for PM_{10} is included in Table 1. The area within the ROI is referred to as the significant impact area (SIA).

Because MEP's modeling showed significant impacts for PM_{10}, cumulative impact modeling was included to demonstrate compliance with the PM_{10} Class II PSD increments. Other sources included in the cumulative impact modeling include Montana Refining, Malmstrom Air Force Base, International Malting, Montana First Megawatts power plant and the Southern Montana Electric (SME) Highwood Generating Station. Some or all of the emissions from each of these sources consume PM_{10} increment.

Class II increment modeling results are compared to the applicable PSD increments in Table 2. Background concentrations are not included in the PSD increment compliance demonstration.

Table 1: MEP Class II Significant Impact Modeling

Pollutant	Avg. Period	Modeled Conc. (μg/m^3)	Class II SIL[a] (μg/m^3)	Significant (y/n)	Radius of Impact (km)
PM_{10}	24-hr	30.3	5 (1)[b]	Y	5.4
	Annual	10.0	1	Y	2.2
NO_x [c]	Annual	0.91	1	N	------
CO	1-hr	40.4	2,000	N	------
	8-hr	25.2	500	N	------
SO_2	3-hr	1.4	25	N	------
	24-hr	0.5	5 (1)[b]	N	------
	Annual	0.02	1	N	------
O_3	Net Increase of VOC: 96.2 tpy. Less than 100 tpy, source is exempt from O_3 analysis.				

[a] All concentrations are 1st-high for comparison to SIL's.
[b] If a proposed source is located w/in 100 km of a Class I area, an impact of 1 μg/m^3 on a 24-hour basis is significant.
[c] Ambient Ratio Method (ARM) is not used for NOx.

Table 2: MEP Class II Increment Compliance Demonstration

Pollutant	Avg. Period	Met Data Year	Class II Modeled Conc. (μg/m^3)	Class II Increment (μg/m^3)	% Class II Increment Consumed	Peak Impact Location UTM (km), Zone 12
PM_{10}	24-hr	1987	25.9	30	86%	(484.447, 5262.72)
	Annual	1987	10.1	17	59%	(484.695, 5263.30)

PSD PRE-MONITORING REQUIREMENTS

Modeling results were used to determine whether MEP needed to perform ambient air quality pre-monitoring as required under ARM 18.8.822. Table 3 compares the MEP peak modeled impacts to the pre-monitoring exemption levels contained in ARM 18.8.818(7)(a). The facility is eligible for exemption from the pre-monitoring requirements for SO_2, NO_2, CO and Pb. MEP is not eligible for exemption from the pre-monitoring requirements for PM_{10}. The Department agreed to use existing monitoring data for the MEP project in the 2001 modeling review. Since that time, SME has collected PM_{10} data at Highwood, and this data has been used in the PM_{10} compliance demonstration. Additional PM_{10} pre-monitoring is not required.

Table 3: MEP Impact Compared to Pre-monitoring Exemption Levels

Pollutant	Avg. Period	Modeled Conc. (μg/m³)	Exemption Level (μg/m³)[a]	Eligible for Exemption (y/n)	Compliance with Pre-monitoring Requirement
PM_{10}	24-hr	30.3	10	N	Use SME pre-monitoring data.
NO_2	Annual [a]	0.68	14	Y	
CO	8-hr	25.2	575	Y	
SO_2	24-hr	0.5	13	Y	
Pb	3-month	nil	0.1	Y	
O_3	Net Increase of VOC: 98 tpy. Less than 100 tpy, source is exempt from O_3 monitoring.				

[a] All concentrations are 1st-high for comparison to the pre-monitoring exemption levels.
[b] The ambient ratio method has been used to convert NOx to NO_2.

The PM_{10} concentrations measured by SME at their Highwood site are slightly lower than Montana's default background values for areas with no other significant sources. The NAAQS/MAAQS PM_{10} compliance demonstration uses SME's PM_{10} monitoring results for background data.

NAAQS/MAAQS COMPLIANCE DEMONSTRATION

NAAQS/MAAQS modeling was conducted for PM_{10} emissions from MEP and other Great Falls area sources. Sources that are permitted but not built were included as existing sources for the full impact analysis.

Modeling results are compared to the PM_{10} MAAQS and NAAQS in Table 4. Modeled concentrations show the impacts from MEP and other sources and include the background values. As shown in Table 4, the modeled concentrations are below the applicable NAAQS/MAAQS.

Table 4: PM_{10} NAAQS/MAAQS Compliance Demonstration

Pollu-tant	Avg. Period	Modeled Conc.[a] (μg/m³)	Background Conc. (μg/m³)	Ambient Conc. (μg/m³)	NAAQS (μg/m³)	% of NAAQS	MAAQS (μg/m³)	% of MAAQS
PM_{10}	24-hr	25.9	23	48.9	150	33	150	33
	Annual	10.2	7	17.2	50	34	50	34

[a] 24-hour concentrations is high-second high value, annual average is highest year.

ADDITIONAL CLASS I IMPACT ANALYSES

Complete Class I area impact analyses were submitted with the original permit application for the MEP facility. Changes proposed in the current application are not extensive enough to require a revision of the Class I area increment and air quality related values (AQRV) analyses.

VISIBILITY ANALYSIS AT GATES OF THE MOUNTAINS (VISCREEN)

The current permit application refers to VISCREEN modeling results in the July 2001 permit application. The applicant used VISCREEN to evaluate visibility impacts from the ethanol plant in the July 2001 permit application and the Department accepted the methodology. Gates of the Mountains Wilderness Area is located beyond 50 km from the MEP site, making short-range visibility impact analysis overly conservative for evaluating the impacts of this project. MEP estimated visibility impacts on the Class I area following the methodology in EPA's Workbook for Estimating Visibility Impairment. Predicted plume impacts from the MEP facility were below the Maximum Visual Impact Screening Criteria for impacts inside Class I areas. No additional review of visibility impacts from MEP is required.

VI. Human Health Risk Assessment

Montana air quality rules require that applicants for facilities meeting the definition of an incineration facility as provided in MCA 75-2-103, and that are subject to rules promulgated in MCA 75-2-215 (Solid or Hazardous Waste Incineration – Additional Permit Requirements), must address potential impacts to human health by performing a human health risk assessment. The RTOs proposed as pollution control devices for the DDGS dryers qualify as incinerators under the Montana rules because they combust material "primarily for the purpose of removal, destruction, disposal, or volume reduction of any portion of the input material." They also combust a "solid waste," as defined in the statues very broadly to include essentially any waste material in any physical form (i.e., solid, liquid, or gas).

MEP conducted a screening-level risk assessment as provided at ARM 17.8.770(c)(ii). This screening method requires that impacts to ambient concentrations of relevant HAPs first be determined based on results of a dispersion modeling analysis. These model-predicted impacts are then compared against screening threshold concentrations for cancer risk and acute and chronic non-cancer risks. According to the information submitted, the Department believes the emissions from the proposed RTOs represent an acceptable risk to human health.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 2-10-105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was performed for this permitting action. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air and Waste Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Montana Ethanol Project, LLC
511 Central Avenue West, Suite 3
Great Falls, MT 59404-2848

Air Quality Permit Number: 2835-06

Preliminary Determination Issued: July 27, 2006
Department Determination Issued: August 29, 2006
Permit Final: September 14, 2006

1. *Legal Description of Site:* MEP's ethanol production facility would be located approximately ½ mile northeast of Great Falls, Montana, in parcel 4, in the NE¼ of the NW¼ of Section 3, Township 20 North, Range 4 East, Cascade County, Montana.

2. *Description of Project*: The Department proposes to modify MEP's Montana Air Quality Permit (MAQP) to reflect a company name change from AgriTech to MEP and to update the facility's nominal fuel-grade ethanol production capacity from 100 million gallons per year (MMGAL/yr) to 125 MMGal/yr. In addition, the facility requested to modify the emissions control system for the DDGS dryers, to add two new barley hammermills, and to update the facility wide emissions inventory to reflect the proposed changes and changes in certain vendor-provided emission factors.

3. *Objectives of Project*: The objective of the project would be to increase MEP's fuel-grade production capabilities from 100 MMGal/yr to 125 MMGal/yr at the proposed ethanol production facility, and to control VOC emissions more efficiently.

4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no action" alternative. The "no action" alternative would deny the issuance of the MAQP to MEP and would not allow the facility to increase capacity or change control techniques. Under the "no action" alternative, none of the impacts described in this EA would occur.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in Permit #2835-06.

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 would be reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and would 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.

Potential Physical and Biological Effects							
		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 Resource			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

This permitting action would have a minor effect on terrestrial and aquatic life and habitats, because the proposed project would affect an already permitted (although not built) industrial property that has already been disturbed (through agricultural activities). In addition, minor effects from the increase in production might be seen. The small amount of air impact would correspond to an equally small amount of deposition.

Aquatic life and habitats would realize little or no impact from the proposed facility because MEP is not proposing to directly discharge any material to the surface or ground water in the area (as all water/wastewater drainage from the facility would be handled by the City of Great Falls) and the resulting air emissions to any water body would be very minor.

B. Water Quality, Quantity, and Distribution

This permitting action would have little to no effect on the water quality, water quantity, and distribution because there would be no discharges to groundwater or surface water associated with this permitting action. A small increase in production capacity would be expected as a result of this project, but should have only a minor impact, if any impact at all, on water.

C. Geology and Soil Quality, Stability, and Moisture

This permitting action would have a minor effect on geology and soil quantity, stability, and moisture, because the proposed project would affect an already permitted (although not built), industrial property that has already been disturbed (through agricultural activities). A small portion of land would be disturbed (in addition to that permitted under #2835-03) for two additional barley hammermills. The increase in production capacity for this project would have a minor effect on the soil stability and moisture, however the air quality permit associated with this project contains limitations to minimize the effect of the emissions (including BACT and an emission limitation) on the surrounding environment. Overall, the impacts to the geology and soil quality, stability, and moisture would be minor.

D. Vegetation Cover, Quantity, and Quality

This permitting action would have a minor effect on vegetation cover, quantity, and quality. The proposed project would affect an already permitted (although not built) industrial property that has already been disturbed (through agricultural activities). No additional vegetation on the site beyond that permitted in #2835-03 would be disturbed for the project. The increase in production capacity for this project might have a minor effect on the surrounding vegetation, however the air quality permit associated with this project contains limitations to minimize the effect of the emissions (including BACT and an emission limitation) on the surrounding environment. The small amount of air impact would correspond to an equally small amount of deposition. Therefore, any impact to the vegetation cover, quantity, and quality would be minor.

E. Aesthetics

The impacts to the aesthetics of the area from this project would be minor because the additional barley hammermills, and the proposed regenerative thermal oxidizers that would be implemented as a part of this permit action, would not change the overall appearance of the facility permitted under Permit #2835-03. No noise or traffic impacts are anticipated as a result of this project.

F. Air Quality

The air quality impacts from the construction and operation of the proposed modified facility would be minor because Permit #2835-06 would include conditions limiting emissions of air pollution from the source. Although throughput of the facility would increase, overall emissions for the facility would decrease from the emissions currently permitted under Permit #2835-04 due to using more efficient technology for controlling VOCs, CO and total particulate.

In addition, the Department determined, based on the ambient air quality dispersion modeling analysis conducted for the proposed permit modification, that the impact from the proposed permit modification would be minor. The Department believes that facility changes considered under the proposed permit modification would not cause or contribute to a violation of any ambient air quality standard. The Clean Air Act, which was last amended in 1990, requires the U.S. EPA to set national NAAQS for pollutants considered harmful to public health and the environment. In addition, Montana has established equally protective or, in some cases, more stringent standards for these pollutants termed MAAQS. The Clean Air Act established two types of NAAQS, Primary and Secondary. Primary Standards set limits to protect public health, including, but not limited to, the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary Standards set limits to protect public welfare, including, but not limited to, protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Primary and Secondary Standards are identical with the exception of SO_2 which has a less stringent Secondary Standard. The air quality classification for the immediate area of proposed MEP operation is considered "Unclassifiable or Better than National Standards" (40 CFR 81.327) for all pollutants.

Overall, any impacts to the air quality of the project area from MEPs proposed permit modification, including construction activities, normal operations resulting in air emissions and deposition of air emissions would be minor and in compliance with all applicable MAQQS and NAAQS.

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

To identify any unique, endangered, fragile, or limited environmental resources in the immediate area of the proposed project, the Department contacted the Montana Natural Heritage Program of the Natural Resource Information System (NRIS), which catalogues species of special concern of the U.S. Forest Service, U.S. Fish and Wildlife Service; and Bureau of Land Management. The Natural Heritage Program files identified eight species of special concern in the 1-mile buffer area surrounding the section, township, and range of the proposed facility. The two plant species identified that were observed in the same U.S.G.S quadrangle (Northeast Great Falls) as the MEP facility were the *entosthodon rubiginosus* and the *funaria americana* (no common names listed for either). Both of these species are found on or near the Missouri River. The search results indicated that both of these plant species were previously recorded within a 5-mile radius. The 5-mile radius does include several miles of the Missouri River. Six species of special concern were identified in the nearby Southeast Great Falls Quadrangle including the *najas guadalupensis* (guadalupe water-nymph), *psilocarphus brevissimus var brevissimus* (dwarf woolly-heads), *carex sychnocephala* (many-headed sedge), *bacopa rotundifolia* (roundleaf water-hyssop), *centunculus minimus* (chaffweed), and *elatine californica* (california waterwort). All of these species are plant species and all except for *elatine californica* (which did not list a site description) occur near ponds, moist meadows, stream edges, and similar habitats. From the information provided by NRIS, no unique, endangered, fragile or limited environmental resources were identified on the proposed project site location.

The impact to unique, endangered, fragile or limited environmental resources from this project would be minor because the project would occur at an already disturbed site and would be minor in scope with respect to emissions increases. In addition, due to the plume characteristics from the proposed facility, the emissions would predominantly be carried to the north and east of the facility, away from the location of the plant species of special concern.

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

As described in Section 7.B of this EA, this permitting action would have little to no effect on the environmental resource of water as there would be no discharges to groundwater or surface water associated with this permitting action.

As described in Section 7.F of this EA, the impact on the air resource in the area of the facility would be minor because the air emissions from the proposed project are low and the facility would be required to maintain compliance with their air quality permit as well as national and state ambient air quality standards. There is no national or state ambient air quality standard for VOCs, however, VOC emissions are taken into consideration when evaluating compliance with the ozone standard.

A minor impact to the energy resource is expected, a new water scrubber, which would have small energy requirements (particularly in light of the overall facility's energy demands), would be operating in the fermentation system. Energy would be required to power fans for moving gases through the water scrubber system. Overall, the impacts to demands on environmental resource of water, air, and energy would be minor.

I. Historical and Archaeological Sites

The proposed project would occur within the boundaries of the already permitted MEP facility area. That area had been previously disturbed by agricultural activities. The Department contacted the Montana Historical Society – State Historic Preservation Office (SHPO) in an effort to identify any historical, archaeological, or paleontological sites or findings near the proposed project prior to the issuance of Permit #2835-03. SHPO's records indicate that there is one previously recorded historic site within the designated search locale. Site 24CA0264 is the old Chicago, Milwaukee, St. Paul, and Pacific Railroad bed. However, this site code covers the entire railroad bed area that lies within Cascade County, not just that area that resides within the proposed MEP facility boundaries. The Manchester Overpass on that railroad line, which is the listed site name for Site 24CA0264, is located West of Great Falls. However, part of the railroad line appears to have been located just south of the proposed facility area. No eligible (with respect to the National Register of Historic Places) structures or buildings exist in the proposed MEP facility area associated with this site code. In addition, because of the fact that severe agricultural activities have occurred in the area, the likelihood of finding undiscovered or unrecorded historical properties is practically nil. A cultural resource inventory had been previously conducted in the area: *Cultural Resources Survey of Approximately 1250 Acres in the Vicinity of Malmstrom Air Force Base Great Falls, Montana* by T. Weber Greiser. It was conducted in 1988 by the U.S. Air Force. Based on the fact that the proposed project area had been previously surveyed and also previously disturbed, SHPO maintains that there is low likelihood that this project would impact unknown or unrecorded cultural properties. Overall, the impacts to historical and archaeological sites would be minor.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological aspects of the human environment would be minor because the impact with respect to the already permitted (although not built) MEP facility is very small. In addition, the overall air impact from the proposed MEP facility combined with the other Great Falls industrial sources is small. The highest impacts from each of the other nearby industrial sources (Montana Refining Company, Malmstrom Air Force Base, the proposed Southern Montana Electric Coop, and the proposed NorthWestern Montana First Megawatts, LLC) would not occur at the same receptor, and the pollutant of concern for each of the nearby industries is generally different.

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

Potential Social and Economic Effects							
		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 SOCIAL AND ECONOMIC EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed project would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the project would be constructed at a site permitted for industrial use. The proposed project would not change the nature of the site in its permitted use.

B. Cultural Uniqueness and Diversity

The proposed project would not cause a change in the cultural uniqueness and diversity of the area because the land is currently permitted to be used as an ethanol production facility; therefore, the land use would not be changing for this permit action.

C. Local and State Tax Base and Tax Revenue

This project would have a minor effect on the local and state tax base and tax revenue because the proposed change would allow MEP to increase the fuel-grade ethanol production capacity from 100 MMGal/yr to 125 MMGal/yr. The fuel-grade ethanol and solid co-products would provide domestic alternatives for the area to replace petroleum-based gasoline and other animal feeds, respectively.

D. Agricultural or Industrial Production

The proposed project would not result in a reduction of available acreage or productivity of any agricultural land; therefore, agricultural production would not be affected. With respect to the usage of corn and barley in the ethanol production process, the facility would provide added support for the area corn and barley industries. The current permit action increases the potential ethanol production capacity; therefore, with the increase in ethanol production capacity, there would be minor impact to the agricultural and industrial production.

E. Human Health

As described in Section 7.F of the EA, the impacts from this facility on human health would be minor because the emissions would be greatly dispersed before reaching an elevation where humans would be exposed. MEP conducted a screening-level human health risk assessment. The model-predicted impacts were compared against screening threshold concentrations for cancer risk and acute and chronic non-cancer risks. All modeled concentrations were below the relevant screening threshold concentrations. In addition, as described in Section 7.F, the modeled impacts from the proposed project, taking into account other dispersion characteristics, are well below the MAAQS and NAAQS. The current permit action would incorporate conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health. Therefore, any impacts to human health would be minor.

F. Access to and Quality of Recreational and Wilderness Activities

No significant recreational or wilderness activities exist within the MEP property boundaries. The property is currently used as a wheat field. Recreational activities exist in the area surrounding the permitted site location for MEP. The closest recreational opportunities appear to be the Rivers Edge Trail (closest point approximately ¾ mile), Giant Springs Heritage State Park (approximately ¾ mile), the Lewis and Clark Interpretive Center (approximately ¾ mile), the Missouri River (closest point approximately ¾ mile), the North Shore Conservation Easement Lands, Black Eagle Dam, Rainbow Dam, Cochrane Dam, Ryan Dam, and Morony Dam. Based on the small amount of emissions increase for the project (see Section 7.F of the EA) and the distance between and direction from the recreational sites and the MEP project site, the impacts to the previously mentioned recreational opportunities and other recreational opportunities in the area would be minor, if any at all.

G. Quantity and Distribution of Employment

The proposed project would not result in any impacts to the quantity or distribution of employment at the facility or surrounding community. No employees would be hired at the facility as a result of the project.

H. Distribution of Population

The proposed project does not involve any significant physical or operational change that would affect the location, distribution, density, or growth rate of the human population. Therefore, there would be no impacts to the distribution of population.

I. Demands of Government Services

The demands on government services would experience a minor impact. The primary demand on government services would be the acquisition of the appropriate permits by the facility (including local building permits, as necessary, and a state air quality permit) and compliance verification with those permits.

J. Industrial and Commercial Activity

The proposed change would allow MEP to increase production capacity of the fuel-grade ethanol. The level of industrial and commercial activity would not increase at the facility as a result of the proposed project, nor is the industrial and commercial activity of the surrounding area expected to increase. Therefore, no effect on the industrial and commercial activity would occur.

K. Locally Adopted Environmental Plans and Goals

The Department is unaware of any locally adopted environmental plans and goals that would be affected by the proposed change to the facility. The conditions associated with the Great Falls CO Limited Maintenance Plan would apply within the Great Falls area regardless of this project's status. The planning efforts by the City of Great Falls for the Missouri River corridor also would not be affected by this proposed change.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor because minor impacts may be seen in the areas of human health, quality of recreational and wilderness activities, and demands of government services. The proposed project provides MEP with operational flexibility in the instance that no outside entity chooses to build an off-site CO_2 processing facility in the area. The project is associated with an already permitted facility and would not change the culture or character of the area.

Recommendation: No 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 modification of MEP's already permitted plant configuration to add the ability to vent VOCs from its fermentation process if an off-site CO_2 recovery facility is unavailable. Permit #2835-06 would include conditions and limitations to ensure the facility would operate in compliance with all applicable rules and regulations. Based on the foregoing review, there are no significant impacts associated with this proposal and the scope of the review is appropriate considering the nature and complexity of the project.

Other groups or agencies contacted or that may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Environmental Quality (Air Resources Management Bureau and Resource Protection Planning Bureau)

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