UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT 16 2007

REPLY TO THE ATTENTION OF:
(AR-18J)

Craig Czarnecki, Field Supervisor
East Lansing Michigan Field Office
United States Fish and Wildlife Service
2651 Coolidge Road
East Lansing, Michigan 48823

Dear Mr. Czarnecki:

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 Asama Coldwater Manufacturing, Inc. (ACM) located in Coldwater, Michigan to determine what impact there may be to any threatened or endangered species in the area around the proposed project. The purpose of this letter is to seek concurrence from the U. S. Fish and Wildlife Service on our determination that the proposed project is not likely to adversely affect any federally listed species in relation to the proposed air quality permit for this facility.

The parties utilized 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 FWS 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). As part of developing the biological evaluation, EPA contacted Carrie Tansy of your office. Based upon the discussions with Ms. Tansy, EPA prepared a document, "Recommended Scope of Analysis for Endangered Species Evaluation Asama Coldwater Manufacturing Plant -- Foundry Expansion Project," last revised on June 12, 2007, which described the general topics of need, species of concern, effects analysis, and literature search, needed in the biological evaluation. NTH Consultants, Ltd (NTH) provided a document on behalf of ACM dated August 1, 2007, which contained the project impact analysis (Enclosure 1). A subsequent document transmitted via e-mail on September 18, 2007, provided additional information concerning the literature search performed by NTH (Enclosure 2).

Project Description

The project will expand the current iron making capabilities of the facility through the addition of two electric induction furnaces, pouring areas, pouring stations, and a sand

mold system comprised of automated conveyors, mold cooling, and automated shakeout lines. Each furnace will hold approximately 11 tons of scrap metal with an hourly production rate of 16.5 tons/hour combined. The facility will produce gray iron, and will utilize clean scrap iron, pig iron and in-house foundry returns.

Increases in criteria pollutants potentially resulting from the project are as follows:

Particulate Matter and Particulate Matter less than 10 microns in aerodynamic diameter (PM/PM10)	31.5 tons per year
Nitrogen Oxides (NOx)	0.60 tons per year
Sulfur Dioxide (SO_2)	1.2 tons per year
Carbon Monoxide (CO)	375.5 tons per year
Volatile Organic Compounds (VOC)	86.0 tons per year

Based on the material produced and utilized by this facility, PM/PM10 Hazardous Air Pollutants (HAPs) expected from the project include lead (0.032 tons per year) and manganese (0.013 tons per year). Significant amounts of chromium and nickel would only be expected if the facility were producing stainless steel or nickel alloy castings. There are also a number of organic HAPs expected from the process. ACM has identified the organic HAPs associated with this project as benzene, toluene, phenol, naphthalene, m,p-xylene, o-xylene, hexane, o-cresol, ethyl benzene, styrene, acetaldehyde, 2-methylnapthalene, and 1-methylnapthalene. A discussion of the HAPs emitted by iron and steel foundries from the proposed rulemaking of the National Emission Standard for Hazardous Air Pollutants for Iron and Steel Foundries (67 FR 78277 – 78278) has been included as Enclosure 3. The results of a study of organic HAPs from iron foundries, "Environmental Assessment of Melting, Pouring, and Inoculation in Iron Foundries," dated May 1983 is included as Enclosure 4. Finally, the emission estimates section from ACM's permit application is included as Enclosure 5.

Action Area

EPA Region 5 and FWS Region 3 have been unable to agree upon how to define action area for projects relating to air emissions. While our agencies continue to work together to determine the best way to address this issue, potentially affected species are identified by consultation with the appropriate FWS Field Office. EPA initially suggested an action area of 3 km for this project based on the level of emissions from the project and short stack heights. The East Lansing Michigan Field Office rejected this action area and requested that the evaluation include the Mitchell's Satyr butterfly and the copperbelly water snake, essentially expanding the action area to the area within a 23 km radius of the facility.

List of Species

The following three species were identified as being potentially affected by this project.

- Indiana bat (*Myotis sodalist*);

- Copperbelly water snake (*Nerodia erythrogaster neglecta*);
- Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*).

Summary of Analysis

NTH performed modeling for emissions associated with the planned project. As recommended by EPA, NTH followed the procedures outlined in Chapter 3 of the EPA, Office of Solid Waste, November 1999, draft document "Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities," (SLERA protocol) to estimate the soil, water and sediment concentrations of the chemicals of potential concern associated with this project. The lifetime of this project is assumed to be 50 years. The AERMOD model was used to estimate the deposition fluxes used to calculate the media concentration rather than ISCST3 as suggested in the SLERA protocol as AERMOD replaced ISCST3 as EPA's required air dispersion model on December 9, 2006. While the SLERA protocol was developed to assist in assessing risk from hazardous waste combustion facilities, the models and calculations presented in Chapter 3 of the document are not specific to hazardous waste combustors. Chapter 3 simply provides an explanation of available models and calculation methodology for determining ambient air concentrations, deposition rates and media concentrations resulting from sources of air pollution. A more detailed explanation of the modeling performed by NTH is found in Section 3.3, "Air Dispersion and Deposition Modeling," of Enclosure 1.

ESA Effects Analysis

Model results for lead and manganese are provided in appendix B of Enclosure 1. Appendix C of Enclosure 1 provides the media specific calculations for each pollutant. In determining the benchmarks to be used in this analysis for the Mitchell's Satyr butterfly and the copperbelly water snake, NTH conducted a literature search as described in section 4.2 "Ecological Risk Assessment" of Enclosure 1. Enclosure 2 provides additional information on the literature search conducted by NTH. In addition, EPA supplemented the literature search conducted by NTH. EPA searched using Science Direct and Google using the following combinations of terms:

- Mitchell's Satyr and air pollution, Mitchell's Satyr and metals, Mitchell's Satyr and lead, and Mitchell's Satyr and manganese;
- Lepidoptera and air pollution, Lepidoptera and metals, Lepidoptera and lead, and Lepidoptera and manganese;
- Butterfly and air pollution, butterfly and metals, butterfly and lead, and butterfly and manganese;
- Herbivore insect and air pollution, herbivore insect and metals, herbivore insect and lead, and herbivore insect and manganese;
- Reptile and air pollution, reptile and metals, reptile and lead, and reptile and manganese;
- Snake and air pollution, snake and metals, snake and lead, and snake and manganese;

- Squamata and air pollution, Squamata and metals, Squamata and lead, and Squamata and manganese;
- Sedge and air pollution, sedge and hyperaccumulate, sedge and nitrogen, sedge and metals; and
- Carex and air pollution, Carex and hyperaccumulate, Carex and nitrogen, and Carex and metals.

For the Indiana bat EPA considered values from EPA Region 5's, Resource Conservation and Recovery Act Ecological Screening Levels (http://www.epa.gov/RCRIS-Region-5/ca/ESL.pdf), and the EPA Ecological Soil Screening Levels (http://www.epa.gov/ecotox/ecossl.

The highest modeled value was compared to the selected benchmark for each species. The highest deposition flux is predicted to occur approximately 100 meters to the northeast of the facility. The known occurrences of the copperbelly water snake and the Mitchell's Satyr butterfly are between 15 to 23 km to the south and west of the facility, and actual levels of exposure to these species are expected to be substantially lower.

Criteria Pollutants

VOC: The project will result in a small increase in VOC emissions of 86 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 86 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 86 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 Project's projected worst case VOC emissions increase of 86 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.

SO_2: The project will result in an increase in SO_2 of 1.2 tons per year. The facility is located in an area that is meeting the primary and secondary National Ambient Air Quality Standards, and the resulting increase from the project will not cause or contribute

to a violation of these standards. These standards were developed to be protective of both human health and the environment. Based upon compliance with these standards, EPA finds that the project is not likely to adversely impact any endangered species with respect to this pollutant.

NOx : NOx emissions are primarily a concern for the Mitchell's Satyr butterfly. According to the Recovery Plan for this species, "Mitchell's Satyr habitat is best characterized as a sedge-dominated fen community," and "Continued habitat loss and disruption of ecological processes are the primary threats to surviving populations." While the main threat to the Mitchell's Satyr is loss of habitat due to changes in hydrology associated with agricultural or urban growth, nitrogen deposition is potentially a concern as nitrogen enrichment of soil could impact the plant species that Mitchell's Satyr relies upon as a food source. While nitrogen increases the production of plants, an excess amount of it 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.

The project is estimated to result in an 0.6 ton/year increase in NOx emissions. Due to the extremely low emissions of NOx associated with this project, nitrogen deposition was not modeled. As a comparison, the nitrogen deposition modeling performed as part of the biological evaluations for a 996.2 ton per year increase in NOx at ConocoPhillips and a 796.61 ton per year increase in NOx emissions at Exxon Mobil resulted in modeled nitrogen deposition fluxes of 0.0933 $g/m^2/yr$ and 0.0828 $g/m^2/yr$. Nitrogen deposition background data was obtained from the nearest Clean Air Status and Trends monitoring site which is located in Ann Arbor, Michigan. The average total nitrogen deposition for the most recent five years of data is 0.878 $g/m^2/yr$. The World Health Organization Air Quality Guidelines establishes a critical load for nitrogen for mesotrophic fens at 2-3.5 $g/m^2/year$. The background plus project contribution would be less than 1 $g/m^2/year$; therefore, we do not anticipate that the additional nitrogen load resulting from this project will have an adverse impact on the sedge. Because the project will not have an adverse impact on the sedge, EPA finds that the NOx emissions from the project are not likely to adversely impact the Mitchell's Satyr.

CO: The project is estimated to result in an increase of 375.5 tons/year of CO. The facility is located in an area that is meeting the primary and secondary National Ambient Air Quality Standards, and the resulting increase from the project will not cause or contribute to a violation of these standards. These standards were developed to be protective of both human health and the environment. Based upon compliance with these standards, EPA finds that the project is not likely to adversely impact any endangered species with respect to this pollutant.

PM/PM10: The project will result in an increase in PM/PM10 emissions of 31.5 tons per year. The portion of PM/PM10 emissions of concern for the potentially affected species would be lead and the HAP component.

Lead: A small increase of lead emissions (0.032 tons per year) is projected for this project. The analysis provided by NTH shows modeled concentrations of lead as follows:

Soil Concentration	Surface Water Concentration (dissolved)	Sediment Concentration	Plant Tissue Concentration
16.6 µg/kg	0.89 µg/L	916 µg/kg	2.4 – 2.9 µg/kg wet weight

EPA was only able to identify one source for a No-Observed-Effect-Concentrations (NOEC) which might be relevant to the Mitchell's Satyr. Gintenreiter, Ortel and Nopp (1993) list the dietary NOEC for another species in the order Lepidoptera, Lymantria dispar (gypsy moth), to be 4 µg/g for lead. The concentration of contaminants in plant tissue is assumed to occur through three possible mechanisms, direct deposition of particles, vapor transfer, and root uptake. Metals are non-volatile; therefore, lead is assumed to be entirely in the particulate phase. While there is research that suggests that some sedge species are hyperaccumulators of metals, the data suggests that this is limited to the root system and that metals are not readily transferred to the above ground portions of the plant. A study performed by the Brookhaven National Laboratory (2003) calculated a bioaccumulation factor for sedge to be as high as 4.2 for lead in the below ground portion of the plant, but the maximum bioaccumulation factor for the above ground portion was only 0.33 for this contaminant. The recommended value for root uptake for lead from the SLERA protocol is 0.045. Based on this information, dietary exposure to the Mitchell's Satyr butterfly resulting from this project would be between 2.4 µg/kg wet weight and 2.9 µg/kg wet weight. Data concerning existing site conditions are not available. Comparing the project contribution to the NOEC of 4 µg/g would result in a hazard quotient of 7.2 E-04. There is no information which suggests that the current levels of lead have adversely affected the fen vegetation, or that the current dietary load has been detrimental to the Mitchell's Satyr butterfly. The estimated additional exposure due to the project, which is an extremely conservative estimate, is less than 0.08% of the NOEC. Based on this information, EPA has concluded that the lead emissions from this project are not likely to adversely impact the Mitchell's Satyr butterfly.

EPA was unable to identify a NOEC for lead for the copperbelly water snake. While a small portion of it's diet would be from terrestrial sources, the majority of the copperbelly's diet is from water sources. Lead is not very soluble and generally does not biomagnify. Therefore, EPA believes that levels that are protective of the copperbelly's food source should also be protective of the copperbelly. The current EPA criterion continuous concentration (http://www.epa.gov/waterscience/criteria/wqcriteria.html) for the dissolved lead in fresh water adjusted for a hardness of 50 ppm is 1.17 µg/L. Site specific background data is not available. The Michigan Department of Environmental Quality has performed limited testing at nearby rivers or streams. Testing was conducted at two locations on the St. Joseph River in September of 2000, and at County Drain #30 in August of 2005. Lead was detected in the St. Joseph River; however, the levels were below the quantitation limit. Lead was not detected at County Drain #30. Based on this information, EPA has concluded that the project is not likely to have an adverse impact on the copperbelly water snake with respect to lead.

The main pathway of exposure to the Indiana bat would be dietary. Again, because lead is not very soluble and generally does not biomagnify, levels that are protective of the Indiana bat's food source should be protective of the Indiana bat. The screening level benchmarks selected are EPA Ecological Soil Screening Levels for mammalian insectivores for soil (56 m/kg), the EPA Region 5 Resource Conservation and Recovery Act Ecological Screening Level for sediment (3.58 E04 µg/kg), and the EPA water quality criterion of 1.17 µg/L. Site specific background concentrations are not available for any media. According to the Michigan Background Soil Survey from 2005, the mean lead concentration in Michigan soils is 7.1 mg/kg . Project contribution plus a background of 7.1 mg/kg is less than the soil screening level of 56 mg/kg. The project impact on sediment of 916 µg/kg is 2.6% of the benchmark. EPA has concluded that this project is not likely to adversely impact the Indiana bat with respect to emissions of lead.

Hazardous Air Pollutants

Manganese: Managnese emissions resulting from the project will be 0.013 tons per year. The modeled concentrations resulting from the project are as follows:

Soil Concentration	Surface Water Concentration	Sediment Concentration	Plant Tissue Concentration
6.9 µg/kg	0.4 µg/L	380 µg/kg	0.98 µg/kg wet weight

EPA was unable to identify a NOEC for the Mitchell's Satyr or the copperbelly water snake for manganese. EPA has not developed a water quality criterion for manganese. Sutter and Tsao (1996) provide a water screening value of 82,000 µg/L. EPA has developed Ecological Soil Screening levels for manganese. The screening level for mammalian insectivores is 4000 mg/kg. Site specific background information is not available. The 2005 Michigan Background Soil Survey lists the mean manganese concentration in Michigan soils as 139 mg/kg. The Michigan Department of Environmental Quality performed testing for manganese in August, 2005, at County Drain #30 which showed a level of 120 µg/L. Based on the available information, EPA has concluded that this project is not likely to adversely impact any of the species of concern with respect to emissions of manganese.

Benzene: According to the Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Benzene (Section 6.3.1 Transport and Partitioning), benzene is highly volatile and partitions readily to the atmosphere from surface water. Any emissions from the project that might be deposited to surface water are expected to quickly volatilize. Additionally the Toxicological Profile states that biconcentration/bioaccumulation of benzene in the aquatic food chain does not appear to be important. Based on this information, EPA has concluded that emissions of benzene will not likely adversely impact any of the endangered species.

Toluene: According to the ATSDR Toxicological Profile (Section 5.3.1 Transport and Partitioning), Toluene is sufficiently volatile that the majority of toluene released to the environment partitions to air. Based on this fact, EPA finds that the emissions of Toluene

from the proposed project are not likely to have an adverse impact on any endangered species.

Phenol: According to the ATSDR Toxicological Profile for Phenol (Section 5.3.1 Transport and Partitioning), some Phenol may wash out of the atmosphere; however, it is probable that only limited amounts wash out because of the short atmospheric half-life of this pollutant. Sorption to sediment is not an important transport process, and Phenol is not expected to bioconcentrate significantly in aquatic organisms. Based on this information, EPA finds that project emissions of Phenol are not likely to adversely impact any endangered species.

Naphthalene, 1-Methylnapthalene, and 2-Methylnapthalene: According to the ATSDR Toxicological Profile for these pollutants (Section 6.3.1 Transport and Paritioning), these pollutants have a short half-life in most natural waters and soils because of their tendency to volatilize and biodegrade. As a consequence of these processes, there is little tendency for build up in the environment over time. It has been estimated that only about 2–3% of naphthalene emitted to air is transported to other environmental media. Based on this information, EPA finds that emissions of these pollutants are not likely to adversely impact any endangered species.

Xylenes: According to the ATSDR Toxicological Profile for this pollutant (Section 5.3.1 Transport and Partitioning), Xylenes are expected to rapidly volatilize in surface water and will not adsorb strongly to organic matter. Based on this information, EPA finds that emissions of this pollutant are not likely to adversely impact any endangered species.

Hexane: According to the ATSDR Toxicological Profile for this pollutant (Section 5.3.1 Transport and Partitioning), the potential for *n*-hexane to bioconcentrate or bioaccumulate in trophic food chains is low. Hexane is highly volatile, and is expected to rapidly volatilize from water and soil. Based on this information, EPA finds that emissions of hexane are not likely to adversely impact any endangered species.

Cresols: According to the ATSDR Toxicological Profile for this pollutant (Section 6.3.1 Transport and Partitioning) the isomers of cresol will not bioconcentrate in fish and aquatic organisms to any significant extent. The short atmospheric residence time expected for the cresols suggests that cresols will not be transported long distances from their initial point of release. Based on this information and the relatively low expected emissions (0.81 tons per year), EPA finds that emissions of this pollutant are not likely to adversely impact any endangered species.

Ethyl benzene: According to the ATSDR Toxicological Profile for this pollutant (Section 5.3.1 Transport and Partitioning), a significant proportion of Ethyl benzene will partition from water into air. Additionally, Ethyl benzene does not significantly bioaccumulate in aquatic food chains. Based on this information EPA finds that emissions of this pollutant are not likely to adversely impact any endangered species.

Styrene: According to the ATSDR Toxicological Profile for Styrene (Section 5.3.1 Transport and Partitioning), physical processes such as precipitation and dry deposition would not be significant mechanisms for removing styrene from the atmosphere because

of its high photochemical reactivity. Based on this information, EPA finds that emissions of this pollutant are not likely to adversely impact any endangered species.

Acetaldehyde: The Henry's Law constant for acetaldehyde, 7.89x10-5 atm.m3/mol at 25°C, and its high vapor pressure, 740 mm Hg at 20°C, indicate that volatilization of the chemical from surface soil or water to the atmosphere will be considerable. Based on this information, EPA finds that emissions of this pollutant are not likely to adversely impact any endangered species.

ESA Determination

After reviewing the analysis provided by NTH, the pollutants with the greatest potential for adverse impact would include NOx, lead and manganese. However, due to the conservative assumptions made and the small contribution of these contaminants in comparison to existing background conditions or benchmarks, 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. EPA respectfully requests FWS concurrence on this determination.

Sincerely yours,

Pamela Blakley

Pamela Blakley, Chief
Air Permits Section

Enclosures

cc: Vincent Hellwig, MDEQ

References Cited

World Health Organization. 2000. Air Quality Guidelines for Europe, second edition. WHO Regional Publications, European Series No. 91.

Gintenreiter, S., J. Ortel, and H.J. Nopp, 1993. Effects of different dietary levels of cadmium, lead, copper, and zinc on the vitality of the forest pest insect Lymantria dispar L. (lymantriidae, lipid). Environmental Contamination and Toxicology 25(1):62-66.

Environmental Management Directorate, Brookhaven National Lavoratory. 2003. Determination of Phytoextraction and Harvesting Efficiency of Several Dominant Emergent Wetland Plants – Contaminated Sediment in the Peconic River, Brookhaven National Laboratory, Upton, New York.

Sutter, G.W. and C.L. Tsao. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. U.S. Department of Energy.