FINAL ENVIRONMENTAL ASSESSMENT

For a Loan and Grant to A123 Systems, Inc., for Vertically Integrated Mass Production of Automotive-Class Lithium-Ion Batteries

DOE/EA-1690
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U.S. Department of Energy
Loan Programs Office
Washington, DC 20585

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Acronyms and Abbreviations

To ensure a more reader-friendly document, the U.S. Department of Energy limited acronyms and abbreviations in this Environmental Assessment. The Summary and document body define acronyms and abbreviations at first use. The list below defines acronyms and abbreviations used in text. Tables define acronyms and abbreviations in footnotes.

BACT	best available control technology
BMP	best management practice
CERCLIS	Comprehensive Environmental, Response, Compensation and Liability Information Systems
CFR	Code of Federal Regulations
dB	decibel
dBA	A-weighted decibel
D-DOT	Detroit Department of Transportation
DOE	U.S. Department of Energy
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
HUD	U.S. Department of Housing and Urban Development
IPCC	Intergovernmental Panel on Climate Change
LAER	lowest achievable emission rate
L_{dn}	Day-Night Sound Level
Leq	hourly equivalent sound level
LOS	Level of Service
MACT	maximum achievable control technology
MAERS	Michigan Department of Environmental Quality Air Emissions Reporting System
MDEQ	Michigan Department of Environmental Quality
MDOT	Michigan Department of Transportation
MMBtu	Million British Thermal Units
NA/NSR	Nonattainment New Source Review
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMP	n-Methylpyrrolidone
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OSHA	Occupational Safety and Health Administration
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PSD	Prevention of Significant Deterioration
SEMCOG	Southeast Michigan Council of Governments
SMART	Suburban Mobility Authority for Regional Transportation
T-BACT	best available control technology for toxics
VOC	volatile organic compound

Summary

The U.S. Department of Energy (DOE) proposes to issue A123 Systems, Inc. (A123), loan and grant funding to retrofit several existing facilities and construct and equip a new facility to support lithium-ion phosphate battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles. All facilities associated with the Proposed Action would be in the Detroit metropolitan area of southeastern Michigan.

DOE prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality NEPA implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and DOE NEPA implementing procedures (10 CFR 1021). The EA examines the potential environmental effects associated with the Proposed Action and the No-Action Alternative.

Purpose and Need for Agency Action

The purpose and need for agency action is to comply with the DOE mandate under the Energy Independence and Security Act and the American Recovery and Reinvestment Act by selecting eligible projects that meet the stated objectives of the acts.

A123 has applied for a loan pursuant to the DOE Advanced Technology Vehicle Manufacturing Incentive Program (Incentive Program). Established under Section 136 of the Energy Independence and Security Act of 2007, this program provides incentives for projects that retrofit, expand, or create manufacturing facilities in the United States for advanced technology vehicles or qualifying components, including engineering costs. The primary goal of the Incentive Program is to improve fuel economy for light-duty vehicles and thereby reduce ozone precursors, greenhouse gas emissions, and particulate matter emissions associated with vehicle emissions. The Incentive Program is designed to stimulate the technology required to meet program objectives.

A123 has also applied for a grant from the DOE National Energy Technology Laboratory through the Office of Energy Efficiency and Renewable Energy Vehicle Technologies Program. The Vehicle Technologies Program was created to implement the American Recovery and Reinvestment Act of 2009 in support of the development of advanced electric drive vehicles, including hybrid electric vehicles, plug-in hybrid electric vehicles, electric vehicles, and fuel cell vehicles. The Vehicle Technologies Program sought applications for grants to support the construction (including production capacity increases of current plants) of U.S.-based manufacturing plants to produce batteries and electric-drive components. Specifically, A123 has requested grant funding under DOE Area of Interest 3, Combined Applications for Cell and Battery Manufacturing Facilities and Advanced Battery Supplier Manufacturing Facilities. Congress has provided funding for loan and grant programs to support construction of domestic advanced battery manufacturing facilities for electric vehicles.

A123 is developing the technology to commercialize the production of lithium-ion phosphate batteries for electric drive vehicles that would reduce air emissions such as ozone precursors, particulate matter and greenhouse gases that contribute to global warming, as is consistent with

the primary goals of the Incentive Program and the Vehicle Technologies Program. Financially supporting the A123 project would bring lithium-ion phosphate batteries to market and into use. This would improve vehicle efficiency, while reducing overall national emissions of air pollutants and human-caused greenhouse gases that existing nonrenewable energy sources otherwise would produce.

DOE is using the NEPA process to help determine whether to issue A123 loan and grant funding to support the proposed project.

Proposed Action and Alternatives

The DOE Proposed Action is to issue A123 loan and grant funding to retrofit existing facilities and construct and equip a new facility to support lithium-ion phosphate battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles in the Detroit metropolitan area of southeastern Michigan.

The objectives of the A123 proposed battery manufacturing project are to (1) build the annual capacity to power 580,000 5-kilowatt-hour plug-in hybrid electric vehicles and approximately 117,000 hybrid electric vehicles by 2012, (2) build a self-sustaining domestic enterprise capable of competing with international competitors, (3) stimulate the economy through the creation of more than 38,000 jobs, including 5,900 direct jobs, more than 14,000 indirect jobs, and more than 21,000 induced jobs[1], (4) help build an American battery manufacturing infrastructure, with key equipment and materials suppliers in the United States, (5) contribute to U.S. energy security, and (6) provide technological leadership in the development of storage methods for renewable energy sources (A123 2009). Using the targeted benchmark of 2012 for production, the incorporation of 1 year's output of A123 lithium-ion phosphate batteries into plug-in hybrid electric vehicles and hybrid electric vehicles would be expected to reduce national fuel consumption by more than 1 billion gallons of gasoline and reduce carbon dioxide emissions by approximately 12 million tons over a 10-year period.

A123 would establish a vertically integrated manufacturing system encompassing the full production processes necessary to produce the lithium-ion phosphate batteries. These processes would be broken into the following four modular components, referred to as Manufacturing Blocks:

[1] The estimated number of jobs created was calculated using the Regional Input-Output Modeling System (RIMS) and A123's production model. RIMS is the Bureau of Economic Analysis' model that produces economic multipliers using state and local area personal income data and national input-output accounts data. RIMS multipliers can be used not only to estimate industry-wide impacts but also the impacts on each of the 20 industry sectors in RIMS. RIMS multipliers are used to study how one industry's production affects the production of other industries in an economy. They are used to estimate how much additional production is created for every initial increase in production and how many additional jobs are created for every new job that is created. This includes indirect jobs created, for example, to supply the materials A123 would require in their production process, and induced jobs, such as those created to provide the consumer goods and services purchased with the earned income of the new A123 workforce.

- Proprietary cathode powder manufacture (Powder Block)
- Cathode and anode manufacture (Coating Block)
- Cell fabrication (Cell Assembly Block)
- Module assembly and battery systems completion for vehicle integration (Module and Pack Block)

A123 would locate its operations at three sites in the Detroit, Michigan, metropolitan area – Livonia, Brownstown Complex, and Romulus Complex.

The Livonia site consists of an existing 291,000-square-foot multi-level building at 39000 Seven Mile Road in Livonia, Michigan. A123 operations at the Livonia facility would be in an existing building and would include a research and development facility with office space, and low-volume Cell Assembly and Module and Pack Blocks.

The Brownstown Complex consists of five existing buildings on the South Campus of the Brownstown Business Center, an industrial park in Brownstown, Michigan. At this location, A123 operations would include high-volume Cell Assembly and Module and Pack Blocks. A123 would occupy and retrofit parts of three of the five buildings, totaling approximately 1,723,000 square feet.

The Romulus Complex includes five existing buildings – 38100 Ecorse Road, 6505 Cogswell Road, 7525 Cogswell Road, 41133 Van Born Road, and 41199 Van Born Road. A123 operations at the Romulus complex would include high-volume Powder and Coating Blocks. Except for the Ecorse Road location, A123 would occupy and retrofit parts of the existing buildings, totaling approximately 1,076,060 square feet. Adjacent to the 38100 Ecorse Road location (where the current land use is industrial), a new and separate 300,000 square-foot building would be constructed in a previously disturbed area (Expansion Site). The landlord would construct the Expansion Site building, the address of which would be 38070 Ecorse Road, to suit A123 operational parameters and A123 would equip the new facility. This would be the only new building A123 would construct for the lithium-ion battery manufacturing project. Although there would be no clearing or ground-disturbing activities at the other Romulus sites or at the Livonia and Brownstown sites, each existing building at these sites would require some interior modifications, and the installation of prefabricated ancillary exterior structures (such as distillation columns, scrubbers and other air pollution control equipment, and aboveground storage).

This EA also analyzes the No-Action Alternative, under which DOE would not issue A123 loan and grant funding and assumes A123 would not proceed with the project.

Summary of Environmental Effects

This EA analyzes the potential environmental impacts of implementing the Proposed Action and the No-Action Alternative. Using the targeted benchmark of 2012 for production, the incorporation of 1 year's output of A123 lithium-ion phosphate batteries into plug-in hybrid electric vehicles and hybrid electric vehicles would be expected to reduce national fuel consumption by more than 1 billion gallons of gasoline and reduce emissions of carbon dioxide

by approximately 12 million tons over a 10-year period. Therefore, the A123 project would help avoid and reduce emissions of air pollutants and human-caused greenhouse gases, as mandated by the U.S. Environmental Protection Agency for passenger cars and trucks pursuant to federal emissions requirements under the Clean Air Act (65 *Federal Register* 6698, February 10, 2000).

The analysis did not identify adverse impacts to land use (zoned use), visual resources, water resources, biological resources, cultural resources, noise, or public health and safety from implementing the Proposed Action. The analysis identified small adverse impacts to air quality and traffic. The analysis identified small short- and long-term beneficial impacts to socioeconomics in the region of influence from job creation associated with the proposed project.

The No-Action Alternative would not impact the environmental resources evaluated in the EA. If DOE did not issue A123 loan and grant funding, A123 would not proceed with the project. Without the financial assistance a DOE loan and grant would provide, A123 would not pursue creation of lithium-ion phosphate battery manufacturing centers in the United States. This would not be consistent with DOE Incentive Program and Vehicle Technologies Program goals.

1 Purpose and Need for Agency Action

1.1 Purpose and Need

The purpose and need for agency action is to comply with the U.S. Department of Energy (DOE) mandate under the Energy Independence and Security Act and the American Recovery and Reinvestment Act by selecting eligible projects that meet the stated objectives of those acts.

A123 Systems, Inc. is a manufacturer of high-power rechargeable lithium-ion batteries. The company's objective is to develop, validate, and scale mass production of its patented lithium-ion technology.

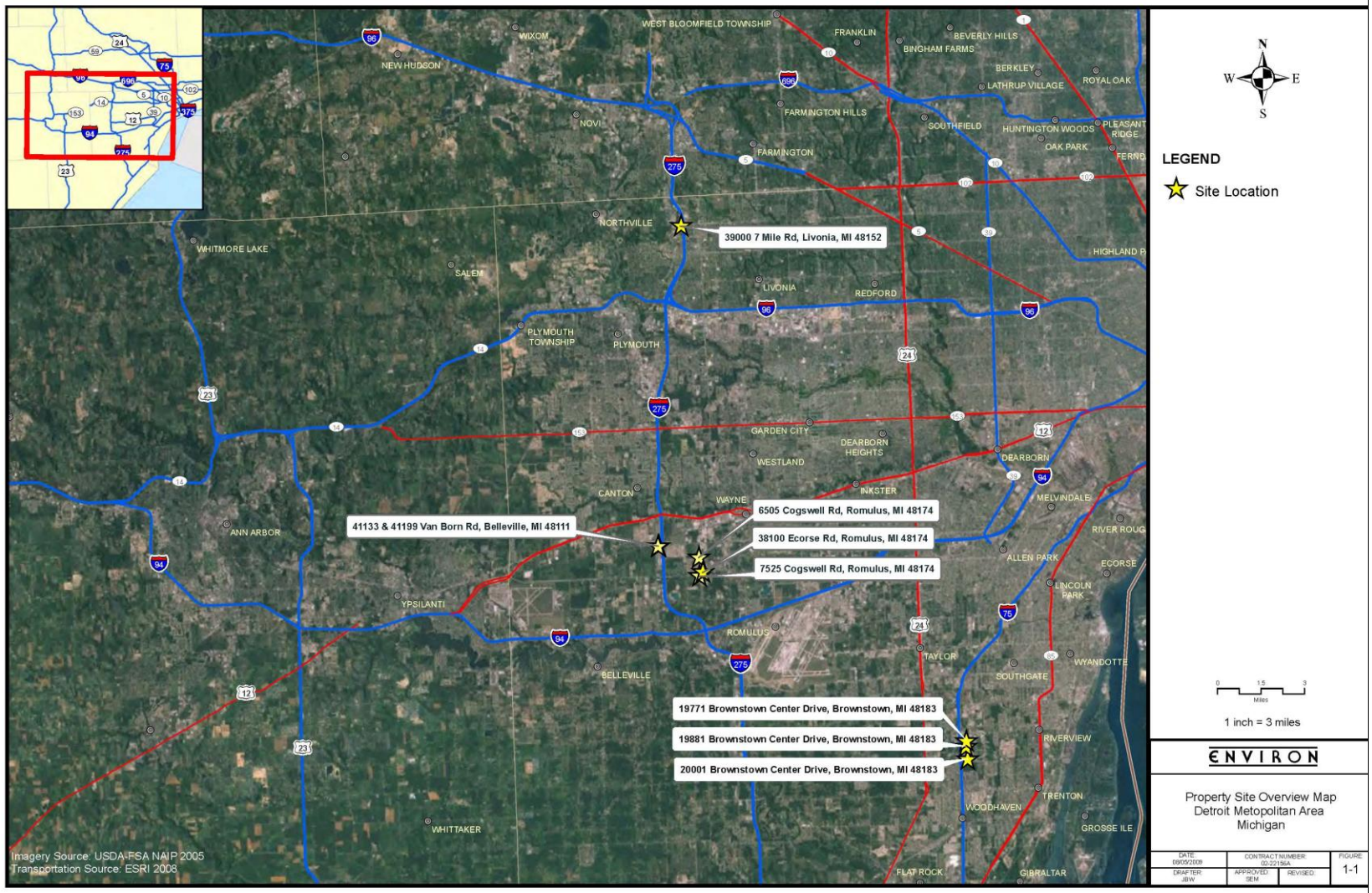
A123 has applied for a loan pursuant to the U.S. Department of Energy (DOE) Advanced Technology Vehicle Manufacturing Incentive Program (Incentive Program)[2]. Established under Section 136 of the Energy Independence and Security Act of 2007, this program provides incentives for projects that retrofit, expand, or create manufacturing facilities in the United States for advanced technology vehicles or qualifying components, including engineering costs. The primary goal of the Incentive Program is to improve fuel economy for light-duty vehicles and thereby reduce ozone precursors, greenhouse gas emissions, and particulate matter emissions associated with vehicle emissions. The Incentive Program is designed to stimulate the technology required to meet program objectives.

A123 also has applied for a grant from the DOE National Energy Technology Laboratory through the Office of Energy Efficiency and Renewable Energy Vehicle Technologies Program. The Vehicle Technologies Program was created to implement the American Recovery and Reinvestment Act of 2009 in support of the development of advanced electric-drive vehicles, including hybrid electric vehicles, plug-in hybrid electric vehicles, electric vehicles, and fuel-cell vehicles. The Vehicle Technologies Program sought applications for grants to support the construction (including production capacity increases of current plants) of U.S.-based manufacturing plants to produce batteries and electric-drive components. Specifically, A123 has applied for a grant under DOE Area of Interest 3, Combined Applications for Cell and Battery Manufacturing Facilities and Advanced Battery Supplier Manufacturing Facilities. Congress has provided funding for loan and grant programs to support construction of domestic advanced battery manufacturing facilities for electric vehicles.

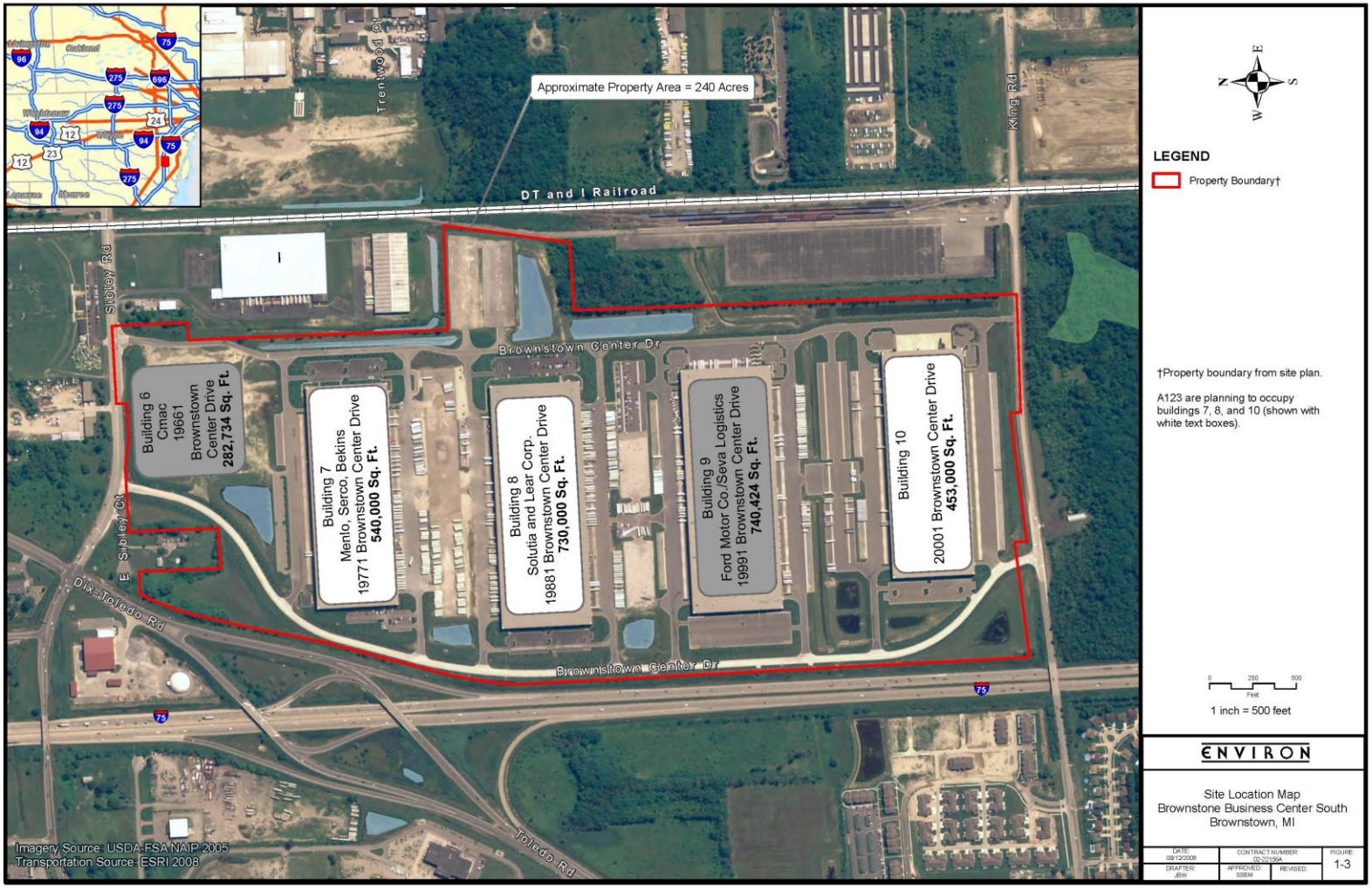
A123 is developing the technology to commercialize the production of lithium-ion phosphate batteries for electric drive vehicles that would reduce air emissions such as ozone precursors,

[2] The amount requested for the loan guarantee can not be disclosed at this time because it is business sensitive. Moreover, should DOE approve a loan guarantee, the amount may differ from the original request.

particulate matter, and greenhouse gases that contribute to global warming, as is consistent with the primary goal of the Incentive Program and the Vehicle Technologies Program. Financially supporting the A123 project would bring lithium-ion phosphate batteries to market and into use. This would improve vehicle efficiency, while reducing overall national emissions of air pollutants and human-caused greenhouse gases that existing nonrenewable energy sources otherwise would produce. Figure 1-1 provides an overview of the proposed centers. Figure 1-2 provides additional and site-specific details for Livonia; Figure 1-3 provides


WEST BLOOMFIELD TOWNSHIP
WIXOM
FRANKLIN
BEVERLY HILLS
BINGHAM FARMS
NEW HUDSON
BERKLEY
LATHRUP VILLAGE
ROYAL OAK
NOVI
FARMINGTON HILLS
SOUTHFIELD
HUNTINGTON WOODS
PLEASANT RIDGE
OAK PARK
FERND
FARMINGTON
NORTHVILLE
39000 7 Mile Rd, Livonia, MI 48152
WHITMORE LAKE
SALEM
LIVONIA
REDFORD
PLYMOUTH TOWNSHIP
PLYMOUTH
GARDEN CITY
DEARBORN HEIGHTS
WESTLAND
DEARBORN
INKSTER
CANTON
WAYNE
MELVINDALE
41133 & 41199 Van Born Rd, Belleville, MI 48111
6505 Cogswell Rd, Romulus, MI 48174
38100 Ecorse Rd, Romulus, MI 48174
7525 Cogswell Rd, Romulus, MI 48174
ANN ARBOR
RIVER ROUG
ALLEN PARK
ECORSE
LINCOLN PARK
YPSILANTI
ROMULUS
TAYLOR
WYANDOTTE
SOUTHGATE
BELLEVILLE
19771 Brownstown Center Drive, Brownstown, MI 48183
19881 Brownstown Center Drive, Brownstown, MI 48183
20001 Brownstown Center Drive, Brownstown, MI 48183
RIVERVIEW
TRENTON
WOODHAVEN
GROSSE ILE
WHITTAKER
FLAT ROCK
GIBRALTAR
Imagery Source: USDA FSA NAIP 2005
Transportation Source: ESRI 2008
N
W
E
S
LEGEND
Site Location
0 1.5 3
Miles
1 inch = 3 miles
ENVIRON
Property Site Overview Map
Detroit Metopolitan Area
Michigan
DATE: 09/09/2009
CONTRACT NUMBER: 02-22156A
FIGURE: 1-1
DRAFTER: JBW
APPROVED: SEM
REVISED:


Approximate Property Area = 35 Acres
39000 7 Mile Road, Livonia, MI 48152
Haggerty Rd
7 Mile Rd
Imagery Source: USDA-FSA NAIP 2005
Transportation Source: ESRI 2008
N
W
E
S
LEGEND
Approximate Property Boundary†
†Property boundary from site plan map.
1 inch = 250 feet
ENVIRON
Site Location Map
39000 7 Mile Road
Livonia, MI
1-2


Approximate Property Area = 240 Acres
Trentwood Ct
King Rd
DT and I Railroad
Sibley Rd
E Sibley Ct
Brownstown Center Dr
Dix-Toledo Rd
Toledo Rd
Building 6
Cmac
19661
Brownstown
Center Drive
282,734 Sq. Ft.
Building 7
Menlo, Serco, Bekins
19771 Brownstown Center Drive
540,000 Sq. Ft.
Building 8
Solutia and Lear Corp.
19881 Brownstown Center Drive
730,000 Sq. Ft.
Building 9
Ford Motor Co./Seva Logistics
19991 Brownstown Center Drive
740,424 Sq. Ft.
Building 10
20001 Brownstown Center Drive
453,000 Sq. Ft.
Imagery Source: USDA-FSA NAIP 2005
Transportation Source: ESRI 2008
N
E
S
W
LEGEND
Property Boundary†
†Property boundary from site plan.
A123 are planning to occupy buildings 7, 8, and 10 (shown with white text boxes).
0 250 500
Feet
1 inch = 500 feet
ENVIRON
Site Location Map
Brownstone Business Center South
Brownstown, MI
DATE: 09/12/2009
CONTRACT NUMBER: 02-22159A
FIGURE: 1-3
DRAFTED: JSW
APPROVED: SSEM
REVISED:

additional and site-specific details for Brownstown, and Figure 1-4 provides additional and specific details for Romulus.

Commercializing lithium-ion phosphate battery technology would provide a renewable means of producing and storing energy to power vehicles and simultaneously reduce U.S. dependence on fossil fuels, including imported oil. The objectives of the A123 proposed battery manufacturing project are to:

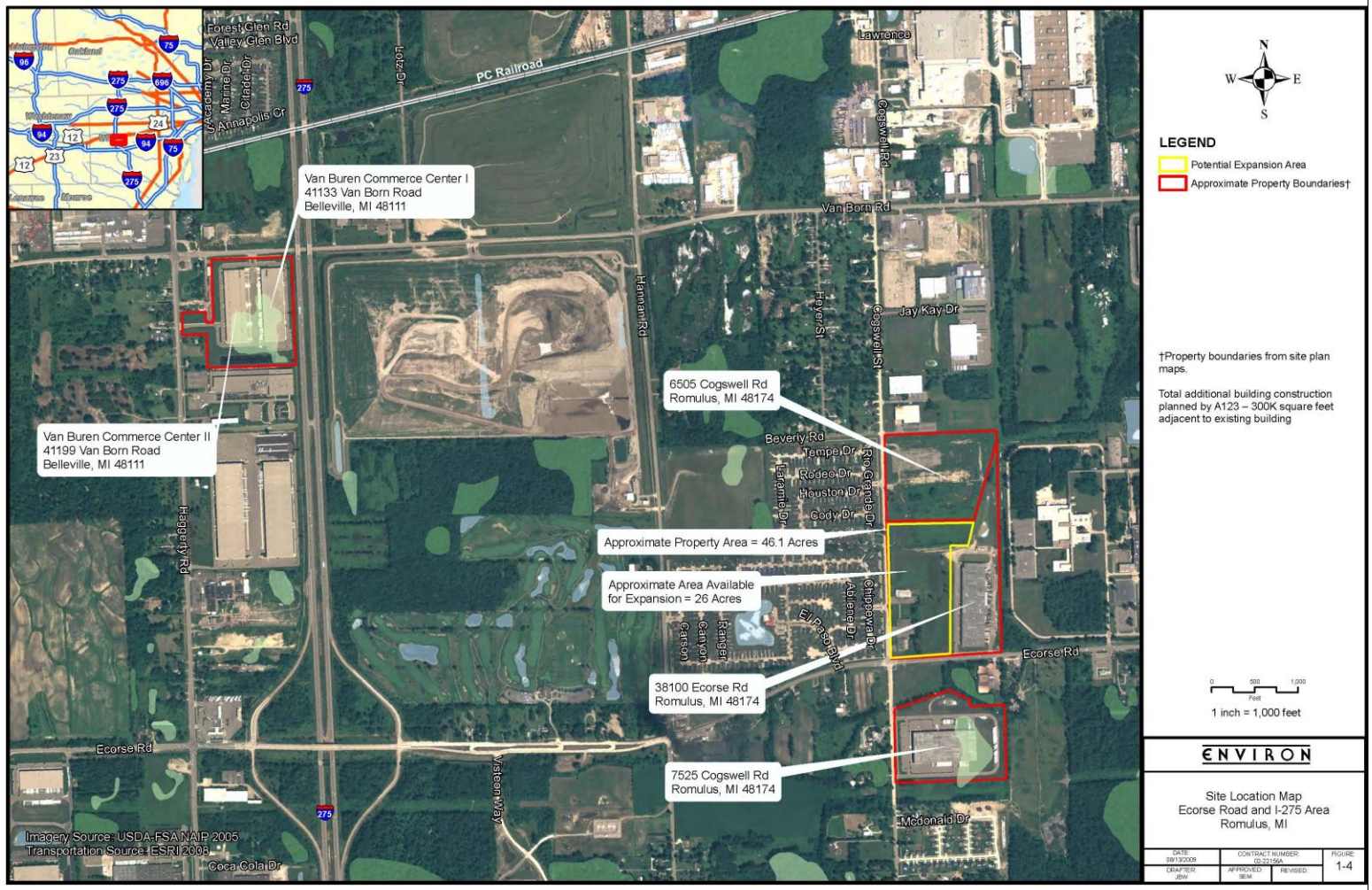
- By 2012,[3] build the capacity to power 580,000 5-kilowatt-hour plug-in hybrid electric vehicles and approximately 117,000 hybrid electric vehicles.
- Build a self-sustaining domestic enterprise capable of competing with international competitors.
- Stimulate the economy through the creation of more than 38,000 jobs, including 5,900 direct jobs, more than 14,000 indirect jobs, and more than 21,000 induced jobs.
- Help build an American battery manufacturing infrastructure, with key equipment and materials suppliers in the United States.
- Contribute to U.S. energy security.
- Provide technological leadership in the development of storage methods for renewable energy sources (A123 2009).

Using the targeted benchmark of 2012 for production, the incorporation of 1 year's output of A123 lithium-ion phosphate batteries into plug-in hybrid electric vehicles and hybrid electric vehicles would be expected to reduce national fuel consumption by more than 1 billion gallons of gasoline and reduce carbon dioxide emissions by approximately 12 million tons over a 10-year period. Therefore, the A123 project would help avoid and reduce emissions of air pollutants and human-caused greenhouse gases, as mandated by the U.S. Environmental Protection Agency (EPA) for passenger cars and trucks pursuant to federal emissions requirements under the Clean Air Act (65 *Federal Register* 6698, February 10, 2000).

1.2 Background

Energy Independence and Security Act Section 136 establishes requirements for the DOE Incentive Program. Loans are targeted at developing technologies that support advanced

[3] The project implementation schedule in this EA is from the original A123 loan and grant applications. The actual implementation schedule would depend on when DOE issued A123 a loan and a grant, if DOE selects the Proposed Action.


Van Buren Commerce Center I
41133 Van Born Road
Belleville, MI 48111
Van Buren Commerce Center II
41199 Van Born Road
Belleville, MI 48111
6505 Cogswell Rd
Romulus, MI 48174
Approximate Property Area = 46.1 Acres
Approximate Area Available
for Expansion = 26 Acres
38100 Ecorse Rd
Romulus, MI 48174
7525 Cogswell Rd
Romulus, MI 48174
PC Railroad
Van Born Rd
Ecorse Rd
Haggerty Rd
Hannan Rd
Cogswell Rd
Jay Kay Dr
Beverly Rd
Tempe Dr
Rodeo Dr
Houston Dr
Cody Dr
Rio Grande Dr
Laramie Dr
Heyer St
Abilene Dr
Chippewa Dr
El Paso Blvd
Carson
Canyon
Ranger
Wayne Way
Mcdonald Dr
Coca Cola Dr
Imagery Source: USDA-FSA NAIP 2005
Transportation Source: ESRI 2008
LEGEND
Potential Expansion Area
Approximate Property Boundaries†
†Property boundaries from site plan maps.
Total additional building construction planned by A123 – 300K square feet adjacent to existing building
1 inch = 1,000 feet
ENVIRON
Site Location Map
Ecorse Road and I-275 Area
Romulus, MI
FIGURE 1-4

technology vehicles, although the vehicles are not yet necessarily available on a commercial scale for mass production for the U.S. automotive sector. DOE published an Interim Final Rule (73 *Federal Register* 66721, November 12, 2008) and invited interested parties to submit loan applications that meet the stated objectives of the Energy Independence and Security Act in tranches, or waves of applications, due every 90 days from the date the *Federal Register* notice as long as the funds and loan authority were in place. DOE received the A123 application by the first deadline of December 31, 2008.

American Recovery and Reinvestment Act Title IV, Energy and Water Development, appropriates stimulus funds to the DOE Office of Energy Efficiency and Renewable Energy for grants to manufacture electric-drive vehicle batteries and components. The National Energy Technology Laboratory administers this program. On March 19, 2009, successful applicants with a substantially complete application were invited to complete an environmental questionnaire for National Environmental Policy Act (NEPA) compliance as part of the ongoing review process. On May 19, 2009, A123 submitted an application requesting a grant under the National Energy Technology Laboratory program to support the retrofitting of several existing buildings and new construction of one building at three primary manufacturing centers in the Detroit metropolitan area.

DOE is performing a detailed review of the A123 applications and supporting documentation to evaluate the financial risk of the proposed project.

1.3 Scope of this Environmental Assessment

DOE is using the National Environmental Policy Act (NEPA) process to help determine whether to issue A123 a loan and a grant to support the proposed project.

This Environmental Assessment (EA) describes the potential environmental effects of the DOE Proposed Action to issue A123 a loan and a grant to retrofit existing facilities and construct and equip a new facility for lithium-ion phosphate battery manufacturing operations. DOE has prepared this EA in accordance with NEPA, Council on Environmental Quality NEPA implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and DOE NEPA implementing procedures (10 CFR 1021).

1.4 Document Organization

Chapter 1, Purpose and Need, describes the purpose and need for the proposed DOE action, provides background information about the DOE loan and grant programs, and describes the scope and organization of the EA.

Chapter 2, Proposed Action and No-Action Alternative, describes the Proposed Action and No-Action Alternative.

Chapter 3, Affected Environment, describes existing baseline conditions for environmental resources the Proposed Action could affect – land use, visual resources, air quality, noise, geology and seismicity, water resources, biological resources, cultural resources, socioeconomics and environmental justice, public health and safety, and transportation.

Chapter 4, Environmental Consequences, describes the potential physical, biological, and socio-cultural effects under the Proposed Action and the No-Action Alternative, and describes the potential cumulative impacts of the Proposed Action.

Chapter 5, List of Preparers, lists EA preparers and provides a brief description of their credentials and roles in EA preparation.

Chapter 6, List of Agencies Contacted, lists agencies contacted regarding this EA.

Chapter 7, References, lists the sources of information used during EA preparation.

2 Proposed Action and No-Action Alternative

This chapter describes the DOE Proposed Action, the A123 lithium-ion phosphate battery manufacturing process and product, and the No-Action Alternative.

2.1 Proposed Action

The DOE Proposed Action is to issue A123 loan and grant funding to retrofit existing facilities and construct and equip a new facility to support lithium-ion phosphate battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles in the Detroit metropolitan area of southeastern Michigan.

2.1.1 Project Objectives

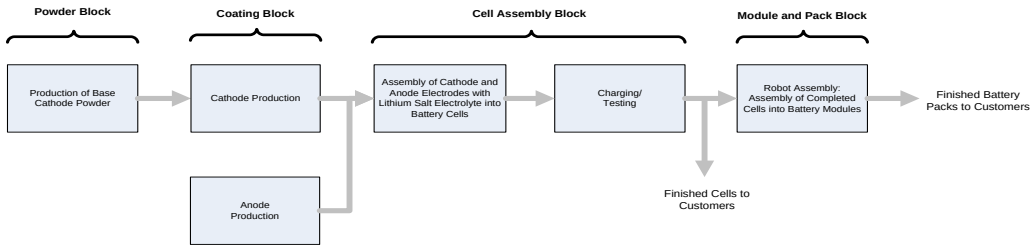
The objectives of the A123 proposed battery manufacturing project are to (1) build the annual capacity to power 580,000 5-kilowatt-hour plug-in hybrid electric vehicles and approximately 117,000 hybrid electric vehicles by 2012, (2) build a self-sustaining domestic enterprise capable of competing with international competitors, (3) stimulate the economy through the creation of more than 38,000 jobs, including 5,900 direct jobs, more than 14,000 indirect jobs, and more than 21,000 induced jobs, (4) help build an American battery manufacturing infrastructure, with key equipment and materials suppliers in the United States, (5) contribute to U.S. energy security, and (6) provide technological leadership in the development of storage methods for renewable energy sources (A123 2009). Using the targeted benchmark of 2012 for production, the incorporation of 1 year's output of A123 lithium-ion phosphate batteries into plug-in hybrid electric vehicles and hybrid electric vehicles would be expected to reduce national fuel consumption by more than 1 billion gallons of gasoline and reduce carbon dioxide emissions by approximately 12 million tons over a 10-year period.

2.1.2 Process Description

Lithium-ion batteries generate electricity by means of an electrochemical reaction in which a lithium ion moves between the battery cell's anode and cathode. The three components necessary for the electrochemical reaction are the anode (negative electrode), cathode (positive electrode), and an electrolyte. The lithium ion moves from the anode to the cathode during discharge, and from the cathode to the anode when charging. The cathode of the A123 battery cell consists of a proprietary lithium-ion phosphate powder coated onto both sides of aluminum foil and then bonded to the foil during baking. The anode of A123 battery cell is a graphite powder coated onto both sides of a copper foil and then bonded to the foil during baking. The electrolyte consists of a lithium salt in an organic solvent.

A123 plans to build a vertically integrated manufacturing system that encompasses the full production process, including manufacturing the proprietary cathode powder (Powder Block[4]), manufacturing cathodes and anodes (Coating Block), fabricating cells (Cell Assembly Block), and assembling modules and completing battery systems for vehicle integration (Module and Pack Block). Figure 2-1 is a simplified diagram of the process. Sections 2.1.2.1 through 2.1.2.4 describe specific operations in each manufacturing block.

Figure 2-1: Simplified Block Flow Diagram – Vertically Integrated Manufacturing Process



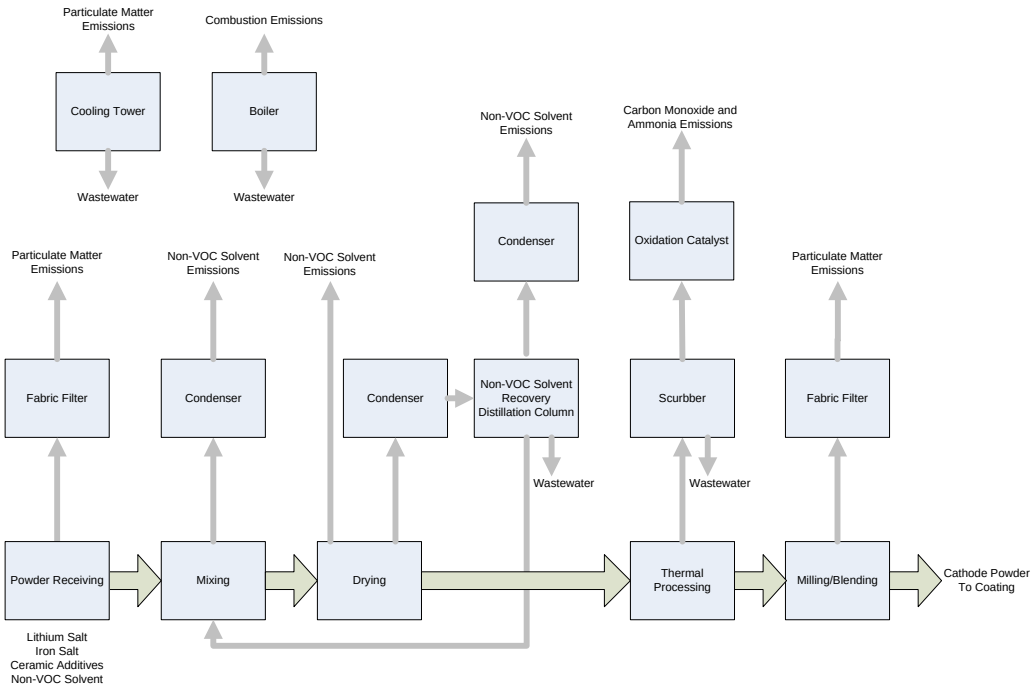
2.1.2.1 Powder Block Operations

Powder Block operations involve the production of lithium iron phosphate powder material for cathode manufacture. Lithium and iron salt powders and ceramic additives would be processed with a non-volatile organic compound (VOC) solvent (acetone) to achieve the necessary chemical characteristics for cathode performance. The mixture would be dried and the non-VOC solvent captured from the process, evaporated, condensed, collected, distilled, and reused. The lithium-iron phosphate powder would then be processed, thermally milled,

[4] A123 describes its manufacturing processes in terms of "Blocks," that is, the physical processes needed to manufacture 90 metric tons of lithium-iron phosphate powder into finished batteries. A Block is analogous to two 45-metric-ton modules of manufacturing or processing capacity. Each 45-metric-ton module is considered one-half Block.

blended, and transferred to the Coating Block operation. Figure 2-2 is a simplified schematic of the Powder Block manufacturing process, including the key raw materials and expected air emissions and wastewater streams,

Figure 2-2. Simplified Block Flow Diagram – Powder Block Operations



and process and pollution control equipment. Figure 2-3 provides photographs of the types of equipment associated with Powder Block operations. Permitting requirements applicable to operations are not process specific; they are site specific, as discussed in Section 2.1.14.

2.1.2.2 Coating Block Operations

Coating Block operations would consist of separate coating lines for making anode and cathode electrode sheets. Anodes would use imported graphite powder as the primary component; cathodes would use lithium-iron phosphate powder manufactured from Powder Block operations. Anode and cathode powders would be mixed separately with binders and an organic solvent (n-Methylpyrrolidone) that acts as a carrier. The anode slurry and the cathode

Figure 2-3: Powder Block Operations Equipment Types

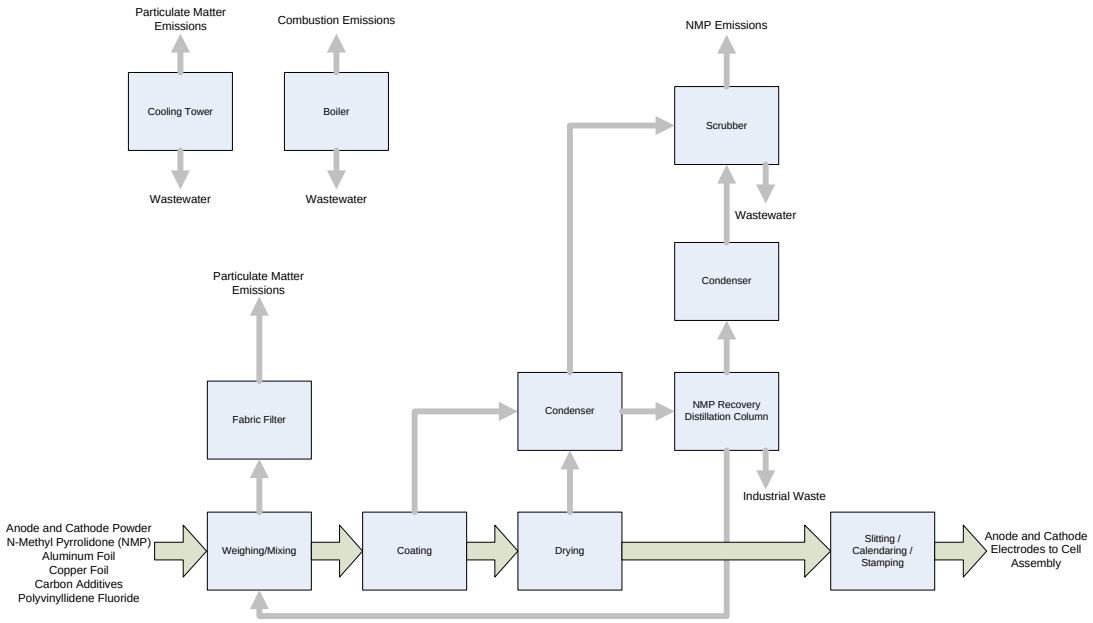
Mixer

Blender

Thermal Processing

slurry would then be applied as a thin coating to rolls of metallic foil sheets (copper for anode and aluminum for cathode) in three-lane or six-lane coaters.[5] The coated foil sheets would pass through curing ovens to yield the final anode and cathode products. The carrier solvent, which would be driven off in the curing ovens, would be captured, condensed, distilled, and reused in the process. The rolls of electrode would then be slit, densified, and stamped to form individual sheets of specified sizes. These electrode sheets would be transferred to the Cell Assembly Block operations at other sites. Figure 2-4 is a simplified schematic of Coating Block operations, including the key raw materials, expected air emissions, wastewater streams and solid wastes, and process and pollution-control equipment. Figure 2-5 provides photographs of the types of equipment associated with Coating Block operations. Permitting requirements applicable to operations are not process specific; they are site specific, as discussed in Section 2.1.14.

Figure 2-4. Simplified Block Flow Diagram – Coating Block Operations



[5] The coaters A123 would use would be conventional double-sided roll-to-roll coaters with convection hot-air drying. There would be two coating stations and two drying chambers for each coater, and the material would alternate between coating and drying for a total of two coating and two drying steps. The number of lanes would define the operating width for coating. Three lanes would correspond to approximately 700 millimeters of coating width; six lanes would correspond to approximately 1,400 millimeters of coating width.

Figure 2-5: Coating Block Operations Equipment Types

Calendaring (densification)

Slitting

Master Web (Anode)

Slit Rolls

Slurry Mixing for Coater

Coater Control Console

Figure 2-5 Coating Block Operations Equipment Types (continued)

Coater Ovens

Coater Feed and Electrical Application

2.1.2.3 Cell Assembly Block Operations

Figure 2-6 is a simplified schematic of the Cell Assembly and Module and Pack Block (see Section 2.1.2.4) operations, including the key raw materials, expected air emissions, wastewater streams and solid wastes, and process and pollution control equipment. Figure 2-7 provides photographs of the types of equipment associated with the Cell Assembly and Module and Pack Block operations. Permitting requirements applicable to operations are not process specific; they are site specific as described in Section 2.1.14.

Cell Assembly Block operations would consist of assembling anode and cathode foil sheets by stacking (for prismatic cell configurations) or rolling (for cylindrical cell configurations) with separator sheets and then placing them into a laminated foil pouch or cylindrical casing to form battery cells. Cells would be filled with liquid lithium salt electrolyte, sealed, and leak tested to produce battery cells. All cells would then undergo formation by application of an electric current and then be aged at elevated temperatures before final testing. Prismatic cells would be degassed under vacuum after formation. Cylindrical Cell Assembly Block operations would differ from Prismatic Cell Assembly Block Operation because the cells would be assembled in a metal can instead of a foil pouch, a slightly different electrolyte would be used, and the cylindrical cell production would not involve degassing the final formed cells. Cells could be shipped to customers or A123 Module and Pack Block operations for further assembly into battery packs.

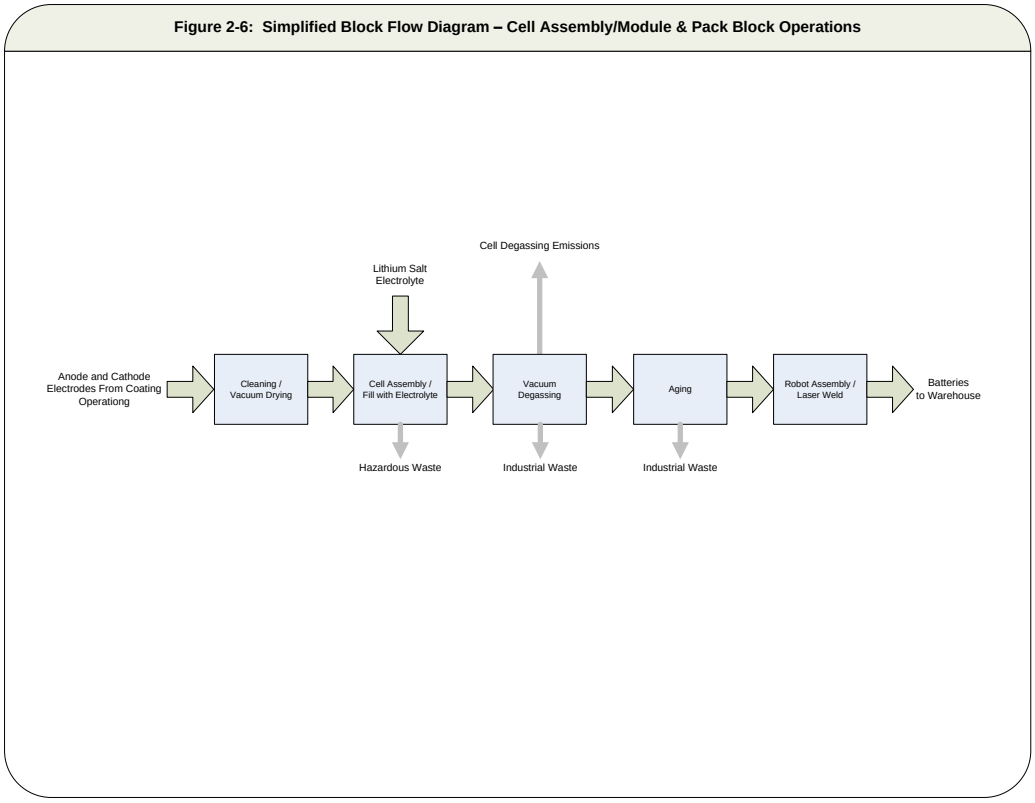


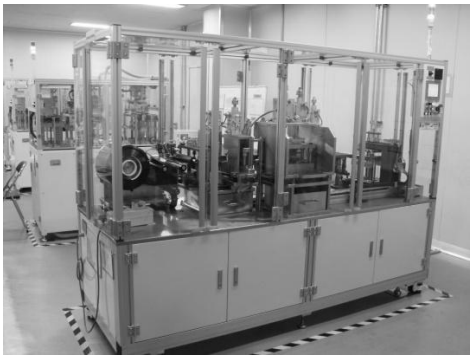
Figure 2-7: Cell Assembly/Module and Pack Block Operations Equipment Types

Packaging and electrolyte filling

Stacking

Figure 2-7: Cell Assembly/Module and Pack Block Operations Equipment Types (continued)

Stamping



Automated inspection and formation

Prismatic module assembly station

2.1.2.4 Module and Pack Block Operations

Module and Pack Block operations would consist of an automated robotic process to assemble cells into battery modules and packs to meet a variety of form-factor specifications for automotive customer applications.

2.1.3 Process Implementation

A123 proposes to implement a manufacturing scale-up plan in three phases over 3 years. This approach would begin with low-risk, mature process technologies; A123 would improve the technologies and systematically increase throughput over time.

Phase I would involve rapidly installing the low-volume manufacturing factory, a Cell Assembly Block and Module and Pack Block operation that would use the same processes and equipment currently used in existing A123 Asian factories. The only difference would be an increase in the level of automation for material movement and process control to boost output and productivity. Low-volume manufacturing would initially use electrode sheet material imported from A123

Asian factories until coated electrode production capacity was established domestically. Planning and permitting are underway for Phase I and the facility would be expected to start production in the third quarter of 2010.

Phase II would involve installing equipment almost identical to that used for current production, but with increased throughput at specific, low-risk operations. This high-volume manufacturing capability would reduce costs by approximately 10 percent and improve productivity through additional automation, data collection, and manufacturing execution platforms. Phase II would be executed in 2010 and 2011.

Phase III would involve putting in place high-volume manufacturing capability that leapfrogs the capacity installed in phase two facilities by as much as twice the operational output of powder, coatings, and cell assembly. The processes installed in this phase would reduce overall costs (both capital and operational) by more than 20 percent, reduce space requirements, maximize productivity, and allow for improved scalability. Phase III would begin in 2010 and be completed by the end of 2013.

2.1.4 Proposed Locations

A123 proposes to manufacture lithium-ion phosphate battery materials at the following sites in the Detroit metropolitan area:

- Livonia, Michigan (research and development and low-volume manufacturing Cell Assembly and Module and Pack Blocks)
- Brownstown, Michigan (high-volume manufacturing Cell Assembly and Module and Pack Blocks)
- Romulus, Michigan (high-volume manufacturing Powder and Coating Blocks)

The Livonia site consists of an existing 291,000-square-foot multi-level building at 39000 Seven Mile Road in Livonia.

The Brownstown site is a complex of five existing buildings on the South Campus of the Brownstown Business Center, an industrial park in Brownstown. At this location, A123 proposes to occupy and retrofit parts of three of the five buildings, totaling approximately 1,723,000 square feet.

The Romulus site consists of five parcels, each of which includes existing buildings – 38100 Ecorse Road, 6505 Cogswell Road, 7525 Cogswell Road, 41133 Van Born Road, and 41199 Van Born Road. See Figure 1-1. Adjacent to the 38100 Ecorse Road location (where the current land use is industrial), a new and separate 300,000 square-foot building would be constructed in the previously disturbed Expansion Site. The landlord would construct the Expansion Site building, the address of which would be 38070 Ecorse Road, to suit A123 operational parameters, and A123 would equip the new facility. This would be the only new building construction in the A123 lithium-ion battery manufacturing project. Although there would be no clearing or ground-disturbing activities at the Livonia site, the Brownstown site, or

four of the five Romulus site parcels, each existing building at these sites would require some interior modifications and the installation of prefabricated ancillary exterior structures (such as distillation columns, scrubbers and other pollution control equipment, and aboveground storage tanks). Sections 2.1.4.1 through 2.1.4.3 provide detailed information about each location's planned construction and operations. Table 2-1 lists production requirements, Tables 2-2 and 2-3 summarize the locations of the existing properties, the available size (in square feet) at each location, and planned operations at each site. Table 2-4 lists material usage information for all of the sites.

Table 2-1
A123 Production Requirements 2010-2013

Block	Blocks Required	Manufacturing Square Feet per Block	Total Square Feet	Comments
Powder Block	11	90,000	990,000	90 metric tons per month capacity per block = 6.5 million cells per year
Coating Block three lanes	0.5	100,000	50,000	Supports 9.9 million cells per year per block
Coating Block six lanes	2.5	140,000	350,000	Supports 26.6 million cells per year per block
Cell Assembly	17.5	70,000	1,225,000	3.6 million (first generation) or 4.0 million (second Generation) cells per year per block
Module and Pack Assembly	3	40,000	120,000	100 thousand plus packs per year per block equals 22.5 million cells per year per block
Warehouse	1	135,000	135,000	Logistics Center
Total square feet needed: 2,870,00				

Table 2-2
Production Site Use Plan for Romulus Complex

				Planned Operations		
Site	**Address**	**Existing Building Square Feet**	**New Construction**	**Blocks**	**Number of Blocks**	**Square Feet Required**
Plastech/LDM Technologies High-Volume Manufacturing Factory	38100 Ecorse Road Romulus, Michigan 48174	273,000	None	Powder Coating (Hybrid Block) Total	1 1	90,000 140,000 230,000
Medine and Mastronardi High-Volume Manufacturing Factory	6505Cogswell Road Romulus, Michigan 48174	424,320	None	Powder Coating (six lanes) Total	2 1	180,000 140,000 320,000
Van Buren Commerce Center I High-Volume Manufacturing Factory	41133 Van Born Road Belleville, Michigan 48111	199,920	None	Powder Coating Total	2	180,000 180,000
Van Buren Commerce Center ll High-Volume Manufacturing Factory	41199 Van Born Road Belleville, Michigan 48111	199,920	None	Powder Total	2	180,000 180,000
Archway/Gage Marketing High-Volume Manufacturing Factory	7525 Cogswell Road Romulus, Michigan 48174	252,700	None	Powder Coating (six lanes) Total	1 1	90,000 140,000 230,000
Plastech/LDM Technologies High-Volume Manufacturing Factory	38070 Ecorse Road Romulus, Michigan 48174		300,000	Powder Coating (Hybrid Block) Total	3 0	270,000 270,000
Total Romulus space available: 1,349,060 + 300,000 = 1,649,060 square feet				Total space needed: 1,410,000 square feet		

Table 2-3
Production Site Use Plan for Livonia and Brownstown Complex

Site	Address	Existing Building Square Feet	Blocks	Number of Blocks	Square Feet Required
Livonia USA-1 Low-Volume Manufacturing Factory	39000 Seven Mile Road Livonia, Michigan 48152	291,000	Prismatic Cell Assembly Module and Pack 32113 Assembly ESG Engineering Offices and Shared Spaces Research and Development Laboratories Total	1 0.5 1 1 1 1	100,000 20,000 20,000 40,000 95,000 15,000 290,000
Brownstown Building 10 High-Volume Manufacturing Factory	200001 Brownstown Center Drive Brownstown, Michigan 48192	453,000	Cell Assembly Module and Pack Total	5 1	350,000 40,000 390,000
Brownstown Building 8 High-Volume Manufacturing Factory	19881 Brownstown Center Drive Brownstown, Michigan 48192	730,000	Cell Assembly Module/Pack Warehouse Total	7.5 1 1	525,000 40,000 140,000 705,000
Brownstown Building 7 High-Volume Manufacturing Factory	19771 Brownstown Center Drive Brownstown, Michigan 48192	540,000	Cell Assembly Module and Pack Total	4.5 1	315,000 40,000 355,000
Total Livonia and Brownstown space available: 2,014,000				Total space needed: 1,740,000	

Table 2-4
Raw Material Consumption Rates At Full Build-Out Capacity

Raw Materials Input[a]	Type of Container	Material Processed (kilograms per month)
Powder Blocks (Romulus Complex)		
Non-volatile organic compound solvent (Acetone)	Bulk liquid	220,000
Lithium-iron phosphate powders (lithium and iron salts with ceramic additives)	Fiberboard containers	1,069,431
Coating Blocks (Romulus Complex)		
Graphite powder (for anodes)	Fiberboard containers	52,073
Composite Graphite Powder (for anodes)	Fiberboard containers	523,936
Additive (Oxalic acid)	Fiberboard containers	565
Binder (Polyvinyllidene Fluoride)	Fiberboard containers	73,807
Copper Foil	Bulk pallets	488,000
Aluminum Foil	Bulk pallets	270,000
n-Methylpyrrolidone	Bulk liquid	367,000
Cell Assembly Blocks (Brownstown)		
Electrolyte for prismatic cells	Totes	607,967
Anode sheet for prismatic cells	Bulk Pallets	2,331,749
Cathode sheet for prismatic cells	Bulk Pallets	3,959,747
Cell Assembly Blocks (Livonia)		
Electrolyte for prismatic cells	Totes	29,229
Electrolyte for cylindrical cells	Totes	1,750
Anode sheet for prismatic cells	Bulk Pallets	141,318
Anode sheet for cylindrical cells	Bulk Pallets	1,000
Cathode sheet for prismatic cells	Bulk Pallets	239,985
Cathode sheet for cylindrical cells	Bulk Pallets	2,100

[a] Anode and cathode sheets for prismatic and cylindrical cells, which are the raw materials for the cell assembly blocks at Livonia and Brownstown, are intermediate products from the Romulus Complex

2.1.4.1 Livonia

Process Operations

For the Phase I low-volume manufacturing plant, A123 has leased an existing, 291,000-square-foot multi-level building at 39000 Seven Mile Road in Livonia, Michigan. The Livonia facility would include the following operations:

- Prismatic Cell Assembly Block (approximately 100,000 square feet)
- Module and Pack Block (approximately 20,000 square feet)
- Prototype Cell Assembly Block (known as the Cylindrical Cell Assembly Block, approximately 20,000 square feet)
- Engineering laboratory (approximately 40,000 square feet)
- Research and development laboratory (approximately 15,000 square feet)
- Offices and shared spaces (approximately 95,000 square feet)

The Livonia facility would not contain Powder and Coating Blocks. This low-volume manufacturing plant would produce prismatic and cylindrical cells, and battery modules and packs. Planning for this location is underway. A123 has received an exemption from air permitting from the Michigan Department of Environmental Quality (MDEQ) for facility operations. Startup production would utilize electrode material produced in A123 Asian factories until coated electrode material became available from the Romulus facilities, projected to occur in 2011 to 2013. At full capacity, this plant would be expected to produce 257 megawatt hours of lithium-ion battery cells (equivalent to battery packs for 52,000 5-kilowatt-hour plug-in hybrid electric vehicles). Table 2-4 lists the primary raw material consumption rates expected at full build-out capacity.

Construction Activities

No new or exterior building construction is planned for this facility, except for two 6,000 gallon liquid nitrogen and electrolyte above ground storage tanks (one each), and a 40 foot long helium tube trailer. A123 would retrofit the interior of the existing building to install manufacturing equipment.

2.1.4.2 Brownstown

Process Operations

In Phase I of the manufacturing ramp up, A123 proposes to occupy and retrofit parts of three of the five buildings on the South Campus of the Brownstown Business Center – Building 7 (19771 Brownstown Center Drive, 540,000 square feet), Building 8 (19881 Brownstown Center Drive, 730,000 square feet), and Building 10 (20001 Brownstown Center Drive, 453,000 square feet). A123 would occupy a total of 1,723,000 square feet in these buildings. All three occupied

buildings are designed to become high-volume manufacturing plants under full build-out conditions. Building 7 would house four Cell Assembly Blocks and a modified portion of one Module and Pack Block. Building 8 would house 7.5 Cell Assembly Blocks, a portion of one Module and Pack Block, and a 140,000-square-foot warehouse. Building 10 would house five Cell Assembly Blocks and one Module and Pack Block. As discussed in Section 2.1.14, planning and environmental permitting for Phase I at this location is scheduled to begin in 2010, with full ramp up completed in 2013. Production would be expected to be fully operational in 2013. At full capacity and in conjunction with the Romulus facilities discussed in the Section 2.1.4.3, Phase I would be expected to support the production of 1,129 megawatt hours of lithium-ion cells (equivalent to battery packs for 270,000 5-kilowatt-hour plug-in hybrid electric vehicles). Additional capacity would be added at this facility during Phase III to scale up to a capacity of 2,871 megawatt hours of lithium-ion cells (equivalent to battery packs for 580,000 5-kilowatt-hour plug-in hybrid electric vehicles). Table 2-4 lists primary raw material consumption rates expected at full build-out capacity.

Construction Activities

No new or exterior building construction is planned for this facility, with the exception of six (one per building of each) 6,000 gallon liquid nitrogen and electrolyte aboveground storage tanks, and three 40 foot long helium tube trailers (one per building). A123 would retrofit the interior of the existing buildings to install manufacturing equipment. It is possible that new prefabricated controlled manufacturing facilities would be installed along with storage facilities for raw materials or hazardous waste (including one or more aboveground storage tanks). If outside the existing buildings, such facilities would be in vacant areas immediately adjacent to the building within the existing developed footprint of the facility, and would comply with all applicable state requirements for installation of storage tanks (see Section 2.1.14.2).

2.1.4.3 Romulus

Process Operations

In Phase I of the manufacturing ramp up, A123 also proposes to occupy and retrofit five existing locations in Van Buren Township and Romulus, Michigan, and expand one facility in Romulus to serve as high-volume manufacturing plants. The four facilities expected to be retrofitted include two properties in the Van Buren Commerce Center at 41133 and 41199 Van Born Road, Belleville (but physically located in Van Buren Township), Michigan, and two properties in Romulus at 6505 and 7525 Cogswell Road. The fifth property, where the only new outdoor construction is proposed, is an existing building at 38100 Ecorse Road in Romulus with an adjacent approximately 26-acre vacant lot referred to as the Expansion Site. The Ecorse Road property is in the final phases of lease negotiations. The properties in the Van Buren Commerce Center are each expected to house two Powder Blocks. The property at 6505

Cogswell Road is expected to house two Powder Blocks and one six-lane Coating Block. The property at 7525 Cogswell Road is expected to house one Powder Block and one six-lane Coating Block. The property at 38100 Ecorse Road (with the Expansion Site at 38070 Ecorse Road) is expected to house four Powder Blocks and one hybrid[6] Coating Block. Table 2-2 describes details by property. As discussed in Section 2.1.14, planning and environmental permitting for Phase II at these properties is expected to begin in 2009 for the 2011 operational facilities and in 2010 for the 2012 and 2013 operational facilities. At full capacity and in conjunction with the Brownstown facilities described in Section 2.1.4.2, Phase II would be expected to support the production of 1,129 megawatt hours of lithium-ion cells (equivalent to battery packs for 270,000 5-kilowatt-hour plug-in hybrid electric vehicles). Additional capacity would be added at this facility during Phase III to scale up to a capacity of 2,871 megawatt hours of lithium-ion cells (equivalent to battery packs for 580,000 5-kilowatt-hour plug-in hybrid electric vehicles). Table 2-4 lists primary raw material consumption rates expected at full build-out capacity.

Construction Activities

Construction of the 300,000-square-foot Expansion Site would be expected to require only minimal grading to level and prepare the building surface because the site was previously graded and cleared (see Figure 2-8). As part of construction, new parking spaces would be added to the east of the Expansion Site. No new access roads would be expected because the existing access via Ecorse Road is already developed and in use for the adjacent building. If new access entrances were required, access to the Expansion Site would be via the existing access route on Ecorse Road and through an additional parking lot or parking spaces added as part of the new construction. No underground utilities or pipelines, other than water, sewer, electricity, and natural gas for space heating for the new building, are anticipated. There are no wetlands or floodplains within the Expansion Site boundary. Storm-water detention would be accomplished using a shared basin immediately north of the Expansion Site on the adjacent property at 6505 Cogswell Road. A123 plans to add decorative landscaping around the perimeter of new construction to match the existing landscaping at the existing building, which is comprised of grassy areas and a limited number of ornamental trees.

A123 might need to remove a few ornamental trees on the eastern perimeter of the Expansion Site and the western edge of the existing parking lot during site preparation. A123 would construct the new building in 2011 so it could be occupied and equipped for production in 2012.

[6] The hybrid Coating Block would use the same coaters as previously described. The difference would be that a three-lane coating block or a six-lane Coating Block would be comprised of only three-lane coaters or only six-lane coaters, respectively, while a hybrid Coating Block would be made up of a mix of three-lane and six-lane coaters. Specifically, a hybrid Coating Block would be comprised of three three-lane coaters and two six-lane coaters.

Each of the facilities also would require modification of interior areas to accommodate powder and/or coating operations. In addition, prefabricated exterior structures, including distillation columns, scrubbers, condensers, aboveground storage tanks, and pollution-control equipment, would be required and would be located immediately adjacent to the existing buildings. To the extent necessary, existing parking spaces would be relocated to other available on-site areas. Construction of such facilities would conform to applicable codes for construction of storage tanks (see Section 2.1.14.2).

Figure 2-8. Looking east from Gogswell Road at Expansion Site

2.1.5 Emissions, Effluents, and Waste Streams

2.1.5.1 Air Emissions

The primary air emissions at the Romulus sites would consist of fuel-combustion products from the boilers used to generate process steam, carbon monoxide and ammonia emissions from the thermal processing lines, a VOC (NMP) from the solvent recovery and distillation processes, and particulate matter from the dry raw materials and powder handling equipment. Emissions from Livonia and Brownstown facilities would consist of natural gas combustion products associated with the emergency generator and comfort heating (boilers), and minimal process emissions from cell degassing during prismatic cell assembly (after the initial charge, a vacuum would be pulled on the assembled cells to provide intimate contact between the anode, cathode, and electrolyte, during which a small amount of gas would be evolved). Process emissions from the assembly and formation of cylindrical cells are anticipated to be *de minimis*. A123 anticipates that construction-related emissions would be fugitive dust during grading at the 38100 Ecorse Road facility, emissions from delivery vehicles at all the facilities, emissions from vehicles used by construction personnel for commuting to all facilities, and use of any construction equipment inside and outside of the structures that emit air pollutants.

A123 would install the following air pollution control equipment (or equivalent) at the Romulus facilities to control process emissions:

- Particulate control equipment, including dust collectors and fabric filters (which would control particulate emissions on exhaust to 0.01 gram per standard cubic foot) on the more significant dry raw materials and powder handling equipment to control emissions of particulate matter.

- Chilled water and refrigerated vent condensers (85 percent to 99 percent removal efficiency) on the anode and cathode coating lines, drying lines, and solvent recovery distillation columns, which would cool the exhaust stream to recover condensable solvent for reuse.

- Scrubbers on the coating line solvent recovery distillation columns to increase solvent removal efficiency (95 percent removal efficiency) by capturing solvent in aqueous solution. An oxidant such as hydrogen peroxide solution would be used to treat effluent water from the polishing scrubber before it was discharged to the sewer.

- Ammonia scrubbers (95 percent removal efficiency) and oxidation catalysts (98 percent removal efficiency) on the thermal processing vents from powder production.

- Chilled water and refrigerated vent condensers (85 percent to 99 percent removal efficiency) on the powder production operations and spray dryers to recover the condensable non-VOC solvent for reuse.

- Ultra low oxides of nitrogen burners and “good combustion control” (maintaining the boilers according to manufacturer specifications, conducting periodic burner tune-ups and adjustments, and operator training) on the powder and coating process boilers to control fuel combustion emissions.

Most of the air pollution control equipment would be either inside or on the roofs of the buildings. However, certain equipment, such as the solvent recovery distillation columns, condensers, scrubbers, and oxidation catalysts, might need to be outside immediately adjacent to the manufacturing buildings because of limited space or structural load limitations of the buildings, or to keep the air pollution control equipment near the emitting process being controlled.

A123 would employ additional measures (for example periodic sweeping of paved areas and parking areas and restricting idling of trucks) to minimize fugitive and transportation-related emissions from the Romulus, Brownstown, and Livonia facilities. Section 2.1.14 and Chapters 3 and 4 provide more information about regulatory permit requirements, air emission estimates, and pollution control technologies for each site.

2.1.6 Storm Water Runoff

The planned 300,000-square-foot expansion of the 38100 Ecorse Road facility would disturb approximately 26 acres, and the storm-water runoff from the disturbed area would be expected to constitute a point source discharge.[7] A123 would be required to obtain a storm-water permit before commencing construction at sites with 5 or more acres of land disturbance and a point source storm-water discharge. To obtain storm water permit coverage under permit-by-rule, the applicant must first obtain a permit to conduct construction activities (Act 451, Part 91 Soil Erosion and Sedimentation Control) from the Wayne County Department of Environment and the City of Romulus Building Department. After obtaining the Act 451, Part 91 permit, the permittee must send a Notice of Coverage (EQP 4661) to the MDEQ. The permittee must be the land owner or a recorded easement holder of the property where the construction would take place. Regarding construction sites with 1 to 5 acres of land disturbance and a point source storm-water discharge, the permittee has automatic coverage under permit-by-rule without submitting the Notice of Coverage). A123 anticipates that the planned installation of external process equipment at one or more of the Romulus sites might trigger storm-water permitting requirements for minor construction (1 to 5 acres of disturbance). However, all construction, other than at the Expansion Site, would occur immediately adjacent to buildings within previously disturbed areas of the existing buildings and parking lots.

2.1.7 Wastewater

The Detroit Water and Sewerage Department conveys and treats wastewater for the communities of Livonia and Romulus (DWSD 2003). At full build-out capacity, the proposed operations at Livonia and Romulus would produce about 0.18 million gallons per day of sanitary and industrial wastewater (Table 2-3), which would be a very small amount of the total wastewater treatment plant flows. The Detroit Wastewater Treatment Plant processes an average flow of 727 million gallons per day (DWSD 2009), and is among the top 10 in the world as measured by average daily flow (DWSD 2003). Table 2-3 identifies the constituents of the wastewater load from the Livonia and Romulus facilities.

Sanitary and limited quantities of industrial wastewater, primarily nominal amounts of boiler blowdown from the Brownstown site, would be treated at the South Huron Waste Water Utility

[7] The definition of a "Point Source Discharge" in Michigan's Permit-by-Rule regulations (R 323.2190, National Permit for Storm Water Discharge from Construction Activity, Act 451, Part 31) is very broad and "means a discharge that is released to the waters of the state by a discernible, confined, and discrete conveyance, including any of the following from which wastewater is or may be discharged: (i) a pipe; (ii) a ditch; (iii) a channel; (iv) a tunnel; (v) a conduit; (vi) a well; (vii) a discrete fissure; (viii) a container; (ix) a concentrated animal feeding operation; and (x) a vessel or other floating craft. The term does not include a legally established county or inter-county drain, except for a county or inter-county drain that has a publicly owned treatment works designated as part of the drain or a discharge." Storm-sewer outfalls or ditches that convey the site storm water runoff are expected to be considered "point sources" for purposes of the Michigan regulations.

Authority Facility (now called the United Water Wastewater Treatment Plant) at 34000 West Jefferson Street in Brownstown, and the Downriver Waste Water Treatment Plant at 797 Central Avenue in Wyandotte. Capacity during normal flow conditions at the United Water Wastewater Treatment Plant is approximately 24 million gallons per day, less than 50 percent of its total maximum capacity of 50 million gallons per day (Wells 2009b). Capacity during normal flow conditions at the Downriver Waste Water Treatment Plant is approximately 40 percent of its maximum total capacity of 125 million gallons per day (Wells 2009c). Table 2-5 identifies the constituents of the wastewater load from the Brownstown facilities.

2.1.8 Hazardous Wastes

Tables 2-6 and 2-7 summarize the projected types and quantities of hazardous waste that would be generated at each location. Except for the Brownstown facility, all locations would qualify as small-quantity generators of hazardous waste. The Brownstown facility would likely be considered a large-quantity generator of hazardous waste. The ramifications of being a small-quantity generator rather than a large-quantity generator of hazardous waste are nominal, because the primary differences are in the number of days hazardous waste can be accumulated on a site before off-site disposal (typically 90 days for a large-quantity generator and 180 days for a small-quantity generator) and slightly enhanced administrative requirements related to worker safety training, waste materials manifests, recordkeeping, and state-level reporting for large-quantity generators. A123 would construct Resource Conservation and Recovery Act (RCRA)-compliant hazardous waste storage areas at each site. Hazardous wastes would be stored in approved containers (drums or totes) before they were transported by truck for off-site disposal. Hazardous wastes would not be stored longer than the limit imposed on each site as dictated by its generator status. Hazardous waste would be recycled and/or reclaimed at a permitted facility such as TOXCO, Inc., AIR CYCLE Corporation, EQ Environmental, Safety Kleen, Waste Management, and/or Veolia Environmental Services. Because the proposed sites would be in an industrial area where hazardous waste disposal capacity is large and well established, there would be no capacity issues related to the disposal of this hazardous waste.

Table 2-5
Wastewater Loads and Related Constituents by Facility at Full Build-Out Capacity

Facility and Location	Anticipated Manufacture Block	Total Gallons per Day	Wastewaters and Related Constituents[a] (gallons per day)						Permit Type
			Process	Thermal Scrubber	NMP Scrubber[b]	Non-Contact	Boiler	Sanitary	
Brownstown Center Drive	Cell Assembly, Module and Pack	30,823	-	-	-	Nominal	Nominal	30,823	Industrial
39000 Seven Mile Road	Cell Assembly, Module and Pack	6,175	-	-	-	Nominal	Nominal	6,175	Industrial
41133 Van Born Road	Powder	32,714	264	24,192	-	879	879	6,500	Industrial
41199 Van Born Road	Powder	32,714	264	24,192	-	879	879	6,500	Industrial
6505 Cogswell Road	Powder and Coating	43,939	791	24,192	4,320	1,319	5,048	8,268	Industrial
7525 Cogswell Road	Powder and Coating	27,581	659	12,096	4,320	879	4,609	5,018	Industrial
38100 Ecorse Road	Powder and Hybrid Coating	73,152	1,055	48,384	2,592	2,198	4,311	14,612	Industrial
Totals		247,098	3,034	133,056	11,232	6,155	15,726	77,896	

[a] Process wastewater – less than 0.1 percent non-volatile organic compound solvent not on the Michigan Critical Materials List and 99.9 percent water from solvent recovery bottoms.
Thermal scrubber – Effluent from scrubber to remove ammonia emissions, total dissolved solids.
n-Methylpyrrolidone scrubber – Effluent from polishing packed bed scrubbers to remove residual n-Methylpyrrolidone, also not on the Michigan Critical Materials List.
Non-contact cooling-tower blowdown, total dissolved solids and total suspended solids.
Boiler blowdown – total dissolved solids, total suspended solids, and total organic carbon.
Sanitary wastewater – biochemical oxygen demand and total suspended solids.

[b] NMP = n-Methylpyrrolidone; assumes use of hydrogen peroxide for n-Methylpyrrolidone treatment before discharge to sewer.

Table 2-6
Types of Hazardous Wastes by Location

Facility and Location	Type of Hazardous Waste
Romulus (Powder and Coating Blocks)	
41133 Van Born Road	Karl Fischer reagent and laboratory chemicals (D001, ignitable hazardous waste)
41199 Van Born Road	Karl Fischer reagent and laboratory chemicals
6505 Cogswell Road	Karl Fischer reagent and laboratory chemicals
7525 Cogswell Road	Karl Fischer reagent and laboratory chemicals
38100 Ecorse Road	Karl Fischer reagent and laboratory chemicals
Livonia (Cell Assembly and Module and Pack Blocks)	Waste electrolyte (D001, ignitable hazardous waste)[a]
Brownstown (Cell Assembly and Module and Pack Blocks)	Waste electrolyte (D001, ignitable hazardous waste)[a]

[a] It is possible that the waste electrolyte would be recycled and reclaimed and might not need to be managed as a hazardous waste.

Table 2-7
Quantity of Hazardous Waste per Location at Full Build-Out Capacity

Facility and Location	Hazardous Waste[a] (kilograms per month)	Hazardous Waste Generator Status
Romulus (Powder and Coating Blocks)		
41133 Van Born Road	206	Small quantity
41199 Van Born Road	206	Small quantity
6505 Cogswell Road	248	Small quantity
7525 Cogswell Road	145	Small quantity
38100 Ecorse Road	454	Small quantity
Livonia (Cell Assembly and Module and Pack Blocks)	134	Small quantity
Brownstown (Cell Assembly and Module and Pack Blocks)	2,219	Large quantity

[a] Each Romulus facility would be expected to be assigned a separate U.S. Environmental Protection Agency identification number.

2.1.9 Non-Hazardous Solid Waste

In addition to the waste streams already identified, the project would generate industrial solid waste of the types and in the quantities listed in Tables 2-8 and 2-9. Solid wastes would be disposed of at a permitted facility such as TOXCO, AIR CYCLE, EQ Environmental, Safety Kleen, Waste Management, or Veolia. Scrap cells (a universal waste in accordance with 40 CFR Part 273) generated at the Brownstown and Livonia facilities would be similarly managed and recycled through approved waste-disposal contractors and would be transported by trucks. The Brownstown and Livonia facilities would likely trigger the management requirements (labeling, storage, and disposal) of large-quantity and small-quantity handlers of universal waste, respectively, which the facilities would meet. The management requirements for small- and large-quantity handlers of universal waste during routine manufacturing operations at a

Table 2-8
Type of Industrial Waste per Location

Facility and Location	Type of Industrial Waste
Romulus (Powder and Coating Blocks)	
41133 Van Born Road	None
41199 Van Born Road	None
6505 Cogswell Road	Anode Waste Wet Slurry Cathode Waste Wet Slurry Copper Trim Scrap Aluminum Trim Scrap Maintenance Oil and Grease n-Methylpyrrolidone Still Bottoms
7525 Cogswell Road	Anode Waste Wet Slurry Cathode Waste Wet Slurry Copper Trim Scrap Aluminum Trim Scrap Maintenance Oil and Grease n-Methylpyrrolidone Still Bottoms
38100 Ecorse Road	Anode Waste Wet Slurry Cathode Waste Wet Slurry Copper Trim Scrap Aluminum Trim Scrap Maintenance Oil and Grease n-Methylpyrrolidone Still Bottoms
Livonia (Cell Assembly and Module and Pack Blocks)	Empty scrap prismatic cells Scrap cylindrical cells
Brownstown (Cell Assembly and Module and Pack Blocks)	Empty scrap prismatic cells

Table 2-9
Quantity of Industrial Waste per Location at Full Build-Out Capacity

Facility and Location	Industrial Waste (kilograms per month)
Romulus (Powder and Coating Blocks)	
41133 Van Born Road	0
41199 Van Born Road	0
6505 Cogswell Road	146,963
7525 Cogswell Road	146,963
38100 Ecorse Road	87,812
Livonia (Cell Assembly and Module and Pack Blocks)	825, including empty scrap prismatic and scrap cylindrical cells
Brownstown (Cell Assembly and Module and Pack Blocks)	10,148, including empty scrap cells

facility are nominal and relate to appropriately labeling waste containers, storing wastes in appropriately covered containers, safety training for workers handling the waste materials, and disposal at approved recycling or treatment centers. Because these manufacturing facilities would be in an industrial area where waste-disposal capacity is large and well established, there would be no capacity issues related to the management of these solid and universal wastes.

2.1.10 Materials Transport

At full build-out capacity, A123 anticipates that the total number of truck or trailer trips per week associated with hauling raw materials, intermediate products, finished goods, and wastes would be 3 trips for Livonia, 41 trips for Brownstown, and 74 trips for Romulus complex. Of the total number of trips per complex per week, the largest proportion is expected to result from transportation of raw material inputs for the Romulus Complex (57 out of 74 weekly trips) and finished goods from the Brownstown Complex (25 out of 41 weekly trips). There would be one trip per week each for raw material input, finished material, and waste transportation at Livonia (three trips per week total).

2.1.11 Water Supply

At full build-out capacity, the proposed manufacturing process would require approximately 250,000 gallons per day of potable water (Table 2-5). The Detroit Water and Sewerage Department supplies water to the communities of Brownstown, Livonia, Romulus, and Van Buren Township (DWSD 2004). The Water and Sewerage Department's water supply system is one of the largest in the Nation, both in terms of water produced and population served. The water system draws fresh water from the Great Lakes System, with Lake Huron to the north and the Detroit River to the south. The water network consists of 3,438 miles of transmission and distribution mains within the City of Detroit, and 402 miles of transmission mains in the remaining service area. Five water treatment plants pump an average of 622 million gallons of clean drinking water each day (DWSD 2009). A123 proposes to lease sites in locations already zoned for the intended commercial and industrial uses.

2.1.12 Energy Consumption

Detroit Edison would provide the electricity at all facilities for lighting and manufacturing process needs, including initial battery charging during cell assembly at the Brownstown and Livonia facilities. Consumers Energy would provide natural gas for the facilities. At full build-out capacity, electricity consumption is projected to be 716,825 kilowatt hours per month at Livonia, 11,800,000 kilowatt hours per month at Brownstown, and 57,102,323 kilowatt hours per month at the combined Romulus sites. At full build-out capacity, estimated annual natural gas consumption at the Brownstown, Livonia, and combined Romulus sites is projected to be 180 million cubic feet, 32 million cubic feet, and 4,132 million cubic feet, respectively. Table 2-10 provides site-specific details for the Romulus facilities.

2.1.13 Employees, Access, and Parking

2.1.13.1 Livonia

At full build out, the proposed facility would employ a total of 475 employees – 100 administrative employees who would report for work at 9:00 am and leave at 5:00 pm, 105 supervisory employees who would work during two equal shifts during the week, and 270 employees who would work during two equal shifts during the week. At present, there are 700 parking spaces and 16 trailer parking spaces at the property.

Table 2-10
Site-Specific Patterns of Energy Use for the Romulus Complex at Full Build-Out Capacity

	38100 Ecorse Road	6505 Cogswell Road	7525 Cogswell Road	41133 Van Born Road	41199 Van Born Road
Electricity (kilowatt hours per)	20,654,554	10,931,896	6,070,567	9,722,658	9,722,658
Natural Gas (million cubic feet per year)	1,173	1,283	1,131	273	272

The facility would operate in two 12-hour shifts per day at full build-out condition to maximize operational capacity. The site is at the northwestern intersection of Interstate 275 and Seven Mile Road. Access is via two access driveways – one along Seven Mile Road and one along Haggerty Road. A123 does not anticipate changes in access configuration.

2.1.13.2 Brownstown

At full build out, the site would employ a total of 2,371 employees who would work during two equal shifts during the week. The first shift would consist of approximately 593 employees who would arrive for work between 7:00 am and 8:00 am. They would replace approximately 593 employees who would leave the site starting at 8:00 am. The second shift would arrive between 7:00 pm and 8:00 pm, replacing the first-shift employees. Most of these shift employees would use the Interstate 75 urban freeway to access the site. The arrival and departure distribution of these employees would add to the traffic volumes during the 7:00 am to 8:00 am peak hour and during the 7:00 pm to 8:00 pm period. During shift changes, A123 anticipates that there would be a minor number of trucks associated with the work performed at the site (fewer than two trucks at each site during the am or pm shift). During the facility retrofit phase, some oversize trucks would need to deliver equipment to the site.

At present, the South Campus has 1,731 car parking spaces and 1,281 trailer parking spaces for all five buildings combined. Adjacent buildings share centrally located parking lots with access from each building. Each trailer parking space could be converted into approximately two car parking spaces if necessary.

Access to each building is via one or more access driveways along Brownstown Center Drive, which intersects with Sibley Road. A123 does not anticipate changes to site-access configurations. There are two major arterial roadways (Sibley Road and Toledo-Dix Highway) and one urban freeway (Interstate 75) adjacent to the site.

2.1.13.3 Romulus

At full build out conditions, the total number of employees in the Van Buren Commerce Center is expected to be 500 workers per location (1,000 people combined for the entire Van Buren

Commerce Center), 636 workers at 6505 Cogswell Road, 386 workers at 7525 Cogswell Road, and 1,124 workers at 38100 Ecorse Road, for a combined total across all Romulus and Van Buren Township facilities of 3,146 workers. The facilities would operate in two 12-hour shifts per day at full build-out condition to maximize operational capacity. It is estimated that only 25 percent of the total planned employees would be working at each facility at any given time.[8]

The first shift would consist of approximately 786 employees who would arrive for work between 7:00 am and 8:00 am. They would replace approximately 786 employees who would leave the site starting at 8:00 am. The second shift would arrive for the start of their shift between 7:00 pm and 8:00 pm, replacing the first-shift employees. Most of these shift employees would use the Interstate 275 urban freeway to access the site. The arrival and departure distribution of these employees would add to traffic volumes during these shift changes, there would be a small number of trucks associated with the work performed at the site (fewer than two trucks at each site during the am or pm shift). During the facility retrofit phase, it can be anticipated that some oversize trucks would need to deliver equipment to the sites.

The primary site in the Romulus Complex (38100 Ecorse Road) has 306 parking spaces and 81 trailer parking spaces. The building has never been fully occupied, so parking spaces are an appropriate surrogate for prior peak capacity. The other four satellite locations in the Romulus Complex have parking space for 1,208 cars, which could be expanded to accommodate 1,784 cars. All Romulus sites combined have parking capacity for approximately 2,090 workers. Existing parking spaces would easily accommodate the rotational shifts.

Access to each site is via one or more access driveways along Van Born Road, Cogswell Road, or Ecorse Road. A123 does not anticipate changes to access configurations.

2.1.14 Permits and Authorizations

Sections 2.1.14.1 through 2.1.14.6 describe the permits and authorizations A123 would need before initiating ground-breaking or construction activities.

2.1.14.1 Air Permitting - Michigan Department of Environmental Quality

The MDEQ Air Quality Division administers the state's air quality rules and regulations. MDEQ Air Pollution Control Rules have been adopted pursuant to Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). The Air Quality Division is responsible for monitoring compliance with and enforcing the Air Pollution Control Rules, including permitting new sources of air emissions in the state.

[8] As an example, if there are 100 workers at the facility, two groups of 25 workers each would work three 12-hour shifts in Week 1 and four 12-hour shifts in Week 2. The remaining two groups of 25 workers each would work four 12-hour shifts in Week 1 and three 12-hour shifts in Week 2.

The MDEQ Air Pollution Control Rules specify permitting requirements, including requirements for preconstruction permits and operating permits. Preconstruction permits are MDEQ-required approvals before air emission sources can be constructed; operating permits are approvals required to allow air emission sources to operate. Depending on the size and type of facility being constructed or modified and the location of the source, a Permit-to-Install, a Prevention of Significant Deterioration (PSD) permit, or a Nonattainment New Source Review (NA/NSR) permit could be required. Depending on the size of the facility, a Permit-to-Operate or a Renewable Operating Permit (also known as a Title V permit) could be required. Certain processes and equipment are exempt from these requirements, including the Permit-to-Install, if the required conditions are met.

Permit-to-Install/Permit-to-Operate

MDEQ specifies its Permit-to-Install requirements under Part 2 of the Air Pollution Control Rules (R336.1201). These rules define the sources required to obtain a Permit-to-Install before construction can begin and outline the application process, including the required application content, emission control evaluation, and air toxics analyses. After operations have commenced and the facility has demonstrated that it can comply with the emission limits and regulations, an operating permit (Permit-to-Operate or Renewable Operating Permit) is required.

Certain processes and equipment are exempt from the Permit-to-Install requirement under Rules 336.1278 through 1290 if all of the following are true:

- The proposed activity would not be subject to PSD or NA/NSR preconstruction permitting.
- The proposed activity would not result in an increase in actual emissions greater than the significance levels defined in Rule 336.1119.
- The proposed project would not consist of the construction or reconstruction of a major source of hazardous air pollutants.
- The proposed project would not consist of a construction or modification subject to 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants.

A123 anticipates that the Livonia and Brownstown facilities would qualify for the Permit-to-Install exemption criteria. The MDEQ has notified A123 that planned operations at the Livonia facility qualify for exemption from obtaining a Permit-to-Install. The Romulus facilities would require a Permit-to-Install and a Permit-to-Operate to construct and operate the process and air pollution control equipment. A123 would obtain a synthetic minor Permit-to-Install, which would include federally enforceable permit conditions, for the entire Romulus facility. These permit conditions would establish the requirements to operate the proposed emission control equipment, achieve prescribed emission limits, and maintain usage of certain materials (organic solvents in coating operations) below certain thresholds.

Title V Renewable Operating Permit

Michigan's Title V permit program (also known as the Renewable Operating Permit program) outlines stationary sources that are subject to Title V permit requirements, as follows:

- Sources with a potential to emit 10 tons per year of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants
- Sources with the potential to emit 100 tons per year or more of the criteria pollutants lead, sulfur dioxide, oxides of nitrogen, carbon monoxide, particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and VOCs
- Sources subject to New Source Performance Standards (NSPS) or that emit any Class I or II ozone-depleting substances
- Major sources in nonattainment areas
- Any affected source that is subject to the Acid Rain Program
- Any solid waste incineration unit, as defined in Clean Air Act Section 129(g)
- Any municipal solid waste landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters
- Any 40 CFR Part 70 source

Because the A123 proposed Romulus operations would exceed the Renewable Operating Permit threshold for carbon monoxide emissions (100 tons per year), A123 would be required to apply for and obtain a Renewable Operating Permit within 1 year of beginning operations. The Renewable Operating Permit would not establish new limits on emissions or new emission-control requirements. Rather, the Renewable Operating Permit would simply be a compilation of the applicable air quality requirements in other A123 air permits (such as the Permit-to-Install) and MDEQ and EPA air regulations into a single operating permit for a subject site.

Air Toxics

The MDEQ Air Quality Department began developing an air toxics monitoring strategy in 1992. Detroit is one of several cities where air toxics are being continuously monitored. In addition to regulating hazardous air pollutants listed in Clean Air Act Section 112(b), Michigan's air toxics program (R 336.1224 through R 336.1232) regulates additional compounds. The MDEQ defines toxic air contaminants as "any air contaminant for which there is no national ambient air quality standard and which is or may become harmful to public health or the environment when present in the outdoor atmosphere in sufficient quantities and duration" (MDEQ 2010). Sources of toxic air contaminants are subject to two main requirements – each source must apply the best available control technology for toxics (T-BACT) and emissions from the source cannot result in a maximum ambient concentration that exceeds the applicable health-based screening level. Certain sources can be exempt from the T-BACT requirements if they emit only small amounts of low-potency carcinogens or low toxicity non-carcinogens, or if they already meet

best available control technology (BACT), lowest achievable emission rate (LAER), or maximum achievable control technology (MACT) requirements. Certain sources can be exempt from the health-based screening requirements if they emit only small amounts of non-carcinogens or other products not listed as high-concern compounds, or are regulated under a MACT or residual risk regulation.

2.1.14.2 Aboveground Storage Tank Certification – Michigan Department of Environmental Quality

The MDEQ Waste and Hazardous Materials Division is responsible for regulating the installation of new aboveground storage tank systems that contain petroleum and other substances with a flash point less than 200 degrees Fahrenheit (Michigan Administrative Code, R 29 Part 1 through Part 5). To a large extent, state regulatory requirements reflect the scope and intent of requirements provided in the National Fire Prevention Act standards for flammable and combustible liquids. These regulations reflect the fire prevention requirements typically administered by local fire departments. They cover such topics as design and installation for indoor and outdoor tanks; testing, maintenance, and overfill protection; leak detection and inventories; corrosion protection; tanks contained in vaults; standards for pipes, valves, pipe joints, fittings, and supports; ignition-source control; and general handling and use.

Specifically, the MDEQ Aboveground Storage Tank Program regulates storage and handling of flammable and combustible liquids with a flash point less than 200 degrees Fahrenheit, storage and handling of liquefied petroleum gases, and compressed natural gas vehicular systems. If any of these types of aboveground storage tanks would be placed on the site, a plan review installation application is required for storage capacity greater than 1,100 gallons, a site plan is required, a site inspection is required before and after installation is complete, and an annual certification is required. Storage of the non-VOC solvent and/or NMP in aboveground storage tanks at the Romulus facilities would be expected to trigger these requirements.

2.1.14.3 National Pollutant Discharge Elimination System – Michigan Department of Environmental Quality

The MDEQ Water Bureau is responsible for processing National Pollutant Discharge Elimination System (NPDES) permits under the authority of the federal Clean Water Act and Part 31 of the Natural Resources and Environment Protection Act, 1994 PA 451, as amended. The purpose of this permit is to control the discharge of pollutants into surface waters of the state to protect the environment.

Storm-water discharges from construction sites of 5 or more acres that result in a point-source discharge to waters of the state (including separate storm sewers) must obtain coverage under the storm-water permit before construction begins. The required storm-water coverage can be obtained through Permit-by-Rule (R323.2190 of Act 451, Part 31). The permittee must first obtain a permit to perform construction activities, Act 451, Part 91 Soil Erosion and Sedimentation Control, from the Wayne County Department of Environment and the City of Romulus Building Department. If the site is from 1 acre to 5 acres with a discharge to waters of the state, the permittee has automatic coverage under permit-by-rule without submitting the Notice of Coverage (EQP 4661). For construction sites of 5 or more acres, after obtaining the

Act 451, Part 91 Soil Erosion and Sedimentation Control permit, the permittee must send Notice of Coverage Form (EQP 4661) to the MDEQ. The permittee must be the land owner or a recorded easement holder of the property where the construction would take place (MDEQ 2005).

Planned construction of the 300,000-square-foot building at 38100 Ecorse Road would trigger the requirements for construction sites over 5 acres. A123 anticipates that the planned installation of external process equipment at one or more of the other Romulus sites could trigger storm-water permitting requirements for minor construction (1 to 5 acres of disturbance).

2.1.14.4 Construction Permits – Wayne County Department of Environment

For all sites with existing buildings, permits for construction and engineering would require a completed building permit application, the appropriate fee for plan review, prints and specifications for the proposed work signed and sealed by a State of Michigan licensed architect or engineer, and a Soil Erosion and Sedimentation Control Permit Application. Permit requirements for new construction are more detailed and include cost breakdowns and plan reviews. All sites with existing buildings would require construction permits, and the proposed new construction at 38100 Ecorse Road would require the more-detailed permit.

2.1.14.5 Wastewater Discharge Permits – Detroit Water and Sewerage Department

The Detroit Water and Sewerage Department Industrial Waste Control Division regulates the discharge of industrial wastewater and allowable pollutant levels into the City of Detroit Wastewater Treatment Plant municipal sewage system in accordance with the specific provisions of City of Detroit Ordinance 08-05 (Formerly 34-96), effective March 11, 2005. All industrial users who discharge process and/or contact cooling water, in addition to sanitary waste, into the municipal sewage system are required to file a “Permit Application/Baseline Monitoring Report – For Industrial Wastewater Discharge” with the Water and Sewerage Department. This application/ questionnaire is designed to enable the Water and Sewerage Department to make a determination for issuance of Industrial Wastewater Discharge Permits. A123 would be required to complete permit applications for discharge of industrial wastewater into the municipal sewage system from the five Romulus facilities and the Livonia facility.

2.1.14.6 Wastewater Discharge Permit – Wayne County Department of Environment

The Wayne County Department of Environment regulates and administers permitting for wastewater discharges in Brownstown Township. Industrial users who propose to connect to the system or discharge industrial wastes or wastewater are required to submit an “Industrial – Commercial Waste Questionnaire” to the Department of Environment, which forwards the questionnaire to the local community as part of the permitting process. Compliance with Wayne County Sewer Ordinance 98-473 is required. A123 would be required to submit the questionnaire and obtain a permit for the Brownstown facility.

2.2 Alternatives Considered But Eliminated from Consideration

This section briefly describes how A123 selected its proposed configuration for the three manufacturing center campuses in the Detroit metropolitan area.

A123 originally envisioned manufacturing facilities at four Michigan locations (Livonia, Wixom, Romulus, and Brighton) and one warehouse (at Plymouth). As an alternative, A123 consolidated its proposed operations at only three locations (Livonia, Romulus, and Brownstown). A123 eliminated the Wixom, Brighton, and Plymouth facilities, and in their place added a single new location (Brownstown) that would use existing buildings only (no new construction). The resulting configuration, which comprises the proposed action, would provide A123 with one central office in Livonia and two manufacturing campuses in Romulus and Brownstown.

A123 eliminated the original alternative to substantially reduce potential environmental impacts. Under the A123 proposed alternative, the need for new construction would be reduced by almost 1 million square feet. By eliminating the original alternative (which included the new construction of 1,260,000 square feet of manufacturing space), and consolidating space previously spread between three facilities into an existing facility at Brownstown, A123 plans only 300,000 square feet of new construction. Because the proposed alternative would use fewer facilities that are closer together, A123 concluded that it could reduce traffic between facilities in connection with the transfer and storage of intermediate and finished goods. In addition, the elimination of the Brighton location avoids potential environmental impacts associated with the construction of wastewater treatment facilities. At present, the Brighton location is not hooked up to the local sewer system, and A123 would need to construct new sanitary wastewater treatment capacity before this location could be used. Various alternatives for this facility could have included a new on-site septic leach field or piping to the local sewer system (which might have resulted in crossing a stream and wetland complex). A123 has eliminated these potential impacts by incorporating the Brownstown facility, which the local sewer system serves, into the proposed alternative.

2.3 No-Action Alternative

A123 has resolved all potential conflicts regarding alternative uses of available resources that would suggest the need for other alternatives. Therefore, the No-Action Alternative is the only viable alternative for consideration in this NEPA review.

A123 is developing the technology to commercialize the production of lithium-ion phosphate batteries for hybrid electric vehicles that would reduce air emissions, such as particulates, ozone precursors, and greenhouse gases that contribute to global warming. Financially supporting the A123 project would bring lithium-ion phosphate batteries to market and into use, improving vehicle efficiency and reducing overall national emissions of air pollutants and human-caused greenhouse gases that existing nonrenewable energy sources otherwise would produce.

If DOE did not issue A123 the combination of loan and grant funding for which it has applied, A123 would not retrofit the seven existing facilities and expand one of the facilities to create

three manufacturing centers in the Detroit metropolitan area. Without DOE financial assistance, A123 would not pursue creation of lithium-ion phosphate battery manufacturing centers in the United States, which would not be consistent with DOE Advanced Technology Vehicle Manufacturing Incentive Program and Vehicle Technologies Program goals.

3 Affected Environment

This chapter describes the existing physical, biological, and socio-cultural conditions of the project area. With the exception of new construction at the Romulus Expansion Site, the work undertaken at the proposed sites would consist only of retrofitting existing industrial facilities. Therefore, the discussion of affected environment is tailored to resources the Proposed Action would have the potential impact. This information is subsequently used in Chapter 4, Environmental Consequences, as the baseline for identifying and evaluating impacts resulting from the Proposed Action and the No-Action Alternative described in Chapter 2.

3.1 Land Use

The proposed properties are all in urbanized industrial parks. The proposed project would involve indoor retrofitting of existing manufacturing facilities at the Livonia, Brownstown, and Romulus sites. At Romulus, one of the five sites also would involve construction of one new 300,000-square-foot building in a previously disturbed area adjacent to an existing building and parking lot.

Based on 1995 land use data, an estimated 32 percent of the Romulus and Brownstown area is covered by impervious surfaces such as roads, rooftops, and parking lots. Impervious surfaces impede groundwater recharge, and precipitation on such surfaces often drains directly into storm sewers and then quickly into the nearest body of surface water. The subwatershed downstream of all of the Romulus sites is almost completely built out, with only 3 percent of urban open space left in the watershed (Lower Two Subwatershed Group 2001).

The Livonia site is in the upper Rouge River watershed, where residential, industrial, commercial, and roadway land use categories make up more than 75 percent of current land use. Impervious surfaces cover approximately 21 percent of the land within the Upper Subwatershed. Based on current master land use plans for the various communities within the Upper Subwatershed, the amount of impervious surfaces is expected to increase (Upper Rouge River Subwatershed Advisory Council 2001).

3.1.1 Livonia

Most of the developed portions of the Livonia site are relatively flat, with slightly elevated parking lots at the northern portion of the property. The wooded areas and wetlands surrounding the developed portions of the property have slightly varied (rolling) topography around the perimeter of the property. As discussed in Chapter 2, the site is improved with a 291,000-square-foot multi-level building, parking lots and driveways, and landscaped areas. There are wooded areas, wetlands, creeks, and a retention pond on the property. Retrofitting the existing facility would not affect these features. The site is bordered to the north by undeveloped woodland, to the east by landscaped areas and Interstate-96/Interstate-275, to the south by wooded areas and wetlands north of Seven Mile Road, and to the west by commercial properties. A123's proposed use is consistent with the current zoning designation as M-1 (Light Industrial) (City of Livonia 2003).

Access to the site is via two access driveways – one along Seven Mile Road and one along Haggerty Road. Access from Haggerty Road is the rear egress and ingress trucks or large vehicles would most likely use. See Section 3.11 for more information. A123 does not anticipate changes in access configurations.

3.1.2 Brownstown

The Brownstown South Campus consists of five buildings, of which A123 intends to occupy portions of three – Building 7 (19771 Brownstown Center Drive, 540,000 square feet), Building 8 (19881 Brownstown Center Drive, 730,000 square feet), and Building 10 (20001 Brownstown Center Drive, 453,000 square feet), for a total of 1,723,000 square feet. As described in Chapter 2, the site is improved with parking lots, driveways, and landscaped areas. The site is bordered to the north by a mix of industrial and commercial properties, to the east by railroad tracks and a mix of commercial and industrial facilities, to the south by undeveloped woodland, and to the west by a combination of residential and commercial office buildings with limited amounts of undeveloped space. A123's proposed use is consistent with the current zoning designation as general industrial (Brownstown Township 2009).

Access to each building is via one or more driveways along Brownstown Center Drive, which intersects Sibley Road. A123 does not anticipate changes in access configurations. There are two major arterial roadways (Sibley Road and Toledo-Dix Highway) and one urban freeway (Interstate 75) adjacent to the site. Interstate 75 would serve as the primary ingress and egress to all three buildings via the Sibley Road interchange.

3.1.3 Romulus

The sites are in an industrial area at and around the intersection of Interstate 275 and Ecorse Road. The area contains numerous industrial and commercial facilities and some residences. Land use is currently zoned light industrial for both properties on Cogswell Road and industrial for the property at 38100 Ecorse Road (City of Romulus 2009). The properties on Van Born Road in Van Buren Township (Belleville physical address) also are zoned light industrial (Van Buren Township Building and Zoning Department 2009).

Two of the properties (41133 and 41199 Van Born Road) are side-by-side along the west side of Interstate 275. The site at 41133 Van Born Road is improved with one 199,920 square foot building, paved parking areas, driveways, and landscaped areas. The site at 41199 Van Born Road is improved with one 199,120 square-foot building, paved parking areas, driveways, and landscaped areas. Two of the properties on the north side of Ecorse Road (6505 Cogswell Road and 38100 Ecorse Road) share a north-south property boundary. The site at 6505 Cogswell Road is improved with a 424,320 square-foot building, paved parking areas, driveways, and landscaped areas. The site at 38100 Ecorse Road is improved with an approximately 273,000 square-foot building, paved parking areas, driveways, and landscaped areas. The other Romulus property (7525 Cogswell Road) is directly south of these properties about 1,000 feet south of the property at 38100 Ecorse Road. The site at 7525 Cogswell Road is improved with one single-story office/warehouse building totaling approximately 252,700 square feet, paved parking areas, and access roads. There are landscaped areas to the north,

east, and south of the building. See Sections 2.1.13 and 3.11 for more information about access to the sites.

Surrounding land uses and access at each site are variable and include a mix of residential, commercial, industrial, and undeveloped space. The neighboring properties at 41133 and 41199 Van Born Road in Romulus are adjacent to and on the west side of Interstate 275, with access provided on Van Born Road, a paved road with two lanes of travel in both directions. Both properties are bordered by undeveloped land with scattered trees to the north, by Interstate 275 to the east, by industrial buildings to the south, and by a mix of undeveloped land and developed areas to the west between the property and Haggerty Road. Of the three remaining properties, the property at 6505 Cogswell Road is immediately north of the property at 38100 Ecorse Road, and the property at 7525 Cogswell Road is to the south with a mix of partially developed industrial property and undeveloped areas with scattered trees between it and 38100 Ecorse Road. These three properties are bordered to the north and east by partially developed industrial property. The southernmost property at 7525 Cogswell Road is adjacent to undeveloped open areas with a few scattered trees. There is a residential subdivision on the west side of Cogswell Road that appears to have its main entrance to Cogswell Road, although no individual houses appear to have front entrances or driveways that are accessed from Cogswell Road.

3.2 Visual Resources

According to the Michigan Department of Natural Resources, there are no rivers in Wayne County federally designated as wild and scenic or rivers protected by Part 305 of the Natural Rivers Act (MDNR 2009a). There are no federally designated scenic highways or roadways designated scenic, historic, or recreational under the Michigan Heritage Route Program (MDNR 2009b). There are no other scenic resources noted in regional watershed or local county plans.

3.3 Air Quality

This section provides general air quality information, including discussions of the regulatory framework, details about regional air quality, Michigan-specific air-related programs, and greenhouse gases evaluated for potential applicability to the A123 project sites. Because emissions and operating controls would keep emissions and storage of materials below the applicability thresholds, the Proposed Action would not be subject to PSD or NA/NSR permitting, or the Clean Air Act 112(r) Risk Management plans. Emissions during the construction phase would be below the general conformity thresholds; therefore general conformity review would not be triggered. However, A123 would be required to obtain a Permit-to-Install and a Renewable Operating Permit (Title V), and be subject to certain NSPS for boilers. In addition, A123 would be required to comply with MDEQ state implementation plan, including its air toxics regulations. The Proposed Action would not involve any regulated MACT source category, and therefore would not be subject to any MACT standard. The discussions that follow have been supplemented to include comments related to the specific applicability of the regulations and programs reviewed.

3.3.1 Regulatory Framework

3.3.1.1 National Ambient Air Quality Standards

Congress passed the Clean Air Act in 1970 to regulate air pollutant emissions from stationary, mobile, and area sources. The Clean Air Act established National Ambient Air Quality Standards (NAAQS) for pollutants that could be harmful to human health and the environment. Under the Clean Air Act, the EPA is responsible for carrying out the law. In 1990, Congress amended the Clean Air Act to give the EPA more authority to implement and enforce regulations by setting emissions limits for stationary, mobile, and area sources.

Clean Air Act regulatory programs generally focus on regulating emissions from all sources to avoid exceedances of ambient air quality standards, typically through regulations in state implementation plans; enforcing more stringent air emissions control technology and permitting requirements for new sources; and addressing specific pollution problems such as hazardous air pollutants and visibility impairment.

To improve U.S. air quality, the EPA promulgated the NAAQS as required under the Clean Air Act for certain criteria pollutants – nitrogen dioxide, sulfur dioxide, particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and a nominal 2.5 micrometers (PM_{10} and $PM_{2.5}$), carbon monoxide, ozone, and lead. NAAQS include primary and secondary standards. Primary standards set limits to protect public health and include an adequate margin of safety to protect susceptible members of the community, including children and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to crops and buildings. Table 3-1 lists NAAQS.

Table 3-1
Applicable National Ambient Air Quality Standards[a]

Pollutant[b]	Averaging Period	Limits[c]	Primary or Secondary Standard[d]
Carbon monoxide	1 hour 8 hours	40 mg/m^3 (35 ppm) 10 mg/m^3 (9 ppm)	Primary Primary
PM_{10}	24 hours	150 µg/m^3	Primary and Secondary
$PM_{2.5}$	24 hours Annual	35 µg/m^3 15.0 µg/m^3	Primary and Secondary Primary and Secondary
Sulfur dioxide	3 hours 24 hours Annual	1,300 µg/m^3 (0.5 ppm) 365 µg/m^3 (0.14 ppm) 80 µg/m^3 (0.03 ppm)	Secondary Primary and Secondary Primary and Secondary
Nitrogen dioxide	Annual	100 µg/m^3 (0.053 ppm)	Primary and Secondary
Ozone	8 hours	0.075 ppm	Primary and Secondary
Lead	Quarterly average Rolling 3-month average	1.5 µg/m^3 0.15 µg/m^3	Primary and Secondary Primary and Secondary

[a] Source: 40 Code of Federal Regulations, Part 50.
[b] PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
[c] ppm = parts per million; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter;
[d] Primary standards are health based; secondary standards are welfare based.

The EPA evaluates whether criteria-pollutant levels in a region or geographic area meet NAAQS. Areas in which ambient pollutant concentrations are either below or above the NAAQS are classified as attainment or nonattainment areas, respectively. Areas that have been redesignated from nonattainment to attainment are classified as maintenance areas. Nonattainment areas are sometimes classified by degree (marginal, moderate, serious, severe, and extreme for ozone, and moderate and serious for carbon monoxide and PM_{10}). Each state is responsible for achieving and maintaining NAAQS within its borders through the development and implementation of a state implementation plan. The contents and stringency of and the sources regulated by the state implementation plan are dictated by the attainment status of areas in the state and include enforceable emission limits, compliance schedules, and enforcement measures. After the EPA approves a state implementation plan, it becomes federally enforceable.

According to the MDEQ 2007 Air Quality Report, all of Michigan is in attainment for carbon monoxide, lead, nitrogen dioxide, and sulfur dioxide. Concentrations of these pollutants are at levels well below their NAAQS. There have been periods when particulate matter and ozone levels in certain areas of the state exceeded the ambient standards; however, the levels of ambient $PM_{2.5}$ and ozone have declined in recent years and air monitoring data show many areas now meet the ambient standards. On June 29, 2009, Wayne County's designation changed from marginal nonattainment for ozone to attainment (MDEQ 2009e).[9] Wayne County continues to be listed as nonattainment for $PM_{2.5}$.[10]

3.3.1.2 Clean Air Act Conformity Guidelines

Clean Air Act Section 176(c) dictates that federal agency actions, including actions that might receive federal funding, comply with the Clean Air Act and applicable state implementation plans. Federal agencies are required to confirm that the action or project will not cause or contribute to the violation of any standard, increase the frequency or severity of any existing violations, or delay timely attainment of any standard in any area.

The EPA promulgated rules that establish transportation and general conformity analysis procedures. The transportation conformity rules (40 CFR 93, Subpart A) cover transportation-related projects; general conformity rules (40 CFR 93, Subpart B) cover non-transportation-related projects sponsored or funded by federal agencies. The A123 project would need to evaluate applicability of the general conformity rules, because it is not a transportation plan,

[9] The EPA recently reduced the 8-hour ozone NAAQS from 0.08 parts per million to 0.075 parts per million. It is anticipated that Wayne County will be reclassified as nonattainment after the EPA examines ambient air monitoring data (possibly in 1 year).

[10] On October 17, 2006, the EPA reduced the 24-hour $PM_{2.5}$ NAAQS from 65 micrograms per cubic meter to 35 micrograms per cubic meter. As a result, the EPA will need to redesignate the attainment status of this area with the new standard. Because the standard is becoming more stringent, this area will remain a $PM_{2.5}$ non-attainment area.

program, or project being developed or funded by a federal agency (DOE 2000).[11] The general conformity rule requires projects in nonattainment or maintenance areas[12] to perform conformity analyses when the net increase in direct[13] or indirect emissions[14] of nonattainment or maintenance pollutants exceeds *de minimis* thresholds (see 40 CFR 93.153(b)).

At present, Wayne County is not a nonattainment area for $PM_{2.5}$ and is considered a maintenance area for ozone. The general conformity regulations establish emission thresholds above which a general conformity analysis is required, as follows:

- Ozone (VOCs or oxides of nitrogen), all maintenance areas, 100 tons per year
- Carbon monoxide, all maintenance areas, 100 tons per year
- $PM_{2.5}$, direct emissions, 100 tons per year
- Sulfur dioxide (as a precursor), 100 tons per year
- Oxides of nitrogen (as a precursor), 100 tons per year
- VOCs, maintenance areas outside an ozone transport region, 100 tons per year

In addition, existing general conformity regulations define "regionally significant" as "a Federal action for which the direct and indirect emissions of any pollutant represent 10 percent or more of a nonattainment or maintenance area's emissions inventory (40 CFR 93.152)'' and require conformity determinations for all regionally significant actions even though the total direct and indirect emissions from the action were below the *de minimis* emission levels (40 CFR 93.153(i)). (However, as a Streamlining and Burden Reduction Measure, the EPA is proposing to delete this test of regional significance.)

Except where indicated otherwise ($PM_{2.5}$), emissions used for comparison to the applicability threshold include direct and indirect emissions. Direct and indirect emissions for the general conformity applicability analysis for this project apply to the construction phase, and include

[11] According to DOE General Conformity guidance (*Clean Air Act General Conformity Requirements and the National Environmental Policy Act Process*, [DOE 2000]), DOE does not expect to propose actions that will be subject to the Transportation Conformity Rule (p. 2).

[12] A maintenance area is an area a state has redesignated from nonattainment to attainment. The state submits to the EPA a plan for maintaining the NAAQS in the maintenance area as a revision to the state implementation plan. The maintenance plan must show that the NAAQS will be maintained for at least 10 years after redesignation and must include contingency measures to address any violation of the NAAQS.

[13] Direct emissions are emissions of criteria pollutants initiated or caused by the federal action (such as emissions from construction).

[14] Indirect emissions are emissions of criteria pollutants caused by the federal action, but could occur later in time and/or be farther removed from the action itself (such as emissions from mobile sources operating because of the federal action).

primarily emissions from construction equipment, construction activities, and construction-worker vehicles. The analysis of construction emissions in Chapter 4 shows that emissions would not exceed the general conformity threshold; therefore, the Proposed Action does not trigger general conformity requirements.

3.3.1.3 State Plans and Ambient Air Quality Standards

Michigan first submitted a state implementation plan to the EPA in 1972, and has since submitted several additions and changes. The Michigan state implementation plan includes regulations and other materials for compliance with the NAAQS and other Clean Air Act requirements, including EPA-approved state regulations, state-issued and EPA-approved orders requiring pollution control at individual companies, federal implementation plans, and planning documents. Michigan has not adopted state ambient air quality standards; therefore, only EPA NAAQS apply in the state. The Proposed Action involves operations of stationary sources that would be required to comply with the Michigan state implementation plan. Chapter 4 describes specific state implementation plan requirements.

3.3.1.4 Applicable Federal and State Regulations

The MDEQ Air Quality Division administers the state's air quality rules and regulations. MDEQ Air Pollution Control Rules have been adopted pursuant to Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). The Air Quality Division is responsible for monitoring compliance and enforcing the Air Pollution Control Rules, including permitting new sources of air emissions in the state.

MDEQ Air Pollution Control Rules specify permitting requirements, including those for preconstruction permits and operating permits. Preconstruction permits are MDEQ approvals required before air emission sources can be constructed; operating permits are approvals required to allow air emission sources to operate. Depending on the size and type of facility being constructed or modified and where the source would be, required preconstruction permits could be a Permit-to-Install, a PSD permit, or an NA/NSR permit. Depending on the size of the facility, operating permits could be a Permit-to-Operate or a Renewable Operating Permit. The Proposed Action would require a Permit-to-Install and a Renewable Operating Permit; however, the Proposed Action would not be subject to PSD or NA/NSR permitting because emissions and operating controls would keep emissions below the applicability thresholds for these permits.

Permit-to-Install/Permit-to-Operate

MDEQ specifies its Permit-to-Install requirements under Part 2 of the Air Pollution Control Rules. These regulations define the sources that are required to obtain a Permit-to-Install before construction can begin and outlines the application process, including the required application content, emissions control evaluation, and air toxics analyses. Once operations have commenced and the facility has demonstrated that it can comply with the emission limits and regulations, an operating permit (Permit-to-Operate or Renewable Operating Permit) is required. A123 would need to obtain a Permit-to-Install and a Permit-to-Operate (in this case a Renewable Operating Permit) for the proposed Romulus campus.

Prevention of Significant Deterioration

Michigan has adopted by reference EPA regulations to implement the federal PSD preconstruction permitting program (40 CFR 52.21), and has incorporated additional provisions under Part 18 of the Michigan Air Pollution Control Rules. Major PSD sources are those that have either of the following:

- The potential to emit 100 tons per year or more of any pollutant subject to regulation under the Clean Air Act and are one of 28 listed source categories
- The potential to emit 250 tons per year or more of any Clean Air Act pollutant (not listed in the 28 listed source categories)

New sources that are major PSD sources are required to obtain PSD permits. In addition, either of the following can trigger PSD permitting requirements:

- Changes to an existing major PSD source if the change would increase emissions by a "significant" amount
- Changes to an existing source if the change would increase emissions by an amount that itself would be a major stationary source

A facility with emissions that are otherwise unrestricted (based on equipment specifications, without any limitations on operating hours or material throughput, and without air emission control equipment) that exceed the major source thresholds would be considered a major PSD source. However, if a facility agrees to adhere to federally enforceable permit limits that restrict potential emissions to below the major source thresholds identified above (a "synthetic minor" source), PSD will not apply. This synthetic minor permitting strategy can be implemented by, for example, installing and operating emissions control equipment, accepting material use limits, or agreeing to operational limitations such as restrictions on hours of operation. Such requirements would have to be incorporated into a state- or federal-issued air permit to become federally enforceable. The Proposed Action would be a synthetic minor source not subject to PSD regulations because emissions and operating controls and permit limits would keep emissions below the applicability threshold.

Nonattainment New Source Review

The State of Michigan has established NA/NSR preconstruction permitting regulations (codified at Part 19 [R 336.2901 – 2910]) applicable to new major stationary sources or major modifications that are in a nonattainment area and major for the pollutant for which the area is designated as nonattainment. A major stationary source in a nonattainment area is defined as a stationary source that has a potential to emit that would be equal to or exceed the following thresholds:

- 100 tons per year of VOCs or oxides of nitrogen (marginal and moderate ozone nonattainment area)

- 50 tons per year of VOCs or oxides of nitrogen (serious ozone nonattainment area);
- 100 tons per year of oxides of nitrogen or 50 tons per year of VOCs (ozone transport region)
- 25 tons per year of VOCs or oxides of nitrogen (severe ozone nonattainment area)
- 10 tons per year of VOCs or oxides of nitrogen (extreme ozone nonattainment area)
- 50 tons per year of carbon monoxide (serious carbon monoxide nonattainment area where the MDEQ has determined that stationary sources contribute significantly to carbon monoxide levels in the area)
- 70 tons per year of PM_{10} (serious PM_{10} nonattainment area)
- 100 tons per year of $PM_{2.5}$ ($PM_{2.5}$ nonattainment area)

As with the PSD program, changes to existing major NA/NSR sources that result in increases in emissions exceeding a "significant" amount will trigger NA/NSR permitting requirements. The area A123 proposes for this project is in attainment of the NAAQS for all criteria pollutants except for $PM_{2.5}$. The Proposed Action would not be subject to NA/NSR regulations because emissions and operating controls would keep emissions below the applicability threshold for Wayne County, which is nonattainment for $PM_{2.5}$.

Title V Renewable Operating Permit

Michigan's Title V permit program (also known as the Renewable Operating Permit program) outlines stationary sources subject to Title V permit requirements, as follows:

- Sources with a potential to emit 10 tons per year of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants
- Sources with a potential to emit 100 tons per year or more of the criteria pollutants lead, sulfur dioxide, oxides of nitrogen, carbon monoxide, PM_{10}, and VOCs
- Sources subject to NSPS or that emit any Class I or II ozone-depleting substances
- Major sources in nonattainment areas
- Any affected source subject to the Acid Rain Program
- Any solid waste incineration unit, as defined in Clean Air Act Section 129(g)
- Any municipal solid waste landfill with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters
- Any 40 CFR Part 70 source

Because A123 proposed operations at the Romulus Complex would exceed the Renewable Operating Permit threshold of 100 tons per year for carbon monoxide emissions, A123 would be

expected to apply for a Renewable Operating Permit within 12 months of starting operations. The Renewable Operating Permit would not establish new limits on emissions or new emissions control requirements. Rather, the Renewable Operating Permit program is simply a compilation of the applicable air quality requirements in other A123 air permits (such as the Permit-to-Install) and the MDEQ and EPA air regulations into a single operating permit for a subject site.

New Source Performance Standards

A123 might install various fuel-burning equipment at the project locations to provide steam, comfort heating, desiccant renewal, and emergency electrical power. Certain boilers providing steam for the process at the Romulus campus would be subject to NSPS Subparts Dc and Db. The EPA has created NSPS in an effort to regulate new sources of air pollution and ensure that those sources pollute less than the older ones they replace. NSPS have been written for more than 75 categories of sources ranging from small boilers to large municipal sewage sludge incinerators. The NSPS typically places limits on the emissions of certain air pollutants, such as carbon monoxide, sulfur dioxide, oxides of nitrogen, and particulate matter, and can require performance testing, recordkeeping, reporting, and monitoring. NSPS Subpart Dc applies to small industrial boilers with a heat input rating greater than 10 million British Thermal Units (MMBtu) per hour but less than 100 MMBtu per hour; NSPS Subpart Db applies to boilers that exceed 100 MMBtu per hour heat input rating.

National Emissions Standards for Hazardous Air Pollutants

Facilities in certain source categories that have the potential to emit more than 10 tons per year of any single hazardous air pollutant or 25 tons per year of combined hazardous air pollutants (major sources of hazardous air pollutants) are subject to MACT standards. Such source categories include boilers, which are regulated under NESHAP Subpart DDDDD. In addition, sources that are not major for hazardous air pollutants might still be subject to the National Emission Standards for Hazardous Air Pollutants as area sources if they fall within certain source categories. The Proposed Action would not involve process operations or sources that would subject the operations to any MACT standard.

Air Toxics

The MDEQ Air Quality Division began developing an air toxics monitoring strategy in 1992. Detroit is one of several cities where air toxics are continuously monitored. In addition to regulating the hazardous air pollutants listed in Clean Air Act Section 112(b), Michigan's air toxics program (R 336.1224 through R 336.1232) regulates additional compounds. The MDEQ defines a toxic air contaminant as "any air contaminant for which there is no national ambient air quality standard and which is or may become harmful to public health or the environment when present in the outdoor atmosphere in sufficient quantities and duration (MDEQ 2010)." Sources of toxic air contaminants are subject to two main requirements – each source must apply T-BACT and emissions from the source cannot result in a maximum ambient concentration that exceeds the applicable health-based screening level.

Sources can be exempt from the T-BACT requirements if they emit only small amounts of low-potency carcinogens or low-toxicity non-carcinogens, or if they already meet BACT, LAER, or

MACT requirements. For nonexempt sources, compliance with the T-BACT rule requires an analysis to determine the maximum degree of toxic air contaminant emissions reduction available for each source and that does not result in unreasonable impacts to energy, environmental, or economic resources.

Sources that emit only small amounts of non-carcinogens or other products not listed as high-concern compounds, or that are regulated under a MACT or Residual Risk regulation, are exempt from the health-based screening levels. Emissions from nonexempt sources have to be demonstrated to result in maximum ambient concentrations below the screening level for each emitted toxic air contaminant. This demonstration involves calculating maximum allowable emissions rates following methodologies specified in the rule or, if required, performing dispersion modeling. The Proposed Action would emit certain toxic air contaminants and would be required to comply with MDEQ air toxics regulations.

Clean Air Act Section 112(r) Risk Management Plan

The EPA considers storing and handling certain highly toxic and flammable substances above specific threshold quantities to be subject to Accidental Release Prevention requirements (Clean Air Act Section 112(r)). Under these requirements, a subject facility must document the hazards of the chemicals, document the potential for off-site impacts from catastrophic releases of the chemicals, and develop accident-prevention procedures to respond to and mitigate the effects of any accidental releases. This program also requires a subject facility to develop a Risk Management Program and prepare a Risk Management Plan for submission to the EPA. The Proposed Action would not involve storage of any substance listed under the Clean Air Act Section 112(r) regulations in quantities above the applicability thresholds; therefore, these regulations would not apply.

Other State Implementation Plan Requirements

To preserve air quality in Michigan, the MDEQ has established specific emissions limitations and prohibitions for other pollutant categories. These limitations and prohibitions are outlined in MDEQ regulations and apply to sources of particulate matter (Part 3), sulfur-bearing compounds (Part 4), VOCs (Part 6 and Part 7), oxides of nitrogen (Part 8), and various other pollutants (Part 9), and are codified under R 336.1301 through R 1941. The Proposed Action would involve emissions from stationary source operations that would be required to meet emissions limitations specified in the MDEQ state implementation plan.

Regional Air Quality

In general, the primary sources of air pollution in the Detroit metropolitan area are from motor vehicles, industry, and powerplants. The region has been designated as in attainment of the NAAQS for all criteria pollutants except for $PM_{2.5}$. The locations of the proposed project are in Class II areas under the PSD regulations, where moderate, controlled growth can take place.

For the criteria pollutants lead, nitrogen dioxide, and sulfur dioxide, all Michigan Class II areas have continued to stay in attainment at ambient levels well below their NAAQS. Ambient monitoring data have shown that regional ozone and fine particulate concentrations at various

monitors in the state are trending downward (MDEQ 2009c). The following relate to nonattainment or maintenance conditions:

- Carbon monoxide – According to the MDEQ 2007 Air Quality Report, since 1999, all of Michigan is designated as in attainment and carbon monoxide monitoring is no longer required.

- 8-hour ozone – Ambient ozone concentrations dropped 12 percent between 1997 and 2007 through regulation of the ozone precursors oxides of nitrogen and VOCs. On April 15, 2004, EPA officially designated Wayne County as a moderate nonattainment area for the 8-hour ozone standard, and reclassified the county as marginal nonattainment in July 2004 (MDEQ 2009a, MDEQ 2009b). Ozone data from monitoring stations in southeast Michigan from 2006 through 2008 demonstrated attainment of the ozone NAAQS throughout the region, and on June 29, 2009, the EPA re-designated Wayne County as in attainment with the ozone NAAQS. On March 27, 2008, the EPA reduced the 8-hour ozone NAAQS from 0.08 parts per million to 0.075 parts per million (73 *Federal Register* 16435). It is anticipated that Wayne County will revert to nonattainment status with application of the new standard (MDEQ 2009e). Wayne County is currently considered a maintenance area for ozone.

- $PM_{2.5}$ – On December 17, 2004, the EPA designated seven counties in southeast Michigan as nonattainment for the annual $PM_{2.5}$ NAAQS. Based on 2006 through 2008 data, only Wayne County remains in nonattainment of the $PM_{2.5}$ NAAQS. MDEQ requested EPA re-designation of all areas except Wayne County as in attainment of the $PM_{2.5}$ NAAQS.

Because the nearest Class I PSD areas are more than 62 miles away from the proposed project location, the potential impact of the Proposed Action would be very small. The nearest Class I PSD area (designated public lands such as national parks, wilderness areas, and memorial parks) is the Seney Wildlife Refuge (Michigan), which is approximately 300 miles to the northwest, beyond the 62-mile distance typically considered to be evaluated for PSD permits. Other Class I areas, which include Rainbow Lake (Wisconsin), Isle Royale National Park (Michigan), Boundary Waters Canoe Wilderness Area (Minnesota), and Voyageurs National Park (Minnesota), are to the northwest much farther away.

3.3.2 Greenhouse Gases and Climate Change

Greenhouse gases are chemical compounds in Earth's atmosphere that trap heat. Greenhouse gases allow sunlight to freely enter the atmosphere, but limit the amount of infrared radiation (heat) that bounces back into space after striking Earth's surface. Over time, the amount of energy sent from the sun to Earth's surface should be about the same as the amount of energy radiated back into space, leaving the temperature of Earth's surface roughly constant. However, most studies indicate that Earth's climate has warmed over the past century and that human activity affecting the atmosphere is likely an important contributing factor. Computer-based modeling suggests that rising greenhouse gas concentrations generally produce an increase in the average temperature of Earth, which can produce changes in sea levels, rainfall patterns, and intensity and frequency of extreme weather events. Collectively, these effects are referred to as "climate change" (NEIC 2008). In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) stated that warming of Earth's climate

system is unequivocal, and that warming is very likely due to human-caused greenhouse gas concentrations (IPCC 2007).

Gases exhibiting greenhouse properties come from both natural and human sources. The most common greenhouse gases are water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Water vapor, carbon dioxide, methane, and nitrous oxide are examples of greenhouse gases that have both natural and manmade sources, while other gases such as those used for aerosols are exclusively manmade. In the United States, greenhouse gas emissions come mostly from energy use. These emissions are driven largely by economic growth, fuel used to generate electricity, and weather patterns that affect heating and cooling needs. Energy-related carbon dioxide emissions, resulting from combustion of petroleum and natural gas, represent 82 percent of total U.S. manmade greenhouse gas emissions (NEIC 2008).

The EPA and other government agencies have published national greenhouse gas inventory reports. In 2007, total U.S. greenhouse gas were more than 7 billion metric tons of carbon dioxide equivalents, rising by 17 percent from 1990 to 2007 (EPA 2009). Similar to the U.S. inventory, the principal sources of Michigan's greenhouse gas emissions are generation of electricity for in-state consumption; residential, commercial, and industrial fuel use; and transportation (MCAC and MDEQ 2009).

There are no formal federal climate change policies or regulations to regulate emissions of carbon dioxide. However, the Council on Environmental Quality is proposing guidance for the consideration of the effects of climate change and greenhouse gas emissions in NEPA documents. The draft guidance addresses the consideration of greenhouse gas emissions effects of a proposed action, and the relationship of climate change effects to a proposed action. The draft guidance suggests that if a proposed action would cause direct emissions of 25,000 metric tons or more of CO_2-equivalent greenhouse gas emissions on an annual basis, then consideration be given to including an assessment of these emissions in the NEPA review of that action. The guidance specifically states that the Council "does not propose [25,000 metric tons] as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of [greenhouse gas emissions] that may warrant some description in the appropriate NEPA analysis" (CEQ 2010). The climate change analysis in Section 4.3.2 of this EA is consistent with the Council's draft guidance. Beyond any federal climate change policy or regulation, there are several Federal Government incentive and voluntary programs to reduce emissions and foster the growth of climate technology and science.

3.4 Noise

This section addresses noise and includes a discussion of relevant noise regulations, impact criteria, and existing sound levels applicable to the proposed A123 facilities.

3.4.1 Noise Regulations and Impact Criteria

The federal Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 United States Code [U.S.C.] 4901 through 4918), delegates to states the authority to regulate environmental noise. It also directs government agencies to comply with local

community noise statutes and regulations and to implement their programs to promote an environment free of any noise that could jeopardize public health or welfare.

As described below, the noise impact evaluation for this project considered noise rules and criteria established by the State of Michigan, Wayne County, the Cities of Livonia and Romulus, the Townships of Brownstown and Van Buren, and a federal agency. However, regarding the proposed Livonia and Brownstown facilities, this section does not include noise limits established in the City of Livonia and Brownstown Township ordinances because A123 does not propose major exterior changes; A123 would not construct new facilities; A123 would install little to no new noise-producing equipment at exterior locations; and A123 plans limited interior construction activities at these facilities.

3.4.1.1 State of Michigan

The State of Michigan has no specific noise limits that apply to either the construction or operation of industrial sites. The state encourages local jurisdictions to establish their own noise limits and regulations.

3.4.1.2 Wayne County

Similar to the state, Wayne County has not established noise limits that apply to either the construction or operation of industrial sites. The county has a nuisance-noise code (Chapter 170 of the Wayne County Code) that applies primarily to amplified music produced by a musical instrument, radio, phonograph, tape recorder, compact disc player, or similar device.

3.4.1.3 City of Romulus

Section 8.05 of the City of Romulus Code of Ordinances establishes industrial performance standards, including standards for noise. The noise limits listed in Table 3-2 apply at the street or nearest property line. In addition to those limits, objectionable sounds of an intermittent nature or characterized by high frequencies, even if falling below the specified decibel levels, are required to be controlled so as not to become a nuisance to adjacent uses.

3.4.1.4 Van Buren Township

Van Buren Township has not established noise limits that apply to either the construction or operation of industrial sites. The township has a nuisance-noise code found in Division 5 (Noise) of Article II (Nuisances) in the Van Buren Township Code. The nuisance code focuses primarily on amplified noises and other sources not expected for the proposed project (for example, animals and loudspeakers).

Table 3-2
Romulus Maximum Permitted Sound Levels (decibels)[a]

Cycles per (hertz)[b]	Day[c]	Night[c]
0 to 74	76	70
75 to 149	70	62
150 to 299	64	56
300 to 599	57	49
600 to 1,199	51	44
1,200 to 2,399	45	39
2,400 to 4,799	38	33
4,800 and above	36	31
Approximate overall A-weighted sound level (dBA)[d]	60	53

[a] Source: Section 8.05(a)(1) of the City of Romulus Code of Ordinances
[b] Sound level meter set to "C" or "flat" scale, slow response.
[c] Day is between 7 am to 8 pm; night is between 8 pm and 7 am.
[d] Because the frequency spans identified in this rule do not reflect standard octave band frequency spans, the calculated overall A-weighted decibel (dBA) were estimated as a means to express the day and night noise limits as single values that consider all frequencies.

3.4.1.5 Federal Transit Administration

Because noise impact assessments usually consider potential incremental increases in the overall noise levels due to a project, and because none of the applicable local noise codes establish rules for characterizing impacts due to incremental increases, DOE applied the Federal Transit Administration noise impact criteria for this purpose. The Federal Transit Administration describes its noise impact criteria for transit projects in the manual entitled *Transit Noise and Vibration Impact Assessment* (FTA 2006). Noise impact criteria use a sliding scale to define project-related noise impacts based on the existing sound levels, and the criteria vary depending on the type of receiving property (for example, residential). These criteria characterize project noise levels as resulting in "no impact," or "impact," or "severe impact." These nationally recognized and widely applied noise impact criteria provide a reasonable measure for assessing and characterizing potential noise impacts due to incremental increases in the existing acoustic environment. As described in Section 3.4.2, existing day-night sound levels (L_{dn}S) were estimated using the U.S. Department of Housing and Urban Development (HUD) noise calculation tool in conjunction with the average daily traffic volumes on nearby major roadways.

Federal Transit Administration transit noise impact criteria are based on the land use category of the receiving properties (Table 3-3). Criteria for lands with uses confined primarily to daytime

activities (such as schools and churches) are based on the hourly equivalent sound level (L_{eq}) of the noisiest hour of transit-related activity, especially during periods of increased sensitivity to noise. The L_{eq} is a noise metric representing the level of a constant sound that contains the same amount of sound energy as the actual fluctuating sound over the same period. Therefore, the L_{eq} can be considered an energy-average sound level.

In contrast, Federal Transit Administration transit noise impact criteria apply the L_{dn} at residential uses and other locations used for habitation/sleep (such as hospitals and hotels) because of the potential for sleep disturbance. The L_{dn} is similar to a 24-hour L_{eq}, except that the metric includes an additional 10 dBA added to sound levels in each hour between 10 pm and 7 am to account for possible sleep disturbance.

Table 3-3
Land Use Categories and Metrics for Transit Noise Impact Criteria[a]

Land Use Category	Noise Metric[b] (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(1)$[c]	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, such land uses as outdoor amphitheaters and concert pavilions, and National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels, where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(1)$[c]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls fall into this category, as do places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities are also included.

[a] Source: FTA 2006.
[b] dBA = A-weighted decibel; L_{eq} = equivalent sound level; L_{dn} = equivalent day-night sound level.
[c] Equivalent sound level of the noisiest hour of transit-related activity during period of noise sensitivity.

Federal Transit Administration noise impact criteria are based on a sliding scale of impact levels for project-related noise based on existing sound levels (Figure 3-1) as determined using the HUD calculation tool. Based on these criteria, receiving locations with low existing sound levels can be exposed to greater increases in overall noise, after the addition of project noise, before there is an impact. Conversely, locations with higher existing sound levels can be exposed to smaller increases in overall noise before there is an impact. For example, residential locations with an existing sound level of L_{dn} 40 dBA would not be considered severely affected under Federal Transit Administration criteria unless a project would cause a 15-dBA increase in overall levels, while residential locations with an L_{dn} 60 dBA baseline would be considered severely affected by less than a 5-dBA increase due to project noise.

3.4.2 Existing Acoustic Environment

Because noise impacts typically are assessed based on both compliance with local noise limits and on incremental increases over baseline noise levels, existing ambient sound levels at potentially affected sensitive receptors such as residences, schools, hospitals near each of the project sites need to be identified. For this assessment, no sound level measurements were taken. In lieu of measurements, existing L_{dn} were estimated using the HUD noise calculation tool in conjunction with the average daily traffic volumes on nearby major roadways. The HUD noise calculation tool considers distance from roadway, average daily traffic (characterized as cars, medium-duty trucks, and heavy-duty trucks), and fraction of nighttime volumes (from 10 pm to 7 am).[15]

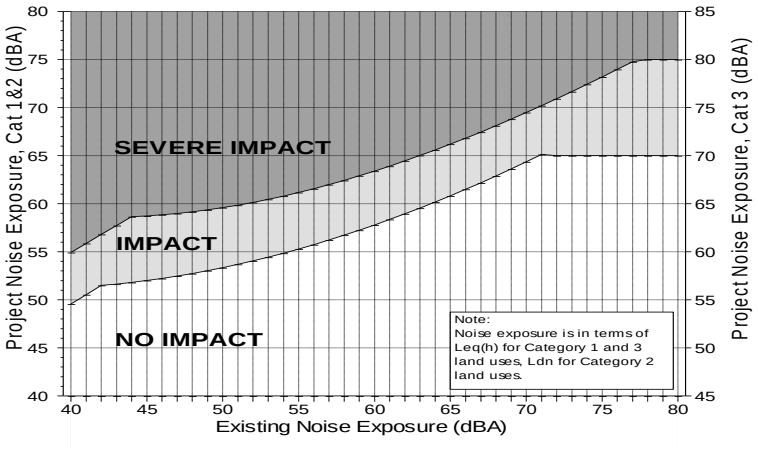


Figure 3-1. Federal Transit Administration Noise Impact Criteria

For most of the roadways in the project area, relevant traffic data were available on the Southeast Michigan Council of Governments' (SEMCOG) website.[16] Traffic volumes on highways and freeways were obtained from the Michigan Department of Transportation (MDOT) website.[17] The project's traffic consultant provided traffic volume data for Cogswell Road and Ecorse Road in Romulus.

[15] The HUD Ldn calculation tool can be found at www.hud.gov/offices/cpd/environment/dnlcalculatortool.cfm

[16] www.semcog.org/Data/Apps/trafficcounts.cfm?mcd=8999

[17] www.michigan.gov/documents/detmetro_19640_7.pdf

The proposal for the Livonia and Brownstown facilities would result in installation of little to no new exterior equipment and would produce few new truck trips on area roadways (approximately 3 to 6 round trips per week). In addition, the facilities would be far from any potentially affected receptors. Consequently, due to the low potential for noise impacts from these facilities, no existing sound levels were estimated for the Livonia and Brownstown facilities. The following paragraphs describe estimated noise levels for Romulus facilities.

The Romulus site consists of several facilities, each potentially affecting different sensitive receptor populations. Estimates of existing sound levels at potentially affected sensitive receptors are described separately below for each facility. As discussed in Chapter 4, restricting construction activity to day-time hours would be expected to minimize any construction-related noise impacts. Further, noise from exterior process and air pollution control equipment from the Romulus sites could exceed the nighttime noise limit of 53 dBA at residential properties near the facilities. To comply with the nighttime noise limit, A123 would implement noise attenuation measures as part of facility design (see Chapter 4).

3.4.2.1 Van Buren Commerce Center I and II

This facility in Van Buren Township is comprised of two buildings (referred to as Van Buren Commerce Center I and II) south of Van Born Road, west of Interstate 275, and east of Haggerty Road. The sensitive receptors nearest the site are residences between the facility and Haggerty Road and residences and a church west of Haggerty Road. All of these receptors are currently affected to varying degrees by traffic noise from Interstate 275, Van Born Road, and Haggerty Road. Although the nearby traffic-noise source that dominates varies depending on each receptor's distance from the various roadways, the estimated sound level due to traffic sources alone is approximately 67 dBA L_{dn} at all of the nearest sensitive receptors. This estimate of existing sound levels does not include contributions from any existing commercial and industrial businesses in the area.

3.4.2.2 6505 Cogswell Road

This facility is on the east side of Cogswell Road, north of Ecorse Road. There are numerous residences on the west side of Cogswell Road between the facility access driveway and Ecorse Road. The existing noise environment at these receptor locations is affected by traffic traveling on Cogswell Road and on Ecorse Road. Existing traffic noise levels vary quite a bit, depending on residence distances from Ecorse Road, a much more heavily traveled road than Cogswell Road. At residences adjacent to both Cogswell Road and Ecorse Road, the estimated existing sound level is 70 dBA L_{dn}. At residences approximately half way between Ecorse Road and the facility's access driveway off Cogswell Road, the estimated existing sound level is 55 dBA L_{dn}. At residences directly across from the facility and the facility's access driveway, the estimated existing sound level is 54 dBA L_{dn}. (These northernmost residences also could be affected by traffic noise from Van Born Road.) These sound level estimates do not include noise from any other existing sources such as industrial facilities and aircraft.

3.4.2.3 38100 Ecorse Road

This facility is adjacent to Ecorse Road and shares its northern property boundary with the facility at 6505 Cogswell Road. The receptors potentially affected by this facility would be the same as identified for 6505 Cogswell Road.

3.4.2.4 7525 Cogswell Road

This facility is on the east side of Cogswell Road, south of Ecorse Road. There are numerous residences south of the facility (south of an intervening transmission line easement). There are more residences on the west side of Cogswell Road, between the facility and Ecorse Road. As with the 6505 Cogswell Road facility, the existing noise environment at these receptor locations is affected by traffic on Cogswell Road and Ecorse Road, and noise levels vary quite a bit, depending on residence distance from Ecorse Road and from Cogswell Road. At residences due south of the facility and farthest from Cogswell Road, the estimated existing sound level is 52 dBA L_{dn}. At residences south of the facility and adjacent to Cogswell Road, the estimated existing sound level is 54 dBA L_{dn}. These sound level estimates do not include noise from any other existing sources, such as industrial facilities and aircraft.

3.5 Geology and Seismicity

This section describes the regulatory framework related to geology, site topography, the regional geologic setting, and the local geology. Because construction involving ground disturbance is planned only for the Romulus Expansion Site, this section does not describe geology and soil conditions for Livonia, Brownstown, and the four other Romulus sites. According to the U.S. Geological Survey 2008 Seismic Hazard Maps, the Detroit metropolitan area is in an area of very low seismic risk (Peterson et al. 2008) and no further seismic analyses are necessary.

The Romulus Expansion Site is in Wayne County, wherein the topography is extremely flat with a gentle slope from 0 to 4 percent toward the Detroit River to the east (Lower Two Subwatershed Group 2001).

Geology in this area was influenced by glacial action during the Wisconsin Period. Bedrock in this area of Michigan is generally concealed by an unattached layer of loose fragmented rock. The quarternary, or surface geology, are surface features created by glaciers during the last 15,000 years. DOE expects that soils at the Expansion Site would be comprised of poorly drained loamy sand and loamy fine sand of the Wasepi and Belleville series (Nova 2007).

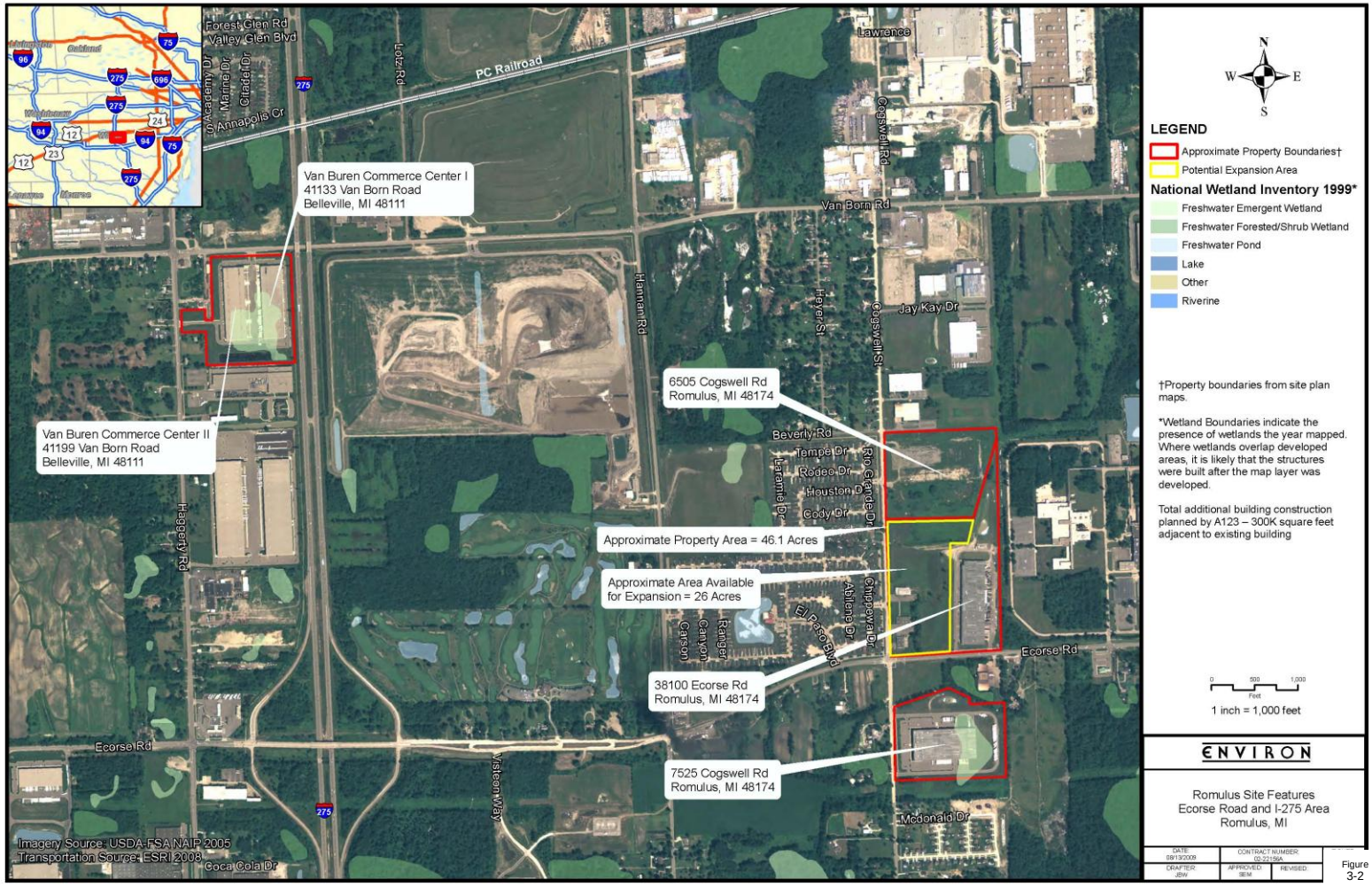
3.6 Water Resources

Long-term annual average precipitation at the Detroit Metropolitan Airport is 32.3 (CDWIC 2006). Annual precipitation totals include rainfall and hail, sleet, and snow expressed as equivalent inches of water. The wettest months are typically May and June (NOAA 2006).

Because construction involving ground disturbance is planned only for the Romulus Expansion Site, this section does not further discuss climate and water resources for Livonia, Brownstown, and the four other Romulus sites.

3.6.1 Wetlands

The Expansion Site contains man-made storm-water detention basins, but there are no surface-water detention ponds on the site. Michigan, which administers the federal wetlands program, regulates only wetlands that are connected to an inland lake, pond, river, or stream; within 500 feet of such a waterbody; or more than 5 acres in size (Mich. Comp. Laws 324.30301(p)). Based on the results of the site visit and review of the National Wetland Inventory maps (Figure 3-2), there are no surface streams or jurisdictional wetlands on the Expansion Site.


Van Buren Commerce Center I
41133 Van Born Road
Belleville, MI 48111
Van Buren Commerce Center II
41199 Van Born Road
Belleville, MI 48111
6505 Cogswell Rd
Romulus, MI 48174
Approximate Property Area = 46.1 Acres
Approximate Area Available for Expansion = 26 Acres
38100 Ecorse Rd
Romulus, MI 48174
7525 Cogswell Rd
Romulus, MI 48174
Forest Glen Rd
Valley Glen Blvd
Lotz Rd
PC Railroad
Lawrence
Annapolis Dr
Van Born Rd
Hannan Rd
Cogswell Rd
Jay Kay Dr
Beverly Rd
Tempe Dr
Rodeo Dr
Houston Dr
Cody Dr
Haggerty Rd
Ecorse Rd
Canyon
Ranger
Abilene Dr
Chippewa Dr
El Paso Blvd
Mcdonald Dr
Coca Cola Dr
Imagery Source: USDA-FSA NAIP 2005
Transportation Source: ESRI 2008
N
W
E
S
LEGEND
Approximate Property Boundaries†
Potential Expansion Area
National Wetland Inventory 1999*
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
†Property boundaries from site plan maps.
*Wetland Boundaries indicate the presence of wetlands the year mapped. Where wetlands overlap developed areas, it is likely that the structures were built after the map layer was developed.
Total additional building construction planned by A123 – 300K square feet adjacent to existing building
1 inch = 1,000 feet
ENVIRON
Romulus Site Features
Ecorse Road and I-275 Area
Romulus, MI
Figure 3-2

3.6.2 Water Quality

The Romulus Expansion Site is in the upper reaches of the Lower Rouge River watershed, on the boundary of the Ecorse Creek and Combined Downriver Watersheds. The Lower Branch of the Rouge River has a drainage area of 21,027 acres (Lower 2 Subwatershed Group 2001). There are straightened drains on the east and west sides of the Expansion Site. These generally parallel the roads and flow north to the Lower Rouge River (approximately 1 mile north of the Expansion Site).

MDEQ Water Programs establish water quality standards, assess water quality, provide regulatory oversight for all public water supplies, issue permits to regulate the discharge of industrial and municipal wastewaters, monitor the quality of state water resources, monitor the quantity and quality of aquatic habitat, assess the health of aquatic communities, and ensure compliance with state laws.

The Rouge River National Wet Weather Demonstration Project is an ongoing EPA-funded regional project that provides a framework for the preparation of pollution prevention initiatives to meet state and federal water quality regulations (Upper Rouge River Subwatershed Advisory Council 2001). This project has resulted in the completion of seven Subwatershed Management Plans developed through the cooperative efforts of cities and townships, counties, and the MDOT, with the advice and counsel of the MDEQ and the Rouge River Remedial Action Plan Advisory Council. These subwatershed plans were developed under a unique state program for permitting storm-water discharges (Upper Rouge River Subwatershed Advisory Council 2001). An emphasis of each of the subwatershed management plans is to mitigate the undesirable impacts of wet-weather discharges to the river. These plans are relevant to the proposed project because storm water from the Romulus Expansion Site might discharge to the Lower Rouge River and ultimately flow to the Detroit River. The proposed project would be consistent with the subwatershed plans.

3.6.3 Floodplains

Floodplains are lowlands and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands (41 *Federal Register* 46968, October 26, 1976). The 100-year floodplain (an area with 1-percent or greater chance of flooding in any given year) might be present in low-lying regions, typically near rivers or drainages, or in coastal areas that are not well protected from sea swells. To screen for the location of floodplains and associated risk of flooding, analysts reviewed flood risk data from the Federal Emergency Management Agency's Flood Insurance Rate Maps (FEMA 1996).

With the exception of the Brownstown site, none of the proposed sites is within 0.5 mile of the 100-year floodplain for which rate maps are available. At Brownstown, the site is within 0.3 mile of the 100-year floodplain. As discussed earlier, there are no planned construction activities at Livonia, Brownstown, or four of the five Romulus sites. Rate maps are not available for the Cogswell Road and Ecorse Road portions of the Romulus Complex because they are in communities that do not participate in the National Flood Insurance Program. These sites are in the upper headwaters of tributaries to the Lower Rouge River and the elevations of the sites are

greater than the elevations for the adjacent areas considered to be in the 100-year floodplain. The area is not considered to be at risk of flooding (Wells 2009a).

3.7 Biological Resources

Biological resources described in this section include native or naturalized plants and animals and their habitats. Protected and sensitive biological resources include specific habitats and the plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service or the Michigan Department of Natural Resources or are otherwise protected under federal or state law.

3.7.1 Applicable Federal Plans, Policies, and Regulations

At present, Michigan is one of two states in the United States with delegated authority to administer the Clean Water Act locally through the MDEQ. Michigan regulates only wetlands that are (1) connected to an inland lake, pond, river, or stream, (2) within 500 feet of such a water body, or (3) more than 5 acres in size (Mich. Comp. Laws 324.30301(p)). As discussed in Section 3.6, none of these features is present at the Romulus Expansion Site, where A123 plans the only ground-disturbing construction.

The principal statute pertaining to the protection of plants and animals is the federal Endangered Species Act, as amended, which requires protection of federally listed threatened and endangered species and their habitats. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service administer the Endangered Species Act, which mandates protection and conservation of threatened and endangered species and the ecosystems upon which they depend.

The Migratory Bird Treaty Act of 1918 is the domestic law that affirms, or implements, the U.S. commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protect selected species of birds common to both countries (that is, species occur in both countries at some point during their annual life cycle). The act protects all migratory birds and their parts, including eggs, nests, and feathers.

3.7.2 Applicable Michigan Plans, Policies, and Regulations

Part 365 of the Endangered Species Protection Section of Natural Resources and Environmental Protection Act 451 of the Michigan Public Acts of 1994 legally protects state-listed threatened or endangered species. Under this law, the Michigan Department of Natural Resources performs environmental reviews using the Endangered Species Assessment process. The state uses the Michigan Natural Features Inventory database to list species of special concern and address other sensitive natural features based on the locations of threatened or endangered species, exemplary natural communities, and geologic features.

3.7.3 Fish and Wildlife

Fish and wildlife resources include indigenous and migratory animal species. These resources include wildlife individuals and populations and their relationships to habitat, including wetland and riparian ecosystems. The disturbed and highly developed nature of the project sites do not provide what would be considered high-quality wildlife habitat, and only common and urban-adapted wildlife species are expected to be present at the sites. A watershed specialist and certified fisheries biologists visited the sites on March 5 and May 4, 2009, to evaluate the presence of potentially sensitive habitats and federally or state protected species.

There are no regionally or nationally important habitat areas on or near the sites, and no critical habitat for federally or state protected species. Rare plant species are not expected to be present in the project area. The sites are not known to serve as migratory wildlife corridors or as wildlife nursery sites for native resident or migratory fish or wildlife species.

3.7.4 Threatened and Endangered Species and Special Status Species

Of principal concern are direct or indirect effects to federally and state protected species or their prime habitats. Federally and state listed species are typically found in unique natural environments. The Michigan Natural Features Inventory Rare Species Explorer was used to produce a list of special status and federally or state protected species with the potential to occur in Wayne County (see Appendix A) (MDNR 2009c).

Table 3-4 lists the federally threatened or endangered species identified in the Fish and Wildlife Service threatened or endangered species lists for Wayne County. The Fish and Wildlife Service Midwestern Region periodically updates these lists to assist with project planning. Sections 3.7.4.1 through 3.7.4.5 describe the life history, habitat requirements, and state and federal protection status for each of the five species listed in Table 3-4.

3.7.4.1 Indiana Bat

Indiana bats (*Myotis sodalist*) are a federally and state endangered member of the bat family *Vespertilionidae* (FWS 2009). This species is a medium size bat with dull gray fur and a pink or cinnamon colored underside. Indiana bats typically use caves or mines for winter hibernacula. In Michigan, summer breeding habitat includes roost and maternity roost trees with exfoliating bark such as shagbark hickory (*Carya ovata*) and oak (*Quercus* spp.) (FWS 2007) with good solar exposure in somewhat open areas. According to the *First Revision of the Draft Indiana Bat Recovery Plan* (FWS 2007), the only known winter hibernacula of this species historically occurred in northwestern Michigan, but this location is no longer considered an extant winter hibernacula. There have been at least 11 maternity colonies located in Michigan, but none of these have been detected in Wayne County. This species is not expected to occur on the project sites due to the highly developed nature of the industrial sites and the lack of suitable habitat that contains roost trees close to wooded areas. Critical habitat was designated for this species in 1967, but there is no critical habitat in the state of Michigan (FWS 2009).

Table 3-4
Threatened and Endangered and Special Status Species with Potential to Occur[a]

Common Name	Scientific Name	Status[b]	Habitat[c]	Determination and Basis
Indiana bat	*Myotis sodalist*	FE, SE	Summer habitat includes small to medium river and stream corridors with well developed riparian woods; woodlots within 1 to 3 miles of small to medium rivers and streams; and upland forests. Caves and mines as hibernacula.	No effect. Lack of onsite habitat. The sites do not include riparian woods, woodlots within 1 to 3 miles of small to medium rivers, or suitable streams, caves, or mines.
Eastern massasauga	*Sistrurus catenatus catenatus*	FC, SC	Wet areas, including wet prairies, marshes and low areas along rivers and lakes.	No effect. Lack of onsite habitat. The sites do not include wet prairies or marshes.
Northern riffleshell	*Dysnomia torulosa rangiana*	FC, SE	Large streams and small rivers in firm sand or riffle areas; also occurs in Lake Erie.	No effect. No large streams or rivers of any kind on any of the properties.
Rayed bean	*Villosa fabalis*	FC, SE	Rivers and streams in the Great Lakes region near shoal or riffle habitat with sand or gravel substrates; also occurs in Lake Erie.	No effect. No suitable stream or rivers on any of the properties.
Eastern prairie fringed orchid	*Plantathera leucophaea*	FT, SE	Mesic to wet prairies and meadows.	No effect. No prairies or meadow habitat on any of the properties.

[a] Source: http://www.fws.gov/midwest/Endangered/lists/michigan-cty.html)
[b] FC = federal candidate; FT = federally threatened; FE = federally endangered; SC = state species of concern; SE = state endangered.
[c] From species lists on the Endangered, Threatened, Candidate, and Proposed section of the Midwestern Region (Region 3) of the U.S. Fish and Wildlife Service web site at http://www.fws.gov/midwest/Endangered/lists/e_th_pr.html.

3.7.4.2 Eastern Massasauga

The eastern massasauga (*Sistrurus catenatus catenatus)* is a federal candidate and state species of concern in the family *Viperidae* (USFWS 2009). This species is a small snake that reaches approximately 2 feet in length and is generally gray or light brown with chocolate-rimmed blotches. This species of rattlesnake requires moist grasslands or wetlands. Eastern massasuagas are known to occur in Wayne County, but are not expected to occur on the project sites due to the lack of suitable habitat and highly developed nature of the surrounding area.

3.7.4.3 Northern Riffleshell

Northern riffleshells (*Dysnomia torulosa)* are a federal candidate and state endangered species of freshwater mussel in the family *Unionidae* (FWS 2009). This species buries itself in sand or

gravel substrates of rivers and streams and is threatened by changes in water-level management associated with dams and reservoirs and by non-native species. This species occurs statewide in Michigan, but is not expected to occur on the project sites because it lacks suitable river and stream habitat.

3.7.4.4 Rayed Bean

The Rayed bean (*Villosa fabalis)* is a federal candidate and state endangered species of freshwater mussel in the *Unionidae* family (FWS 2007). This species occurs in rivers and streams with near-shoal or riffle habitat with sand or gravel substrate, and in Lake Erie. This species is sensitive to flooding or changes in water-flow elevations and usually prefers low-flow refuge areas. Rayed beans occur in several drainages associated with the Lower Great Lakes system in Michigan, including the Clinton River. This species is not expected to occur on the project sites due to a lack of suitable habitat.

3.7.4.5 Eastern Prairie Fringed Orchid

The eastern prairie fringed orchid (*Plantathera leucophaea)* is a federally threatened and state endangered member of the family *Orchidaceae* (FWS 2005). This species requires wetlands or moist prairies, is intolerant of shade and woody species, and is pollinated by hawkmoths (*Sphingidae*) (FWS 1999). According to the Eastern Prairie Fringed Orchid Recovery Plan (FWS 1999), there are 12 extant populations in nine counties in Michigan, including several populations in southeastern Michigan. However, this species is not expected to occur on the project sites due to a lack of suitable habitat.

Due to the disturbed conditions at the project sites and the developed nature of adjacent properties, project sites are not likely to support listed species. No known special status species of plant or animal or evidence of their presence was detected during the biological survey. DOE sent a letter to the U.S. Fish and Wildlife Service on October 23, 2009, stating the Department's determination that the Proposed Action would have no effect on any federally listed endangered, threatened, proposed, or candidate species. The Service responded in an email dated November 25, 2009, indicating that no further action was required by DOE under Section 7 of the Endangered Species Act (see Appendix B).

3.8 Cultural Resources

The National Historic Preservation Act of 1966 is the primary federal law protecting cultural, historic, and archaeological resources. National Historic Preservation Act Section 106 requires DOE to account for the effects of its undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment (ACHP 2009). The Section 106 process is initiated by first determining whether the Proposed Action is an activity that could affect historic properties. Historic properties are properties that are included on the

National Register of Historic Places or that meet the criteria for listing on the National Register (ACHP 2009).

The buildings on the project sites are all contemporary and were constructed since 1980. A search of the Michigan State Historical Preservation Office (SHPO) online database[18] did not identify any known historical or archaeological resources on any of the project sites or in the immediate vicinity of the project sites.

The Louis Berger Group performed a Phase IA archaeological survey (see Appendix C) for all properties in July of 2009. The survey included field visits, a search of known archaeological records, examination of historical maps and aerial photos to assess archaeological potential, and recommendations regarding whether additional investigation was warranted. The report concluded that there are no resources that meet the criteria for listing on the *National Register of Historic Places*, that no historic resources have been previously discovered on the sites, and that no future investigation was warranted due to the high level of development within the Area of Potential Effect or property boundaries (Louis Berger Group 2009).

DOE sent a letter and Section 106 Review Application to the Michigan SHPO on December 2, 2009, requesting concurrence with the DOE determination of No Historic Properties Affected under 36 CFR Part 800.4(d)(1) for the Livonia, Brownstown, and Romulus sites (see Appendix B).

Letters were also sent to Hannahville Indian Community and the Forest County Potawatomi Community on October 23, 2009, because these communities have expressed a historical interest in Wayne County (see Appendix B). Both letters requested information on any archaeological, religious, or cultural sites of significance.

3.9 Socioeconomics and Environmental Justice

3.9.1 Socioeconomics

The socioeconomic factors that influence the quality of the human environment include population demographics, housing, and economic figures such as employment, income, and earnings. Population factors include the number of residents in the area and the recent change in population growth. Housing includes number of units, ownership, and vacancy rates. Employment data include labor sectors, labor force, and statistics on unemployment.

The socioeconomics region of influence for the Proposed Action is Wayne County, Michigan. Table 3-5 lists selected economic indicators for the region of influence and comparative data for the state. For state-and county-level information, and for the Cities of Livonia and Romulus, the

[18] http://www.mcgi.state.mi.us/hso/findlocation.asp

analysis uses data from the U.S. Census Bureau's American Community Survey for 2007. For Van Buren Township and Brownstown, 2007 data are not available; therefore, the analysis uses data from the 2000 Census.

Table 3-5
Selected Socioeconomic Indicators for the Region of Influence and State of Michigan

Geographic Area	Population	Labor Force	Housing Units	Housing Vacancy Rate (percent)	Median Home Price (dollars)
City of Livonia[a]	102,455	53,263	38,903	4.9	200,500
City of Romulus[a]	26,192	12,270	10,001	8.6	135,400
Van Buren Township[b]	23,559	13,639	10,417	5.3	143,100
Brownstown Township[b]	22,989	12,287	9,008	8.0	147,200
Wayne County[a]	1,985,101	910,668	839,201	15.8	137,300
Michigan[a]	10,071,822	5,020,953	4,526,914	15.0	153,100

[a] Source: U.S. Census Bureau 2007.
[b] Source: U.S. Census Bureau 2000 (2007 data not available).

According to the Census Bureau, the population in Wayne County was 1,985,101 in 2007. This represents a 3.7 percent decrease in population since the 2000 Census. There are approximately 839,201 housing units in the region of influence, with a 15.8 percent vacancy rate, about 4.2 percent higher than the national vacancy rate and 8.8 percent higher than the region of influence vacancy rate in 2000. Approximately 66.6 percent of the housing units in the region of influence are owner occupied and approximately 24.6 percent are renter occupied. The median value of a home in Wayne County in 2007 was approximately $137,300, which was 24 percent lower than the national median home value of $181,800.

The average per capita income in the region of influence in 2007 was $21,879. The primary employment sectors were healthcare and social assistance; manufacturing; retail trade; and professional, scientific, and technical services. The unemployment rate in Wayne County in 2007 was 14 percent. According to the State of Michigan Labor Market Information web site, the unemployment rate had climbed to 15.1 percent by October of 2009, considerably higher than the national rate of 10.2 percent (Michigan Department of Labor & Economic Growth 2009).

Section 3.9.2 provides demographics (race and ethnicity) and income and poverty-level data for the census tract in which each project site is located.

3.9.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires that "each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities, on minority populations and low-income populations" (59 *Federal Register* 7629, February 11, 1994 [Section 1-201]).

The Council on Environmental Quality has issued guidance to federal agencies to assist them with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. DOE also issued guidance and recommends that DOE consider pathways or uses of resources that are unique to a minority or low-income community before determining that there are not disproportionately high and adverse impacts on the minority or low-income population (DOE 2004).

3.9.2.1 Demographics

Table 3-6 lists racial and ethnic data for the geographic areas and comparative data for the state. The proposed project would be within census tracts 5565 (Livonia facility); 5858 (the Romulus facility's Ecorse Road and Cogswell Road locations); 5879 (the Romulus facility's Van Born Road locations); and 5915 (Brownstown facility). Whites are the predominant ethnic group in Wayne County and each of the proposed location census tracts. African Americans are the predominant minority group in Wayne County and in all of the proposed location census tracts except 5565, in which Asians are the predominant minority. With one exception, each of the 34 census tracts adjacent to the four proposed location census tracts have levels of minorities that are lower than or comparable to the proposed location census tracts. The exception is tract 5856, which is 73.6 percent African American and is adjacent to tract 5858, which is 40.6 percent African American. In each of the proposed location census tracts, the overall percentage of minorities is less than in the region of influence as a whole, and generally comparable to the percentage in the cities in which the census tracts are located.

3.9.2.2 Income and Poverty Level

Table 3-7 lists income statistics for geographic areas in the region of influence and comparative data. Compared to Wayne County as a whole, all of the census tracts in which the proposed facilities would be located have a higher median household income, except for tract 5879, where the median household income ($40,179) is slightly below the Wayne County median household income ($42,470). Per capita income in census tracts 5879 and 5915 is comparable to per capita income in Wayne County ($21,879), while per capita income in tract 5858 is somewhat lower than in Wayne County. In contrast, per capita income in tract 5565 is higher than in Wayne County. The percentage of individuals living in poverty in Wayne County is 20.7 percent, which is considerably higher than the percentage in any of the census tracts where the proposed project would be located, which range from 3.7 percent to 13.7 percent.

3.9.2.3 Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 *Federal Register* 19885, April 23, 1997), states that each federal agency shall make it a priority to identify and assess environmental health risks and safety risks that could disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that children are likely to come into contact with or ingest.

Table 3-6
Total Percentage of Population by Race/Ethnicity

Geographic Area	White	Black, African American	Native American, Alaskan, Aleut	Asian	Native Hawaiian or Other Pacific Islander	Other	Latino, Hispanic
Census Tract 5565 (Livonia Facility)[a]	94.1	1.1	0.3	2.5	0.0	1.1	0.9
Census Tract 5858 (Romulus Facility: Ecorse Road and Cogswell Rd. Locations)[a]	55.4	40.6	1.2	0.5	0.1	0.3	1.8
Census Tract 5879 (Romulus Facility: Van Born Road Locations)[a]	73.8	19.9	1.7	1.5	0.1	0.2	2.7
Census Tract 5915 (Brownstown Facility)[a]	79.2	8.0	1.2	7.7	0.0	0.5	3.4
City of Livonia[b]	90.9	2.3	0.2	3.3	0.0	0.9	2.4
City of Romulus[a]	64.5	30.4	1.4	0.8	0.1	0.6	2.2
Van Buren Township[a]	81.2	13.7	0.5	1.9	0.0	0.5	2.2
Brownstown Township[a]	86.6	4.3	1.2	4.3	0.0	0.0	3.6
Wayne County[b]	50.0	40.8	0.2	2.5	0.0	1.6	4.9
Michigan[b]	77.5	14.0	0.5	2.4	0.0	1.7	4.0

[a] Source: U.S. Census Bureau 2000 (2007 data not available)
[b] Source: U.S. Census Bureau 2007.

Table 3-7
Income and Poverty Level

Geographic Area	Median Household Income (dollars)	Per Capita Income (dollars)	Percentage of Individuals Living in Poverty
Census Tract 5565 (Livonia Facility)[a]	48,708	32,062	3.7
Census Tract 5858 (Romulus Facility: Ecorse Road and Cogswell Road Locations)[a]	44,904	18,259	12.3
Census Tract 5879 (Romulus Facility: Van Born Road Locations)[a]	40,179	20,386	13.7
Census Tract 5915 (Brownstown Facility)[a]	47,448	20,666	8.2
City of Livonia[b]	71,196	30,168	3.7
City of Romulus[b]	45,218	20,411	17.5
Van Buren Township[a]	50,984	24,820	6.3
Brownstown Township[a]	55,239	22,523	6.9
Wayne County[b]	42,470	21,879	20.7
Michigan[b]	47,950	24,816	10.1

[a] Source: U.S. Census Bureau 2000 (2007 data not available)
[b] Source: U.S. Census Bureau 2007.

In census tract 5565, 17 percent of the population is younger than 18, which is somewhat lower than the county level (26.7 percent), state level (24.3 percent), and national level (24.5 percent). In the census tracts for the other proposed locations, the levels are more in line with the county, state, and national levels. In census tracts 5858 and 5879, 32 percent of the population is younger than 18; in census tract 5915, the level is 29 percent.

The closest school to the Livonia facility, Sunny Pointe Child Care Center, is a preschool, 1.1 miles to the west of the facility. The closest school to the Brownstown facility is Meadowbrook Preschool, 0.5 mile to the north. The closest school to the Romulus Ecorse Road and Cogswell Road locations is Romulus Middle School, 1.1 miles to the southeast. The closest school to the Van Born Road locations is Walker Winter Elementary, 1.2 miles to the northeast. .

3.10 Public Health and Safety

This section describes concerns related to the health and safety of the public, of construction workers during construction of the Romulus Expansion Site, and of A123 workers at the facilities, once completed, and the associated regulatory framework.

A search of the Michigan's Enviromapper, the EPA Comprehensive Environmental, Response, Compensation and Liability Information System (CERCLIS) database, and Michigan Site Registry web sites indicated there is no record of contamination at the project sites.

Daily operations at the manufacturing and assembly plants would involve storing, handling, and transporting hazardous materials (Table 2-4). The proposed project would also require the installation of prefabricated aboveground storage tanks to store non-VOC solvent, NMP, hydrogen peroxide, and electrolyte (at Brownstown), among others. Workers at the completed A123 facilities would work daily with hazardous materials that, if contacted, could pose health risks. All workers with the potential to be exposed to hazardous materials would be trained in proper handling procedures and would be outfitted with personal protective equipment, as necessary. In addition, engineering controls would be in place to prevent accidental exposure.

There are various risk scenarios for the facilities that could provide A123 workers and the public pathways for exposure, including the following:

- Chemical and waste storage, handling, and delivery systems at all facilities
  - Leaks from the operating systems, which could introduce chemicals to the facility's floor and air, potentially resulting in exposure of workers.
  - Vapor release, which would introduce toxic chemicals to the facility's air, potentially resulting in exposure to workers.
  - Contact exposure due to leaks, releases, or human error, which could result in chemical burns and absorption of toxic chemicals.
  - Overfill of tanks and containers, which could cause spills and releases of chemicals to the facility's floor and air, potentially resulting in exposure to workers.
  - Electrical shock and/or leakage of the electrolyte or gasses from the cells resulting from batteries or battery packs being abused or significantly damaged in handling or transport, potentially resulting in exposure to workers. Examples of abusive conditions include extreme heat, test equipment failure during charging, handling incidents from fork trucks and power tools, and dropping from extreme heights.
- Scrubbers and air pollution control exhausts at Romulus facilities
  - Loss of exhaust and loss of pH control, which could result in release of non-VOC solvent, ammonia, carbon monoxide, and NMP to the environment and exposure of nearby people to chemicals that could cause adverse health effects. Any upset conditions associated with the routine operation of the process or air pollution control equipment would result in additional pollutant emissions to the atmosphere, including non-VOC solvent, NMP, ammonia, and carbon monoxide.
  - Failure of primary containment for storage of non-VOC solvent and NMP, which could expose workers to chemical contact on their skin or vapors in their eyes or respiratory system.

- Wastewater treatment at Romulus Facilities
  - Failure of treatment resulting in discharge of "out-of-spec" wastewater, which would result in potentially contaminated waters being released to the DWSD sewer system. This could result in adverse impacts to ecological resources when these waters were treated and reached the Great Lakes.
  - Failure of tanks or piping resulting in leak of wastewater or treatment system chemicals. This scenario could result in the exposure of humans or the environment to hazardous substances.
- All facilities
  - Human error, which could expose humans or the environment to hazardous materials.
  - Sabotage by personnel, which could result in a variety of health and safety risks.

Occupational health and safety rights for workers at the A123 facilities would be protected through the federal Occupational Safety and Health Act (29 U.S.C. 651 *et seq.*). Under this act, Congress created the Occupational Safety and Health Administration (OSHA), an agency of the U.S. Department of Labor. The OSHA mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continuous improvement in workplace safety and health. States might have additional laws and regulations that build on the Occupational Safety and Health Act.

3.11 Transportation

This section describes existing transportation routes, public transit services, and traffic conditions on the roadways.

3.11.1 Roadway Network

3.11.1.1 Livonia

There are two major arterial roadways and one urban freeway adjacent to the site. Interstate 96/275, an eight-lane freeway with four lanes in each direction, is immediately east of the site. This freeway carries 197,700 vehicles per day (MDOT 2007).

Seven Mile Road intersects Interstate 96/275 via a diamond interchange. Seven Mile Road, a five-lane undivided arterial roadway with a 45-mile-per hour speed limit, is immediately south of the site. Haggerty Road intersects Seven Mile Road at a signalized intersection southwest of the site. Haggerty Road, a five-lane undivided arterial roadway with a 45-mile-per-hour speed limit, is west of the site.

3.11.1.2 Brownstown

Access is provided to each building at the Brownstown site via one or more access driveways along Brownstown Center Drive, which intersects Sibley Road. There are two major arterial roadways (Sibley Road and Toledo-Dix Highway), and one urban freeway (Interstate 75) adjacent to the site. Interstate 75 is a six-lane freeway with three lanes in each direction that would serve as the primary location for ingress and egress vehicle movements to all three sites via the existing Sibley Road interchange. This freeway carries 95,600 vehicles per day (MDOT 2007). Sibley Road intersects this freeway via a partial diamond interchange. It is estimated that up to 60 percent of all traffic originating or destined for any of the three sites would use this interchange.

Sibley Road is a four-lane divided arterial roadway in the project area with left-turn lanes provided via a center, undivided median. The speed limit along Sibley Road is 45 miles per hour. Sibley Road would provide direct access to the sites via existing access driveways or via Brownstown Center Drive. The intersection of Sibley Road and Brownstown Center Drive is controlled by a stop sign facing the Brownstown Center Drive approach.

Toledo-Dix Highway is a four-lane undivided arterial roadway with a 45-mile-per-hour speed limit, and it intersects Sibley road just east of the Interstate 75 interchange. The intersection of Sibley Road and Toledo-Dix Highway is controlled by an existing traffic signal, with left-turn lanes provided for Sibley Road traffic.

3.11.1.3 Romulus

There are two major arterial roadways (Ecorse Road and Haggerty Road), two minor arterial roadways (Van Born Road and Cogswell Road) and one urban freeway (Interstate 275) adjacent to the site.

Interstate 275 is a six-lane freeway with three lanes in each direction that would serve as the primary location for ingress and egress vehicle movements to all five sites via the existing Ecorse Road interchange. This freeway carries 98,100 vehicles per day (MDOT 2007). Ecorse Road intersects this freeway via a diamond interchange. It is estimated that up to 60 percent of all traffic originating or destined for any of the five sites would use this interchange.

Ecorse Road is a four-lane divided arterial roadway between Haggerty Road (west of Interstate 275) and Hannon Road (east of Interstate 275), and a two-lane undivided roadway east of Hannon Road. The speed limit along Ecorse Road is 45 miles per hour. Ecorse Road would provide direct access to the site at 38100 Ecorse Road via two existing driveways.

Haggerty Road is a two-lane undivided arterial roadway with a 45-mile-per-hour speed limit. Haggerty Road would be used to provide transportation routing between Ecorse Road and Van Born Road, and ultimately to the two sites along Van Born Road. There are no direct access connections to any site from Haggerty Road. The intersection of Haggerty Road and Ecorse Road is controlled by an existing traffic signal, with left-turn lanes provided for Ecorse Road traffic.

Van Born Road is a two-lane undivided minor arterial roadway with a 45-mile-per-hour speed limit. Van Born Road would provide direct access to the two Van Born Road sites via existing access driveways. Local ordinances prohibit heavy truck movements to the east and south; therefore, all truck movements must use Haggerty Road and Interstate 275 to access the sites. The intersection of Haggerty Road and Van Born Road is controlled by an existing traffic signal, with left-turn lanes provided for Van Born Road traffic.

Cogswell Road is a two-lane undivided minor arterial roadway with a 45-mile-per-hour speed limit. Cogswell Road would provide direct access to the two Cogswell Road sites via existing access driveways. The intersection of Ecorse Road and Cogswell Road is controlled by an existing signal, with separate left-turn lanes onto Cogswell Road from Ecorse Road.

3.11.2 Existing Traffic Conditions

Existing traffic conditions (Level of Service [LOS])[19] on local and arterial roads and on freeways expected during peak hours of travel were determined using methods prescribed by the Highway Capacity Manual (Highway Capacity Software Version 5.21) for each type of roadway. The method used followed acceptable procedures typically used by experienced traffic engineers to evaluate LOS for existing conditions.

Archive traffic-volume data were gleaned from published documents obtained from the Southeast Michigan Council of Governments (SEMCOG) and the Michigan Department of Transportation (MDOT) pertaining to 24-hour traffic volumes at specific locations determined to be in the vicinity of the A123 sites. Hourly volume factors were applied to these daily volumes to identify the most reasonable hourly traffic flow that would correspond to the period of interest (am or pm hour of the A123 employee shift changes). Next, the physical characteristics of the roadway (lane widths, shoulder widths, longitudinal grade, and interchange spacing) were input to the software. Traffic characteristics were also input, including the free-flowing traffic speed as indicated by the posted speed limits on each roadway, percentage of heavy vehicles, and peak hourly factors. The software produced estimates of the LOS associated with these inputs, which provided a baseline LOS for each roadway against which future changes in traffic could be compared.

Based on the calculations, the LOS for all local and arterial roadways immediately adjacent to the A123 sites ranged from A to D during peak hours. The LOS at peak hours for the freeways servicing the arterial roads was also calculated to be between A and D for all freeways, with the exception of the I-96/275 at pm time, which was calculated to be E.

[19] LOS is a qualitative measure of operating conditions in a traffic stream, and describes how motorists and/or passengers perceive those conditions. LOS generally describes these conditions in relation to such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Levels are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Appendix D provides summary tables listing the physical characteristics of the roadways and the LOS of individual roadways calculated using the Highway Capacity Software.

3.11.3 Public Transit

Three public transit agencies provide services in the project areas – Suburban Mobility Authority for Regional Transportation (SMART), Livonia Community Transit, and the Detroit Department of Transportation (D-DOT). These three transit authorities serve Livonia and Romulus. There are no fixed-route transit services in the Brownstown project area; however, Brownstown does provide on-demand transportation for the elderly and handicapped.

In Livonia, Livonia Community Transit provides transportation for senior and disabled residents to places within the City of Livonia, with limited service to places outside the city limits. Livonia Community Transit also serves two hubs for SMART and D-DOT riders, providing transportation to various employers within the City of Livonia. There are no designated transit routes near the intersection of Seven Mile Road and Haggerty Road. Therefore, opportunities for employees to use public transit to access the Livonia site would be limited. Livonia Community Transit hours of operation are Monday through Friday from 6:00 am to 6:00 pm. Therefore, the system does not operate during the anticipated shift change at 8:00 pm and does not provide an opportunity for reduced vehicular traffic.

In Romulus, SMART provides a fixed time route (Route 202) that runs Monday through Friday during peak hours between Metro Airport and West Michigan Avenue. This fixed route uses Cogswell Road and Ecorse Road adjacent to the project site. Route 202 intersects with D-DOT routes at West Michigan Avenue, and riders can transfer there and at Metro Airport. The SMART fixed route provides an opportunity for users of the D-DOT system to access the Romulus sites on Ecorse Road and on Cogswell Road. Southbound Route 202 buses are scheduled to arrive at the intersection of Ecorse Road and Cogswell Road at 5:48 am, 6:53 am, and at 2:48 pm. Northbound Route 202 buses arrive at this intersection at 6:26 am, 2:22 pm, and 3:32 pm. These scheduled times do not fit well with the anticipated shift times of the facilities in the area; therefore, the likelihood of large numbers of employees using SMART during the week would be small.

4 Environmental Consequences

As discussed in Chapters 2 and 3, A123 plans to lease and retrofit several existing facilities and construct and equip one planned new building (Romulus Expansion Site) in the Detroit metropolitan area of southeastern Michigan. In Romulus, the landlord would construct the Expansion Site building on previously leveled and graded land to suit A123 operational parameters, and A123 would equip the new building. All properties are zoned for industrial use, have existing access roads, have been developed for and/or used by industrial and commercial facilities, and are serviced by local infrastructure. The evaluation of the potential environmental effects of the Proposed Action is based largely on existing site conditions and applicability of federal, state, and local regulations. Sections 4.1 through 4.11 describe potential environmental impacts to environmental resources under the Proposed Action and the No-Action Alternative. Section 4.12 describes potential cumulative impacts under the Proposed Action.

4.1 Land Use

4.1.1 Proposed Action

A123 plans to lease and retrofit manufacturing facilities and construct and equip one new facility. All of the proposed sites are already zoned for A123's intended commercial and industrial uses. Retrofitting and operating the facilities would, therefore, be consistent with existing zoning and would result in no adverse impacts to residential areas, existing communities, or land use.

4.1.2 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no change in zoning at the sites and no impacts to land use.

4.2 Visual Resources

4.2.1 Proposed Action

4.2.1.1 Livonia and Brownstown

A123 does not proposed major exterior changes at the Livonia and the Brownstown sites. The interior of the buildings would be retrofitted to meet A123 manufacturing needs. There could be some limited exterior installation of prefabricated aboveground storage tanks, generally in close to the buildings at the sites, in conformance with local building and fire department codes and MDEQ aboveground storage tank regulations. Installing aboveground storage tanks would not materially change the existing visual landscape at the Livonia and Brownstown sites only slightly.

4.2.1.2 Romulus

The only new construction proposed would be at the Expansion Site in a previously disturbed portion of the property adjacent to the existing building and parking lot at 38100 Ecorse Road

(see Figure 1-4). Construction activities would change the existing visual landscape slightly, but the change would be consistent with the appearance of the existing manufacturing facility on the property.

A123 does not propose major exterior changes at any of the other Romulus sites. The interior of the buildings would be retrofitted to meet A123's manufacturing needs. In addition, exterior structures, including prefabricated distillation columns, scrubbers, condensers, aboveground storage tanks, and pollution-control equipment for storage, recovery, and reuse of powder materials, non-VOC solvent, and NMP, would be required and would be installed immediately adjacent to the existing buildings. Any exterior changes would conform to local building and fire department codes and MDEQ aboveground storage tank regulations. Installing such equipment would change the existing visual landscape at the Romulus sites only slightly. A123 would install visual barrier screens such as trees as required to maintain the existing visual landscape.

4.2.1 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no change in the visual settings at the sites and no impacts to visual resources.

4.3 Air Quality

The proposed Livonia, Brownstown, and Romulus Campus sites are in Wayne County, which, as discussed in Section 3.3, is currently in nonattainment for $PM_{2.5}$ and is considered a maintenance area for ozone.

4.3.1 Proposed Action[20]

4.3.1.1 Livonia

Construction Emissions

A123 plans minimal outdoor construction (installation of prefabricated aboveground storage tanks on the northeastern portion of the site) for the Livonia site. It is anticipated that construction-related emissions would be from delivery vehicles, vehicles used by construction personnel for commuting, and use of any air-pollutant-emitting construction equipment inside the structure. A123 would employ BMPs to control emissions during construction, including measures such as street sweeping and vehicle speed control to control fugitive dust from

[20] The air quality analysis for the Proposed Action assumes the construction schedule in A123's original loan and grant applications. The original schedule was an accelerated schedule based on receiving 100 percent of the requested funding from DOE. The current schedule is a less aggressive schedule that reflects A123's current planning. Because the air quality analysis presented here is based on the accelerated construction schedule, it is conservative. The results of this analysis demonstrate that there would be small impacts to air quality; therefore, any analysis results based on the current schedule also would show small impacts.

paved-road dust, and tail-pipe emission control measures, such as restricting on-site vehicle idling.

Table 4-1 lists estimated construction- and traffic-related emissions for the projected 6-month construction period. Table 4-1 also lists general conformity applicability thresholds and regional emissions of the listed air pollutants.

Table 4-1
Construction-Related Emissions[a,b] (tons per year) – Livonia

	VOCs	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2009 Construction Year	0.17	0.72	1.74	180.01	0.00	1.43	0.12	0.11
2010 Construction Year	0.02	0.10	0.24	26.67	0.00	0.21	0.02	0.02
General Conformity Applicability Thresholds	-	100	100	--	100	--	100	100
Regional Emissions Inventory[c,d]	50,489	337,339	77,354	--	643	1,870	735	687

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:

- Emission factors for construction equipment are generated from the U.S. Environmental Protection Agency (EPA) NONROAD model (NONROAD is an EPA Modeling Software used to model air emissions from nonroad vehicles such as construction equipment).
- Construction equipment and phasing activity (type of equipment and expected time of utilization) are based on default values in the URBEMIS 2007 computer model (URBEMIS is an "urban emissions" modeling software that calculates air emissions from various construction and operational stages of land development projects).
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, fugitive dust, and dust from paved and unpaved roads.
- Emissions factors for on-site and off-site construction employee vehicles are generated from EPA the MOBILE 6.2 model using Southeastern Michigan Council of Governments registration data.
- Off-site vehicle emissions were calculated for a 7-mile trip to and from the facility.
- The number of construction workers is estimated at 125 percent of the total number of construction equipment (vehicles and machines) selected for the corresponding phase.
- All construction employees travel on-site every day.

[c] Source: SEMCOG 2008.

[d] Regional emissions inventory is assumed to be the sum of 2008 Wayne County stationary source emission data and the projected 2009 on-road mobile source emissions for Wayne County. Draft 2008 Wayne County stationary source air emissions inventory data was received via Freedom of Information Act request to MDEQ. On-road emissions data was published in Southeast Michigan On-Road Mobile Source Emissions Inventory Developed for the 2008 $PM_{2.5}$ State Implementation Plan Submittal, Table 12: 2009 On-Road Emission Sources for Wayne County, January 28, 2008, prepared by the Southeast Michigan Council of Governments (http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-sip-pm25-appendixD_223436_7.pdf).

With the minimal anticipated construction activities, construction-related air pollutant emissions from mobile sources would be small.

Direct Operations Emissions

Emissions from Livonia would consist of natural-gas combustion products associated with the emergency generator and comfort heating, and minimal process emissions from cell degassing during prismatic cell assembly and initial charging. Process emissions from the cylindrical cell assembly and initial charging operations would be small. A123 estimates that approximately 0.4 grams of material, consisting of constituents of air, hydrogen, carbon monoxide, carbon dioxide, and light hydrocarbons would be lost per cell during this process.

Gas chromatography testing of the cell degassing off-gases shows that this material consists primarily of constituents of air (nitrogen, oxygen, and a minor amount of argon) and small amounts of hydrogen, carbon monoxide, carbon dioxide, and light hydrocarbons. The light hydrocarbon fraction includes methane, ethane, ethylene, propylene, and much smaller fractions of heavier hydrocarbons.[21] Based on the range of concentrations from the gas chromatography testing of the off-gases, A123 estimates that air pollutant emissions (excluding methane and ethane,[22] and non-regulated constituents (hydrogen and carbon dioxide) would consist of approximately 10 percent by weight carbon monoxide and approximately 25 percent by weight non-methane VOCs.[23] Emissions estimates for Livonia, listed in Table 4-2, would be below major source thresholds.

Table 4-2
Estimated Operations-Related Air Emissions[a] (tons per year) – Livonia

	NO_x	CO	SO_2	$PM_{10}/PM_{2.5}$[b]	VOCs	Pb	CO_2
Total Livonia	5.4	3.67	0.07	0.36	0.74	1.9E-05	1,936
PSD Threshold	250	250	250	250	250	250	--
NA/NSR Threshold	--	--	--	100	--	--	--
Exceeded?	No	No	No	No	No	No	--

[a] NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers; VOCs = volatile organic compounds; Pb = lead; CO_2 = carbon dioxide; PSD = Prevention of Significant Deterioration; NA/NSR = Nonattainment New Source Review.

[b] Emissions of $PM_{2.5}$ are assumed to equal emissions of PM_{10}. The NA/NSR threshold provided in this table is for $PM_{2.5}$, because Wayne County is designated as a $PM_{2.5}$ nonattainment area.

[21] The heavier hydrocarbon fraction includes propane, iso-butane, n-butane, butane, iso-pentane, pentenes, and hexane+. Based on the general conformity analytical results, the hexane+ fraction represents only 0.25 weight percent of the off-gases on average, or 8.8 pounds per year of material at the maximum annual cell production rate for Livonia.

[22] The EPA considers certain compounds to be negligibly photochemically reactive (that is, that they only participate in a negligible way in the atmosphere to form ozone). These compounds include methane and ethane.

[23] Hydrocarbon compounds that are assumed to participate in a photochemical reaction in the atmosphere (that is, not determined to be negligibly photochemically reactive (see footnote 20)) may be denoted as non-methane VOCs.

On-Site Fugitive and Transportation-Related Emissions

The site is in Livonia, Michigan, proximate to the greater Detroit metropolitan area. Access to the site is by paved roads, with two five-lane roads lying south and west of the site. The site is already improved with a 291,000-square-foot multi-level building, parking lots and driveways, and landscaped areas. Therefore, on-site fugitive emissions from paved-road dust are expected to be minimal.

The project would result in approximately the following number of vehicle trips at full operation of the Livonia facility:

- 105 administrative personal vehicle round trips per day (assumed 14-mile round-trip commute), 5 days per week
- 186 personal vehicle round trips per day, 7 days per week
- 3 tractor trailer round trips per week

Table 4-3 lists estimated vehicle emissions.

Table 4-3
Estimated Full Operation Vehicle Emissions[a,b] – Livonia (tons per year)

	VOC	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2013 Operational Year	1.3	11.6	0.5	837.0	0.00	0.2	2.5	0.2

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:
- Emissions factors for trucks and employee vehicles are generated from the EPA Model MOBILE 6.2 model using Southeast Michigan Council of Governments registration data based on the assumption that all trucks are heavy heavy-duty trucks and a vehicle mix of light-duty gas vehicles, light-duty diesel vehicles, and light-duty diesel trucks by vehicle miles traveled of each employee vehicle class.
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, and paved-road dust.
- Paved-road dust: Road dust emissions factors from AP-42 Chapter 13 (EPA 2006).

Transportation-related emissions would be expected to result in a small impact to local air quality.

Federal, State, and Local Regulations Applicable to Such Emissions

Livonia will not be a major source under the PSD, NA/NSR, or Title V operating permit programs, and the sources at Livonia have qualified for exemption from Permit-to-Install requirements. As shown in Table 4-1, construction-related direct and indirect emissions, which include primarily emissions from construction equipment, construction activities, and construction-worker vehicles, would not exceed the general conformity applicability thresholds. Furthermore, these emissions would be less than 10 percent of the regional emissions inventory and not considered to be regionally significant. Therefore, general conformity would not be triggered (see discussion in Section 3.3.1). Likewise, the estimated operations emissions shown in Table 4-2 would not exceed the general conformity applicability thresholds or 10 percent of the regional emissions listed in Table 4-1.

4.3.1.2 Brownstown

Construction Emissions Estimates

A123 plans minimal outdoor construction (installation of prefabricated aboveground storage tanks) for the Brownstown facility. It is anticipated that construction-related emissions would be from delivery vehicles, vehicles used by construction personnel for commuting, and use of any air-pollutant-emitting construction equipment inside and outside of the structures. A123 would employ BMPs to control emissions during construction, including measures such as street sweeping and vehicle speed control to control fugitive dust from paved-road dust, and tail-pipe emission control measures, such as restricting on-site vehicle idling.

Table 4-4 lists estimated construction- and traffic-related emissions for the projected 24-month construction period. The table includes general conformity applicability thresholds and regional emissions of the listed air pollutants.

With the minimal anticipated construction activities, construction-related air pollutant emissions from mobile sources would be minimal.

Direct Operations Emissions

Emissions from the Brownstown facility would consist of natural-gas combustion products associated with the emergency generators and comfort heating, and minimal process emissions from cell degassing during cell assembly. A123 estimates that approximately 0.4 grams of gas byproduct consisting of constituents of air, hydrogen, carbon monoxide, carbon dioxide, and light hydrocarbons would be lost per cell during this process. Based on the range of concentrations from the general conformity testing of the off-gases, A123 has calculated that air pollutant emissions, excluding methane, ethane, and non-regulated constituents (hydrogen and carbon dioxide), would consist of approximately 10 percent by weight carbon monoxide, and approximately 25 percent by weight non-methane VOCs.

Table 4-5 lists estimated operations-related emissions for Brownstown, which would be below major source thresholds.

On-Site Fugitive and Transportation-Related Emissions

The sites are located in Brownstown, Michigan, proximate to the greater Detroit Metropolitan Area. Access to the sites is by paved roads with two lanes of travel in both directions. The sites are already improved with buildings, parking lots and driveways, and landscaped areas. Therefore, on-site fugitive emissions from paved-road dust are expected to be minimal.

The project would result in approximately the following number of vehicle trips at full operation of Brownstown:

- 1,186 personal vehicle round-trips per day (assumed 14 mile round-trip commute); and
- 41 tractor trailer round-trips per week.

Estimated vehicle emissions are shown in Table 4-6. Transportation-related emissions would be expected to result in a small impact on local air quality.

Table 4-4
Construction-Related Emissions – Brownstown[a,b] (tons per year)

	VOC	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2010 Construction Year	0.39	1.70	4.10	448.71	0.00	3.56	0.31	0.27
2011 Construction Year	0.46	2.04	4.92	575.26	0.01	4.57	0.38	0.33
2012 Construction Year	0.26	1.10	2.74	344.73	0.00	2.76	0.21	0.18
General Conformity Applicability Thresholds	--	100	100	--	100	--	100	100
Regional Emission Inventory[c,d]	50,489	337,339	77,354	--	642	1,870	735	687

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:
- Emission factors for construction equipment are generated from the U.S. Environmental Protection Agency (EPA) NONROAD model (NONROAD is an EPA Modeling Software used to model air emissions from nonroad vehicles such as construction equipment).
- Construction equipment and phasing activity (type of equipment and expected time of utilization) are based on default values in the URBEMIS 2007 computer model (URBEMIS is an "urban emissions" modeling software that calculates air emissions from various construction and operational stages of land development projects).
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, fugitive dust, and dust from paved and unpaved roads.
- Emissions factors for on-site and off-site construction employee vehicles are generated from EPA the MOBILE 6.2 model using Southeastern Michigan Council of Governments registration data.
- Off-site vehicle emissions were calculated for a 7-mile trip to and from the facility.
- The number of construction workers is estimated at 125 percent of the total number of construction equipment (vehicles and machines) selected for the corresponding phase.
- All construction employees travel on-site every day.

[c] Source: SEMCOG 2008.

[d] Regional emissions inventory is assumed to be the sum of 2008 Wayne County stationary source emission data and the projected 2009 on-road mobile source emissions for Wayne County. Draft 2008 Wayne County stationary source air emissions inventory data was received via Freedom of Information Act request to MDEQ. On-road emissions data was published in Southeast Michigan On-Road Mobile Source Emissions Inventory Developed for the 2008 $PM_{2.5}$ State Implementation Plan Submittal, Table 12: 2009 On-Road Emission Sources for Wayne County, January 28, 2008, prepared by the Southeast Michigan Council of Governments(http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-sip-pm25-appendixD_223436_7.pdf).

Table 4-5
Operations-Related Projected Air Emissions[a] – Brownstown Site (tons per year)

Location	Estimated Emissions (tons/yr)								
	NO_x	CO	SO_2	$PM_{10}/PM_{2.5}$[b]	VOCs	Pb	HAPs	NH_3	CO_2
Total Brownstown	9	25	0.05	0.7	18	4E-05	0.2	0	10,798
PSD Threshold	250	250	250	250	250	250	--	--	--
NA/NSR Threshold	--	--	--	100	--	--	--	--	--
Exceeded?	No	No	No	No	No	No	--	--	--

[a] NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers; VOCs = volatile organic compounds; Pb = lead; HAPs = hazardous air pollutants; NH_3 = ammonia; CO_2 = carbon dioxide; PSD = Prevention of Significant Deterioration; NA/NSR = Nonattainment New Source Review.

[b] Emissions of $PM_{2.5}$ are assumed to equal emissions of PM_{10}. The NA/NSR threshold provided in this table is for $PM_{2.5,}$ because Wayne County is designated as a $PM_{2.5}$ nonattainment area.

Table 4-6
Estimated Full Operation Vehicle Emissions[a,b] – Brownstown Site (tons per year)

	VOCs	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2013 Operational Year	6.1	52.1	2.7	3,807.5	0.1	0.7	11.4	0.9

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:

- Emissions factors for trucks and employee vehicles are generated from the EPA Model MOBILE 6.2 model using Southeast Michigan Council of Governments registration data based on the assumption that all trucks are heavy heavy-duty trucks and a vehicle mix of light-duty gas vehicles, light-duty diesel vehicles, and light-duty ldiesel trucks by vehicle miles traveled of each employee vehicle class.
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, and paved-road dust.
- Paved-road dust: Road dust emissions factors from AP-42 Chapter 13 (EPA 2006).

Federal, State, and Local Regulations Applicable to Such Emissions

Brownstown would not be a major source under the PSD, NA/NSR, or Title V operating permit programs, and would be expected to qualify for exemption from the Permit-to-Install requirements. As shown in Table 4-4, construction-related direct and indirect emissions, which include primarily emissions from construction equipment, construction activities, and construction worker vehicles, would not exceed the general conformity applicability thresholds. Furthermore, these emissions would be less than 10 percent of the regional emissions inventory and not considered to be regionally significant. Therefore, general conformity would not be triggered (see discussion in 3.4.1). Likewise, the estimated operations emissions shown in Table 4-5 would not exceed the general conformity applicability thresholds or 10 percent of the regional emissions listed in Table 4-4.

4.3.1.3 Romulus Campus

Construction Emission Estimates

In addition to the required retrofitting of interior areas to accommodate powder and/or coating operations and the installation of exterior air pollution control equipment and aboveground storage tanks, an approximately 300,000-square-foot building would be constructed at the Expansion Site location as a separate structure adjacent to the existing building. A123 would employ BMPs to control emissions during construction, including measures such as street sweeping and vehicle speed control to control fugitive dust from paved-road dust, and tail-pipe emission control measures, such as restricting on-site vehicle idling.

Construction-related emissions would be limited to dust emissions during grading at the Expansion Site, delivery-vehicle emissions, construction personnel transportation vehicle exhaust emissions, and use of any air pollutant emitting construction equipment inside and outside the structures. A123 would employ dust-control measures, as described above, to minimize fugitive dust emissions from delivery-truck and construction-related traffic. A123 would maintain these air-emission abatement practices as BMPs. Table 4-7 lists estimated construction and traffic-related emissions. Construction at the Romulus sites is estimated to occur over 24 months.

Because anticipated construction activities would be short-term and involve minimal site preparation work, construction-related air pollutant emissions from mobile sources and grading activities would not be significant.

Direct Operations

The primary emissions at the Romulus sites would consist of fuel-combustion products from the boilers used to generate process steam, carbon monoxide and ammonia emissions from the thermal processing lines, VOCs from the solvent recovery and distillation processes, and particulate matter from the dry raw materials and powder handling equipment. Table 4-8 lists estimated emissions. Emissions would be controlled by installing emissions control technologies, as described in Section 2.1.5. This would result in annual emissions being below PSD and NA/NSR major source thresholds. A123 would obtain a synthetic minor permit that would include federally enforceable permit conditions.

Romulus would be a synthetic minor source and require a Renewable Operating Permit. As shown in Table 4-7, construction-related direct and indirect emissions, which include primarily emissions from construction equipment, construction activities, and construction worker vehicles, would not exceed the general conformity applicability thresholds. Furthermore, these emissions would be less than 10 percent of the regional emissions inventory and not considered to be regionally significant. Therefore, general conformity would not be triggered (see discussion in 3.3.1). Likewise, the estimated operations emissions shown in Table 4-8 would not exceed the general conformity applicability thresholds or 10 percent of the regional emissions listed in Table 4-7.

Table 4-7
Estimated Construction-Related Emissions[a,b] – Romulus Sites (tons per year)

	VOC	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2010 Construction Year	0.72	3.20	6.62	760.36	0.01	5.80	36.90	7.73
2011 Construction Year	1.84	8.01	16.02	1,928.87	0.02	14.59	7.13	2.32
2012 Construction Year	1.25	5.37	11.53	1,478.09	0.01	11.39	1.02	0.83
General Conformity Applicability Thresholds	--	100	100	--	100	--	100	100
Regional Emissions Inventory[c,d]	50,489	337,339	77,354	--	643	1,870	735	687

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:

- Emission factors for construction equipment are generated from the U.S. Environmental Protection Agency (EPA) NONROAD model (NONROAD is an EPA Modeling Software used to model air emissions from nonroad vehicles such as construction equipment).
- Construction equipment and phasing activity (type of equipment and expected time of utilization) are based on default values in the URBEMIS 2007 computer model (URBEMIS is an "urban emissions" modeling software that calculates air emissions from various construction and operational stages of land development projects).
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, fugitive dust, and dust from paved and unpaved roads.
- Emissions factors for on-site and off-site construction employee vehicles are generated from EPA the MOBILE 6.2 model using Southeastern Michigan Council of Governments registration data.
- Off-site vehicle emissions were calculated for a 7-mile trip to and from the facility.
- The number of construction workers is estimated at 125 percent of the total number of construction equipment (vehicles and machines) selected for the corresponding phase.
- All construction employees travel on-site every day.

[c] Source: SEMCOG 2008.

[d] Regional emissions inventory is assumed to be the sum of 2008 Wayne County stationary source emission data and the projected 2009 on-road mobile source emissions for Wayne County. Draft 2008 Wayne County stationary source air emissions inventory data was received via Freedom of Information Act request to MDEQ. On-road emissions data was published in Southeast Michigan On-Road Mobile Source Emissions Inventory Developed for the 2008 $PM_{2.5}$ State Implementation Plan Submittal, Table 12: 2009 On-Road Emission Sources for Wayne County, January 28, 2008, prepared by the Southeast Michigan Council of Governments (http://www.michigan.gov/documents/deq/deq-aqd-air-age-sip-pm25-appendixD_223436_7.pdf).

Table 4-8
Estimated Operations-Related Projected Air Emissions[a] – Romulus Sites (tons per year)

	NO_x	CO	SO_2	$PM_{10}/PM_{2.5}$[b]	VOC	Pb	HAPs	NH_3	CO_2
41133 Van Born Road	9	17	0.1	5	0.8	7E-05	0.3	15	18,140
41199 Van Born Road	9	17	0.1	5	0.8	7E-05	0.3	15	18,120
6505 Cogswell Road	27	44	0.4	9	30	3E-04	1.3	15	78,770
7525 Cogswell Road	22	34	0.5	7	30	3E-04	1.1	7	69,269
38100 Ecorse Road	23	50	0.4	12	19	3E-04	1.1	29	73,350
Total Romulus (includes rounding)	90	163	1	37	80	1E-03	4	80	257,649
PSD Threshold	250	250	250	250	250	250	--	--	--
NA/NSR Threshold	--	--	--	100	--	--	--	--	--
Exceeded?	No	No	No	No	No	No	--	--	--

[a] NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers; VOCs = volatile organic compounds; Pb = lead; HAPs = hazardous air pollutants; NH_3 = ammonia; CO_2 = carbon dioxide; PSD = Prevention of Significant Deterioration; NA/NSR = Nonattainment New Source Review.

[b] Emissions of $PM_{2.5}$ are assumed to equal emissions of PM_{10}. The NA/NSR threshold provided in this table is for $PM_{2.5}$, because Wayne County is designated as a $PM_{2.5}$ nonattainment area.

The site is in Romulus, Michigan, proximate to the greater Detroit metropolitan area. Access to the site is by paved roads with two lanes of travel in both directions. The sites are already improved with buildings, parking lots and driveways, and landscaped areas, with the exception of the Expansion Site at 38100 Ecorse Road. Therefore, on-site fugitive emissions from paved-road dust would be minimal.

The project would result in approximately the following number of vehicle trips at full operation of Romulus:

- 1,573 personal vehicle round trips per day (assumed 14 mile round-trip commute)
- 55 tractor trailer round trips per week.

Table 4-9 lists estimated vehicle emissions.

Transportation-related emissions would be expected to result in a small impact to local air quality.

Table 4-9
Estimated Full Operation Vehicle Emissions[a,b] – Romulus Sites (tons per year)

	VOCs	CO	NO_x	CO_2	SO_2	NH_3	PM_{10}	$PM_{2.5}$
2013 Operational Year	8.6	73.5	3.6	5,319.8	0.1	1.0	16.0	1.2

[a] VOCs = volatile organic compounds; CO = carbon monoxide; NO_x = oxides of nitrogen; CO_2 = carbon dioxide; SO_2 = sulfur dioxide; NH_3 = ammonia; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2,5 micrometers.

[b] Models and primary assumptions used to calculate these emissions:

- Emissions factors for trucks and employee vehicles are generated from the EPA Model MOBILE 6.2 model using Southeast Michigan Council of Governments registration data based on the assumption that all trucks are heavy heavy-duty trucks and a vehicle mix of light-duty gas vehicles, light-duty diesel vehicles, and light-duty ldiesel trucks by vehicle miles traveled of each employee vehicle class.
- Total particulate matter emissions include emissions from vehicle exhaust, tire wear, brake wear, and paved-road dust.
- Paved-road dust: Road dust emissions factors from AP-42 Chapter 13 (EPA 2006).

4.3.2 Climate Change

In its Fourth Assessment Report, the IPCC stated that warming of Earth's climate system is unequivocal, and that warming is very likely due to manmade greenhouse concentrations (IPCC 2007). DOE is not aware of any methodology to correlate the carbon dioxide emissions exclusively from the proposed project to any specific impact to global warming; however, studies such as the IPCC report support the premise that carbon dioxide emissions from the proposed project, together with global greenhouse gas emissions, would very likely result in a cumulative impact to global warming. Although the project would contribute to cumulative increases in greenhouse gases and related climate change when combined with other projects globally through the emissions described, greenhouse gas emissions from under the Proposed Action would be minimal increases in carbon dioxide resulting from slight increases in transportation, temporary construction emissions, and indirect emissions related to the use of natural gas and electricity to power the facilities.

In addition, the lithium-ion battery would contribute to the overall reduction of greenhouse gases throughout the United States by promoting cleaner emissions and more energy-efficient automobiles. Lithium-ion batteries manufactured at the proposed A123 facilities could result in the reduction of greenhouse gas emissions by as much as 37 percent, assuming the factories operate at full capacity, the batteries are used in electric-drive vehicles, and such electric-drive vehicles displace an equal number of fossil-fueled conventional vehicles. This projection also assumes a 10-year life for each battery.

The calculation of the carbon dioxide emissions that would result from the proposed project includes projections of emissions associated with the production of lithium-ion batteries, and emissions stemming from the batteries' use in hybrid electric vehicles and plug-in hybrid electric vehicles. Production-related emissions would include emissions from the production of electricity consumed by the battery manufacturing process; emissions from retrofitting and construction-related activities at the A123 sites; and direct emissions of air pollutants from A123

plant operations, including those from manufacturing processes and from operations-related vehicle trips. Use-related emissions would result from emissions from the consumption of gasoline in plug-in hybrid electric vehicles[24] and hybrid electric vehicles, and emissions from the production of electricity needed to recharge plug-in hybrid electric vehicles. The impact of the proposed project on global climate change is determined by comparing the aggregate emissions resulting from the proposed project with emissions from the conventional automobiles that would be displaced by plug-in hybrid electric vehicles and hybrid electric vehicles equipped with A123 batteries.

If A123 did not proceed with the proposed project, carbon dioxide emissions from the continued use of conventional automobiles would exceed by as much as 37 percent the carbon dioxide emissions that would occur if such conventional automobiles were displaced by electric-drive vehicles equipped with A123 batteries.[25] Under the proposed project, A123 expects by 2012 to produce approximately 43.5 million prismatic cells and 7 million cylindrical cells. These cells would be incorporated into approximately 697,000 electric-drive vehicles per year. If A123 did not proceed with the proposed project, conventional vehicles would not be displaced by electric-drive vehicles powered by A123 batteries. The continued use of 697,000 conventional automobiles would result in carbon dioxide emissions of approximately 3.3 million tons per year from the consumption of gasoline, or 32.98 million tons over the 10-year life of the batteries. Direct and indirect carbon dioxide emissions from A123 annual production of lithium-ion batteries at the proposed facilities, and from the charging and gasoline consumption of 697,000 automobiles equipped with such batteries, would amount to approximately 20.87 million tons over the 10-year life of the batteries. Thus, under the Proposed Project, each year's output of A123 lithium-ion batteries could result in a net carbon dioxide reduction of 12.11 million tons, or 37 percent, over a 10-year period. Under the No-Action Alternative, there would be no opportunity to reduce such carbon dioxide emissions as a result of the use of A123 batteries.

4.3.2.1 Production-Related Emissions

A123 plans to produce enough lithium-ion batteries at the proposed facilities to supply 580,000 plug-in hybrid electric vehicles and approximately 117,000 hybrid electric vehicles per year by 2012. A123 projects that the battery manufacturing process would require a maximum of 835,761,252 kilowatt hours of electricity per year, with 8,601,900 kilowatt hours attributable to

[24] Plug-in hybrid electric vehicles can be manufactured with batteries of varying sizes. The size of the battery determines the distance that can be traveled without having to recharge the battery. Small batteries offer shorter ranges and have lower recharge electricity consumption, but the vehicle consumes more gasoline. Larger batteries offer longer ranges and consume less gasoline, but consume more recharge electricity. The plug-in hybrid vehicle with a 20-mile range was selected for this analysis because it is a mid-range vehicle; therefore, its consumption figures represent a rough average across battery ranges.

[25] Based on 1 year's output of A123 lithium-ion batteries over an assumed 10-year life for each battery. This projection also assumes the factories operate at full capacity, the batteries are used in electric-drive vehicles, and such electric-drive vehicles displace an equal number of conventional fossil-fueled vehicles.

Livonia, 141,931,356 kilowatt hours attributable to Brownstown, and 685,227,996 kilowatt hours attributable to Romulus.[26] The electricity required to produce these batteries would be provided by Detroit Edison, which according EPA studies, emits carbon dioxide at an average rate of approximately 2.01842 pounds per kilowatt hour (EPA 2007). At this rate, emissions stemming from the production of electricity required to power the battery manufacturing process would amount to approximately 843,459 tons of carbon dioxide per year, with 8,681 tons per year attributable to Livonia, 143,239 tons per year attributable to Brownstown, and 691,539 tons per year attributable to Romulus.

Total carbon dioxide emissions from construction and retrofitting are projected to be approximately 5,743 tons, with 207 tons attributable to Livonia, 1,369 tons attributable to Brownstown, and 4,167 tons attributable to Romulus.

Total direct carbon dioxide emissions from operations at the A123 facilities are projected to be approximately 270,382 tons per year. At Livonia, approximately 1,936 tons per year of carbon dioxide emissions would be attributable to operations, including 1,824 tons per year from natural-gas generated comfort heating, 2 tons per year from Cell Assembly, and an estimated 110 tons per year from emergency generators. At Brownstown, approximately 10,798 tons per year of carbon dioxide emissions would be attributable to operations, including 10,654 tons per year from natural-gas generated comfort heating, 34 tons per year from Cell Assembly, and an estimated 110 tons per year from emergency generators. At Romulus, approximately 257,648 tons per year of carbon dioxide emissions would be attributable to operations, including 10,197 tons peer year from natural-gas generated comfort heating, 247,042 tons per year from the Powder and Coating processes, and an estimated 409 tons per year from emergency generators.

Total direct carbon dioxide emissions from operations-related vehicles are projected to be approximately 9,965 tons per year, with 837 tons per year attributable to Livonia, 3,808 tons per year attributable to Brownstown, and 5,320 tons per year attributable to Romulus.

The total carbon dioxide emissions associated with the production of A123 lithium-ion batteries, including emissions from the production of electricity needed to make the batteries, emissions from construction and retrofitting, and emissions from A123 plant operations, would be approximately 1,129,549 tons per year.

4.3.2.2 Use-Related Emissions

An average plug-in hybrid electric vehicle is expected to consume 161 gallons of gasoline per year; and average hybrid electric vehicle is expected to consume 316.6 gallons per year (Electric Power Research Institute and Natural Resources Defense Council 2007). According to

[26] This projection is based on peak load estimates. At average loads, the electricity demand would be reduced by as much as 10 percent, with a proportional reduction in carbon dioxide emissions.

the EPA, the combustion of a gallon of gas results in the emission of 19.4 pounds of carbon dioxide (EPA 2005). Therefore, 580,000 plug-in hybrid electric vehicles would emit approximately 905,786 tons of carbon dioxide per year and 117,000 hybrid electric vehicles would emit approximately 359,309 tons of carbon dioxide per year. Thus, the 697,000 vehicles that could be powered by the lithium-ion batteries manufactured at A123 proposed facilities could be expected to emit approximately 1,265,095 tons of carbon dioxide per year over the 10-year life of the batteries.

A plug-in hybrid electric vehicle is projected to consume approximately 1,840 kilowatt hours of electricity per year through recharging (Electric Power Research Institute and Natural Resource Defense Council 2007). The nationwide carbon dioxide emissions rate from electricity production is approximately 1.32935 pounds per kilowatt hour (EPA 2008). At this rate 580,000 vehicles consuming 1,840 kilowatt hours of electricity would result in the emission of approximately 709,341 tons of carbon dioxide per year over the 10-year life of the battery.

Therefore, total use-related carbon dioxide emissions associated with the proposed project would be approximately 1,974,436 tons per year over the 10-year life of the battery.

4.3.2.3 Impact on Climate Change

The aggregate carbon dioxide emissions from the production (1,129,549 tons) and use (1,974,436 tons per year) of lithium-ion batteries manufactured at the proposed facilities would be approximately 20.87 million tons over the 10-year life of the battery.

In comparison, 697,000 conventional vehicles, which would consume an estimated 487.8 gallons of gasoline annually per vehicle (EPRI and NRDC 2007), would emit approximately 3,297,967 tons of carbon dioxide per year as a result of gasoline consumption alone. This results in a total of 32.98 million tons of carbon dioxide emissions over a 10-year period, which exceeds by 12.11 million tons, or 37 percent, the total carbon footprint of the lithium-ion batteries to be manufactured at the proposed A123 facilities.[27] In other words, the proposed action could reduce overall CO_2 emissions over a 10-year period by 12.11 million tons.

4.4 No Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no new emissions or changes in air quality over baseline conditions described in Section 3.3.1. Not constructing the proposed facilities could decrease the future availability of lithium-ion batteries for the plug-in hybrid electric vehicle and hybrid electric vehicle industry, the use of which would reduce greenhouse gas emissions from the transportation sector.

[27] This analysis does not consider the direct and indirect emissions associated with production of conventional batteries as it does with A123 lithium-ion batteries. If these additional emissions associated with conventional batteries were considered, the total emissions from conventional vehicles would exceed the total carbon footprint of A123 lithium-ion batteries by an even greater margin.

4.4 Noise

There could be impacts from noise during short-term construction and/or long-term operations. Noise from construction could be produced by on-site equipment or off-site truck traffic. Noise during operations could be produced by process/air pollution control equipment installed outside existing or new buildings and traffic (both truck and employee) traveling on access roads to the sites. Section 4.4.1 describes potential impacts from noise for each site.

4.4.1 Proposed Action

4.4.1.1 Construction Noise

Livonia and Brownstown

A123 does not propose major exterior changes at the Livonia and Brownstown sites. No new facilities would be constructed, and little to no new noise-producing equipment would need to be installed at exterior locations. Given the limited interior construction activities expected at these facilities, construction-related traffic would also be expected to be minimal.

The City of Livonia Code of Ordinances prohibits noise from construction outside the hours of 7 am to 11 pm, essentially limiting all noisy construction-related activities to daytime hours. Similarly, the Township of Brownstown Code of Ordinances prohibits noise disturbance or annoyance from construction within 500 feet of a residential zone between 10 pm and 7 am.

Consequently, any construction-related impacts from noise from either facility would be small.

Romulus

At Romulus, A123 plans to construct one new building at the Expansion Site and install prefabricated exterior equipment at each of the five facilities. These activities would require use of heavy diesel equipment outside. In addition, construction-related truck traffic would be expected to travel on access roads to the facilities, resulting in an increase in traffic noise at receptors adjacent to the access roads. However, construction would be a temporary activity, and restricting construction to daytime hours would minimize any potential impacts from noise.

4.4.1.2 Operations Noise

Livonia and Brownstown

A123 would retrofit and occupy existing facilities at the Livonia and Brownstown sites. However, little to no new equipment would be installed in exterior locations at either facility, and minimal new truck trips would be anticipated on area roadways. Given that no noise-sensitive receptors have been identified close to the facilities and no new important sources of exterior noise would be expected at the facilities, there would be no impacts from operations noise at receptor locations in the vicinity of the Livonia and Brownstown facilities.

Romulus

A123 expects to install noise-producing process and air pollution control equipment outside the five facilities at the Romulus Complex. In addition, a new building would be constructed and A123 would install related exterior process and air pollution control equipment at the Romulus Expansion Site. The following paragraphs describe these new noise sources.

The Van Buren Commerce Center facility in Van Buren Township would accommodate two Powder Blocks, one in each building, and each would require the installation of air pollution control equipment outside each building. Each Block would require a scrubber and an oxidizer. Potential exterior equipment associated with this facility includes blowers, pumps, and exhaust fans.

For each of the three existing buildings in the City of Romulus (the 6505 Cogswell Road, 38100 Ecorse Road, and 7525 Cogswell Road facilities), A123 proposes Coating Blocks, Powder Blocks, and a distillation column. Potential noise-producing equipment associated with these facilities and at locations outside buildings includes chillers (with compressors), condensers, blowers, pumps, and exhaust fans.

The new building at the Romulus Expansion Site would house four Powder Blocks and a hybrid Coating Block. Potential noise-producing equipment associated with the Blocks includes chillers (with compressors), condensers, blowers, pumps, and exhaust fans.

Table 4-10 lists typical sound levels for this equipment, although the actual equipment sound levels might vary depending on the ultimate size and power of the equipment and the specification of any noise control features.

Table 4-10
Typical Equipment Sound Levels[a] (dBA[b])

Equipment	Sound Level at 100 Feet
Chiller/Compressor	61 to 72
Condenser	59 to 71
Blowers/Fans	72 to 75
Pumps	61
Exhaust Fans	35 to 56

[a] Source: Data compiled from published documents, manufacturer-provided information, and professional experience.
[b] dBA = A-weighted decibels.

Noise from this equipment would be required to meet all applicable local noise limits. Because this equipment is expected to operate 24 hours a day, equipment noise would be required to meet the nighttime noise limits.

In addition to considering issues with the Romulus City Ordinance (based on hourly sound levels and the limits that apply to each hour of the day), noise analysts also assessed potential

impacts from incremental increases over the baseline noise levels based on L_{dn} defined in Section 3.4.2. For purposes of estimating these sound level increases and potential noise impacts, analysts assumed facility equipment would operate 24 hours a day to calculate the most conservative project-related L_{dn}. Because compliance with the Romulus City Ordinance would be a requirement, to provide the most conservative estimates of potential impacts, the analysis (based on L_{dn}) assumed cumulative facility noise during each hour of the day equal Romulus City Ordinance noise limits.

Analysts assumed the Romulus city noise limit of 53 dBA to be an hourly L_{eq} (see Section 3.4.1). To estimate the most conservative noise levels, analysts assumed facility-related noise during each hour of the day to be Leq 53 dBA. As discussed in Section 3.4.2, analysts calculated the corresponding L_{dn} to be 59 dBA. Therefore, the compliance review was based on an hourly limit of 53 dBA, while the impact assessments were based on facility noise levels of L_{dn} 59 dBA.

Van Buren Commerce Center I and II – The proposed facility is in Van Buren Township, which does not identify specific noise limits for industrial sources. The 53-dBA limit established by the City of Romulus would be the most applicable to this facility because the Van Buren Commerce Center is close to Romulus and because of its association with the other facilities A123 proposes for Romulus.

The precise installation locations of the exterior process/air pollution control equipment are not currently known. However, there are several residences between the facility and Haggerty Road and on the west side of Haggerty Road where sound levels of exterior equipment at the facility could exceed the nighttime noise limit. Therefore, equipment selection, placement, and noise abatement would be carefully considered during the final design of the facility, as discussed in Section 4.4.1.3.

Although traffic traveling on public roadways is typically exempt from local noise limits, noise from trucks and employee traffic related to the project would still have the potential to cause impacts. Analysts included noise from facility traffic traveling on local roads in the evaluation of potential impacts because there would be incremental increases in noise associated with the project compared to existing levels. The project traffic consultant provided facility-related traffic volumes. As shown in Table 4-11, adding project-related traffic and equipment sound levels results in overall sound levels of 60 to 61 dBA L_{dn} at the sensitive receptors nearest the facility. Under the Federal Transit Administration noise impact criteria, this would not result in any impacts from noise.

Table 4-11
Van Buren Complex Predicted Sound Levels (Ldn, dBA)[a]

Receiving Location	Existing Sound Level[b]	Project-Related Sound Level			FTA Impact Levels[d]	FTA[e] Impact?	FTA Severe Impact?
		Traffic	Equipment[c]	Overall			
Between Facility and Haggerty Road	67	48	59	60	63/68	No	No
West of Haggerty Road	68	49	59	61	63/69	No	No

[a] Ldn = day-night sound level; dBA = A-weighted decibels.
[b] See Section 3.4 for the basis of these estimated existing sound levels.
[c] Based on compliance with the nighttime noise limit. Because the equipment sound level is not presumed to vary during daytime and nighttime shifts, the calculated Ldn for facility equipment is based on the nighttime hourly regulatory limit of assuming this level would be met 24 hours a day.
[d] FTA = Federal Transit Administration. FTA "Impact"/"Severe Impact" levels are based on the existing sound level and land use category and are from FTA 2006 Table 3-1. The listed sound levels represent the total combined project-related noise levels the FTA defines as the threshold for an Impact or Severe Impact given the existing sound levels.
[e] FTA = Federal Transit Administration.

6505 Cogswell Road and 38100 Ecorse Road – Both of these proposed facilities would have the potential to affect the same sensitive receptor population; therefore, this analysis considers them together.

As with the Van Buren complex, the precise installation locations of the exterior process/air pollution control equipment are not currently known. However, there are numerous residential properties on the west side of Cogswell Road, approximately 100 feet from 6505 Cogswell Road facility and the expanded 38100 Ecorse Road facility, where sound levels of exterior equipment at the facilities could exceed the nighttime noise limit. Therefore, equipment selection, placement, and noise abatement would be carefully considered during the final design of the facilities, as discussed in Section 4.4.1.3.

As with the Van Buren facilities, analysts included noise from facility traffic traveling on local roads in the evaluation of potential impacts because there would be incremental increases in noise associated with the project compared to existing levels. As shown in Table 4-12, adding project-related traffic and equipment sound levels results in overall sound levels of 60 to 61 dBA Ldn at the sensitive receptor locations nearest the 6505 Cogswell Road and 38100 Ecorse Road facilities. Under Federal Transit Administration noise impact criteria based on Ldn, facility noise could result in impacts at residential locations adjacent to Ecorse Road. However, those levels would not be considered severe noise impacts under Federal Transit Administration criteria, even using the conservative assumption that the A123 equipment sound levels at all nearby residential properties would be at the City of Romulus nighttime noise limit. Furthermore, it is likely that equipment sound levels would differ at the various nearby residential properties and some properties would experience equipment sound levels somewhat lower than the nighttime limit.

7525 Cogswell Road – Again, the precise installation locations of the exterior process/air pollution control equipment are not currently known. However, there are several residential properties south of the facility and a residential property west of the facility where equipment sound levels could exceed the nighttime noise limit. Therefore, equipment selection, placement, and noise abatement would be carefully considered during the final design of the facility, as discussed in Section 4.4.1.3.

The project traffic consultant provided facility-related traffic volumes and analysts used that data in the assessment of noise impacts because there would be incremental increases over the existing sound levels. As shown in Table 4-12, adding project-related traffic and equipment sound levels results in overall sound levels of 59 to 60 dBA L_{dn} at the sensitive receptor locations nearest the 7525 Cogswell Road facility. Using Federal Transit Administration noise impact criteria, those levels would not result in severe noise impacts, even using the conservative assumption that A123 equipment sound levels at all nearby residential properties would be at the City of Romulus nighttime noise limit. Furthermore, it is likely that equipment sound levels would differ at the various nearby residential properties and some properties would experience equipment sound levels somewhat lower than the nighttime limit.

4.4.1.3 Noise Abatement Measures

Construction Noise Abatement

Under the Proposed Action at the Livonia and Brownstown facilities, there would be no impacts from noise. Restricting noisy construction activities to daytime hours would be expected to minimize any construction-related noise impacts at the Romulus facilities.

Operations Noise Abatement

Under the Proposed Action at the Livonia and Brownstown facilities, there would be minimal impacts from operations noise and no noise abatement would be needed.

Under the Proposed Action at the Romulus facilities, noise from exterior process and air pollution control equipment could exceed the Romulus nighttime hourly noise limit at residential properties near the facilities. To comply with the nighttime hourly noise limit, specific noise abatement measures would be identified with a more detailed acoustical study, which A123 would complete after the design and engineering process is nearer completion. A123 would select quiet equipment (in relation to standard equipment) and use noise barriers or partial enclosures. If additional noise abatement measures were necessary to comply with the nighttime hourly noise limit, A123 would employ one or more of the following measures to achieve and maintain compliance:

- Appropriately site equipment (for example, site equipment as far as possible from sensitive populations and/or where intervening structures [existing buildings] would serve as a noise barrier).

- Use equipment enclosures, particularly for the blowers.

Table 4-12
Romulus Complex Predicted Sound Levels (L_{dn}, dBA)

Receiving Location	Existing Sound Level[a]	Project-Related Sound Level			FTA Impact Levels[c]	FTA Impact[d]?	FTA Severe Impact?
		Traffic	Equipment [b]	Overall			
6505 Cogswell Road and 38100 Ecorse Road – all potentially affected receptors would be on the west side of Cogswell Road.							
Across from site	55	52	59	60	56/62	Yes	No
Midway between site and Ecorse Road	56	52	59	60	56/63	Yes	No
Adjacent to Ecorse Road	70	56	59	61	65/70	No	No
7525 Cogswell Road							
South of site near Cogswell Road	55	50	59	60	56/62	Yes	No
South of site near eastern boundary	52	39	59	59	55/61	Yes	No

[a] Section 3.4 describes the basis for these estimates of existing sound levels.

[b] Based on compliance with the City of Romulus nighttime noise limit. Because the equipment sound level is not presumed to vary during daytime and nighttime shifts, the calculated L_{dn} for facility equipment is based on the nighttime hourly regulatory limit, assuming this level would actually be met 24 hours a day. Note that the equipment sound level at all receptor locations is assumed to equal the nighttime noise limit. This is a conservative assumption because it is likely that equipment sound levels at receptor locations farther from the facilities would be somewhat lower than the nighttime hourly regulatory limit.

[c] FTA = Federal Transit Administration. FTA "Impact"/"Severe Impact" levels are based on the existing sound level and a residential receptor and are taken from Table 3-1 in FTA 2006. The listed sound levels represent the total combined project-related noise levels the FTA defines as the threshold for an Impact or Severe Impact given existing sound levels.

FTA impact criteria do not specifically pertain to this project but were applied in this review to provide an indication of the relative impact of project-related noise sources using an objective and widely applied approach. As discussed in the related text, although these indications of impacts due to project-related noise suggest the proposed project could affect nearby receptors, any such impacts would not be considered significant under FTA noise criteria.

- Install air ducting inside the buildings, where feasible.
- Install lagging on exterior ducts or pipes.
- Use silencers on fans.

4.4.2 No Action Alternative

Under the No-Action Alternative, A123 would not proceed with the project. Therefore, there would be no impacts from noise.

4.5 Geology and Seismicity

4.5.1 Proposed Action

There is no risk of landslide, fault rupture, or slope failure at any of the proposed project sites. According to a U.S. Coast and Geodetic Survey seismic probability map, Michigan lies in a region of low risk for earthquakes (Bricker 1977). The Romulus Expansion Site, which is the only site where surface geology could be disturbed by construction-related activities, is in an area with extremely flat topography (no concerns regarding landslide or slope failure) already disturbed by previous land uses. Therefore, there would be no the potential for impacts to geology and potential seismic risks would be very small under the Proposed Action.

4.5.2 No Action Alternative

Under the No-Action Alternative, A123 would not proceed with the project. Therefore, there would be no exposure of people or structures to geologic or seismic risks.

4.6 Water Resources

4.6.1 Proposed Action

4.6.1.1 Water Supply

The proposed manufacturing processes would require approximately 250,000 gallons per day of water (see Table 2-3). The Detroit Water and Sewerage Department supplies water to Livonia, Brownstown, Romulus, and Van Buren Township (DWSD 2004). Section 2.1.11 provides more information about the Water and Sewerage Department infrastructure. The estimated daily consumption of water by all sites would be less than 0.03 percent of the total 622 million gallons per day the Water and Sewerage Department supplies to Detroit area communities (DWSD 2009). This usage would to be well within the existing system capacity and have little impact on the system.

4.6.1.2 Wastewater

The Detroit Water and Sewerage Division conveys and treats wastewater for the communities of Livonia and Romulus (DWSD 2003). Proposed operations at Livonia and Romulus would produce approximately 215,000 gallons per day of wastewater (see Table 2-3), which would be a very small amount of the total Water and Sewerage Department flows. The Detroit Wastewater Treatment Plant processed an average annual flow of 727 million gallons per day (DWSD 2009). The Detroit Wastewater Treatment Plant is among the top 10 in the world in capacity as measured by average daily flow (DWSD 2003). The treatment plant has enough capacity to treat expected wastewater discharges from the Livonia and Romulus sites; therefore, wastewater-discharge volumes from operations at these facilities would not impact system capacity.

Sanitary and industrial wastewater from the Brownstown site would be treated at the United Water Wastewater Treatment Plant at 34000 West Jefferson Street in Brownstown and the Downriver Wastewater Treatment Plant at 797 Central Avenue in Wyandotte. Capacity during normal flow conditions at the United Water Wastewater Treatment Plant is approximately 24 million gallons per day, less than 50 percent of their total maximum capacity of 50 million

gallons per day (Wells 2009b). The Downriver Wastewater Treatment Plant is currently at approximately 40 percent of its maximum total capacity of 125 million gallons per day (Wells 2009c). Therefore, wastewater-discharge volumes from operations at the Brownstown site would not impact system capacity.

Table 2-3 lists the constituents of the wastewater load from the Livonia, Brownstown, and Romulus facilities. As discussed in Section 3.6, wastewater discharges from the facilities would be expected to meet the applicable sewer discharge regulations.

4.6.1.3 Water Quality

As discussed in Section 2.1.14, the planned construction of the Romulus Expansion Site would trigger the storm-water permitting requirements for construction sites of more than 5 acres. Contamination from storm-water runoff during construction activities at the Romulus Expansion Site would be minimal because A123 would implement soil erosion and sedimentation controls and comply with MDEQ permitting requirements, as described in Section 2.1.14. If the planned installation of external pre-fabricated process/air pollution equipment at one or more of the Romulus sites triggers storm water permitting requirements for minor construction (one to five acres of disturbance), all applicable permit-by-rule requirements for the prevention of storm water pollution would be implemented. However, all construction at locations other than the Romulus Expansion Site would occur within the previously developed footprint of the existing buildings and parking lots and are not likely to require storm-water permitting.

4.6.1.4 Floodplains

The proposed Romulus Expansion Site would require only minimal grading and elevation change because it was previously graded and disturbed and is currently a relatively level and vacant lot. As discussed in Section 3.6.3, no Flood Insurance Rate Maps are available for the Romulus Expansion Site area. According to City of Romulus representatives, the Romulus Expansion Site area is not in a floodplain, therefore, there would be no impacts to floodplains.

4.6.2 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the project and there would be no impacts to water resources.

4.7 Biological Resources

4.7.1 Proposed Action

4.7.1.1 Construction

The only planned construction is a 300,000-square-foot building at the Romulus Expansion Site. As discussed in Section 3.7, this expansion would occur on a 26-acre vacant lot that has no undisturbed or sensitive habitats.

4.7.1.2 Protected and Sensitive Habitat

The proposed Romulus Expansion Site is a vacant, grass-covered lot in an urban developed area. There is no riparian habitat on or adjacent to the property. Surface water runoff from the site would be controlled with standard soil erosion and sedimentation best management practices during construction. Construction also would require storm-water permitting and preparation of a Soil Erosion and Sedimentation Control Plan based on requirements of the Wayne County Department of Environment, the City of the Romulus Building Department, and the MDEQ. These measures would prevent any potential adverse effects on sensitive habitats that may be associated with the drainage receiving construction site runoff.

4.7.1.3 Threatened and Endangered Species, Special Status Species

There would be no impacts to federally threatened or endangered species. No special status plant species are found at the Romulus Expansion Site because of its recent disturbance and lack of suitable habitat. The project would not impact threatened and endangered animal species. The habitat at the Romulus Expansion Site is not suitable for the threatened and endangered species known to occur in Wayne County.

Construction at the Romulus Expansion Site would not interfere with the movement of any native resident fish or wildlife species or with any known established migratory wildlife corridors. Wildlife species such as raccoons, rodents, and bird species might be present in the area. However, these species are common and urban-adapted. Construction impacts would not be expected to influence more than a few individuals of common wildlife species.

4.7.1.4 Wildlife Migration and Nursery Sites

Construction at the Romulus Expansion Site would not interfere with the migratory corridors or nursery sites of any native resident fish or wildlife species. Common species expected to be present include urban-adapted or urban-tolerant species such as raccoons, Canada geese, and red-winged blackbirds. However, the proposed Romulus Expansion Site does not provide suitable habitat for these species and is not expected to support regular use or occupation due to extensive disturbance and a lack of cover. A123 might have to remove a limited number of trees along the eastern perimeter of the Romulus Expansion Site, but would replace these trees with landscaping consistent with the existing character of the site. Existing trees are not expected to support nesting birds. There are no nursery sites on or near the area. The proposed project would not take or harass migratory birds.

4.7.2 Operations

Operations would be contained inside the commercial structures, and all discharges of water and waste would be monitored and would comply with federal, state, and local laws. Operations at the proposed facilities would not impact biological resources.

4.7.3 Correspondence with U.S. Fish and Wildlife Service

DOE sent a letter to the U.S. Fish and Wildlife service on October 23, 2009, requesting concurrence with the Department's determination that the Proposed Action would have no effect

on any federally listed endangered, threatened, proposed, or candidate species. The Service responded in an email dated November 25, 2009, indicating that no further action was required by DOE under Section 7 of the Endangered Species Act (see Appendix B).

4.7.4 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no impacts to biological resources or changes to the baseline conditions described in Section 3.7.

4.8 Cultural Resources

4.8.1 Proposed Action

As stated in Section 3.8, there are no historic or archaeological sites or sites of religious and cultural significance to tribes at any of the sites. Therefore, there would be no impacts to cultural resources.

At the Romulus Expansion site, there would be some surface grading to create level building and parking lot surfaces. However, the site is very flat and there would be minimal ground disturbance. In the event human remains or artifacts were found, the A123 would follow the unanticipated discovery plan included as part of the Phase IA Archaeological Survey (see Appendix D).

4.8.2 Correspondence with Michigan State Historic Preservation Office

DOE sent an application and letter to the Michigan State Historic Preservation Office on December 2, 2009, requesting concurrence with Department's determination of No Historic Properties Affected under 36 CFR Part 800.4(d)(1) for the Livonia, Brownstone, and Romulus sites. The State Historic Preservation Office concurred with that determination in a letter dated January 5, 2010 (see Appendix B)

DOE also sent letters to Hannahville Indian Community and the Forest County Potawatomi Community on October 23, 2009, because these communities had expressed an historical interest in Wayne County. Both letters invited the tribes to participate in government-to-government consultations and requested information about sites of religious and cultural significance to the tribes (see Appendix B).

4.8.3 No Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no impacts to historic or archaeological sites or sites of religious and cultural significance to Tribes.

4.9 Socioeconomics and Environmental Justice

4.9.1 Proposed Action

4.9.1.1 Socioeconomics

Under the Proposed Action, there would be direct and indirect beneficial impacts to socioeconomics as a result of additional job opportunities. Short-term impacts would include construction employment for the proposed facilities. Long-term benefits would include the projected employment of 5,900 people when the manufacturing facilities become operational. A123 expects that it would be able to fill most of these jobs from the local community. The increase in employment would be gradual as additional stages of manufacturing development were reached.

In addition to A123's direct hires, jobs would be created in the industries that supply the materials for the battery production process (indirect jobs). Jobs would also be created in the commercial and service sectors that produce the goods and services that A123 employees would purchase with their earned income (induced jobs). In all, as many as 14,000 indirect and 21,000 induced jobs could be created.[28] Because some, but not all, of the indirect and induced jobs would be created in the region of influence affected by the proposed A123 project, the region would be expected to realize these additional socioeconomic benefits.

The project area has been and continues to be economically depressed, as evidenced by the high unemployment rates, relatively high poverty levels, and low income levels (see Section 3.9). Numerous manufacturing facilities in the vicinity, particularly in the automobile manufacturing and supply industries, have been partially or completely shut down in the recent past. For example, the GM Power Train Assembly Plant in Livonia has been steadily downsized during this decade and is scheduled to close in 2010. In addition, GM plans to partially or completely close five other manufacturing facilities within a 25-mile radius of the proposed project sites. Ford and Chrysler also are expected to close at least one plant within this same radius. Accordingly, it is very likely that the proposed project, through the creation of jobs, would create economic benefit for the surrounding local population, including low-income and minority populations.

[28] The estimated number of jobs created was calculated using the Regional Input-Output Modeling System (RIMS) and A123's production model. RIMS is the Bureau of Economic Analysis' model that produces economic multipliers using state and local area personal income data and national input-output accounts data. RIMS multipliers can be used not only to estimate industry-wide impacts but also the impacts on each of the 20 industry sectors in RIMS. RIMS multipliers are used to study how one industry's production affects the production of other industries in an economy. They are used to estimate how much additional production is created for every initial increase in production and how many additional jobs (indirect and induced) are created for every new job that is created.

4.9.1.2 Environmental Justice

As demonstrated throughout the rest of this EA, the proposed project would likely result in small or no adverse impacts to the human environment. Therefore, implementing the Proposed Action should not result in disproportionately high and adverse environmental impacts to minority populations, low-income populations, or children.

In addition, the socioeconomic and demographic composition of the proposed locations further minimizes the possibility that the proposed project would disproportionately and adversely impact minority or low-income populations. For example, A123 facilities construction and operations would occur largely in existing buildings, near other manufacturing and commercial facilities, and in areas currently zoned for such use. As described in Section 3.9, each of the proposed location census tracts has a lower percentage of minorities than Wayne County as a whole, and percentages comparable to the cities in which they are located. Income levels also are comparable to Wayne County as a whole, while poverty levels are lower. Therefore, the characteristics of the proposed locations regarding minority and low-income populations are such that the proposed project would not disproportionately affect these populations. Moreover, as the rest of this EA indicates, any adverse impacts to these populations would likely be small.

The percentage of children in the surrounding communities is lower than or generally comparable to the percentage in the region of influence and there are no public schools within 0.5 mile of the proposed facilities. Therefore, the proposed project's impacts to children in the area would be small and proportional to the rest of the community.

4.9.2 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project. There would be no increase in employment levels attributable to the proposed project, and no beneficial impacts to socioeconomics. There would be no impacts to minority or low-income populations.

4.10 Public Safety

4.10.1 Proposed Action

All project activities during facilities construction and operations would be performed in compliance with OSHA requirements, which would minimize potential impacts to workers. The construction site would be temporarily fenced to prevent unauthorized entry and posted with no-trespassing signs. Health and safety impacts to the general public would be small.

Phase I environmental assessments (environmental due diligence audits of the sites) were performed in conformance with ASTM Standard E1527-05 for all proposed project locations. Because there is no documented contamination at the project sites, the potential for construction workers to be exposed to contaminated soils would be small.

Daily operations at the manufacturing and assembly plants would involve storing, handling, and transporting hazardous materials (see Table 2-4). The proposed project also would require the installation of prefabricated aboveground storage tanks for the storage of non-VOC solvent,

NMP, hydrogen peroxide, and electrolyte (at Brownstown), among others. These and all other hazardous materials would be delivered and stored in accordance with regulatory specifications. If storage and use of OSHA hazardous substances exceeded certain regulatory thresholds, A123 would report an annual inventory of such substances to local and state regulatory agencies.

A123 battery composition is different from other lithium-ion batteries. In addition to using less material, the lithium compounds used are more stable than other battery chemistries. In addition, A123 ships cells and packs in United Nations- and U.S. Department of Transportation-approved containers.

All hazardous materials stored on the sites would be required to be delivered and removed from the sites for disposal by an appropriately licensed chemical transporter. Daily operations at the facilities would comply with regulations regarding hazardous materials according to the standards of the fire codes and local building permits.

Workers in the facilities would handle hazardous materials and wastes. All hazardous substances would be handled in accordance with the Material Safety Data Sheets for that substance, OSHA safety requirements, and RCRA handling, disposal, and storage requirements. As previously described NMP is an important solvent used in the A123 battery manufacturing process. The primary risks from the use of NMP are associated with chronic exposures like those experienced in the work place. NMP has low acute toxicity, so risks to workers and the public from short-term exposure during spills or other accidents are low. There would be no unusual or potentially unacceptable hazards or risks to workers because A123 would employ BMPs for safe handling.

N-METHYLPYRROLIDONE

N-Methylpyrrolidone (NMP) is a water-miscible organic solvent widely used in the petrochemical industry, in fabricating microelectronics, and in manufacturing compounds such as pigments, cosmetics, pesticides, floor cleaners, and paint removers. NMP increasingly is used as a substitute for chlorinated hydrocarbons, which are more toxic to the environment and human health.

NMP has low acute toxicity, is potentially irritating to the skin and eyes, and at high aerosol concentrations can cause respiratory tract irritation. It is readily absorbed through the skin which, along with inhalation, represents the primary exposure routes for humans. As with other organic solvents, breathing excessive amounts of NMP can affect the brain and result in temporary headaches, nausea, dizziness, clumsiness, drowsiness and other effects similar to intoxication. Testing on animals has not shown a link to cancer that can be related to human exposures. However, NMP has been shown to cause effects, such as delayed growth, to offspring of animals exposed during pregnancy. As a result of these types of test results, the State of California has identified NMP as a reproductive toxin and has established maximum allowable dose levels of 17,000 and 3,200 micrograms per day for dermal contact and inhalation exposures, respectively. Products that could result in daily exposures exceeding these levels must carry an appropriate label under California law.

All hazardous wastes would be contained and picked up by hazardous waste handlers, who would handle and process these materials in accordance with OSHA and RCRA regulations. A123 BMPs would include complete electrical hazard and fire safety training for all employees. Abatement methods and equipment would be provided to ensure a safe work environment, and manufacturing operations would be kept clean and well organized. All equipment would be regularly checked and calibrated. A123 would perform routine safety audits and investigate all incidents and close calls.

In case of any operational upset conditions that result in additional air emissions that are not immediately correctable, process equipment operations would be scaled back or shut down to remain in compliance with MDEQ permit limits. MDEQ would require proper monitoring of operations and control equipment to ensure that A123 can comply with emissions limits established in the MDEQ air permits.

DOE believes that the proposed facilities would not present a likely target for an act of terrorism and would have an extremely low probability of being attacked. Therefore, the potential for terrorism-related impacts would be very small. All of the facilities would be under 24-hour camera surveillance. All areas of the buildings would be access controlled, with security personnel performing regular rounds. All authorized personnel (employees and contractors) would be issued access key fobs to regulate entry into each facility, including office and processing areas. Storage and use of hazardous materials would comply with federal, state, and local regulatory requirements. These measures would limit access and deter intruders. If destructive acts were to occur, the consequences would not exceed those set forth in this analysis (see risk scenarios presented in Section 3.10).

4.10.2 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and no personnel or members of the public would be exposed to hazardous conditions.

4.11 Transportation

4.11.1 Proposed Action

4.11.1.1 Construction Activities

During the individual facility retrofitting phases and construction of the building at the Romulus Expansion Site, some oversize trucks would need to deliver equipment to the sites over existing regional and local roadways. The roadway network around the sites would easily accommodate these trucks, and truck shipments would be subject to MDOT and Wayne County Department of Public Services load-permitting processes. The additional truck traffic associated with site construction would be expected to have a small impact on existing traffic.

4.11.1.2 Operations Traffic Impacts

For future traffic LOS associated with the Proposed Action, estimates of traffic volumes in 2035 were identified from traffic projections in the SEMCOG 2035 Transportation Plan (SEMCOG 2009c). These volume predictions are for the same roadway segments used to determine the current LOS values (see Section 3.11.2). The 2035 daily volumes were adjusted by the same hourly factors described in Section 3.11.2, and a future estimate of hourly traffic volumes calculated. New vehicle trips associated with employees and deliveries to and from the A123 sites were added to these future SEMCOG volumes, and the Highway Capacity Software inputs were modified where appropriate to reflect future traffic volumes. The software produced estimates of future LOS for each roadway against which existing traffic conditions could be compared to identify future impacts.

Based on the calculations, during peak hours the LOS for all local and arterial roadways immediately adjacent to the A123 sites would continue to range between A and D, which the SEMCOG would consider satisfactory levels of service. The LOS at peak hours for the freeways servicing the arterial roads also would range between A and D for all freeways, with the exception of Interstate 96/275 in the pm and Interstae-75 in the am, which were calculated to be LOS E. In the SEMCOG region, LOS E conditions are acceptable for short times.

Based on this information, after all proposed facilities achieved maximum employment and production levels, anticipated traffic volumes would not adversely impact any of the local or arterial roadways or the urban freeways adjacent to the sites, and roadways would not experience unacceptable LOS.

Because the traffic analysis concludes that no urban freeways, arterial roadways, or local roadways would experience unacceptable service levels after the proposed sites were developed and fully occupied, a logical conclusion is that major intersections in the project area also would operate with acceptable overall service levels, and that the Proposed Action would not result in adverse impacts to intersection service levels.

Appendix D provides summary tables listing the physical characteristics of the roadways evaluated and the service levels of individual roadways.

4.11.2 No-Action Alternative

Under the No-Action Alternative, A123 would not proceed with the proposed project and there would be no changes in traffic levels from the project.

4.12 Cumulative Impacts

A cumulative impact is "the impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action" (40 CFR Part 1508.7).

4.12.1 Regional Manufacturing Closures and Redevelopment

Livonia, Brownstown, and Romulus are regions of the greater Detroit metropolitan area that have experienced closures and slowing of some of their major manufacturing plants in the last year (Detroit News 2009). The proposed project sites are under the planning jurisdiction of the SEMCOG. The manufacturing industry, which is the second largest employment sector in southeastern Michigan, and the 2009 SEMCOG Employment Forecast, estimate a loss of approximately 40 percent of jobs in the manufacturing sector from 2005 to 2035 (SEMCOG 2009a). The closures and slow downs will contribute to overall reduced air emissions from the plants in the region. In addition, the closures and slow downs will reduce the indirect mobile source emissions from commercial and commuter traffic. According to information on the SEMCOG data site (June 12, 2009), "From 2007-2008, the seven-county Southeast Michigan region has seen nearly a three percent decrease in weekday traffic volumes. This continues the downward trend; from 2002-2007, the decrease in weekday traffic volume was more than five percent. These results are based on an analysis of about 3,000 locations region-wide, using the traffic-count database of SEMCOG. Weekend or discretionary travel is down another five percent; it was down two percent from 2002-2007. Factors contributing to the decrease in travel include the economy, high gas prices, and changes in travel choice" (SEMCOG 2009b).

4.12.2 Cumulative Impacts Analysis

The EA analysis did not identify adverse effects that could incrementally contribute to cumulative impacts to land use, visual resources, noise, water resources, biological resources, cultural resources, socioeconomics, or public health and safety. The analysis did identify small cumulative impacts to air quality and traffic, as described in Sections 4.12.2.1 and 4.12.2.2.

4.12.2.1 Air Quality

Air emissions from the proposed Livonia and Brownstown facilities would be well below any major source thresholds and would not contribute to pollutant concentrations in regional air quality. No adverse cumulative impacts would be expected as a result of the A123 Livonia and Brownstown projects.

For the Romulus site, the MDEQ Site Registry program (MDEQ 2009f) was used to locate permitted air emission sources in Wayne County within a 7-mile radius of the Romulus Complexes. Using the MDEQ Air Emissions Reporting System (MDEQ 2009d), sources of air emissions were inventoried and trended from 2003 to 2008. Table 4-13 provides the results of this analysis. The results show that criteria air pollutants in the vicinity of the proposed Romulus Complex trend downward from 2003 to 2008 by the following annual total quantities:

- 86 tons per year carbon monoxide (reduced by 31 percent)
- 39 tons per year of oxides of nitrogen (reduced by 10 percent)
- 58 tons per year of PM_{10} (reduced by 75 percent)
- 30 tons per year of sulfur dioxide (reduced by 89 percent)
- 505 tons per year of VOCs (reduced by 37 percent)

$PM_{2.5}$ emissions in the Romulus region were variable per year and showed no clear trend.

Furthermore, A123's Romulus facility criteria pollutant emissions would be almost completely offset by the reduction of emissions from nearby sources. By summer 2010, the additional closure of the GM Powertrain-Willow Run Plant (MDEQ 2009f),[29] a major source of regional air emissions, will reduce the regional air emissions even further. Therefore, no adverse cumulative impacts to regional criteria air pollution would be expected to result from the A123 Romulus facility, even with the planned Hoosier Energy Rec., Inc. (Hoosier Energy)[30] project, given the reduction in emissions from other sources in the region.

Table 4-13
Romulus Criteria Pollutant Emission Trends[a]

Reported Emissions[b] (tons per year)							
Year	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SO2**	**VOCs**	**Pb**
2003	273.76	388.89	76.53	4.12	33.66	1347.21	0
2004	259.83	356.74	60.21	16.9	24.81	1153.78	0
2005	262.44	355.68	19.12	12.27	6.04	873.1	0
2006	242.47	324.92	27.58	10	3.79	923.76	0.10
2007	226.21	320.80	27.42	11.88	5.39	965.07	0.12
2008[c]	187.98	349.48	18.91	11.06	3.66	842.19	0.02
Pollutant reduction	85.78	39.41	57.62	--	30	505.02	--
Percent reduction[d]	31	10	75	--	89	37	--

[a] Source: MDEQ 2009d. Regional pollutant trends summarized by collecting emissions data from sources within 7 miles of the proposed Romulus Complex for each year from 2003 from the Michigan Department of Environmental Quality Air Emissions Reporting System (MAERS) website at: http://www.deq.state.mi.us/maers/emissions_query.asp

[b] CO = carbon monoxide; NOx = oxides of nitrogen; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers; SO2 = sulfur dioxide; VOCs = volatile organic compounds; Pb = lead.

[c] 2008 data has not yet been published on the MAERS web site. Information is in draft form and was received through a Freedom of Information Act request to the Michigan Department of Environmental Quality.

[d] Calculated based on the difference between the emissions from 2003 and emissions from 2008.

[29] The Willow Run Plant is slated for reduced operations and possible closure summer 2010. This plant historically has emitted on average 858 tons per year of carbon monoxide, 98 tons per year of oxides of nitrogen, 4.0 tons per year of $PM_{10,}$ 2.0 tons per year $PM_{2.5,}$ 0.8 tons per year of sulfur dioxide, 85.6 tons per year of VOCs (MAERS Emission Inventory Data from 2003-2007). http://www.deq.state.mi.us/maers/emissions_query.asp

[30] The Hoosier Energy project is a proposed facility in Visteon Village in Van Buren Township that would include the addition of four energy-producing internal combustion engines and one flare. The proposed facility would be a major source of air emissions. Potential air emissions summarized in the pending air permit application are 427 tons per year of carbon monoxide, 87 tons per year of oxides of nitrogen, 28 tons per year of sulfur dioxide, 36.7 tons per year of VOCs, and 15 tons per year of PM_{10}.

Other than the discussion about greenhouse gases below, no past, present, or reasonably foreseeable future actions that are considered pertinent to the analysis of cumulative impacts for the proposed action have been identified.

While the scientific understanding of climate change continues to evolve, the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report has stated that warming of the Earth's climate is unequivocal, and that warming is very likely attributable to increases in atmospheric greenhouse gases caused by human activities (anthropogenic) (IPCC Fourth Assessment Report, Climate Change 2007: Synthesis Report (IPCC 2007)). The IPCC's Fourth Assessment Report indicates that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts are linked to changes in the climate system, and that some changes may be irreversible (IPCC 2007). The release of anthropogenic greenhouse gases and their potential contribution to global warming are inherently cumulative phenomena. Greenhouse gas emissions from the proposed action are relatively small compared to the 8,026 million tons (7,282 million metric tonnes) of CO2-equivalent greenhouse gases emitted in the U.S. in 2007 (Energy Information Administration, Report # DOE/EIA-0573 (2007)) and the 54 billion tons (49 billion metric tonnes) of CO2-equivalent anthropogenic greenhouse gases emitted globally in 2004 (IPCC 2007). However, emissions from the proposed action in combination with past and future emissions from all other sources would contribute incrementally to the climate change impacts described above. However, at present there is no methodology that would allow DOE to estimate the specific impacts (if any) this increment of climate change would produce in the vicinity of A123's proposed sites in southeast Michigan or elsewhere.
Although the proposed action would contribute to cumulative increases in greenhouse gases and related climate change when combined with other projects globally, emissions from the manufacture of lithium-ion batteries is expected to be more than offset by reductions in fossil fuel consumption by vehicles using the batteries. As discussed in Section 4.3.2.2, use of the A123 batteries produced could reduce CO_2 emissions by 12.11 million tons over a 10-year period.

4.12.2.2 Traffic

There would be small long-term adverse cumulative effects on traffic levels due to the combined increase in human use of the area and the proposed project. However, it should be noted the traffic analysis, projected to 2035, concludes that no urban freeway, major arterial roadway, or minor arterial roadway would experience unacceptable service levels after the proposed sites were developed and fully occupied.

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- Michigan State Historic Preservation Office, Michigan Historical Center, P.O. Box 30740, 702 Kalamazoo Street, Lansing, MI 48909-8240
- U.S. Fish and Wildlife Service, 2651 Coolidge Road, East Lansing, MI 48823

7 References

A123 (A123 Systems, Inc). 2009. Vertically Integrated Production of Automotive Class Lithium Ion Batteries. Project Narrative. Application for Federal Funding under the American Reinvestment and Recovery Act Electric Drive Vehicle Battery and Component Area of Interest 3. Funding Opportunity Number: DE-FOA-0000026.

ACHP (Advisory Council on Historic Preservation). 2009. Working with Section 106. Accessed at: http://www.achp.gov/work106.html

Bricker, D.M. 1977 Seismic Disturbances in Michigan. Circular 14. Michigan Department Of Natural Resources, Geology Division. 5 pages accessed at: http://www.deq.state.mi.us/documents/deq-ogs-gimdl-CR14.pdf

Brownstown Township. 2009. Brownstown Township Zoning Districts Map. Adopted March. Accessed at: http://www.brownstown-mi.org/include/ZoningMap.pdf

CDWIC (Combined Downriver Inter-Municipality Committee). 2006. The Combined Downriver Watershed Management Plan. May 12. Accessed June 17, 2009 at: http://www.combineddownriver.com/cdwic_wmp.htm

CEQ, 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions. President's Council on Environmental Quality. February 18, 2010 at: http://ceq.hss.doe.gov/current_developments/new_ceq_nepa_guidance.html

City of Livonia. 2003. City of Livonia Zoning Map. http://ci.livonia.mi.us/website/zoning/viewer.htm

City of Romulus. 2009. Public Draft Comment Master Plan. Accessed at: http://www.romulusgov.com/bins/site/content/pages/departments/Planning/PlanningPDF/master0609%20.pdf

Detroit News. 2009. "Michigan Cities Scramble to Recycle Auto Plants." Accessed at: http://www.detnews.com/article/20090622/AUTO01/906220310/Michigan-cities-scramble-to-recycle-auto-plants

DWSD (Detroit Water and Sewerage Department). 2003. Wastewater Master Plan Executive Summary. 12 pages. Accessed June 15, 2009 at: http://www.dwsd.org/about/wastewater/executive%20summary.pdf

DOE (U.S. Department of Energy). 2000. *Clean Air Act General Conformity Requirements and the National Environmental Policy Act Process*. Department of Energy, Environment, Safety, and Health. Office of NEPA Policy and Assistance. April. http://www.gc.energy.gov/NEPA/documents/caaguidance.pdf

DOE (U.S. Department of Energy). 2004. *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements*. Department of Energy, Environment, Safety and Health. Office of NEPA Policy and Compliance. Second Edition. December.

DWSD (Detroit Water and Sewerage Department). 2004. Summary Report, Comprehensive Water Master Plan, DWSD Contract. No. CS-1278 Final Report. 113 pages. Accessed June 15, 2009 at: http://www.dwsd.org/about/water/Summary_Report.pdf

DWSD (Detroit Water and Sewerage Department). 2009. Fact Sheet. Detroit Water and Sewerage Department. Accessed July 30.

EPA (U.S. Environmental Protection Agency). 2005. Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. February. Accessed at: http://www.epa.gov/otaq/climate/420f05001.htm

EPA (U.S. Environmental Protection Agency). 2006. AP-42 Emission Factors Chapter 13. November. Accessed at: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf

EPA (U.S. Environmental Protection Agency). 2007. EGrid: Year 2005 Plant and Aggregation Files. Accessed at: http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html (user must download zip file)

EPA (U.S. Environmental Protection Agency). 2008. eGRID2007 Version 1.1 Year 2005 Summary Tables. December. Accessed at: http://www.epa.gov/cleanenergy/documents/egridzips/eGRID2007V1_1_year05_SummaryTables.pdf

EPA (U.S. Environmental Protection Agency). 2009. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2007. April. Accessed at: http://www.epa.gov/climatechange/emissions/downloads09/GHG2007entire_report-508.pdf

EPRI and NRDC (Electric Power Research Institute and Natural Resources Defense Council). 2007. *Environmental Assessment of Plug-in Hybrid Electric Vehicles, Volume I: Nationwide Greenhouse Gas Emissions*. July.

FEMA (Federal Emergency Management Agency). 1996. FEMA Q3 Flood Insurance Rate Maps. http://msc.fema.gov/webapp/wcs/stores/servlet/info?storeId=10001&catalogId=10001&langId=-1&content=firmetteHelp_A&title=FIRMettes

FTA (Federal Transit Administration). 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. May.

FWS (U.S. Fish and Wildlife Service). 1999. Eastern prairie fringed orchid *Platanthera leucophaea* (Nuttall) Lindley Recovery Plan. Prepared by M.L. Bowles for Region 3, USFWS, Fort Snelling, MN. September 29. http://www.fws.gov/midwest/Endangered/plants/pdf/epfoplan.pdf.

FWS (U.S. Fish and Wildlife Service). 2005. Eastern prairie fringed orchid (*Platanthera leucophaea*) Fact Sheet. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009 http://www.fws.gov/midwest/Endangered/plants/epfo.html.

FWS (U.S. Fish and Wildlife Service). 2007a. Indiana bat summer life history information for Michigan. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009. http://www.fws.gov/midwest/Endangered/section7/s7process/mammals/inba/inbaMIlifehist.html.

FWS (U.S. Fish and Wildlife Service). 2007b. Indiana bat (*Myotis sodalist*) Draft Recovery Plan: First Revision. Edited by L. Pruitt and L. TeWinkel for Region 3 Office of the USFWS, Fort Snelling, MN. April. Accessed June 15, 2009. http://www.fws.gov/midwest/Endangered/mammals/inba/inba_drftrecpln16ap07.html.

FWS (U.S. Fish and Wildlife Service). 2007c. Rayed bean (*Villosa fabalis*) Species Assessment and Listing Priority Assignment Form. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009. http://ecos.fws.gov/docs/candforms_pdf/r3/F01A_I01.pdf.

FWS (U.S. Fish and Wildlife Service). 2008. Northern riffleshell (*Epioblasma torulosa rangiana*) Fact Sheet. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009. http://www.fws.gov/midwest/Endangered/clams/n-riffleshell.html.

FWS (U.S. Fish and Wildlife Service). 2009a. Mammals: Endangered, Threatened, Proposed, and Candidates in the Upper Midwest. Indiana bat. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009. http://www.fws.gov/midwest/Endangered/mammals/index.html#indiana.

FWS (U.S. Fish and Wildlife Service). 2009b. Eastern Massassauga Rattlesnake (*Sistrurus catenatus catenatus*) Species Profile. Midwestern Regional Office, USFWS, Fort Snelling, MN. Accessed June 15, 2009 http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C03P.

IPCC (Intergovernmental Panel on Climate Change). 2007. Fourth Assessment Report, Climate Change 2007: Synthesis Report, Summary for Policy Makers. Released in Valencia, Spain. November 17.

Louis Berger Group. 2009. Phase IA Archaeological Survey for Three Manufacturing Complexes, Wayne County, Michigan. Prepared for A123 Systems. July.

Lower 2 Subwatershed Group. 2001. Lower 2 Rouge River Subwatershed Management Plan. May. Accessed June 17, 2009, at http://www.rougeriver.com/pdfs/stormwater/TR35/summary.pdf

MCAC and MDEQ (Michigan Climate Action Council and Michigan Department of Environmental Quality). 2009. Climate Action Plan. March. Accessed at: http://www.miclimatechange.us/ewebeditpro/items/O46F21226.pdf

Michigan Department of Labor & Economic Growth. 2009. Michigan's Employment Snapshot. October. http://www.milmi.org

MDEQ (Michigan Department of Environmental Quality). 2005. State of Michigan Department of Environmental Quality Permit and Licensing Requirements. Section 5.2.1.

MDEQ (Michigan Department of Environmental Quality). 2006. Wayne County Final Wetland Inventory Map. Accessed July 10, 2009 at: http://www.michigan.gov/documents/wayne_prelim_wi_54437_7.pdf

MDEQ (Michigan Department of Environmental Quality). 2009a. *2007 Annual Air Quality Report*. Air Quality Division. June.

MDEQ (Michigan Department of Environmental Quality). 2009b. Air Quality Division Ozone Guidance. Accessed at: http://www.michigan.gov/deq/0,1607,7-135-3310_30151_31129_50579---,00.html

MDEQ (Michigan Department of Environmental Quality). 2009c. Air Quality Division 84 ppb Ozone Attainment Designation Status. Accessed at: http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-Ozone-8hr-trend-Map-June-09_284459_7.pdf

MDEQ (Michigan Department of Environmental Quality). 2009d. Michigan Air Emissions Reporting System Annual Pollutant Totals Query. Accessed at: http://www.deq.state.mi.us/maers/emissions_query.asp

MDEQ (Michigan Department of Environmental Quality). 2009e. Ozone Attainment for Eight SE Michigan Counties. Accessed at: http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-O3-Attainment-8-SE-Mi-Counties-7-09_284876_7.pdf

MDEQ (Michigan Department of Environmental Quality). 2009f. The DEQ Site Registry Inquiry System. Accessed at: http://www.deq.state.mi.us/SiteRegistry/

MDEQ (Michigan Department of Environmental Quality). 2010. Overview of Michigan's Air Toxic Rules. Accessed at: http://www.michigan.gov/deq/0,1607,7-135-3310_4105-11749--,00.html

MDOT (Michigan Department of Transportation). 2007. Michigan Traffic Volume Map. Accessed at: http://www.michigan.gov/mdot/0,1607,7-151-9622_11033_11149---,00.html

MDNR (Michigan Department of Natural Resources). 2009a. Michigan Highways. Accessed at: http://www.michiganhighways.org/other.hertage.html#Scenic

MDNR (Michigan Department of Natural Resources). 2009b. Michigan Natural Rivers Program. Accessed at: http://www.tourism.msu.edu/tap/inventory/NaturalRiversMI.doc

MDNR (Michigan Department of Natural Resources). 2009c. Rare Species Explorer. Michigan Natural Features Inventory. Accessed at: http://web4.msue.msu.edu/mnfi/explorer/index.cfm

NEIC (National Energy Information Center). 2008. *Greenhouse Gases, Climate Change, and Energy*. Accessed September 1, 2009 at: http://eia.doe.gov/oiaf/1605/ggccebro/chapter1.html

NOAA (National Oceanic and Atmospheric Administration). 2006. National Weather Service. Detroit/Pontiac, MI Weather Forecast Office Climate Records and Information for Southeast Michigan. Page last modified: May 2nd, 5:18 PM. Accessed June 15, 2009 at: http://www.crh.noaa.gov/dtx/cms.php?n=clisum

Nova. 1997. Phase I Environmental Assessment Report, Ashley Calumet, LLC, Sibley-Brownstown, Brownstown Township, Michigan.

Nova. 2007. Phase I Environmental Assessment Report, Plastech, 38100 Ecorse Road, Romulus, Michigan 48174.

Petersen, Mark D., Frankel, Arthur D., Harmsen, Stephen C., Mueller, Charles S., Haller, Kathleen M., Wheeler, Russell L., Wesson, Robert L., Zeng, Yuehua, Boyd, Oliver S., Perkins, David M., Luco, Nicolas, Field, Edward H., Wills, Chris J., and Rukstales, Kenneth S. 2008. Documentation for the 2008 Update of the United States National Seismic Hazard Maps: U.S. Geological Survey Open-File Report 2008–1128, 61 pages.

SEMCOG (Southeast Michigan Council of Governments). 2005. SEMCOG 2035 Forecast - Employment by sector. Accessed at: http://www.semcog.org/uploadedFiles/Programs_and_Projects/Planning/Regional_Forecast/forecasted_emp_by_sector.pdf)

SEMCOG (Southeast Michigan Council of Governments). 2008. Southeast Michigan On-Road Mobile Source Emissions Inventory Developed for the 2008 $PM_{2.5}$ State Implementation Plan Submittal. January. Accessed at: http://michigan.gov/documents/deq/deq-aqd-air-aqe-sip-pm25-appendixD_223436_7.pdf

SEMCOG (Southeast Michigan Council of Governments). 2009a. SEMCOG 2035 Forecast-Employment by Sector. Accessed at: http://www.semcog.org/uploadedFiles/Programs_an_Projects/Planning?Regional_Forecast/forecasated_emp_by_sector.pdf

SEMCOG (Southeast Michigan Council of Governments). 2009b. Traffic down in Southeast Michigan. Accessed at: http://www.semcog.org/TopNavInfo.aspx?id=9508

SEMCOG (Southeast Michigan Council of Governments). 2009c. Direction 2035 Regional Transportation Plan. Accessed at: http://www.semcog.org/Long-RangeTransportationPlan.aspx?ekmensel=c580fa7b_58_124_128_3

U.S. Census Bureau. 2000. Census Data. Accessed at: http://www.census.gov/main/www/cen2000.html

U.S. Census Bureau. 2007. American Community Survey. Accessed at: http://www.census.gov/acs/www/Products/2007/index.html

Upper Rouge River Subwatershed Advisory Council 2001. Upper Rouge River Subwatershed Management Plan. Accessed June 14, 2009 at: http://www.rougeriver.com/pdfs/stormwater/TR31/chapter1.pdf

Van Buren Township Building and Zoning Department. 2009. (Personal communication between ENVIRON and Tina Grishaber, Account Clerk regarding zoning designation for Commerce Center). July 27.

Wells, K. 2009a. Personal communication with Derek Schuler, Romulus Public Works Department. June 16.

Wells, K. 2009b. Personal communication with Mark Houle, United Water Wastewater Treatment Plant. July 31.

Wells, K. 2009c. Personal communication with Firooz Fath-Azam, Downriver Wastewater Treatment Plant. July 31.

Appendix A

List of Special Status and State or Federally Protected Species with the Potential to Occur in Wayne County

Special Status and State or Federally Protected Species with the Potential to Occur in Wayne County[a]			
Scientific Name	**Common Name**	**Federal Status[b]**	**State Status[c]**
Acipenser fulvescens	Lake sturgeon		T
Adlumia fungosa	Climbing fumitory		SC
Alasmidonta marginata	Elktoe		SC
Ambystoma texanum	Smallmouth salamander		E
Ammocrypta pellucida	Eastern sand darter		T
Ammodramus henslowii	Henslow's sparrow		E
Ammodramus savannarum	Grasshopper sparrow		SC
Angelica venenosa	Hairy angelica		SC
Arabis missouriensis var. deamii	Missouri rock-cress		SC
Aristida longespica	Three-awned grass		T
Aristolochia serpentaria	Virginia snakeroot		T
Asclepias hirtella	Tall green milkweed		T
Asclepias sullivantii	Sullivant's milkweed		T
Betula populifolia	Gray birch		SC
Calephelis mutica	Swamp metalmark		SC
Camassia scilloides	Wild hyacinth		T
Carex squarrosa	Sedge		SC
Castanea dentata	American chestnut		E
Clemmys guttata	Spotted turtle		T
Clinostomus elongatus	Redside dace		E
Cyclonaias tuberculata	Purple wartyback		T
Diarrhena obovata	Beak grass		T
Eleocharis engelmannii	Engelmann's spike rush		SC
Epioblasma obliquata perobliqua	White catspaw	LE	E
Epioblasma torulosa rangiana	Northern riffleshell	LE	E
Epioblasma triquetra	Snuffbox		E
Eragrostis pilosa	Small love grass		SC
Euonymus atropurpurea	Wahoo		SC
Euphorbia commutata	Tinted spurge		T
Euphyes dukesi	Dukes' skipper		T
Falco peregrinus	Peregrine falcon		E
Floodplain Forest			
Fraxinus profunda	Pumpkin ash		T
Galearis spectabilis	Showy orchis		T
Gallinula chloropus	Common moorhen		T
Gentianella quinquefolia	Stiff gentian		T
Geum virginianum	Pale avens		SC
Great Blue Heron Rookery			
Great Lakes Marsh			
Haliaeetus leucocephalus	Bald eagle		SC
Hybanthus concolor	Green violet		SC

Special Status and State or Federally Protected Species with the Potential to Occur in Wayne County[a]			
Scientific Name	**Common Name**	**Federal Status[b]**	**State Status[c]**
Hydrastis canadensis	Goldenseal		T
Hypericum gentianoides	Gentian-leaved St. John's-wort		SC
Ixobrychus exilis	Least bittern		T
Jeffersonia diphylla	Twinleaf		SC
Juncus brachycarpus	Short-fruited rush		T
Juncus vaseyi	Vasey's rush		T
Justicia americana	Water willow		T
Lactuca floridana	Woodland lettuce		T
Lakeplain Oak Openings			
Lakeplain Wet Prairie	Alkaline Wet Prairie, Midwest Type		
Lakeplain Wet-mesic Prairie	Alkaline Tallgrass Prairie, Midwest Type		
Lampsilis fasciola	Wavyrayed lampmussel		T
Leucospora multifida	Conobea		SC
Liatris squarrosa	Plains blazing star		X
Liparis liliifolia	Purple twayblade		SC
Lycopodium appressum	Northern prostrate clubmoss		SC
Lycopus virginicus	Virginia water-horehound		T
Lysimachia hybrida	Swamp candles		X
Macrhybopsis storeriana	Silver chub		SC
Mesic Sand Prairie	Moist Sand Prairie, Midwest Type		
Mesic Southern Forest	Rich Forest, Central Midwest Type		
Mimulus alatus	Winged monkey flower		X
Morus rubra	Red mulberry		T
Moxostoma carinatum	River redhorse		T
Myotis sodalis	Indiana bat	LE	E
Nelumbo lutea	American lotus		T
Notropis anogenus	Pugnose shiner		E
Noturus miurus	Brindled madtom		SC
Noturus stigmosus	Northernm madtom		E
Nycticorax nycticorax	Black-crowned night-heron		SC
Obovaria olivaria	Hickorynut		E
Obovaria subrotunda	Round hickorynut		E
Opsopoeodus emiliae	Pugnose minnow		E
Panax quinquefolius	Ginseng		T
Pantherophis gloydi	Eastern fox snake		T
Penstemon pallidus	Pale beard tongue		SC
Percina copelandi	Channel darter		E
Percina shumardi	River darter		E
Phaseolus polystachios	Wild bean		X
Platanthera leucophaea	Prairie white-fringed orchid	LT	E
Pleurobema sintoxia	Round pigtoe		SC

Special Status and State or Federally Protected Species with the Potential to Occur in Wayne County[a]			
Scientific Name	**Common Name**	**Federal Status[b]**	**State Status[c]**
Polygala cruciata	Cross-leaved milkwort		SC
Pomatiopsis cincinnatiensis	Brown walker		SC
Potentilla paradoxa	Sand cinquefoil		T
Prosartes maculata	Nodding mandarin		X
Protonotaria citrea	Prothonotary warbler		SC
Quercus shumardii	Shumard's oak		SC
Rallus elegans	King rail		E
Rhexia virginica	Meadow beauty		SC
Ruellia humilis	Hairy wild petunia		T
Sagittaria montevidensis	Arrowhead		T
Sander canadensis	Sauger		T
Sanguisorba canadensis	Canadian burnet		E
Scirpus clintonii	Clinton's bulrush		SC
Scleria pauciflora	Few-flowered nut rush		E
Scleria triglomerata	Tall nut rush		SC
Silene virginica	Fire pink		E
Silphium laciniatum	Compass plant		T
Silphium perfoliatum	Cup plant		T
Simpsonaias ambigua	Salamander mussel		E
Sistrurus catenatus catenatus	Eastern massasauga	C	SC
Sisyrinchium hastile	Blue-eyed-grass		X
Smilax herbacea	Smooth carrion-flower		SC
Speyeria idalia	Regal fritillary		E
Spiza americana	Dickcissel		SC
Sterna forsteri	Forster's tern		T
Sterna hirundo	Common tern		T
Strophostyles helvula	Trailing wild Bean		SC
Sturnella neglecta	Western meadowlark		SC
Stylurus laurae	Laura's snaketail		SC
Stylurus notatus	Elusive snaketail		SC
Stylurus plagiatus	Russet-tipped clubtail		SC
Trillium recurvatum	Prairie trillium		T
Villosa fabalis	Rayed bean	C	E
Villosa iris	Rainbow		SC
Wet-mesic Flatwoods			
Wisteria frutescens	Wisteria		T
Zizania aquatica var. aquatica	Wild rice		T

[a] Source: MDNR 2009c (data downloaded 9/30/2009).
[b] Federal Protection Status Code Definitions
LE = Listed endangered
LT = Listed threatened
LELT = Partly listed endangered and partly listed threatened
PDL= Proposed delist

Special Status and State or Federally Protected Species with the Potential to Occur in Wayne County[a]			
Scientific Name	**Common Name**	**Federal Status[b]**	**State Status[c]**

E(S/A) = Endangered based on similarities/appearance
PS = Partial status (federally listed in only part of its range)
C = Species being considered for federal status
[c] State Protection Status Code Definitions
E = Endangered
T = Threatened
SC = Special concern

Appendix B

Correspondence

Department of Energy
Washington, DC 20585

October 23, 2009

OCT 23 2009,

Honorable Kenneth Meshigaud
Chairperson
Hannahville Indian Community
N 14911
Hannahville B1 Road
Wilson, MI 49896

Subject: A123 Systems Manufacturing Facility

Dear Chairperson Meshigaud:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for a Federal loan to A123 Systems (A123) to support construction of lithium-ion battery manufacturing facilities in Romulus, Livonia, and Brownstown, Wayne County, Michigan. As part of this environmental review process, DOE is also conducting an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Our records show that your Tribe has expressed an historical interest in Wayne County, Michigan. I am writing this letter to extend an opportunity to you to engage DOE in government to government consultation on the proposed A123 project. Consideration of any comments or concerns you provide will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The proposed project will consist primarily of retro-fitting existing buildings for use as manufacturing facilities. In addition, a new building (or extension) with a proposed footprint of 300,000 square feet would be constructed on a site at the corner of Ecorse and Cogswell Roads in Romulus. A total of about 3,700,000 square feet of manufacturing and warehouse space would be constructed, including the new 300,000 square foot building. All of the sites are at or adjacent to existing sites containing office, warehouse, or light manufacturing facilities. For example, at Brownstown, A123 will be leasing space in existing buildings in an established

commercial/industrial park which includes additional similar buildings. Therefore, new construction development footprints will be limited.

The Livonia site consists of an existing structure of 295,000 square feet on a 35 acre parcel, at 39000 West Seven Mile Road. This building would be retrofitted for manufacturing and other activities. No new or exterior building construction is planned for this facility, except for the installation of nitrogen and helium storage tanks.

The Romulus manufacturing campus consists of 1,349,060 square feet of existing space on five parcels: (1) 38100 Ecorse Road (the Plastech/LDM Technologies Building), 273,000 square feet; (2) 6505 Cogswell Road (the Medine & Mastronardi Building), 424,320 square feet; (3) 7525 Cogswell Road (the Archway/Gage Marketing Building), 252,700 square feet; (4) 41133 Van Born Road (Van Buren Commerce Center I), 199,920 square feet; and (5) 41199 Van Born Road (Van Buren Commerce Center II), 199,120 square feet. An additional 300,000 square feet of building space would be constructed at the Ecorse Road location as a separate structure adjacent to the existing building. This is the only new building construction in the entire A123 lithium ion battery manufacturing project. However, each existing building would require some interior modifications as well as the construction of ancillary exterior structures (such as distillation columns, scrubbers and other pollution control equipment, and aboveground storage tanks) immediately adjacent to the existing building.

The Brownstown campus consists of portions of three existing buildings located in the South Campus of the Brownstown Business Center. A123 is proposing to occupy the following amount of space in these buildings: 540,000 square feet in Building 7, located at 19771 Brownstown Center Drive; 730,000 square feet in Building 8, located at 19881 Brownstown Center Drive; and 453,000 square feet in Building 10, located at 20001 Brownstown Center Drive. No new or exterior building construction is planned for this facility with the exception of nitrogen, helium and electrolyte storage tanks. It is possible that aboveground storage tanks may need to be constructed adjacent to the existing buildings for the storage of raw materials or hazardous waste.

Our review of the project has not identified any historic or archeological resources, or sites of religious and cultural significance in the vicinity of the proposed project site; however, we want to give you the opportunity to raise any issues or concerns you may have regarding the site. To assist you, the Phase I Archeological Survey for the proposed project sites, including maps showing the site locations is enclosed.

We would greatly appreciate receiving any comments or concerns you may have. Comments can be provided in writing or by email. Please send written comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, CF-1.3, Washington, DC 20585. Or provide comments by email at matthew.mcmillen@hq.doe.gov. I can also be reached by telephone at 202-586-7248.

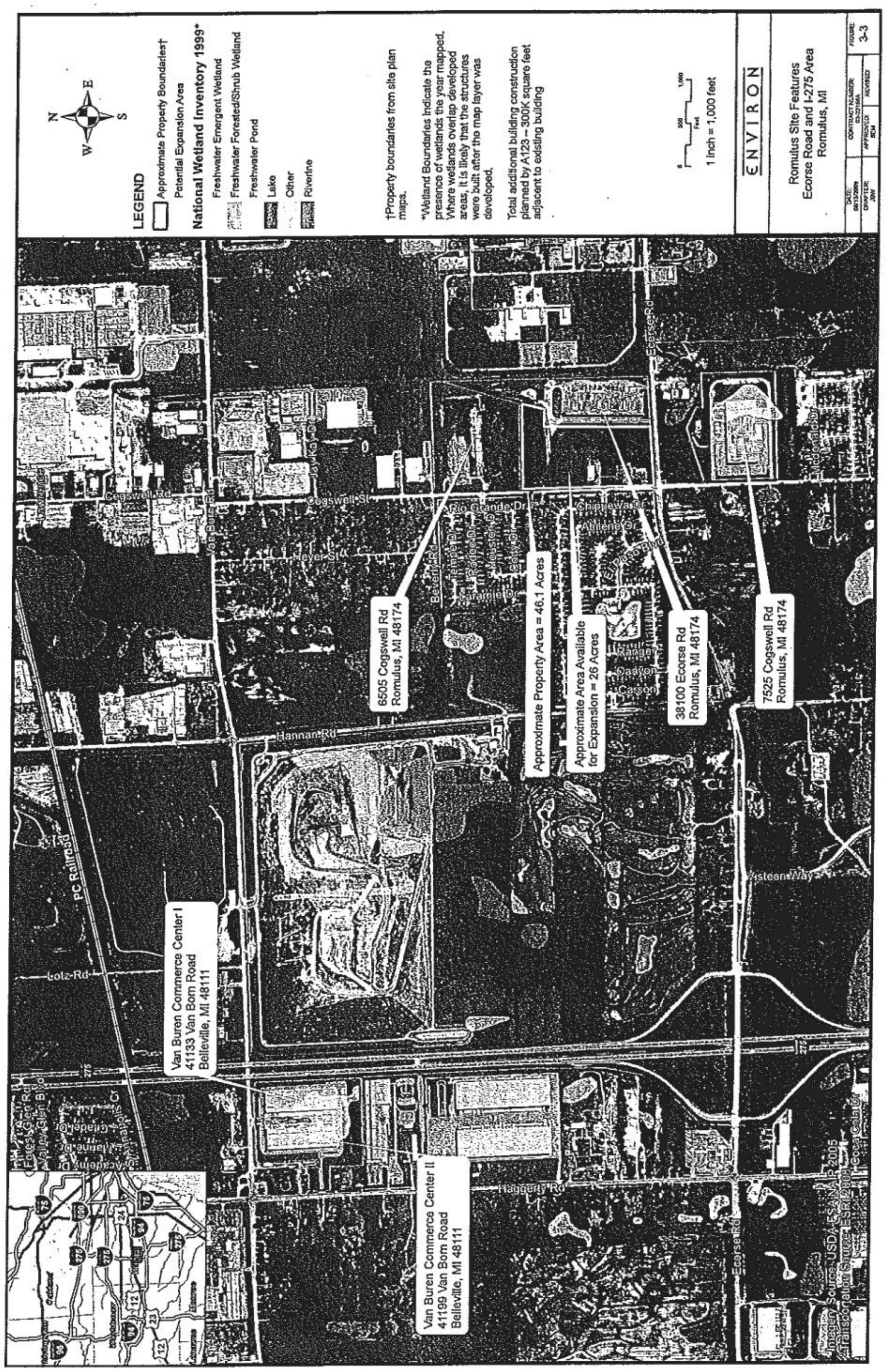
Respectfully,

Matthew McMillen

Director, NEPA Compliance

DOE Loan Guarantee Program Office

Enclosure


LEGEND
Approximate Property Boundaries†
Potential Expansion Area
National Wetland Inventory 1999*
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
†Property boundaries from site plan maps.
*Wetland Boundaries indicate the presence of wetlands the year mapped. Where wetlands overlap developed areas, it is likely that the structures were built after the map layer was developed.
Total additional building construction planned by A123 – 300K square feet adjacent to existing building
1 inch = 1,000 feet
ENVIRON
Romulus Site Features
Ecorse Road and I-275 Area
Romulus, MI
3-3
6505 Cogswell Rd
Romulus, MI 48174
Approximate Property Area = 46.1 Acres
Approximate Area Available
for Expansion = 26 Acres
38100 Ecorse Rd
Romulus, MI 48174
7525 Cogswell Rd
Romulus, MI 48174
Van Buren Commerce Center I
41133 Van Born Road
Belleville, MI 48111
Van Buren Commerce Center II
41199 Van Born Road
Belleville, MI 48111
Cogswell Rd
Hannan Rd
PC Railroad
Lotz Rd
Haggerty Rd
Ecorse Rd

Department of Energy
Washington, DC 20585

October 23, 2009

OCT 23 2009

Honorable Harold Frank
Chairman
Forest County Potawatomi Community
P.O. Box 340
Crandon, WI 54520

Subject: A123 Systems Manufacturing Facility

Dear Chairman Frank:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for a Federal loan to A123 Systems (A123) to support construction of lithium-ion battery manufacturing facilities in Romulus, Livonia, and Brownstown, Wayne County, Michigan. As part of this environmental review process, DOE is also conducting an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Our records show that your Tribe has expressed an historical interest in Wayne County, Michigan. I am writing this letter to extend an opportunity to you to engage DOE in government to government consultation on the proposed A123 project. Consideration of any comments or concerns you provide will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The proposed project will consist primarily of retro-fitting existing buildings for use as manufacturing facilities. In addition, a new building (or extension) with a proposed footprint of 300,000 square feet will be constructed on a site at the corner of Ecorse and Cogswell Roads in Romulus. A total of about 3,700,000 square feet of manufacturing and warehouse space would be constructed, including the new 300,000 square foot building. All of the sites are at or adjacent to existing sites containing office, warehouse, or light manufacturing facilities. For example, at

Brownstown, A123 would be leasing space in existing buildings in an established commercial/industrial park which includes additional similar buildings. Therefore, new construction development footprints will be limited.

The Livonia site consists of an existing structure of 295,000 square feet on a 35 acre parcel, at 39000 West Seven Mile Road. This building would be retrofitted for manufacturing and other activities. No new or exterior building construction is planned for this facility, except for the installation of nitrogen and helium storage tanks.

The Romulus manufacturing campus consists of 1,349,060 square feet of existing space on five parcels: (1) 38100 Ecorse Road (the Plastech/LDM Technologies Building), 273,000 square feet; (2) 6505 Cogswell Road (the Medine & Mastronardi Building), 424,320 square feet; (3) 7525 Cogswell Road (the Archway/Gage Marketing Building), 252,700 square feet; (4) 41133 Van Born Road (Van Buren Commerce Center I), 199,920 square feet; and (5) 41199 Van Born Road (Van Buren Commerce Center II), 199,120 square feet. An additional 300,000 square feet of building space would be constructed at the Ecorse Road location as a separate structure adjacent to the existing building. This is the only new building construction in the entire A123 lithium ion battery manufacturing project. However, each existing building would require some interior modifications as well as the construction of ancillary exterior structures (such as distillation columns, scrubbers and other pollution control equipment, and aboveground storage tanks) immediately adjacent to the existing building.

The Brownstown campus consists of portions of three existing buildings located in the South Campus of the Brownstown Business Center. A123 is proposing to occupy the following amount of space in these buildings: 540,000 square feet in Building 7, located at 19771 Brownstown Center Drive; 730,000 square feet in Building 8, located at 19881 Brownstown Center Drive; and 453,000 square feet in Building 10, located at 20001 Brownstown Center Drive. No new or exterior building construction is planned for this facility with the exception of nitrogen, helium and electrolyte storage tanks. It is possible that aboveground storage tanks may need to be constructed adjacent to the existing buildings for the storage of raw materials or hazardous waste.

Our review of the project has not identified any historic or archeological resources, or sites of religious and cultural significance in the vicinity of the proposed project site; however, we want to give you the opportunity to raise any issues or concerns you may have regarding the site. To assist you, the Phase I Archeological Survey for the proposed project sites, including maps showing the site locations is enclosed.

We would greatly appreciate receiving any comments or concerns you may have. Comments can be provided in writing or by email. Please send written comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, CF-1.3, Washington, DC 20585. Or provide comments by email at matthew.mcmillen@hq.doe.gov. I can also be reached by telephone at 202-586-7248.

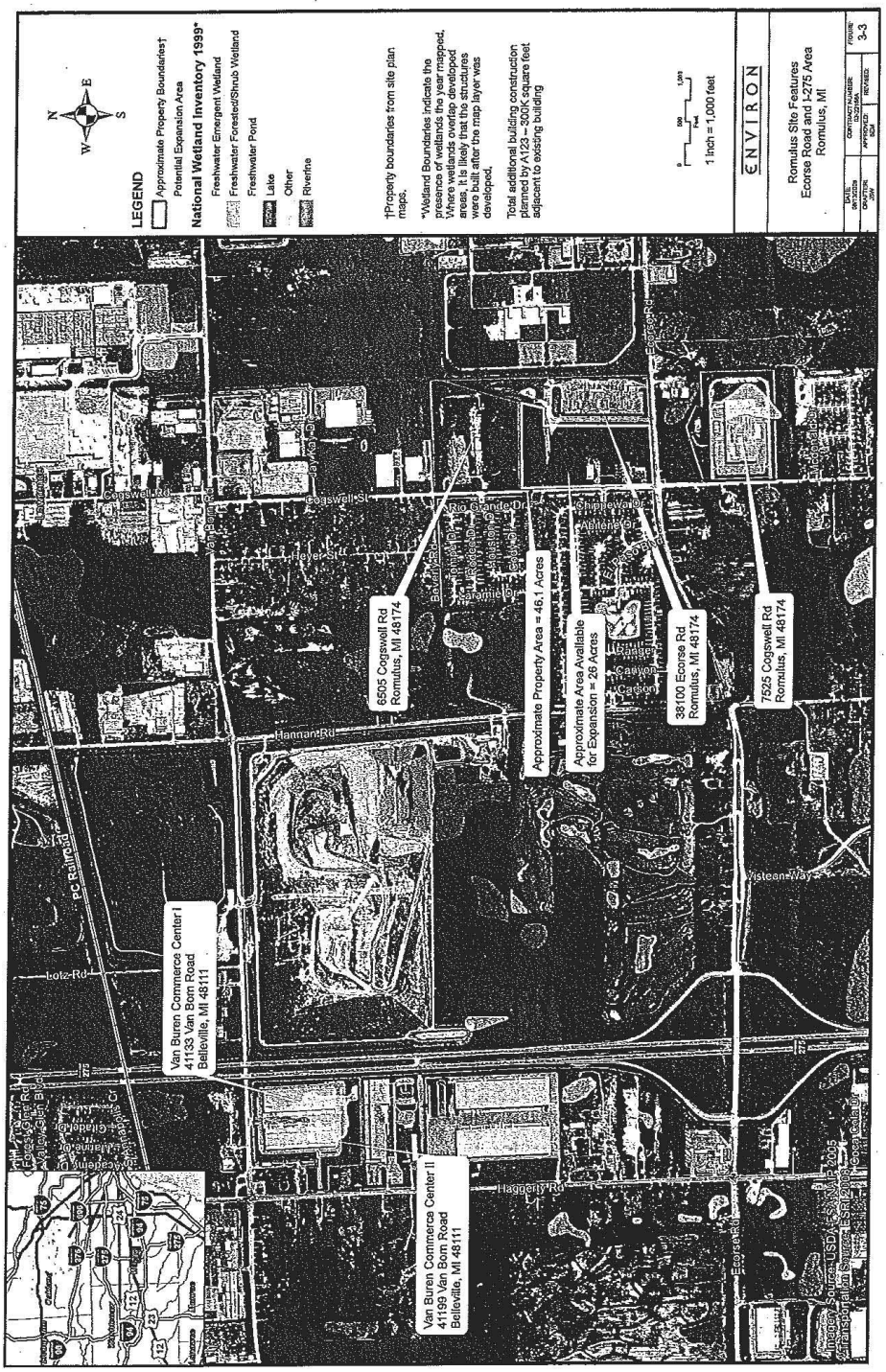
Respectfully,

Mathew McMillen

Director, NEPA Compliance Division

DOE Loan Guarantee Program Office

Enclosure


LEGEND
Approximate Property Boundaries†
Potential Expansion Area
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Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
†Property boundaries from site plan maps.
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Total additional building construction planned by A123 – 300K square feet adjacent to existing building
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ENVIRON
Romulus Site Features
Ecorse Road and I-275 Area
Romulus, MI
FIGURE 3-3
Van Buren Commerce Center I
41133 Van Born Road
Belleville, MI 48111
Van Buren Commerce Center II
41199 Van Born Road
Belleville, MI 48111
6505 Cogswell Rd
Romulus, MI 48174
Approximate Property Area = 46.1 Acres
Approximate Area Available for Expansion = 28 Acres
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Romulus, MI 48174
7525 Cogswell Rd
Romulus, MI 48174
Cogswell St
Hannan Rd
Lotz Rd
Haggerty Rd
Ecorse Rd
Yisteen Way
PC Railroad
Imagery Source: USDA - FSA - NAIP 2005
Transportation Source: ESRI 2008

Department of Energy
Washington, DC 20585

October 23, 2009

OCT 23 2009

Mr. Craig Czarnecki
Field Supervisor
U.S. Fish and Wildlife Service
2651 Coolidge Road
East Lansing, MI 48823

Subject: Request Concurrence with No Effect Determination for the Proposed A123 Systems Lithium Ion Battery Manufacturing Complex in Wayne County, Michigan.

Dear Mr. Czarnecki:

The Department of Energy (DOE) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act for a Federal loan to A123 Systems under DOE's Advanced Technology Manufacturing Incentive Program for a proposed lithium ion battery manufacturing complex in the following three manufacturing centers located in the Detroit metropolitan area of Wayne County, Michigan: Livonia, Romulus campus, and Brownstown Campus. As part of the review process for this facility, DOE has determined that the proposed project will have no effect on Federally-listed threatened and endangered species or their habitat.

The Livonia site consists of an existing structure of 295,000 square feet on a 35 acre parcel, at 39000 West Seven Mile Road. This building would be retrofitted for manufacturing and other activities. No new or exterior building construction is planned for this facility, except for the installation of nitrogen and helium storage tanks. Wetlands are currently present on the Livonia site, but the proposed activities would not result in any disturbance to these wetlands. The surface areas of this site include existing buildings, paved parking lots, landscaped areas, open fields, wetlands, and a freshwater pond.

Printed with soy ink on recycled paper

The Romulus manufacturing campus consists of 1,349,060 square feet of existing space on five parcels: (1) 38100 Ecorse Road (the Plastech/LDM Technologies Building), 273,000 square feet; (2) 6505 Cogswell Road (the Medine & Mastronardi Building), 424,320 square feet; (3) 7525 Cogswell Road (the Archway/Gage Marketing Building), 252,700 square feet; (4) 41133 Van Born Road (Van Buren Commerce Center I), 199,920 square feet; and (5) 41199 Van Born Road (Van Buren Commerce Center II), 199,120 square feet. An additional 300,000 square feet of building space would be constructed at the Ecorse Road location as a separate structure adjacent to the existing building. The site for construction is an open, fallow field previously disturbed by construction activities. This is the only new building construction in the entire A123 lithium ion battery manufacturing project. However, each existing building would require some interior modifications as well as the construction of ancillary exterior structures (such as distillation columns, scrubbers and other pollution control equipment, and aboveground storage tanks) immediately adjacent to the existing building. The surface areas of each of the five sites consists solely (except for 38100 Ecorse Road) of buildings, parking lots, landscaped areas, and areas containing ancillary fixtures or structures such as silos. Wetlands are not present at any of the Romulus sites.

The Brownstown campus consists of portions of three existing buildings located in the South Campus of the Brownstown Business Center. A123 is proposing to occupy the following amount of space in these buildings: 540,000 square feet in Building 7, located at 19771 Brownstown Center Drive; 730,000 square feet in Building 8, located at 19881 Brownstown Center Drive; and 453,000 square feet in Building 10, located at 20001 Brownstown Center Drive. No new or exterior building construction is planned for this facility with the exception of nitrogen, helium and electrolyte storage tanks. It is possible that aboveground storage tanks may need to be constructed adjacent to the existing buildings for the storage of raw materials or hazardous waste. Wetlands are not present at on the Brownstown site. The surface area of the Brownstown Campus consists solely of land developed with buildings, paved parking lots, landscaping, and surface water detention ponds.

The Romulus and Livonia sites described above were surveyed by Karen Kuzis, M.S., a watershed specialist and certified fisheries biologist and Kimberly Suedkamp Wells, Ph.D., a certified wildlife biologist, both at ENVIRON International Corporation, on March 9, 2009. The Brownstown site was surveyed by Dr. Suedkamp Wells on May 4, 2009. The determination of no effect is based on this site surveillance, and the lack of suitable habitat observed.

The enclosed table presents the Federally- Listed Threatened, Endangered, Proposed, and Candidate Species occurring in Wayne County, Michigan as identified at

http://www.fws.gov/midwest/Endangered/lists/michigan-cty.hml,
http://ecos.fws.gov/docscandforms_pdf/r3F01A_I01.pdf, and
http://ecos.fws.gov/Midwest/endangered/reptiles/eama-fct-sht.html.

The enclosed table includes a brief summary of the basis for the determination that the listed species are not likely to occur on the proposed project sites. Based on this information and our analysis we have determined that the action would have no effect on federally-listed endangered, threatened, proposed, or candidate wildlife species. This determination of no effect is supported by the habitat information provided by the U.S. Fish and Wildlife Service at the above websites and by the site surveys described above. Although not required as part of our coordination and consultation responsibilities pursuant to Section 7 of the Endangered Species Act of 1973, as amended, we are requesting your concurrence with our determination that the proposed project will have no effect on federally listed endangered, threatened, proposed, or candidate species.

I may be contacted in writing at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, CF-1.3, Washington, DC 20585. Or please contact me by email at matthew.mcmillen@hq.doe.gov. I can also be reached by telephone at 202-586-7248.

Respectfully,

Matthew McMillen
Director, NEPA Compliance
DOE Loan Guarantee Program Office

Enclosure

Federally- Listed Threatened, Endangered, Proposed, and Candidate Species Occurring in Wayne County

All of the proposed manufacturing sites are within Wayne County. The following species and habitat were identified at http://www.fws.gov/midwest/Endangered/lists/michigan-cty.hml, http://ecos.fws.gov/docscandforms_pdf/r3F01A_I01.pdf, and http://ecos.fws.gov/Midwest/endangered/reptiles/eama-fct-sht.html.

Species	Status	Habitat	Determination and Bases
Indiana bat (*Myotis sodalist*)	Endangered	Summer habitat includes small to medium river and stream corridors with well developed riparian woods; woodlots within 1 to 3 miles of small to medium rivers and streams; and upland forests. Caves and mines as hibernacula.	No effect. Lack of onsite habitat. The sites do not include riparian woods, woodlots within 1 to 3 miles of small to medium rivers, or suitable streams, caves, or mines.
Eastern massasauga (*Sistrurus catenatus catenatus)*	Candidate	Wet areas including wet prairies, marshes and low areas along rivers and lakes.	No effect. Lack of onsite habitat. The sites do not include wet prairies or marshes.

Northern riffleshell (*Dysnomia torulosa rangiana*)	Candidate	Large streams and small rivers in firm sand or riffle areas; also occurs in Lake Erie	No Effect. No large streams or rivers of any kind on any of the properties.
Rayed Bean Mussel (*Villosa fabalis*)	Candidate	Rivers and streams in the Great Lakes region near shoal or riffle habitat with sand or gravel substrates, also in Lake Erie.	No Effect. No suitable stream or rivers on any of the properties.
Easter prairie fringed orchid (*Plantathera leucophaea*)	Threatened	Mesic to wet prairies and meadows.	No Effect. No prairie or meadow habitat on any of the sites.

Mcmillen, Matthew C

From: Jeremy_Banfield@fws.gov
Sent: Wednesday, November 25, 2009 10:19 AM
To: Mcmillen, Matthew C
Subject: Re: Proposed A123 Systems Lithium Ion battery Manufacturing Complex, Wayne County, Michigan.

Mr. Matthew McMillen
U.S. Department of Energy
1000 Independence Ave
Washington DC 20585

Re: Proposed A123 Systems Lithium Ion Battery Manufacturing Complex, Wayne County, Michigan.

Dear Mr. McMillen:

This letter is in response to your October 23, 2009 letter pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended (Act), requesting concurrence with your determination that the referenced project will have no effecton the Indiana bat (Myotis sodalist), eastern massasauga rattlesnake (Sistrurus catenatus catenatus) northern riffleshell mussel (Dysnomia torulosa rangiana), rayed bean mussel (Villosa fabalis) and eastern prairie fringed orchis (Plantathera leucophaea). Your consultation request was received in this office on November 2, 2009.

On March 9, 2009 Karen Kuzis surveyed the Romulus and Livonia sites. On May 4, 2009 Dr. Suedkamp Wells surveyed the Brownstown site. Both surveyors observed a lack of suitable habitat and determined that this project will have no effect on these species because the project area does not meet the criteria for suitable habitat.

Please note, the US Fish and Wildlife Service does not provide concurrence for no effectdeterminations. This precludes the need for further action on this project as required by section 7 of the Act. If the project is modified or new information about the project becomes available that indicates listed species or critical habitat may be affected in a manner or to an extent not previously considered, you should reinitiate consultation with this office.

We appreciate the opportunity to cooperate with you in conserving endangered species. If further assistance is needed or you have any questions, please contact Tameka Dandridge of this office, at (517) 351-8315.

****
Tameka Dandridge
U.S. Fish & Wildlife Service
East Lansing Field Office
2651 Coolidge Rd., Suite 101
East Lansing, MI 48823
517-351-8315
tameka_dandridge@fws.gov

Department of Energy
Washington, DC 20585

DEC 2 2009

State Historic Preservation Office
Environmental Review Office
Michigan Historical Center
702 W. Kalamazoo Street
P.O. Box 30740
Lansing, MI 48909-8240

Subject: A123 Systems Manufacturing Facility

Dear Historic Preservation Office:

The U.S. Department of Energy (DOE) is proposing to issue A123 Systems a loan under the Advanced Technology Vehicle Manufacturing Incentive Program and a grant under the Vehicle Technologies Program to support construction of lithium-ion battery manufacturing facilities in Romulus, Livonia, and Brownstown Township, Wayne County, Michigan. DOE is submitting the enclosed "State Historic Preservation Office Application for Section 106 Review" form and accompanying materials to comply with Section 106 of the National Historic Preservation Act. DOE requests State Historic Preservation Office concurrence with a "finding of no historic properties affected" for the A123 Systems battery manufacturing project.

Please address correspondence to me at the following address: U.S. Department of Energy, CF-1.3, 1000 Independence Ave., S.W., Washington, DC 20585. If email is more convenient for you, my email address is matthew.mcmillen@hq.doe.gov. You may also contact me by phone at 202-586-7248.

Sincerely,

Matthew McMillen
Director, Environmental Compliance
DOE Loan Guarantee Program Office

Printed with soy ink on recycled paper

STATE HISTORIC PRESERVATION OFFICE
Application for Section 106 Review

SHPO Use Only
☐ IN Received Date ____ / ____ / ____ Log In Date ____ / ____ / ____
☐ OUT Response Date ____ / ____ / ____ Log Out Date ____ / ____ / ____
Sent Date ____ / ____ / ____

Submit one copy for each project for which review is requested. This application is required. Please type. Applications must be complete for review to begin. Incomplete applications will be sent back to the applicant without comment. Send only the information and attachments requested on this application. Materials submitted for review cannot be returned. Due to limited resources we are unable to accept this application electronically.

I. GENERAL INFORMATION

☒ THIS IS A NEW SUBMITTAL ☐ THIS IS MORE INFORMATION RELATING TO ER#

a. Project Name: Environmental Assessment for a DOE Direct Loan to A123 Systems for Construction and Leasing of Facilities for Verticallly Integrated Mass Production of Automotive Class Lithium-Ion Batteries
b. Project Address (if available): Directly adjacent (westerly) to 38100 Ecorse Road, City of Romulus, Wayne County, Michigan
c. Municipal Unit: City of Romulus County: Wayne
d. Federal Agency, Contact Name and Mailing Address (*If you do not know the federal agency involved in your project please contact the party requiring you to apply for Section 106 review, not the SHPO, for this information.*): U.S. Department of Energy, Loan Guarantee Program Office, Matthew McMillen, Director, Environmental Compliance Division, 1000 Independence Avenue, SW, CF-1.3, Washington, DC 20585. (202) 586-7248
e. State Agency (if applicable), Contact Name and Mailing Address: N/A
f. Consultant or Applicant Contact Information (if applicable) *including mailing address*: John Pinho, Director of Global Facilities and Environmental Health & Safety, A123 Systems Inc., 321 Arsenal Street, Watertown MA 02472. (617) 778-5700. jpinho@a123systems.com

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II. GROUND DISTURBING ACTIVITY (INCLUDING EXCAVATION, GRADING, TREE REMOVALS, UTILITY INSTALLATION, ETC.)

DOES THIS PROJECT INVOLVE GROUND-DISTURBING ACTIVITY? ☒ YES ☐ NO (If no, proceed to section III.)

Exact project location must be submitted on a USGS Quad map (portions, photocopies of portions, and electronic USGS maps are acceptable as long as the location is clearly marked).

a. USGS Quad Map Name: Wayne
b. Township: T3S Range: R9E Section: 7
c. Description of width, length and depth of proposed ground disturbing activity: 300,000 square foot building within a 26-acre expansion area
d. Previous land use and disturbances: Modern industrial development
e. Current land use and conditions: Industrial
f. Does the landowner know of any archaeological resources found on the property? ☐ YES ☒ NO
Please describe:

III. PROJECT WORK DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)
Note: Every project has an APE.

a. Provide a detailed written description of the project (plans, specifications, Environmental Impact Statements (EIS), Environmental Assessments (EA), etc. **cannot** be substituted for the written description): The proposed project involves the construction of a 300,000 square foot expansion to an existing industrial facility at 38100 Ecorse Road, Romulus, Michigan. The expansion would take the form of a separate structure adjacent to the existing building and parking lot, and would be constructed on a previously disturbed portion of the 38100

Ecorse Road property. As part of construction, additional parking spaces would be added to the east of the expansion site. The construction is expected to require only minimal grading to level and prepare the building surface because the site was previously graded and cleared. No new access would be required because the existing access road via Ecorse Road is already developed and in use for the adjacent building. No underground utilities or pipelines, other than water, sewer, electricity, and natural gas for space heating for the new building, are anticipated. A few ornamental trees, located on the eastern perimeter of the expansion site and the western edge of the existing parking lot, may need to be removed during site preparation. Construction of the new building would occur in 2011 in order to be occupied and fit up for production in 2012. Once operational, the facilities at 38100 Ecorse Road would produce components used in the manufacture of lithium-ion batteries for electric vehicles. To prepare the buildings for these operations, pre-fabricated exterior structures, including distillation columns, scrubbers, condensers, aboveground storage tanks and pollution control equipment will be required and will be located immediately adjacent to the buildings.

b. Provide a localized map indicating the location of the project; road names must be included and legible.
c. On the above-mentioned map, identify the APE.
d. Provide a written description of the APE (physical, visual, auditory, and sociocultural), the steps taken to identify the APE, and the justification for the boundaries chosen. The APE for this project consists of a 46.1 acre parcel of land containing an existing 273,000 square foot industrial facility at 38100 Ecorse Road and the 26 acre area upon which the new 300,000 square foot facility would be constructed. The APE also includes paved parking areas to the north, east, and west sides of the existing structure, and a landscaped area surrounding a man-made retention pond to the north of the existing structure. The 26 acre expansion site has been completely leveled by past construction grading activity. The current land use designation for the area comprising the APE is industrial. There are numerous industrial facilities in the area surrounding the APE. There are no scenic resources located in or around the APE and sound levels are consistent with those of an industrialized area. As the APE must comprise the area in which a project may cause changes in the character or use of historic properties, the first step in identifying the APE for this proposed project consisted of locating the historic properties in the vicinity of 38100 Ecorse Road. This search, which was conducted using the Michigan State Historic Preservation Office's online database, revealed that the nearest historic property is the Merrill-Morris House, located approximately 4 miles from the proposed project. Given the distance between this historic property and the proposed project, and in light of the extensive modern development in the surrounding area including numerous preexisting industrial facilities and interstate 275, the project will not have any direct or indirect physical, visual, auditory, or sociocultural effects on the character or use of the Merrill-Morris House. Therefore, the only historic resources that could potentially be impacted by the proposed project are those resources that may exist within the boundaries of the parcel of land in which the proposed project would take place. Thus, it is appropriate in this case to have chosen APE boundaries that are coextensive with the physical boundaries of the proposed project.

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. List and date **all** properties 50 years of age or older located in the APE. If the property is located within a National Register eligible, listed or local district it is only necessary to identify the district: N/A
b. Describe the steps taken to identify whether or not any **historic** properties exist in the APE and include the level of effort made to carry out such steps: July 2009 Phase IA Archaeological Survey conducted by The Louis Berger Group, Inc. This included a site reconnissance and search of the Michigan State Historic Preservation Office's online database. The nearest listing (Merrill-Morris House) was approximately four miles from the proposed project site. Letters requesting information on any sites of religious and cultural significance in the vicinity of the project site were sent to the Hannahville Indian Community and the Forest County Potawatomi Community, which were identified as Tribes with an historic interest in Wayne County (identified using the Department of Housing and Urban Development's Tribal Directory Assessment Tool). No information was received from the Tribes.
c. Based on the information contained in "b", please choose one:
   - ☐ Historic Properties Present in the APE
   - ☒ No Historic Properties Present in the APE
d. Describe the condition, previous disturbance to, and history of any historic properties located in the APE: N/A

V. PHOTOGRAPHS

Note: All photographs must be keyed to a localized map.

a. Provide photographs of the site itself.
b. Provide photographs of all properties 50 years of age or older located in the APE (faxed or photocopied photographs are not acceptable).

VI. DETERMINATION OF EFFECT

☒ No historic properties affected based on [36 CFR § 800.4(d)(1)], please provide the basis for this determination.

☐ No Adverse Effect [36 CFR § 800.5(b)] on historic properties, explain why the criteria of adverse effect, 36 CFR Part 800.5(a)(1), were found not applicable.

☐ Adverse Effect [36 CFR § 800.5(d)(2)] on historic properties, explain why the criteria of adverse effect, [36 CFR Part 800.5(a)(1)], were found applicable.

Please print and mail completed form and required information to:
State Historic Preservation Office, Environmental Review Office, Michigan Historical Center, 702 W. Kalamazoo Street, P.O. Box 30740, Lansing, MI 48909-8240

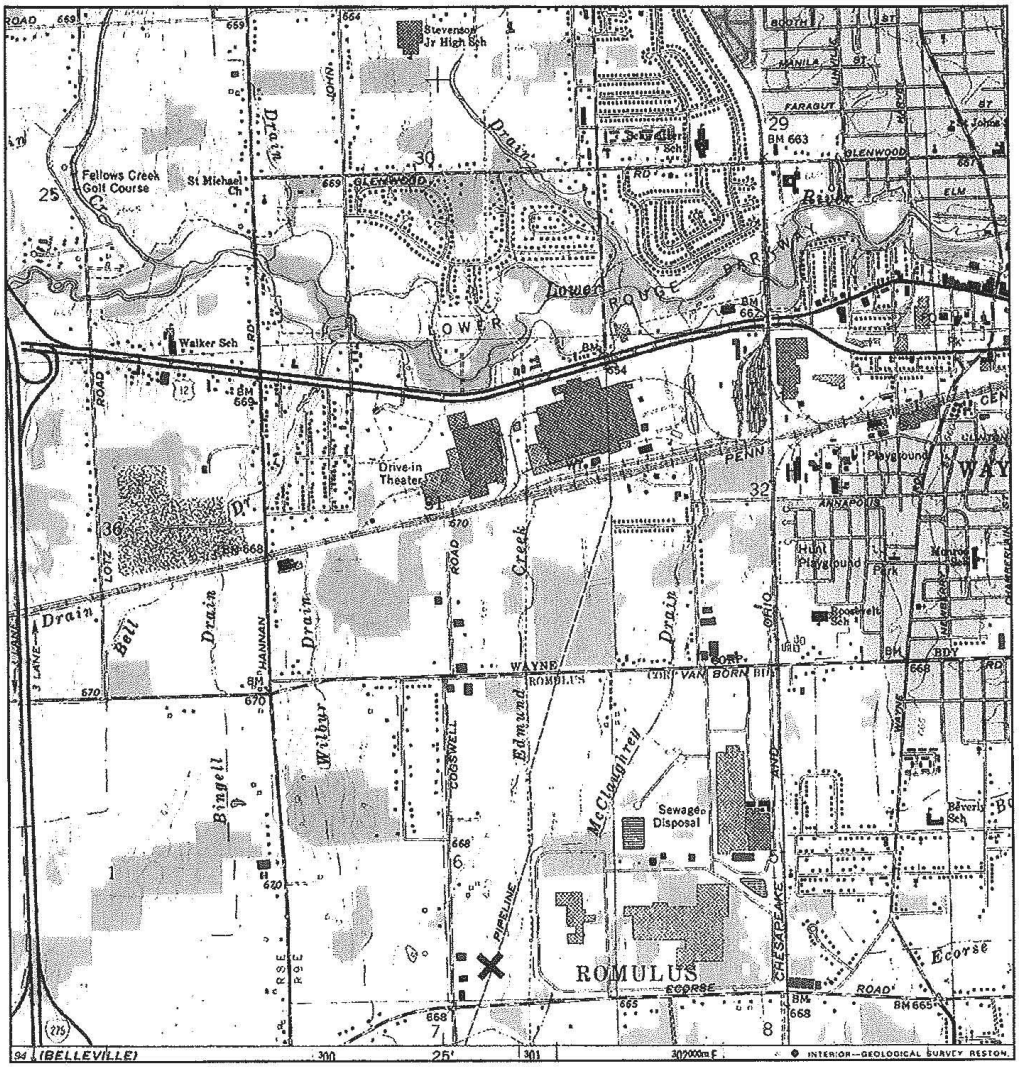
STATE HISTORIC PRESERVATION OFFICE
Application for Section 106 Review
(Addendum)

Project Name: Environmental Assessment for a DOE Direct Loan to A123 Systems for Construction and Leasing of Facilities for Verticallly Integrated Mass Production of Automotive Class Lithium-Ion Batteries.

Response to Part VI (Basis for determination that no historic properties will be affected): No historic properties or traditional cultural properties have previously been identified within the APE. The APE has been extensively disturbed due to modern development. Because of this disturbance, there is no potential for the APE to contain archaeological resources which would meet the criteria for inclusion in the National Register of Historic Places. Therefore, no historic properties would be affected by the proposed project.

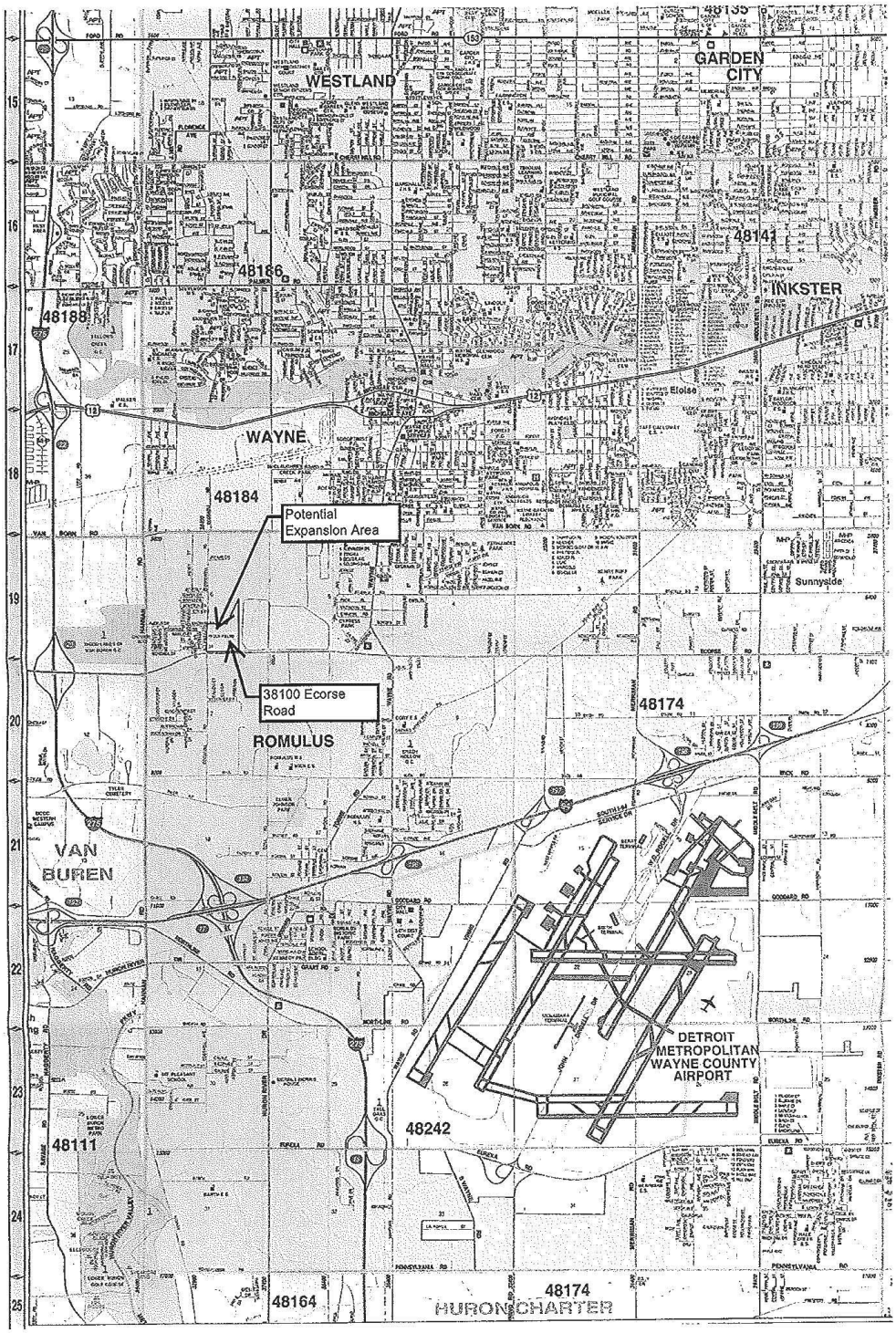
1

Historical Topographic Map



N	TARGET QUAD NAME: WAYNE MAP YEAR: 1980 PHOTOREVISED FROM:1968 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 38100 Ecorse Road ADDRESS: 38100 Ecorse Road Romulus, MI 48174 LAT/LONG: 42.2518 / 83.4137	CLIENT: Skadden Arps Slate Meagher & Flom LLP CONTACT: Benn Clapp INQUIRY#: 2534785.22 RESEARCH DATE: 07/07/2009

X = exact project location


WESTLAND
GARDEN CITY
48135
48141
INKSTER
48186
48188
WAYNE
Eloise
48184
Potential Expansion Area
Sunnyside
38100 Ecorse Road
48174
ROMULUS
VAN BUREN
DETROIT METROPOLITAN WAYNE COUNTY AIRPORT
48242
48111
48164
48174
HURON CHARTER

STATE HISTORIC PRESERVATION OFFICE
Application for Section 106 Review
(Addendum)

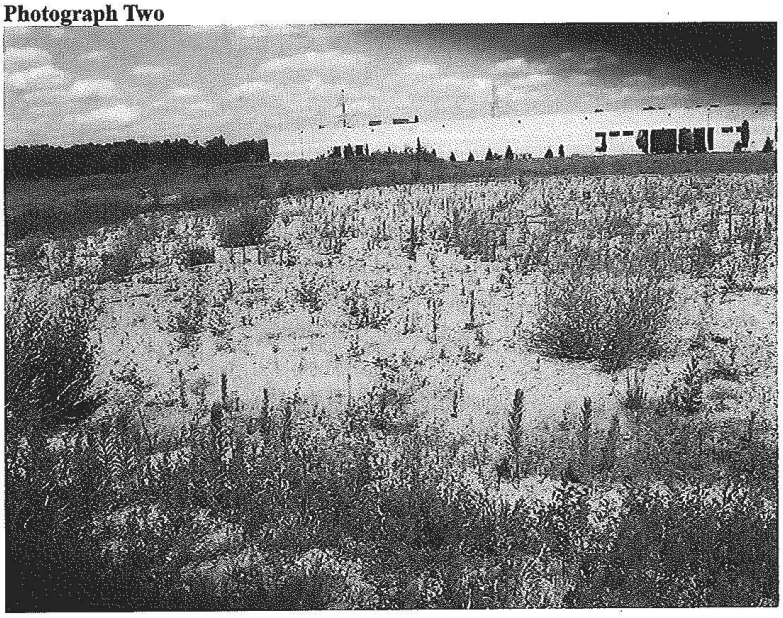
Project Name: Environmental Assessment for a DOE Direct Loan to A123 Systems for Construction and Leasing of Facilities for Verticallly Integrated Mass Production of Automotive Class Lithium-Ion Batteries.

Response to Part V. (Photographs)

Photograph One

Description: View of expansion site looking east from Cogswell Road toward retention pond north of 38100 Ecorse Road.

Photograph Two



Description: View of expansion site looking east from Cogswell Road toward existing industrial facility at 38100 Ecorse Road.

2

Photograph Three

Description: View of expansion site looking southeast from Cogswell Road toward existing industrial facility at 38100 Ecorse Road.

3

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
LANSING

JENNIFER GRANHOLM
GOVERNOR

KEITH MOLIN
EXECUTIVE DIRECTOR

January 5, 2010

MATTHEW MCMILLEN
DEPARTMENT OF ENERGY
1000 INDEPENDENCE AVENUE SW, CF-1.3
WASHINGTON DC 20585

RE: ER-10-172 A123 Systems Automotive Class Lithium-Ion Battery Production Facility, Directly adjacent to 38100 Ecorse Rd, Section 7, T3S, R9E, City of Romulus, Wayne County (DOE)

Dear Mr. McMillen:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

This letter evidences the DOE's compliance with 36 CFR § 800.4 "Identification of historic properties", and the fulfillment of the DOE's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected".

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Cultural Resource Protection Specialist, at (517) 335-2721 or by email at ER@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Martha MacFarlane Faes
Environmental Review Coordinator

for Brian D. Conway
State Historic Preservation Officer

MMF: JRH: BGG: kam

Copy: John Pinho, A123 Systems Inc.

Appendix C

Phase IA Archaeological Survey

Phase IA Archaeological Survey for Three Manufacturing Complexes

Wayne County, Michigan

Prepared for:

A123 SYSTEMS
321 Arsenal Street
Watertown, Massachusetts 02472

Prepared by:

Charles J. Rinehart

THE LOUIS BERGER GROUP, INC.
2009 Greenwich Court
Lansing, Michigan 48910
(517) 882-3263

Final Report

JULY 2009

ABSTRACT

The Louis Berger Group, Inc. (Berger) has completed a Phase IA archaeological survey for the proposed development of three manufacturing complexes (39000 West Seven Mile Road, Livonia; 19881 Brownstown Center Drive, Brownstown; and five Romulus parcels located at 41133 and 41199 Van Born Road, 6505 and 7525 Cogswell Road, and 38100 Ecorse Road) in Wayne County, Michigan. For each complex the investigations consisted of a records search for previously identified archaeological sites, examination of historic maps and aerial photographs to assess the location's archaeological potential, and a recommendation whether an intensive archaeological field survey was required. On July 13, 2009, a field visit to the five Romulus parcels was conducted to document the existing environmental setting. Also, for all the complexes an unanticipated discoveries plan was developed outlining procedures to follow if human remains or other potential cultural resources are discovered during construction.

Due to extensive disturbance from modern development to the area of potential effect (APE) within each of the complexes, intensive archaeological field survey is not recommended for any complex. There is no potential for archaeological resources to remain within the APE which would meet the criteria for inclusion in the National Register of Historic Places. In addition, no historic properties have previously been identified within the APE at any of the three complexes. Therefore, no historic properties will be affected by the proposed undertaking at any of the three complexes.

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LIST OF PLATES

I. INTRODUCTION

A. PURPOSE OF INVESTIGATION

This report documents the Phase IA archaeological survey undertaken by The Louis Berger Group, Inc. (Berger), in Wayne County, Michigan. The purpose of the proposed project is to develop three manufacturing complexes. Skadden, Arps, Slate, Meagher, & Flom, LLC (Skadden) on behalf of A123 Systems (A123) sponsored this investigation in compliance with federal cultural resource management policies that require consideration of the effects of federally funded or licensed construction on significant historic or prehistoric resources. These policies include Section 106 of the National Historic Preservation Act of 1966 (as amended). A123 has applied to the Department of Energy (DOE) for a loan and grant to finance development of these three manufacturing complexes.

B. AREA OF POTENTIAL EFFECT DESCRIPTIONS

The area of potential effect (APE) for each complex is defined in the Request for Proposals and associated maps provided to Berger by Skadden. The Livonia complex consists of an existing 295,000 square-foot structure on a 35 acre parcel (Figure 1). No new construction is planned at this complex. The Brownstown complex consists of three existing buildings within the 240-acre South Campus of the Brownstown Business Center: 1) Building 7, located at 19771 Brownstown Center Drive, with 540,000 square feet; 2) Building 8, located at 19881 Brownstown Center Drive, with 730,000 square feet; and 3) Building 10, located at 20001 Brownstown Center Drive, with 453,000 square feet (Figure 2). No new construction is planned for any portion of the Brownstown complex.

The Romulus complex consists of five parcels and an expansion area associated with one of these properties. Each parcel contains an existing structure and there is the potential for construction on each parcel for air pollution control equipment, storage tanks, and other structures associated with the battery manufacturing process. The first two parcels are side-by-side located at 41133 Van Born Road and 41199 Van Born Road (Figure 3). The third parcel is located at 6505 Cogswell Road. The fourth parcel is located at 38100 Ecorse Road and a new 300,000 square-foot building will be constructed within a 26-acre expansion area directly west of 38100 Ecorse Road (Figure 4). The fifth parcel is located at 7525 Cogswell Road (Figure 5).

C. PROJECT INFORMATION AND REPORT ORGANIZATION

This report describes the results of Berger's research at all three complexes, which included a records search for previously identified archaeological sites, examination of historic maps and aerial photographs to assess the location's archaeological potential, and a recommendation whether an intensive archaeological field survey was required. A field visit was conducted on July 13, 2009 to the five properties which form the Romulus complex. Background research was completed on July 14, 2009. Charles J. Rinehart (R.P.A.), Berger Senior Archaeologist, was the Project Manager and Principal Investigator. Mr. Rinehart conducted all of the analysis and investigations for this project.

This report documenting Berger's investigations is organized into four chapters. This introductory chapter discussed the nature of the undertaking and described the APE at each complex. It also documents the course of the investigations.

Chapter II begins with the results of the records search to document any previously identified archaeological sites within each complex. These results also indicate whether any of these sites are listed in the National Register of Historic Places. Also, these results discuss if any traditional cultural properties (TCPs) associated with Native American sites of religious and cultural significance are present. The chapter concludes with the

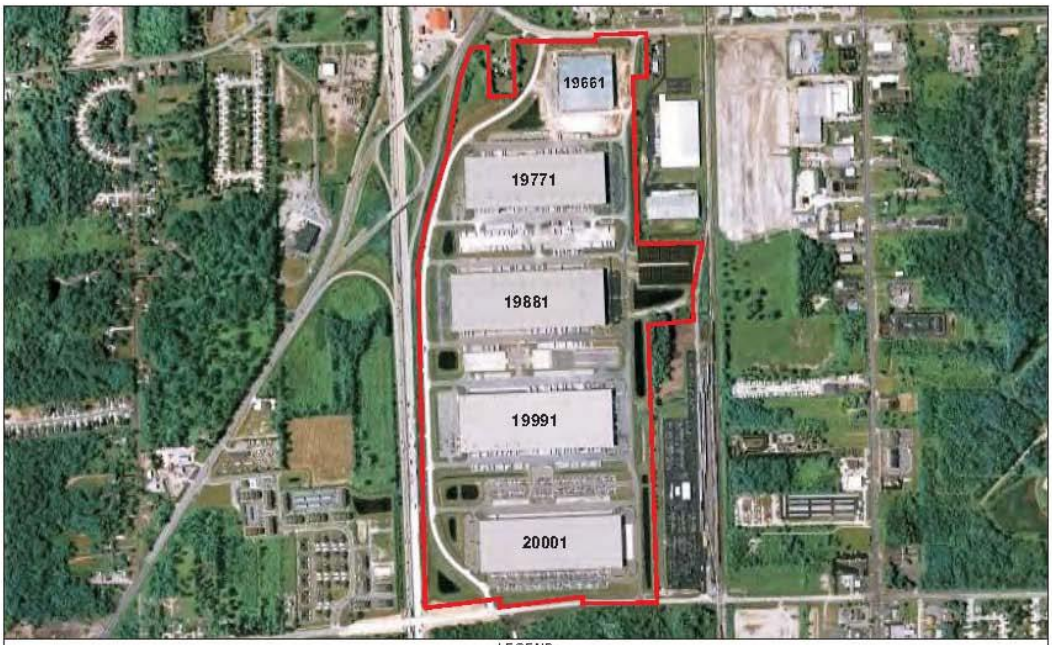
land use history of each complex and assesses the potential of each complex to contain prehistoric and/or historic archaeological resources. Chapter IV provides a summary of the Phase IA investigations and recommendations regarding whether or not further archaeological investigations (i.e. intensive archaeological survey) is needed at each complex. Chapter V provides a list of references cited in the current report.

All work was completed in compliance with the National Historic Preservation Act of 1966 (as amended through 1999). The field investigations and technical report meet the standards specified in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historical Preservation (*Federal Register* 48:190:44716-44742; United States Department of the Interior 1983). All key project personnel performing these investigations meet or exceed the qualifications described in the Secretary of Interior's *Professional Qualifications Standards* (*Federal Register* 48:190:44738-44739; United States Department of the Interior 1983).

SOURCE: Google Earth Image Server, Image Date: June 2007

FIGURE 1: 39000 West 7 Mile Road - Livonia

3



SOURCE: Google Earth Image Server, Image Date: June 2007

FIGURE 2: 19771, 19881, and 20001 Brownstown Center Drive - Brownstown

4

SOURCE: Google Earth Image Server, Image Date: June 2007

FIGURE 3: 41133 and 41199 Van Born Road - Romulus

5

SOURCE: Google Earth Image Server, Image Date: June 2007

FIGURE 4: 6505 Cogswell Road, 38100 Ecorse Road, and Expansion Area - Romulus

6

SOURCE: *Google Earth Image Server, Image Date: June 2007*

FIGURE 5: 7525 Cogswell Road - Romulus

7

II. RECORDS SEARCH AND ARCHAEOLOGICAL POTENTIAL ASSESSMENT

A. RECORDS SEARCH

The archaeological site files and associated United States Geological Survey topographic quadrangle maps at the Office of State Archaeologist (OSA), which is affiliated with the State Historic Preservation Office (SHPO), in Lansing, Michigan were consulted to determine if any previously identified archaeological sites were documented in each complex. In addition, Assistant State Archaeologist Barbara Mead was contacted to determine whether any TCPs were located in any of the complexes. She indicated there are no known TCPs in the Livonia, Brownstown, or Romulus complex (Mead, personal communication 2009).

For the Livonia complex and all five properties associated with the Romulus complex, no previously identified archaeological sites were identified within each location's APE. At the Brownstown complex, part of a large prehistoric Woodland period surface scatter (Site 20WN234) in an agricultural field is located in the northern quarter of this approximately 240 acre property (Figure 6). The site was identified in 1933, but no subsurface testing was done. Associated notes with Site 20WN234 are insufficient to determine whether it would be eligible for inclusion in the National Register of Historic Places. Approximately 75 percent of this site has been destroyed by construction of I-75 and its related ramps as well as modern commercial buildings both inside and outside of the Brownstown complex.

B. ARCHAEOLOGICAL POTENTIAL ASSESSMENT

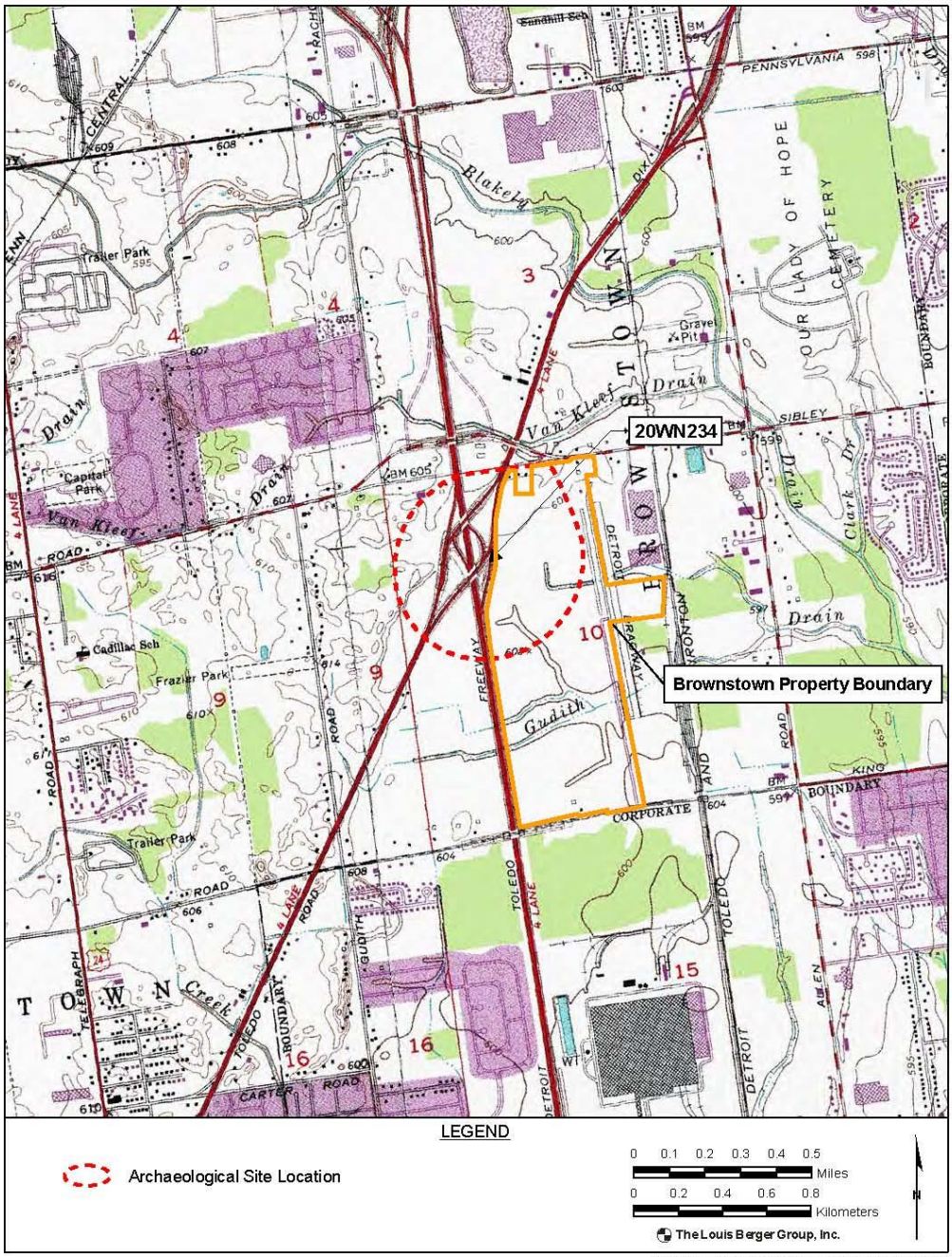
The assessment for the archaeological site potential of each complex was conducted in two stages. The first stage was a review of historic aerial photographs and historic topographic maps to study the land use history of each parcel. The second stage was analysis to determine the potential for any prehistoric or historic archaeological resources within each complex given the data in the first stage.

1. Livonia Complex

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1961, 1967, 1972, 1985, 1993, and 2000 (Environmental Data Resources Inc. [EDR] 2009a). Examination of historic topographic maps included maps from 1905, 1945, 1952, 1969, 1973, and 1980 (EDR 2009b). No buildings or structures were observed within the Livonia complex during any of these years until 1993, by which time the current buildings were constructed. Thus there is a low potential for historic archaeological resources on the property.

The large pond to the southwest of the existing structure (see Figure 1) is present as early as the 1945 topographic map, but is not visible on the 1905 topographic map. This finding suggests the pond was manmade in the early 1900s. A small unnamed creek once ran east to west along the southern end of the complex and was apparently dammed to create a pond; this creek may have been used during prehistoric time periods. The topographic relief indicates the portion of the complex most suitable for prehistoric occupation is the flattest area, along a ridge nose which is where the existing structure is located. Therefore, the prehistoric archaeological site potential for the entire complex is low as the high potential area was extensively disturbed when the current structure was built.

The proposed undertaking at the Livonia complex will occur within the confines of the existing building. If any archaeological resources once existed in this portion of the parcel they were disturbed when the existing structure was built. Because of this modern development there is no potential for archaeological resources



SOURCE: USGS 7.5' Series, Wyandotte, MI, 1967

FIGURE 6: Previously Identified Archaeological Site - Brownstown Complex

which would meet the criteria for inclusion in the National Register of Historic Places (NRHP) to remain within the APE. Therefore, Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

2. Brownstown Complex

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1961, 1967, 1972, 1985, 1993, and 2005 (EDR 2009c). Examination of historic topographic maps included maps from 1906, 1942, 1967, 1973, and 1981 (EDR 2009d). One to two buildings associated with a farmstead were present along the very southern edge of the complex on King Road from 1906 to 1981. The structures, however, are no longer standing and were destroyed when the existing commercial buildings were constructed.

The topographic relief is flat across the whole complex. Gudith Drain was a small creek which once flowed east to west near the center of the parcel. Prehistoric Site 20WN234 is located near the headwaters of this drain and implies some use of the complex during prehistoric times. The creek, however, no longer exists. All land within the complex was completely disturbed by the construction of five commercial buildings and their associated driveways and parking areas (see Figure 2). This construction was done sometime between 1993 and 2005. As a result, there is no archaeological potential for the Brownstown Complex.

The proposed undertaking at the Brownstown complex will occur within the confines of three existing buildings (Buildings 7, 8, and 10). While some of Site 20WN234 is located beneath Building 7 and part of Building 8, this site would have been heavily disturbed by construction of the structures. Because of this modern development there is no potential for archaeological resources which would meet the criteria for inclusion in the NRHP to remain within the APE. Therefore, Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

3. Romulus Complex

The Romulus complex is divided into four different areas and each area is discussed separately below.

a) 41133 and 41199 Van Born Road

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1961, 1967, 1972, 1985, 1993, 2000, and 2005 (EDR 2009e). Examination of historic topographic maps included maps from 1905, 1943, 1952, 1968, 1973, and 1980 (EDR 2009f). Two farmsteads were present along the very northern edge of the complex on Van Born Road from 1905 to 1985. The structures were removed by 1993. The current buildings and associated facilities were constructed between 2000 and 2005. The facilities consist of two large commercial buildings, two driveways, and a long retention pond at the south edge of the parcel (see Figure 3). There also are earth berms with trees planted on them along the periphery of the parcel.

A field visit was conducted of 41133 and 41199 Van Born Road to examine the current field conditions. The topographic relief is generally flat across the entire property, with a few isolated small rises. There are no permanent water sources within 500 feet of the property, so the prehistoric archaeological potential is low for this parcel. The historic archaeological potential along the northern edge would be high because of the two farmstead locations, but this area and all of the land within the property has been completely disturbed by the construction of the existing commercial complex.

As a result of modern development, there is no potential for the Van Born Road property to contain archaeological resources which would meet the criteria for inclusion in the NRHP. Therefore, Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

b) 6505 Cogswell Road

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1964, 1967, 1972, 1985, 1994, 2000, and 2005 (EDR 2009g). Examination of historic topographic maps included maps from 1905, 1943, 1952, 1968, 1973, and 1980 (EDR 2009h). One farmstead was present in the southwest corner of the property from 1905 to 2000. The structures were removed by 2005 and the area was cleared for construction of an existing commercial complex. The current building and associated facilities were constructed between 2000 and 2005. The facilities consist of one large commercial building with a driveway which circles it. Earth berms with trees planted on them are present along the periphery of the parcel on the north, south, and west sides (see Figure 4).

A field visit was conducted of property as it appeared from the 2005 aerial photograph its southern portion may retain subsurface archaeological integrity and evidence of the farmstead. Prior to the field visit, additional archival research at the Library of Michigan in Lansing located a historic atlas map which revealed the farmstead existed as early as 1876 (Belden & Company 1876).

The field visit showed that the height of the earth berm on the south side of the existing building is approximately 15 feet near Cogswell Road (Plate 1). Another view of this berm along the south side from the adjacent property to the south (i.e. the expansion area) indicates the entire farmstead location has been heavily disturbed and the earth for this berm likely came from what is now a low spot on the expansion area (Plate 2).

The topographic relief is flat across most of the property. A couple of low rises originally existed in isolated spots, with the largest rise containing the farmstead location. There are no permanent water sources within 500 feet of the property, so the prehistoric archaeological potential is low for this parcel. The historic archaeological potential in the southwestern corner would be high because of the farmstead location, but this area and all of the land within the property has been heavily disturbed by the construction of the existing commercial complex. As a result, there is no archaeological potential for the 6505 Cogswell Road property.

Because of modern development, there is no potential for the 6505 Cogswell Road property to contain archaeological resources which would meet the criteria for inclusion in the NRHP. Therefore, Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

c) 38100 Ecorse Road and Expansion Area

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1964, 1972, 1985, 1994, 2000, and 2005 (EDR 2009i). Examination of historic topographic maps included maps from 1905, 1943, 1952, 1968, 1973, and 1980 (EDR 2009j).

One to two farmsteads were present on the 38100 Ecorse Road property from 1905 to 1957. The existing business complex was constructed between 1972 and 1980. The facilities include one large commercial structure with associated parking areas on the north, east and west sides, and a landscaped area surrounding a retention pond to the north of the building. All land within the complex was completely disturbed by the construction of these various components.

One farmstead was present in the expansion area in the southwestern quarter of the property from 1905 to 1968. Two commercial buildings were in place by 1968 in the expansion area's southwestern corner. A third business located to the north of the previous two businesses was constructed by 1972 and was situated on top of the historic farmstead's former location (see Figure 4). The 2000 aerial photograph showed the southern 75 percent of the expansion area surrounding the three businesses had been graded from Cogswell Road east up to 38100 Ecorse Road.

PLATE 1: 6505 Cogswell Road, South Side of Building, Looking East from Sidewalk along Cogswell Road toward 1876 Farmstead Location

PLATE 2: Expansion Area, From top of 15-foot Tall Berm along Cogswell Road, Looking East toward Retention Pond

A field visit was conducted of 38100 Ecorse Road and the expansion area to examine the current field conditions; especially the condition of the farmstead's former location. Prior to the field visit, additional archival research at the Library of Michigan in Lansing located a historic atlas map which revealed the farmstead existed as early as 1876 (Belden & Company 1876).

The field visit revealed all three businesses in the expansion area have been removed. Also, the location of the farmstead which dated from 1876 has been heavily disturbed and leveled from the demolition of the northern most commercial structure (Plate 3).Another view of the expansion area from the area's northwest corner illustrates further that this whole area has been leveled (Plate 4). As mentioned above, the northern end of the expansion area has been disturbed by the removal of earth to create berms on the 6505 Cogswell Road parcel. Also, a small retention pond is located in the northeast corner of the expansion area.

The topographic relief is flat across both the 38100 Ecorse Road property and the expansion area. A couple of low rises originally existed in isolated spots, but these have been removed by construction grading activity. There are no permanent water sources within 400 feet of the property, so the prehistoric archaeological potential is low for this parcel. The historic archaeological potential in the southwestern portion of the expansion area would be high because of the farmstead location. This area, however, and all of the land within the 38100 Ecorse Road property and the rest of the expansion area have been extensively disturbed by the construction of existing and former commercial complexes. As a result, there is no archaeological potential for the 38100 Ecorse Road property or the expansion area.

Because of modern development, there is no potential for the 38100 Ecorse Road property or the expansion area to contain archaeological resources which would meet the criteria for inclusion in the NRHP. Therefore, Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

d) 7525 Cogswell Road

Examination of historic aerial photographs included images from 1937, 1940, 1949, 1957, 1964, 1972, 1985, 1994, 2000, and 2005 (EDR 2009k). Examination of historic topographic maps included maps from: 1) 1906 - Romulus quadrangle; 2) 1952, 1967, 1973, and 1980 – Belleville quadrangle; and 3) 1905, 1943, 1952, 1968, 1973, and 1980 – Wayne quadrangle (EDR 2009l). No buildings or structures were observed within the property during any of these years until 2005, by which time the current building complex was constructed. Thus there is a low potential for historic archaeological resources on the property.

A field visit was conducted of 7525 Cogswell Road to examine the current field conditions. The existing facilities consist of one large commercial building with a driveway which circles it. Parking areas are on the north and south sides of the structure. A retention pond has been dug and impacted 75 percent of the grassy area north of the building; the rest of this grassy area appears to have been leveled and thus disturbed when the pond was created (see Figure 5).

The topographic relief is virtually flat across all of the property. McClaughrey Drain is a small creek immediately north of the parcel. The proximity of this creek indicates there is a moderate potential for prehistoric archaeological sites on the property. All of the land, however, within the parcel has been heavily disturbed by the construction of the existing business complex. As a result, there is no archaeological potential for the 7525 Cogswell Road property.

Because of modern development, there is no potential for the 7525 Cogswell Road property to contain archaeological resources which would meet the criteria for inclusion in the NRHP. Berger recommends no further archaeological investigations. No historic properties will be affected by the proposed undertaking.

PLATE 3: Expansion Area, From Cogswell Road, Looking East toward 1876 Farmstead Location and 38100 Ecorse Road

PLATE 4: Expansion Area, From top of 5-foot Tall Berm along Cogswell Road, Looking Southeast toward 38100 Ecorse Road

III. UNANTICIPATED DISCOVERIES PLAN

If a previously unidentified historic property, generally an archaeological site, is discovered during construction, the following plan will be implemented by A123:

- Halt all work in the vicinity of the discovered property. The property will be assumed to be eligible for listing in the NRHP under Section 106 of the NHPA and protected until a determination of eligibility can be made.
- Notify the SHPO.
- Take all reasonable steps to ensure that the discovery is protected and not further undisturbed until it can be evaluated by a qualified archaeologist.
- If the discovery is determined eligible for the NRHP, A123 will consult with the SHPO to determine the effect of project activities on the property and the appropriate mitigation strategy.

If at any time during construction human remains are encountered within the APE, A123 will immediately stop work and will notify the appropriate law enforcement agencies and the State Archaeologist in accordance with applicable laws. A123 will comply with the Michigan State Attorney General's Opinion 6585. In addition, A123 will take into account the Advisory Council on Historic Preservation's *Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects* (2007) in the ultimate treatment and disposition of human remains. A123 will also notify the DOE and if applicable any consulting Native American tribe.

IV. SUMMARY AND RECOMMENDATIONS

On behalf of A123 Systems, the Louis Berger Group, Inc. has completed a Phase IA archaeological survey for the proposed development of three manufacturing complexes (39000 West Seven Mile Road, Livonia; 19881 Brownstown Center Drive, Brownstown; and five Romulus parcels located at 41133 and 41199 Van Born Road, 6505 and 7525 Cogswell Road, and 38100 Ecorse Road) in Wayne County, Michigan. The investigations included a records search for previously identified archaeological sites, examination of historic maps and aerial photographs to assess the location's archaeological potential, and a recommendation whether an intensive archaeological field survey was required for each complex. Also as part of the investigations, a field visit was conducted to the five Romulus parcels to document the existing environmental setting. In addition, for all the complexes an unanticipated discoveries plan was developed outlining procedures to follow if human remains or other potential cultural resources are discovered during construction.

Due to extensive disturbance from modern development to the APE within each of the complexes, intensive archaeological field survey is not recommended for any complex. There is no potential for archaeological resources which would meet the criteria for inclusion in the National Register of Historic Places to remain within the APE. In addition, no historic properties or traditional cultural properties have previously been identified within the APE at any of the three complexes. Therefore, no historic properties will be affected by the proposed undertaking at any of the three complexes.

IV. REFERENCES CITED

Advisory Council on Historic Preservation
2007 *Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects*. Accessed online July 17, 2009, at http://www.achp.gov/docs/hrpolicy0207.pdf.

Belden, H. & Company
1876 *Illustrated Historical Atlas of the County of Wayne,, Michigan.* Microfilm on file, Library of Michigan, Michigan Historical Center, Lansing.

Environmental Data Resources, Inc. [EDR]
2009a *The EDR Aerial Photo Decade Package: 39000 West Seven Mile Road, Livonia, Michigan 48152*. Inquiry Number 2534785.5. Environmental Data Resources Inc., Milford, Connecticut.

2009b *The EDR Historical Topographic Map Report: 39000 West Seven Mile Road, Livonia, Michigan 48152*. Inquiry Number 2534785.4. Environmental Data Resources Inc., Milford, Connecticut.

2009c *The EDR Aerial Photo Decade Package: 19881, 19771, & 20001 Brownstown Center Drive, Brownstown, Michigan 48183*. Inquiry Number 2534785.35. Environmental Data Resources Inc., Milford, Connecticut.

2009d *The EDR Historical Topographic Map Report: 19881, 19771, & 20001 Brownstown Center Drive, Brownstown, Michigan 48183*. Inquiry Number 2534785.34. Environmental Data Resources Inc., Milford, Connecticut.

2009e *The EDR Aerial Photo Decade Package: 41133 & 41199 Van Born Road, Belleville, Michigan 48111*. Inquiry Number 2534785.11. Environmental Data Resources Inc., Milford, Connecticut.

2009f *The EDR Historical Topographic Map Report: 41133 & 41199 Van Born Road, Belleville, Michigan 48111*. Inquiry Number 2534785.10. Environmental Data Resources Inc., Milford, Connecticut.

2009g *The EDR Aerial Photo Decade Package: 6505 Cogswell Road, Romulus, Michigan 48174*. Inquiry Number 2534785.17. Environmental Data Resources Inc., Milford, Connecticut.

2009h *The EDR Historical Topographic Map Report: 6505 Cogswell Road, Romulus, Michigan 48174*. Inquiry Number 2534785.16. Environmental Data Resources Inc., Milford, Connecticut.

2009i *The EDR Aerial Photo Decade Package: 38100 Ecorse Road, Romulus, Michigan 48174*. Inquiry Number 2534785.23. Environmental Data Resources Inc., Milford, Connecticut.

2009j *The EDR Historical Topographic Map Report: 38100 Ecorse Road, Romulus, Michigan 48174*. Inquiry Number 2534785.22. Environmental Data Resources Inc., Milford, Connecticut.

2009k *The EDR Aerial Photo Decade Package: 7525 Cogswell Road, Romulus, Michigan 48174*. Inquiry Number 2534785.29. Environmental Data Resources Inc., Milford, Connecticut.

2009l *The EDR Historical Topographic Map Report: 7525 Cogswell Road, Romulus, Michigan 48174*. Inquiry Number 2534785.28. Environmental Data Resources Inc., Milford, Connecticut.

Google Earth Image Server
2009 Google Earth Image Server. Aerial maps downloaded from Google Earth software. Google Earth 5.0.

Mead, Barbara
2009 Assistant State Archaeologist, Office of State Archaeologist. Personal communication with Berger Senior Archaeologist Charles J. Rinehart, July 14.

United States Department of the Interior
1983 Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. *Federal Register*, Part IV, 48(2):44716-44742. Annotated version showing later technical and officially adopted revisions available from the National Park Service's preservation laws, regulations, and standards webpage at http://www.cr.nps.gov/local-law/arch_stnds_0.htm.

United States Geological Survey [USGS]
1967 *Wyandotte, Michigan*. 7.5-Minute (Topographic) Series Quadrangle. Photorevised 1981. United States Geological Survey, Washington, D.C.

Appendix D

Traffic Analysis Methodology and Results

Appendix D

Traffic Analysis Methodology and Results

D.1 Methodology Used to Estimate Level of Service

Analysts used Highway Capacity Software (HCS Version 5.21) to calculate Level of Service (LOS) estimates for freeway, arterial, and local roadway traffic flows. The method followed acceptable procedures typically used by experienced traffic engineers to evaluate LOS for existing and future conditions.

First, analysts gleaned archive traffic-volume data from published documents obtained from the Southeast Michigan Council of Governments (SEMCOG) and the Michigan Department of Transportation (MDOT) pertaining to 24-hour traffic volumes at specific locations in the vicinity of the proposed A123 Systems, Inc. (A123) sites. Analysts applied hourly volume factors obtained from SEMCOG to the daily volumes to identify the most reasonable hourly traffic flow that would correspond to the period of interest (am or pm hour of the A123 employee shift changes).

Analysts visited sites to visually confirm existing traffic flows and to verify the physical characteristics of the roadways (lane widths, shoulder widths, longitudinal grades, and interchange spacings).

Analysts calculated new trips to each facility based on site employment information presented in the Environmental Assessment. Analysts selected shift–change times as the periods of interest in determining Proposed Action traffic impacts on adjacent roadway systems.

Analysts distributed the expected new trips to the adjacent roadway networks according to the directional distributions revealed in the archive traffic-volume data. It is logical to assume that for these future trips, existing travel patterns through the three affected areas would continue.

Analysts followed Highway Capacity Software procedures to create input files that included the hourly traffic volume, roadway physical characteristics, traffic composition, prevailing traffic flow speeds, and peak hourly factors. The software produced estimates of the LOS associated with these inputs. This provided a baseline LOS for each roadway against which future changes in traffic could be compared to identify future impacts.

For future traffic LOS associated with the Proposed Action, analysts gleaned estimates of traffic volumes in 2035 from SEMCOG traffic projections in the 2035 Transportation Plan. These volume predictions were for the same roadway segments used to determine the existing LOS values. The 2035 daily volumes were adjusted by the same hourly factors described above, and a future estimate of hourly traffic volumes calculated. These included the long-term growth trends identified in the SEMCOG 2035 Transportation Plan. Analysts added expected new vehicle trips associated with employees and deliveries to and from the A123 sites to these SEMCOG future traffic volumes, and modified the Highway Capacity Software inputs where appropriate to reflect future traffic volumes. The result was estimates of future LOS for each of the individual traffic scenarios. By comparing the future LOS to the existing LOS values,

analysts identified the predicted impact of both long-term traffic growth and new traffic associated with the A123 facilities.

D.2 Results

Tables D-1 through D-12 list the results of the Highway Capacity Software analysis. Tables D-1 through D-6 list current traffic service levels; Tables D-7 through D-12 list service levels for future (2035) traffic conditions, including traffic impacts of the Proposed Action.

Table D-1
AM Peak Hour[a] Freeway Service Levels

Freeway	Direction	Number of Lanes	Flow Rate[b]	Density[c] (2007)	Free-Flowing Speed (miles per hour)	Level of Service[d]
I-96/275 (Livonia)	North	4	955	13.9	68.5	B
I-96/275 (Livonia)	South	4	1,121	16.4	68.5	B
I-275 (Romulus)	North	3	606	9.0	67.0	A
I-275 (Romulus)	South	3	772	11.5	67.0	A
I-75 (Brownstown)	North	3	1553	22.3	69.6	C
I-75 (Brownstown)	South	3	912	13.0	70.0	B

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-2
PM Peak Hour[a] Freeway Service Levels

Freeway	Direction	Number of Lanes	Flow Rate[b]	Density[c] (2007)	Free-Flowing Speed (miles per hour)	Level of Service[d]
I-96/275 (Livonia)	North	4	2,369	44.2	53.6	E
I-96/275 (Livonia)	South	4	2,377	44.6	53.3	E
I-275 (Romulus)	North	3	1,321	19.7	67.0	C
I-275 (Romulus)	South	3	1,270	19.0	67.0	C
I-75 (Brownstown)	North	3	785	11.2	70.0	B
I-75 (Brownstown)	South	3	1,228	17.5	70.0	B

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-3
AM Peak Hour[a] Major Arterial Street Service Levels

Major Arterial	Direction	Number of Lanes	Flow Rate[b]	Density[c] (year)	Free-Flowing Speed (miles per hour)	Level of Service[d]
West Seven Mile (Livonia)	East	2	522	11.6 (2003)	45.0	B
West Seven Mile (Livonia)	West	2	570	12.7 (2003)	45.0	B
West Seven Mile (Livonia)	North	2	344	7.6 (2007)	45.0	A
West Seven Mile (Livonia)	South	2	438	9.7 (2007)	45.0	A
Ecorse/east of I-275 (Romulus)	East	2	475	9.8 (2001)	48.5	A
Ecorse/east of I-275 (Romulus)	West	2	282	5.8 (2001)	48.5	A
Ecorse west of I-275 (Romulus)	East	2	1,259	26.0 (2003)	48.4	D
Ecorse west of I-275 (Romulus)	West	2	708	14.6 (2003)	48.4	B
Dix-Toledo (Brownstown)	North	2	376	8.3 (2007)	45.4	A
Dix-Toledo (Brownstown)	South	2	224	4.9 (2007)	45.4	A
Sibley Road (Brownstown)	East	2	460	10.1 (2005)	45.4	A
Sibley Road (Brownstown)	West	2	635	14.0 (2005)	45.4	B

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-4
PM Peak Hour[a] Major Arterial Street Service Levels

Major Arterial	Direction	Number of Lanes	Flow Rate[b]	Density[c] (year)	Free-Flowing Speed (miles per hour)	Level of Service[d]
West 7 Mile (Livonia)	East	2	522	11.6 (2003)	45.0	B
West 7 Mile (Livonia)	West	2	570	12.7 (2003)	45.0	B
N Haggerty (Livonia)	North	2	344	7.6 (2007)	45.0	A
N Haggerty (Livonia)	South	2	438	9.7 (2007)	45.0	A
Ecorse east of I-275 (Romulus)	East	2	475	9.8 (2001)	48.5	A
Ecorse east of I-275 (Romulus)	West	2	282	5.8 (2001)	48.5	A
Ecorse west of I-275 (Romulus)	East	2	1,259	26.0 (2003)	48.4	D
Ecorse west of I-275 (Romulus)	West	2	708	14.6 (2003)	48.4	B
Dix-Toledo (Brownstown)	North	2	376	8.3 (2007)	45.4	A
Dix-Toledo (Brownstown)	South	2	224	4.9 (2007)	45.4	A
Sibley Road (Brownstown)	East	2	460	10.1 (2005)	45.4	A
Sibley Road (Brownstown)	West	2	635	14.0 (2005)	45.4	B

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-5
AM Peak Hour[a] Minor Arterial Street Service Levels in the Romulus Site Area

Minor Arterial	Direction	Number of Lanes	Volume[b] (year)	Volume-to-Capacity Ratio	Level of Service[c]
Ecorse Road (Romulus)	East/West	2	1,239 (2001)	0.46	D
South Haggerty (Romulus)	North/South	2	765 (2007)	0.28	B
Cogswell North (Romulus)	North/South	2	50 (2009 estimate)	0.02	A
Cogswell South (Romulus)	North/South	2	50 (2009 estimate)	0.02	A

[a] Corresponding to the peak hour of the project.
[b] Two-way volume in passenger cars per hour.
[c] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-6
PM Peak Hour[a] Minor Arterial Street Service Levels in the Romulus Site Area

Minor Arterial	Direction	Number of Lanes	Volume[b] (year)	Volume-to-Capacity Ratio	Level of Service[c]
Ecorse Road (Romulus)	East/West	2	428 (2001)	0.16	A
South Haggerty (Romulus)	North/South	2	353 (2007)	0.13	A
Cogswell North (Romulus)	North/South	2	95 (2009 estimate)	0.04	A
Cogswell South (Romulus)	North/South	2	95 (2009 estimate)	0.04	A

[a] Corresponding to the peak hour of the project.
[b] Two-way volume in passenger cars per hour.
[c] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-7
Future (2035) AM Peak Hour[a] Freeway Service Levels

Freeway	Direction	Number of Lanes	Flow Rate[b]	Density[c]	Free-Flowing Speed (miles per hour)	Level of Service[d]
I-96/275 (Livonia)	North	4	953	13.9	68.5	B
I-96/275 (Livonia)	South	4	1,160	16.9	68.5	B
I-275 (Romulus)	North	3	695	10.4	67.0	A
I-275 (Romulus)	South	3	780	11.6	67.0	A
I-75 (Brownstown)	North	3	2,215	37.1	59.7	E
I-75 (Brownstown)	South	3	1,262	18.0	70.0	C

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-8
Future (2035) PM Peak Hour[a] Freeway Service Levels

Freeway	Direction	Number of Lanes	Flow Rate[b]	Density[c]	Free-Flowing Speed (miles per hour)	Level of Service[d]
I-96/275 (Livonia)	North	4	2,321	41.9	55.4	E
I-96/275 (Livonia)	South	4	2,258	39.3	57.5	E
I-275 (Romulus)	North	3	1,336	19.9	67.0	C
I-275 (Romulus)	South	3	1,366	20.4	67.0	C
I-75 (Brownstown)	North	3	1,152	16.5	70.0	B
I-75 (Brownstown)	South	3	1,699	24.7	68.8	C

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-9
Future (2035) AM Peak Hour[a] Major Arterial Street Service Levels

Major Arterial	Direction	Number of Lanes	Flow Rate[b]	Density[c]	Free-Flowing Speed (miles per hour)	Level of Service[d]
West Seven Mile (Livonia)	East	2	554	12.3	45.0	B
West Seven Mile (Livonia)	West	2	596	13.2	45.0	B
West Seven Mile (Livonia)	North	2	359	8.0	45.0	A
West Seven Mile (Livonia)	South	2	495	11.0	45.0	A
Ecorse east of I-275 (Romulus)	East	2	729	15.0	48.5	B
Ecorse east of I-275 (Romulus)	West	2	285	5.9	48.5	A
Ecorse west of I-275 (Romulus)	East	2	1,441	29.8	48.3	D
Ecorse west of I-275 (Romulus)	West	2	716	14.8	48.4	B
Dix-Toledo (Brownstown)	North	2	553	12.2	45.4	B
Dix-Toledo (Brownstown)	South	2	310	6.8	45.4	A
Sibley Road (Brownstown)	East	2	767	16.9	45.4	B
Sibley Road (Brownstown)	West	2	878	19.3	45.4	C

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-10
Future (2035) PM Peak Hour[a] Major Arterial Street Service Levels

Major Arterial	Direction	Number of Lanes	Flow Rate[b]	Density[c]	Free-Flowing Speed (miles per hour)	Level of Service[d]
West Seven Mile (Livonia)	East	2	653	14.5	45.0	B
West Seven Mile (Livonia)	West	2	722	16.0	45.0	B
West Seven Mile (Livonia)	North	2	1,013	22.5	45.0	C
West Seven Mile (Livonia)	South	2	999	22.2	45.0	C
Ecorse east of I-275 (Romulus)	East	2	382	8.1	47.0	A
Ecorse east of I-275 (Romulus)	West	2	130	2.8	47.0	A
Ecorse west of I-275 (Romulus)	East	2	778	17.1	45.4	B
Ecorse west of I-275 (Romulus)	West	2	257	5.7	45.4	A
Dix-Toledo (Brownstown)	North	2	299	6.6	45.4	A
Dix-Toledo (Brownstown)	South	2	411	9.1	45.4	A
Sibley Road (Brownstown)	East	2	685	15.1	45.4	B
Sibley Road (Brownstown)	West	2	568	12.5	45.4	B

[a] Corresponding to the peak hour of the project.
[b] Passenger cars per lane per hour
[c] Passenger cars per mile.
[d] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-11
Future (2035) AM Peak Hour* Minor Arterial Street Service Levels

Minor Arterial	Direction	Number of Lanes	Volume[b]	Volume-to-Capacity Ratio	Level of Service[c]
Ecorse Road (Romulus)	East/West	2	1,659	0.61	E
South Haggerty (Romulus)	North/South	2	916	0.34	C
Cogswell North (Romulus)	North/South	2	185	0.07	A
Cogswell South (Romulus)	North/South	2	205	0.08	A

[a] Corresponding to the peak hour of the project.
[b] Two-way volume in passenger cars per hour.
[c] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.

Table D-12
Future (2035) PM Peak Hour* Minor Arterial Street Service Levels

Minor Arterial	Direction	Number of Lanes	Volume[b] (year)	Volume-to-Capacity Ratio	Level of Service[c]
Ecorse Road (Romulus)	East/West	2	840	0.31	C
South Haggerty (Romulus)	North/South	2	500	0.19	B
Cogswell North (Romulus)	North/South	2	230	0.09	A
Cogswell South (Romulus)	North/South	2	250	0.09	A

[a] Corresponding to the peak hour of the project.
[b] Two-way volume in passenger cars per hour.
[c] A = free flow; B = reasonably free flow; C = stable flow; D = approaching unstable flow; E = unstable flow; F = forced or breakdown flow.