Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P. O. Box 200901 Helena, MT 59620-0901 (406) 444-2544 Website: www.deq.mt.gov

PRELIMINARY DETERMINATION
ON PERMIT APPLICATION

Date of Mailing: February 1, 2012

Name of Applicant: Montana Advanced Biofuels, LLC

Source: 126 million gallon per year dry mill ethanol plant

Proposed Action: The Department of Environmental Quality (Department) proposes to issue a permit, with conditions, to the above-named applicant. The application was assigned Permit Application Number 4260-00.

Proposed Conditions: See attached.

Public Comment: Any member of the public desiring to comment must submit such comments in writing to the Air Resources Management Bureau (Bureau) of the Department at the above address. Comments may address the Department's analysis and determination, or the information submitted in the application. In order to be considered, comments on this Preliminary Determination are due by March 2, 2012. Copies of the application and the Department's analysis may be inspected at the Bureau's office in Helena. For more information, you may contact the Department.

Departmental Action: The Department intends to make a decision on the application after expiration of the Public Comment period described above. A copy of the decision may be obtained at the above address. The permit shall become final on the date stated in the Department's Decision on this permit, unless an appeal is filed with the Board of Environmental Review (Board).

Procedures for Appeal: Any person jointly or severally adversely affected by the final action may request a hearing before the Board. Any appeal must be filed by the date stated in the Department's Decision on this permit. The request for a hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, MT 59620.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-3490

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Environmental Engineer
Air Resources Management Bureau
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VW:EW
Enclosures

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
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DRAFT ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Montana Advanced Biofuels, LLC (MAB)

Montana Air Quality Permit Number: 4620-00

Preliminary Determination Issued: 2/1/12
Department Decision Issued:
Permit Final:

1. *Legal Description of Site*: Section 3, Township 20 North, Range 4 East, in Cascade County, Montana.

2. *Description of Project*: MAB proposes to construct and operate a 126 million gallon per year fuel grade ethanol (ethyl alcohol) manufacturing facility. Barley and wheat are to be the primary raw material. The plant will produce distiller's dried grains and solubles (DDGS) for animal feed and wheat gluten as by-products of the alcohol manufacturing process.

3. *Objectives of Project*: To generate income from the production and sale of fuel grade ethanol, DDGS, and wheat gluten.

4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because MAB demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in MAQP #4620-00.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

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

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

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

A. Terrestrial and Aquatic Life and Habitats

Overall, the impacts from this project to terrestrial and aquatic life and habitats would be minor because of the relatively small portion of land that would be disturbed and the minor impact to the surrounding area from the air emissions (considering the air dispersion characteristics). Terrestrials (such as deer, antelope, rodents) would use the general area of the facility. The surrounding area is currently used for agricultural purposes and will remain an agricultural area. Other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, a Conoco bulk storage facility, and Malteurop North America Inc., are located within a few miles of the property boundary. The Southern Montana Electric Highwood Generating Station is approximately eight miles from the proposed ethanol plant.

Aquatic life and habitats would realize little or no impact from the proposed facility because MAB is not proposing to directly discharge any material to the surface or ground water in the area as all wastewater drainage from the facility would be handled by the Publicly Owned Treatment Works (POTW) and the resulting air emissions to any water body would be very minor.

The modeling analysis (see section 7.F of this EA) of the air emissions from this facility indicates that the impacts from the MAB emissions on land or surface water would be minor and would consume only a small portion of the ambient air quality standards. The small amount of air impact would correspond to an equally small amount of deposition. The proposed facility is in compliance with National Ambient Air Quality Standards (NAAQS) and Montana Ambient Air Quality Standards (MAAQS), both primary and secondary standards. The secondary standards are applicable in this case, as they protect public welfare, including protection against damage to animals (including terrestrial and aquatic life).

The proposed MAB site resides within the city limits of the City of Great Falls. Although city water and sewer are not connected at this time as the current use of the site is agricultural, part of the facility's construction would include connection with city services. That portion of this

project would result in very little impact on the terrestrial and aquatic life and habitats because the activities would result in minimal disturbance to land/water and the disturbances would be temporary where the piping would be installed. The sewer and water system upgrade may require the use of motor vehicles, but again, the impacts would be minor and of a short time duration.

B. Water Quality, Quantity and Distribution

The proposed facility would result in moderate impacts to water quality, quantity, and distribution in the area because little or no impacts to the surrounding surface area would result from the air emissions and the facility would use the services of the City of Great Falls for water demands and sewage discharge. The proposed location does not lie within a 100 year or 500 year floodplain and no part of the project site is within either a state or federally designated wild or scenic river land use district. Storm water discharges will be routed to an onsite storm water retention pond.

As described in Section 7.F of this EA, the maximum impacts from the air emissions from this facility would be relatively minor. As a result of the relatively low air impact from this facility, the corresponding deposition of the air pollutants in the area would also be very minor. Furthermore, the highest impacts identified in Section 7.F do not occur on or near any surface water. Based on the dispersion characteristics (wind speed, wind direction, atmospheric stability, stack temperature, etc.) of the area, the highest impacts would not be at or near the Missouri River. The proposed facility is in compliance with NAAQS and MAAQS, both primary and secondary standards. The secondary standards are applicable in this case, as they protect public welfare, including protection against damage to water resources.

The estimated water requirements for the facility would be 900 gallons per minute (gpm) ± 200 gpm, which is equivalent to approximately five gallons of water per gallon of ethanol produced. The city currently has sufficient water rights to supply the required water demand for the plant. All water for the facility would be obtained from the Great Falls municipal water supply.

Two types of industrial wastewater would be generated at the facility; process and non-contact. The design of the plant is as a zero "contact" process wastewater discharge facility. This means that no contact process wastewater is released to the environment or POTW. The facility incorporates a biomethanator to recycle the contact wastewater for reuse in the process and minimizes water demand for the plant. The biomethanator is a biological water treatment system that converts organic material into fuel gas (primarily methane) which supplements the facility's biogas demand.

The other industrial wastewater that would be generated by the site is non-contact process water. Non-contact process water would include cooling tower blowdown, reverse osmosis reject water, water softener regeneration, and other water filter blowdown. The estimated amount of non-contact water discharge, along with sanitary wastes from restrooms, kitchens, etc., is estimated to be 529,000 gallons per day. This wastewater would be discharged to the Great Falls POTW and regulated by an Industrial Discharge Permit. The proposed non-contact process water to be discharged generally only contains the constituents of the city water, except in higher concentrations due to some of the water being recycled an estimated three to five cycles in the cooling tower before discharge.

The impacts from the water demands for this facility would be moderate in comparison with other industrial users. The city of Great Falls Water Pollution Control POTW is sized to handle the additional sanitary and non-contact process water expected to be discharged.

C. Geology and Soil Quality, Stability and Moisture

The impacts to the geology and soil quality, stability, and moisture from this facility would be minor because the project would impact a relatively small portion of land, the land has previously been disturbed by agricultural tillage, and the amount of resulting deposition of the air emissions would be small. The project site is a 220-acre parcel of land within the city of Great Falls that has been approved for agricultural and industrial use. This parcel is currently being used for agricultural production (wheat) and has been farmed continuously since 1942. Approximately 95 acres would be disturbed for the physical construction of the ethanol plant and the remaining 125 acres of the parcel would remain cropland. The parcel is level and therefore it is not expected that any deep excavations would be required. One storm water retention pond would need excavation. The storm water retention pond would be lined to prevent seepage. Soil stability in the immediate vicinity of the proposed facility would likely be impacted by the new footings and foundations required for the facility. Some of the air emissions from the facility may deposit on local soils, but that deposition would result in only a minor impact to local areas because of the air dispersion characteristics of the area (See Section 7.F of this EA). The proposed facility is in compliance with NAAQS and MAAQS, both primary and secondary standards. The secondary standards are applicable in this case, as they protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The connection to city services (water and sewer) portion of this project would result in little impact on the geology and soil quality, stability, and moisture because the activities would result in minimal disturbance to land/water and the disturbances would be temporary in those areas. The sewer and water system installation would require the use of motor vehicles, but again, the impacts would be minor and of a short time duration.

D. Vegetation Cover, Quantity, and Quality

The proposed project would result in minor impacts on the vegetative cover, quantity, and quality in the immediate area because only a small amount of property would be disturbed and the resulting deposition from air emissions would be relatively small. Approximately 95 of the 220 acres are planned on being disturbed for the facility and its perimeter.

In addition, as described in Section 7.F of this EA, the modeled air impacts from the air emission from this facility are minor. As a result, the corresponding deposition of the air pollutants on the surrounding vegetation would also be minor. The proposed facility is in compliance with NAAQS and MAAQS, both primary and secondary standards. The secondary standards are applicable in this case, as they protect public welfare, including protection against damage to vegetation.

The connection to city services would have little, if any, impact on the vegetation in the area because the disturbances would occur on previously disturbed land. Those disturbances to previously disturbed land would be of short duration and would eventually return to their current status.

E. Aesthetics

The impacts to the aesthetics of the area from this project would be minor because other industrial and commercial facilities/structures are located in the nearby area. The facility would be located 1 ¼ miles from the Missouri River and the plant grain elevator, plant buildings, and various process stacks would not be visible from the Lewis and Clark Interpretive Center. The plant and its stacks would be visible from portions of the city's elevated "River's Edge Trail", along with other industrial sources adjacent to the site. In cold weather, the condensed water vapor from the plant's cooling towers and the thermal oxidizer stack would be visible. MAQP

#4620-00 would have conditions and limitations on any visible emissions from the facility; however, condensed steam is not subject to opacity regulations.

The plant would operate 24 hours per day; therefore, lighting would be required to support operations and provide security during nighttime hours. The site would primarily use lighting commonly referred to as "shoebox lights" that are shielded on five sides and allow only downward facing illumination. Some additional spot lighting may be used as well.

Noise at the site during operations would be related primarily to mechanical equipment operations. Much of the mechanical equipment at the site is related to the raw material and product handling operations. Production activities and equipment that would generate noise include dryers, thermal oxidizers, and cooling equipment. In addition to mechanical equipment, the facility would utilize trucks and rail for the transport of raw materials and final product as well as some industrial equipment such as front end loaders for on-site product movement. There will also be noise generated during the construction of the facility.

The land at the proposed site is currently used for agricultural purposes; however, other industries currently operate in the surrounding area. Montana Refining Company is located approximately 3 miles away. Malmstrom Air Force Base and a Conoco bulk storage facility for petroleum products are adjacent to the project site.

The fermentation tanks and DDGS dryers are typically the main generators of odors at ethanol facilities. The VOC emissions from these activities are believed to be the cause of the odors. This facility would use RTOs to control VOC from the DDGS dryers which are designed to destroy approximately 99 percent of these emissions. Fermentation tanks would utilize internal floating roofs that would provide approximately 98 percent control of the VOC emissions. With this level of control, it would be expected that any potential odor impacts would be limited to the areas immediately surrounding the facility.

F. Air Quality

The proposed MAB project would result in minor air quality impacts because of the relatively low levels of air emissions and the good dispersion characteristics of the stacks and the area. The project would result in emissions of PM, PM_{10}, $PM_{2.5}$, NO_x, CO, SO_2, and VOC. Based on the potential levels of these pollutants, this source would be a synthetic minor source of air contaminants with respect to the Prevention of Significant Deterioration (PSD) air permitting rules. Effective on July 20, 2011, the US EPA has deferred the application of PSD permitting requirements to carbon dioxide (CO_2) emissions from biogenic stationary sources for a period of three years (Docket #EPA-HQ-OAR-2011-0083, 76 FR 43490). Based on this deferral and the application of federally enforceable permit conditions limiting the amount of natural gas that can be burned at the facility during any 12-month rolling period, the facility's carbon dioxide equivalent (CO_2e) emissions are less than the PSD thresholds for becoming a pollutant subject to regulation at this time.

Bison Engineering, Inc. (Bison) conducted air quality dispersion modeling for the facility that factored in such parameters as wind speed, wind direction, atmospheric stability, stack heights, stack temperatures, and stack emissions, which demonstrated that the emission impacts from the proposed project would not violate any NAAQS or MAAQS.

Review of Model Inputs

Bison used the Oris Solutions Bee-Line Software BEEST for Windows (Version 9.91). The AERMOD modeling system included AERSURFACE (Version 08009), AERMET (Version 06341), AERMAP (Versions 09040 and 11103), and AERMOD (Version 11103). The EPA-

developed Building Profile Input Program – Plume Rise Model Enhancement (BPIP-PRIME) Version 04274 was included with the BEEST AERMOD modeling platform to determine building downwash. For the 1-hour NO_x analyses, the AERMOD modeling system was used in the non-regulatory default mode with the ozone limiting method (OLM) option applied. This method required hourly ozone data and a background NO_2 concentration. The OLM limits the amount of nitric oxide (NO) conversion to nitrogen dioxide (NO_2) by ambient ozone (O_3). If the O_3 concentration is less than the NO concentration, the amount of NO_2 formed by this reaction is limited by the amount of available O_3. If the O_3 concentration is greater than or equal to the NO concentration, the entire NO concentration is assumed to be converted to NO_2. The ambient hourly O_3 data was collected near Lake McDonald in Glacier National Park. The in-stack ratio of NO_2 to NO_x emitted from NO_x sources was based on information obtained from the San Joaquin Valley Air Pollution Control District (SJVAPC) and EPA AP-42. The MAB analysis used the AERMOD default value of 0.90 for the atmospheric equilibrium ratio of NO_2 to NO_x. The modeling analyses were conducted using 5 complete years (all four seasons from 1999-2003) of Great Falls ambient air quality surface and upper air data. The modeling inputs were based on the "worst case" emissions from the facility. The air dispersion modeling analysis was independently reviewed by the Department.

AERMOD Analysis Methodology

Bison first performed significant impact modeling which was used to establish the need for cumulative impact modeling. Significant impact modeling is a screening technique that provides a quick, conservative estimate of air quality impact based on MAB emissions alone. If significant impact modeling results show exceedances of any respective significant impact level (SIL), then a radius of impact (ROI) is used to determine the extent of the significant impact area (SIA). The more refined cumulative impact modeling is then performed for all the receptors that fall within the SIA to determine compliance with the appropriate NAAQS or MAAQS. Cumulative impact modeling takes into account MAB emissions as well as emissions from surrounding sources, ambient background levels, the surrounding terrain, and local meteorology. The results of the significant impact modeling are shown the following table.

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)[1, 2]	Class II SIL ($\mu g/m^3$)	Significant? (Y/N)	Radius of Impact (km)[3]
CO	1-Hour	52.4 (GF 2003)	2,000	N	NA[4]
	8-Hour	27.4 (GF 2001)	500	N	NA
$PM_{2.5}$	24-Hour	11.6[5]	1.2	Y	3.5
	Annual	3.7 (GF 2001)	0.3	Y	2.1
PM_{10}	24-Hour	56.9 (GF 2001)	5	Y	4.2
	Annual	14.8 (GF 2001)	1	Y	2.1
NO_x	1-Hour	30.1[6]	7.55[7]	Y	38.6
	Annual	1.5 (GF 1999)	1	Y	0.6
SO_2	1-Hour	22.6[8]	7.86[7]	Y	2.2

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)[1, 2]	Class II SIL (µg/m^3)	Significant? (Y/N)	Radius of Impact (km)[3]
	3-Hour	22.6	25	N	NA
	24-Hour	5.5 (GF 2001)	5	Y	0.4
	Annual	1.4 (GF 1999)	1	Y	0.5

1. µg/m^3 = micrograms per cubic meter.
2. All selected concentrations were high-first-high (H1H), except otherwise noted.
3. km = kilometer(s).
4. NA = Not Applicable.
5. Oris PMPost AERMOD post-processor was used to calculate the highest 24-hour $PM_{2.5}$ average concentration at a receptor over the 5 years of Great Falls met data.
6. Oris NO2Post AERMOD post-processor was used to calculate the 98th percentile of the daily maximum 1-hour NO2 concentrations at a receptor over the 5 years of Great Falls met data.
7. USEPA interim SILs are based on 4% of the 1-hour $PM_{2.5}$ and NO_2 NAAQS.
8. Oris SO2Post post-processor was used to calculate the 99th percentile of the daily maximum 1-hour SO_2 concentration at a receptor over the 5 years of Great Falls met data.

The results of the significant impact modeling indicated that cumulative impact modeling would be required to demonstrate NAAQS/MAAQS compliance for $PM_{2.5}$, PM_{10}, NO_x, and SO_2. The results of the cumulative impact modeling are shown in the following table.

Pollutant	Averaging Period	Modeled Concentration (µg/m^3)[1]	Background Concentration (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	Percent of NAAQS (%)	MAAQS (µg/m^3)	Percent of MAAQS (%)
$PM_{2.5}$	24-Hour	18.0[2]	12.3	30.3	35	87	NA[3]	NA
	Annual	5.5[2]	5	10.5	15.0	70	NA	NA
PM_{10}	24-Hour	61.8[4]	13	74.8	150	50	150	50
	Annual	17.3[5]	5	22.3	NA	NA	50	45
NO_2	1-Hour	61.7[6]	40	101.7	188.679	54	564	18
	Annual	3.6[5]	6	9.6	100	10	94	10
SO_2	1-Hour	114.7[7]	35	149.7	195	77	1,300	12
	24-Hour	16.7[4]	11	27.7	NA	NA	262	11
	Annual	2.8[5]	3	5.8	NA	NA	52	11

1. µg/m^3 = micrograms per cubic meter.
2. Oris PMPost AERMOD post-processor was used to calculate the highest 24-hour and annual $PM_{2.5}$ average concentrations at a receptor over the 5 years of Great Falls met data.
3. NA = Not Applicable.
4. The high-second-high modeled value for a met year was selected.
5. The high-first-high modeled value for a met year was selected.
6. Oris NO2Post AERMOD post-processor was used to calculate the 98th percentile of the daily maximum 1-hour NO2 concentrations at a receptor over the 5 years of Great Falls met data.

7. Oris SO2Post post-processor was used to calculate the 99th percentile of the daily maximum 1-hour SO_2 concentration at a receptor over the 5 years of Great Falls met data.

The significant and cumulative impact modeling results indicate that MAB would not cause or contribute to any violations of ambient air quality standards for $PM_{2.5}$, PM_{10}, CO, NO_2, or SO_2.

Ozone Modeling

The Department instructed MAB to address ozone NAAQS compliance because the facility's potential VOC emissions, an ozone precursor, are greater than 100 tons per year. Ozone is not directly emitted but created in the atmosphere primarily in the presence of sunlight from various reactions involving VOC and NO_x. Therefore, the application of AERMOD is inappropriate since this model does not simulate photochemical atmospheric reactions. To provide some assistance in cases involving NAAQS ozone compliance demonstrations for a proposed new or modified source, EPA has published a screening method to evaluate incremental ozone concentration impacts based on a facility's annual NO_x and VOC emissions. The screening method is published in a September 1988 paper entitled; "VOC/NO_x Point Source Screening Tables" by Richard D. Scheffe (http://ndep.nv.gov/bapc/permitting/download/model/scheffe.pdf). It should be noted that this method actually refers to non-methane organic carbon (NMOC). The analysis presented here assumes NMOC is equivalent to VOC. This method estimates a conservatively high ozone concentration impact assessment. The screening analysis requires the following information regarding the proposed facility:

- A determination must be made as to whether the area surrounding the facility is urban or rural; Montana is considered as rural.
- The facility's maximum potential annual emission rates in tons per year of VOC and NO_x are required. These values are used to calculate a ratio that identifies the appropriate lookup table for a given scenario. The potential annual VOC emissions are 232 tons per year and the potential NO_x emissions are 224 tons per year. The ratio of VOC to NO_x is approximately 1.0.

The VOC/NO_x annual rate ratio of 1.0 designates the following lookup table (with linear interpolation results inserted and shaded in parts per million, ppm) for the rural category only to represent Montana:

VOC (tpy)	**Ozone Impact (ppm) VOC/NO_x (tpy/tpy) < 5.2**
	Rural
50	0.011
75	0.012
100	0.014
232	0.016
300	0.017
500	0.019
750	0.023
1000	0.027

The resulting 0.016 ppm is about 21% and 16 % of the 8-hour and 1-hour ozone NAAQS, respectively. Since the entire state of Montana is classified as attainment or unclassifiable for ozone, the results demonstrate that the MAB will not cause or contribute to a violation of an ozone NAAQS.

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 and the loadout flares proposed for the truck and rail loadout systems 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).

Bison conducted a screening-level risk assessment on behalf of MAB in accordance with 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 and flares represent an acceptable risk to human health.

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 occurrence reports for four species of concern in the 1-mile buffer area surrounding the section, township, and range of the proposed facility.

The three plant species of concern that were observed in the vicinity of the MAB facility were the *entosthodon rubiginosus* (entosthodon moss), the *psoralea hypogaea* (little Indian breadroot), and the *carex sychnocephala* (many-headed sedge). The entosthodon moss is a nonvascular plant with habitat on or near the Missouri River. The little Indian breadroot is a perennial herb with habitats of rocky or sandy soils. The many-headed sedge has a habitat in the moist soil of meadows along streams and ponds. While these plants are all ranked at risk for extinction or extirpation, their last recorded observations in the area are from 120 years or more ago.

The animal species of concern with a species occurrence in the vicinity of the MAB facility was the *ammodramus savannarum* (grasshopper sparrow). This bird's preferred habitat is open prairies with intermittent brush. The most recent reported observations were from 2006 and occurred approximately two miles to the southeast of the proposed MAB facility location. One reported observation from 1993 occurred approximately one mile northwest of the proposed location along the Missouri River. The grasshopper sparrow has a species ranking of potentially at risk because of limited and/or declining numbers in some areas.

From the information provided by NRIS, the Department is unaware of any unique, endangered, fragile or limited environmental resources on the proposed project site. Recorded observations of species of concern are either of a historical nature from species that are potentially extinct or extirpated, or occur in areas with differing habitats than would be found in the proposed MAB facility location.

Based on the modeled air quality impacts from the MAB facility, the MAB proposal would have little, if any chance of impacting the unique, endangered, fragile, or limited environmental resources in the area. The modeling analysis results presented in Section 7.F of this EA indicate that the highest impacts from the air emissions from this facility would be minor.

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

As described in Section 7.B of this EA, the estimated water requirements for the facility would be 900 gallons per minute, with approximately 529,000 gallons per day in wastewater produced. All water for the facility would be obtained from the Great Falls municipal water supply, and all non-contact wastewater would be discharged to the Great Falls POTW. The impacts from the water demands for this facility would be moderate. The city currently has sufficient water rights to supply the required water demand from the plant. The Great Falls POTW has adequate capacity to accommodate the proposed facility's wastewater needs. MAB would discharge storm water to an onsite retention pond.

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 facility are relatively low and the dispersion characteristics of the facility and area are very good. Ambient air modeling for NO_x, CO, VOC, PM, PM_{10}, $PM_{2.5}$, and SO_2 was conducted for the facility at "worst case" conditions that demonstrates that the emissions from the proposed facility would not exceed any ambient air quality standard nor significantly contribute to the CO maintenance area. In conjunction with the ambient air quality analysis presented in Section 7.F of the EA, MAQP #4620-00 would contain conditions limiting the emissions from the facility.

The impacts to the energy resources from this facility would be moderate based on the anticipated demands from the facility. Natural gas would be provided by Energy West Montana, Inc., a local natural gas distribution company that already serves the surrounding area and has existing utilities that are sufficient to provide the required gas demanded by the project. No new pipeline distribution station would be required as a result of the proposed project. The MAB facility would also supply much of its own heat energy from the combustion of biogas that has been derived from the gasification of the separated husk/bran and wheat midds. MAQP #4620-00 contains federally enforceable permit conditions that limits the maximum potential amount of natural gas used at the facility to 1,550 million standard cubic feet per year. Electricity would be provided by PPL which already serves the surrounding area and the existing utilities are sufficient to provide the required additional power demanded by the facility.

The connection to city services for this project would result in very little air quality impact because no major air emission activities would be required. The sewer and water system connection may require the use of motor vehicles, but the impacts would be minor and of a short time duration. Similarly, minor fugitive dust emissions would result from the sewer and water system connection as well, but the emissions would be temporary.

I. Historical and Archaeological Sites

The potential impact to historical and archaeological sites would be minor because the site location contained no visible standing structures, the facility would physically impact a small amount of property (approximately 95 acres), the facility would locate within an area that has been plowed for agricultural purposes, and the site location is in an area that would likely not have been used for any significant historical or archaeological activity. The area of the actual construction contained no visible standing structures and has been thoroughly disturbed by agricultural activities (plowing). Since the topsoil in the area is 4-6 inches thick and covers glacial gravel, any possibility of historical or archaeological material being present was destroyed by the agricultural activities (plowing) in the area.

The physical location of the site also indicates that it was not likely a location for significant historical or archaeological activity. The site location is located in rolling terrain, currently used for wheat farming. The nearest portion of the Missouri River to the site location is approximately ¾ mile away.

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. 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 project 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 project area associated with this site code. In addition, because of the fact that severe agricultural activities have occurred in the area, there is little likelihood of finding undiscovered or unrecorded historical properties. 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.

The connection of city services for this project would result in no impact on historical or archaeological sites because the disturbances would occur within previously disturbed sites, and the sites that are not previously disturbed would be in the same area as previously described in this section.

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 overall air impact from MAB in addition to 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, and the forthcoming Southern Montana Electric Highwood Generating Station) would not occur at the same receptor, and the pollutant of concern for each of the nearby industries is generally different. In addition, emissions from the nearby sources that were previously mentioned were included in the cumulative impact modeling performed by MAB at the request of the Department. The modeling analysis indicated that the cumulative emissions from these facilities would not violate any NAAQS or MAAQS.

Although possible odors from this proposed facility would be in addition to other odors common to the Great Falls area (grain handling, vehicle exhaust, and industrial odors from the refinery), the cumulative and secondary impacts would be minor. The odor associated with grain handling is already present in the Great Falls area and odor associated with similar dryers in ethanol facilities has been described as a baking bread odor. MAB would operate RTO pollution control devices on the DDGS driers which would destroy approximately 99% of the organic compound emissions that are believed to cause the majority of the odors from ethanol facilities.

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

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

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

A. Social Structures and Mores

The proposed facility would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the land use proposal would not be out of place given the land use of the larger area surrounding the proposed site and the fact that the immediate surrounding area would remain agricultural. Besides the agricultural properties near the facility, there are other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, and the forthcoming Southern Montana Electric Highwood Generating Station, in the greater surrounding area.

The connection to city services would have no impact on social structures and mores because these associated activities are not new to Montana or the specific areas of impact. Most of the impacts from the other portions of the project would occur within previously disturbed sites that are already conducting the desired activity, but just need improvements or upgrades.

B. Cultural Uniqueness and Diversity

The proposed facility would not cause a change in the cultural uniqueness and diversity of the area because the area is currently used predominantly for agricultural purposes, and the MAB facility would make use of agricultural products in the process. Even with the addition of MAB to the area, the area would still be used predominantly for agricultural purposes.

Besides the agricultural properties near the facility, industrial activity is not "out of place" given the larger Great Falls area. Other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, and the forthcoming Southern Montana Electric Highwood Generating Station, operate or are planning to operate in the greater surrounding area of the proposed site location.

The connection to city services would have no impact on cultural uniqueness and diversity because the land use of the area(s) would not be changing.

C. Local and State Tax Base and Tax Revenue

The facility would have a minor effect on the local and state tax base and tax revenue from payroll taxes for the approximately 100 people it would employ. In addition to the plant jobs, MAB estimates that 150 truck drivers would be required to support the facility. MAB estimates that approximately 600 people would be employed during construction of the facility, also adding to the overall income taxes paid.

D. Agricultural or Industrial Production

The impacts to agricultural and industrial production in the area from this facility would be minor because the facility would physically impact a small amount of land, the impact from the air emissions on the land would be small, and the facility would make use of agricultural products as raw materials. The agricultural property on which the facility would be built is 220 acres. The facility would be constructed on approximately 95 acres, and the immediate area surrounding the facility would be fenced. The rest of the land associated with the project would remain as agricultural land.

As described in Section 7.F of the EA, the air quality impacts from this facility are minor, and the resulting deposition of the pollutants from the MAB project is consequently also minor. In addition, as described in Section 7.F, the fact that the facility would comply with the NAAQS and MAAQS (protect public health and promote public welfare) indicates that the impacts from the facility would be minor.

The MAB facility may assist agricultural producers by consuming Montana-grown wheat and barley in their raw materials, thereby providing a ready market to the agricultural community.

The connection to city services would have little, if any impact on agricultural production because the disturbance for most of the activities would be within previously disturbed locations and the disturbances at other locations (addition of utilities) would be minor and not change the predominant setting of the area.

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 impact from the air emissions would be greatly dispersed before reaching an elevation where humans were exposed. Also, as described in Section 7.F, the modeled impacts from this facility, taking into account other dispersion characteristics (wind speed, wind direction, atmospheric stability, stack height, stack temperature, etc.), do not violate any MAAQS or NAAQS. The air quality permit for this facility incorporates 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.

Besides the criteria pollutants, the impacts from all other air pollutants (HAPs, for example) would also be greatly minimized by the dispersion characteristics of the facility and the area (wind speed, wind direction, atmospheric stability, stack temperature, facility emissions, etc.). Impacts from other common activities (such as fueling your vehicle for example) would have a greater impact on human health for HAPs because of the concentrations at the point of exposure.

MAB conducted a screening-level human health risk assessment as required by ARM 17.8.770 for the sources that meet the Montana definition of an incinerator (RTOs, truck loadout flare, and railcar loadout flare). 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.

F. Access to and Quality of Recreational and Wilderness Activities

The facility would result in a minor impact on the access to and quality of recreational and wilderness activities because the air emissions from the facility are relatively small and would disperse before impacting the recreational areas (see Section 7.F of EA). Within ½ mile are three recreational sites that include a soccer complex and two small residential parks. The proposed facility location is approximately ¾ of a mile from the River's Edge Trail at its closest point and would be visible from the trail. The Rainbow Dam on the Missouri River is approximately ¾ of a mile from the proposed facility location.

The connection of the facility to city services would have no impact on recreational and wilderness activities because the areas of disturbance are currently not sites for these types of activities and because most of the impacts would be temporary.

G. Quantity and Distribution of Employment

There would be a moderate effect on the employment of the area from this project because plant operation would result in approximately 100 plant jobs as well as requiring around 150 truck drivers (non-plant employees) and construction of the facility would require approximately 600 workers. In total, this project would result in approximately 850 employment opportunities.

A few temporary employment opportunities would result from the facility's connection to city services. The sewer and water system upgrades would require some construction and corresponding man-hours. However, the impacts on quantity and distribution of employment would be minor because the required work would be temporary and would likely be handled by current employees of the City of Great Falls.

H. Distribution of Population

The entire project would not affect the normal population distribution in the area because although approximately 100 full-time positions would be created, many of those employed might come from the existing population in Great Falls. The jobs related to the construction of the facility (approximately 600 jobs) would be temporary. The estimated 150 truck drivers would not be plant employees and these would likely be existing jobs. Neither the 100 full-time positions nor the numerous temporary construction-related positions or truck driving positions would likely affect the distribution of population in the area.

Most employees required for the construction and operation of the ethanol plant would likely be from Great Falls or temporarily locate within Great Falls. For the other construction-related activities with this project, the employees would likely be existing staff in the area and would likely not be moving to Great Falls.

I. Demands for Government Services

Demands on government services from this facility would be minor because the facility would require some, but not extensive, government services. Government services would be required for the acquisition of the appropriate permits for the facility. Minor increases may be seen in traffic on existing roads in the area while the facility is operating, however, much of the transportation of raw materials and products would take place by rail. Some road improvement on 18th Avenue North would be required and is already being planned by the city (3-inch asphalt overlay on existing road).

As the proposed site is within the limits of the City of Great Falls, it would be connected to city water and sewer, but this connection would be financed by MAB. All water for the facility would be obtained from the Great Falls municipal water supply, and all spent water would be discharged to the POTW. The City of Great Falls currently has adequate capacity in their system to accommodate the proposed facility's water and wastewater needs.

The acquisition of the appropriate permits by the facility (including local building permits and a state air quality permit), the permits for the associated activities of the project, and compliance verification with those permits would also require minor services from the government.

J. Industrial and Commercial Activity

The MAB facility would represent a minor increase in industrial activity in the area. The facility would operate 24 hours a day and 7 days per week producing ethanol, wheat gluten, and DDGS. Some of the other permitted facilities in the area are Montana Refining Company and Malmstrom Air Force Base.

K. Locally Adopted Environmental Plans and Goals

Prior to July 8, 2002, the City of Great Falls contained a nonattainment area for CO along the 10th Avenue South corridor. On this date the U.S. Environmental Protection agency approved a CO "attainment" limited maintenance plan (LMP) for the area, citing that the area is in compliance with ambient CO standards. The proposed facility is outside of the CO LMP area and would result in only minor impacts to the area because the CO emissions from the facility have been modeled to demonstrate that the impacts would not significantly contribute to any further CO attainment status problems in the CO LMP area (see Section VI of the permit analysis and Section 8.F of this EA). Overall, the proposed project could result in minor impacts to the local CO attainment LMP area.

The Department is unaware of any other locally adopted environmental plans and goals that would be affected by the facility or the other portions of the project as identified at the beginning of this EA. The state standards would be protective of the environment.

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 numerous new full-time employment opportunities would result, many construction related employment opportunities would be available, and the facility could use Montana-grown agricultural products as raw materials.

The MAB project would result in additional jobs for the Great Falls area. As described in Section 8.G of this EA, the facility would employ approximately 100 full-time people, utilize approximately 150 truck drivers while in production, and require approximately 650 people during the construction phase. The "day-to-day" normal operation positions and the construction-related positions created by the MAB project would bring additional money into the Great Falls economy.

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

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of an ethanol manufacturing facility. MAQP #4620-00 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

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

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

EA prepared by: Ed Warner
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