NETL NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA
U.S. DEPARTMENT OF ENERGY

August 12, 2011

Dear Reader:

The enclosed document, *Draft Supplemental Environmental Assessment for General Motors LLC Electric Drive Vehicle Battery and Component Manufacturing Initiative* (supplemental EA; DOE/EA-1723S), was prepared by the U.S. Department of Energy (DOE) in accordance with the Council on Environmental Quality's National Environmental Policy Act (NEPA) implementing regulations (40 CFR Parts 1500 to 1508) and DOE NEPA implementing procedures (10 CFR Part 1021). DOE prepared this supplemental EA to evaluate the potential environmental consequences of providing financial assistance under the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat. 115) to General Motors Limited Liability Company (GM) for its proposed project that would involve construction and operation of a manufacturing facility to produce electric motor components and assemble electric drive units for hybrid and electric vehicles. This project was initially analyzed in an EA (DOE/EA-1723) that resulted in a Finding of No Significant Impact in April 2010. Due to GM's proposed changes to the size and orientation of the building, and the addition of a parking lot, fire access road, truck turn-around area, and ground mounted equipment, DOE determined that a supplemental EA was needed to address additional impacts.

DOE's proposed action is to award approximately $105 million of financial assistance, under a grant, to GM to construct a building of approximately 104,000 square feet, pave an area for up to 308 parking spaces lot, and widen a truck dock. The building would be constructed at GM's existing White Marsh, Maryland, facility to support the manufacture of electric motor components and assemble electric drive units for hybrid and electric vehicles. The estimated cost of the total project is $283.9 million.

In this supplemental EA, DOE analyzed impacts to air quality, geology and soils, wetlands and floodplains, water resources, terrestrial vegetation, wildlife and threatened or endangered species, socioeconomic resources, infrastructure and utilities, noise, human health and safety, and waste generation. The proposed project activities – construction and operation of a manufacturing building of approximately 104,000 square feet, twenty-foot wide fire road representing approximately 8,000 square feet of pavement or gravel, 120,000 square feet of paved parking lot, and ground-mounted equipment and supporting infrastructure – would not have any meaningful or detectable impacts on groundwater; land use; wild and scenic rivers; environmental justice; cultural resources; local property values; local government expenditures; right-of-way acquisition; or surface hydrology patterns.

GM's proposed project would be conducted in compliance with federal and Maryland permits and environmental regulations. The emission rates would change minimally from the facility's current levels, and would not have significant impacts to air quality. The proposed construction is limited to surface and near-surface disturbance, and has no potential to affect minerals or deeper geologic strata. The potential for soil loss and erosion during construction activities will be managed in accordance with

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local permits and through the use of Best Management Practices. The current infrastructure has sufficient capacity to supply water and to pretreat wastewater prior to discharge to a publicly owned treatment works. Additionally, erosion control measures will reduce potential impacts to groundwater during the construction and operation phases. No wetlands exist within the GM property footprint; but some lakes and ponds are nearby. Earthmoving activities would occur outside of the 100-year floodplain, but the parking lot and pedestrian walkway (with no curb) would partially interfere with the 500-year floodplain. The vegetation at the project site was previously cleared, and is currently composed of landscape and mowed grass. Impacts during construction would be minimal and the vegetation is expected to fully recover. There are no known threatened or endangered species on the site; however, there are species that are known to occur in Baltimore County. Given the disturbed nature of this site, these species are not expected to be present.

The project would result in a temporary beneficial impact to the local economy through the creation of construction jobs. Manufacturing jobs would represent a long-term beneficial impact, though the addition of approximately 200 jobs in the area does not exceed the threshold of significance. There are no known historic or prehistoric resources in the project area. The project would involve minimal increases in ambient noise during the construction phase. Increased employment may result in a minor increase in traffic around the site during construction and operation. All wastes generated during construction and operation of the project components will be managed and disposed of properly. Operations are not expected to generate hazardous waste in different types or quantities than currently produced at the plant. Currently, the facility is a conditionally exempt small quantity generator.

Invitation to Comment

DOE invites interested parties to comment on this draft EA during a 15-day public comment period, which ends August 29, 2011. Submit comments to:

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Envelopes and the subject line of emails and faxes should be labeled "GM Supplemental EA Comments." Comments received after the close of the comment period will be considered to the extent practicable. Individual names and addresses, including email addresses, received as part of the comment documents normally are considered part of the public record. Persons wishing to withhold his or her name, address, or other identifying information from the public record must state this request prominently at the beginning of the comment document; DOE will honor this request to the extent allowable by law. All submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses will be included in the public record and open to public inspection in their entirety.

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DOE/EA-1723S

DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

For
General Motors LLC
Electric Drive Vehicle Battery and Component Manufacturing Initiative

White Marsh, Maryland

August 2011

U.S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

COVER SHEET

Responsible Agency: U.S. Department of Energy (DOE)

Title: *General Motors LLC Electric Drive Vehicle Battery and Component Manufacturing Initiative Application: White Marsh, Maryland* (DOE/EA-1723S)

Contact: For additional copies or more information about this environmental assessment (EA), please contact:

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Abstract: DOE prepared this Supplemental EA to evaluate the potential environmental consequences of providing financial assistance in a cooperative agreement with General Motors Limited Liability Company (LLC) (General Motors Company or GM). A supplement to the April 2010 EA was necessary due to the proposed building size increasing three fold as well as the addition of a parking lot and widening of a truck dock area. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. If GM received the funding, they would construct a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble electric drive units for hybrid and electric vehicles. This funding would be used for constructing a building of approximately 104,000 square feet, paving an approximately 120,000 square foot parking lot, twenty-foot wide fire road representing approximately 8,000 square feet of pavement or gravel, and widening a truck dock as well as various other supporting infrastructure.

DOE's proposed action would provide approximately $105 million in financial assistance in a cost-sharing arrangement to GM. The cost of the proposed project would be approximately $283.9 million.

This EA evaluates the environmental resource areas DOE commonly addresses in its EAs and identifies no significant adverse environmental impacts for the proposed project. The proposed project could result in beneficial impacts to the nation's fuel efficiency and the local economy.

Availability: The draft EA is available on DOE's National Energy Technology Laboratory website at http://www.netl.doe.gov/publications/others/nepa/ea.html and at:
White Marsh Branch Library
8133 Sandpiper Circle
Baltimore, Maryland 21236

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
AQCR	Air Quality Control Region
BMPs	Best Management Practices
CAA	Clean Air Act
CCSP	U.S. Climate Change Science Program
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CESQG	Conditionally Exempt Small Quantity Generator
cf	cubic feet
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COMAR	Code of Maryland Regulations
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
DNL	Day-night Average Sound Level
DOE	U.S. Department of Energy
DOT	Department of Transportation
e.g.	*Exempli gratia*, for example
EA	Environmental Assessment
EDV	Electric Drive Vehicles
EERE	Energy Efficiency and Renewable Energy
EIS	Environmental Impact Statement
EO	Executive Order
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
et seq.	*et sequens*, and the following one or ones
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft	Feet
ft^2	Square Feet
FTE	Full-Time-Equivalent
gal.	Gallons
GHG	Greenhouse Gases
GM	General Motors Company (General Motors)
gpd	Gallons per Day
hr	Hour
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I-95	Interstate 95
i.e.	*id est*, that is

IPCC	International Panel on Climate Change
km	Kilometer
lbs	Pounds
LEED	Leadership in Energy and Environmental Design
L_{eq}	Equivalent Sound Level
LLC	Limited Liability Company
Lmax	Maximum Allowable Noise Level
m	Meter
m^2	Square Meter
MACT	Maximum Available Control Technology
MD	Maryland
MDE	Maryland Department of the Environment
MMBTU	Million British Thermal Units
MMcf	Million Cubic Feet
MTA	Maryland Transit Administration
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NETL	National Energy Technology Laboratory
NHPA	National Historic Preservation Act
NNSR	Nonattainment New Source Review
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetlands Inventory
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OTR	O_3 Transport Region
PM_{10}	Particulate Matter of 10 Micrometers or Less in Aerodynamic Diameter
$PM_{2.5}$	Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
Recovery Act	American Recovery and Reinvestment Act of 2009, Public Law 111-5
SHPO	State Historic Preservation Office or Officer
SIP	State Implementation Plans
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
spp.	*Species pluralis*, multiple species
SQG	Small Quantity Generators
tpy	Tons per Year
TSP	Total Suspended Particles
USC	United States Code
USEPA	U.S. Environmental Protection Agency

USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
VT	Vehicle Technologies
yr	Year

USE OF SCIENTIFIC NOTATION

Very small and very large numbers are sometimes written using scientific notation rather than as decimals or fractions. This notation uses exponents to indicate the power of 10 as a multiplier (i.e., 10^n, or the number 10 multiplied by itself n times; 10^{-n}, or the reciprocal of the number 10 multiplied by itself n times).

For example: $10^3 = 10 \times 10 \times 10 = 1{,}000$

$$10^{-3} = \frac{1}{10 \times 10 \times 10} = 0.001$$

In scientific notation, large numbers are written as a decimal between 1 and 10 multiplied by the appropriate power of 10:

4,900 is written $4.9 \times 10^3 = 4.9 \times 10 \times 10 \times 10 = 4.9 \times 1{,}000 = 4{,}900$.
0.049 is written 4.9×10^{-2}.
1,490,000 or 1.49 million is written 1.49×10^6.

A positive exponent indicates a number larger than or equal to one; a negative exponent indicates a number less than one.

1.0 INTRODUCTION

1.1 Background

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy (EERE). A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles (EDVs).

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. DOE solicited applications for this funding by issuing a competitive Funding Opportunity Announcement (DE-FOA-0000026), *Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative*, on March 19, 2009. The announcement invited applications in seven areas of interest:

- Area of Interest 1 – projects that would build or increase production capacity and validate production capability of advanced automotive battery manufacturing plants in the United States.
- Area of Interest 2 – projects that would build or increase production capacity and validate production capability of anode and cathode active materials, components (e.g. separator, packaging material, electrolytes, and salts), and processing equipment in domestic manufacturing plants.
- Area of Interest 3 – projects that combine aspects of Area of Interest 1 and 2.
- Area of Interest 4 – projects that would build or increase production capacity and validate capability of domestic recycling or refurbishment plants for lithium ion batteries.
- Area of Interest 5 – projects that would build or increase production capacity and validate production capability of advanced automotive electric drive component in domestic manufacturing plants.
- Area of Interest 6 – projects that would build or increase production capacity and validate production capability of electric drive subcomponent suppliers in domestic manufacturing plants.
- Area of Interest 7 – projects that combine aspects of Area of Interest 5 and 6.

The application period closed on May 19, 2009, and DOE received 119 proposals across the seven areas of interest. DOE selected 30 projects based on the evaluation criteria set forth in the funding opportunity announcement; special consideration was given to projects that promoted the objectives of the Recovery Act – job preservation or creation and economic recovery – in an expeditious manner.

This project, U.S. Electric Drive Manufacturing Center, was one of the 30 DOE selected for funding. DOE's proposed action is to provide $105 million in financial assistance in a cost sharing arrangement with the project proponent, General Motors Limited Liability Company

(LLC) (General Motors Company or GM). The total cost of the project is estimated at $283.9 million. A supplement to the April 2010 Environmental Assessment (EA) is necessary due to the proposed building size increasing three fold as well as the addition of a parking lot and widening of a truck dock area. The building size increase would accommodate more manufacturing equipment and provide office space. Because no changes are proposed at the Wixom, Michigan site, this supplemental EA only covers the White Marsh site.

1.2 Purpose and Need for DOE Action

The overall purpose and need for DOE action pursuant to the VT program and the funding opportunity under the Recovery Act is to accelerate the development and production of various electric drive vehicle systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and EDV components, in addition to stimulating the United States' economy. This work will enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing. DOE issued the call for proposals in order to further this purpose and satisfy this need by providing financial assistance under cost-sharing arrangements to this and the other 29 projects selected under this funding opportunity announcement.

This and the other selected projects are needed to reduce the United States' petroleum consumption by investing in alternative vehicle technologies. Successful commercialization of EDVs would support DOE's Energy Strategic Goal of "protect[ing] our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy." This project would also meaningfully assist in the nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

1.3 Legal Framework

DOE has prepared this EA in accordance with the Council on Environmental Quality (CEQ) "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," codified in Title 40 of the *Code of Federal Regulations* in Parts 1500 through 1508 (40 CFR 1500-1508). These implement the procedural requirements of the National Environmental Policy Act (NEPA), found in Title 40 of the *United States Code* in Section 4321 and following sections (42 USC § 4321 *et seq.*).

NEPA requires Federal agencies to consider the potential environmental consequences of a proposed action in their decision-making processes. NEPA encourages Federal agencies to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ NEPA regulations specify that an EA be prepared to:

- Provide sufficient analysis and evidence for determining whether or not to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI);
- Aid in an agency's compliance with NEPA when no EIS is deemed necessary; and
- Facilitate EIS preparation when one is necessary.

Further, the CEQ NEPA regulations encourage agencies to integrate NEPA requirements with other environmental review and consultation requirements. Relevant environmental requirements are contained in other Federal statutes, such as the Clean Air Act and the Clean Water Act, and their state counterparts. The following Federal and state statutes and regulations are relevant to this EA. Federal and state permits that may be required are also listed.

American Recovery and Reinvestment Act

American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) is an act making supplemental appropriations for job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization. It is through this act that DOE could fund GM's proposed project.

Clean Air Act

The Clean Air Act (CAA), 42 USC § 7401 *et seq.*, establishes the National Ambient Air Quality Standards (NAAQS) developed by the U.S. Environmental Protection Agency (USEPA) for the pervasive pollutants: sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), lead, and particulate matter (both particulate matter of 10 micrometers or less in aerodynamic diameter (PM_{10}) and particulate matter less than 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$)). The NAAQS are expressed as concentrations of the criteria pollutants in the ambient air, the outdoor air to which the general public is exposed. The CAA also contains emission control permit programs to protect the nation's air quality and establishes New Source Performance Standards that establish design standards, equipment standards, work practices, and operational standards for new or modified sources of air emissions. Where the NAAQS emphasize air quality in general, the New Source Performance Standards focus on particular industrial categories or sub-categories (e.g., fossil fuel fired generators, grain elevators, and steam generating units). Regulations implementing the CAA are found in 40 CFR Parts 50-95.

Clean Water Act

The Clean Water Act (CWA), 33 USC § 1251 *et seq.*, establishes a comprehensive framework of standards, technical tools, and financial assistance to address "point source" pollution from municipal and industrial wastewater discharges and "nonpoint source" pollution from urban and rural areas. Applicants for federal licenses or permits to conduct any activity that may result in a discharge to navigable waters must provide the Federal agency with a state CWA Section 401 certification that the discharge would comply with applicable provisions of the CWA. CWA Section 404 establishes a permit program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which requires point sources of pollutants to obtain permits to discharge effluents and storm water to surface waters. Regulations for implementing relevant CWA programs are found in 33 CFR Parts 320-331 and 40 CFR Parts 400-503.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 *et seq.*, regulates the treatment, storage, and disposal of solid and hazardous wastes. RCRA sets "cradle to grave" standards for both solid waste and hazardous waste management. Certain wastes are specifically excluded because they are regulated under other statutes. Some examples are domestic sewage and septic tank waste; agricultural wastes; industrial discharges; some nuclear wastes; and mining overburden. RCRA regulations are found in 40 CFR Parts 239-282.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC § 9601 *et seq*., also known as "Superfund," established a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA also establishes requirements for closed and abandoned hazardous waste sites, provides for the liability of persons responsible for the release of hazardous substances, and established a trust fund to pay for orphan facility cleanup and closure. Regulations for implementing CERCLA are found in 40 CFR Parts 300-312.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA), 42 USC § 1001 *et seq.*, requires Federal agencies to provide information on hazardous and toxic chemicals to state emergency response commissions, local emergency planning committees, and USEPA. EPCRA's goal is to provide this information to ensure that local emergency plans are sufficient to respond to unplanned releases of hazardous substances. Regulations implementing EPCRA are found in 40 CFR Parts 350-374.

National Historic Preservation Act

The National Historic Preservation Act (NHPA), 16 USC § 470 *et seq.*, requires DOE to consult with the State Historic Preservation Officer (SHPO) prior to any construction to ensure that no historical properties would be adversely affected by a proposed project. DOE must also afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project. Regulations for implementing NHPA are found in 36 CFR 800-812.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act, 16 USC § 470aa *et seq.*, requires a permit for excavation or removal of archaeological resources from publicly held or Native American lands. The Act requires that excavations further archaeological knowledge in the public interest and that the resources removed remain the property of the United States. Regulations for implementing the Act are found in 43 CFR 7 and 36 CFR 296.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act, 42 USC § 1996, establishes policy to protect and preserve the inherent and Constitutional right of Native Americans to believe, express, and exercise their traditional religions. The law ensures the protection of sacred locations; access of Native Americans to those sacred locations and traditional resources that are integral to the practice of their religions; and establishes requirements that would apply to Native American sacred locations, traditional resources, or traditional religious practices potentially affected by construction and operation of proposed facilities. Regulations for implementing the Act are also found in 43 CFR 7.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act, 25 USC § 3001, directs the Secretary of the Interior to guide the repatriation of federal archaeological collections and collections that are culturally affiliated with Native American tribes and held by museums that receive federal funding. DOE would follow the provisions of this Act if any excavations associated with the proposed construction led to unexpected discoveries of Native American graves or grave artifacts. Regulations for implementing the Act are found in 43 CFR 10.

Endangered Species Act

The Endangered Species Act (ESA), 16 USC 1531 *et seq.*, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants, as well as the preservation of the ecosystems on which they depend. ESA Section 7 requires any federal agency authorizing, funding, or carrying out any action to ensure that the action is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species. Regulations implementing the ESA interagency consultation process are found in 50 CFR Part 402.

Fish and Wildlife Conservation Act/Fish and Wildlife Coordination Act

The Fish and Wildlife Conservation Act, 16 USC § 2901 *et seq.*, encourages Federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. In addition, the Fish and Wildlife Coordination Act, 16 USC § 661 *et seq.*, requires Federal agencies undertaking projects affecting water resources to consult with the United States Fish and Wildlife Service (USFWS) and the state agency responsible for fish and wildlife resources. Compliance with these statutes is internalized in DOE NEPA process.

Noise Control Act

The Noise Control Act of 1972, 42 USC § 4901 *et seq.*, directs federal agencies to carry out programs in their jurisdictions to the fullest extent within their authority and in a manner that furthers a national policy of promoting an environment free from noise that jeopardizes health and welfare. This would involve complying with applicable municipal noise ordinances to the maximum extent practicable.

Occupational Safety and Health Act

The Occupational Safety and Health Act, 29 USC § 651 *et seq.*, requires employers to furnish employees a place of employment that is free from recognized hazards that are causing or are likely to cause death or serious physical harm to the employees, and to comply with occupational safety and health standards promulgated by the Occupational Safety and Health Administration (OSHA). OSHA standards are implemented under regulations found in 29 CFR Parts 1900-2400.

Pollution Prevention Act

The Pollution Prevention Act, 42 USC § 13101 *et seq.*, establishes a national policy for waste management and pollution control that focuses first on source reduction, and then on environmentally safe waste recycling, treatment, and disposal. Three executive orders provide guidance to agencies to implement the Pollution Prevention Act: Executive Order (EO) 12873, "Federal Acquisition, Recycling, and Waste Prevention," EO 13101, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition," and EO 13148, "Greening the Government through Leadership in Environmental Management."

Executive Orders

A number of presidential executive orders in addition to those noted above provide additional guidance to Federal agencies in developing EAs, including this EA. The most relevant of them include:

- EO 11514, "Protection and Enhancement of Environmental Quality"
- EO 11988, "Floodplain Management"
- EO 12856, "Right to Know Laws and Pollution Prevention Requirements" EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"
- EO 13423, "Strengthening Federal Environmental, Energy, and Transportation Management"
- EO 13514, "Federal Leadership in Environmental, Energy, and Economic Performance"

Federal executive orders can be accessed at: http://www.archives.gov/federal-register/codification/.

Federal and State Permitting

The following are potentially applicable federal permitting requirements to construct and operate the proposed facilities.

- Clean Water Act, Section 401 Certification, Section 402 NPDES Permit, Section 404 Wetlands Permit, and Pretreatment Authorization for Discharge of Wastewater to Municipal Collection System, 40 CFR Parts 104-140, 403
- Clean Air Act, 40 CFR Parts 50-96
- Federal Construction General Permit, Stormwater Discharge

- Hazardous Waste Permit, Title 40 Part 270
- Major Source Construction Permits, Title V Part 70

The following are potentially applicable state permitting requirements to construct and operate the proposed facilities.

- Air Quality Permit to Construct, Maryland Department of the Environment (MDE)
- National Pollutant Discharge Elimination System Permit, Title 9 Part 3
- Waterway and 100-Year Floodplain (Non-tidal Wetlands and Waterways) Permit, Title 5 Parts 5.501-5.514
- Hazardous Waste Permit, Code of Maryland Regulations (COMAR) 26.13

1.4 Related Projects

GM along with TimberRock and Constellation Energy is planning for solar panels on the proposed building's roof and on top of a small carport over the proposed parking lot. There is a possible additional area west of the proposed parking lot for ground mounted solar panels (GM, 2011a). The carport would cover six parking spaces and the employee turnstile (GM, 2011b). The solar panels would be about three by five feet each. The maximum total amount of solar panels for the three areas would be 5,200 (Raad, 2011a). The existing panels produce 1.2 megawatts of direct current (DC) power. Due to regulatory constraints, all of these proposed panels and the current panels could produce no greater than two megawatts of alternating current. Further, the proposed ground mounted solar panel area next to the proposed parking lot would likely be reduced by half but would remain within the depicted area in Figure 2.2.1-1. The ground-mounted solar panels are currently being evaluated for feasibility (GM, 2011b). The ground-mounted solar panels could be on grass, gravel, or impervious surface. If the proposed building and parking lot did not occur, the solar capacity would likely come from the ground-mounted solar panels (Walker, 2011).

As part of the Leadership in Energy and Environmental Design (LEED) effort, a bus stop may be constructed near the facility along Philadelphia Road. A bus stop already exists further down the road. This proposed bus stop would depend on negotiations with the transit authority (GM, 2011a). The bus stop would be on city property (Walker, 2011).

No other expansions are currently planned. However, as per the standard practice of GM, the proposed building would be built to facilitate any future expansions; that is, the foundation would be engineered to handle more weight than the proposed building. (Raad, 2011b; Seibert and Walker, 2011).

2.0 PROPOSED DOE ACTION AND ALTERNATIVES

DOE's proposed action is to provide GM with $105 million in financial assistance in a cost-sharing arrangement to facilitate construction and operation of a manufacturing facility to produce electric motor components and assemble electric drive units. This proposed action through the Vehicle Technologies Program would accelerate the development and production of electric-drive vehicle systems and reduce the United States' consumption of petroleum**.** This proposed action would also meaningfully assist in the nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

2.1 GM's Proposed Project

The objective of the proposed three-year project addressed in this EA is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble electric drive units for hybrid and electric vehicles. The electric motor design requires significant advances in manufacturing process technology because of the complexities of the electric motor components. Therefore, a supporting objective is to develop and validate novel electric motor manufacturing technology. As mentioned in Section 1.1, the April 2010 EA covered activities at two sites: White Marsh, Maryland and Wixom, Michigan. However, since GM proposed no changes at the Wixom site, this supplemental EA only covers the activities at the White Marsh site.

2.1.1 White Marsh, Maryland (U.S. Electric Drive Manufacturing Center)

General Motors Company proposes to design and construct a new building to house an electric motor component production facility at its White Marsh, Maryland (MD) site. The new electric motor manufacturing area would occupy approximately 104,000 square feet (ft^2) (approximately 9,700 square meters (m^2)) within the footprint of that existing facility property (Figure 2.1.1-1). This would be expected to require 50 full-time-equivalent (FTE) construction jobs over the 11 months of construction (Seibert, 2011a; Seibert, 2011b). The related activities would also occur in approximately a quarter of the existing facility. Overall project activities do not change from the April 2010 EA. The operation of the electric motor manufacturing as well as hybrid and electric drive unit assembly for the proposed project would require approximately 200 FTE jobs, at the maximum sustainable capacity of 50,000 units per year (annual production) (Gieseking, 2011a; GM, 2011c).

All project components would remain out of the 100-year floodplain (GM, 2011b). In addition to the new building, the project includes the widening of the truck dock area to allow the truck traffic the ability to effectively turn in and out of the docks (Ramos, 2011). GM has decided to reduce the proposed parking lot area to approximately 120,000 square feet, with one entrance/exit initially, and a second entrance/exit to possibly be added in the near future. This would provide about 200 parking spaces. This parking lot would be in the 500-year floodplain, but this location allows for less impervious surface than locating the parking lot out of the 500-year floodplain as well as a shorter distance for the employees to walk (GM, 2011a) (See Figure 2.1.1-1). A small pedestrian walkway with no curb would connect the proposed parking lot to the proposed new building, and would also cross in the 500-year floodplain.

Due to Baltimore County's occupancy permit requirements, a twenty-foot wide fire road would be constructed to allow access around the building. This would represent approximately 8,000 square feet of pavement or gravel. While GM plans to negotiate with the county to minimize the road size, this EA analyzes the larger size because the smaller road would have similar impacts to the larger road (GM, 2011a; GM, 2011b).

GM would construct the necessary underground fire mains, sewer lines, and stormwater connections to support this proposed building. The sewer and stormwater would connect to GM's existing infrastructure that is capable of handling the additional load. The sewer and fire lines would be constructed in the 500-year floodplain as shown in Figure 4.4.1. The power produced by the ground mounted solar panels, parking lot panels, and the roof-top panels would be transported using wiring inside the building or buried in the near-surface ground. Power would also be similarly transferred to outdoor equipment, such as outdoor lights in the parking lot and the employee turnstiles, using near surface cables. The potable water would be transferred from the existing building to the proposed building through a pipeline in the ceiling of the walkway. The foundation would be about six feet under the ground (Seibert and Walker, 2011). The deepest excavation would be 15 feet deep for the sewer pipes (Raad, 2011c).

As part of a workers' union agreement, GM would install two gazebos on cinder blocks to provide the workers an outdoor break area with picnic benches. These would be less than twenty feet by twenty feet each (GM, 2011a). These would be located somewhere near the building and out of the 100-year floodplain. A second entrance and exit from the proposed parking lot would likely occur in the future or even possibly during the proposed project's construction (GM, 2011b; Seibert, 2011c).

Some of the equipment would be placed outside in the mechanical equipment area in Figure 2.1.1-1. Both the exact pieces of equipment and final locations of this equipment would be determined during the final design stages when the process loads are confirmed, but the equipment would all be located in the mechanical equipment area (GM, 2011b). The types of equipment would be air dryers, centrifugal water chillers, primary chilled water pumps, secondary chilled water pumps, cooling towers pumps, cooling towers, and air compressors. Additionally, some equipment would be on the proposed building's roof. This would include package rooftop air handling units, general exhaust fans, toilet exhaust fans, air handling units, and air-cooled condensing units (Raad, 2011d). All of this equipment besides the air handling units would be electric (GM, 2011b). The air handling units would be direct fired natural gas, which would be supplied from the existing building's pipes (GM, 2011b; Raad, 2011c). One inert gas tank of about 48 inches in diameter and 120 inches in height would be in the outdoor mechanical area and would be used for welding gases. It would operate at less than 500 pounds per square inch. Additionally, a 3,000-gallon (gal.) process waste tank would be in the outdoor mechanical area (Raad, 2011c). All other permanent equipment would be indoors, and noise from the indoor equipment would not be noticeable outdoors (Raad, 2011b).

Figure 2.1.1-1. General Motors Company White Marsh Proposed Expansion Area Map
Source: (ESRI, 2010)

Figure 2.1.1-2 shows the area that could be disturbed during construction of all the proposed facility improvements. The activities in this area would include equipment storage, equipment movement, construction material storage, material lay down, and temporary construction facilities as well as the construction of the facility (GM, 2011b). The soil, concrete, and other materials would be reused at the site to the extent possible. Any inert construction debris that could not be used would be hauled to a landfill in roll-off boxes (Seibert and Walker, 2011).

After the construction period, any paved areas would be repaved, and any lawn area will be reseeded and returned to the previous condition. The exception would be the proposed impervious surface project components, such as the parking lot (GM, 2011b).

Figure 2.1.1-2. Planned Disturbance Area
Source: (ESRI, 2010)

This project would involve an addition to the existing facility dedicated to technology and equipment needed for the manufacturing of electric motors and a changeover of the existing drive unit facility to manufacture electric drive units for hybrid and electric vehicles as mentioned above. Further, the new building would provide necessary office space. The processes and equipment related to each of these major project elements is set forth below.

1. Electric Motor Production Facility

The project would involve the construction of an addition to the existing facility and the installation of equipment dedicated to the production of electric motors. The manufacturing process to produce the electric motors begins with the receipt of copper wire and core materials, and continues with wire forming, stator and rotor assembly, varnish and epoxy, final assembly, and test. The types of machinery and equipment to be installed at the facility include a roller straightener, wire cutter, press, wire former, slot liner, wire stripping, cutting, welder, balancer, electrical and spin test machines, wire installation, twister, lacing, oven, varnish and epoxy application, staking, and rotor & stator assembly machine (DOE, 2010).

2. Electric Drive Unit Manufacturing

The manufacturing process begins with the receipt of productive materials delivered to the machining and assembly departments. Copper wire and core materials are wire formed, assembled into rotors and stators, final assembled and tested into electric motors. Raw castings or blanks are machined into prismatic and gear components through metal removal using standard oil, synthetic lubricant, or water-soluble metal cutting fluids. Metal removal equipment planned for installation at the facility includes provisions for component features such as reaming, drilling, taping, milling, spot facing, turning, deburring, chamfering, broaching, honing, and boring. Gears are heat treated in nitrogen gas furnaces to increase material strengths. Finished machining components would be checked for hardness, leak tested, inspected, washed utilizing a water-soluble, rust preventative solution, and then delivered to final assembly. Final assembly of drive units would consist of assembly of the prismatics, gears, electric motors and externally purchased parts into a functional electric drive unit. This drive unit would then be filled with automatic transmission fluid, tested, and washed (DOE, 2010).

New and existing emission control and particulate collection devices, such as dust collectors, thermal oxidizer and process flare would be used at the facility. Nonhazardous and hazardous waste would be accumulated on site and would be recycled and reclaimed using off site facilities including permitted Treatment, Storage, and Disposal facilities, in accordance with applicable laws and regulations to support Landfill Free and Environmental stewardship. Proper maintenance schedules on equipment would be established and adhered to as part of the company's best management practices (BMPs) (DOE, 2010).

Fundamentally, validation occurs also at the White Marsh site based on the development process (program timing gate). Components could be shipped from Wixom, Michigan site to the White Marsh site, but component shipping from White Marsh to the Wixom site would be very

unlikely. Any components shipped would be finished manufactured electric motors (DOE, 2010).

A full decommissioning of the facility is not anticipated after the end of the proposed project. The site is part of an existing manufacturing facility. General Motors Company may continue to use the facility and equipment after the Electric Drive Vehicle Battery and Component Manufacturing Initiative funding stops. If decommissioning of the building or equipment should occur, the activities would comply with all applicable regulations (DOE, 2010).

2.2 Alternatives

DOE's alternatives to this project consist of the 45 technically acceptable applications received in response to the Funding Opportunity Announcement, *Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative*. Prior to selection, DOE made preliminary determinations regarding the level of review required by the NEPA based on potentially significant impacts identified in reviews of acceptable applications. DOE conducted these preliminary environmental reviews pursuant to 10 CFR 1021.216 and a variance to certain requirements in that regulation granted by the Department's General Counsel (74 Federal Register 30558, June 26, 2009). These preliminary NEPA determinations and reviews were provided to the selecting official, who considered them during the selection process.

Because DOE's proposed action is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's decision is limited to either accepting or rejecting the project as proposed by the proponent, including its proposed technology and selected sites. DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and a no-action alternative for each selected project.

2.3 No-Action Alternative

Under the no-action alternative, DOE would not provide funds to the proposed project. As a result, this project would be delayed while GM looks for other funding sources to meet their needs, or abandoned if other funding sources are not obtained. Furthermore, acceleration of the development and production of various electric drive vehicle systems would not occur or would be delayed. DOE's ability to achieve its objectives under the VT program and the Recovery Act would be impaired.

Although this and other selected projects might proceed if DOE decided not to provide financial assistance, DOE assumes for purposes of this environmental analysis that the project would not proceed without DOE assistance. If projects did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative (i.e., providing assistance that allows the project to proceed). In order to allow a comparison between the potential impacts of a project as implemented and the impacts of not proceeding with a project, DOE assumes that if it were to decide to withhold assistance from a project, it would not proceed.

2.4 Comparison of Impacts

Table 2.4 below compares impacts of GM's proposed project and the no-action alternative.

Table 2.4. Comparison of Impacts

Resource	No-Action Alternative	GM's Proposed Project
Air Quality	No impact	Short- and long-term minor adverse effects on air quality would be expected. The effects would be from air emissions during construction and from operational sources of air emissions at the proposed facility. Increases in emissions would not exceed applicability thresholds or contribute to a violation of any Federal, state, or local air regulation.
Geology and Soils	No impact	Changes in geological or soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time*, as provided for in permit conditions for the project; therefore, the projected impact to geology and soils would be less than significant
Water Resources	No impact	Slight changes to surface water quality or hydrology are confined to the immediate project area. Full recovery would occur in a reasonable time, as provided for in NPDES permit conditions for the project; therefore, the projected impact from the proposed activity would be less than significant.
Wetlands/ Floodplains	No impact	Earthmoving activities associated with the proposed facility extension would occur in the 500-year floodplains. With appropriate regulatory compliance and implementation of BMPs, impacts to wetlands and floodplains should be less than the significance threshold.
Terrestrial Vegetation	No impact	Overall, any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state.
Wildlife	No impact	Overall, any impacts on wildlife from GM's proposed project would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species' natural state.
Threatened and Endangered Species	No impact	Unless a discovery of previously unknown threatened or endangered species occurs, impacts from implementing this alternative would be expected to be less than the significance threshold.
Socioeconomic Resources	Lost opportunity for beneficial economic impact	Impacts would be beneficial but less than the significance threshold.
Infrastructure/ Utilities	No impact	Short- and long-term minor adverse effects on transportation, infrastructure, and utilities would be expected from implementing GM's proposed project. The changes would be due to construction vehicles and small changes in localized traffic patterns from the additional personnel. The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area; therefore, the impact would be less than the significance threshold.

Table 2.4. Comparison of Impacts		
Resource	**No-Action Alternative**	**GM's Proposed Project**
Noise	No impact	Short and long-term, minor, and adverse effects on the noise environment would be expected. Noise levels would not exceed Federal, state, or local noise standards. Minor increases in noise would be primarily from using heavy equipment during construction at the proposed site, and locating some machinery outside the facility.
Human Health and Safety	No impact	Appropriate monitoring equipment and systems that are consistent with all BMPs and regulations would be in place for the activities, materials, and wastes produced. This would reduce the risk to human health and safety on the site as well as in the local community; therefore, overall less than the significance threshold.
Waste Management	No impact	The solid waste generated at the White Marsh facility is anticipated to be similar to the amount generated by past manufacturing at full production rates and no new permits would be required for wastes indicating that any impact from disposal would be negligible, which is less than the significance threshold.

* Recovery in a reasonable time: Constant, sustainable improvement is apparent and measurable when the site is routinely observed, and full recovery is achieved over a period of no more than several years.

2.5 Issues Considered But Dismissed from Further Analysis

The Purpose and Need section above highlighted the importance of the overall program of evaluating EDV as one tool among many to address VT and Recovery Act objectives while providing this nation with a secure energy future and job stability. Potential impact issues typically addressed in the preparation of EAs were reviewed. Because of the lack of potential impacts to certain resource areas due to the specific characteristics of GM's proposed project, the following issues were considered but dismissed from detailed analysis:

Groundwater

The water supply would be from a public source. Most of the construction would be limited to near-surface activity. According to Natural Resource Conservation Service (NRCS), the water table is at six feet underground (NRCS, 2011a). The existing sewer is 15 feet underground. GM's first preference would be to connect the new pipes to an existing pipe above the sewer. If GM cannot connect to an adequately sized entrance pipe, then they will excavate to 15 feet to directly connect to the sewer (Walker, 2011). GM would take the precautions to not to disturb the groundwater during these excavations. However, since the area was filled in, the water table may be deeper than the surrounding areas. With proper BMPs during excavation and construction, such as spill clean up, groundwater sources would not be affected. Therefore, impacts to groundwater were dismissed from further analysis.

Land Use and Visual Resources

Under the no-action alternative, the White Marsh site would continue current uses and ownership. This would result in no impacts to land use. Implementation of GM's proposed project would entail the construction of a new approximately 104,000 ft^2 building, a 120,000 ft^2

parking lot, widening of a truck dock area, a fire road, and a pedestrian walkway with no curb as well as underground pipeline installation for sewer, stormwater, power, and fire main. These manufacturing supporting activities would be on GM property, so they would be compatible with current land use at the site. Further, the proposed project would be implemented to ensure avoidance or mitigation of any land use issues at that site with the benefit of the project proponent also being the current and future landowner. The cumulative projects are also being considered by GM, so GM can ensure that all projects are compatible, which is likely as they all support the manufacturing at the facility.

The nearest park to White Marsh is Bengies-Walter Park, which is about 3 miles (4.8 kilometers (km)) southeast. Thus, the proposed project is unlikely to impact parks and recreation. The proposed projects would not interfere with surrounding land uses because they are extensions of current facility activities at an established industrial site. Additionally, the project does not require any zoning changes, and there are no prime farmlands at the site (DOE, 2010). GM would follow its own noise safety requirements, which would reduce the potential for conflicts with the proposed outdoor equipment (GM, 1997).

The closest Class I Area for White Marsh is Shenandoah National Park, which is 100 miles (160 km) to the west (USEPA, 2009; ESRI, 2010). The presence of the construction equipment and activities including earthmoving would be temporary and restricted to the GM facility, which would reduce impacts. The new outdoor equipment and facilities at the existing GM site would not be out of character for the manufacturing site, so it would be unlikely that they would be objectionable to viewers. Because the proposed new building at White Marsh is in an existing industrial area and considering the distance to the nearest Class I areas, this proposed project is unlikely to impact visual resources. Therefore, because projected impacts, if any, to land use and visual resources would be negligible, these topics were dismissed from further analysis.

Environmental Justice

Federal agencies must identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations (EO 12898). An environmental justice population is defined as a population comprised of at least half minority status or at least half low-income status, or whose representation of these categories is greater than the general population in a meaningful way. The U.S. Department of Health and Human Services defines the average poverty threshold as a maximum annual income of $22,350 or less for a family of four for the year 2011 (HHS, 2011).

The population of White Marsh is 82.4% White non-Hispanic with the largest minority being African American at 9.2% (Census, No date[a]). Only 2.8% of White Marsh residents had incomes below the poverty level, compared to 13.5% in the U.S. overall (Census, No date[b]). The similar percentage of “minority” residents (defined as Black or African-American, Hispanic or Latino, Asian, American Indian, Native Hawaiian, or other Pacific Islander) and the lower percentage of incomes below the poverty level compared to Maryland as a whole suggest there would be no disproportionate impacts on minority or low income communities from implementing GM’s proposed project, especially as the impacts would be felt by the population

as a whole and be largely beneficial or negligible (Census, No date[c]). Therefore, impacts to environmental justice were dismissed from further analysis.

Cultural Resources

There would be ground disturbance and excavations. However, all construction activities would occur at an existing industrial site and in a disturbed location. Further, the site's soil is fill material from the 1990s used to reclaim the site from historical activities in preparation for future land development as an industrial site (Seibert, 2011b). This reduces the probability of discovering or disturbing previously unknown cultural resources. Further, no known eligible or listed National Register of Historic Places sites exist within one mile (approximately 1.6 km) of the proposed White Marsh site (EDR, 2009a). The closest reservation is the Onondaga Indian Reservation, and it is 250 miles (402 km) north. The closest cemetery is Holly Hill Memorial Gardens, which is 1.14 miles (1.9 km) to the southeast (ESRI, 2010).

Considering the above factors, it is unlikely that cultural resources would be disturbed; therefore, potential impacts to cultural resources have been eliminated from further analysis.

The SHPO in Maryland was contacted for any possible concerns regarding this project, and SHPO concluded no historic properties in the area of potential effect (Appendix A). NETL is informing the SHPO of project changes during the public comment period. Since no nationally recognized tribe has land claims in the county, Bureau of Indian Affairs was contacted for any possible concerns regarding this project (HUD, 2008). They responded with no concerns (Appendix B). Should any cultural resources be discovered during construction, work in the area would cease, and the discovery would be reported immediately to the SHPO and any relevant Native American Tribes.

Below are additional issues considered but dismissed due to absence in the project areas.

Right-of-Way Acquisition	There was no need for additional right-of-way.
Wild and Scenic Rivers	There are no designated Wild and Scenic Rivers within proximity of the project site.
Impact Property Values	This is a minor expansion within an existing industrial facility.
Alter Local Hydrology Patterns	None of the proposed construction would significantly impact drainage in the local watershed.

3.0 THE ENVIRONMENTAL ANALYSIS APPROACH

This chapter describes how the environmental review team analyzed the potential impacts of this GM's proposed project (i.e., the building and operation of the United States Electric Drive Manufacturing Center in MD). Chapter 4 provides a description of the affected environment and the potential environmental effects of GM's proposed project and the no-action alternative.

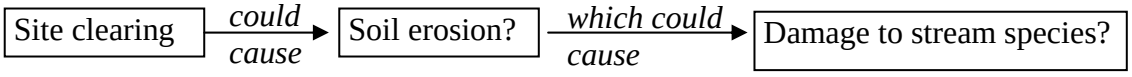
3.1 Approach to the Analysis

An EA is intended to be a clear, focused analysis of impacts. It is not intended to be merely a compilation of encyclopedic information about the project or about the environment. Accordingly, the environmental review team used a systematic approach to identifying, and then answering the relevant impact questions.

The initial step was to develop a detailed description of the components of the United States Electric Drive Manufacturing Center in Maryland process to be used at the proposed site to study the potential of furthering VT and Recovery Act objectives. This description was presented in Chapter 2.

For each project component (e.g., construction of the facility), the team sought to identify all the types of direct effects that that activity could cause on relevant environmental resources. For example, clearing a site of vegetation could cause soil erosion. In doing this preliminary identification of the types of impacts that potentially could occur, the team drew upon their experience with previous projects.

For each potential direct effect, the team then sought to identify the potential indirect effects on other environmental resources. For example, soil erosion could cause sedimentation in nearby streams, which could in turn harm the fish and other species in the stream.



This served as the framework of the analysis of impacts. That is, the team focused their efforts on answering these questions as to whether these effects would in fact occur, and if so, how extensive, how severe, and how long lasting they would be. This was then compared to the significance levels found in Table 3.2 below.

3.2 Analysis of Significance

The team used a systematic process to evaluate the importance, or significance, of the predicted impacts. This process involved comparing the predictions to the significance criteria established by the team and set out below in Table 3.2. These significance criteria were based on legal and regulatory constraints and on team members' professional technical judgment.

Table 3.2. Impact Significance Thresholds	
	Impact Significance Thresholds
Resource Area	**An impact would be significant if it EXCEEDS the following conditions.**
Air Quality	The project would not produce emissions that would exceed applicability thresholds, be regionally significant, or contribute to a violation of any federal, state, or local air regulation.
Geology and Soils	Any changes in soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time*, considering the size of the project. Mitigation, if needed, would be simple to implement.
Surface Water	Any changes to surface water quality or hydrology would be confined to the immediate project area. Full recovery would occur in a reasonable time, considering the size of the project and the affected area's natural state.
Wetlands and Floodplains	Any impacts to wetlands and floodplains would be confined to the immediate project area and would not cause any regional impacts.
Terrestrial Vegetation	Any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state. Mitigation, if needed, would be simple to implement.
Wildlife	Any changes to wildlife would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species' natural state.
Threatened or Endangered Species	Any effect to a federally listed species or its critical habitat would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. This negligible effect would equate to a "no effect" determination in U.S. Fish and Wildlife Service terms.
Socioeconomic Resources	Changes to the normal or routine functions of the affected community are short-term or do not alter existing social or economic conditions in a way that is disruptive or costly to the community.
Infrastructure/Utilities	The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area.
Noise	Noise levels in the project area would not exceed ambient noise level standards as determined by the Federal, state, and/or local government.
Human Health and Safety	The project, with current and updated safety procedures, would pose no more than a minimal risk to the health and safety of onsite workers and the local population.
Waste Management	The action, along with planned mitigation measures, would not cause air, water, or soil to be contaminated with hazardous material that poses a threat to human or ecological health and safety.

* Recovery in a reasonable time: Constant, sustainable improvement is apparent and measurable when the site is routinely observed, and full recovery is achieved over a period of no more than several years.

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

4.1 Air Quality

4.1.1 Description

The USEPA Region 3 and the MDE regulate air quality in Maryland. The CAA (42 USC 7401-7671q) gives USEPA the responsibility to establish the primary and secondary NAAQS (40 CFR Part 50) that set acceptable concentration levels for seven criteria pollutants: PM_{10}, $PM_{2.5}$, SO_2, CO, nitrogen oxides (NO_x), O_3, and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. Each state has the authority to adopt standards stricter than those established under the Federal program; however, Maryland accepts the Federal standards.

Federal regulations designate Air-Quality Control Regions (AQCRs) that are in violation of the NAAQS as nonattainment areas and those in accordance with the NAAQS as attainment areas. Baltimore County, MD (and therefore the proposed facility) is within the Metropolitan Baltimore Intrastate AQCR (40 CFR 81.23) and within the O_3 transport region (OTR). The USEPA has designated Baltimore County as the following:

- Moderate nonattainment Area for the 8-hour O_3 NAAQS;
- Nonattainment for the $PM_{2.5}$ NAAQS (1997); and
- Attainment for all other criteria pollutants (USEPA, 2011a).

MDE issued an air permit to construct on May 5, 2011 consolidating all existing air permits and the permit for the new electric motor manufacturing operation into one premises-wide permit (Premises Number 005-2422). This permit limits premises-wide NO_x emissions to maximum 25 tons in any rolling 12-month period (Pujara, 2011a; MDE, 2011). The facility is not currently required to submit an emission inventory to MDE (Pujara, 2011b).

Climate, Green House Gases, and Global Warming. Greenhouse gases (GHG) are components of the atmosphere that contribute to the greenhouse effect and global warming. Some GHG occur naturally in the atmosphere, while others result from human activities such as the burning of fossil fuels. Federal agencies, states, and local communities address global warming by preparing GHG inventories and adopting policies that would result in a decrease of GHG emissions. Six common GHGs are carbon dioxide (CO_2), nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (UNFCC, 2007). Although the direct GHG (CO_2, methane, and nitrous oxide) occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. On a global scale, fossil fuel combustion added approximately 30 $x10^9$ tons (27 $x10^9$ metric tons) of CO_2 to the atmosphere in 2004, of which the United States accounted for about 22 percent (USEPA, 2007). Since 1900, the Earth's average surface air temperature has increased by about 1.2 to 1.4ºF. The warmest global average temperatures on record have all occurred within the past 15 years, with the warmest year being 2005 (USEPA, 2011b) (See Section 1.4.1 for more information).

The CEQ recently released draft guidance on when and how Federal agencies should consider GHG emissions and climate change in NEPA. The draft guidance includes a presumptive effects threshold of 25,000 metric tons of carbon dioxide equivalent emissions from an action (CEQ, 2010). Notably, the total greenhouse gas emissions from the facility based on actual 2010 fuel usage was 1,390 tons (1,261 metric tons) expressed as CO_2 equivalents.

4.1.2 Effects of GM's Proposed Project

Short- and long-term minor adverse effects on air quality would be expected. The effects would be from air emissions during construction and from operational sources of air emissions at the proposed facility. Increases in emissions would not exceed applicability thresholds or contribute to a violation of any Federal, state, or local air regulation.

Estimated Emissions and General Conformity. The General Conformity Rule specifies applicability thresholds by pollutant to determine if the conformity requirements apply to a project located in a nonattainment or maintenance area. These applicability thresholds vary based on pollutant type and the level of nonattainment. The applicability thresholds for the site are 100 tons per year (tpy) for $PM_{2.5}$, NO_x, and SO_2 and 50 tpy for volatile organic compounds (VOCs). If the total direct and indirect emissions associated with the action were greater than these levels, a formal conformity determination would be required.

All direct and indirect emissions of criteria pollutants for GM's proposed project have been estimated and compared to the applicability thresholds to determine the applicability of the general conformity rules and the level of impact under NEPA. The total direct and indirect emissions associated with the following activities were accounted for:

- Constructing the new facilities,
- Operating vehicles for construction workers,
- Paving parking areas,
- Operating personal vehicles for employees,
- VOCs from industrial processes, and
- Operating new stationary sources of air emissions (i.e. boilers).

The requirements of the general conformity rule are not applicable because the highest total annual direct and indirect emissions from these alternatives would not exceed the applicability threshold for any criteria pollutant (Table 4.1.2-1). These effects would be minor. A detailed breakdown of construction and operation emissions is in Appendix C.

Table 4.1.2-1. GM's Proposed Project Emissions Compared to Applicability Thresholds

	Annual emissions (tpy)						Applicability threshold (tpy)	Would emissions exceed applicability thresholds? [Yes/No]
Activity	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$		
Construction	9.5	11.7	2.2	<0.1	2.0	0.8	100 (50)*	No
Operation	18.8	3.7	3.7	<0.1	0.3	0.2		

* For a moderate nonattainment area for the 8-hour O_3 NAAQS within the OTR, the applicability criterion is 50 tpy for VOCs. Note: SO_x is sulfur oxides.

For the purposes of calculating emissions, it was assumed that approximately 200 permanent personnel would be employed at the proposed site. Moderate changes in the size or type of equipment ultimately selected or the number of personnel would not substantially change the total direct or indirect emissions or the level of impact under NEPA.

GHG and Global Warming. GM's proposed project would introduce a long-term minor increase to GHG in the atmosphere. The increase in CO_2 from use of fossil fuel based electricity and fossil fuel based heat would be 3,150 tpy (2,864 metric tpy) and 338 tpy (308 metric tpy) respectively. This is equivalent to annual GHG emissions from 622 passenger vehicles or the electricity use of 385 homes for one year (USEPA, 2011c). GM's proposed project would be below the threshold outlined in the draft CEQ guidance on greenhouse gas emissions.

Regulatory Review. The CAA, as amended in 1990, mandates that state agencies adopt and implement State Implementation Plans (SIPs) to eliminate or reduce the severity and number of violations of the NAAQS. Since 1990, Maryland has developed a core of air quality regulations that the USEPA has approved. These approvals signified the development of the general requirements of the SIP. Maryland programs for regulating air emissions affect industrial sources, commercial facilities, and residential development activities. Regulation occurs primarily through a process of reviewing engineering documents and other technical information, applying emission standards and regulations in permit issuance, performing field inspections, and assisting industries in determining their compliance status with applicable requirements.

As part of these requirements, MDE oversees programs for permitting the construction and operation of new or modified stationary source air emissions. MDE air permitting is required for many industries and facilities that emit regulated pollutants. These requirements include Title V permitting of major sources, New Source Review (NSR), Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS) for selected categories of industrial sources, and the National Emission Standards for Hazardous Air Pollutants (NESHAP). An overview of the applicability of these regulations to the project is outlined in Table 4.1.2-2.

Table 4.1.2-2. Air Quality Regulatory Review for Proposed Stationary Sources

Regulation	
Nonattainment New Source Review (NNSR)	The potential emissions would not exceed NNSR threshold and would be exempt from NNSR permitting requirements.
PSD	Potential emissions would not exceed the 250-tpy PSD threshold. Therefore, the project would not be subject to PSD review.
Title V Permitting Requirements	The facility's potential to emit would be below the Title V major source threshold and would not require a Title V permit.
NESHAP	Potential Hazardous Air Pollutant emissions would not exceed NESHAP thresholds. Therefore, the use of Maximum Available Control Technology (MACT) would not be required.
NSPS	All new stationary sources would meet NSPS if required.

Varnish application for the motor manufacturing is estimated to emit 2.0 tpy (or less) of VOC. Other new sources of emissions such as aqueous parts washers in hybrid and electric motor components manufacturing, epoxy usage and wet machining in motor manufacturing, and building Heating, Ventilation, and Air Conditioning (HVAC) units would also generate some

criteria pollutants. However, the total NO_x and VOC emissions from all new sources combined would be below 25 tons per year. The facility's current air permit would be amended, if required, to cover the modification to machine components and assemble hybrid and electric drive transmissions. An air permit to construct that includes the proposed new electric motor manufacturing operation was obtained in May 2011 (Pujara, 2011a; MDE, 2011). Notably, all outdoor equipment, except the air-handling units, would be electric powered and would not be sources of fuel-burning air emissions. The air-handlers would be natural gas fired and are included in the obtained air permit. All chillers would comply with applicable CAA regulations (GM, 2011b).

Emission control devices include mist collectors and thermal oxidizers currently in operation in the existing facility. For equipment not required to have controls under applicable laws, emissions would be vented via general ventilation or through stacks. GM is reviewing low VOC varnishes that would not require thermal oxidizer control technology to enable GM to meet the air permit VOC emission limit for this process. If low VOC varnishes are properly validated, GM will be able to meet air permit emission limits without any new add-on control technology (Pujara, 2011c; GM, 2011c).

Other non-permitting requirements may be required through the use of compliant practices and/or products. These regulations are outlined in COMAR Title 26, Subtitle 11, *Air Quality* and include:

- Particulate Matter from Materials Handling and Construction (COMAR 26.11.06.03.D)
- Open Fires (COMAR 26.11.06)
- Control of Emissions of VOCs from Architectural Coatings (COMAR 26.11.33)
- Control of Emissions of VOCs from Consumer Products (COMAR 26.11.32)
- Control of Emissions of VOCs from Adhesives and Sealants (COMAR 26.11.35)

In addition to those outlined above, during construction, reasonable measures may be required to prevent unnecessary amounts of particulate matter from becoming airborne (COMAR 26.11.06.03.D). This listing is not all-inclusive; GM and any contractors would comply with all applicable air pollution control regulations. Outside of these BMPs, no mitigation measures would be required for the construction and operation of the proposed facilities. Overall, with BMPs in place, the projected impacts would be less than the significance threshold.

4.1.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no impact to ambient air-quality. No construction would be undertaken, and no new facility operations would take place. Ambient air-quality conditions would remain as described in Section 4.1.1.

4.1.4 Cumulative Effects

The State of Maryland takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of their SIP. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. Estimated emissions generated by GM's proposed project would be *de minimis*; therefore, it would not

contribute significantly to adverse cumulative effects to air quality. In addition, no projects or proposals, including the proposed solar panels and bus stop, have been identified that when combined with the GM's proposed project would increase the effects to exceed the significance threshold.

Greenhouse Gas and Global Warming. According to the International Panel on Climate Change (IPCC), a worldwide environmental issue is the likelihood of changes in the global climate as a consequence of global warming produced by increasing atmospheric concentrations of GHGs (IPCC, 2007a). The atmosphere allows a large percentage of incoming solar radiation to pass through to the earth's surface, where it is converted to heat energy (infrared radiation) that is more readily absorbed by GHGs such as CO_2 and water vapor than incoming solar radiation. The heat energy absorbed near the earth's surface increases the temperature of the air, soil, and water.

GHGs include water vapor, CO_2, methane, nitrous oxide, ozone, and several chlorofluorocarbons. The GHGs constitute a small percentage of the earth's atmosphere. Water vapor, a natural component of the atmosphere, is the most abundant GHG. The second-most abundant GHG is CO_2, which remains in the atmosphere for long periods of time. Due to man's activities, atmospheric CO_2 concentrations have increased approximately 35 percent over preindustrial levels. Fossil fuel burning is the primary contributor to increasing concentrations of CO_2 (IPCC, 2007a).

According to the IPCC fourth assessment report, "[w]arming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level" (IPCC, 2007b). The IPCC report finds that the global average surface temperature has increased by approximately 0.74 degrees Celsius (°C) in the last 100 years; global average sea level has risen approximately 150 millimeters over the same period; and cold days, cold nights, and frosts over most land areas have become less frequent during the past 50 years. The report concludes that most of the temperature increase since the middle of the twentieth century "is very likely due to the observed increase in anthropogenic [GHG] concentrations."

The IPCC 2007 report estimates that, at present, CO_2 accounts for approximately 77 percent of the climate change potential attributable to anthropogenic releases of GHGs, with the vast majority (74 percent) of this CO_2 coming from the combustion of fossil fuels.

IPCC and the U.S. Climate Change Science Program (CCSP) examined the potential environmental impacts of climate change at global, national, and regional scales. IPCC's report states that, in addition to increases in global surface temperatures, the impacts of climate change on the global environment may include:

- More frequent heat waves, droughts, and fires.
- Rising sea levels and coastal flooding; melting glaciers, ice caps, and polar ice sheets.
- More severe hurricane activity and increases in frequency and intensity of severe precipitation.
- Spread of infectious diseases to new regions.
- Loss of wildlife habitats.

- Heart and respiratory ailments from higher concentrations of ground-level ozone (IPCC, 2007b).

On a national scale, average surface temperatures in the United States have increased, with the last decade being the warmest in more than a century of direct observations (CCSP, 2008). Impacts on the environment attributed to climate change that have been observed in North America include:

- Extended periods of high fire risk and large increases in burned area.
- Increased intensity, duration, and frequency of heat waves.
- Decreased snow pack, increased winter and early spring flooding potentials, and reduced summer stream flows in the western mountains.
- Increased stress on biological communities and habitat in coastal areas (IPCC, 2007b).

The Northeast region that includes Maryland historically has severe extremes in weather and climate, such as floods, drought, heat waves, and severe storms. The temperature increases of as much as 4 degrees Fahrenheit (°F) or 2°C over the last 100 years have occurred along the coastal margins of the region with many areas also having a more than 20 percent increase in precipitation (USNA, 2000).

Because climate change is a cumulative phenomenon produced by releases of GHGs from industry, agriculture, and land use changes around the world, it is generally accepted that any successful strategy to address it must rest on a global approach to controlling these emissions. In other words, imposing controls on one industry or in one country is unlikely to be an effective strategy. And because GHGs remain in the atmosphere for a long time and industrial societies will continue to use fossil fuels for at least 25 to 50 years, climate change cannot be avoided. As IPCC report states, "[s]ocieties can respond to climate change by adapting to its impacts and by reducing [GHG] emissions (mitigation), thereby reducing the rate and magnitude of change" (IPCC, 2007b).

According to the IPCC, there is a wide array of adaptation options. While adaptation will be an important aspect of reducing societies' vulnerability to the impacts of climate change over the next two to three decades, "adaptation alone is not expected to cope with all the projected effects of climate change, especially not over the long term as most impacts increase in magnitude" (IPCC, 2007b). Therefore, it will also be necessary to mitigate climate change by stabilizing the concentrations of GHGs in the atmosphere. Because these gases remain in the atmosphere for long periods of time, stabilizing their atmospheric concentrations will require societies to reduce their annual emissions. The stabilization concentration of a particular GHG is determined by the date that annual emissions of the gas start to decrease, the rate of decrease, and the persistence of the gas in the atmosphere. The IPCC report predicts the magnitude of climate change impacts for a range of scenarios based on different stabilization levels of GHGs. "Responding to climate change involves an iterative risk management process that includes both mitigation and adaptation, taking into account actual and avoided climate change damages, co-benefits, sustainability, equity, and attitudes to risk" (IPCC, 2007b).

Section 4.1.2 analyzed the specific greenhouse impacts from GM's proposed project. The main purpose of GM's proposed project is to accelerate the development and production of various

electric drive vehicle systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and EDV components, in addition to stimulating the United States' economy. This work would enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing. Expanded use of electric vehicle technologies would reduce reliance on petroleum fuels with a corresponding decrease in GHG produced by internal combustion engines. Overall, there would be a beneficial reduction in greenhouse gas emissions as the proposed project would help the viability of the commercial market for green energy products, thereby reducing the carbon footprint of the transportation sector.

4.2 Geology and Soils

4.2.1 Description

The project site lies within a physiographic province named the Atlantic Coastal Plain and more specifically the region within the province known as the Western Shore Lowlands Region. In this province and region, there is a low marine terrace adjacent to Chesapeake Bay with sea level marshes and several tidal streams. The underlying rocks in this area are obscured by thick, unconsolidated marine sediment. In some places, the sediment has been removed by erosion, leaving isolated sedimentary caps, often quite thin, over the underlying rock (Reybold and Matthews, 1976; MGS, 2009).

Mineral resources of the Coastal Plain are chiefly sand and gravel, and are used as aggregate materials by the construction industry. Clay for brick and other ceramic uses is also important. Small deposits of iron ore are of historical interest. Plentiful supplies of groundwater are available from a number of aquifers throughout much of this region. The Atlantic Continental Shelf contains abundant sand deposits that are useful for beach restoration (MGS, 2009).

The existing GM facility contains soil designated as "made land" (Reybold and Matthews, 1976). Made land is created when tidal flats are filled in to expand areas along the coastline to make them suitable for development. For the GM White Marsh site, unknown soil types were used to create the made land. According to the NRCS, the proposed project is on land designated as udorthents (Figure 4.2.1) (NRCS, 2009). Udorthents consists of moderately coarse textured soil material. The permeability and stability of this group are variable (NRCS, No date).

Throughout the history of Baltimore County going back to April 1758, there have been earthquake tremors that have been felt in the county. Most of the earthquakes that were felt have had epicenters outside the county (USGS, 2009). Despite this history, the area is located in seismic zone 1, the second lowest seismic risk zone defined by the Uniform Building Code, which has no additional enforceable requirements for structural design due to earthquakes in this zone.

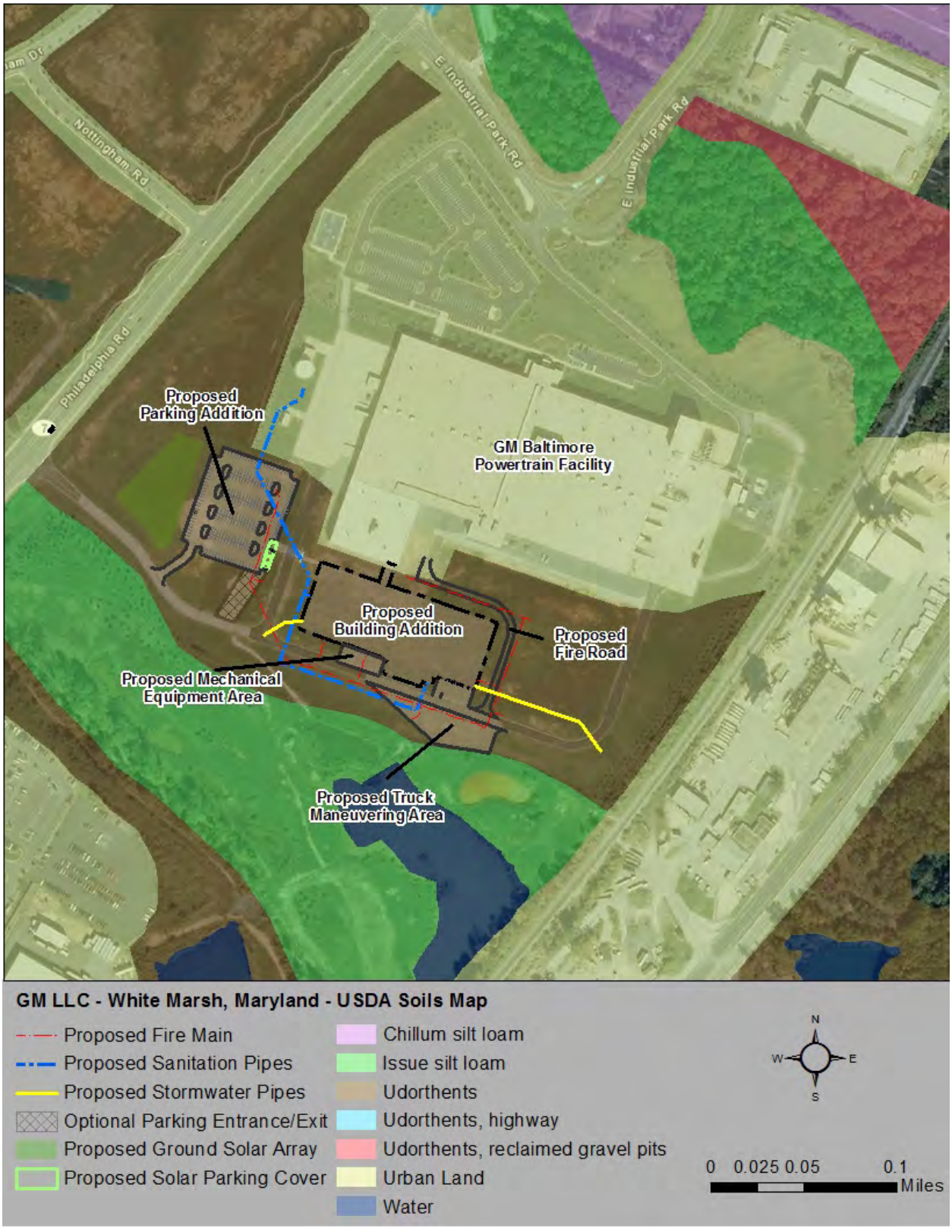


Figure 4.2.1. Soil Map
Sources: (ESRI, 2010; NRCS, 2009)

4.2.2 Effects of GM's Proposed Project

Construction activities would have the greatest potential to generate effects on geological and soil resources. Even with excavations to 15 feet, the proposed construction is limited to surface and near-surface activity that would have no potential to affect minerals and deeper geological strata. Seismic activity in this region is negligible and would be adequately addressed through compliance with local building codes.

Soil loss and erosion are the major geological resources to be considered and managed with this project. Planned BMPs that can effectively prevent major effects to this resource include stormwater training for onsite personnel, use of erosion control blankets where soil would otherwise be exposed, and avoidance of excessive soil stockpiling where soil is exposed to wind and rain. Other planned BMPs are a sediment settling basin as part of the run-off control program, use of water and dust palliatives on soils that are temporarily exposed to erosive elements, and proper use of temporary or permanent landscaping that would hold soils in place and prevent unwanted soil movement (DOE, 2010). Soil would be stockpiled and reused after the fire mains, sewer, and stormwater pipes as well as underground power cables were installed (Seibert and Walker, 2011). The areas that are not converted to impervious surface would be reseeded and returned to the manicured lawn (GM, 2011b). This would reduce soil erosion and impacts.

Operation activities would have negligible impacts to soils and geology because the activities would occur in buildings or on impervious surface of a parking lot, gazebos, truck turnaround, mechanical equipment area, or sidewalk.

Changes in geological or soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time, as provided for in permit conditions for the project; therefore, the projected impact to geology and soils would be less than the significance threshold.

4.2.3 Effects of No-Action Alternative

Under the no-action alternative, none of the proposed construction activities or the operation activities would occur. The absence of construction or operation activities would cause no effects on this resource.

4.2.4 Cumulative Effects

The installation of the solar panels on the roof of the proposed building and over some of the proposed parking lot would have negligible impacts to soils and geology because they would occur on impervious surface. The installation of these panels may require some construction equipment on soils, and the related power cables would be buried in the near-surface soil (Seibert and Walker, 2011). These activities would be limited in extent and would be of short duration. Following all applicable BMPs to minimize soil erosion would cause negligible impacts. The solar panels in the field west of the proposed parking lot would have similar effects except that

these may occur on a manicured lawn or gravel, which could reduce compaction impacts. The potential bus stop with a shelter would be a small soil disturbance. This would also follow all applicable soil BMPs. Therefore, these reasonably foreseeable future projects when added to GM's proposed project would result in impacts less than the significance threshold. The cumulative impacts of implementing the no-action alternative, which would only include the related projects (see Section 1.4) and existing facility, would result in less overall soil disturbance than GM's proposed project.

4.3 Water Resources

4.3.1 Description

The project site lies within the Bird River watershed in eastern Baltimore County. The watershed's major tributary, White Marsh Run, passes within 0.25 miles southwest of the project site before it enters Bird River just east of Route 40 at Ebeneezer Road. The community of White Marsh is one of the original designated growth areas of Baltimore County. The area was targeted for intensive residential, commercial, and industrial development and currently clusters of financial, insurance and health care operations, light manufacturing, technology, and distribution surround the town center (BALCO, 2011).

The Bird River watershed was also targeted for the County's first comprehensive watershed plan, which was completed in 1995. To date, over five miles (eight km) of stream restoration have been completed on the main stem and tributaries of White Marsh Run and Honeygo Run. In addition, numerous water quality retrofit projects have been implemented in this watershed as well as the dredging of Bird River and Railroad Creek (BALCO, 2011). The nearest impaired body of water is Big Piney Reservoir, which is 1.44 miles northeast of the proposed building (USEPA, 2010a).

GM would utilize public systems for water supply and wastewater disposal. The current wastewater pretreatment permit WWDP #1567 covers discharges arising from activities associated with the proposed project. Pretreatment of wastewater would be performed before it enters the public wastewater collection system. Operational wastewater discharges are estimated to be 1,040 gallons per day (gpd) non-contact cooling water, 1,490 gpd of process water, and 2,870 gpd of sanitary sewage and/or grey water (GM, 2011d). The project would utilize 25% of existing facility floor space, so water surplus from the displaced functions would reduce the new project demand.

The project proponents would also implement erosion control measures during and after construction, and the construction contractor would be responsible for obtaining and complying with all permits including erosion control and stormwater management for construction, if required (Seibert, 2011d). Collected stormwater comes from the parking lot's stormwater sewers and from stormwater roof drains and are conducted via the dedicated stormwater/sewer system to one of two existing stormwater retention basins (Seibert, 2011e). These stormwater basins are designed to retain the initial run-off from the beginning of a rain event. They act as settling basins for any particulates entrained in the stormwater run-off. Once the ponds exceed their capacity, the excess water spills out of the ponds via the designed overflow weirs that eventually

connect to Waters of the U.S. (Seibert, 2011f). This discharge is managed through GM's NPDES permit (Seibert, 2011d).

There would be new underground storm sewer pipes installed to take the new roof drainage as well as from the parking lot into the existing nearby storm sewer (Seibert, 2009; Seibert, 2011e). The project would utilize existing storm sewers and two retention ponds onsite (Seibert, 2009). The new sewer lines and fire mains connecting to the existing infrastructure would also be installed to service the proposed facilities (GM, 2011b). The existing conditions were designed and installed based on a larger footprint than exists today (including the proposed project), so the systems have capacity remaining (Seibert, 2009; Seibert and Walker, 2011).

4.3.2 Effects of GM's Proposed Project

Both construction and operation activities have the potential to affect water resources in the project area. During the construction and operations phases, erosion control measures are planned in compliance with local regulations, reducing the risk of contamination from run-off. The return of disturbed areas to manicured lawn would also reduce run-off potential.

Infrastructure capacity is sufficient for water supply, stormwater treatment, and onsite pretreatment of wastewater prior to discharge to a public system (Seibert and Walker, 2011). The project would not require GM to revise any water or sewage permits or contracts including the NPDES, so no substantial change in water quality or quantity of run-off would be expected (Seibert, 2011b; Seibert, 2011d). Additionally, it is expected that no new types of contaminants in the wastewater would be additions to the current discharges to the publicly owned treatment works (Seibert, 2011b). Since water supply, stormwater, and wastewater treatment would be accomplished through properly sized public and onsite systems, any potential concerns with groundwater sources and unregulated waste disposal are avoided. Big Piney Reservoir would not receive any stormwater discharges. The operational activities would also occur indoors or on impervious surfaces that would be channeled to the stormwater system, which would minimize impacts to run-off with implementation of BMPs. Contamination from accidental spills would be minimized by following applicable regulations and BMPs.

Slight changes to surface water quality or hydrology are confined to the immediate project area. Full recovery would occur in a reasonable time, as provided for in NPDES permit conditions for the project; therefore, the projected impact from the proposed project would be less than the significance threshold.

4.3.3 Effects of No-Action Alternative

Under the no-action alternative, none of the proposed construction activities or the operation activities would occur. The absence of construction or operation activities would cause no effects on this resource.

4.3.4 Cumulative Effects

The roof and parking lot solar panels would be placed on planned impervious surfaces of GM's proposed project, so impervious surface increases and related run-off impacts would be reduced. If the ground-mounted solar panels were placed on impervious surface, this would represent a negligible increase in impervious surface. Some water would be needed for solar panel maintenance, but this would be minimal compared to the current and planned manufacturing activities. The solar panel cleaner would be biodegradable (Walker, 2011). The bus stop shelter would represent a negligible increase in impervious surface. All of these activities would not represent a major hydrological or surface water quality change given the small sizes and existing onsite water quality infrastructure, such as retention ponds. All of the activities would adhere to applicable regulations and follow BMPs to reduce impacts. Thus, the impacts from the related projects would be less than the significance threshold. The cumulative impacts of these projects when added to GM's proposed project would not exceed the significance threshold.

4.4 Wetlands and Floodplains

4.4.1 Description

Wetlands and floodplains exist near the project site (Figure 4.4.1). The construction would occur within the existing footprint of the GM property. No wetlands on a National Wetlands Inventory (NWI) exist in the proposed project footprint, but some lakes and ponds are nearby (USFWS, 2010). Previous permitted filling activities have brought the GM facility including the proposed project area out of the 100-year floodplain. Thus, the 100-year floodplain is outside the ring road (Seibert, 2011b; USACE, 1997; USACE, 1998; GM, No date). All project activities would be kept out of the 100-year floodplain (GM, 2011b). However, the project's sidewalk with no curb, some of the underground pipes, and parking lot would be in the 500-year floodplain.

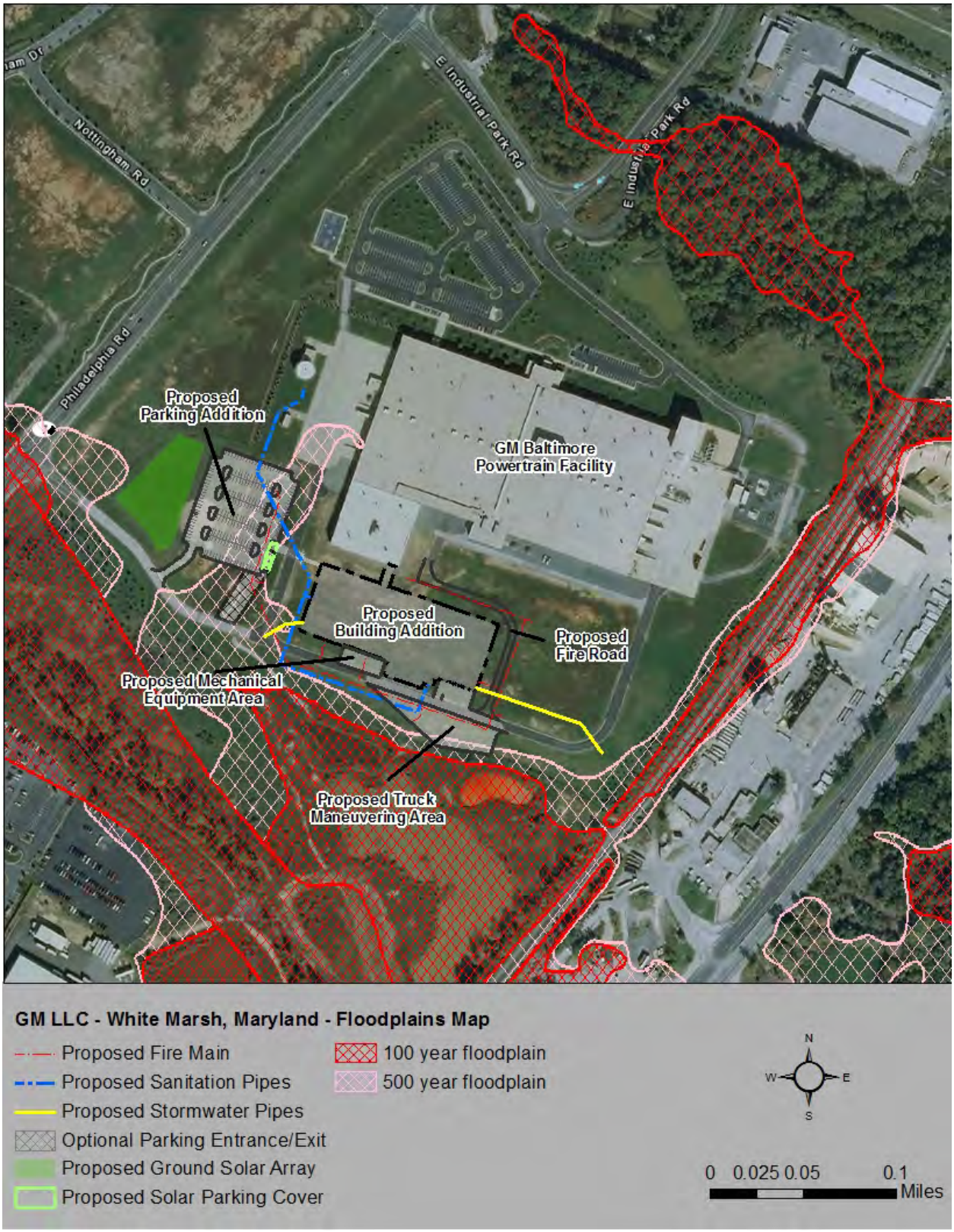


Figure 4.4.1. Wetlands and Floodplains
Sources: (ESRI, 2010; USFWS, 2010)

4.4.2 Effects of GM's Proposed Project

Based on the previous wetland permits, no wetlands are in the project area (USACE, 1997; USACE, 1998). BMPs should be implemented to avoid run-off into the nearby lakes. Earthmoving activities and project components, such as the gazebos, would not be in the 100-year floodplain. Some portions of the pedestrian sidewalk with no curb, parking lot, and the sewer, fire main, power cables, and stormwater pipes would be in the 500-year floodplain. The truck turnaround was relocated to avoid the 500-year floodplain, but the sidewalk cannot be and still perform its function of connecting the parking lot and the proposed building. Since the sidewalk would be small and would have no curb, this addition to the 500-year floodplain is not anticipated to have more than negligible impacts to the function of the floodplain. The infrastructure pipelines would cross the 500-year floodplain to connect to the existing infrastructure, such as the wastewater pretreatment system. The pipelines should not measurably affect the 500-year floodplain's functioning because the pipelines would be underground and the area would be returned to the existing grade present at the site (Walker, 2011). The parking lot location reduces the impervious surface necessary for the sidewalk and its run-off would be diverted to the existing stormwater basins, which would reduce flooding risks.

A consultation letter was sent to Federal Emergency Management Agency (FEMA); however, Baltimore County's Department of Public Works has jurisdiction over floodplain impacts (McManus, 2011) (Appendix D). Baltimore County's Department of Public Works stated its ordinance regulates only the 100-year floodplains, but DOE has informed the Department of Public Works of the project changes (Appendix D). With appropriate regulatory compliance and implementation of BMPs, impacts to wetlands and floodplains should be less than the significance threshold.

4.4.3 Effects of No-Action Alternative

Under the no-action alternative, the construction and other project components would not occur. Thus, no impacts to wetlands or floodplains would occur due to lack of the associated earthmoving or ground disturbance activities.

4.4.4 Cumulative Effects

Past activities have altered the floodplains and wetlands in the area, such as filling in the existing property. The proposed project would represent a negligible impact, at most, to floodplains and wetlands due to the size of the proposed activities, lack of these resources in the proposed project footprint, compliance with applicable regulations, and BMPs implementation. None of the planned activities would occur in the 100-year floodplain. The ground-mounted and roof top solar panels would be located out of the 500-year floodplain, but the power cables may transverse the 500-year floodplain. The parking lot solar panels would partially occur in the 500-year floodplain but would represent a minimal impervious surface addition to the proposed parking lot. The total increase in impervious surface from GM's proposed project and these future projects should not affect offsite run-off or flooding given the onsite stormwater system including pipes and retention ponds. The change in runoff is so minimal that GM would not

need to revise the NPDES permit for these activities (Seibert, 2011d). Further, GM is increasing vegetation onsite with tree plantings (GM, 2011e). Therefore, the cumulative impacts of the proposed project and related projects would be less than the significance threshold.

4.5 Terrestrial Vegetation

4.5.1 Description

The open area proposed for the new construction in Maryland was previously disturbed to construct the existing facility, access road, and stormwater retention ponds. GM has maintained the proposed project area as a lawn of turf grasses with some landscaping. The land use for the area that would be impacted is categorized as industrial (See Section 2.5: Land Use). Vegetation in the surrounding wooded areas likely includes poplar (*Populus spp.)*, ash *(Fraxinus spp.)*, oak (*Quercus spp.*), and hickory *(Carya spp.)* trees with possibly some white or loblolly pines (*Pinus strobus* or *Pinus taeda*). Understory shrubs species likely include dogwood (*Cornus spp.*), juniper (*Juniperus spp.*), sumac (*Rhus spp.*), and serviceberry (*Amelanchier spp.*).

Executive Order 13112 - Invasive Species directs federal agencies to make efforts to prevent the introduction and spread of invasive plant species. Invasive species are usually destructive, difficult to control or eradicate, and generally cause ecological and economic harm. A noxious weed is any plant designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property. Maryland's Weed Control Law lists species that may not be grown in the state and must be controlled on both public and private lands. This law is enforced by the Maryland Department of Agriculture and county weed control coordinators. Maryland also restricts the use of certain seeds in grass mixes (MDA, 2009).

4.5.2 Effects of GM's Proposed Project

The White Marsh project would include a new building of approximately 104,000 square feet, a 120,000 square foot parking lot with entrances and exits, an 8,000 square foot fire road, an outdoor mechanical equipment area, a truck widening area, and two gazebos on cider blocks (See Figure 2.1.1-1). Excavation up to 15 feet deep would be required for stormwater drains, sanitation pipes, and a fire main. The project would also include installing near-surface underground power cables to power outside equipment and connect the solar panels to existing infrastructure. This infrastructure would be located adjacent to the existing facility and access road and within the existing developed boundaries of the property (Seibert, 2011a; Seibert, 2011b). Grading the site for construction would impact the maintained landscape and mowed grounds. Disturbed areas around the new facility would be landscaped with native vegetation and seed mixtures approved by the Maryland Department of Agriculture that blends well with the existing landscaping of the site and surrounding areas. There are no plans for nearby forests to be encroached upon in this project. The only trees that may be removed are 'ornamental' trees near the current facility. Trees would be added to the parking lot area following construction (Seibert, 2011b). Disturbed lawn areas would be reseeded following construction. Impacts to vegetation would be minor.

Noxious weeds and invasive plant species often take advantage of disturbed soil conditions. Surface disturbance and construction activities could facilitate the establishment and spread of noxious weeds. Aggressive non-native species could become established if ground disturbance during construction is extensive and lengthy. The construction period is expected to be less than one year (Seibert, 2011b). The size of disturbance for the proposed manufacturing facility and the short length of time before the ground surface is stabilized would minimize the risk of noxious weeds becoming established and therefore any potential impacts would be negligible.

Preventive measures such as monitoring and eradication would be implemented to reduce weeds from emerging after ground disturbance occurs. Any hay bales used to control surface run-off during construction would be certified as free from weed seeds. Heavy equipment transferring among construction sites could also introduce noxious weeds; however, because of the relatively small scale of the proposed facility, it is likely that equipment would mobilize to the site only once, thereby minimizing this risk, though movement and use is at the contractors' discretion (Seibert, 2011b; DOE, 2010). With preventative measures implemented, including those listed above, the risks of introducing and encouraging invasive species should be minimized.

Overall, any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state. Therefore, impacts on terrestrial vegetation would not be expected to exceed the significance threshold.

4.5.3 Effects of No-Action Alternative

Site conditions would remain unchanged under the no-action alternative. The surface soils would not be disturbed for construction, and no impacts to vegetation would occur.

4.5.4 Cumulative Effects

Expansion of industrial development would have a cumulative effect to native vegetation in the area. Potential future projects include a proposed bus stop and solar arrays. The bus stop would negligibly affect vegetation as it is located adjacent to a road in an area with already disturbed vegetation. With GM's proposed project, the solar panels would be mounted on the roof of the proposed building and over some of the parking area as well as possibly some ground-mounted to the west of the proposed parking lot. Under the no-action alternative, the solar panels that would have been on the proposed building's roof and parking lot's carport would be ground-mounted on gravel, grass, or impervious surface depending on weed control decisions (Walker, 2011). The cumulative amount of impervious surfaces would be slightly less under the no-action alternative but with negligible differences in the impact to vegetation. Cumulative impacts from either GM's proposed project or the no-action alternative when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.6 Wildlife

4.6.1 Description

Wildlife that could typically be found in a rural/urban interface area similar to the project area include white-tailed deer (*Odocoileus virginianus),* foxes *(Vulpes vulpes),* rabbits *(Syvilagus spp.),* chipmunks (*Tamias sciurus),* squirrels (*Sciurus spp. and Spermophilus spp.),* skunks (*Mephitis mephitis),* and different species of mice, moles, shrews, and bats. Avian species may include passerines (such as sparrows, bluebirds, waxwings, robins, and orioles), doves, woodpeckers, crows, ravens, and raptors (hawks and owls). With the close proximity to surface water sources (White Marsh Run and stormwater retention ponds), amphibian and reptile species such as turtles, salamanders, and frogs are likely present in the project area.

Most birds are protected by the Migratory Bird Treaty Act that prohibits the destruction of active nesting habitat. The wooded areas to the south and east of the GM facility likely provide habitat for foraging and nesting for various species of birds.

4.6.2 Effects of GM's Proposed Project

Construction activities would occur adjacent to the existing White Marsh facility and access road. Common wildlife species inhabiting or using this area for forage or cover would be displaced and direct mortality of less mobile species could potentially occur. Similar habitat on adjacent wooded and open land provides better habitat and would support the displaced species and thus potential impacts would be negligible. The typical species that could be impacted are widely distributed, and thus loss of some individuals and habitat would not impact the populations throughout their range. Reviews indicate that there are no sensitive or unique habitats that would impacted by this project (GM, 2011d). The Critical Habitat Mapper image shows that there are no critical habitats on or near the site (Figure 4.6.2).

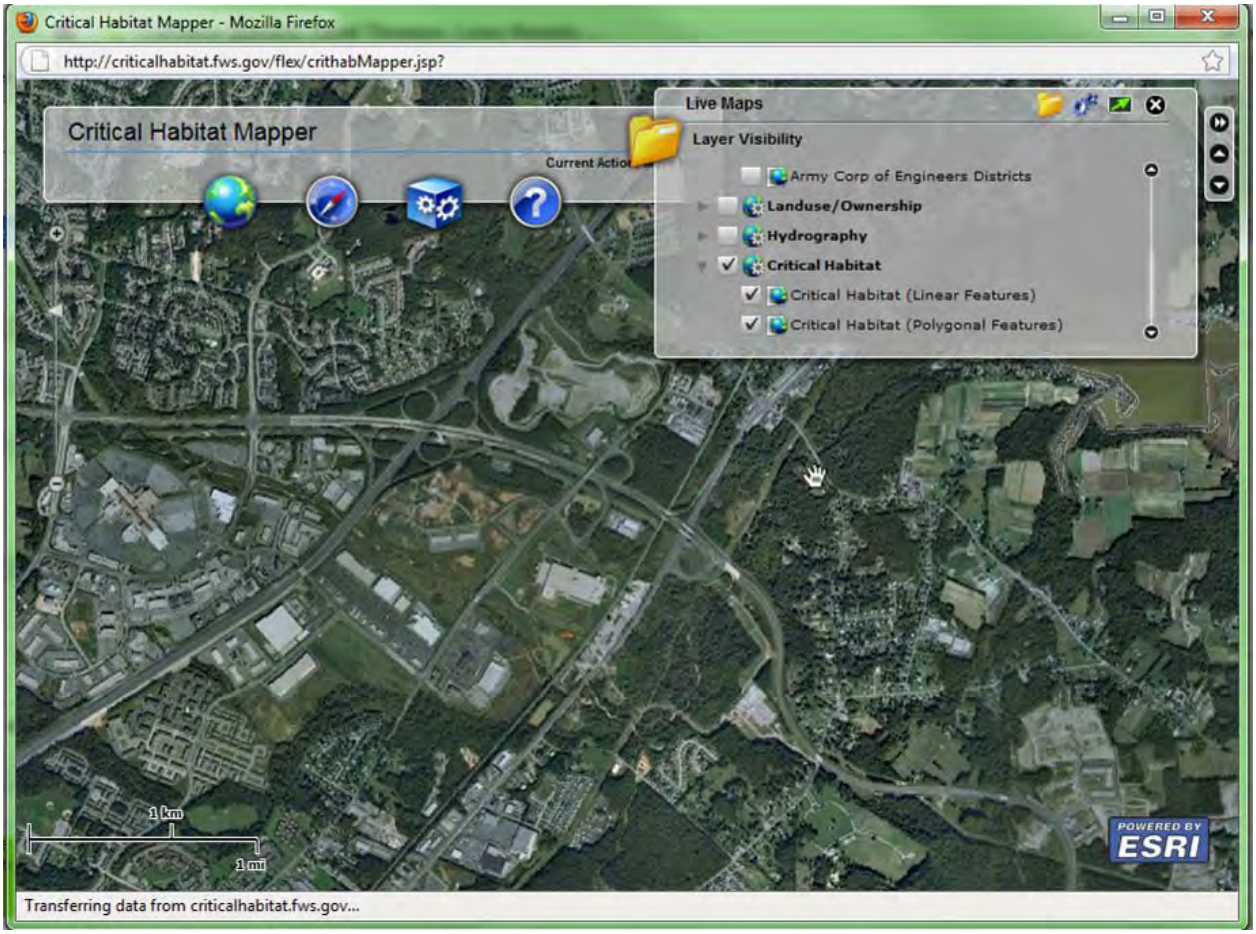


Figure 4.6.2. Map of USFWS Identified Critical Habitats in the White Marsh Site Vicinity
Sources: (USFWS, No date; ESRI, 2010)

Construction activities could disturb any birds foraging, roosting, or nesting in the nearby wooded area and along White Marsh Run; however, potential impacts would be negligible because of distance between the construction site and habitat, and mobility of the species to move away from the disturbance. New trees planted in the parking lot area may help offset disturbances for birds and other wildlife. Additionally, a soil and erosion plan to protect the stormwater retention ponds near the project would be created (Seibert, 2011b). Thus, there would be negligible impacts to existing wildlife due to the small population affected. These impacts are not likely to jeopardize the viability of the resources.

After construction, operations at the White Marsh facility would create noise, vehicle and human traffic, light pollution, and other disturbances that typically impact wildlife. However, the current White Marsh facility and other industrial facilities have been operating at some capacity continuously since 2000 with similar noise, vehicle and human traffic, light pollution, and other disturbances. Any highly sensitive species would have already relocated to habitats that are more appropriate, and other organisms that currently live near the facility have acclimated to the operational impacts of the facility.

Overall, any impacts on wildlife from GM's proposed project would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species' natural state. Therefore, overall impacts on wildlife would not be expected to exceed the significance threshold.

4.6.3 Effects of No-Action Alternative

Under this alternative, GM's proposed project's components would not occur, so they would not disturb habitat or displace wildlife species. Consequently, there would be no impacts to wildlife.

4.6.4 Cumulative Effects

Conversion of open land to industrial development would have a cumulative effect to wildlife species in the area. Potential future projects in the area include a bus stop with a shelter and solar panels. The bus stop would negligibly affect wildlife as it is located adjacent to a road in an area that does not provide good habitat for wildlife species. Under the no-action alternative, the proposed solar panels that would be located on the roof of the proposed building and parking lot would instead be ground mounted on gravel, grass, or an impervious surface depending on the weed management strategy (Walker, 2011). The amount of area disturbed under this alternative would be less than GM's proposed project, and impacts to wildlife species would be negligible and therefore less than significant. Cumulative impacts from GM's proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance.

4.7 Threatened and Endangered Species

4.7.1 Description

A species is listed under the ESA because of danger of its extinction due to economic growth and development, without adequate conservation.

With regard to potential impacts to threatened and endangered species at the proposed Maryland site, the sandplain gerardia (*Agalinis acuta*) is a federally listed plant species known to occur in Baltimore County, Maryland. USFWS listed the species in 1988 as endangered under the ESA. The sandplain gerardia is also listed by the State of Maryland as endangered. The favored growing conditions of the plant are native grasslands on sandy loam, loam, and loamy sand soils (USFWS, 1989). Maryland's single known population grows on a site that has been protected for over 20 years as a state Natural Environmental Area (MDNR, No date).

The bog turtle (*Glyptemys muhlenbergii*), a federally listed reptile, is also known to occur in the county. It was listed as threatened by the USFWS in 1997. Bog turtle habitat includes wetlands and freshwater marshes in northern Maryland counties. The turtles depend on a mosaic of microhabitats for foraging, nesting, basking, hibernation, and shelter (NatureServe, 2009). Larger population sizes in Maryland are associated with circular basins with spring-fed pockets of shallow water, bottom substrate of soft mud and rock, dominant vegetation of low grasses and

sedges, and interspersed wet and dry pockets (NatureServe, 2009). USFWS concluded no federally listed species exist in the project impact area other than occasional transient visitors for which no further consultation is required (Appendix E). DOE is updating the agency regarding the project changes since the consultation.

There are a number of other species found in Baltimore County that have been listed by the State of Maryland as threatened or endangered that are not federally listed (MDNR, 2010). Some of these species and a brief description of their habitat are discussed in Table 4.7.1 below. Many other species listed as threatened or endangered found in Baltimore County have habitats that allow them to be dismissed (Flora of North America, 1993+; NatureServe, 2009). A list of these organisms is found in Appendix F. Habitats that allowed for immediate dismissal are those that are not found on the proposed project site. These habitats include wetlands, aquatic and marine ecosystems, forests, rocky outcrops, and similar habitats. Since these habitats would not be impacted by the proposed project, these organisms would not be impacted. Several organisms did not have habitat requirements listed in any database searched. Given the disturbed nature of this site, it is unlikely that these organisms are present, so these species are listed in Appendix F. Additionally, a consultation letter has been sent to the Maryland Department of Natural Resources Wildlife and Heritage Service, who concluded there are no known state listed species at the site (see Appendix G). DOE is updating the agency regarding the project changes since the consultation.

Table 4.7.1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Considered Further Due to Habitat Considerations

Scientific Name	Common Name	State Status	Habitat
Cicindela patruela	Green-patterned Tiger Beetle	Endangered	Open grounds within woodlands, pine barrens, along trails, on outcrops, etc.
Chenopodium standleyanum	Standley's Goosefoot	Endangered	Shaded wooded areas in disturbed soils
Coeloglossum viride	Long-bracted Orchis	Endangered	Sub-arid soil in damp open woods, frequent in disturbed areas
Lupinus perennis	Wild Lupine	Threatened	Dry, open, sandy woods, clearings with little shade; occurs in disturbed areas
Lygodium palmatum	Climbing Fern	Threatened	Poorly drained, after disturbance
Pycnanthemum torrei	Torrey's Mountain-mint	Endangered	Exposures of xeric, rocky, wooded habitat; dry power line corridors
Spiranthes ochroleuca	Yellow Nodding Ladys' Tresses	Endangered	Open woodlands, outcrops, old fields

Sources: (Flora of North America, 1993; NatureServe, 2009; MDNR, 2010)

4.7.2 Effects of GM's Proposed Project

The known habitats for sandplain gerardia and bog turtles are not on or near the White Marsh project area, and thus, construction and operation activities for the new facility would not affect either species. USFWS concluded no federally listed species exist in the project impact area other than occasional transient visitors for which no further consultation is required (Appendix E).

Several species identified as threatened or endangered by the State of Maryland live in disturbed or modified habitat, so they were further considered for potential impacts. The habitats of *Chenopodium standleyanum, Coeloglossum virid,* and *Lupinus perennis* all include disturbed areas. However, their optimal habitats are also woody. While there are woodlands near the projects, these woody areas would not be impacted by GM's proposed project. Therefore, these three plant species are unlikely to be affected by GM's proposed project.

Lygodium palmatum thrives after disturbance in poorly drained soil. While it is possible that there would temporarily be disturbed, poorly drained soil during construction, this kind of habitat is not currently found on the project site, so it is highly unlikely that this species is present. *Pycnanthemum torrei* thrives in power line corridors, which are a type of disturbed area. However, the open areas on this project site currently consist of a manicured lawn, which is ecologically different from the described habitat of this organism. Similarly, *Spiranthes ochroleuca*'s habitat includes old fields, but the open areas on this site are covered in lawn, which is not likely to be an ideal habitat of this plant. It is not likely that any of these plant species are currently present in this project site or would be impacted by this action.

The habitat of the Green-patterned Tiger Beetle (*Cicindela patruela*) includes open ground. This beetle may live in open ground on the site. However, this habitat description refers to open ground found in within woodlands, pine barrens, or other less disturbed areas. As can be seen in Figure 2.1.1-1, most of the open area in the project site area is manicured lawn. Therefore, it is not highly likely that this site provides habitat for this beetle.

Overall, though there are a large number of species listed as threatened or endangered by Maryland, it is unlikely that this project would impact the habitat or overall population of any of these species. Unless a discovery of previously unknown threatened and endangered species occurs, impacts from this alternative would be expected to be less than the significance threshold.

4.7.3 Effects of No-Action Alternative

There are no known threatened or endangered species or critical habitat in the vicinity of the GM facility in White Marsh, Maryland. Under the no-action alternative, GM's proposed project's components would not be built, and thus, no impacts would occur.

4.7.4 Cumulative Effects

Related projects include solar panels and a bus stop. With GM's proposed project, the solar panels would be mounted on the roof of the proposed building and over some of the parking area as well as possibly some ground-mounted to the west of the proposed parking lot. The panels on the proposed facilities would not harm listed species due to their absence in the project area and the panels being on impervious surfaces. Under the no-action alternative, the solar panels that would have been on the proposed building's roof and parking lot's carport would be ground-mounted on gravel, grass, or impervious surface depending on weed control decisions (Walker, 2011). Both the proposed ground-mounted solar panel area and the proposed bus stop area have previously been disturbed and are currently maintained lawns. Because GM's proposed project would have no effect to listed species or habitat, it would not contribute to any cumulative effects on the species due to loss of potential habitat from other development in the project area. Although under the no-action alternative the proposed solar array would be ground mounted, the disturbed area would be less than that under GM's proposed project. Because none of the areas disturbed in GM's proposed project or related projects include likely habitat for threatened and endangered species, cumulative impacts would be negligibly adverse with a no effect determination and are not expected to exceed the threshold of significance.

4.8 Socioeconomic Resources

Socioeconomic factors describe the local demographics, economy, and employment that could be influenced by GM's proposed project.

4.8.1 Description

Because the 2010 Census data will not be available until 2012, the 2005-2009 American Community Survey 5-Year Estimates are the most recent reliable information. White Marsh, MD is an unincorporated community and a census-designated place in Baltimore County, MD, with roughly 9,103 residents (Census, No date[a]). It is a relatively new community, being formally designated as a town center in the Baltimore County Master Plan in 1979 (DOE, 2010).

Almost a third (28.1%) of White Marsh's population works in educational services and health care and social assistance industry. Only 6.3% work in construction, and manufacturing employs 5.6% of White Marsh's population (Census, No date[d]). The most current unemployment data is only available down to the Baltimore metro area level. The Baltimore, Maryland metro area had a preliminary (not seasonally adjusted) unemployment rate of 7.3% in May 2011, below the national average of 8.7%, but slightly higher than the Maryland rate of 6.8% (BLS, 2011a; BLS, 2011b).

4.8.2 Effects of GM's Proposed Project

This section addresses the potential for positive and negative socioeconomic impacts that might occur in the local community.

GM's proposed project would involve constructing a building of approximately 104,000 ft^2, a parking lot of approximately 120,000 ft^2, a truck turnaround area, mechanical equipment yard, and a small pedestrian sidewalk with no curb as well as installing infrastructure pipelines, and two gazebos in a period of 11 months in White Marsh to house its electric motor component production facility.

The electric motor component manufacturing process would initially be developed and validated at the Wixom Validation Center, which was analyzed in the 2010 EA (DOE, 2010). Then, the hybrid and electric drive unit component manufacturing and assembly process, including electric motor components, would be designed and validated to meet the production target. Machine, tooling, and equipment requirements would be specified, and vendors would be selected. The factory floor in the electric motor component production facility would be designed for the most efficient implementation of the manufacturing process. The existing 2-mode drive unit component manufacturing area would be adapted for production of components (DOE, 2010). A new hybrid and electric drive unit assembly area would be designed within the footprint of the same facility. GM's proposed project would generate minor beneficial increases in economic activity in the following ways:

(1) The construction of the White Marsh facility is expected to create approximately 50 FTE construction jobs over the 11 months of construction. The total project estimate is $25 million with 55% or $13.75 million being labor costs (Seibert, 2011a; Seibert, 2011b).

(2) Once operational, the White Marsh facility is expected to produce about 200 FTE operational positions (Gieseking, 2011a). The addition of 200 permanent manufacturing jobs to the community would have a minor beneficial impact on economic activity in the region, as the salaries and wages paid to facility staff flow through the local and regional economy in the purchase of goods and services.

(3) The sale of manufactured products creates employment both "backwards"—in mining and construction—and "forward", in the transportation, finance, and wholesale trade sectors. The U.S. Department of Commerce estimated that every dollar in final sales of manufactured products supports $1.40 in other sectors of the economy (TMI, 2009).

GM anticipates that both the temporary construction jobs and the ongoing operation jobs could be filled from local or nearby communities. Otherwise, the workers would come from different counties or even states (Gieseking, 2011b). Even if all 200 workers came from outside of the community, they would represent approximately a two percent increase in population. Thus, the influx should be able to be accommodated by the White Marsh area without strain. This would include finite community resources, such as schools, housing, health facilities, or law enforcement capabilities. Therefore, the impacts from implementing this project would be beneficial but less than the significance threshold.

4.8.3 Effects of No-Action Alternative

If the construction facility were not built, the opportunity to create short-term construction jobs, long-term manufacturing jobs, and the benefits of resulting economic activity would be lost. This alternative would represent a lost opportunity for a relatively small number of jobs and income in the community, which would not worsen current conditions. Therefore, the impacts would be less than the significance threshold.

4.8.4 Cumulative Effects

GM's proposed project would not add to local economic development pressures in White Marsh, since the new facilities are proposed within the existing GM property footprint. In addition, incremental cumulative economic impacts are unlikely because GM's proposed project is not large enough to result in enough increased demand for goods and services that would trigger further economic development. The installation of no more than 5,200 solar panels total would represent a negligible and temporary demand for the manufacturing of the panels and negligible jobs for the installation and maintenance. The bus stop with shelter would similarly represent a negligible and temporary demand for construction and negligible demand for operation given the project size and since a bus stop exists down the street, which means a new bus route would not be required. Thus, the related projects would represent a minimal, at most, cumulative impact, so the cumulative impacts of the no-action alternative would be less than the significance threshold even with the small lost opportunity of jobs from not implementing GM's proposed project. Therefore, the cumulative impacts of GM's proposed project with other past, present, and reasonably foreseeable future projects would be expected to be less than the significance threshold.

4.9 Infrastructure/Utilities

Characterization of the infrastructure and utilities within the project area focuses on the ability of these elements to serve existing demand as well as any increase that may result from implementation of GM's proposed project.

4.9.1 Description

Traffic in White Marsh is generated primarily by personal operating vehicles. However, the proposed location also has direct access to Maryland Transit Administration (MTA) bus routes on Philadelphia Avenue and White Marsh Boulevard. Regional access to White Marsh is provided by Interstate-95 (I-95) traveling north to south between Wilmington, Delaware and Baltimore, Maryland approximately one-half mile west of the site. Once entering the area, travelers would approach the site most efficiently via Route 43 that exits directly onto Philadelphia Avenue and into the existing GM facility. Depending on their point of origin, travelers could approach via Route 40 from the south, or via Whitemarsh Boulevard from the east and west. The existing facility has electrical transmission lines, potable water utilities, and sewage access.

4.9.2 Effects of GM's Proposed Project

Short- and long-term minor adverse effects on transportation, infrastructure, and utilities would be expected from implementing GM's proposed project. The changes would be due to construction vehicles and small changes in localized traffic patterns from the additional personnel. The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area; therefore, the impact would be less than the significance threshold.

Traffic would increase because of additional construction vehicles and traffic delays near the construction sites. These effects would be temporary in nature and would end with the construction phase. The local roadway infrastructure would be sufficient to support any increase in construction vehicle traffic. Such effects would be minimized by placing construction staging areas where they interfere with traffic the least. All construction vehicles would be equipped with backing alarms, two-way radios, and Slow Moving Vehicle signs when appropriate.

Access to the site would be limited to a single entrance/exit from Philadelphia Road (Route 7), which would result in effects that are more noticeable on streets near the site than on any of the regional roadways. GM's proposed project would introduce approximately 200 permanent employees at the proposed hybrid and electric drive unit facility. These personnel would constitute approximately 700 more vehicle trips per normal weekday, and fewer on the weekend (ITE, 2003). There would be a small increase in public bus use on routes servicing the facility. No changes in rail or air traffic would be expected. Parking would be adequate for the additional personnel.

Only a fraction of the new vehicle trips would occur during peak traffic periods. These small increases in traffic would not affect the capacity of any nearby roadway segments or intersections. These effects would be minor. Moderate changes in the number of additional personnel would not substantially change the number of daily trips, the times of travel, or the level of impact under NEPA.

The site would require substantial utility upgrades and services to support the proposed facilities; primarily electrical, water, and sewage. Baltimore County provides service and information to residential and commercial customers through the county Public Works department. Baltimore County Bureau of Utilities is made up of four divisions: Sewer, Water, and Storm Drain; Pipeline Maintenance Division; Pumping & Treatment Division; and Engineering and Regulations Division (Baltimore County, 2010). In the final design stages, all utility upgrades would be reviewed carefully to ensure compatibility with the site as well as local zoning ordinances. There would be limited potential to alter or disturb power or other infrastructure services to the area because of GM's proposed project. These effects would be minor and below the threshold of significance.

4.9.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no impact to infrastructure and utilities. No construction or changes in facility operations would take place. Conditions would remain unchanged when compared to existing conditions (Section 4.9.1).

4.9.4 Cumulative Effects

Cumulative impacts would not be anticipated with GM's proposed project. There are no planned or reasonably foreseeable actions, which when added to the effect of GM's proposed project, would substantially change local road use or traffic patterns. There would be limited potential to alter or disturb power or other infrastructure services to the area as a result of GM's proposed project. Cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimal and not expected to exceed the threshold of significance. In addition, no projects or proposals, including the proposed solar panels and bus stop, have been identified that when combined with the GM's proposed project would increase the effects to exceed the significance threshold.

4.10 Noise

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. A-weighing, described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate levels in dBA are provided in Table 4.10.

Table 4.10. Common Sounds and Their Levels

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: (Harris, 1998)

The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant, so a noise metric, day-night sound level (DNL) has been developed. DNL is defined as the average

sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. In addition, equivalent sound level (L_{eq}) is often used to describe the overall noise environment. L_{eq} is the average sound level in dB.

The Noise Control Act of 1972 (Public Law 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

4.10.1 Description

The State of Maryland's Environmental Noise Act of 1974 limits both the overall noise environment and the maximum allowable noise level in residential, industrial, and commercial areas (Table 4.10.1-1). In addition, a person may not cause or permit noise levels emanating from construction or demolition site activities that exceed 90 dBA during daytime hours (7 a.m. to 10 p.m.). Baltimore County maintains a nuisance noise ordinance; however, it does not specifically outline not-to-exceed noise levels or standards (Baltimore County, 2011).

Table 4.10.1-1. State of Maryland Overall Environmental Noise Standards

Day/Night	Industrial	Commercial	Residential
Maximum Allowable Noise Level (Lmax)			
Day	75	67	65
Night	75	62	55
Overall Environmental Noise Standards			
24-hour	$L_{eq} > 70$	DNL > 64	DNL > 55

Source: (COMAR, Title 26.02.03)
Note: Daytime construction noise limits are 90 dBA for all land use categories, and the symbol ">" means greater than.

Existing sources of noise near the site include highway and local road traffic, rail traffic, high altitude aircraft, and natural noises such as leaves rustling and bird vocalizations. The site is one-half mile west of I-95 and is adjacent to a major north-south rail corridor. There are no nearby airfields.

Existing noise levels (DNL and L_{eq}) were estimated for the site and surrounding areas using the techniques specified in the *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present* (ANSI, 2003). Table 4.10.1-2 outlines the closest noise-sensitive areas such as residents, schools, churches, and hospitals, and the estimated existing noise levels at each location. Notably, nearby areas are primarily industrial and commercial, and there are no residences, churches, schools, or hospitals within one-half mile of the site.

Table 4.10.1-2. Estimated Existing Noise levels at Nearby Noise-Sensitive Areas					
Closest noise-sensitive area			**Estimated existing sound levels (dBA)**		
Distance	Direction	Type	DNL	L_{eq} (Daytime)	L_{eq} (Nighttime)
2,600 feet (ft) (780 meters (m))	South	Quiet Urban Residential	55	56	50
3,400 ft (1,000 m)	Southeast				

Source: (ANSI, 2003)

4.10.2 Effects of GM's Proposed Project

Short and long-term, minor, and adverse effects on the noise environment would be expected. Noise levels would not exceed Federal, state, or local noise standards. Minor increases in noise would be primarily from using heavy equipment during construction at the proposed site, and locating some machinery outside the facility.

GM's proposed project would require the construction of new facilities at the proposed site. Individual pieces of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (Table 4.10.2). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. There are no residences closer than 800 feet to the site that would experience appreciable amounts of construction noise. Given the temporary nature of the construction, and the distance to the nearest sensitive receptor, it would have a minor effect and would be below the threshold of significance.

Table 4.10.2. Noise Levels Associated with Outdoor Construction	
Construction Phase	**dBA L_{eq} at 50 ft from Source**
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

Source: (USEPA, 1974)

Although construction-related noise effects would be minor, contractors would limit construction to occur primarily during normal weekday business hours and properly maintain construction equipment mufflers. It is not expected, therefore, that construction noise would violate the state or local noise ordinances. Noise effects on construction personnel could be limited by ensuring that all personnel wear adequate personal hearing protection to limit exposure and ensure compliance with Federal health and safety regulations.

Operational Noise. The proposed facility is in the preliminary design stage. Therefore, a complete equipment list and associated manufacturers specifications are not finalized. Air dryers, centrifugal water chillers, water pumps, cooling towers pumps, cooling towers, and air

compressors would be located outside in the mechanical equipment area (Figure 2.1.1-1). Additionally, air handling units, exhaust fans, air handlers, and air-cooled condensers would be on the roof. All outdoor equipment would be electric, except the air handling units, which would be direct fired natural gas. No internal combustion engines would be located in these areas. All other permanent equipment would be indoors, and none of the indoor equipment's noise would be vented outdoors (Raad, 2011b; GM, 2011b).

GM would evaluate noise control measures to be implemented at the facility to ensure the impacts remained less than significant. Specifically, GM would:

- Design the facility, through building and other equipment specifications (such as silencers, mufflers, engineered sound enclosures, etc.), to reduce overall noise levels as measured at the property line adjacent to residential neighbors or other sensitive receptors, to less than 65 dBA between the hours of 7 a.m. and 10 p.m., or 55 dBA between the hours of 10 p.m. to 7 a.m., and to a level 3 dB less than the State of Maryland Noise Ordinance. In addition, pure tones generated by the facility must be at least 10 dB below the applicable criterion level outlined above.
- Perform a post-construction sound survey at the site. If the noise attributable to the operation of the facility does not meet the design criteria, additional noise controls shall be installed within one-year of the in-service date to meet these levels (GM, 1997).

These mitigation measures would equate to a noise level of 65 dBA DNL, which is the threshold (i.e. absolute minimum recommended) for noise sensitive land uses such as residences. Due to the distance to the nearest sensitive receptor, the use of primarily electric driven machinery, and the implementation of the mitigation outlined above, the GM's proposed project would have long-term, minor, and adverse effects to the noise environment, which would be less than the significance threshold.

4.10.3 Effects of No-Action Alternative

Selecting the no-action alternative would result in no effect on the ambient noise environment. No construction would be expected. Ambient noise conditions would remain as described in Section 4.10.1.

4.10.4 Cumulative Effects

GM's proposed project would introduce short-term incremental increases to the noise environment. These changes would be minor and temporary. In addition, taken as a whole, the cumulative impacts from the proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance. In addition, no projects or proposals, including the proposed solar panels and bus stop, have been identified that when combined with the GM's proposed project would increase the effects to exceed the significance threshold.

4.11 Human Health and Safety

4.11.1 Description

Air pollution causes human health problems. Air pollution can cause breathing problems; throat and eye irritation; cancer; birth defects; and damage to immune, neurological, reproductive, and respiratory systems (USEPA, 2010b). National and state ambient air quality standards represent the maximum allowable atmospheric concentrations that may occur while still protecting public health and welfare with a reasonable margin of safety (See Section 4.1). In addition, OSHA regulations specify appropriate protective measures for all employees.

Spills from the construction of GM's proposed project and its operation could also be a source of possible impacts to human health and safety. Spills can introduce soil contamination and allow exposure pathways to workers and the public. The risks and effects of a spill depend on its composition. Similarly, waste management also is a source of possible human health and safety risks from exposure to contaminants (See Section 4.12).

A primary concern to human health and safety within the project area would be industrial accidents. Although the proposed project would be using innovative technology, the project components' construction and operation would not present unusual risks for the workers due to the BMPs and safety protocols present as well as the similar nature to the tasks already occurring. Thus, the workers on the project would be subject to the same types of health risks that are generally associated with their professions. The most fatalities of any industry in the private sector in 2009 occurred in the construction industry with 834 deaths (BLS, 2010a; BLS, 2010b). The 2009 nonfatal workplace injuries and illnesses rate was 3.6 per 100 equivalent full-time workers. The transportation equipment manufacturing 2009 nonfatal occupational injuries and illnesses rate was 72.8 per 100 equivalent full-time workers (BLS, 2010c).

Before GM allows any new or modified materials on the facility, the site Hazardous Materials Control Committee reviews each chemical and its proposed use, handling, and storage activities. This committee is a cross functional group of site experts typically from safety, environmental, medical, manufacturing, engineering, and representative personnel from the United Auto Workers. This committee reviews proposed materials to be brought onsite to ensure that the site can handle every chemical appropriately, safely, and in compliance with all regulations applicable to the site as well as identifying applicable training to employees and other personnel who would come in contact with these chemicals to ensure that hazards are understood and that the materials are handled in a safe manner while they are present at the site. This is an ongoing safety oversight procedure that would occur for GM's proposed project (Seibert, 2011g).

4.11.2 Effects of GM's Proposed Project

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components facility and assemble hybrid and electric drive units at GM's White Marsh, MD site.

General Motors Company has a global safety program applicable for all its facilities. This program includes a plant safety review board, safe operating practices, periodic safety observation tours, incident investigation, and an employee safety concern process (GM, 2005a). The purpose of these programs is to establish a robust health and safety leadership culture that eliminates or mitigates health and safety risks.

If GM's proposed project were implemented, the equipment and operations used in the project should only present minimal risks to human health and safety when operated under normal conditions and equipment is maintained. Thus, if BMPs, maintenance, and regulations are followed, the equipment should pose little impact to human health and safety. All personnel would be trained regarding the safety measures and procedures (such as handling hazardous materials) associated with the job. All necessary safety equipment would be worn during operating hours or while on the premises. If necessary, the GM safety manual would be updated. Following safety protocols and other necessary measures would minimize occupational hazards.

Indoor and outdoor ambient noise would increase due to the proposed equipment. Noise exposure for the workers would be mitigated through donning appropriate safety equipment. At least annually, GM performs a noise survey of equipment (GM, 2011b). This would determine the worker's noise level exposure and allow for implementing corrective measures to comply with OSHA and other regulations to protect worker's health. Outdoor noise levels would be mitigated to comply with GM's sound level specifications (GM, 1997). During commissioning, the contractor would have to prove to GM that the equipment works to GM's specifications, which includes community sound limits and other GM's noise specifications (GM, 2011b). With these requirements, outdoor noise increases would be expected to be minor (Section 4.10.2). Consequently, the impact to human health and safety from noise would be less than the significance threshold.

GM's proposed project would cause some increase in traffic, which increases the potential for accidents. The White Marsh facility currently has about 200 employees (GM, 2011f). While implementing GM's proposed project would mean that the number of employees would double, the infrastructure could handle the increase in the number of trips from the current level of vehicle activity (See Section 4.9). Because current roads near the site should be able to handle the increase in vehicles associated with this project, the risks of accidents are reduced. Thus, the impact to human health and safety from the increase in transportation is not expected to exceed the level of significance threshold.

Air emissions from GM's proposed project are anticipated to be less than significant (See Section 4.1). Thus, the impacts to human health from air emissions would not be expected to exceed the significance threshold. Following BMPs would reduce any impacts to human health from air quality. Further, workers would follow OSHA procedures, which would further reduce the impact to human health. Therefore, there would be a minimal risk to human health and safety as long as safety procedures are followed.

The soils are not highly erodible (NRCS, 2011b); therefore, water contamination from increased run-off, which could lead to human health and safety risks, is not a major issue. If significant changes were to occur to stormwater run-off, a new or modified NPDES permit would be

required, but this is not anticipated. Further, wastewater would be collected and treated according to applicable regulations and by qualified personnel (See Section 4.3). Therefore, the overall effect of GM's proposed project to surface water quality would not be expected to exceed the significance threshold.

Currently, there are no chemicals planned in GM's proposed project that would need special handling, notification, or permits other than what GM currently manages and has identified during various review and permitting activities (e.g., those required under the CAA, the CWA). Chemicals would be of a similar nature to the ones currently being used. All chemicals would be handled in compliance with all safety and environmental regulations applicable to the site (Seibert, 2011g).

If safety procedures and BMPs were followed, spills and leaks from equipment and processes (other than the hazardous wastes) would be of small volumes as well as nonhazardous and non-toxic. This would represent a low risk to human health and safety. Under normal conditions, hazardous and toxic materials can be used safely when appropriate safety precautions are followed. Some hazardous waste would be created during the project but in quantities small enough to maintain small quantity generator status since Maryland does not recognize conditionally exempted small quantity generators. All generated waste materials would be handled and disposed of in accordance with applicable regulations.

With regard to the handling of hazardous materials, GM effectively controls chemicals and exposure with the GM Hazardous Materials Control Program developed to protect health, safety, and the environment. GM has documented, validated, and fully implemented plans for managing the life cycle of chemicals and materials used in GM manufacturing processes and facilities. This includes procurement, storage, use, disposal, or reuse as well as a plan to limit exposure to hazardous chemicals based on GM Global Air Sampling Plans and Occupational Exposure Guidelines (GM, 2005b).

Elements of the "2005 safety plan," referenced in the 2010 EA (DOE, 2010), would be updated as appropriate with information still pertinent to the GM White Marsh site. For GM's proposed project, the safety plan would be developed (updated to reflect current program requirements) prior to and implemented during the building expansion construction activity (Seibert, 2011g).

The current Baltimore manufacturing facility also has comprehensive detailed safety elements (plan) that must be complied with for manufacturing, maintenance, and other operational activities that occur at the site. These safety requirements would also be applicable to the operations that would occur under this project once manufacturing gets under way (Seibert, 2011g).

Appropriate monitoring equipment and systems that are consistent with all BMPs and regulations would be in place for the materials and wastes produced. This operating procedure would detect leaks and equipment malfunctions to ensure the safety of the workers and enable appropriate early responses to any problems. This would reduce the risk to human health and safety on the site as well as in the local community. As a further precaution, and when necessary as required by regulatory mandate, the local communities and other relevant agencies would be notified of

the materials present so that appropriate emergency plans could be modified. Therefore, risks to human health and safety from chemical handling and wastes would be below the significance threshold.

Facility decommissioning would represent the same types of risks as the operation. Thus, with proper safety procedures, the impact to human health and safety should be minimal. Appropriate BMPs and adherence to regulations would minimize the risks present with project implementation. Therefore, the overall impact to human health and safety would not be expected to exceed the significance threshold.

4.11.3 Effects of No-Action Alternative

Under the no-action alternative, there would be no construction, operation, or decommissioning of GM's proposed project. Thus, none of the risks listed in the previous section would occur, which would mean no impacts to human health and safety. The exception would be the fact that GM's proposed project's purpose, which is to further the research and manufacture of advanced electric drive systems while providing economic stimulation, would not be implemented. EDV technology could result in lower air emissions, which would improve human health and safety. However, many other projects are in operation or being proposed to assist in the EDV technology and stimulate the economy. Thus, all possible issues with delaying the advancement of EDV research and economic stimulation would not be attributable to implementing the no-action alternative (DOE declining to fund GM's proposed project) for this project. Nevertheless, while the no-action alternative does represent some risk to human health and safety through the lack of EDV system manufacturing, impacts to human health and safety from implementing the no-action alternative would be expected to be below the significance threshold.

4.11.4 Cumulative Effects

The installation of solar panels and a bus shelter would have similar construction impacts as described above. Because GM already maintains and operates solar panels on the existing facility, GM's personnel are familiar with the safety requirements of the solar panel maintenance and operation. Further, the solar panel cleaner would be biodegradable, so it would likely be non-toxic, which reduces its risks (Walker, 2011). The bus shelter maintenance and operation would represent typical public transportation risks, which can be minimized through BMPs, such as public safety awareness campaigns about not running after buses. As long as BMPs and applicable regulations are followed, the related projects' risk to human health and safety would be below the significance threshold.

The cumulative impacts of existing activities in and around the project area do not represent a substantial risk to human health and safety with existing and upcoming mitigation and safety procedures in place. Further, GM's proposed project would contribute minimally to cumulative impacts due to the minimal risk to human health and safety with BMPs and mitigation in place. Therefore, the cumulative impacts with implementing GM's proposed project would not be expected to exceed the significance threshold.

Under the no-action alternative, the related projects would still occur, but these would be below the significance threshold. Since the current projects in the area do not pose a substantial risk to human health and safety, the no-action alternative does not represent any additional risks to human health and safety. As described in the previous section, the exception is that not implementing GM's proposed project (thus, implementing the no-action alternative) would have an adverse impact on the progress towards solutions for electric drive system manufacturing and economic stimulus. However, since this is a single project of many, the cumulative impacts to human health and safety for the no-action alternative are not expected to exceed the threshold of significance.

4.12 Waste Management

4.12.1 Description

The GM Baltimore Allison Transmission Plant in Maryland is identified by the USEPA as a conditionally exempt small quantity generator (CESQG) of hazardous waste under identification number MDR000019596 (USEPA, 2011d). In 2009, only one hazardous waste shipment was sent, which was 200 pounds of aerosol cans Manifest #002563125 FLE. Clean Harbors Environmental Services, Inc is the hauler (EPA# MAD039322250). This waste went through the Clean Harbors of Baltimore facility (MDD980555189) and eventually disposed/recycled at Clean Harbors Eldorado LLC (ARD069748192) in Eldorado, Arkansas. Clean Harbors of Baltimore is used by the Baltimore Transmission plant for disposing of hazardous wastes and some non-hazardous waste streams. The present hazardous waste streams are not and should not be associated with GM's proposed project, since Baltimore is in the process of eliminating the use of aerosol cans. Any hazardous wastes generated during the manufacturing of the hybrid and electric drive units would be dealt with upon determination (Seibert, 2010).

The White Marsh facility manufactures vehicle parts and accessories, electrical equipment for internal combustion engines, aluminum die castings, and plastics products. As a CESQG, the facility generates less than 220 pounds (100 kilograms) of hazardous waste per calendar month. The State of Maryland does not have a CESQG status and therefore classifies generators of less than 220 pounds (100 kilograms) hazardous waste per calendar month as small quantity generators (SQG). The waste stream includes used oil filters, waste oil, solvents, and sludge filter media. The White Marsh facility has been operating at reduced capacity since 2007 (GM, 2009). The White Marsh facility does not dispose of any of its production wastes in a landfill; as such, it is a landfill free facility. Most of the non-hazardous materials associated with the GM White Marsh facility operations are recycled (Seibert, 2009).

4.12.2 Effects of GM's Proposed Project

Construction activities present the potential to encounter previously unidentified contaminated soils or groundwater. Based on a database search of known locations of hazardous sources and reported activity near the GM facility at White Marsh (EDR, 2009b), the likelihood of encountering contamination is low and impacts from contaminants expected during construction would be negligible. Small amounts of potentially hazardous waste materials (e.g., waste oils, lubricants, solvents, cleaners, and paints) would be generated during construction, but proper use

and storage of the materials would ensure no impact to workers and the environment. Use or storage of hazardous materials onsite during construction would be in accordance with applicable regulations, and appropriate spill prevention measures would be implemented (See Section 4.11). If hazardous materials are spilled or deposited on the site during or after construction, the responsible party would immediately notify appropriate regulatory parties, take all necessary actions to clean up and properly dispose of the materials, and complete all reporting requirements. The soil, concrete, and other materials would be reused at the site when possible, which would reduce the possible waste stream. Any inert construction debris that could not be reused would be hauled away for a landfill in roll-off boxes (Seibert and Walker, 2011), but the existing infrastructure would be expected to be able to handle this quantity without strain since the minimal landfill waste would be small pieces (Walker, 2011).

Operations at the White Marsh facility are not expected to generate hazardous waste of a different type or amount than what is currently generated or was generated at the facility at full operational capacity, and therefore, no changes to GM's status as a SQG at White Marsh are anticipated. The plant has been operating at a reduced level currently. Operation of the facility proposed in this project is not expected to produce waste levels that would exceed waste levels when the plant was operating at full production in the past. In 2007, the last year in which the facility was operating at full capacity, 700 total tons of solid waste were generated at the site. The solid waste generated from this project would be a portion of the overall solid waste production of the GM facility (GM, 2011d). Minor amounts of hazardous wastes (code D001, which generally are solvents) may be generated at the White Marsh facility from the manufacturing process (GM, 2009), having a negligible impact on accumulation quantities or time limits, or frequency of off-site transport.

Additionally, before any new or modified materials are used or generated on the facility, the site Hazardous Materials Control Committee reviews each chemical and its proposed use, handling, and storage activities. The committee ensures that any new chemical brought onsite is one that the site can handle appropriately, safely, and in compliance with all applicable regulations. However, there are currently no chemicals planned that would require special handling, notification, or permits other than what the facility currently manages.

Increases in office trash are expected with the approximately 200 additional employees expected to operate the new facility at White Marsh. The gazebos would have waste containers (Walker, 2011). Non-hazardous solid waste generated by the new manufacturing process would be approximately 700 tons (635 metric tons) annually from the White Marsh facility (GM, 2011d), similar to historic waste levels. All of the non-hazardous solid waste generated is recycled, and thus, the amount of solid waste requiring disposal by the new development, validation, and manufacturing processes would be a negligible impact on the volume received. The solid waste generated at the White Marsh facility is anticipated to be similar to the amount generated by past manufacturing at full production rates (GM, 2009), and thus, any impact from disposal would be negligible. Any hazardous waste generated during construction or operations would be collected and stored in drums or other Department of Transportation (DOT) approved containers. The operation of this facility would not generate any recyclables, byproducts, and waste materials that are not currently being handled at the site, so it is not expected that new transportation activity or waste disposal plans or processes would need to be developed (Seibert, 2011b). The

wastewater and stormwater systems have excess capacity to handle the increase load from GM's proposed project (Seibert and Walker, 2011). Therefore, overall impacts to waste management from implementing this alternative would be expected to be less than the significance threshold.

4.12.3 Effects of No-Action Alternative

The construction of a new manufacturing facility at White Marsh would not occur under the no-action alternative. There would be no new development, validation, and manufacturing processes affecting the management of existing hazardous and solid waste at these facilities.

4.12.4 Cumulative Effects

Increased manufacturing of parts for electric drive vehicles would have a cumulative beneficial effect on the environment from improved electric drive vehicles due to the creation of fewer wastes than traditional motors. The solar panels and bus stop with shelter would create limited construction wastes given project size, and these wastes would be of similar types to those described above. The maintenance and operation waste of these future facilities would be negligible and nontoxic. The solar panel cleaner would be biodegradable, which would reduce impacts (Walker, 2011). Cumulative impacts from GM's proposed project when added to other past, present, and reasonably foreseeable future actions would be minimally adverse and are not expected to exceed the threshold of significance. The cumulative impact from the no-action alternative would similarly be less than the significance threshold since the related projects would cause minimal impacts.

4.13 Sustainability

EO 13541 on Federal Sustainability issued on 5 October 2009, states in part that it is the **policy** of the Federal government *"to create a clean energy economy"* and that *"Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; ….design, construct, maintain, and operate high performance sustainable buildings in sustainable locations; and strengthen the vitality and livability of the communities in which Federal facilities are located."*

Section 2(f)(iv) of the EO states that each agency shall *"advance regional and local integrated planning by … identifying and analyzing impacts from energy usage and alternative energy sources in all Environmental Impact Statements and Environmental Assessments for proposals for new or expanded Federal facilities under the National Environmental Policy Act of 1969, as amended (42 USC 4321 et seq.)."*

GM's proposed project reviewed by this EA is part of a larger national effort to move this country to a more sustainable future. Efforts are underway to begin the move from non-renewable fuel sources to renewable fuel sources to power our economy. A major part of that non-renewable fuel use is in personal transportation and the use of internal combustion engines

in our automobiles. A shift to electric vehicles can be viewed as viable means to a more sustainable future.

The action proposed and reviewed in this EA is a part of that effort. If initiated, not only would this project assist in the development of the viable use of electric vehicles but also GM would implement specific project designs that would increase the sustainability of the proposed project. For example, it is the intent of GM to add a reclamation system (provides fluid dehydration, filtration, and temperature stabilization) to reclaim synthetic oil from drive unit test stands as an integral part of the project (DOE, 2010).

GM currently has ongoing programs to engineer out waste generation from their products, optimize first time through build quality to maximize manufacturing efficiency, and to minimize environmental impacts on waste, water usage, and utility use (Seibert, 2011b). The GM White Marsh site has been landfill free since 2007, which means that waste that is generated during the routine production process is either recycled or sent to a waste-to-energy plant, and it would continue this status with GM's proposed project (Seibert, 2011b; GM, 2010). The White March facility has reduced its energy usage by 54% since 2003. The site also has an International Organization for Standardization 14001-certified Environmental Management System, which is a system to improve environmental performance of a business. Recently, as an effort to enhance the surrounding area, GM planted 200 trees on the property, which increases the buffer around the facility (GM, 2011e). Further, GM plans to install solar panels on the roof of the proposed building and parking lot as well as possibly west of the proposed parking lot (GM, 2011b). This would reduce the facility's dependence on fossil fuels for energy. GM plans to continue sustainability efforts during the proposed project.

5.0 CONSULTATION AND COORDINATION

A kick-off meeting was held on October 20, 2009, at NETL office in Morgantown, West Virginia, with representatives from NETL and Mangi Environmental Group to begin formally the NEPA for the Electric Drive Vehicle Battery and Component Manufacturing Initiative projects. Subsequent to the determination of a supplemental EA, a review was made of available information necessary for the completion of the EA and data gaps were sent to NETL and General Motors Company. Given the project changes after the late May and early June 2011 public review period, NETL has sent copies of the draft supplemental EA to the agencies listed below to inform them of the project changes.

5.1 Agency Coordination

The CEQ's regulations for implementing NEPA allows federal agencies to invite comment from Tribal, state, and local agencies, as well as other federal agencies in the preparation of EAs. The purpose of this coordination is to obtain special expertise with respect to environmental and cultural issues in order to enhance interdisciplinary capabilities and otherwise ensure successful, effective consultation in decision-making. The below entities were contacted for this effort.

5.1.1 U.S. Fish and Wildlife Service (USFWS)

The mission of the USFWS is to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of American people. Consultation with USFWS also assists with the Endangered Species Act compliance.

See Appendix E for correspondence with this agency.

5.1.2 State Historic Preservation Office (SHPO)

The NHPA requires DOE to consult with the SHPO prior to any construction to ensure that no historical properties would be adversely affected by a proposed project. DOE must also afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project.

See Appendix A for correspondence with this agency.

5.1.3 Bureau of Indian Affairs

The American Indian Religious Freedom Act, 42 USC § 1996, establishes policy to protect and preserve the inherent and Constitutional right of Native Americans to believe, express, and exercise their traditional religions. The law ensures the protection of sacred locations; access of Native Americans to those sacred locations and traditional resources that are integral to the practice of their religions; and establishes requirements that would apply to Native American sacred locations, traditional resources, or traditional religious practices potentially affected by construction and operation of proposed facilities.

See Appendix B for correspondence with the Bureau of Indian Affairs.

5.1.4 Other Agencies

Other consultation letters and responses are in Appendices D and G.

5.2 Public Involvement

The public comment period on the Draft Supplemental EA was May 22 to June 6, 2011. An article informing the public of the availability of the Draft Supplemental EA at the White Marsh Branch Library ran in The Baltimore Sun on May 22, 23, and 24, 2011. DOE received no comments from the public. Due to project changes, a second public comment period was initiated.

6.0 LIST OF PREPARERS

James Mangi: Contract Management, Project Oversight
Meghan Morse: Project Manager; Document/Administrative Record Management; Geology and Soils; Water Resources; Wetlands/Floodplains; Human Health and Safety; Socioeconomics; Waste Management; and Dismissed Sections
Tim Lavallee; Air Quality, Noise, Infrastructure and Utilities
Charlene Mangi; Wildlife, Terrestrial Plants, Threatened and Endangered Species, and Waste Management
Chelsie Romulo; GIS; Wildlife, Terrestrial Plants, and Threatened and Endangered Species

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8.0 GLOSSARY

A-weighted Decibels - An expression of the relative loudness of sounds in air as perceived by the human ear.

Air-Quality Control Region - A contiguous area where air quality is relatively uniform. AQCRs may consist of two or more cities, counties or other governmental entities, and each region is required to adopt consistent pollution control measures across the political jurisdictions involved.

Alluvial Soil - Clay, silt, or gravel carried by rushing streams and deposited where the stream slows down.

Ambient - The natural surroundings of a location.

Anode - The *anode* of a device is the terminal where electric current flows in.

Attainment Areas - A zone within which the level of a pollutant is considered to meet the National Ambient Air Quality Standards.

Barrens - Land with sparse vegetation, often with bedrock at or very near the surface (especially in mountainous states, often populated with scrubby pines).

Best Management Practices - Methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while optimally using the firm's resources.

Cathode - The *cathode* of a device is the terminal where current flows out.

Criteria Pollutants - The Clean Air Act requires USEPA to set standards for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are found all over the United States. They are particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead.

Cumulative Effects - Those effects on the environment that result from the incremental effect of the action when added to past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions.

Day-night Sound Level - The A-weighted equivalent sound level for a 24-hour period with 10 dB added to levels between 10 p.m. to 7 a.m.

dB (Decibel) - A unit of measurement that expresses the magnitude of a physical quantity (usually intensity) relative to a specified or implied *reference level*. The decibel is useful for a wide variety of measurements in science (for this application, it is sound).

Demographics - The characteristics of human population and population segments, especially when used to describe consumer markets.

EA (Environmental Assessment) - A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

EIS (Environmental Impact Statement) - A detailed written statement required by Section 102(2) (C) of the National Environmental Policy Act, analyzing the environmental impacts of a GM's proposed project, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance

and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

Electrolytes - In chemistry, an *electrolyte* is any substance containing free ions that make the substance electrically conductive.

Endangered Species - A species that is threatened with extinction throughout all or a significant portion of its range.

Environmental Justice - The confluence of social and environmental movements, which deals with the inequitable environmental burden borne by groups such as racial minorities, women, or residents of developing nations.

Equivalent Sound Level - The level of a steady-state noise without impulses or tone components that is equivalent to the actual noise emitted over a period of time.

Estuaries - Part of the seacoast over which the tide ebbs and flows, an inlet or arm of the sea; especially the wide mouth of a river, where the tide meets the current.

Fen - A general term used in reference to habitats that are fed throughout the year by a flow of water at or just beneath the surface.

Floodplain - The lowlands and relatively flat areas adjoining inland waters, including flood prone areas, which are inundated by a flood.

FONSI (Finding of No Significant Impact) - A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).

Hazardous Waste/Materials - Waste substances that can pose a substantial or potential hazard to human health or the environment when improperly managed.

Hertz - A unit of frequency equal to one cycle per second.

Humus - The organic component of soil, formed by the decomposition of leaves and other plant material by soil microorganisms.

Impaired Body of Water - This is a stream, lake, or other waterbody that does not meet one or more of USEPA's water quality standards for its designated uses. Consequently, this body of water would be on the CWA's Section 303(d) list for impaired bodies of water.

Invasive Species - An alien (nonnative to the ecosystem) species whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Ions - An *ion* is an atom or molecule where the total number of electrons is not equal to the total number of protons, giving it a net positive or negative electric charge.

Lithium - A soft, silver-white metal that belongs to the alkali metal group of chemical elements.

Marsh - An area of low-lying land that is flooded in wet seasons or at high tide, and typically remains waterlogged at all times.

Mitigation - Methods or actions taken to improve site conditions by limiting, reducing or controlling adverse impacts to the environment.

NAAQS (National Ambient Air Quality Standards) - Standards established by the USEPA that apply to outdoor air throughout the country. Primary standards are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease.

National Emissions Standards for Hazardous Air Pollutants - Emissions standards set by the USEPA for an air pollutant not covered by NAAQS that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness.

Native - A species that historically occurs in an area or one that was not introduced (brought) from another area.

NEPA (National Environmental Policy Act) - Requires all agencies, including Department of Energy, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500).

New Source Performance Standards - Pollution control standards issued by the USEPA. The term is used in the Clean Air Act to refer to air pollution emission standards, and in the Clean Water Act referring to standards for discharges of industrial wastewater to surface waters.

Nonattainment Areas - A locality where air pollution levels persistently exceed national standards or that contributes to ambient air quality in a nearby area that fails to meet standards.

Nonpoint Source Pollution - Water pollution affecting a water body from diffuse sources, rather than a point source that discharges to a water body at a single location.

NPDES (National Pollutant Discharge Elimination System) - The national program for administering permits (and pretreatment requirements) under sections 307, 402, 318, and 405 of the Clean Water Act. The term includes state or tribal" approved programs."

Overburden - The term used in mining and archaeology to describe material that lies above the area of economic or scientific interest.

Particulate Matter - Small solid particles and liquid droplets in the air.

Peat - A brown, soil-like material characteristic of boggy, acid ground, consisting of partly decomposed vegetable matter.

Physiographic - Pertaining to the science of physical geography.

PM_{10} - Particulate matter less than 10 microns in diameter.

$PM_{2.5}$ - Particulate matter less than 2.5 microns in diameter.

Potential to Emit (PTE) - The maximum amount of air contaminants that your source could emit if each process is operated at 100% of its design capacity; each process operated 24 hours/day, 365 days/year; materials that emit the most air contaminants are materials that emit the most air contaminants are used or processed 100% of the time; and air pollution control equipment is turned off.

Prime Farmland - Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oil seed crops and is available for these uses. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Reclamation - The process of reclaiming something from a loss or more useful condition

Refurbishment - The process of major maintenance or minor repair of an item, either aesthetically or mechanically.

Retrofit - To adapt to a new purpose or need.

Savannah - A temperate grassland with scattered oaks.

Scrub - Vegetation consisting chiefly of stunted trees or shrubs.

Sedimentary - Formed by the deposition of sediment, as certain rocks.

Serpentine - Derived from ultramafic rocks, in particular serpentine, a rock formed by the hydration and metamorphic transformation of ultramafic rock from the Earth's mantle.

Silt - Fine sand, clay, or other material carried by running water and deposited as a sediment, especially in a channel or harbor.

State Implementation Plan - The state plan for complying with the federal Clean Air Act. A SIP consists of narrative, rules, technical documentation, and agreements that an individual state will use to clean up area not meeting the National Ambient Air Quality Standards.

Sustainability - The capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time

Threatened Species - A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Vernally - occurring in the spring.

Waters of the U.S. - Surface bodies of water protected by the CWA as defined by 40 CFR 230.3(s) including navigable waters.

Weir - A small dam.

Wetland - Area inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Xeric - Containing little moisture; very dry.

APPENDICES
Appendix A SHPO Consultation

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

MDP

PROJECT REVIEW FORM

Request for Comments from the Maryland Historical Trust/ MDSHPO on State and Federal Undertakings

MHT USE ONLY
Date Received: Log Number:

Print Form

Section A: General Project Information — **Submit hard copy of form and all attachments to: Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032**

Project Name: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electri | County: Baltimore County

[x] This is a new submittal **OR** This is additional information related Project Log Number:

Section B: Primary Contact Information

Contact Name: Pierina Fayish | Company/Agency: U.S. Department of Energy

Mailing Address: Office: 922-M-218 Mail Stop: 922-M217 626 Cochrans Mill Road P.O. Box 10940

City: Pittsburgh | State: Pennsylvania | Zip: 15236

Email: Pierina.Fayish@NETL.DOE.GOV | Phone Number: +1 (412) 386 5428 | Ext.

Section C: Description of Undertaking

Location - Attach a map, preferably a section of a USGS quad, showing the location and boundaries of the project

Address: 10301 Philadelphia Road | City/Vicinity: White Marsh

List all federal and state agencies / programs (funding, permits, licenses) involved in this project (e.g. Bond Bill Loan of 2009, Chapter #; Transportation Enhancement Grant; HUD/CDBG; MDE/COE permit; etc.).

Agency Type	Agency/Program/Permit Name	Project/Permit/Tracking Number (if applicable)
Federal	Department of Energy, NETL	Transportation Electric Drive Vehicle Battery

Proposed Work - Attach project description, scope of work, site plans / drawings

This project includes (check all applicable): [x] **New Construction** [ ] **Demolition** [ ] **Remodeling/Rehabilitation**

This project involves: [ ] **State or Federal Rehabilitation Tax Credits**
[ ] **Properties subject to an easement held by MHT, MET, or another entity**

Section D: Identification of Historic Properties

This project involves: [ ] **Properties designated as historic by a local government, listed in the National Register, or included in Maryland Inventory of Historic Properties**

Property/District Name:

The subject property [ ] **has** [x] **has not** been the subject of previous archeological, architectural, or historical investigations.

Please describe:

Attachments [x] **Map** [x] **Project Description/Scope of Work** [x] **Site Plans/Drawings**

[x] **Photographs** - Attach prints or digital photographs showing the project site including images of **all** buildings and structures, preferably keyed to a site plan

[x] **Conditions** - Attach a brief description of past and present conditions of the project area (wooded, mined, developed, agricultural uses, etc) including construction dates of buildings, if known.

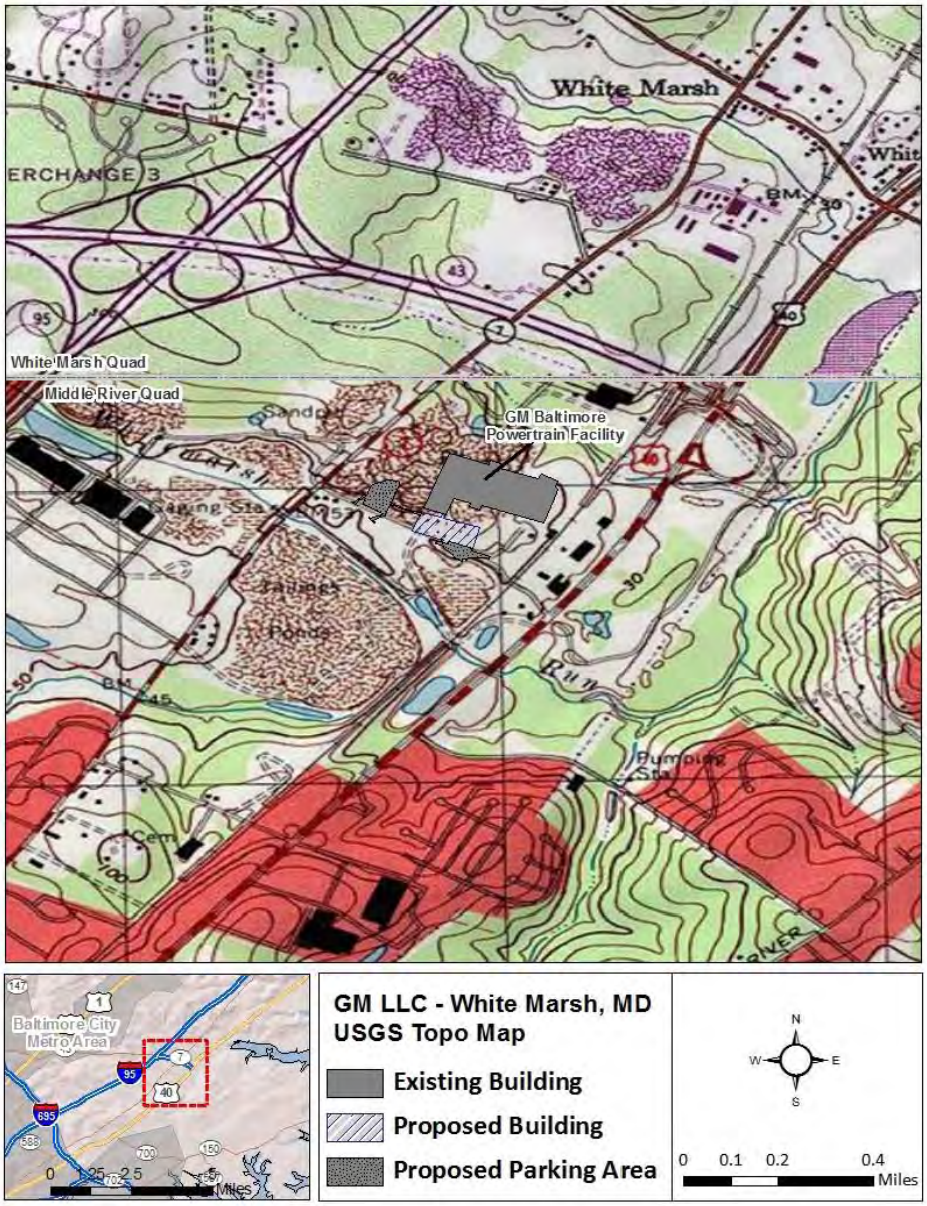
MHT Determination MHT Reviewer: Date:

[ ] There are **NO HISTORIC PROPERTIES** in the area of potential effect
[ ] The project will have **NO EFFECT** on historic properties
[ ] The project will have **NO ADVERSE EFFECT** on historic properties
[ ] The project will have **NO ADVERSE EFFECT WITH CONDITIONS**
[ ] **MHT REQUESTS ADDITIONAL INFORMATION**
[ ] The project will have **ADVERSE EFFECTS** on historic properties

Page 1 of 8

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Map:



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Project Description

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE selected for funding under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The previous proposal under the same project name had project number 200904598 and received "no historic properties affected" determination from your office on January 7, 2010.

The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in the following site drawings as well as the above figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

DOE is requesting information or concerns you may have on properties of traditional, religious, or cultural significance in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (EA) and fulfillment of its responsibilities under Section 106 of the National Historic Preservation Act.

As designed, the proposed project would avoid any disturbance to known cultural or archeological sites. If any cultural materials were to be discovered during the construction phase of the project, all work would cease until the Maryland Historical Trust is contacted and corrective measures implemented.

DOE will provide you a copy of the Draft Supplemental EA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the supplemental EA. At this time, DOE is anticipating a 15-day public comment period.

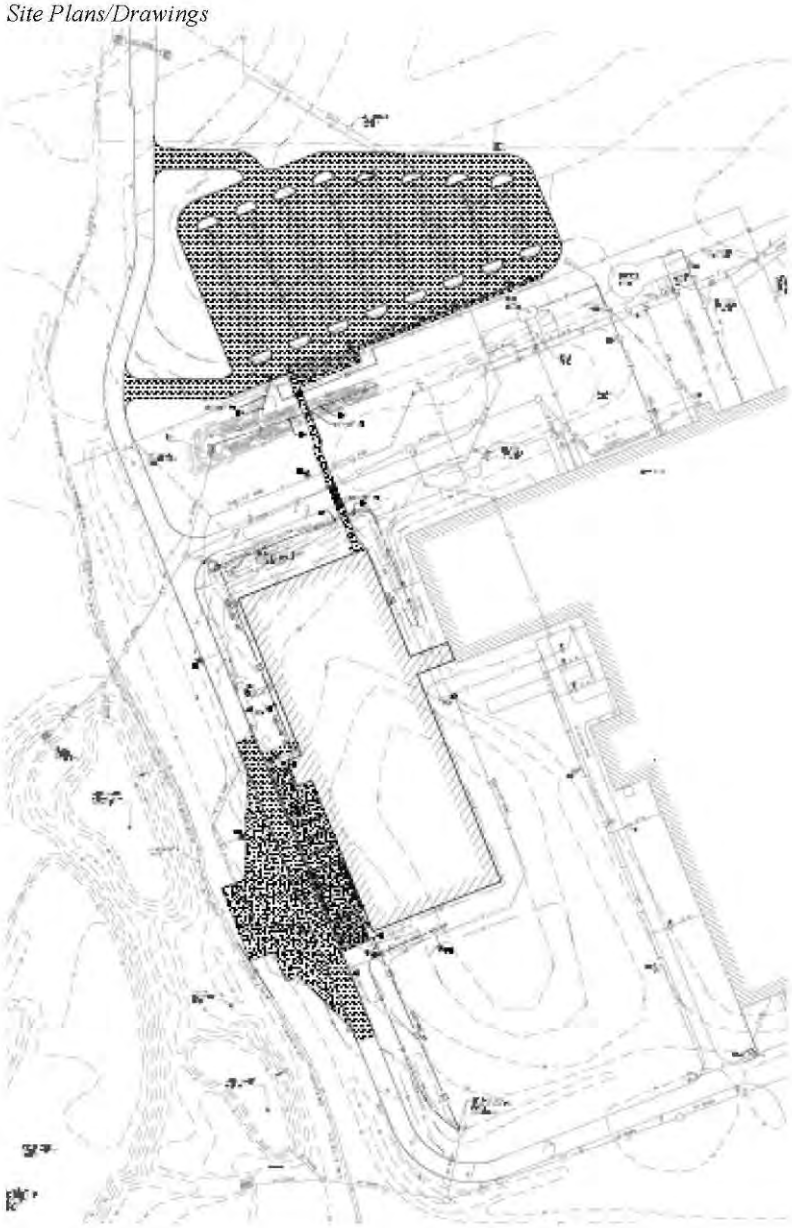
Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Conditions

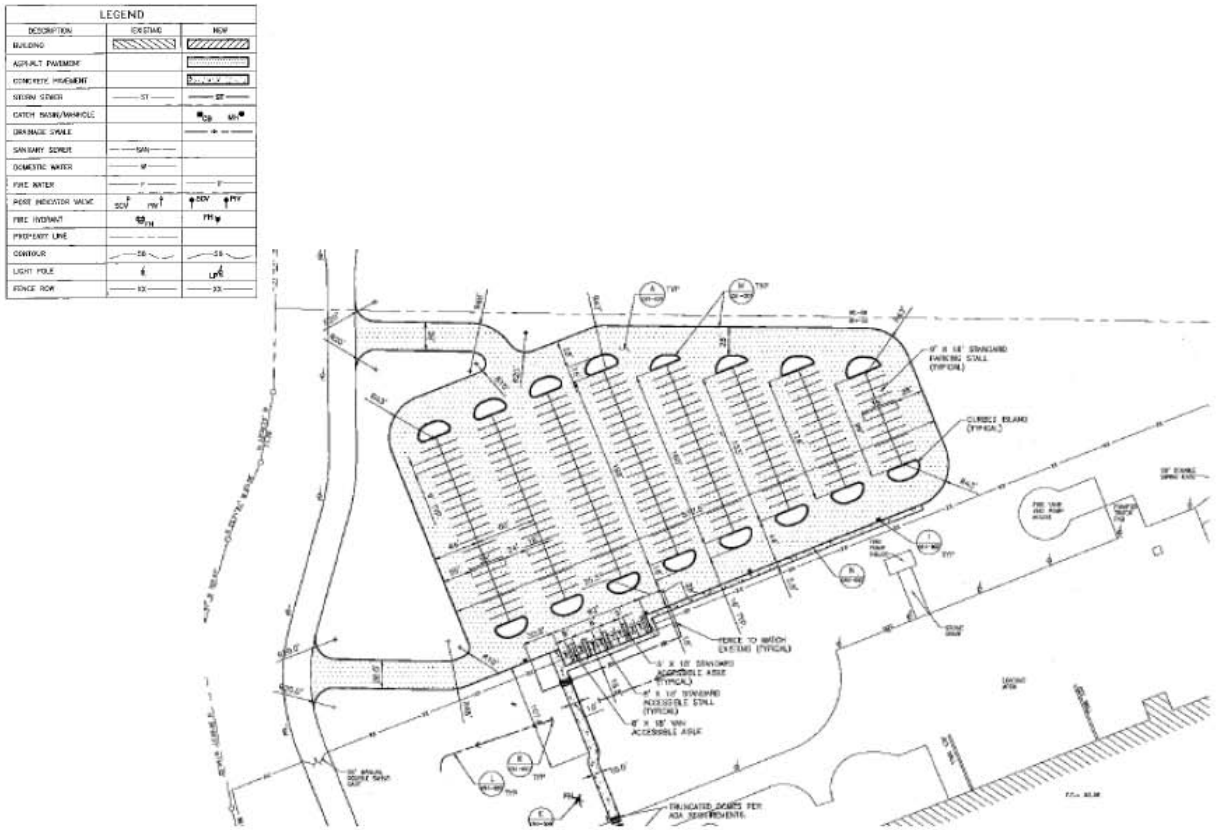
The past condition of the property was a gravel pit before GM built the facility. The current use of the property is an activity industrial complex with other industrial facilities nearby. There is also some wooded area near the facility that would not be removed with the proposed project. The date of the buildings is unknown but likely not historical given the previous project approval.

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

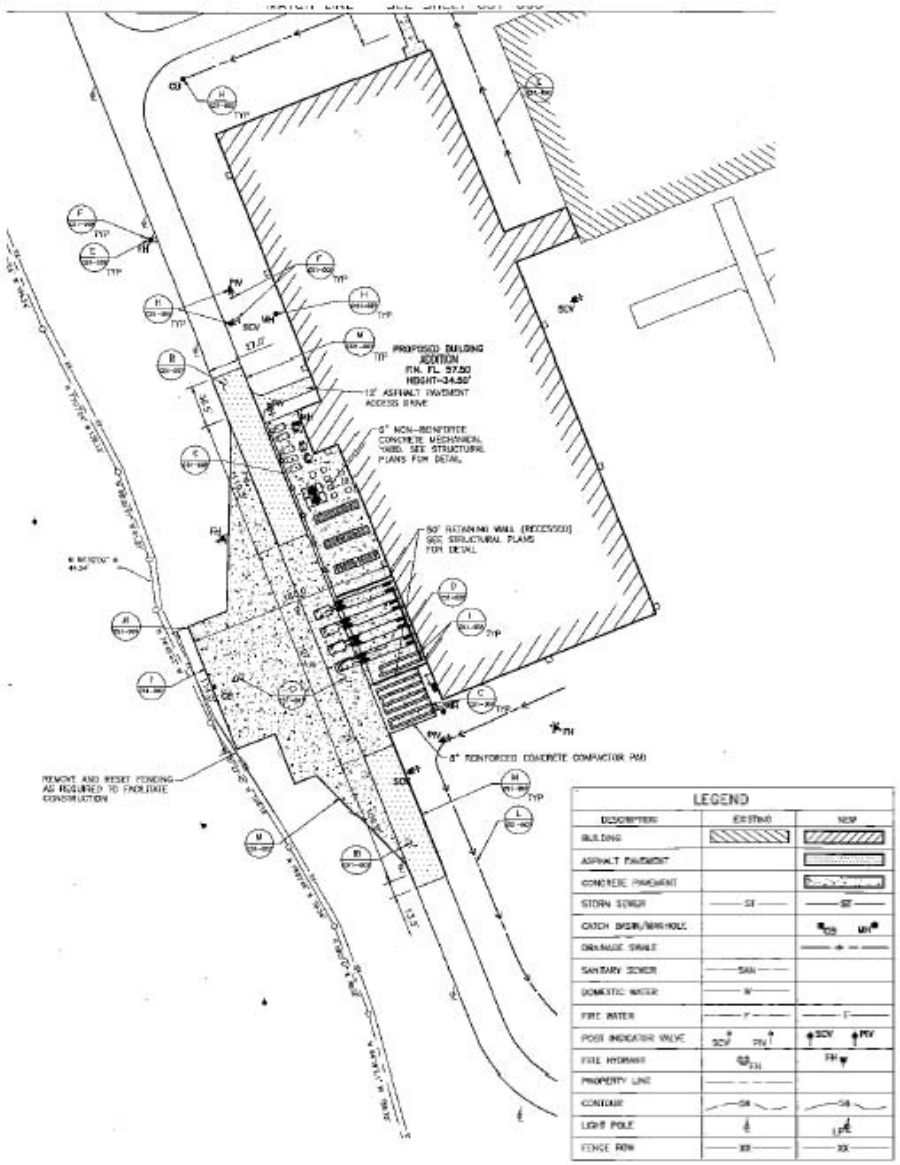
Site Plans/Drawings



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility



U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Site Photo

Response:

U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

MDP

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MHT USE ONLY
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Submit hard copy of form and all attachments to:
Beth Cole, MHT, 100 Community Place, Crownsville, MD 21032

Print Form

Section A: General Project Information

Project Name: U.S. Electric Drive Manufacturing Center -- Global Rear-Wheel Drive (RWD) Electric | County: Baltimore County

☒ This is a new submittal **OR** This is additional information related Project Log Number:

Section B: Primary Contact Information

Contact Name: Pierina Fayish | Company/Agency: U.S. Department of Energy

Mailing Address: Office: 922-M-218 Mail Stop: 922-M217 626 Cochrans Mill Road P.O. Box 10940

City: Pittsburgh | State: Pennsylvania | Zip: 15236

Email: Pierina.Fayish@NETL.DOE.GOV | Phone Number: +1 (412) 386-5428 | Ext.

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	Federal	Department of Energy, NETL	Transportation Electric Drive Vehicle Battery

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☐ **Properties subject to an easement held by MHT, MET, or another entity**

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Please describe: prior review 20090498

Attachments ☒ **Map** ☒ **Project Description/Scope of Work** ☒ **Site Plans/Drawings**

☒ **Photographs** - Attach prints or digital photographs showing the project site including images of all buildings and structures, preferably keyed to a site plan

☒ **Conditions** - Attach a brief description of past and present conditions of the project area (wooded, mined, developed, agricultural uses, etc) including construction dates of buildings, if known.

MHT Determination MHT Reviewer: Jonathan Sager Date: 4/21/11

☒ There are **NO HISTORIC PROPERTIES** in the area of potential effect ☐ The project will have **NO ADVERSE EFFECT WITH CONDITIONS**

☐ The project will have **NO EFFECT** on historic properties ☐ **MHT REQUESTS ADDITIONAL INFORMATION**

☐ The project will have **NO ADVERSE EFFECT** on historic properties ☐ The project will have **ADVERSE EFFECTS** on historic properties

Page 1 of 8

Appendix B Contact with the Bureau of Indian Affairs

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

April 12, 2011

Franklin Keel, Regional Director
Bureau of Indian Affairs, Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Dear Mr. Keel:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

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DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

In light of the change to the construction plans, DOE is requesting information or concerns you may have on properties of traditional, religious, or cultural significance in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA) and fulfillment of its responsibilities under Section 106 of the National Historic Preservation Act.

As designed, the proposed project would avoid any disturbance to known cultural or archeological sites. If any cultural materials were to be discovered during the construction phase of the project, all work would cease until the Maryland Historical Trust is contacted and corrective measures implemented.

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

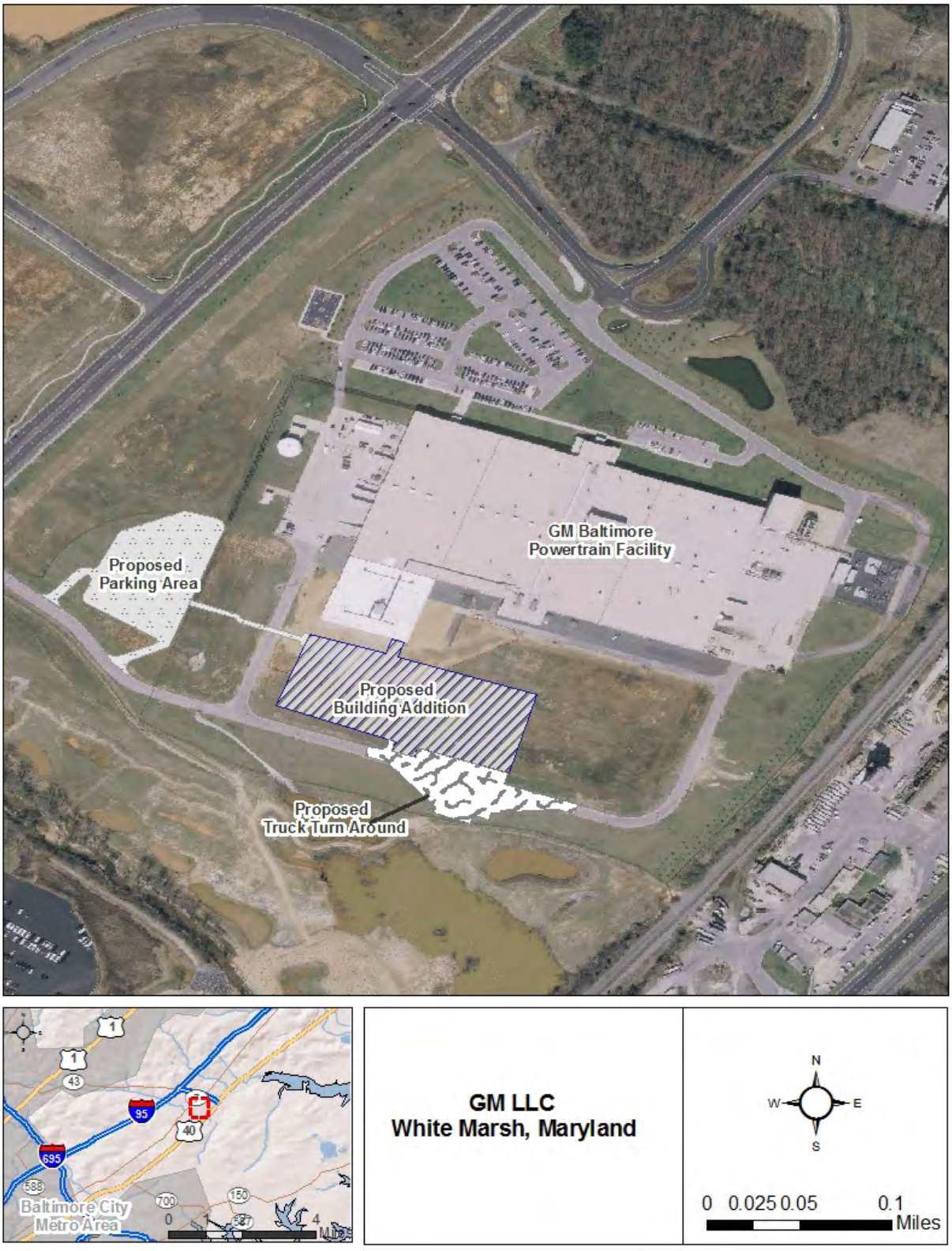
Sincerely,

Pierina N Fayish

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the original site map, which is shown below.


GM Baltimore
Powertrain Facility
Proposed
Parking Area
Proposed
Building Addition
Proposed
Truck Turn Around
Baltimore City
Metro Area
GM LLC
White Marsh, Maryland
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Response:

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Eastern Regional Office
545 Marriott Drive, Suite 700
Nashville, TN 37214

MAY - 2 2011

IN REPLY REFER TO:
Trust Services
Environment, Safety, and Cultural Resources Division

Ms. Pierina Fayish
NEPA Document Manager
U.S. Department of Energy
National Energy Technology Laboratory
P.O. Box 10940
Pittsburgh, Pennsylvania 15236-0940

RE: U.S. Electric Drive Manufacturing Center – Global Rear Wheel Drive Electric Validation Center at its White Marsh, Maryland Facility

Dear Ms. Fayish:

Thank you for contacting the Bureau of Indian Affairs (BIA), Eastern Regional Office, about the location of significant American Indian traditional, sacred, and religious properties in White Marsh, Baltimore County, Maryland. There are no federally recognized American Indian tribes or nations in Maryland, and the project cited above does not concern the BIA.

Tribal consultation information is available to you on the internet. An annually updated tribal leaders directory for federally recognized tribes and nations can be found on the internet at *http://www.bia.gov* - **Site Map - BIA – OIS – Division of Tribal Government Services - Tribal Directory**. A map titled *Indian Reservations in the Continental United States* is located at *http://www.nps.gov/history/nagpra/documents*, and a Native American Consultation Database is at *http://home.nps.gov/nacd*. Maps of each reservation are available at *http://www.census.gov/geo/bas/bas10/aia/entlist_aia.html*. For additional consultation, a current list of State Historic Preservation Officers is at *http://www.ncshpo.org*, and a current list of Tribal Historic Preservation Officers is at *http://www.nathpo.org*.

If you have questions, please contact David Saunders, Eastern Regional Archaeologist, at (615) 564-6840.

Sincerely,

Scott C. Meneely

Acting Director, Eastern Region

Appendix C Air Emission Calculations

Table C-1. Construction Equipment Use				
Equipment Type	**Number of Units**	**Days on Site**	**Hours per Day**	**Operating Hours**
Excavators Composite	2	115	4	920
Rollers Composite	2	173	8	2768
Rubber Tired Dozers Composite	2	115	8	1840
Plate Compactors Composite	4	115	4	1840
Trenchers Composite	4	58	8	1856
Air Compressors	4	115	4	1840
Cement and Mortar Mixers	4	115	6	2760
Cranes	2	115	7	1610
Generator Sets	3	115	4	1380
Tractors/Loaders/Backhoes	3	230	7	4830
Pavers Composite	2	58	8	928
Paving Equipment	3	58	8	1392

Note: Some inconsistencies due to rounding may occur.

Table C-2. Construction Equipment Emission Factors (pounds/hour)						
Equipment	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Excavators Composite	0.5828	1.3249	0.1695	0.0013	0.0727	0.0727
Rollers Composite	0.4341	0.8607	0.1328	0.0008	0.0601	0.0601
Rubber Tired Dozers Composite	1.5961	3.2672	0.3644	0.0025	0.1409	0.1409
Plate Compactors Composite	0.0263	0.0328	0.0052	0.0001	0.0021	0.0021
Trenchers Composite	0.5080	0.8237	0.1851	0.0007	0.0688	0.0688
Air Compressors	0.3782	0.7980	0.1232	0.0007	0.0563	0.0563
Cement and Mortar Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044
Cranes	0.6011	1.6100	0.1778	0.0014	0.0715	0.0715
Generator Sets	0.3461	0.6980	0.1075	0.0007	0.0430	0.0430
Tractors/Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599
Pavers Composite	0.5874	1.0796	0.1963	0.0009	0.0769	0.0769
Paving Equipment	0.0532	0.1061	0.0166	0.0002	0.0063	0.0063

Table C-3. Construction Equipment Emissions (tons per year)						
Equipment	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Excavators Composite	0.2681	0.6095	0.0780	0.0006	0.0335	0.0335
Rollers Composite	0.6008	1.1912	0.1838	0.0011	0.0832	0.0832
Rubber Tired Dozers Composite	1.4684	3.0058	0.3353	0.0023	0.1296	0.1296
Plate Compactors Composite	0.0242	0.0302	0.0047	0.0001	0.0019	0.0019
Trenchers Composite	0.4714	0.7644	0.1718	0.0006	0.0639	0.0639
Air Compressors	0.3479	0.7342	0.1134	0.0007	0.0518	0.0518
Cement and Mortar Mixers	0.0617	0.0907	0.0156	0.0001	0.0061	0.0061
Cranes	0.4839	1.2961	0.1432	0.0011	0.0576	0.0576
Generator Sets	0.2388	0.4816	0.0742	0.0005	0.0297	0.0297
Tractors/Loaders/Backhoes	0.9813	1.8706	0.2908	0.0019	0.1446	0.1446
Pavers Composite	0.2726	0.5009	0.0911	0.0004	0.0357	0.0357
Paving Equipment	0.0370	0.0738	0.0115	0.0001	0.0044	0.0044
Total	5.26	10.65	1.51	0.0094	0.64	0.64

Table C-4. Painting			
VOC Content	0.84	pounds (lbs)/gal.	
Coverage	400	ft^2/gal.	
Emission Factor	0.0021	lbs/ft^2	
Building/Facility	**Wall Surface**	**VOC (lbs)**	**VOC (tpy)**
All Buildings Combined	208,000	436.8	0.218
Total	208,000	436.80	0.22

Table C-5. Delivery of Equipment and Supplies						
Number of Deliveries	4					
Number of Trips	2					
Miles Per Trip	30					
Days of Construction	230					
Total Miles	55200					
Pollutant	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Emission Factor (lbs/mile)	0.0219	0.0237	0.0030	0.0000	0.0009	0.0007
Total Emissions (lbs)	1211.59	1308.93	165.20	1.42	47.26	40.81
Total Emissions (tpy)	**0.61**	**0.65**	**0.08**	**0.0007**	**0.02**	**0.02**
Source: (CARB, 2007)						

Table C-6. Surface Disturbance						
TSP Emissions	80	lbs/acre				
PM_{10}/TSP	0.45					
$PM_{2.5}/PM_{10}$	0.15					
Period of Disturbance	30	days				
Capture Fraction	0.5					
Building/Facility	**Area (acres)**	**TSP (lbs)**	**PM_{10} (lbs)**	**PM_{10} (tons)**	**$PM_{2.5}$ (lbs)**	**$PM_{2.5}$ (tons)**
Demolition	2.4	5741	2583	1.29	194	0.10
Total	**2.4**	**5741**	**2583**	**1.29**	**194**	**0.10**
Sources: (USEPA, 1995; USEPA, 2005) Note: TSP is Total Suspended Particles.						

Table C-7. Construction Worker Commutes						
Number of Workers	50					
Number of Trips	2					
Miles Per Trip	30					
Days of Construction	115					
Total Miles	345000					
Pollutant	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001
Total Emissions (lbs)	3639.21	380.49	372.32	3.71	29.34	18.26
Total Emissions (tpy)	**1.82**	**0.19**	**0.19**	**0.0019**	**0.01**	**0.01**
Source: (CARB, 2007)						

Table C-8. Total Construction Emissions (tons per year)						
Activity/Source	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Construction Equipment	5.26	10.65	1.51	0.0094	0.64	0.64
Painting	0.00	0.00	0.22	0.0000	0.00	0.00
Delivery of Equipment and Supplies	0.61	0.65	0.08	0.0007	0.02	0.02
Surface Disturbance	0.00	0.00	0.00	0.0000	1.29	0.10
Worker Commutes	3.64	0.38	0.37	0.0037	0.03	0.02
Total Construction Emissions	**9.5**	**11.7**	**2.2**	**<0.1**	**2.0**	**0.8**

Table C-9. Boiler Emissions									
Emission Factor (lbs/MMcf), From AP-42 Table 1.4-1 and 1.4-2									
NO_x	CO	Total PM	VOC	SO_x					
100	84	7.6	5.5	0.6					
Combined Max Heat Input Capacity (MMBTU/hr)	Max Hourly Natural Gas Usage (cf/hr)	Annual Operating Hours	Annual Natural Gas Usage (MMcf/yr)	Emissions (tons/yr)					
				NO_x	CO	PM	VOC	SO_x	
8.62	8620	4440	38.3	1.91	1.61	0.15	0.11	0.011	
Notes: MMBTU is Million British Thermal Units, MMcf is million cubic feet, hr is hour, yr is year, and cf is cubic feet. Source: (GM, 2011g).									

Table C-10. Worker Commutes						
Number of Workers	209					
Number of Trips	2					
Miles Per Trip	30					
Days of Work	260					
Total Miles	3260400					
Pollutant	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001
Total Emissions (lbs)	34392.12	3595.84	3518.60	35.04	277.31	172.57
Total Emissions (tons)	**17.20**	**1.80**	**1.76**	**0.02**	**0.14**	**0.09**
Source: (CARB, 2007)						

Table C-11. VOC Emissions from Electric Motor Manufacturing Process								
Material	Maximum Annual Usage [Gal.]	VOC [lbs/gal.]	Total VOC [lbs]	Total VOC [tons]	VOC [lbs/hr]	VOC [lbs/day]	VOC [lbs/month]	Notes
Dupont Voltatex 4201	5000	0.58	2904.0	**1.5**	0.5	9.7	242.0	0.1123 lbs/gal VOC plus 5% by weight vinyl toluene
Dupont Voltatex 5050	30	8.00	241.0	**0.1**	0.0	0.8	20.1	Cleaning material, assumed all VOC
Three Bond 2273E	2000	0.03	58.0	**0.0**	0.0	0.2	4.8	Emission factor per material data sheet

Table C-11. VOC Emissions from Electric Motor Manufacturing Process								
Material	**Maximum Annual Usage [Gal.]**	**VOC [lbs/gal.]**	**Total VOC [lbs]**	**Total VOC [tons]**	**VOC [lbs/hr]**	**VOC [lbs/day]**	**VOC [lbs/month]**	**Notes**
Houghton Rust Veto 4222-S	1000	0.42	420.0	**0.2**	0.1	1.4	35.0	Per emission factor provided by the supplier of the material
Total			**3623.0**	**1.8**	**0.6**	**12.1**	**302.0**	
Source: (GM, 2011g).								
Notes: 1 VOC lbs/hr numbers are based on 2 10-hr shifts per day (120 operating hours per week), 50 operating weeks per year and 6000 operating hours per year; however, the operation is designed for 24 hours per day and 7 days per week								
2 VOC lbs/day numbers are based 300 operating days per year, however, the operation is designed for 365 days per year								

Table C-12. Total Operational Emissions (tons)						
Activity/Source	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Boiler Emissions	1.61	1.91	0.11	0.01	0.15	0.15
Worker Commutes	17.20	1.80	1.76	0.02	0.14	0.09
Varnish Application Process	0.00	0.00	1.80	0.00	0.00	0.00
Total Operational Emissions	**18.8**	**3.7**	**3.7**	**0.03**	**0.3**	**0.2**

Appendix D Floodplain Consultations

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

April 27, 2011

Catharine McManus
FEMA, Region III
615 Chestnut Street
One Independence Mall, Sixth Floor
Philadelphia, PA 19106-4404

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Dear Ms. McManus:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. DOE is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center project. DOE determined that an environmental assessment (EA) is the appropriate level of NEPA review for this project. DOE previously prepared an EA for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM has proposed project scope changes, which require a Supplemental EA.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking

626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

Our review of the FEMA floodplain data shows that the planned pedestrian sidewalk with no curb transverses the 500-year floodplain. Consequently, DOE is requesting information or concerns you may have on floodplains in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,

Pierina N Fayish

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was figure shown below.

>>> "Meghan Morse" <MMorse@mangi.com> 6/8/2011 10:29 AM >>>
Dear Dave,

Thank you for taking the time to discuss this project with me. As we discussed, attached is the project map that depicts the 500-year floodplain. Our request is that you review the map, and let us know if Baltimore County Department of Public Works agrees that there would be no significant adverse effect to the floodplain from the planned sidewalk with no curb transversing the 500-year floodplain. If you all do believe there would be an adverse effect, please let me know. DOE requires this consultation as part of the Supplemental Environmental Assessment for its decision to provide the grant to General Motors.

If you require further information or have questions, please do not hesitate to contact me via email or 919-636-1655. An email response would be sufficient. If we could have your response this week or early next week, we would appreciate it.

As I mentioned on the phone, I will be traveling today at 2:30PM Central, but I will respond to you as soon as I can.

Thanks,
Meghan

Note: the enclosed map is shown below.

GM LLC - White Marsh, Maryland
National Wetlands Inventory and Floodplains Map

- Proposed Building
- Proposed Parking Area
- Proposed Truck Turnaround
- 100 year floodplain
- 500 year floodplain
- Lakes and Ponds
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Riverine

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Miles

Response:

From: David Thomas [mailto:dthomas@baltimorecountymd.gov]
Sent: Thursday, June 09, 2011 10:14 AM
To: Meghan Morse
Cc: Edward Adams; Pierina.Fayish@NETL.DOE.GOV
Subject: Re: GM Baltimore Supplemental EA Floodplain request

Meghan,

Please accept this e-mail as our department's response to your inquiry. The Baltimore County Department of Public Works agrees that there will be no significant adverse effect to the floodplain from the planned sidewalk with no curb transversing the 500-year floodplain as shown on the attached drawing. I have reviewed the Federal FIRM map for this area and it agrees with the delineation of the floodplain areas shown on this drawing.

The Baltimore County floodplain ordinance regulates development related to the 100-year floodplain only.

If there are questions, please feel free to contact our office.

Sincerely,

Dave Thomas

David L. Thomas
Baltimore County DPW
(410) 887-3984

Appendix E USFWS Consultation

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

April 12, 2011

Devin Ray
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Dear Mr. Ray:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 DOE selected for funding under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and

626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

provide office space. The proposal includes 308 new parking spaces and widening of a truck dock area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

Your office determined on January 6, 2010 for the original proposal under the same project name that "no federally proposed or listed endangered or threatened species are known to exist within the project impact area," so no further consultation was required. In light of the proposed changes to the construction area, DOE is requesting information or concerns you may have on federally listed species in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA) and fulfillment of its responsibilities under the Endangered Species Act.

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,

Pierina Fayish

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the original site map, which is shown in Appendix B.

Response:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

May 31, 2011

United States Department of Energy
National Energy technology Laboratory
626 Cochrans Mill Road.
P.O. Box 10940
Pittsburg, Pa 15236

RE: U.S. electric Drive Manufacturing Center Global Rear Wheel Drive Electric Validation Center at its White Marsh Maryland Facility

Dear Pierina Fayish:

This responds to your letter, received April 15, 2011, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

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If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

Leopoldo Miranda
Supervisor

Appendix F Dismissed Maryland Threatened and Endangered Species

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available

Scientific Name	Common Name	State Status	Habitat*
Alasmidonta undulata	Triangle Floater	Endangered	Aquatic
Alasmidonta varicosa	Brook Floater	Endangered	Aquatic
Bartramia longicauda	Upland Sandpiper	Endangered	Marine
Erynnis martialis	Mottled Duskywing	Endangered	Hilly country, near woods or open brushy fields
Graptemys geographica	Northern Map Turtle	Endangered	Rivers and lakes
Lanius ludovicianus	Loggerhead Shrike	Endangered	Shrubs, small trees, open country with scattered trees and shrubs
Laterallus jamaicensis	Black Rail	Endangered	Marshes
Ophiogomphus incurvatus incurvatus	Appalachian Snaketail	Endangered	Clear streams
Satyrium edwardsii	Edwards' Hairstreak	Endangered	Scrub oak; rocky sparsely wooded ridges
Satyrium favonius ontario	Northern Oak hairstreak	Endangered	Open woodlands, oak groves, coastal barrens
Sternula antillarum	Least Tern	Threatened	Seacoasts, beaches, estuaries etc.
Agalinis obtusifolia	Blunt-leaved Gerardia	Endangered	Dry or seasonally dry habitats; clayey or sandy; shallow soil; limestone in pinelands
Agastache scrophulariifolia	Purple Giant Hyssop	Threatened	Forest
Arabis missouriensis	Missouri Rockcress	Endangered	Acid soils, rocky, wooded slopes, upland ridges, sand hills
Arnica acaulis	Leopard's-bane	Endangered	Savannahs, pine barrens, open woodlands
Asplenium pinnatifidum	Lobed Spleenwort	Endangered	Cliffs, ledges, boulders of sandstone
Carex hystericina	Porcupine Sedge	Endangered	Open swamps, sedge meadows, fen, stream, pond, etc.
Carex meadii	Mead's Sedge	Endangered	Prairies, fens, cedar glades, moist depressions
Carex richardsonii	Richardson's Sedge	Endangered	Vernally moist, open woodlands, floodplains edges
Carex vestita	Velvety Sedge	Threatened	Dry to moist, open, sandy or gravelly meadows
Corallorhiza wisteriana	Wister's Coralroot	Endangered	Deciduous and coniferous woods
Desmodium strictum	Stiff Tick-trefoil	Endangered	Sandy habitats, fire maintained forests and woodlands
Diplazium pycnocarpon	Glade Fern	Threatened	Moist woods and slopes in neutral soil
Eleocharis intermedia	Matted Spikerush	Endangered	Fresh wet, along streams lakeshores, etc.
Equisetum sylvaticum	Wood Horsetail	Endangered	Moist forests, greenland
Eriocaulon parkeri	Parker's Pipewort	Threatened	Muddy tidewater banks, marsh
Eupatorium leucolepis	White-bracted Boneset	Threatened	Bay
Hydrastis canadensis	Goldenseal	Threatened	Hardwood (second growth) forests
Iris prismatica	Slender Blue Flag	Endangered	Swampy, peaty soil

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available

Scientific Name	Common Name	State Status	Habitat*
Juncus torreyi	Torrey's Rush	Endangered	Wet sandy shores, edges of sloughs, watercourses
Limosella australis	Mudwort	Endangered	Fresh water, intertidal
Linum intercursum	Sandplain Flax	Threatened	Open oak and pine and open places on coastal plain; sandy soil on coastal plain
Melanthium latifolium	Broad-leaved Bunchflower	Endangered	Dry, rocky, wooded slopes
Monotropsis odorata	Sweet Pinesap	Endangered	Mixed-deciduous or coniferous forests
Panicum flexile	Wiry Witch-grass	Endangered	Dry exposed limestone bluffs, seepage fens, damp sandy areas
Platanthera blephariglottis	White Fringed Orchid	Threatened	In full sun or semi shade in damp acidic situations
Platanthera ciliaris	Yellow Fringed Orchid	Threatened	Variety of habitats, wet, humus to dry rocky mountain slopes
Platanthera grandiflora	Large Purple Fringed Orchid	Threatened	Alluvial and swamp forests, stream banks
Platanthera peramoenaa	Purple Fringeless Orchid	Threatened	Alluvial forests, stream banks
Polemonium vanbruntiae	Jacob's-ladder	Threatened	Wetlands
Polygala senega	Seneca Snakeroot	Threatened	Woods, shores and prairies; rocks, gravels, thin soils; wet or boggy
Rhynchospora cephalantha	Capitate Beakrush	Endangered	Sandy silts, sands, peats, boggy streams
Silene nivea	Snowy Campion	Endangered	Woods and alluvium, distributed floodplains and stream banks
Spiranthes lucida	Wide-leaved Ladys' Tresses	Endangered	Rocky and sandy riverbanks
Symphyotrichum depauperatum	Serpentine Aster	Endangered	Serpentine barrens, open areas
Talinum teretifolium	Fameflower	Threatened	Rock outcrops
Limotettix minuendus	Eastern Sedge Barrens Planthopper	Endangered	Habitat Data Not Available
Adlumia fungosa	Climbing Fumitory	Threatened	Habitat Data Not Available
Agalinis setacea	Thread-leaved Gerardia	Endangered	Habitat Data Not Available
Asclepias rubra	Red Milkweed	Endangered	Habitat Data Not Available
Bromus latiglumis	Broad-glumed Brome	Endangered	Habitat Data Not Available
Deschampsia cespitosa	Tufted Hairgrass	Endangered	Habitat Data Not Available
Desmodium lineatum	Linear-leaved Tick-trefoil	Endangered	Habitat Data Not Available
Desmodium rigidum	Rigid Tick-trefoil	Endangered	Habitat Data Not Available
Epilobium ciliatum	Northern Willowherb	Endangered	Habitat Data Not Available
Filipendula rubra	Queen-of-the-prairie	Endangered	Habitat Data Not Available
Gentiana andrewsii	Fringe-tip Closed Gentian	Threatened	Habitat Data Not Available
Gentiana villosa	Striped Gentian	Endangered	Habitat Data Not Available
Gentianopsis crinita	Fringed Gentian	Endangered	Habitat Data Not Available
Helianthemum bicknellii	Hoary Frostweed	Endangered	Habitat Data Not Available
Hierochloe odorata	Holy Grass	Endangered	Habitat Data Not Available
Hypericum denticulatum	Coppery St. John's-wort	Threatened	Habitat Data Not Available
Linum sulcatum	Grooved Flax	Endangered	Habitat Data Not Available
Matelea obliqua	Climbing Milkweed	Endangered	Habitat Data Not Available
Pedicularis lanceolata	Swamp Lousewort	Endangered	Habitat Data Not Available

Table F-1. Threatened or Endangered Species (State Status) of Baltimore County, Maryland That Were Dismissed from Further Consideration Due to Habitat Requirements or Whose Habitat Data Was Not Available

Scientific Name	Common Name	State Status	Habitat*
Phlox pilosa	Downy Phlox	Endangered	Habitat Data Not Available
Polanisia dodecandra	Clammyweed	Endangered	Habitat Data Not Available
Pycnanthemum verticillatum	Whorled Mountain-mint	Endangered	Habitat Data Not Available
Sanguisorba canadensis	Canada Burnet	Threatened	Habitat Data Not Available
Scutellaria leonardii	Leonard's Skullcap	Threatened	Habitat Data Not Available
Sphenopholis pensylvanica	Swamp-oats	Threatened	Habitat Data Not Available
Symphyotrichum concolor	Silvery Aster	Endangered	Habitat Data Not Available
Thaspium trifoliatum	Purple Meadow-parsnip	Endangered	Habitat Data Not Available
Triosteum angustifolium	Narrow-leaved Horse-gentian	Endangered	Habitat Data Not Available

*Sources: (Flora of North America, 1993+; NatureServe, 2009; MDNR, 2010)

Appendix G Other Agencies

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

April 12, 2011

Lori Byrne
DNR Wildlife & Heritage Service
580 Taylor Ave.
Tawes Office Bldg E-1
Annapolis, MD 21401

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Dear Ms. Byrne:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act) in order to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. NETL is considering funding the proposed U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center as one of 30 projects under the Recovery Act.

The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

DOE previously prepared an environmental assessment (EA) for this project (DOE/EA-1723), which resulted in Finding of No Significant Impact (FONSI) in April 2010. GM intends to expand the size of its new manufacturing building in White Marsh, Maryland about three-fold from the original proposal (from approximately 37,000 square feet to 104,000 square feet). The expanded new building, and related improvements, will be situated within the existing property boundary. This building size increase is necessary to accommodate more manufacturing equipment and provide office space. The proposal includes 308 new parking spaces and widening of a truck dock

626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

area as shown in enclosed figure. GM will use the expanded area and a quarter of the existing facility to manufacture Global Rear Wheel Electric and other electric drive units for vehicles.

In light of the project changes, DOE is requesting information or concerns you may have on state listed species in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the original site map, which is shown in Appendix B.

NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

April 12, 2011

MDE Main Office
1800 Washington Blvd.
Baltimore, MD 21230

Subject: U.S. Electric Drive Manufacturing Center – Global Rear-Wheel Drive (RWD) Electric Validation Center at its White Marsh, Maryland Facility

Dear Sir or Madam:

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy. A key objective of the VT program is accelerating the development and production of electric drive vehicle systems in order to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically so as to increase the use of electric drive vehicles.

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The objective of the proposed three-year project is to construct and validate a high-volume U.S. manufacturing facility to produce the first U.S.-manufactured electric motor components and assemble a second-generation global RWD electric drive unit, designated "GRE." The GRE motor design requires significant advances in manufacturing process technology because of the complexities of the motor components. Therefore, a supporting objective is to develop and validate novel motor manufacturing technology.

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626 Cochrans Mill Road, P.O. Box 10940, Pittsburgh, PA 15236

In light of the proposed change to the construction area, DOE is requesting information or concerns you may have on environmental issues in the vicinity of the proposed GM project site. Any information you provide will assist the Department in the preparation of a supplemental environmental assessment (SEA).

DOE will provide you a copy of the Draft SEA, once completed, where you may again respond to any specific concerns you may have. All correspondence(s) with your office will be included in an appendix to the SEA. At this time, DOE is anticipating a 15-day public comment period.

Because this is a Recovery Act project, we would appreciate a quick response to our request for consultation. Should you require additional information, please contact me by telephone at (412) 386-5428 or by email at pierina.fayish@netl.doe.gov.

Sincerely,

Pierina Fayish
NEPA Document Manager

Enclosure

Note: The enclosure was the original site map, which is shown in Appendix B.

Response:

May 5, 2011

Pierina Fayish
National Energy Technology Laboratory
PO Box 10940
Pittsburgh, PA 15236

RE: Environmental Review for GM, LLC Powertrain facility, proposed expansion for US Electric Drive Manufacturing Center, Global Rear-Wheel Driver Electric Validation Center at White Marsh Facility, Baltimore County, MD.

Dear Ms. Fayish:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2011.0519.ba