

**Biological Evaluation  
MGP Ingredients, Inc.  
Pekin, Illinois**

Pursuant to Section 7 of the Endangered Species Act (ESA), (87 Stat. 884, as amended; 16 U.S. C. 1531 et seq.), the U.S. Environmental Protection Agency has reviewed the biological information and analysis related to a Prevention of Significant Deterioration permit for the proposed expansion to the MGP Ingredients, Inc. (MGP) facility located in Pekin, Illinois, to determine what impact there may be to any threatened or endangered species in the area around the facility. EPA has followed the informal consultation process as specified in the “Endangered Species Consultation Handbook, procedures for conducting consultation and conference activities under Section 7 of the Endangered Species Act, (March 1998 final),” by the U.S. Fish and Wildlife Service and National Marine Fisheries Service. EPA prepared this biological evaluation following the guidance provided in the ESA consultation handbook, as well as the recommended content suggested in the ESA regulations found in 50 CFR Part 402.12(f). MGP provided documents prepared by Connestoga-Rovers & Associates dated January 30, 2008, August 11, 2008, and October 15, 2008, which contain their analysis of the project impacts (Attachment 1, 2, and 3).

**Project Description**

MGP plans to construct a 493 mmBtu/hr (based on the description in the draft permit) coal fired boiler at its Pekin, Illinois, ethanol manufacturing facility. Criteria pollutant emissions expected from this project are as follows:

Particulate Matter (PM)/Particulate Matter less than 10 microns in aerodynamic diameter (PM10)	68.1 tons per year
Nitrogen Oxides (NO <sub>x</sub> )	216.8 tons per year
Sulfur Dioxide (SO <sub>2</sub> )	323.7 tons per year
Carbon Monoxide (CO)	324.7 tons per year
Volatile Organic Compounds (VOC)	7.9 tons per year

The project will also result in the release of several Hazardous Air Pollutants (HAPs). A complete list of HAPs associated with this project can be found in Appendix D of Attachment 1.

**Action Area**

MGP is located in Tazewell County, Illinois. The Illinois River is to the northwest of the facility. Impacts within a 3 km radius of the facility were considered. Land Use and Land Cover, and wetland maps are provided in Attachment 4.

## List of Species

There are five listed species potentially occurring in Tazewell County. These species include:

- Indiana bat (*Myotis sodalist*);
- Eastern prairie fringed orchid (*Platanthera leucophaea*);
- Prairie bush clover (*Lespedeza leptostachya*);
- Lakeside daisy (*Hymenoxys herbacea*); and
- Decurrent false aster (*Boltonia decurrens*).

## Summary of Analysis

On January 24, 2008, MGP provided an analysis prepared by Conestoga-Rovers & Associates. Two additional reports prepared by Conestoga-Rovers & Associates were submitted by MGP one on August 11, 2008, and another report dated October 15, 2008, contained additional and corrected calculations. These reports contain summaries of the modeling and media concentration calculations for emissions increases associated with the project. The AERMOD model was used to model dispersion and deposition of pollutant emissions from the facility. Soil, water, and sediment concentrations were estimated for several of the hazardous air pollutants (HAPs) associated with the project. Soil, surface water, and sediment concentrations were estimated using the methodology recommended in Chapter 3 of the draft EPA, Office of Solid Waste, "Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities," and assuming a deposition period of 100 years.

## ESA Effects Analysis

### Criteria Pollutants

Ozone: The project will result in an increase in VOC emissions of 7.9 tons per year. At the current time, EPA is unaware of any reliable means to assess ozone changes through "point source" modeling. Although point source screening models have been developed, they have not been consistently applied with success for source changes of this small magnitude. Such screening models were developed for much larger VOC and NOx sources and/or emissions changes. Urban scale photochemical ozone models, such as the Urban Airshed Model, could be employed to assess the ambient impact of emission increases as well as emission decreases resulting from the implementation of emissions control programs. Past experience, however, with such models indicates that a VOC change of 7.9 tons per year would not produce a predicted change in ozone concentrations. The Urban Airshed Model, for example, has been shown to be relatively insensitive to changes in VOC emissions. Past modeling results considering VOC emissions changes on the order of hundreds to several thousand tons per year of VOC in major urban areas have shown only modest decreases in predicted peak ozone concentrations. Therefore, it is concluded that such models would likely show a zero ozone change for a VOC increase of 7.9 tons per year. Stated another way, based on the best available tools and information that exist today, one would not expect any

measurable change in ambient ozone concentrations due to the projected worst case VOC emissions increase of 7.9 tons per year. Based on this information, EPA concludes the project will have no measurable effect, if not no effect, on the endangered species with respect to ozone. At a minimum, the project is not likely to adversely effect the endangered species as no measurable change in ozone will result from the project.

NO<sub>x</sub>: NO<sub>x</sub> emissions are primarily a concern for the three plant species that may occur in the area. Nitrogen enrichment of soil could impact these species. While nitrogen increases the production of plants, an excess amount can create a competition among plants for space that can lead to declines in overall plant species diversity and loss of rare and uncommon species. Based on a search of scientific literature performed in the evaluation for an expansion at ExxonMobil, it is likely that the appropriate benchmark for nitrogen is somewhere between 0.5 and 1.0 g/m<sup>2</sup>/yr. The maximum project contribution is estimated at 0.2783 g/m<sup>2</sup>/yr. Background values for nitrogen are based on the last five years of available data from the Clean Air Status and Trends Network station in Bondville, IL (<http://www.epa.gov/castnet/sites/bv1130.html>). Based on this data, background concentrations of nitrogen are 0.706g/m<sup>2</sup>/yr. Project contribution plus background is 0.984 g/m<sup>2</sup>/yr, which is in a range that may be harmful to the listed plant species in the area; however, the maximum predicted concentration would not occur in an area where any of the listed species are likely to occur. Based on the concentration contours for NO<sub>x</sub> deposition in figure 6.2 of the January 24, 2008, report, deposition rates in areas where the plant species are likely to occur are considerable lower, around 0.02 g/m<sup>2</sup>/yr. Background plus project concentration would therefore be about 0.726 g/m<sup>2</sup>/yr. Project contributions would be about 3% of background. The project impacts are insignificant with respect to background. It would not likely be possible to measure or detect any negative response to an endangered species in response to the project contribution of nitrogen.

PM/PM<sub>10</sub>: The project will result in an increase in PM emissions of 68.1 tons per year, of which 68.1 tons per year consist of PM<sub>10</sub>. The portion of PM/PM<sub>10</sub> emissions of greatest concern for the potentially affected species would be the HAP component. However, sufficiently high deposition rates of PM can interfere with normal plant respiration and photosynthesis. The modeling performed by Conestoga –Rovers & Associates predicts a maximum particle loading of 1.08 g/m<sup>2</sup>, which is within the range of 1 -10 g/m<sup>2</sup> at which reduced levels of photosynthesis have been observed in some plant species. This level occurs a short distance from the facility, and loadings drop rapidly with distance. Loadings drop to less than 0.25 g/m<sup>2</sup> before reaching an area where any endangered plant species are likely to occur.

CO: The project will result in an increase in CO of 324.7 tons per year. This increase will not result in a violation of the NAAQS, and EPA believes that compliance with the NAAQS would be protective of the listed species.

SO<sub>2</sub>: The project will result in an increase in SO<sub>2</sub> emissions of 323.7 tons per year. The project increases will not cause an exceedence of the primary or secondary NAAQS.

## Hazardous Air Pollutants

The August 14, 2008, and October 15, 2008, Conestoga-Rovers & Associates reports provide a summary of the modeling performed for the HAPs associated with the project. The proposed equipment may result in the emission of 74 HAPs. The complete list of potential HAPs can be found in Appendix D of Attachment 1. Several of these potential HAPs are highly volatile and not likely to partition to other media from the atmosphere. EPA and FWS considered the potential HAPs from the project and narrowed the list for further evaluation. Attachment 3 provides a summary of project impacts for each of the HAPs evaluated. The project contributions plus background exceed the soil benchmarks for antimony, cadmium, manganese, and benzo(a)pyrene, and the surface water benchmarks for cadmium, lead and mercury. MGP did not provide calculations for either 3-Methylchlorantere or benzo(b,j,k)fluoranthene. Pollutant specific physical and chemical data necessary to estimate impacts was not available for 3-Methylchlorantere. EPA did provide data for two of the benzo(b,j,k)fluoranthene isomers that could have been used. EPA would expect levels on par with the other volatile HAPs that were evaluated for these two pollutants, and does not anticipate either would likely result in an adverse impact to an endangered species.

**Antimony:** The maximum soil impact from the project was estimated at 0.00815 mg/kg. The background level of antimony is 4.0 mg/kg. The benchmark selected for comparison is 0.27 mg/kg. The background alone exceeds the benchmark for this pollutant; however, the project contribution is only 0.2% of background and 3.0% of the benchmark. The project impacts are insignificant with respect to background. It would not likely be possible to measure or detect any negative response to an endangered species in response to the project contribution of antimony.

**Benzo(a)pyrene:** The maximum soil impact from the project was estimated at 6.38E-06 mg/kg. The background level of benzo(a)pyrene is 2.10 mg/kg. The selected benchmark for this contaminant is 1.52 mg/kg. The background alone exceeds the benchmark for this contaminant. The project contribution is less than 0.01% of both the background and the benchmark. It would not likely be possible to measure or detect any negative response to an endangered species in response to the project contribution of benzo(a)pyrene.

**Cadmium:** With respect to soil, the project contribution is estimated to be 0.0395 mg/kg and background levels of cadmium are 0.6 mg/kg. The benchmark selected for cadmium is 0.27 mg/kg. The background alone exceeds the benchmark. The project contribution is 14.6% of the benchmark, and 6.6% of background. The project contribution estimate is based on the point of highest deposition, which occurs less than 1 km from the stack, in a primarily agricultural area. Deposition values are expected to be lower for areas where species are more likely to occur. Based on this information, EPA has concluded that the project is not likely to have an adverse impact on any endangered species with respect to soil impacts for cadmium.

With respect to surface water, the project contribution is estimated to be 2.92E-05 µg/l, and background levels of cadmium are 3.00 µg/l. The benchmark selected for surface

water is 0.15 µg/l. Project contributions to surface water are 0.02% of the benchmark and less than 0.01% of background. It would not likely be possible to measure or detect any negative response to an endangered species in response to the project contribution of cadmium to surface water.

Lead: The project contribution of lead to surface water is estimated to be 4.96E-05 µg/l, and the background is 5.00 µg/l. The selected benchmark is 1.17 µg/l. The project contribution is less than 0.01% of both the background and the benchmark. It would not likely be possible to measure or detect any negative response to an endangered species in response to the projected increase in lead.

Manganese: The project contribution of manganese to soil is estimated at 0.086 mg/kg, and background levels of manganese are 636 mg/kg. The benchmark selected for comparison is 220 mg/kg. Project contributions are 0.04% of the benchmark and 0.01% of background. It would not likely be possible to measure or detect any negative response to an endangered species in response to the projected increase in manganese.

Mercury: The project contribution of mercury to surface water is estimated at 5.43 E-08 µg/l, and background levels of mercury are 0.10 µg/l. The benchmark selected for comparison is 0.0013 µg/l. Project contributions are less than 0.01% of both background and the benchmark. It would not likely be possible to measure or detect any negative response to an endangered species in response to the projected increase in mercury.

### Greenhouse Gases

Various EPA offices are currently evaluating other CAA permits that authorize pollution-emitting activities, including emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHG). Public comments in some of those actions have alleged that authorization of these activities requires that Federal action agencies address certain species in consultations with the relevant Services under section 7(a)(2) of the ESA due to possible impacts of the GHG emissions from an authorized activity.

In the context of the final listing of the polar bear as a threatened species under the ESA, FWS determined, with supporting analysis provided by the U.S. Geological Survey, that the best currently available scientific data do not support drawing a causal connection between GHG emissions from a particular facility and effects on listed species or their habitats, for ESA purposes. Further, EPA notes that on October 3, 2008, the U.S. Department of Interior issued a Solicitor's Opinion in which it detailed why proposed actions that involve the emission of GHGs would not meet the "may affect" threshold set forth in the ESA regulations and therefore would not trigger the consultation requirements under section 7(a)(2) of the ESA.

As an additional analysis to the rationale offered by FWS in the polar bear listing and in DOI's Solicitor's Opinion, and considering EPA's expertise in current global climate change research and substantial experience in utilizing available models to analyze GHG emissions, EPA conducted a general assessment of the anticipated GHG emissions from a

large coal-combusting source in relation to two listed coral species under NOAA Fisheries' jurisdiction and listed polar bears under the jurisdiction of FWS. Notwithstanding the uncertainties associated with modeling single-source emissions and localized regional or sub-regional end-point impacts, EPA assessed a model facility, using emissions estimates that are substantially greater than the emissions estimates from any actual project currently pending before EPA. That assessment is described in the attached letter EPA sent to the Services on October 3, 2008 (Attachment 5).

As reflected in the attached letter, EPA's conclusion based on its additional assessment is that the risk of harm to any listed species, including the listed corals or polar bears, or to the habitat of such species from the anticipated GHG emissions of the model facility – which are much larger than those authorized in the MGP permit – is too uncertain and remote to trigger ESA section 7(a)(2) consultation. Since the emissions from the 493 mmBtu/hr coal fired boiler at MGP are expected to be much less than the model facility emissions modeled in the analysis described in the attached memorandum, any risk of harm to listed species, including the listed corals or polar bears, or to the habitat of such species from the anticipated GHG emissions of the MGP operations is similarly too uncertain and remote to trigger ESA section 7(a)(2) consultation.

### **ESA Determination**

After reviewing the analysis provided by Conestoga-Rovers & Associates, the pollutants with the greatest potential for adverse impact would include antimony, benzo(a)pyrene, cadmium, lead, manganese, and mercury. However, due to the conservative assumptions made and the small contribution of these contaminants in comparison to existing background conditions, EPA has concluded that it would not likely be possible to measure or detect an adverse response as a result of the proposed project. Considering this analysis in its entirety, EPA concludes that the proposed construction and operation of this facility may affect, but is not likely to adversely affect, any of the threatened and endangered species.