DOE/EA-1862

DRAFT
ENVIRONMENTAL ASSESSMENT

FOR THE

ONEIDA SEVEN GENERATIONS CORPORATION: ENERGY RECOVERY PROJECT, GREEN BAY, WISCONSIN

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
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COVER SHEET

RESPONSIBLE AGENCY: U.S. Department of Energy

TITLE: *Draft Environmental Assessment for Oneida Seven Generations Corporation: Energy Recovery Project, Green Bay, Wisconsin* (DOE/EA-1862)

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ABSTRACT: The U.S. Department of Energy (DOE) has provided Federal funding to the Wisconsin Department of Commerce under the State Energy Program (SEP). Wisconsin selected an Oneida Seven Generations Corporation (Oneida) project to receive a $2 million loan under the SEP. The Bureau of Indian Affairs (BIA), an agency of the Department of the Interior (DOI), has already provided $584,000 in Federal funding to Oneida for this project. BIA is also considering providing a loan guarantee of up to $19 million. BIA made the initial award to Oneida to support preliminary planning and studies. These elements of the proposed project do not significantly impact the environment and the initial funding does not commit the government to this project in advance of the conclusion of the EA. Because Oneida would use Federal funding for this project, DOE must first determine if authorizing Wisconsin to use SEP funds for the project (Proposed Action) would result in environmental impacts. For this EA, the Proposed Action also includes BIA's decision to authorize the loan guarantee.

Oneida's Energy Recovery Project (proposed project) would construct and operate a solid waste-to-electricity power plant on vacant property within the Bayport Industrial Center in the City of Green Bay, Brown County, Wisconsin. This energy recovery process would involve bringing municipal solid waste into the plant for sizing (shredding), sorting (removing recyclable material), and conveying into one of three pyrolytic gasification systems. In these "closed systems," the waste would be heated under controlled conditions to decompose through pyrolysis and produce flammable synthesis gas (syngas) consisting primarily of hydrogen, carbon monoxide, and hydrocarbons such as methane, ethane, and propane. This syngas would be collected and used as fuel to maintain operation of the pyrolytic systems and to fire three reciprocating internal combustion engine generators. Each generator would have a rated capacity of 1.54 megawatts of electricity, for a combined capacity of almost 5 megawatts. Oneida would sell the energy to a local electrical utility. The engine-generator sets would include air pollution control equipment to reduce emissions of carbon monoxide and volatile organic compounds.

This Draft EA analyzes the potential environmental impacts of the proposed construction, operation, and eventual decommissioning of the proposed project and the alternative of not implementing this project (the No-Action Alternative), under the assumption that the project would not go forward without the SEP or BIA funding.

PUBLIC INVOLVEMENT: The public is provided with an opportunity to comment on this Draft EA by sending comments via email or mail marked to the attention of the NEPA Document Manager listed above. Envelopes and the subject lines of emails should be labeled "Oneida Energy Recovery Project Draft EA Comments." Letters should be postmarked no later than September 3, 2011. Use of email to submit comments will avoid processing delays associated with delivery of mail to Federal agencies. Please email comments to the DOE NEPA Document Manager at: Melissa.Rossiter@go.doe.gov, or fax them to 720-356-1560. DOE will consider all submitted comments in preparing the Final EA. After completion of the Final EA, DOE will determine whether to issue a Finding of No Significant Impact or prepare an environmental impact statement.

AVAILABILITY: The Draft EA is available on the DOE Golden Field Office Reading Room Website at http://www.eere.energy.gov/golden/Reading_Room.aspx.

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
BACT	best available control technology
BIA	Bureau of Indian Affairs
BMP	best management practice
Btu	British thermal unit
CAA	*Clean Air Act*
CFR	*Code of Federal Regulations*
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dBA	decibel on an A-weighted scale, used to approximate the human ear's response to sound
DEMD	Division of Energy and Mineral Development
DNR	(Wisconsin) Department of Natural Resources
DOE	U.S. Department of Energy (also called the Department)
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMDP	Energy and Mineral Development Program
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
GBMSD	Green Bay Metropolitan Sewerage District
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutant
HDPE	high-density polyethylene
ICI	industrial, commercial, or institutional (waste)
MSW	municipal solid waste
NAAQS	National Ambient Air Quality Standards
NEPA	*National Environmental Policy Act*
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	*National Historic Preservation Act*
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NR	Natural Resources (section of the WAC)
NSPS	New Source Performance Standards
O^3	ozone
PCBs	poly-chlorinated biphenyls
PET	polyethylene terephthalate
PM_n	particulate matter with an aerodynamic diameter less than or equal to a nominal *n* micrometers
PSD	Prevention of Significant Deterioration
psig	pounds per square inch of gauge pressure

SEP	State Energy Program
SO_2	sulfur dioxide
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WAC	Wisconsin Administrative Code
WPDES	Wisconsin Pollutant Discharge Elimination System

1. INTRODUCTION

1.1 National Environmental Policy Act

The *National Environmental Policy Act* [42 United States Code (U.S.C.) 4321 *et seq.*; NEPA) and the Council on Environmental Quality NEPA regulations [40 *Code of Federal Regulations* (CFR) Parts 1500 to 1508] require that Federal agencies prepare a detailed Environmental Impact Statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment" [42 U.S.C. 4332(2)(C) (1994)]. Federal regulations permit the U.S. Department of Energy (DOE) and the U.S. Department of Interior (DOI) to conduct a less exhaustive Environmental Assessment (EA) to determine whether the proposed action will "significantly affect" the environment and thus, to determine whether an EIS is required [40 CFR 1501.4(b), 1508.9 (2001)]. NEPA usually applies when, as here, a Federal agency provides Federal financial assistance for an activity or project to be carried out by a State or other non-Federal entity. Requirements to fully understand and take into consideration environmental consequences of proposed Federal actions are further delineated in the DOE and DOI NEPA implementing regulations found at 10 CFR Part 1021 and 43 CFR Part 46, respectively. In this document, DOI actions are being taken by one of its agencies, the Bureau of Indian Affairs (BIA).

In compliance with these regulations, this EA:

- Examines the potential environmental impacts of the Proposed Action and the No-Action Alternative;
- Identifies unavoidable adverse environmental impacts of the Proposed Action;
- Evaluates the potential individual and cumulative, direct and indirect impacts of the proposed project;
- Describes the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; and
- Characterizes any irreversible and irretrievable commitments of resources that would be involved should DOE decide to implement its Proposed Action.

This EA must meet these requirements before DOE and BIA can make a final decision to proceed with any proposed Federal action that could cause adverse impacts to human health or the environment. This EA provides DOE, BIA, and other decisionmakers the information needed to make an informed decision about the installation, operation, and eventual decommissioning of the proposed project.

For purposes of comparison, this EA also evaluates the impacts that could occur if DOE and BIA did not provide funding (the No-Action Alternative), under which it is assumed the proposed project would not proceed. No other action alternatives are analyzed.

This EA constitutes DOE's and BIA's compliance with other Federal statutory requirements should both agencies authorize additional expenditure of Federal funds. This EA is intended to fulfill DOE's and BIA's obligations under Section 106 of the *National Historic Preservation Act* (16 U.S.C. 470 *et seq*.; NHPA), the *Native American Graves Protection and Repatriation Act of 1990* (25 U.S.C. 470 *et seq*.), and to document fulfillment of requirements under Section 7(a)(2) of the *Endangered Species Act* (16 U.S.C. 1536 *et seq.*) These statutory requirements are addressed in subsequent sections of this review.

1.2 Background

The Oneida Seven Generations Corporation (Oneida) proposes to construct and operate a new solid waste-to-electricity power plant in the Bayport Industrial Center in Green Bay, Brown County, Wisconsin (Figure 1-1). The current estimated project cost is $23 million. The State of Wisconsin selected this project for a $2 million loan from the Wisconsin Economic Development Corporation based on the project's goal of improving the State's energy efficiency and use of renewable energy. The BIA has provided $584,000 in Federal funding for the proposed project and is also considering providing a loan guarantee of up to $19 million for the proposed project. BIA made the initial award to Oneida to support preliminary planning and studies. These elements of the proposed project do not significantly impact the environment and the initial funding does not commit the government to this project in advance of the conclusion of the EA. Also related to the proposed project the Wisconsin Department of Commerce awarded a $2 million grant in State funds to Oneida for development of this proposed project.

A Wisconsin Economic Development Corporation loan to this project would come from money that the State of Wisconsin received from DOE pursuant to DOE's State Energy Program (SEP). The purpose of the SEP is to promote the conservation of energy and reduce dependence on foreign oil by helping States develop comprehensive energy programs and by providing them with technical and financial assistance. SEP is authorized under the *Energy Policy and Conservation Act*, as amended (42 U.S.C. 6321 *et seq*.). States can use SEP funds for a wide variety of activities related to energy efficiency and renewable energy (42 U.S.C. 6321 *et seq*. and 10 CFR Part 420). In the *American Recovery and Reinvestment Act of 2009* (Pub. L.111-5, 123 Stat. 115; Recovery Act), Congress appropriated $3.1 billion to DOE's SEP, and the State of Wisconsin received $55.5 million pursuant to a Federal statutory formula for distributing these funds.

The State of Wisconsin informed DOE that it proposes to use $2 million of its SEP funds for a loan to the Oneida Energy Recovery Project. The potential use of Federal SEP funds to assist in the financing of this project constitutes a Federal action subject to review under NEPA.

The Division of Energy and Mineral Development (DEMD), under the Office of Indian Energy and Economic Development of BIA awarded two separate grants for the Oneida Energy Recovery Project. The first grant was for $250,000 and was awarded in March 2010. The second grant was for $334,000 and was awarded in September of 2010. The DEMD awards grants to tribal projects through its Energy and Mineral Development Program (EMDP). The EMDP provides funding to tribes with the goal of assessing, evaluating, and promoting

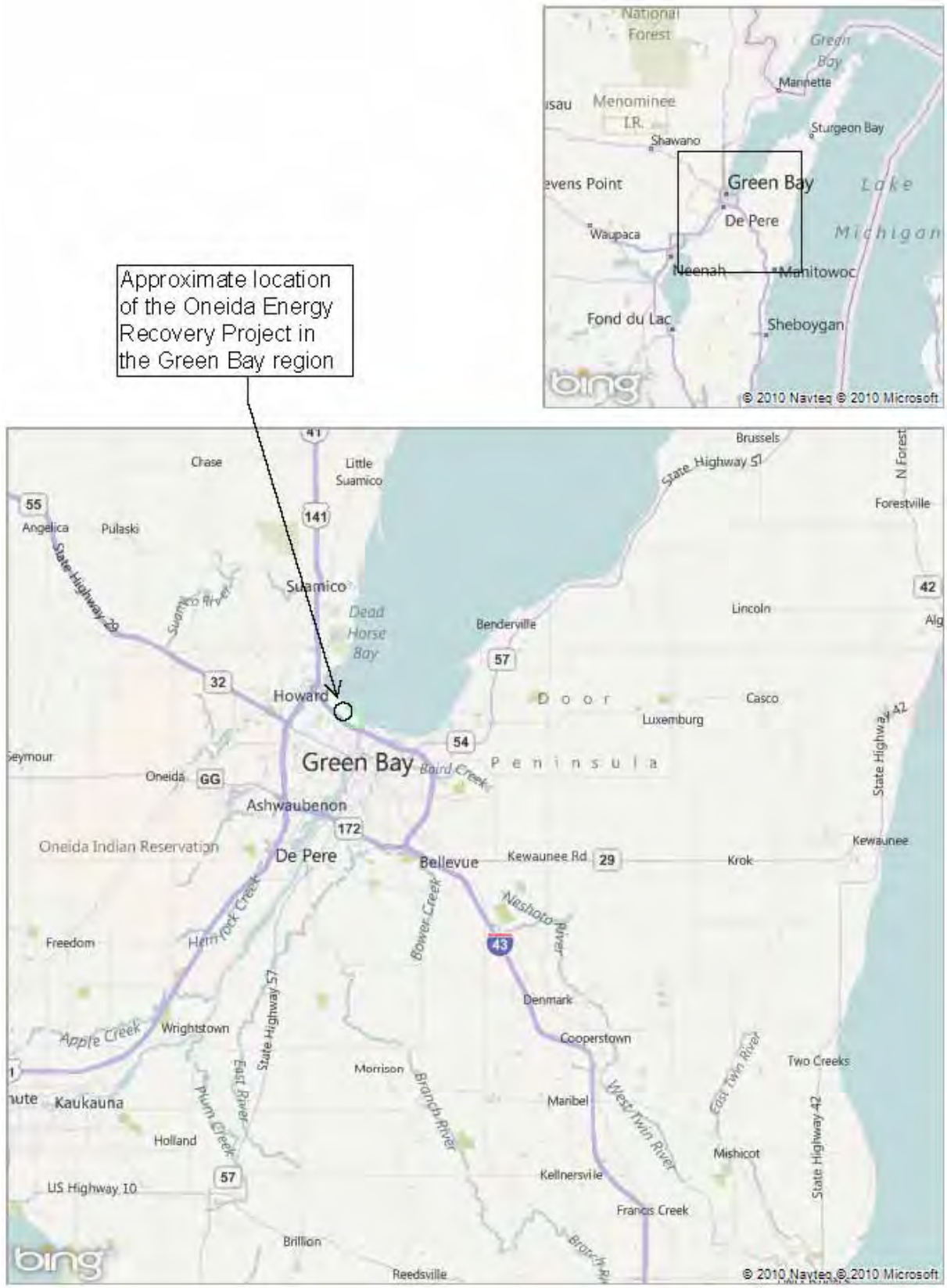


Figure 1-1. Region of the Proposed Oneida Energy Recovery Project

energy and mineral resources on Indian trust lands for the economic benefit of Indian mineral owners. The DEMD solicits proposals from tribes through an annual *Federal Register* notice. The DEMD uses a competitive evaluation process to select proposed projects to receive an award.

Section 103 of the *Indian Self-Determination Act* (Pub. Law 93-638, as amended by Public Law 100-472) contains the contracting mechanism for energy and mineral development funded programs. The Office of Indian Energy and Economic Development, through the DEMD, administers and manages the EMDP. The objectives of the solicitation are to receive proposals for energy and mineral development projects in the areas of exploration, assessment, development, feasibility and market studies. The EMDP is funded under the non-recurring appropriation of the BIA budget.

Energy includes conventional energy resources (such as oil, gas, coal, uranium, and coal-bed gas) and renewable energy resources (such as wind, solar, biomass, hydro, and geothermal). Mineral resources include industrial minerals (such as sand and gravel), precious minerals (such as gold, silver, and platinum), base minerals (such as lead, copper, and zinc), and ferrous metal minerals (such as iron, tungsten, and chromium).

Each year DEMD usually receives more energy and mineral applications than can be funded in that year. The DEMD has discretion for awarding funds and requires that the tribes compete for such funds on an annual basis. The DEMD has established ranking and paneling procedures with defined criteria for rating the merits of proposals to make the award of limited funds as fair and equitable as possible.

Proposals are formally evaluated by a DEMD Review and Ranking Panel. In 2010, there were five ranking criteria:

1. Resource Potential
2. Marketability of the Resource
3. Economic Benefits Produced by the Project
4. Tribes' Willingness to Develop
5. Tribal Commitment to the Project

DOE and BIA are developing a single EA to address the actions of both agencies; this decision will avoid duplication of resources and effort. DOE is the lead agency and BIA is a cooperating agency. In compliance with NEPA regulations, this Draft EA examines the potential environmental impacts of DOE's and BIA's Proposed Action (providing funding for the proposed project) and the No-Action Alternative. This EA also describes options that Oneida considered during development of its application to the State of Wisconsin, which is the recipient of Federal funding under DOE's SEP (Oneida is a sub-recipient). When complete, this EA will provide DOE with the information needed to make an informed decision about whether authorizing the State of Wisconsin to provide some of its Federal funds for the proposed project could result in significant environmental impacts. Based on the Final EA, DOE, as the lead agency, either will issue a Finding of No Significant Impact (FONSI), which may include mitigation measures, or determine that additional study is needed in the form of a more detailed EIS.

1.3 Purpose and Need

1.3.1 DOE'S AND BIA'S PURPOSE AND NEED

DOE's and BIA's purpose and need is to ensure that Federal funds are used for activities that meet congressional statutory goals for these funds, such as improving energy efficiency, reducing dependence on foreign oil, decreasing energy consumption, creating and retaining jobs, and promote renewable energy. Providing funding as part of Wisconsin's SEP loan to Oneida would partially satisfy the need of this program to assist U.S. cities, counties, states, territories, and American Indian tribes to develop, promote, implement, and manage energy efficiency and conservation projects and programs designed to:

- Reduce fossil fuel emissions;
- Reduce the total energy use of the eligible entities;
- Improve energy efficiency in the transportation, building, and other appropriate sectors; and
- Create and retain jobs.

Congress enacted the Recovery Act to create jobs and restore economic growth and strengthen America's middle class through measures that, among other things, modernize the nation's infrastructure and enhance America's energy independence. Provision of funds under SEP would partially meet these goals.

1.3.2 STATE OF WISCONSIN'S PURPOSE AND NEED

The Wisconsin Economic Development Corporation's purpose and need is to take action in pursuit of the State's Energy Policy and objectives set for DOE's SEP. Key goals of the State's Energy Policy are to increase energy efficiency and, to the extent cost-effective and technically feasible, base all new installed capacity for electric generation on renewable energy sources (Wisconsin Statutes, Chapter 1, Section 1.12). Within the DOE SEP, Wisconsin's identified objective is to deploy funds to support clean energy development, with a program goal of not only creating jobs in the short-term, but supporting businesses "that will create clean energy jobs for decades" (Commerce 2010). In establishing criteria for the selection of loan recipients under the SEP, the State recognized the critical role of the manufacturing industry in Wisconsin, along with the need to leverage private sector investment, and chose to target businesses that promote:

- Major renewable energy production projects;[1]
- The manufacture of clean energy products or components;
- Retooling to provide component parts and other critical needs for a successful, total integrated supply chain; and
- Improving an industry's competitiveness through energy efficiency and renewable energy deployment.

1.4 Public and Agency Involvement

This section addresses efforts made to inform the public of the Oneida Energy Recovery Project and to make contact with Federal, State, and local agencies that could have involvement with permitting requirements or other concerns associated with the proposed project.

1.4.1 SCOPING

NEPA regulations require public participation in the environmental review process. To maximize public consultation and input during preparation of this EA, DOE sent notices of public scoping postcards (Appendix B) to 75 stakeholders, including local, State, and Federal agencies, American Indian tribes, natural resources agencies, landowners, and other interested individuals and organizations on March 31, 2011. Appendix A provides a listing of those receiving the postcards, plus any additional individuals or groups that provided comments or identified an interest in the project after the notice was sent out. The scoping notice identified the project and pointed the addressee to the DOE Golden Field Office Public Reading Room Website: http://www.eere.energy.gov/golden/Reading_Room.aspx, to obtain information about the project and upcoming public meeting. The posted information (Appendix B) described the Oneida project, potential benefits, proposed activities, the NEPA process, and solicited comments as part of the development of the Draft EA. The information included notice of a public scoping meeting scheduled for April 12, 2011, in Green Bay. The same information was placed in the *Green Bay Press-Gazette* on April 1, 2011.

The original notices described a 15-day comment period (ending April 15, 2011). However, as a result of high interest in the project, DOE extended the scoping comment period by 30 days to May 15, 2011. This extension was announced at the April 12, 2011, public scoping meeting and via posting on the DOE Golden Field Office Reading Room Website.

1. The municipal solid waste (MSW) that would be processed in the Oneida project contains items that the U.S. Environmental Protection Agency (EPA) describes as renewable resources, such as food, paper, and wood products (EPA 2010a), and the State of Wisconsin's energy policy (Wisconsin Statutes, Chapter 1 Sovereignty and Jurisdiction of the State) specifically identifies refuse as a renewable energy resource when describing the State's goal for new electric generation capacity. [In this case, refuse is defined as "all matters produced from industrial or community life, subject to decomposition, not defined as sewage" (Wisconsin Statutes, Chapter 289 Solid Waste Facilities)]. However, MSW also contains nonrenewable materials derived from fossil fuels, such as plastics and synthetic rubbers. DOE believes it is appropriate to designate an element of the proposed project as involving the production of renewable energy and as long as recyclable materials are removed from the waste stream to the extent practicable, DOE also believes the management of nonrenewable materials by the proposed project represents a preferable alternative to landfilling or incineration without energy recovery.

During the 45-day public comment period, more than 40 individual members of the public, elected officials, or representatives of interest groups provided written comments or gave verbal comments at the public meeting on April 12, 2011. At the public meeting, 82 people identified themselves on the sign-in sheets and 25 of those chose to speak. In a few instances, the same individual provided a comment document, even multiple comment documents, in addition to providing oral comments at the public meeting. Many commenters expressed opposition to the project in addition to identifying issues of concern they felt should be addressed in the EA; other commenters expressed support for the project, citing extending landfill life and creating jobs, for example, as benefits of the proposed project. In some cases, those expressing opposition to the project also expressed their belief that the project required development of an environmental impact statement. Appendix C of this EA includes summary tables of the commenters and the scoping comments, binned into several topical categories. A few of the more recurring concerns are summarized below (in no particular order):

- Concern was expressed over the nature of the technology and the lack of examples that would show real operating experience to prove the project would be effective, safe, and in compliance with environmental standards. In this regard, many of the comments pointed to what they felt were incorrect, misleading, or contradictory bits of information on the proposed project that have been put out to the public.

- Similar to the concern over the maturity of the technology (above), there were concerns expressed over the designer's, builder's, and owner's lack of experience in the processes involved in the technology.

- Concern was expressed about the viability of the project and of waste-to-energy projects in general and comments cited examples of projects around the world that were identified as being problem ridden or having failed. Some comments questioned whether this or other such projects could even exist without Federal subsidies.

- Commenters indicated their preference for "zero waste" programs or for "greener" technologies for energy generation (for example, geothermal, solar, and wind) as opposed to the proposed project.

- Some commenters indicated they wanted to have more detail on the characteristics of the feed material that would go into the pyrolysis process, and several asked if tires would be included.

- Concern was expressed over air emissions from the proposed facility, whether there would be toxic materials such as dioxin and mercury, and, if so, what their effects would be on people and the environment. There was also specific concern over the fine particulates that could be emitted and their health effects.

- A few commenters asked if the project location would result in disproportionate adverse impacts to minority or low-income neighborhoods.

- There was concern over effects on traffic and transportation in the area, including whether there would be hazardous materials transported in and out of the proposed facility.

- Several commenters questioned whether it was reasonable to assume that the char and ash produced by the pyrolysis process could have an end use such as a concrete additive or fill material when ash from solid waste incinerators often qualifies as hazardous waste.

- There was some concern over effects to storm water runoff, as well as the characteristics of wastewater generated by the proposed project and how it would be managed.

DOE considered the scoping comments and concerns when evaluating the potential impacts of the proposed project and in developing this EA. Appendix D of this EA contains a short paper that provides general information on pyrolysis technology and its use in applications similar to the proposed project. This paper was prepared to address concerns expressed during the scoping process.

1.4.2 STATE HISTORIC PRESERVATION OFFICER

In a letter dated March 8, 2011 (Appendix B), DOE initiated consultation with the Wisconsin State Historic Preservation Officer under Section 106 of the NHPA. The letter and attachment described the proposed project, stated DOE's belief that there would be no adverse effects to historic or archaeological resources in the project area, and proposed that the area of potential effect for the project be limited to its footprint (that is, the 5.88-acre lot on Hurlbut Street where the facility would be constructed).

A Program Associate of the Wisconsin Historical Society responded to DOE in an email dated April 25, 2011 (Appendix B). The email requested that hard copies of the EA (draft and final) and other relevant information be provided to the office as it becomes available, but provided no information on whether the Historical Society concurred with the DOE position that there would be no adverse effects to historic or archaeological resources.

1.4.3 TRIBAL GOVERNMENTS

DOE searched several data sources to identify American Indian tribes that might have a historic link with the land that is now Brown County, Wisconsin. This included tribes identified on the State of Wisconsin's web site as having Federally designated Tribal Historic Preservation Officers (WHS 2011a). Tribes identified with a possible link to the general area and therefore with a possible interest in the proposed project are as follows:

- Bad River Band of Lake Superior Chippewa Indians
- The Ho-Chunk Nation
- Lac Courte Oreilles Band of Lake Superior Chippewa Indians
- Lac du Flambeau Band of Lake Superior Chippewa Indians
- Menominee Indian Tribe of Wisconsin
- Oneida Nation of Wisconsin
- Red Cliff Band of Lake Superior Chippewa Indians

- Citizen Potawatomi Nation, Oklahoma
- Forest County Potawatomi, Wisconsin
- Hannahville Indian Community, Michigan
- Prairie Band of Potawatomi Nation, Kansas

On March 31, 2011, DOE sent a copy of the scoping notice, as described in Section 1.4.1, to each of the above tribes. As of the date of this Draft EA's release, none of the tribes, with the exception of the Oneida Nation of Wisconsin (who has a vested interest in the proposed project), responded with any concerns or expressions of interest.

DOE provided specific notification to the above tribes of the availability of this Draft EA. This was done via DOE letter to each tribe that included an invitation to comment on the EA and, if interested, to consult with DOE and BIA on the proposed project under Section 106 of the NHPA. The outcome of these invitations will be addressed in the Final EA.

1.4.4 U.S. FISH AND WILDLIFE SERVICE

On April 8, 2011, DOE requested information from the Green Bay Ecological Services Field Office of the U.S. Fish and Wildlife Service (USFWS) (Appendix B) on the identification of listed or proposed species or designated or proposed critical habitat that might be present in the proposed project area. The DOE letter included a description of the proposed project and figures depicting the proposed project site. The USFWS responded in a letter dated May 12, 2011 (Appendix B) that "no federally-listed, proposed, or candidate species would be expected within the project area. No critical habitat is present. This precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended."

2. PROPOSED ACTION AND ALTERNATIVES

2.1 DOE and BIA's Proposed Action

DOE proposes to authorize the State of Wisconsin to use its SEP funds for a loan to assist in financing the design, permitting, and construction of the Oneida Energy Recovery Project (proposed project) to facilitate Wisconsin's achievement of the objectives of the SEP. DOE's funding, through the SEP, would be from the Recovery Act. BIA is also proposing to authorize the expenditure of Federal funding to assist in financing the proposed project. The BIA is considering both a grant and a loan guarantee for the project.

2.2 Proposed Project

The Wisconsin Department of Commerce selected the Oneida Energy Recovery Project for a $2 million loan based on the project's goals of generating electricity from a renewable energy source and creating new jobs. The BIA selected the proposed project for funding because it met its program goals, the potential for economic benefits, and Oneida's commitment to the project. The proposed Oneida project would include the design, construction, and operation of a solid waste-to-electricity power plant on vacant property in Green Bay, Brown County, Wisconsin. As shown in Figure 2-1, the proposed project location is in north-central Green Bay, near the bay. The building site is within the Bayport Industrial Center in an area zoned "General Industrial" per the City's zoning code (Green Bay 2008).

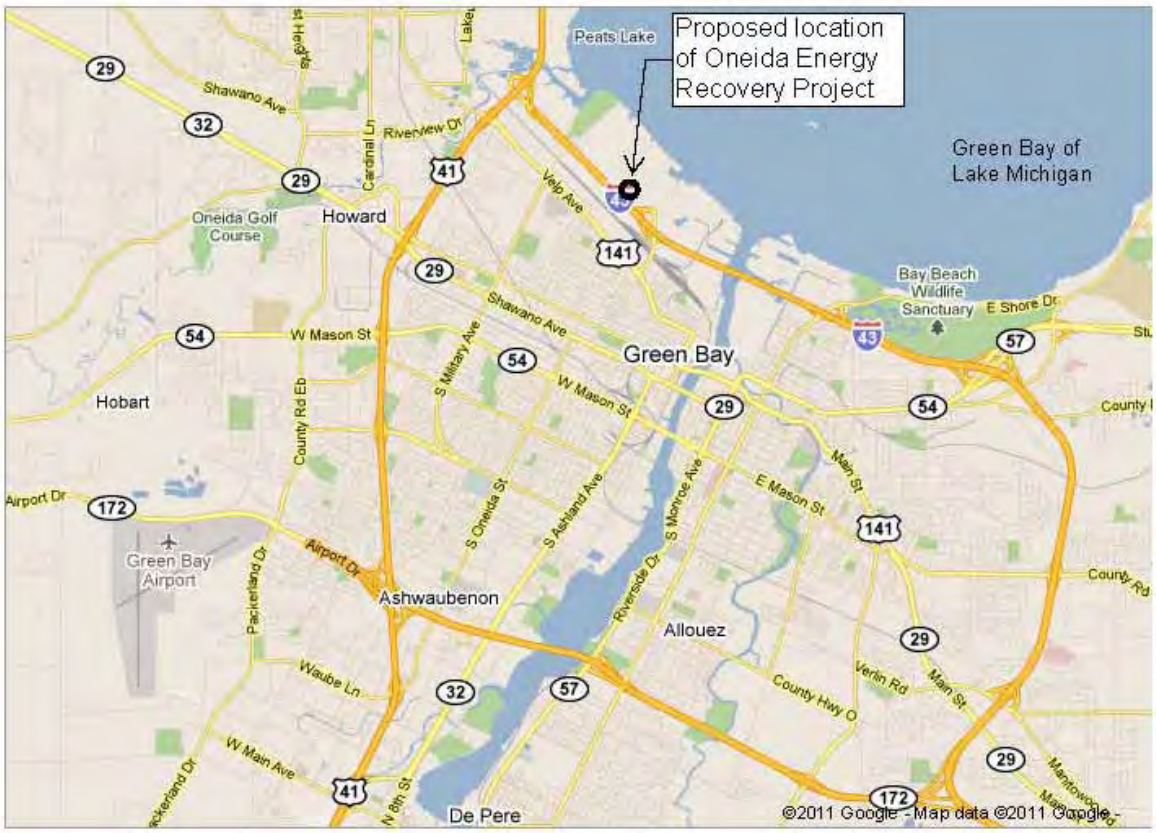


Figure 2-1. Location of the Proposed Project in Green Bay, Wisconsin

Surrounding uses include a concrete company adjacent to the project site to the north, Hurlbut Street and Interstate Highway 43 to the southwest, and a construction company to the southeast. Other nearby uses include oil storage facilities to the southeast and the Wisconsin Public Service Pulliam coal-fired power plant at the mouth of the Fox River. The property is serviced by the City of Green Bay Water Utility and the Green Bay Metropolitan Sewerage District (GBMSD). Figure 2-2 shows an aerial view of the project site with an outline of the parcel of property where the facility would be constructed.

Figure 2-2. Aerial View of Proposed Project Location

2.2.1 ENERGY RECOVERY PROCESS OVERVIEW

The energy recovery process would involve municipal solid waste (MSW) brought into the facility for sizing (shredding), sorting (removing recyclable material), and conveying into one of three pyrolytic gasification systems. In these closed systems, the waste would be heated under controlled conditions to decompose through pyrolysis and produce flammable synthesis gas (syngas) consisting primarily of hydrogen, carbon monoxide, and hydrocarbons such as methane, ethane, and propane. Oneida would collect this syngas and use it as fuel to maintain operation of the pyrolytic systems and to fire three reciprocating internal combustion engine generators. Each generator would have a rated capacity of 1.54 megawatts of electricity, for a combined capacity of approximately 4.6 megawatts. The energy created would be sold to a local electrical utility. Natural gas would be used to fuel the pyrolytic systems during start-up, and the facility's electrical connection would draw electricity from the grid as necessary.

Figure 2-3 is a simplified schematic of the primary process elements that would make up the Oneida Energy Recovery Project. The main process flow is shown in the figure with solid lines and arrows, the dashed lines represent the water that would be extracted from the waste, and the dotted lines represent the fresh water that would be used in the process to provide non-contact cooling of various process elements.

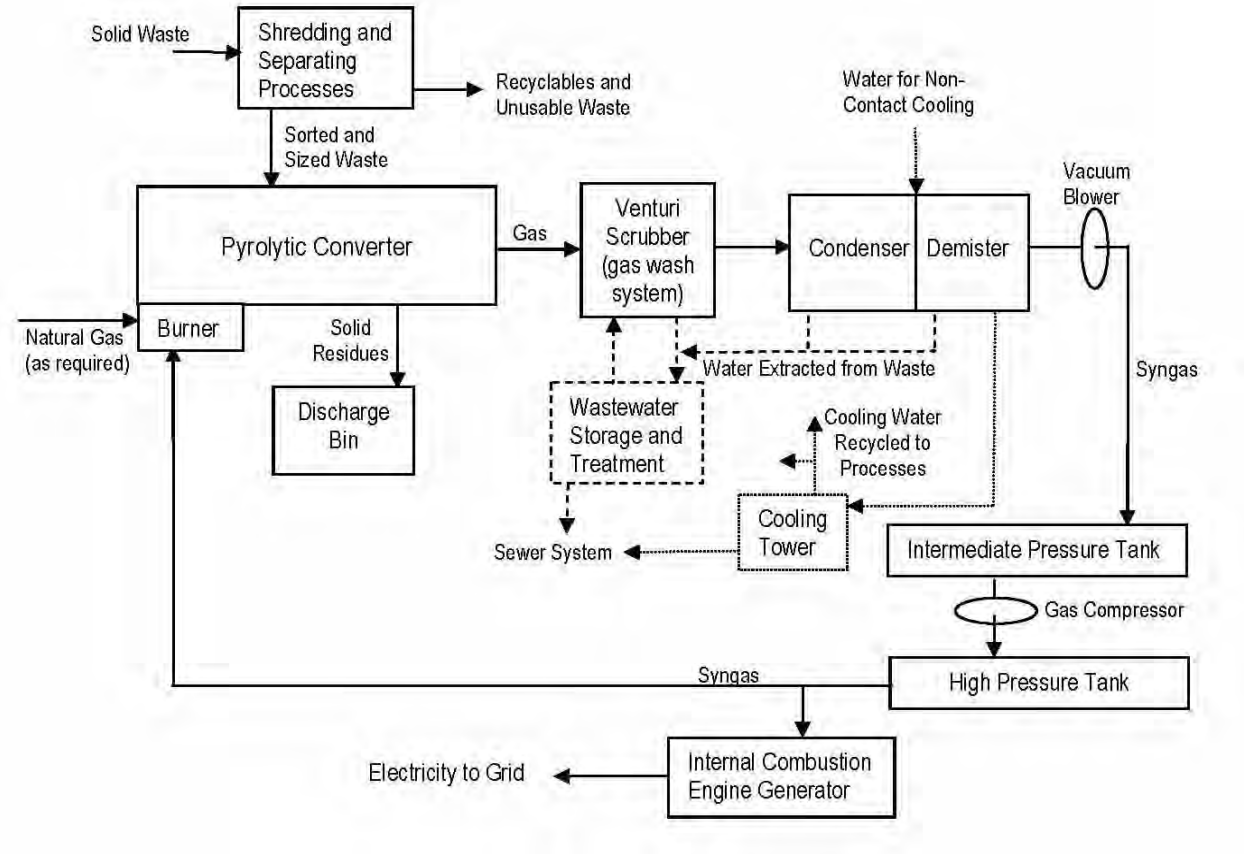


Figure 2-3. Simplified Schematic of Oneida Energy Recovery System Process Elements

The primary process elements shown in the figure are described as follows:

- Shredding and Separating Processes – MSW brought to the facility would run through multiple shredding and separation steps to get to an appropriate size (2 inches or less) and to remove items such as metal, glass, and dirt that are not appropriate for the pyrolysis process. An initial shredder would break down the waste material into pieces of 8-inches or smaller. A ballistic separator would then mechanically separate the waste into one of three types of material:

    1. Items with distinct width, length, and depth (three dimensions) such as cans, bottles, and similar materials. These items would be conveyed directly to further separation actions including hand picking and magnets to remove recyclable materials [including aluminum, steel, and polyethylene terephthalate (PET) and high-density polyethylene (HDPE) plastics] and waste inappropriate for the pyrolysis units (including materials with no energy value such as sheet rock, concrete blocks, and glass tiles).

2. Flat items such as paper, cardboard, and light films, which would be conveyed directly to the next shredder.

3. Small, fine material (fines) including broken glass, dust, and dirt, which would be conveyed directly to a waste bin for eventual removal from the facility.

A final shredder would then break down the material further so that no pieces would be greater than 2 inches in size. The shredded material would be conveyed to a storage silo before going to the pyrolysis process. The shredded waste would move through an enclosed tube conveyor from the silo to the pyrolysis units. Waste deliveries would occur five days a week; however, the waste would have to be of sufficient quantity to supply the shredding processes and pyrolysis units for a full seven days of operations. Therefore, the up-front waste receipt, or tipping area would require storage for up to a three-day supply of waste. The waste would be staged to allow for the waste that had been in the facility the longest to be used first (first in, first out).

- Pyrolytic Converter – From the shredding and separating processes (and the associated storage silo) the waste would move via screw auger through a pair of air lock valves and into the pyrolytic converter (or pyrolysis unit). The air locks are necessary to keep air out because the objective of pyrolysis is to decompose organic material at an elevated temperature with no, or minimal, oxygen. The outlet of the converter is similarly equipped with two air lock valves. The waste material, continually moved by the screw auger from the inlet to the outlet, would stay in the converter for 60 to 75 minutes, where it would be subjected to temperatures ranging from 850° to 1,400°F. Gases formed during decomposition of the organic material would be pulled out of the converter with a blower, while solid residues were dropped into a discharge bin as they moved out of the converter. The facility would have three of these pyrolysis units.

- Venturi Scrubber – Gases pulled from the pyrolytic converter would first go through a venturi scrubber or separator. This step washes out carbon particles that may have traveled with the gas from the converter and removes some of the condensable gases. It also begins bringing the temperature of the gas down. At steady-state conditions, water used in the scrubber would be that extracted from the waste as it heated in the pyrolysis units. For start-up conditions, the scrubber would use fresh water from the city's drinking water system.

- Condenser and Demister – From the venturi scrubber, the gas would go through a condenser to remove the rest of the condensable gases, which consist primarily of steam/water, but which could also include some hydrocarbons. The non-condensable gas then would go through a demister to ensure no liquid remained in the stream. Fresh water would be used in the process to provide non-contact cooling of various process components (greatly simplified in Figure 2-3). That is, the fresh water would be enclosed in pipes or radiator-like components that would allow heat to be exchanged but would keep the fresh water from contacting either gas flows or the water extracted from the waste).

- Storage Tanks – From the demister, the blower would move the syngas into a storage tank with an intermediate pressure level, and a compressor would be used to move the gas into a high-pressure storage tank. Gas in the storage tanks can be used to supply the burner in the pyrolytic converter or sent to an internal combustion engine generator. Oneida expects to use a single 10,000-gallon tank for the intermediate pressure syngas and two 33,000-gallon tanks located outside the building for storage of the high-pressure syngas. The smaller vessel would operate at 10 to 15 pounds per square inch of gauge pressure (psig) and would be rated for 50 psig. The two larger vessels would operate at 50 psig and would be rated for 75 psig.

- Internal Combustion Engine Generator – The internal combustion engine generator, specified as the Cummins C1540N6C, is a four-cycle, water-cooled engine, specifically designed to run on low-British thermal unit (Btu) gas, such as that which would be produced through the pyrolysis of solid waste. The engine and its electric generator have the capacity to generate 1.54 megawatts of electricity. The facility would have three of these generator sets, with a combined capacity of approximately 4.6 megawatts of electricity. Electricity from the generator would be sent to the regional grid.

- Water Cooling and Recycling System – Water would be used to cool the solid residues as they are sent to the discharge bin and in the gas washing system. The non-contact cooling water would be pumped through a cooling tower to support its reuse to the extent possible, but some would be lost to evaporation in the cooling tower and other portions would have to be bled off to the sewer system so that dissolved solids concentrations in the cooling water would not continue to increase. (Dissolved solids in this case would be constituents such as calcium, magnesium, and iron that are naturally in the water supply, but that would tend to increase in concentration as a portion of the water was lost to evaporation.) Fresh water from the city's drinking water system would be used to continuously replenish these lost quantities.

- Wastewater Storage and Treatment – MSW has a high moisture content, estimated at an average of 17 percent of the incoming waste's mass. This water would be extracted from the process; first by evaporation in the pyrolytic converter and then by condensing and washing out in the gas treatment processes. The extracted water would be accumulated and treated as appropriate to allow its reuse in the scrubber. The excess extracted water would also be treated as necessary prior to discharge to the sewer system leading to the GBMSD's sewer system collection lines located on Hurlbut Street. Oneida's current plans are for the wastewater treatment process to consist of dissolved air flotation and ozonation. Under the first step of the wastewater treatment process, ultra-fine bubbles of air would be pumped through the wastewater to float oils and similar materials for removal by skimming. The skimmed materials would be sent to an oil recycler. In the second step, ozone would be injected into the wastewater for destruction of any soluble oils and other hydrocarbon contaminants. An ozone destruct module would be included in the second step to prevent unused ozone from escaping into the atmosphere. The treatment process likely would be done daily on a batch basis.

- Solids Discharge Bin – Solid residues from the pyrolytic converter would be a carbon char and ash, in a quantity of about 20 percent of the dry weight of the solid waste going

into the converter. Depending on the specific constituents in the waste product, it is expected that at least a portion of the waste stream could be usable as a concrete additive or as road bed material. These beneficial uses would be subject to sampling and characterization of the residues produced onsite after the facility was operational and State approval of such uses. The reduced-volume waste that cannot be reused would go to a State-approved landfill. It is expected that residues not used would go to the same regional landfill from which the facility's MSW feedstock would be diverted. So the char and ash would use up landfill capacity, but at a much reduced rate than the diverted MSW, were it to continue going to the landfill.

Appendix D of this EA provides general information on pyrolysis technology and its use in applications similar to the proposed project.

2.2.2 CONSTRUCTION

Construction of the proposed facility would take an estimated eight months, with an average construction workforce of approximately 21 people. (There could be more than 130 different people working on specific elements of the construction during the construction phase, but over the course of the eight-month period there would be an average of 21 workers present at any given time.) Standard construction methods and equipment (for example, trucks, excavators, backhoes, bulldozers, and cranes) would be used. Because of the existing soil conditions at the proposed project site, it is expected that geo-piers would be used in the construction of the building's foundation (VerHaagh 2011). Specifically, it is expected that the 14- to 24-foot-deep foundation would consist of a rammed aggregate pier system, which is formed by filling a wide-diameter drill hole with compacted layers of gravel. As each layer is compacted by ramming, the surrounding natural material is also compacted, forming a deep and stable base. After the building is constructed, it is estimated that it would take another two months with an average of 10 workers to install the equipment and perform operational tests.

Figure 2-4 provides a preliminary drawing of how the proposed facility and its access roads would be laid out within the identified parcel of property. The property is identified in Brown County property records as Parcel Number 6-3043, which is shown in the figure. The building depicted would be about 64,000 square feet in size with a 3,000-square-foot mezzanine. It would house the primary process equipment and the waste handling areas, as well as an area for offices and employee support facilities. Outside the building, there would be an outdoor area for exterior cooling units, fencing, employee parking, a truck scale, and access roads (to Hurlbut Street). The lot size is 5.88 acres and Oneida anticipates that essentially all of the land would be disturbed during construction. In addition to the 64,000 square feet of building, there would be about 2.5 acres of asphalt or concrete surfaces installed to provide roadways, parking areas, access ramps, and equipment pads.

Final design for the proposed facility has not yet been completed, but preliminary technical requirements for the facility have been developed and indicate the facility's design and construction would include the following features:

- Areas where water would be used in the process (and therefore could involve spills or leaks) and where water would be used for cleaning process areas, would include catch

basins draining to a containment tank. Water collected from these areas would be tested to determine appropriate disposition and treatment needs.

- Sound attenuating walls would be used in the building area where the engine generators would be located.

- Water extracted from the waste during the pyrolysis process would also be managed in a containment tank so that it could be monitored and treated, as necessary, before discharging to the municipal sewer system.

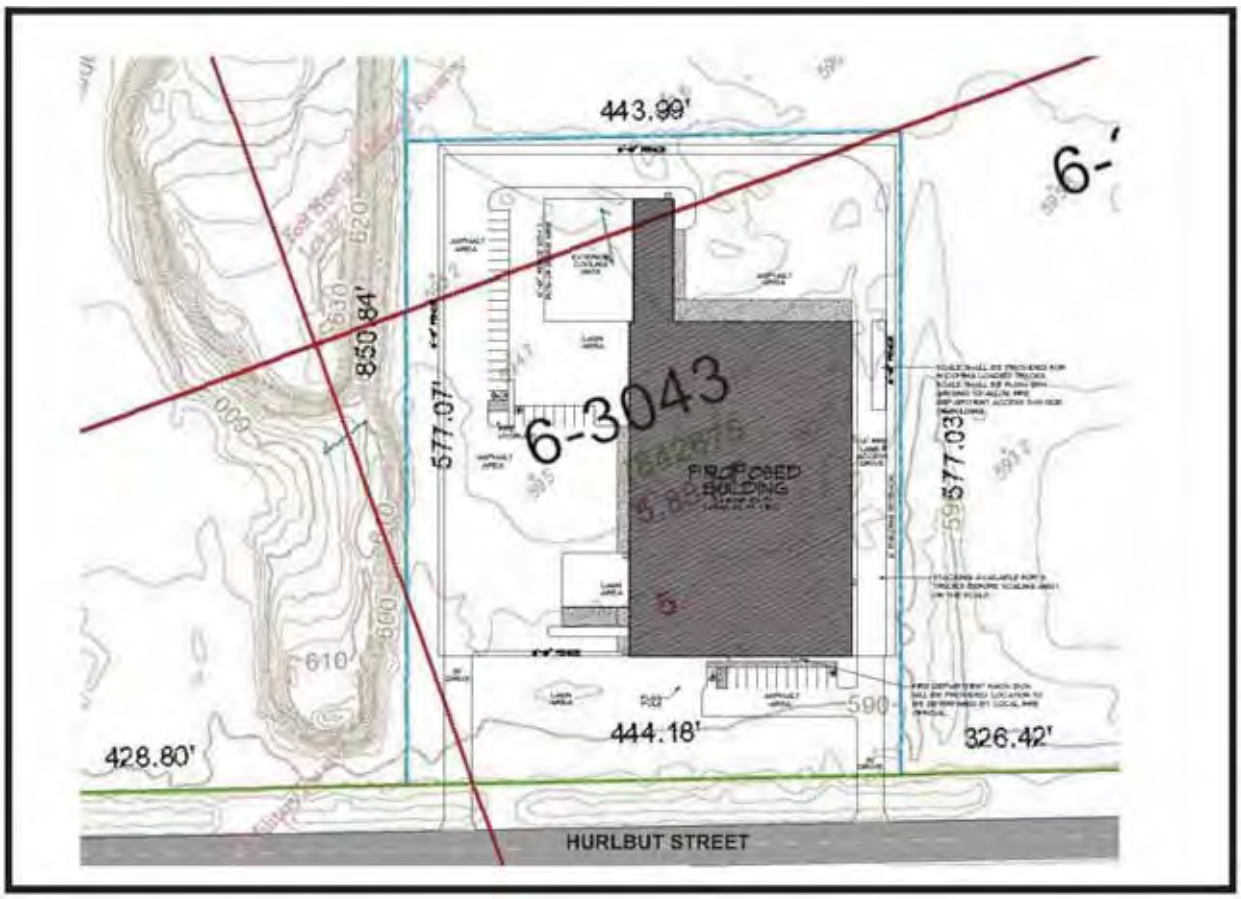


Figure 2-4. Preliminary Drawing of Proposed Facility Layout

2.2.3 OPERATIONS

Operation of the proposed facility would employ up to 30 full-time workers, including regular day and shift workers. The facility would receive and process an estimated 313 tons of MSW per day (as described in more detail later in this section, only a portion of this waste would find its way to the pyrolysis units). It is expected that this quantity of waste would require approximately 24 delivery trucks (garbage trucks) going in and out of the facility each day, five days a week. The facility would operate 24 hours a day, 7 days a week (with the night shift used primarily for maintenance activities); however, waste deliveries would occur primarily Monday

through Friday during day shift hours. Oneida expects an additional 10 trucks per weekday for removing processed waste residues and recyclable materials separated from the incoming MSW.

Oneida has initiated discussions with Brown County, the City of Green Bay, and several area waste haulers with regard to making arrangements for a waste supply for the facility. To date, a specific source of municipal waste for the facility has not been formalized, but Oneida expects waste would be coming primarily from the City of Green Bay, with additional waste coming from independent waste haulers. Under this scenario, trucks would deliver waste directly to the proposed facility from various points of origin in the area as they completed their pick-up routes. Waste from the pyrolysis process that could not be put to beneficial use would be trucked from the facility directly to a State-approved landfill (for example, the Outagamie or Winnebago county landfills). Recyclable materials sorted from the incoming waste would go directly to a broker or brokers, as would process waste residues suitable for use as fill material or other purposes. Oneida is currently in discussions with potential brokers for recyclable materials and process waste residues. Agreements with brokers or waste haulers will not be formalized until after completion of the NEPA process.

The primary functions of the proposed energy recovery facility and the schedules of when they would occur are summarized as follows:

- Waste deliveries would occur primarily five days a week (Monday through Friday) during the day shift (approximately 7 a.m. to 4 p.m.). Removal of waste process residues and recyclables would also occur during the day shift of the normal workweek. Oneida expects that some truck traffic, particularly waste deliveries, might occur in the evenings (after 4 p.m.) or, in some cases, on Saturdays (VerHaagh 2011). The evaluation in this EA conservatively assumes higher daily traffic count and waste receipt rates based on a five-day schedule.

- Waste sizing and sorting, including removal of recyclables, would occur seven days a week during the day shift and the swing shift (approximately 7 a.m. to 11 p.m.)

- Maintenance activities would normally occur during the night shift (approximately 11 p.m. to 7 a.m.).

- Pyrolysis units and the engine generators would be manned and operated 24 hours a day, 7 days a week.

Waste Quantities and Characteristics

Each of the pyrolysis units is designed to process up to about 10 cubic yards of waste per hour. Oneida estimates this would equate to about 2.1 tons (dry weight) of solid waste per hour or, over a 24-hour operating day, 50 tons per day (VerHaagh 2011). Oneida's operational target would be 150 tons (dry weight) of waste available for processing in the three pyrolysis units on a daily basis. In order to reach this target, Oneida estimates it would require delivery of about 313 tons of waste to the facility each day, five days a week. Derivation of this number is shown in Table 2-1. Processing this waste over a seven-day workweek, an estimated 35 tons of material would be removed each day from the waste stream as being recyclable (13 tons) or inappropriate for the pyrolysis process (22 tons). The remaining waste, 150 tons on dry basis or 188 tons with the integral moisture[2], would be available for processing in the pyrolysis units.

Table 2-1. Derivation of Solid Waste Delivery and Processing Quantities

Waste Description	Waste Quantities Based on Daily Deliveries – 5 days a week	Waste Quantities Processed per Day – over 7 days a week[a]
Total municipal solid waste	313 tons	223 tons
Removed dirt and non processable materials (at 10%)	31 tons	22 tons
Removed recyclables (at 5.8%)	18 tons	13 tons
Moisture incorporated in waste (at 17%)	53 tons	38 tons
Material suitable for pyrolysis (dry weight)	210 tons	150 tons

a. The "7 day a week" values are derived by multiplying the "5 day a week" values by 5 and dividing by 7; that is multiplying the "5 day a week" numbers by the fraction 5/7.

Figure 2-5 is a simplified schematic of the waste shredding and separation processes that would be used in the facility. The figure shows current planning estimates for how the quantities of MSW, or feedstock, would flow through the various process steps and how the numbers in Table 2-1 fit into that flow. As noted, the figure is a simplification and the "tons per day" numbers would undoubtedly vary over time as the characteristics of the waste brought to the facility varied over time. It is also expected that in operation, non-appropriate items could be pulled out of the feedstock flow at any point in the process. For example, it would be logical that some items would be removed from the feedstock at the receiving room, before being run through the initial shredder.

2. For purposes of the mass balance described here, it is assumed that the estimated 17 percent moisture associated with the incoming solid waste stays with the waste portion ultimately going to the pyrolysis units. However, the facility would be designed to collect and contain moisture draining from the waste at its initial tipping point as well as at both shredders and the ballistic separator. Also, some of the moisture could remain in the material separated out as being inappropriate for the pyrolysis process. With the exception of that leaving the facility in segregated materials, the moisture would be collected and managed in the wastewater system no matter its specific source and would not present a problem for any of the process steps.

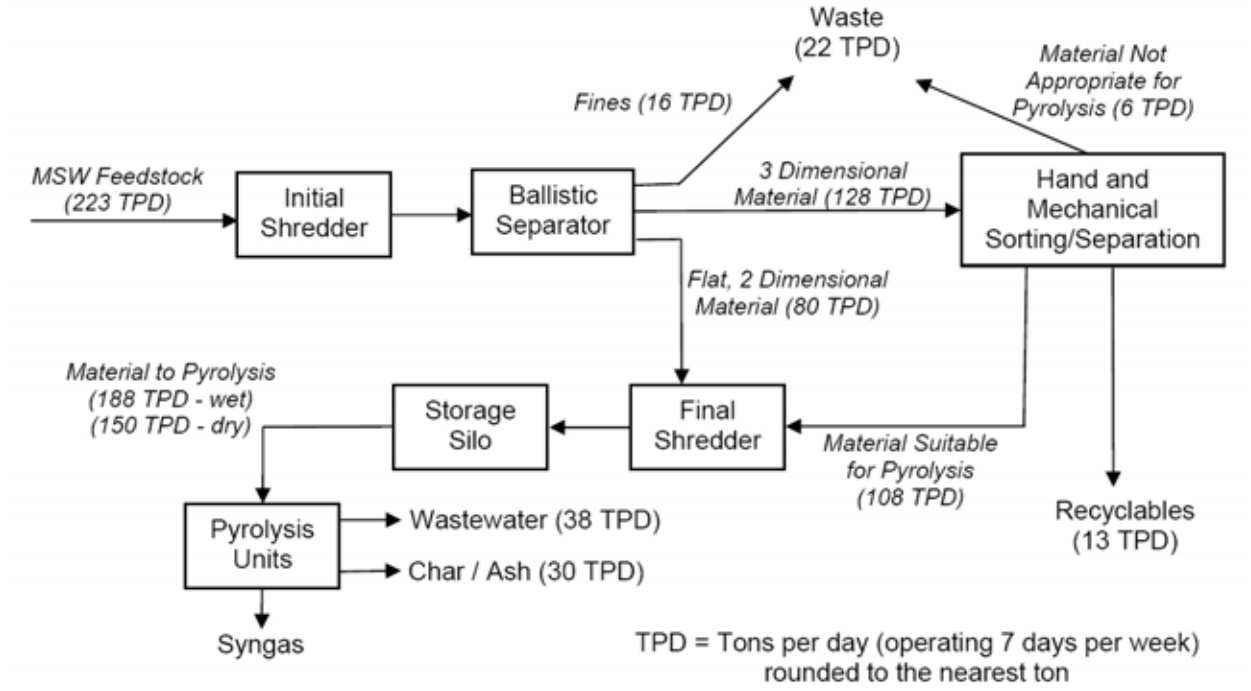


Figure 2-5. Simplified Schematic of the Waste Shredding and Separation Processes that Would be Used in the Energy Recovery Facility

Oneida plans to process primarily residential waste in the proposed facility, but may process up to about 5 percent solid waste classified as industrial, commercial, or institutional (ICI) waste. Oneida expects the waste delivered to the proposed facility to be typical of residential and ICI waste managed throughout the region and has used waste characteristics from a recent study, *2009 Wisconsin State-Wide Waste Characterization Study* (DNR 2010a), in its planning and preliminary facility design efforts. This study, facilitated by the Wisconsin Department of Natural Resources (DNR), provides detailed composition information for (1) residential, (2) ICI, and (3) construction and demolition waste categories. Oneida has no plans to accept waste from the third category. Table 2-2 provides a description of the types of waste that are expected to be delivered to the proposed facility. The waste descriptions in the table include items that would not be put into the pyrolysis units (for example, electronic devices and lead acid batteries), but this characterization information has allowed Oneida to plan for the range of materials that could be delivered to the facility and, as applicable, separated out of the waste stream that would go to the pyrolysis units. Information in the table comes from the DNR study with slight modifications to the percentages to account for a general waste stream that is 95 percent residential and 5 percent ICI.

Oneida expects most recyclable materials to come from the plastics group, primarily PET and HDPE containers, and the metals group, primarily aluminum cans and other scrap metals. Materials removed as being inappropriate for the pyrolysis units could come from any of the groups. It would include materials removed during hand picking as well as the dirt and fine material separated out after the initial shredding step.

Several comments received during the project scoping period expressed concern that tires might be processed through the facility. Oneida does not expect tires to be present in the residential or ICI waste that they would target for the proposed facility because State regulations ban tires from landfill disposal (and the target wastes are currently being collected for landfill disposal). DNR's solid waste characterization study identified tires in some of the residential and ICI waste streams that were sampled and characterized, but in very small quantities (less than 0.01 percent in residential waste and about 0.5 percent in ICI waste) (DNR 2010a). Oneida indicates they are working on contracts for residential waste and possibly small quantities of ICI waste and have no plans to look outside of those arrangements for tires or any other specific waste stream.

Table 2-2. Types and Percentages (by weight) of Waste that Would be Delivered to the Proposed Facility

Waste Group	Description	Approximate Percentage
Paper	Newspaper, office paper, magazines, cardboard	20.7
Plastics	PET and HDPE containers, other plastic containers, polystyrene foam, shopping bags, plastic film	13.6
Metals	Aluminum cans, ferrous (tin) cans, ferrous scrap, non-ferrous scrap	4.6
Glass	Clear beverage containers, colored beverage containers, glass food containers, other glass	1.6
Organic Waste	Yard materials, food scraps, diapers, animal waste/kitty litter, bottom fines/dirt, other organic material	36.6
Construction and Demolition Waste	Wood, bricks, concrete, rock, ceramics	9.6
Problem Materials	Electronics, appliances, batteries, fluorescent lights	2.6
Hazardous Materials	Paint, automobile oil filters, medical waste, household hazardous waste	0.1
Other Waste	Textiles, carpet, carpet pads, furniture, bulky items	10.7

Source: DNR 2010a. The source provides individual waste composition breakdowns for the residential waste category and for the ICI waste category. Percentage values shown here are adjusted from those in the source to approximate a waste stream that is 95 percent residential and 5 percent ICI waste.

2.2.4 DECOMMISSIONING

At some time in the future, the energy recovery facility constructed under the proposed project would be decommissioned and removed. For purposes of this EA, it is assumed that this might occur after 20 years of operation, but it is recognized that the equipment could be operational for a longer period of time, or that the facility could shut down earlier for some unforeseen reason. It is assumed that at the completion of decommissioning activities the site would be restored to a pre-construction condition.

2.3 Alternatives

This section describes the alternatives to the Proposed Action, including the No-Action Alternative, and alternatives considered by Oneida in developing the proposed project.

2.3.1 DOE'S AND BIA'S PROPOSED ACTION

The State of Wisconsin's SEP funds are from a formula grant, in that the amount of the grant to the State is determined pursuant to a formula established in DOE grant procedures at 10 CFR

420.11. Allocation of funds among the States is based on population and other factors. Recipients of these formula grants have broad discretion in how they use their funds.

This Draft EA examines the potential environmental impacts of DOE's and BIA's Proposed Action (providing funding for the proposed project) and the No-Action Alternative. This Draft EA also summarizes alternatives that Oneida (sub-recipient) considered during development of its application to the State of Wisconsin, which is the recipient of Federal funding under the SEP. Wisconsin has informed DOE that it is not considering any project-specific alternatives to providing the Oneida Energy Recovery Project the loan described in Section 2.2. Similarly, BIA has not identified any alternative project or projects that would be considered for its Federal funding if the decision were made not to fund the proposed project. When complete, this EA will provide DOE and BIA with the information needed to make informed decisions about whether authorizing Federal funds for the proposed project might result in significant environmental impacts. Based on the Final EA, DOE either will issue a FONSI, which could include mitigation measures, or determine that additional study is needed in the form of a more-detailed EIS. As a cooperating agency, BIA would develop and issue its own FONSI, as applicable.

2.3.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, DOE would not authorize the State of Wisconsin to use its SEP funds for this project and BIA would not provide its loan to the project. DOE assumes for purposes of this EA that the project would not proceed without SEP or BIA Federal funding. This assumption allows a comparison between the potential impacts of the project as proposed and the impacts of not proceeding with the project. Without the proposed project, Oneida would not construct or operate the energy recovery facility, and the proposed 4.6 megawatts of electricity would continue to be produced at some other location, likely using fossil fuel, and there would be no reduction in greenhouse gas emissions from the regional landfill as the waste naturally decayed. Also, landfill capacity would continue to be used up at its current rate and there would be no infusion of construction dollars and jobs into the area. Similarly, without the proposed project there would be no short-term impacts to air quality and noise during construction and there would be no increase in air emissions or traffic in the area of the Bayport Industrial Center from operation of the proposed facility. If DOE and BIA did not authorize the use of Federal funding for the proposed project, it is expected that the State of Wisconsin would identify some other project for its SEP funds that would promote energy efficiency or use renewable energy, and BIA would similarly identify another project to meet its program objectives.

2.3.3 ALTERNATIVES CONSIDERED BY THE PROJECT PROPONENT

In addition to the project site now being proposed, Oneida considered three alternative sites within the general Green Bay area for the proposed project. The primary criteria by which these alternative sites were evaluated were the proximity to electrical distribution lines, the existing zoning of the property, and the accessibility of the site to truck traffic. Oneida believes the selected project site meets criteria for the proposed facility and has thus far continued to make progress in obtaining the necessary approvals and permits. The following discussion summarizes the three alternative sites Oneida considered and the basis for dropping those

alternative locations from further consideration. Figure 2-6 shows the alternative locations in relation to the location of the proposed project.

- Alternative 1 was a 14.6-acre property located on Bay Ridge Court on Oneida Nation land and in the Village of Hobart, Brown County, Wisconsin. This site was considered because of its proximity to the Brown County Waste Transfer Station on West Mason Street. During a site visit of October 2010, the location was described as fallow grassland. A preliminary review of the site's suitability did not identify any environmental concerns that would prohibit the project, but it was determined that because of its agricultural zone designation it would require conditional use permits from both the Oneida Land Commission and the Village of Hobart. In pursuing the permit from the Village of Hobart, Oneida found conditions it could not meet, so the application was withdrawn and the property dropped from further consideration (Oneida 2011).

Figure 2-6. Alternative Project Sites Oneida Considered

- Alternative 2 was a 20-acre property located on Red Willow Parkway on Oneida Nation land, in the Town of Oneida, Outagamie County, Wisconsin. During a site visit of October 2010, the location was described as part of the Oneida Business Park, consisting of disturbed nonnative annual grassland dominated by invasive pioneer species (that is, nonnative species that have established themselves following the disturbance). A preliminary review of the site's suitability identified actions taken in the late 1990s (when the Business Park was being developed) that addressed wetlands and flood zone issues associated with the site. No prohibitive environmental conditions were identified and it was noted that the Park was designated as a commercial zone, making the proposed facility a permitted use. This alternative would increase truck traffic through the central portion of the Town of Oneida and, based on community meetings with the Wisconsin Department of Transportation, the community cited safety reasons for wishing to reduce truck traffic in this area. In addition, the site was not located within the area served by the Wisconsin Public Service (WPS) with whom the power purchase agreement for the project had been created, so there would be no site access to the WPS electrical grid. The site was dropped from further consideration (Oneida 2011).

- Alternative 3 was an 11.35-acre property located on Packerland Drive on Oneida Nation land and in the Village of Ashwaubenon, Brown County, Wisconsin. The property is within the Oneida Industrial Park, and a site visit of October 2010 described it as upland farmland. A preliminary review of the site's suitability did not identify any environmental concerns that would prohibit the project. It appeared the location would meet all criteria as a suitable site for the proposed project and the facility plan would be consistent with the Oneida Industrial Park Covenants and Design Standards. However, numerous individuals expressed opposition to this site in public meetings and in writing, including correspondence sent to DOE and BIA. Many commenters expressed the opinion that the proposed project was inappropriate for the Oneida Industrial Park because the Park was being developed for light industry and business uses, and because of the residential areas adjacent to the Industrial Park. Increased traffic on Packerland Drive was another commonly expressed concern. The site was dropped from further consideration (Oneida 2011).

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter examines the potential environmental impacts of the proposed project and the No-Action Alternative on the affected environmental resource areas.

3.1 Environmental Resources Evaluated and Dismissed from Further Analysis

Consistent with NEPA implementing regulations and guidance, DOE focuses the analysis in an EA on topics with the greatest potential for significant environmental impact. For the reasons discussed below, the proposed project is not expected to have any measurable effects on certain resources; therefore, these resources are not carried forward for further analysis.

3.1.1 GEOLOGY AND SOILS

Construction would occur on previously disturbed areas with surface materials that include dredge materials from the Fox River Harbor. Preliminary project plans have identified the likely need to use geo-piers for the necessary facility foundation. Specifically, it is expected the new facility would have a rammed aggregate pier system extending down 14 to 24 feet to provide a stable foundation. As described in Section 3.2.3.2 of this EA, actions would be taken during construction to minimize soil erosion. Oneida would control and monitor storm water runoff during construction in accordance with the Wisconsin Stormwater Construction Permit that would be obtained. The combination of such storm water control measures and the relatively flat topography of the area would minimize any potential impact related to soil erosion.

The proposed project site, like the rest of Wisconsin, is considered to be an area of low seismic risk (USGS 2010), and it is unlikely that earthquake activity would occur and result in adverse impacts to the proposed project. The Oneida Energy Recovery Project would not affect or be adversely affected by site geology.

3.1.2 WATER RESOURCES – GROUNDWATER

The City of Green Bay obtains its drinking water predominantly from Lake Michigan. As such, the proposed project's additional demands on the City's water supply would not involve groundwater. During construction of the proposed project, potential sources of contamination would be limited to fuels and lubricants in construction equipment, and the storm water management plan described in Section 3.2.3.2 of this EA would be required to address any necessary actions to prevent contamination of storm water runoff that could potentially soak into the ground and reach groundwater. The design of the proposed facility would include a storm water collection system, including a storm water retention pond, for the outside areas of the facility. Waste deliveries to the facility and all of the facility processes would take place inside the building, so there would be minimal potential for any contaminants to reach the storm water collection system or the drainage channels outside of the project site. Should any contaminants reach the storm water collection system that would be installed around the facility, they would first reach the onsite storm water retention pond where cleanup actions could be initiated. Operations of the proposed facility would involve the production and management of industrial wastewater, but the facility's design would include internal drains, containment tanks, and a

pretreatment system for this wastewater. The industrial wastewater would be treated as necessary and then discharged to the Green Bay Metropolitan Sewerage District. There would be no discharges that could impact groundwater. There would be no uses of groundwater in the proposed project and no project actions that would present new potential sources of groundwater contamination or that could otherwise adversely affect groundwater.

3.1.3 INTENTIONAL DESTRUCTIVE ACTS

DOE considers intentional destructive acts (i.e., acts of sabotage or terrorism) in all its EAs and EISs (DOE 2006). Construction and operation of the proposed project would not involve the transportation, storage, or use of radioactive, explosive, or toxic materials. The proposed project would not offer any particularly attractive targets of opportunity for terrorists or saboteurs to inflict adverse impacts on human life, health, or safety.

3.1.4 DECOMMISSIONING

The discussion of impacts for the above resource areas are generally presented first in terms of construction activities, then for operations of the proposed facility. Following this logic, the discussions might then address eventual decommissioning activities under which it is assumed the facility would be dismantled, debris would be recycled as applicable or disposed of, and the site would be restored to its preconstruction condition. However, the potential impacts of decommissioning actions are usually very similar to those of construction, only in reverse, and in no case would they be expected to be greater than those of the combined construction and operations. As a result and to avoid repetition, the following discussions do not specifically address decommissioning activities.

3.2 Considerations Carried Forward for Further Analysis

This section of the Draft EA examines in detail the potential environmental impacts of the proposed project to the following resource areas:

- Land use
- Air quality
- Water resources – surface water
- Noise
- Transportation
- Waste and hazardous materials
- Utilities and energy
- Biological resources
- Cultural resources
- Aesthetics and visual resources
- Human health and safety
- Socioeconomics
- Environmental justice

3.2.1 LAND USE

3.2.1.1 Affected Environment

The proposed project site is currently a vacant lot in the Bayport Industrial Center, which is located within the boundaries of the City of Green Bay. The lot is further identified as 1230 Hurlbut Street, Parcel No. 6-3043, and, under the Federal land survey system, is within the northeast quarter of Section 23 in Township 24 North, Range 20 East. According to City of Green Bay zoning, the property is designated "General Industry" (Green Bay 2008). Figure 3-1 is a clip from the City's zoning map. As can be seen in the figure, Hurlbut Street and Interstate-

Source: Green Bay 2008.

Figure 3-1. Clip from the Green Bay Zoning Map Showing the Location for the Proposed Project

43 (I-43) are immediately to the southwest; otherwise the proposed site is entirely surrounded by land designated for industrial use, and specifically for General Industry. Other industrial districts (in addition to General Industry) designated by the City's zoning rules are Light Industry and Business Park (Green Bay 2011a). The white area in the upper lefthand corner of Figure 3-1 that has no color-coding represents property within the Village of Howard. Zoning in this area is similar to that of the adjacent Green Bay land: the area between I-43 and U.S. Highway 141 is zoned General Industry and Commercial, and southwest of Highway 141, zoning is predominantly Commercial adjacent to the highway, then moves into residential categories (Howard 2010).

According to Green Bay's City Ordinance for zoning (Chapter 13 of the City Ordinance Code Book; Green Bay 2011a), the General Industry category "accommodates high-intensity industry and often includes very large structures, extensive exterior storage and exterior mechanical or equipment operations." "Where possible, the [General Industry] District should be separated from residential neighborhoods" (Green Bay 2011a). The ordinance identifies principal uses for the industrial districts and, under the Public Service and Utility Uses grouping, identifies "solid waste disposal facility" as "a facility for the disposal or storage of solid waste material, including garbage, trash, construction debris, and other kinds of organic or inorganic refuse by dumping, burial, incineration, or any other similar means."

Of the three industrial districts, only the General Industry category is shown in the zoning ordinance with solid waste disposal facilities as a principal use, and then, only as a conditional use. That is, for this use to be allowed, it must comply with all other applicable provisions of the zoning ordinance and must be done under a conditional use permit, approved by the City's Common Council. In this case, applicable provisions of the zoning ordinance would include general regulations as well as those developed specifically for industrial districts, which address, for example, use restrictions, requirements for outdoor storage, and site design considerations.

The proposed project site is currently surrounded by Hurlbut Street and I-43 to the southwest, a concrete company to the north that spans west to east (L-shaped property), and a construction company to the southeast. As can be seen in the aerial view in Figure 2-2, property occupied by the concrete and construction companies are heavily disturbed areas, with bare ground over much of the area to facilitate equipment movement and storage. The construction company property includes a building that faces Hurlbut Street, with equipment storage behind towards the northeast. Other industrial uses of the strip of land between I-43 and the bay are primarily to the southeast and include a couple of petroleum product tank farms, a calcium carbonate processing plant, and the Wisconsin Public Service Pulliam coal-fired power plant (which is adjacent to the mouth of the Fox River). The power plant is approximately 1 mile southeast of the proposed project site.

The nearest zoned residential areas to the proposed project site are about 0.5 mile to the southwest, across I-43, the railroad, and Highway 141. Based on aerial views of the site, however, there are residences as near as about 0.3 mile almost directly west from the proposed site on Thrush Street (Figure 3-1), in the section lying between Highway 141 and the railroad.

Scoping comments received by DOE identified a concern for the proximity of the proposed project site to land uses such as schools and health care facilities. Figure 3-2 identifies locations

Legend

Schools

A. Bay City Baptist School
B. Helen Keller Elementary
C. Chappell Elementary
D. Notre Dame de la Baie Academy
E. Franklin Middle School
F. Lincoln Elementary
G. Elmore Elementary
H. West High School
I. Saint Patrick School
J. Fort Howard Elementary
K. Jefferson Elementary

Hospitals

1. St. Mary's Hospital

Nursing Homes

2. Manor Care West
3. Golden Living Village Gardens
4. Oaks Family Care Center
5. Grancare Nursing & Rehab
6. New Curative Rehab Inc.
7. Marla Vista Gardens and Manor
8. Oaks Family Care Center

Figure 3-2. Schools and Health Care Facilities Within Two Miles of the Proposed Project Site

of schools, hospitals, and nursing homes within 2 miles of the proposed project site. As seen in the figure, there are 11 schools within about 2 miles of the proposed project site, 1 hospital, and 7 nursing homes. Only two of these facilities (both nursing homes) are within 1 mile of the site. The nursing homes include those recognized by Brown County (Brown 2011) and found in the "Yellow Pages" online listing (http://www.yellowpages.com). Also within 2 miles of the proposed project site are several parks and recreational areas, which are not specifically identified in Figure 3-2, but generally are shown as the green-colored areas (public property/institutional) on both Figures 3-1 and 3-2. Several of these public areas are within 1 mile of the proposed project site, the closest being Mather Heights Park, about 0.6 mile to the southwest, located on the southwest side of Thomas Street (Figure 3-1).

One past use of the proposed project site should be mentioned because of its effect on the site's current physical characteristics. The general area of the proposed project has been used historically for waste disposal, primarily dredge materials removed from the harbor area. The City of Green Bay disposed of dredged materials in the general area from the 1880s to the 1950s (USACE 2010). In the mid-1960s the U.S. Army Corps of Engineers (USACE) became involved in a major project to expand and deepen the Green Bay harbor as a result of *The River and Harbor Act of 1962*. The City of Green Bay furnished a 400-acre, diked disposal area for the placement of dredge materials from this project. This disposal area, then referred to as the "Green Bay Diked Disposal Area," includes the proposed project site as well as the surrounding property. The harbor expansion effort lasted from 1966 to 1973 and the site was used extensively by the USACE for the disposal of dredgings during that time. In the late 1960s there was a general concern that dredge materials might contain contaminants such as poly-chlorinated byphenyls (PCBs) that had reached the nation's waterways. This resulted in a national policy to dispose of polluted dredgings into confined disposal areas, which put further emphasis on the use of the Green Bay Diked Disposal Area.

In 1976, the USACE prepared an EIS for a dredging action that included use of a 30-acre portion of the Green Bay Diked Disposal Area for deposition of an estimated 300,000 cubic yards of dredgings. In describing the entire 400-acre disposal area, the EIS states that when it was originally designated by the City of Green Bay, "it was predominantly in a wetland condition, however, its exact quality and condition was not well documented" (USACE 1976). The EIS then states, "the entire site has been filled to varying depths obliterating its original condition." The document also described how fly ash from the Pulliam power plant had been historically disposed in the north-central portion of the 400-acre disposal area. It was further indicated that only a 30-acre portion of the site still had excess capacity and after the proposed USACE project, a new disposal facility would be needed for continuing maintenance dredging actions. In 1977, a portion of the 400-acre disposal area was modified with additional diking to provide additional capacity (USACE 2003) and the reduced-size disposal facility is now called the Bayport Confined Disposal Facility. In 2010, the USACE issued an EA addressing its 20-year plan for managing dredged materials. The EA describes use of the Bayport Confined Disposal Facility for contaminated sediment from the inner harbor and reconstruction of the Cat Islands with the clean sediment dredged from the outer harbor in Green Bay (USACE 2010). In order to provide capacity for 20 years, the EA describes a 36-acre expansion of the Confined Disposal Facility, which would still be within the original 400-acre site.

Figure 3-3 provides a perspective of the various disposal areas described in the preceding paragraphs. The figure is an aerial view of the disposal areas clipped from USACE (2010), modified to show the approximate boundaries of the original 400-acre Green Bay Diked Disposal Area added. The northern-most portion of the 36-acre expansion is currently being used by the City for yard waste collection and composting (USACE 2010).

Figure 3-3. Aerial View of the Land Historically Used for Disposal of Dredge Materials

3.2.1.2 Discussion of Impacts

Based on planning and zoning guidelines developed by the City of Green Bay, construction, operation, and eventual decommissioning of the proposed facility would represent an acceptable use of the land at the Hurlbut site within the Bayport Industrial Center. As noted above, a facility managing solid waste, such as the proposed project, is an identified use for the General Industry zoning classification assigned to the Bayport Industrial Center provided the facility obtains a conditional use permit. The conditional use permit for the proposed project was approved by the Green Bay Plan Commission during its meeting of February 21, 2011 (Green Bay 2011b). The motion to approve was accompanied by several conditions including compliance with all other regulations of the City's Municipal Code; compliance with all applicable Federal and State regulations, including air and water quality; several specific

building design requirements (specifically, Sections 13-905 and 13-1815 of the zoning regulations) related to its appearance and screening of certain features from street view; agreement that the property owner would make payment in lieu of taxes, should it be determined that the proposed project is tax exempt; and that the owner agrees there would be no attempt to put the land into Trust with the BIA. Under the recommendation of the Plan Commission, the Green Bay Common Council subsequently authorized the conditional use permit during its meeting of March 1, 2011 (Green Bay 2011c). The authorization (adopted March 1 and approved by signature of the Mayor on March 2, 2011) contained all conditions recommended by the Plan Commission, with stipulation that the payment in lieu of taxes (should it be applicable) be based on the City's assessed value of the property.

Other characteristics of the proposed project site that would minimize the potential for adverse land use impacts include the following:

- Hurlbut Street, I-43, the railroad, and the associated right-of-ways act to separate the project site from the nearest non-industrial land use. This distance represents about one-quarter of a mile and the nearest buildings in this direction are primarily commercial facilities lying between the railroad and U.S. Highway 141. Given the current usage of this intervening property, there is no reason to believe that its use will change in the foreseeable future and it would continue to provide a buffer between the proposed facility and any non-industrial land uses.

- Consistent with the above, residential properties are removed from the proposed project site. A small number of residences on a single street may be as close as about 0.3 mile from the site; otherwise, general residential areas appear to be no closer than 0.5 mile from the site. Based on current zoning and past use, there is no reason to suspect that land to the north and northwest would be used for residential purposes in the foreseeable future.

- Hurlbut Street and I-43 currently transect land that is zoned for industrial use and these roads would not be adversely impacted by their proximity to the proposed facility (other than by increased traffic which is addressed in Section 3.2.5 of this EA). The proposed facility is not expected to present any hazards; however, should hazards at the proposed facility exist, they would be typical of this area and the existing uses of adjacent industrial properties (for example, the petroleum tank farm facilities to the southeast and the existing truck traffic).

- Adjacent property uses (including the concrete and construction companies) involve similar operations; movement of heavy trucks and equipment in the area as a result of the proposed project would not represent unusual or new operations in that regard.

Based on review of the City's Zoning Code (Green Bay 2011a), the site's past use, and the surrounding land uses, the location of the proposed project at the site in the Bayport Industrial Center would represent an appropriate, compatible use of the land and would have minimal potential for land use impacts to properties outside the General Industry district. In addition, the City of Green Bay's approval of the conditional use permit supports a conclusion that the project

would be consistent with applicable regulations regarding land use and impacts would be minimal.

3.2.2 AIR QUALITY

3.2.2.1 Affected Environment

As discussed in Section 2.2 Proposed Project, the proposed project site is located in north-central Green Bay, Brown County, Wisconsin. The project area is currently a vacant industrial lot surrounded by industrial uses, including a concrete company to the north that spans west to east, I-43 to the southwest, and a construction company to the southeast. Other industrial uses include a couple of petroleum product tank farms, a calcium carbonate processing plant, and the Wisconsin Public Service Pulliam coal-fired power plant, all to the southeast.

Sensitive receptors are people that, due to age or health conditions, are potentially more susceptible to the effects of exposure to chemicals or other pollutants in the air (EPA 2011a). This generally includes individuals in hospitals, schools, daycare facilities, elderly housing, and convalescent facilities, but in this evaluation it is conservatively assumed they may also be located in nearby residences. The nearest sensitive receptors (in this case, residences) identified within the vicinity of the project site are located approximately 0.3 mile directly west of the project site on Thrush Street (Figure 3-1), in a section lying between Highway 141 and the railroad.

Air quality is affected by both the amount and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality. Air contaminant travel distance varies due to the size of particles, weather conditions, and surrounding topography and vegetation.

The distinctive climate in the area is determined by the surrounding topography including the bay, Lake Michigan, and, to a lesser extent, the slightly higher terrain terminating in the Fox River Valley, which modifies the City's humid continental climate. Specifically, topography within 3 miles of the proposed project site includes rolling terrain with ground-level elevations that rise above the stacks of the proposed facility.

The project site is located in the Lake Michigan Intra-State Air Quality Control Region. The air region is characterized by its variety of land uses. Industry and population centers are located along the Fox River Valley, where many closely spaced cities include the largest concentration of paper manufacturing plants in the nation. In addition to the paper industry, this region is known for metal products and food processing. Large coal-fired plants and a wide variety of other industry, including a cement plant, large unloading and storage facilities, and petroleum product storage and transshipment facilities are all located in Green Bay (DNR 2010b).

The proposed project would be subject to Federal, State, and local air quality regulations. A number of plans and policies have been adopted by various agencies to address air quality concerns. The laws, regulations, plans, and policies relevant to the proposed project are discussed below.

Clean Air Act

The Federal *Clean Air Act* (42 U.S.C. 7401 *et seq.*, as amended; CAA), requires that the EPA establish and enforce National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for pollutants considered harmful to public health and the environment. The CAA establishes two types of NAAQS: primary standards set to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; and secondary standards which set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Table 3-1 provides the NAAQS that have been set for criteria pollutants. Those areas where the current air quality is relatively free of contamination are considered in "attainment" as they in compliance with NAAQS. However, those areas where the air quality is currently unacceptable or require prevention of air quality deterioration as they do not meet these standards are called "nonattainment" areas. Brown County is currently considered in attainment for all NAAQS (EPA 2011b) as indicated by the "Background Concentrations" in Table 3-3 (in the next section below), which also shows NAAQS values for comparison.

Table 3-1. National and State of Wisconsin Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide (CO)	9 ppm (10,000 µg/m^3)	8-hour[a]	None	
	35 ppm (40,000 µg/ m^3)	1-hour[a]		
Nitrogen Dioxide (NO_2)	53 ppb[c] (100 µg/m^3)	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour[d]	None	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour[e]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[f] (Arithmetic Average)	Same as Primary	
	35 µg/m^3	24-hour[g]	Same as Primary	
Ozone (O^3)	0.075 ppm (2008 std)	8-hour[h]	Same as Primary	
	0.08 ppm (1997 std)	8-hour[i]	Same as Primary	
	0.12 ppm (235 µg/m^3)	1-hour[j]	Same as Primary	
Sulfur Dioxide (SO_2)	0.03 ppm (80 µg/m^3)	Annual (Arithmetic Average)	0.5 ppm (1300 µg/m^3)	3-hour[a]
	0.14 ppm (365 µg/m^3)	24-hour[a]		
	75 ppb[k]	1-hour	None	

Sources: EPA 2011c; Wisconsin 2010.

a. Not to be exceeded more than once per year.
b. Final rule signed October 15, 2008.
c. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard
d. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).
e. Not to be exceeded more than once per year on average over 3 years.
f. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.

Table 3-1. National and State of Wisconsin Ambient Air Quality Standards (continued)

g. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).
h. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
i. (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) EPA is in the process of reconsidering these standards (set in March 2008).
j. (a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.
k. (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

In Wisconsin, the primary responsibility for attainment and maintenance of the NAAQS rests with the Wisconsin Department of Natural Resources (DNR). DNR is the issuing agency for "Authority to Construct and Permits to Operate" for coal-power plants, landfill gas recovery projects, landfill gas flare stations, landfill gas-to-energy facilities, and waste-to-energy plants. DNR conducts inspections, initiates compliance actions, and operates a permit program in accordance with State and Federal requirements. Regulations to implement the CAA are incorporated into the Wisconsin Administrative Code (WAC) Natural Resources (NR) Chapter 400.

New major sources of pollutants proposed in an area of attainment or unclassifiable with the NAAQS, are required to assess increment consumption under Prevention of Significant Deterioration (PSD) rules. PSD does not prevent sources from increasing emissions, however, it is designed to protect public health and welfare; preserve, protect, and enhance air quality; and assure that decisions to permit increased air pollution in an area are made only after careful evaluation of the consequences of such decisions and after adequate opportunities for informed public participation in the decision making process. PSD requires that best available control technology (BACT) be employed; an air quality analysis is conducted; an additional impacts analysis is performed; and public involvement is enabled. The DNR is the program authority for the PSD program and has established guidance to ensure that BACT analyses conform to EPA guidance and follow a consistent format. As the program authority, DNR recently prepared an Environmental Assessment for the proposed project in conjunction with a preliminary determination of Oneida's air quality permit. Final determination and approval of the DNR EA and air quality construction and operation permit for the proposed project are pending based on the results of the 30-day public comment period (DNR 2011a).

Criteria Pollutants

Carbon Monoxide (CO) – Carbon monoxide is an odorless, colorless, and tasteless gas that is toxic. It is formed by the incomplete combustion of fuels. The primary sources of this pollutant in Brown County are automobile emissions, home/building heating, thunderstorms and forest fires, vegetation during various growth stages, and the chemical transformation of methane. Carbon monoxide from natural sources usually dissipates very quickly over a large area, posing no threat to human health. The health effects associated with exposure to carbon monoxide are related to its interaction with hemoglobin once it enters the bloodstream. At high concentrations,

carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities. Carbon monoxide is a common indoor air contaminant. Concentrations of 1 to 2 parts per million are common in homes with natural gas-fired furnaces. Malfunctioning furnaces can lead to indoor concentrations of up to 120 parts per million.

Particulate Matter (PM_{10} and $PM_{2.5}$) – Particulate matter consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM_{10} refers to particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (microns or μm) and $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers. Particles smaller than 10 micrometers (i.e., PM_{10} and $PM_{2.5}$) represent that portion of particulate matter thought to represent the greatest hazard to public health. PM_{10} and $PM_{2.5}$ can accumulate in the respiratory system and are associated with a variety of negative health effects. Exposure to particulate matter can aggravate existing respiratory conditions, increase respiratory symptoms and disease, decrease long-term lung function, and possibly cause premature death in people with heart or lung disease. The segments of the population that are most sensitive to the negative effects of air-borne particulate matter are the elderly, individuals with cardiopulmonary disease, and children. Fugitive dust generated by construction activities is a major source of particulate matter.

A portion of the particulate matter in the air comes from natural sources such as windblown dust and pollen. Manmade sources of particulate matter include fuel combustion, automobile exhaust, field burning, cooking, tobacco smoking, factories, and vehicle movement on, or other disturbances of, unpaved areas.

Sulfur Dioxide (SO_2) – Sulfur dioxide is formed when fuel containing sulfur (typically, coal and oil) is burned, and during other industrial processes. Higher SO_2 concentrations are found in the vicinity of large industrial facilities than elsewhere. The physical effects of SO_2 include temporary breathing impairment, respiratory illness, and aggravation of existing cardiovascular disease. Children and the elderly are most susceptible to the negative effects of exposure to SO_2.

Nitrogen Oxides (NO_x) – As a conservative assumption for this analysis, it was assumed that all nitrogen oxides (NO_x) are emitted as nitrogen dioxide (NO_2). Nitrogen dioxide is a poisonous, reddish-brown to dark brown gas with an irritating odor and forms when nitric oxide (NO) reacts with atmospheric oxygen. Most sources of NO_2 are manmade; the primary source is high-temperature combustion. NO_2 may produce adverse health effects such as nose and throat irritation, coughing, choking, headaches, nausea, stomach or chest pains, and lung inflammation (for example, bronchitis, pneumonia).

Hazardous Pollutants

Section 112 of the CAA was amended to include EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP). These rules apply mostly to larger sources but also to some smaller sources of pollution. The rules require existing and new sources to install controls that employ maximum achievable control technology, install certain monitors, keep records, and report to the administering agency (in Wisconsin, DNR). NESHAP standards are incorporated in the WAC, NR 445, "Control of Hazardous Pollutants."

3.2.2.2 Discussion of Impacts

Construction

Construction of the proposed facility is estimated to take approximately eight months. During this time, air emissions would largely result from construction vehicle traffic and equipment exhaust. Fugitive dust emissions would be generated during site grading and other earthwork activities, such as the import and export of new fill material to ensure appropriate soil characteristics and compaction criteria. Standard construction equipment (e.g. trucks, excavators, bulldozers and cranes) would be used.

Prior to starting any construction or groundbreaking activities, Oneida would be required to obtain a construction permit from the DNR pursuant to WAC NR Chapter 406. A fugitive dust plan would be implemented and would incorporate best management practices (BMPs), including precautions to minimize emissions such as limiting vehicle idling, reducing traffic speed in construction areas, watering roadways, seeding disturbed areas, using a clean gravel egress and ingress for access, sweeping pervious surfaces, and other BMPs as deemed appropriate during construction. Fugitive dust emissions would terminate upon completion of construction. Therefore, project impacts would be minor and temporary. Furthermore, with incorporation of BMPs, impacts to air quality during construction of the proposed project would be temporary and minimal.

Operations

During operations, the project is anticipated to produce air emissions from the following sources:

- Three 4-stroke, lean burn (4SLB), spark ignited reciprocating internal combustion engines generators;
- Three 2.5 million Btu per hour, low NO_x burners on the pyrolysis units;
- Three cooling towers (PM emissions); and
- A flare to be used in case of an emergency.

Air emission controls are incorporated into the project design using a catalytic oxidation system with a 60-percent reduction efficiency for VOC and CO, in addition to sulfur reduction tanks[3] to ensure that syngas is scrubbed of contaminants prior to combustion and discharge.

Air emissions modeling results were obtained from the air permit application prepared in compliance with DNR air permitting requirements Chapters 406 and 407 (ERM 2011). In order to estimate air quality impacts from the project sources, air quality dispersion modeling was conducted for the project using the EPA-approved AERMOD V. 11103 dispersion model. Along with DNR, this was found to be an appropriate model for the facility and was used to demonstrate compliance with EPA regulations. Meteorological data were obtained using the EPA program AERMET, which comprises the most recent available five-year record of surface and upper air weather observations (1998 through 2002). Surface and upper air weather were collected from the National Weather Service station at Green Bay Straubel Airport located approximately 5.8 miles southwest of the project site. The airport was found to be the most

3. The sulfur reduction tanks are equipped with sulfur trap and per manufacturer specifications are estimated to trap 99.9 percent of sulfur compounds.

representative weather station that routinely records hourly surface data. Due to its proximity to the project site, similar terrain, prevailing wind direction, and the climate, this station's data were considered representative of meteorological conditions occurring at the project site.

Criteria Pollutants

In order to compare the project's air quality impacts with the NAAQS, background concentrations from DNR were added to project emissions using the AERMOD dispersion model. As noted by DNR, Green Bay is in an area with higher background concentrations. Therefore, higher values were used for this analysis as shown in Table 3-2. The model was run using rural coefficients, as the site is classified as "rural" under current EPA guidelines.[4] Pollutant concentrations were modeled for CO, PM_{10}, $PM_{2.5}$, SO_2, and NO_x based on the estimated maximum processing of 150 tons per day of MSW for the project with emissions controls, including the catalytic oxidation system and sulfur reduction tanks. Results of the modeling are presented in Table 3-3.

Table 3-2. State of Wisconsin Regional Background Concentrations

Pollutant	Time Period	High Value[a] ($\mu g/m^3$)
Carbon monoxide (CO)	1 Hour	1,362.7
	8 Hour	1,191.2
Nitrogen oxides ($NO_{x)}$	Annual	24.1
Particulate matter ($PM_{2.5}$)[b]	24 Hour	28.9
	Annual	10.2
Particulate matter (PM_{10})	24 Hour	47.0
	Annual	19.9
Sulfur dioxide (SO_2)	3 Hour	43.2
	24 Hour	30.5
	Annual	8.6

a. Source: Wisconsin 2008a.
Note: According to the DNR, the City of Green Bay is located in an area with higher regional background concentrations. Therefore, higher regional background concentrations were used.
b. $PM_{2.5}$ background concentrations were obtained through ERM correspondence with DNR.
$\mu g/m^3$ = micrograms per cubic meter.

Based on the results of the dispersion modeling, the maximum potential criteria pollutant emissions would result from CO, and SO_2. However, all potential theoretical emissions would not cause or substantially contribute to any exceedance of NAAQS and DNR ambient air quality standards. Air contaminants emitted by the project would meet all applicable PSD increments for SO_2, NO_2, and PM_{10} as shown in Table 3-4. The potential theoretical emissions would be below the PSD thresholds for criteria pollutants of 250 tons per year. In addition, the source is not listed as a major source per WAC NR 405.02 (22). As currently proposed, DOE anticipates that the proposed project would be consistent with NAAQS standards. However, it should be noted that actual emissions may vary depending on the feedstock.

4. According to EPA modeling guidelines, the urban option is used if (1) the land is classified as urban for more than 50 percent of the land within a 3-kilometer (~1.86 miles) radius of the emission source; or (2) the population density within a 3-kilometer (~1.86 miles) radius is greater than 750 people per square kilometer.

Table 3-3. Air Dispersion Modeling Results for the Proposed Project

Pollutant	Avg. Period	Maximum Theoretical Project Emissions w/ Controls ($\mu g/m^3$)	Background Concentrations ($\mu g/m^3$)	Maximum Predicted Ambient Concentrations ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Exceeds NAAQS?
Carbon monoxide (CO)	1 hour	358.3	1,362.7	1,721	40,000.0	No
	8 hours	208.8	1,191.20	1,400	10,000.00	No
Nitrogen dioxide (NO_2)/oxides (NO_x)	Annual	14.6	24.1	38.7	100	No
Particulate matter (PM)	24 hours	6.3	58.9	65.2	150	No
Particulate matter (PM_{10})	24 hours	6.3	47.0	53.3	150	No
	Annual	10.1	19.9	30.0	50	No
Particulate matter ($PM_{2.5}$)	24 hours	5.9	28.9	34.8	35	No
	Annual	1.0	10.2	11.2	15	No
Sulfur dioxide (SO_2)	3 hours	54.8	43.2	98	1,300.00	No
	24 hours	28.2	30.5	58.7	365	No
	Annual	10.1	8.6	18.7	80	No

Source: ERM 2011.

The proposed project technically meets the definition of a minor source, as the proposed project, once implemented, would not exceed thresholds of 100 tons per year of any criteria pollutant, or thresholds of 10 tons per year or 25 tons per year of individual and combined Federal hazardous air pollutants, respectively. However, while the project does not meet the definition of a major source, per DNR review, the project would be required to obtain a New Source Performance Standards (NSPS) Part 70 source operation permit, because the project meets the criteria of a small municipal waste combustion unit (40 CFR 60.1465).[5]

Oneida applied for exemption from NSPS under 40 CFR 60.1020 as a small power production facility. However, as the EPA has not yet provided input on the applicability of this exemption, the DNR has concluded that the project would not be exempt from these standards. Based on the EPA's response, the DNR determination could be subject to modification. Nonetheless, at the time DOE issued this Draft EA, the project was required to comply with standards of performance (emission limits) for small municipal waste combustion units.

5. NSPS are technology-based standards established for criteria pollutants and apply to specific categories of stationary sources.

These standards include, as proposed by the DNR, an alternative method of demonstrating compliance with sulfur dioxide emission limits.[6] Typically, sources subject to NSPS requirements are also required to provide performance testing to determine compliance. However, since the project does not meet the definition of a major source (per DNR), it would not be subject to compliance assurance monitoring.

Table 3-4. Class II PSD Increment

Pollutant	Averaging Period	Maximum Predicted Class II PSD Increment Consumption ($\mu g/m^3$)	PSD Allowable Increment Consumption ($\mu g/m^3$)	Exceeds PSD Increments?
Nitrogen dioxide (NO_2)/oxides (NO_x)	Annual	14.6	25	No
Particulate matter (PM_{10})	24 hours	6.31	30	No
Sulfur dioxide (SO_2)	3 hours	54.8	512	No
	24 hours	28.3	91	No
	Annual	10.1	20	No

The project would be heating MSW, and the resulting syngas would be similar to gas produced in a landfill. The types and amounts of raw materials to be used during project operations would be subject to the types and amounts of waste received from the contracted waste provider. As such, this variation in composition of solid waste would affect the emissions generated by the project. Therefore, the project would be required to presort solid waste received onsite via a screening process, to ensure the removal of hazardous contaminants as well as recyclable materials. Medical wastes from hospitals and items that can be recycled are generally excluded from MSW used to generate electricity (EPA 2010a). As further discussed in Section 3.2.6 of this EA, contracts with project suppliers would prohibit hazardous contaminants from being received onsite. However, in the event that hazardous waste is received onsite, it would be separated for management at an appropriate treatment-storage-disposal facility.

Hazardous Pollutants

The project would have the potential to emit hazardous air pollutants [CAA, Section 112(b)] and State of Wisconsin hazardous air contaminants (WAC NR Chapter 445.07, Tables A, B, and C) mainly from combustion of the syngas in the three reciprocating internal combustion engine units during operations. Emissions would also result from the use of syngas during the heating of the pyrolysis units, although these emissions would be considered minimal.

It is estimated that the primary hazardous air pollutants of concern the project would emit would include acetaldehyde and formaldehyde.

Acetaldehyde is a chemical mainly used as an intermediate in the synthesis of other chemicals. It is present in the environment and is a product of higher plant respiration and formed as production of incomplete wood combustion in fireplaces and woodstoves, coffee roasting,

6. This can be achieved by demonstrating a relationship between WAC DNR 440.76(9)(b)6 requirements and sulfur dioxide emission from combustion sources during stack testing.

burning of tobacco, vehicle exhaust fumes, and coal refining and waste processing. As such, many individuals are exposed to acetaldehyde by breathing ambient air. Nonetheless, short-term exposure to acetaldehyde can result in effects including irritation of the eyes, skin, and respiratory tract.

Formaldehyde is a colorless, flammable, strong-smelling chemical that is used to manufacture building materials and numerous household products. It is used in pressed-wood products, such as particleboard, plywood, and fiberboard; glues and adhesives; permanent-press fabrics; paper product coatings; and certain insulation materials. Other potential sources of formaldehyde include cigarette smoke and the use of unvented fuel-burning appliances, such as gas stoves, wood-burning stoves, and kerosene heaters. Formaldehyde also occurs naturally in the environment. It is produced in small amounts by most living organisms as part of normal metabolic processes. Short-term exposure to formaldehyde can result in adverse effects such as watery eyes, burning sensations in the eyes, nose, and throat. High concentrations may trigger attacks in people with asthma.

Table 3-5 shows Wisconsin's emission thresholds, standards, and control requirements from WAC NR Chapter 445.07, Table A for acetaldehyde and formaldehyde in comparison with the project emissions. A BACT analysis was performed to identify if either acetaldehyde or formaldehyde limits would trigger BACT controls. As shown in the table, acetaldehyde emissions would meet WAC thresholds; however, the project would trigger the requirement of BACT for formaldehyde, as it would exceed the WAC threshold for annual emissions by 13,818 pounds a year (15,155 pounds a year minus 1,337 pounds a year).

Table 3-5. Maximum Hazardous Air Pollutant Emissions Modeling Results Comparison

Pollutant	Proposed Project Emissions (Controlled)		WAC NR 445 Thresholds		Emissions Exceed Threshold ?
	Hourly Emissions (lbs/hr)	Annual Emissions (lbs/yr)	1-hr Threshold for Stacks 40< 75 feet	Annual threshold for Stacks 40 to <75 ft	
Formaldehyde		15,155		1,337	**YES**
Acetaldehyde	0.021	184	20.6	7,900	NO
Dioxins/Furans		0.00008		0.0001	NO
Arsenic		0.18		4.04	NO
Cadmium		0.66		9.66	NO
Fluoride	0.0003		1.05		NO
Lead	0.0031	27.39			NO
Chromium	0.00016		0.0105		NO
Copper	0.0019		0.0842		NO
Mercury	0.000184		0.0105		NO
Nickel		1.52		66.8	NO
Iron	0.0017		2.11		NO
Selenium	0.0024		0.0842		NO
Antimony	0.0037		0.211		NO
Phosphorus					NO
Chlorides (HCl)	0.022		1.77		NO
Hydrogen Sulfide	0.21		5.87		NO

Source: ERM 2011.

As indicated by the EPA, BACT must be determined using a "top-down" approach, requiring the most stringent control technology available for a similar source or source category be identified for each pollutant. If the most stringent control technology is selected as BACT, no further BACT analysis is necessary. Otherwise, the most stringent control technology is evaluated for its economic, technical, energy, and environmental feasibility with respect to the proposed project. Based on review of several BACT systems, a catalytic reduction system was found to be the most feasible BACT for the project.

As BACT, the project would use a catalytic oxidation system that controls volatile organic compound (VOC) emissions at 60-percent efficiency for each reciprocating internal combustion engine unit to control formaldehyde emissions. The oxidation catalyst is comparable to the control alternatives identified for formaldehyde by the EPA Air Compliance Advisor software. An oxidation catalyst, also known as a two-way catalyst, generally uses a platinum-family element such as platinum or palladium to oxidize carbon monoxide and VOCs to carbon dioxide and water. Combustion exhaust is routed through a catalyst-lined honeycomb channel, usually consisting of ceramic. The catalyzing element lines the surface of the honeycomb channel. As the gas stream passes through the catalyst-lined channels, CO and VOC are oxidized.[7] It is noted that catalytic converters can be fouled in the presence of certain catalysts such as lead or manganese. However, as previously discussed, all MSW would be sorted prior to processing. Removed materials would include but not be limited to waste with lead or manganese contaminants, lead-acid batteries (primarily used for automobiles), consumer electronics, glass and ceramics, pigments (such as paint), steel, aluminum, medical applications, auto shredder waste, feedstocks with high levels of copper or chlorine such as polyvinyl chloride (PVC) materials, items containing mercury, and other materials without Btu value. WAC requirements mandate that if application of the control emissions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the thresholds provided, emissions must be reduced by at least 50 percent (Wisconsin 2009). With incorporation of this BACT and presorting of solid waste for processing, the project emissions of formaldehyde would be reduced by at least 60 percent from approximately 37,800 pounds per year to 15,155 pounds per year. Per the WAC, DNR may require additional controls on other project equipment to further reduce emissions. However, at the time of this document's preparation, DNR's preliminary determination with respect to Oneida's air quality permit is that the proposed project would meet applicable emission limits with implementation of the oxidation catalyst as BACT controls (DNR 2011a).

Public concerns were raised during the public scoping period regarding the project's potential to also emit other hazardous air pollutants such as dioxins and furans. These compounds are considered or known to be toxic or hazardous and consist of benzene rings, oxygen, and chlorine. Dioxins and furans typically form downstream of the combustion process and frequently within the air emission control equipment. With the high temperature range, hydrogen chloride (HCl) in the flue gas would react with oxygen to form chlorine (usually catalyzed by heavy metal vapor, such as copper) and the chlorine would subsequently react with hydrocarbon radicals to form dioxins and furans. While low levels of oxygen present in pyrolysis and gasification processes inhibits the formation of dioxins and furans (UCR 2009), some oxygen may still be present during the pyrolysis process, producing nominal amounts of dioxins and furans.

7. 1) $2CO + O2 \rightarrow 2CO2$; 2) $CxH2x+2\ [(3x+1)/2]\ O2 \rightarrow xCO2 + (X+1)\ H2O$

Specifically, based on testing conducted by Oneida, it is estimated that the project would have the potential to emit up to 0.00008 pound per year of dioxins and/or furans (ERM 2011). This would not exceed the threshold of 0.0001 pound per year, as set forth by the State of Wisconsin (WAC NR Chapter 445). Therefore, the project would not have adverse impacts regarding dioxins or furans.

As shown in Table 3-5, the project would also have the potential to emit other hazardous air pollutants of concern (that is, arsenic, cadmium, mercury, lead, chlorides, and sulfides). However, as shown in the table, the hazardous air pollutants emitted would represent less than 1 percent of State thresholds and would not exceed the limits set forth in the WAC NR Chapter 445. Furthermore, as indicated above, the proposed project would be required to presort waste including the elimination of hazardous materials prior to processing, and BACT systems would be in place to control VOC and hazardous air pollutant emissions. Therefore, impacts related to such emissions from the proposed project would be minimal.

In addition to the above controls, Oneida would employ management practices to ensure the proper operation and maintenance of the systems to help minimize emissions and ensure regulatory compliance. These practices would include adhering to the manufacturer's recommendations on equipment operations and maintenance, training operators on the characteristics of the waste to be processed and materials to be removed prior to the pyrolysis units, and periodic assessments of plant operations. Following permit issuance, Oneida would submit compliance certification reports to the DNR annually, and compliance monitoring reports would be submitted to the DNR every six months. This includes maintenance of documentation of the vendor guarantee for each emissions unit per DNR requirements (DNR 2010c). DNR is responsible for regular inspections and determining whether air pollution sources are operating in compliance with State and Federal laws.

Odors

Since the proposed project would be handling and processing municipal solid waste, it is expected that wet garbage, including food items would be present and odors from waste decay would be a concern. Odors would also be expected during the combustion of the syngas, similar to combustion of natural gas. The project would be required to comply with municipal waste storage regulations for Brown County regarding noxious odors (Brown 2009). The project would also be required to comply with WAC NR Chapter 429.03 regarding malodorous emissions.

In accordance with City regulations, the proposed project would not store MSW outside of the facility at any time. Oneida would also minimize odor problems through a combination of operating procedures and equipment design as described in the following:

- In the main tipping area, waste would be delivered five days a week in an amount that would take seven days to process, first through the shredding and separation steps, then to the pyrolysis units. As a result, waste would accumulate in the tipping area and some would be present for at least a couple of days. In this area, Oneida would implement procedures requiring that the oldest waste was always processed first, thus minimizing the amount of time any waste would be in this area. In addition, all outside doors to the tipping area would remain closed except when waste is being received. By the end of the

seven-day period, all of the waste delivered that week will have been moved to the shredding and separation area and the tipping area could then be cleaned.

- Once waste was moved to the shredding and separation area, the process flow will have been designed so that the various process steps all worked at basically the same rate to void waste accumulation. These processes would operate 16-hours per day, after which the waste would be gone and the process equipment could be cleaned.

- At the end of the shredding and separation processes, the main waste stream (that is, the waste appropriate for the pyrolysis units) would be sent to an enclosed storage silo pending delivery to the pyrolysis units. The waste material would be continuously inside enclosed containers or conveyors while moving from the storage silo through the pyrolysis units, to control odors.

- Should there be an unplanned shut down of facility processes, waste materials would be diverted to the landfill in order to minimize waste accumulation. Should the shutdown continue for any period of time, waste material in the plant would be removed and sent to the landfill to avoid excessive odor buildup.

Combustion odors can be reduced through increasing stack heights to disperse the odors. Wet scrubbers can also be added if odor is still an issue. Odors resulting from syngas combustion would be discharged in stack heights of up to 60 feet, consistent with City regulations requiring venting of odors, gas, and fumes a minimum of 10 feet above grade (Green Bay 2011a). The syngas would also be processed through scrubbers during its collection to reduce potential for odor-causing components. With the above measures in place, impacts related to odors from the proposed project on the sensitive receptors are expected to negligible.

3.2.2.3 Greenhouse Gas Emissions

Affected Environment

While the scientific understanding of climate change continues to evolve, the Intergovernmental Panel on Climate Change 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 2007). The Panel'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 State of Wisconsin formed the Governor's Task Force on Global Warming to provide recommendations on short- and long-term goals for the reduction of greenhouse gas emissions. These goals include a "(i) a reduction to 2005 emissions levels no later than 2014, (ii) a reduction of 22 percent below 2005 GHG emissions levels by 2022, and (iii) a reduction of 75 percent from 2005 GHG emissions levels by 2050" (Wisconsin 2008b). To further GHG reduction goals, the State passed Senate Bill 273, enacted on May 19, 2010, allowing certain resources to count as renewable resources and eligibility for renewable resources credits, such as fuel

produced by the pyrolysis of organic or waste material. As stated in Wisconsin Statutes 196.374(1)(j), a renewable resource "derives energy from any source other than coal, petroleum products, nuclear power, or…natural gas." Comments received during scoping included concerns about whether MSW should be considered a renewable energy resource. Based on current guidance from the EPA, renewable energy is defined as energy derived from resources that are renewed indefinitely which includes the biogenic components of MSW (EPA 2007).

Many guidelines for developing estimates of GHG emissions include the premise that combustion of biogenic materials should be considered carbon neutral; that is they should not be counted as contributing to GHG emissions. Very simply, the basis for this premise is that as long as biomass resources are managed sustainably (that is, the resource's rate of carbon absorption is maintained or increased), the combustion of harvested materials (or products from harvested materials) presents no net increase of carbon to the ongoing carbon cycle and, therefore, should not be considered an increase to GHGs. This is contrasted to the combustion of fossil fuels, which emits carbon that has been sequestered, out of the current carbon cycle for millennia (CEQ 2010). An argument against the premise of carbon neutrality is that combustion of biogenic materials (such as syngas derived from pyrolysis of biogenic materials) results in GHG emissions, just like combustion of fossil fuels, and although emissions from biogenic materials might be considered part of the current carbon cycle, combustion puts GHG emissions into the atmosphere much quicker than would occur as a result of natural decay, which can occur over decades. Therefore, the argument is that combustion of biogenic material does not help attain near-term goals of reducing GHG emissions so it should not be considered carbon neutral.

Given this ongoing debate, on July 1, 2011, EPA finalized its action to defer for a period of three years, GHG permitting requirements for CO_2 emissions from biomass-fired and other biogenic sources.[8] As stated in the final rule, "During the three year deferral period, EPA will conduct a detailed examination of the science associated with biogenic CO_2 emission from stationary sources including engaging with federal partners, technical experts, and an independent scientific panel to consider technical issues" (EPA 2011d) Based on the feedback from the scientific and technical review, EPA will then undertake a rulemaking to address how biogenic CO_2 emissions should be accounted for in the permitting process (EPA 2011d). In the interim, EPA has developed guidance to help determine BACT for reducing CO_2 emissions from bioenergy production, to assist facilities and permitting authorities with permitting decisions until the proposed rule is finalized. As discussed therein, "any stationary source, including a bioenergy facility that qualifies as a major stationary source required to obtain a PSD permit must address the BACT requirement for GHGs if it emits or increases its emissions of this regulated pollutant [CO_2] in amounts greater than 75,000 tons on a CO_2e basis" annually, where CO_2e is carbon

8. According to the EPA, biogenic CO_2 emissions include but are not limited to: CO_2 generated from the biological decomposition of waste in landfills, wastewater treatment, or manure management processes; CO_2 from the combustion of biogas collected in landfills, wastewater treatment or manure management processes; CO_2 from combustion of the biological fraction of municipal solid waste or biosolids; and CO_2 derived from combustion of biological material, including all types of wood and wood waste, forest residue, and agricultural material.

dioxide equivalent.[9] A primary objective of the guidance document is to provide supporting information for a conclusion that BACT for CO_2 emissions at a bioenergy facility "is the combustion of biogenic fuels by itself" (EPA 2011e).

DOE recognizes that the premise of carbon neutrality is currently a highly debated issue with numerous groups and individuals on either side of the argument; that it is a very complex issue (much more complicated than described here). DOE is not seeking to resolve this ongoing question in this analysis. Combustion or thermal processing of MSW is further complicated by the heterogeneous nature of the feedstock. Most of the organic materials in MSW are of biogenic origin (for example, paper, yard trimmings, and food scraps) and involve carbon that was only recently removed from the atmosphere. Other MSW components, such as plastics, synthetic rubber, fiber, and carbon black are of fossil fuel origin, involving carbon removed from the atmosphere millions of years ago. It is clear, however, that MSW going into landfills decays over time and produces landfill gases, high in GHGs such as methane, that are emitted to the atmosphere (unless captured). Combustion or thermal processing of MSW that would otherwise go to a landfill would likely involve rapid production of GHGs, but would also act to reduce the amount of landfill gases produced at landfills over time.

Discussion of Impacts

As the project would have the potential to emit greenhouse gases it is necessary to calculate emissions that would be created as a result of project operations. Under GHG reporting guidelines developed by the Council on Environmental Quality (CEQ 2010), this would include Scope 1, Scope 2, and Scope 3 emissions, which are defined as follows:

- Scope 1 – Direct emissions that result from sources that are owned or controlled by the project. Examples include on-site stationary sources of combustion from fossil fuels or mobile combustion of fossil fuels from vehicles that are either owned or operated as a necessary component of the project.

- Scope 2 –Indirect emissions that result from generation of electricity, heat, or steam generated off-site and controlled by another party but purchased by the project.

- Scope 3 – Indirect emissions from sources not owned or directly controlled by the project but related to project activities such as vendor supply chains, delivery services, outsourced activities, and employee travel and commuting.

For this project, Scope 1 emissions during project operations would result from combustion of syngas in the three engine-generator sets, the three pyrolysis units, and the emergency flare. Scope 1 emissions also would include burning of natural gas for space heating of the facility. Other than for space heating, natural gas would be required only during startup of the project, as it would be replaced by the syngas produced during project operations. The char ash byproduct

9. Carbon dioxide equivalent is a measure used to compare greenhouse gases based on their global warming potential (GWP), using the functionally equivalent amount or concentration of carbon dioxide as the reference. The carbon dioxide equivalent for a gas is derived by multiplying the amount of the gas by its GWP; this potential is a function of the gas' ability to absorb infrared radiation and its persistence in the atmosphere after it is released. The Intergovernmental Panel on Climate Change utilizes the 100-year GWPs to determine carbon dioxide equivalents. GWPs for common GHGs can be found at http://unfccc.int/ghg_data/items/3825.php.

of the proposed project would be disposed of in a landfill where it could aerobically degrade to emit CO_2, anaerobically degraded to emit CH_4, or remain in a relatively inert form. Unless the carbon in the ash is converted to CH_4 (which EPA considers unlikely), the effect of the ash on the net GHG emissions from the landfill would be considered nominal. However, to be conservative, the analysis in this section considers the char ash waste that was never diverted from the landfill.

Scope 2 emissions would include those emitted by the electric utility company in producing the electricity required for project operations. However, in this case the project would also generate electricity for sale back to the local utility. The amount of electricity required by the project (estimated at 0.75 to 0.95 megawatt of electricity) would be offset by the amount of electricity sold to the grid (estimated at approximately 4.6 megawatts). The net effect would be that the facility would not require electricity from the grid, so Scope 2 emissions would be zero.

Scope 3 emissions would likely occur initially from the construction of the facility, from employees traveling and commuting to and from work, as well as delivery of MSW and waste products to and from the project site. However, as noted in Section 3.2.5 of this EA, it is likely that employees traveling to and from the project site would reside locally. In addition, as noted in Section 3.2.6, since the project would result in the diversion of waste from landfills, a reduction in vehicle truck trips and miles traveled would occur and offset increased traffic in the area of the project site. As such, it is likely that Scope 3 emissions would be minor and negligible for this evaluation.

Recognizing that there are different approaches and emission factors available that could lead to slightly different answers, whenever possible, this analysis uses the same criteria or data source for comparable emissions for the project calculations. GHG emissions were calculated using emission factors provided by California Climate Action Registry (CCAR 2009) and the EPA. The California Climate Action Registry includes a comprehensive list of GHG emission factors and, although prepared primarily for the State of California, it was developed in consultation with multiple local, State, and Federal agencies, including EPA. Specifically, GHG emissions were calculated by finding the carbon dioxide equivalent (CO_2e) for three primary greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4). The Scope 1, 2, and 3 emissions were multiplied by each gas's global warming potential to obtain the CO_2e of each gas.

The Registry includes a CO_2 emission factor for burning biogas, but does not have similar biogas factors for N_2O or CH_4. As a result, emission factors for natural gas were used for these two GHGs. This was deemed reasonable because the CO_2 emission factors for biogas and natural gas were very similar, indicating similar carbon content, and once going through a combustion process, concentrations of N_2O or CH_4 in the off-gas would be expected to be minor in comparison to the CO_2. Table 3-6 provides an estimate of the annual GHG emissions from the proposed facility.

Also provided in Table 3-6, for comparison with the estimated facility emissions, are the counterpart GHG emissions that would occur without the facility. This would include the GHG emissions from the average 3.65 megawatts of electricity (4.6 production capacity less the maximum of 0.95 that would be used by the facility) were it generated elsewhere. The emission

factors used for electricity produced elsewhere are those recommended by EPA in its eGrid program for evaluating reduction of electricity usage in the subregion designated the Midwest Reliability Organization - East, which is basically limited to Wisconsin.

Table 3-6 illustrates that the GHG emissions from the proposed facility would be offset by the reduction in emissions from the generation of electricity elsewhere because, in this region of the Midwest, electricity is predominantly produced using fossil fuels (primarily coal).

Although not shown in the table, if implemented, the proposed project would also reduce GHG emissions from the Winnebago County regional landfill where landfill gas is generated from the long-term decomposition of MSW. Although the regional landfill has a gas collection system and uses the gas to fuel power generation engines, some of the landfill gas still escapes to the atmosphere. Specifically, the regional landfill has the capacity to produce 5.4 megawatts of electricity from combustion of landfill gas (Winnebago 2011). Based on DNR studies of landfill gas collection efficiencies at over 30 landfills throughout the state, it is estimated that about 9 percent of the gas is missed by the collection system and lost to the atmosphere (DNR 2008).

Table 3-6. Estimated GHG Emissions with and without the Proposed Project

Action and Amount of Material Involved per Year	Gas	Emission Factor	Emission (tons/yr)	GWP	Emissions in CO_2e (ton)	
					By Species	Subtotal
Emissions With the Proposed Project In Place						
Combustion of Syngas in the Process						
41.1 MM Btu/hr[a] over 365 operating days = 360,036 MM Btu/yr	CO_2	114.8 lb/MM Btu[b]	20,666	1	20,666	
	CH_4	0.011 lb/MM Btu[b]	1.98	21	41.6	
	N_2O	0.00022 lb/MM Btu[b]	0.04	310	12.4	20,720[c]
Combustion of Natural Gas for Space Heating of the Proposed Facility						
2,968 MM Btu/yr[d]	CO_2	117 lb/MM Btu[b]	173.6	1	173.6	
	CH_4	0.011 lb/MM Btu[b]	0.016	21	0.3	
	N_2O	0.00022 lb/MM Btu[b]	0.0003	310	0.1	174
					Total	**20,894**
Emissions Without the Proposed Project (No-Action Alternative)						
Electricity Produced Elsewhere						
Average of 3.65 MW over 365 operating days = 31,974 MW-hr	CO_2	1905.18 lb/MW-hr[e]	30,458	1	30,458	
	CH_4	0.03525 lb/MW-hr[e]	0.56	21	12	
	N_2O	0.02998 lb/MW-hr[e]	0.48	310	149	30,619
					Total	**30,619**

a. Source: ERM 2011.
b. Source: CCAR 2009 – Emission factors are for combustion of natural gas with the exception of the CO_2 emission factor used for combustion of syngas, which is identified as a biogas emission factor.
c. Preliminary air permit documents generated by DNR estimated GHG emissions from processing MSW at about 36,700 tons per year. The DNR document did not present detail on how this value was developed, but it appears to be based on the emission sources being operated at maximum capacity, whereas the emission estimate in this table is based on expected average operating rates.
d. Source: See Section 3.2.7.2 of this EA.
e. Source: EPA 2010c.

Btu = British thermal unit.
CH_4 = methane.
CO_2 = carbon dioxide.
CO_2e = carbon dioxide equivalent, equal to the gas emission multiplied by the GWP value.
GWP = Global Warming Potential.
hr = hour.
lb = pound.
MMBtu = thousand thousand (or million) British thermal units.
MW = megawatt.
N_2O = nitrous oxide.
Yr = year.

Since approximately 11 percent of the MSW now going to the regional landfill would be diverted to the proposed project (Section 3.2.6.2 of this EA), there would be a reduction in the amount of the MSW decomposition at the landfill and, therefore, a reduction in the associated GHG emissions. DOE evaluated the quantities of GHG emissions that could be avoided at the landfill, and estimates that the reduced amount of gas going to the engine generator sets and being released to the atmosphere would result in avoidance of 4,000 to 5,000 tons per year of CO_2e emissions.

These emissions are not shown in Table 3-6 because they are minor, on an annual basis, compared with the reduction in emissions from the generation of electricity elsewhere and because DOE's evaluations would only support a rough estimate. It should be noted that the benefit of any reduction in GHG emissions from the regional landfill, although relatively small on an annual basis, would continue over decades. If the waste targeted for the proposed facility continued to go to the landfill, it would contribute to the production of landfill gas, a source of GHG, for decades as it slowly decomposed in the landfill.

The release of anthropogenic GHGs and their potential contribution to global warming are inherently cumulative phenomena. Under the premise that the longer-term decay of MSW in landfills should not be included in the evaluation, the project would result in a net decrease in GHG emissions of about 9,700 tons carbon dioxide equivalent per year. For perspective, this decrease would be small compared with the 8,026 million tons of carbon dioxide equivalent GHGs emitted in the United States in 2007 (DOE 2007) and the 54 billion tons of carbon dioxide equivalent anthropogenic GHGs emitted globally in 2004 (IPCC 2007). However, emissions from the proposed project, in combination with past and future emissions from all other sources, would still contribute incrementally to the climate change impacts. 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 the facility or elsewhere.

3.2.2.4 Air Quality Conformity

Section 176(c)(1) of the CAA requires Federal agencies to ensure that their actions conform with applicable implementation plans for the achieving and maintaining the NAAQS for criteria pollutants (DOE 2000). To achieve conformity, a Federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern. The EPA general conformity regulations (40 CFR 93, Subpart B) contain guidance for determining whether a proposed Federal action would cause emissions to be above specified levels in nonattainment or maintenance areas.

DOE performed a conformity review of the proposed project in accordance with DOE guidelines for compliance with the CAA General Conformity Requirements (DOE 2000). Although the project would involve emissions of criteria air pollutants, it would not involve air emissions in a nonattainment or maintenance area for any criteria pollutant (EPA 2011b). Accordingly, requirements for the next evaluation step, the conformity determination, do not apply to the project.

3.2.3 WATER RESOURCES – SURFACE WATER

This section discusses Water Resources and Water Quality associated with storm water, and floodplains and wetlands.

3.2.3.1 Affected Environment

The project site is located approximately 0.5 mile south of Green Bay (the body of water) and 1.25 miles west of the Fox River. Green Bay is part of Lake Michigan, one of five Great Lakes, helping form one of the largest freshwater systems on Earth. However, discharges of toxic substances, including runoff from soils and farm chemicals from agricultural lands, waste from cities, discharges from industrial areas, and leachates from disposal sites have impaired the water quality of the lakes and contributed to nutrient pollution, invasive species, and habitat degradation. In the area of the project site, the Fox River Harbor and Lower Green Bay have been identified as an "area of concern" (AOC) (EPA 2010b), due to a history of paper mill pulp production and dumping which have polluted the river and bay with high levels of PCBs and mercury. Figure 3-4 shows those areas currently within the boundaries of the AOC. Restoration

efforts to AOCs are currently funded via the *Great Lakes Legacy Act*. The International Joint Commission (IJC) a collaborative governmental effort between the United States and Canada, have created the Great Lakes Water Quality Agreement to monitor progress of protection of the quality of the lakes since 1972.

Section 402 of the Clean Water Act (33 U.S.C. 1251 *et seq*., as amended) established the National Pollutant Discharge Elimination System (NPDES) for controlling the discharge of any pollutant into waters of the United States. The NPDES regulates storm water and wastewater discharges from municipal storm drains, construction activities, and industrial activities in an effort to prevent the discharge of harmful pollutants into local surface waters such as streams, rivers, lakes or coastal waters (EPA 2011f), such as Green Bay and Fox River. To meet the requirements of the Federal Clean Water Act, the Wisconsin DNR developed the Wisconsin Pollutant Discharge Elimination System (WPDES) Storm Water Discharge Permit Program, which is regulated under the authority of WAC NR Chapter 216 of the WAC (DNR 2010d). As part of the NPDES, the WPDES regulates the discharge of storm water in Wisconsin from construction sites, and selected municipalities. In this case, the City of Green Bay is the implementing authority for DNR regulations.

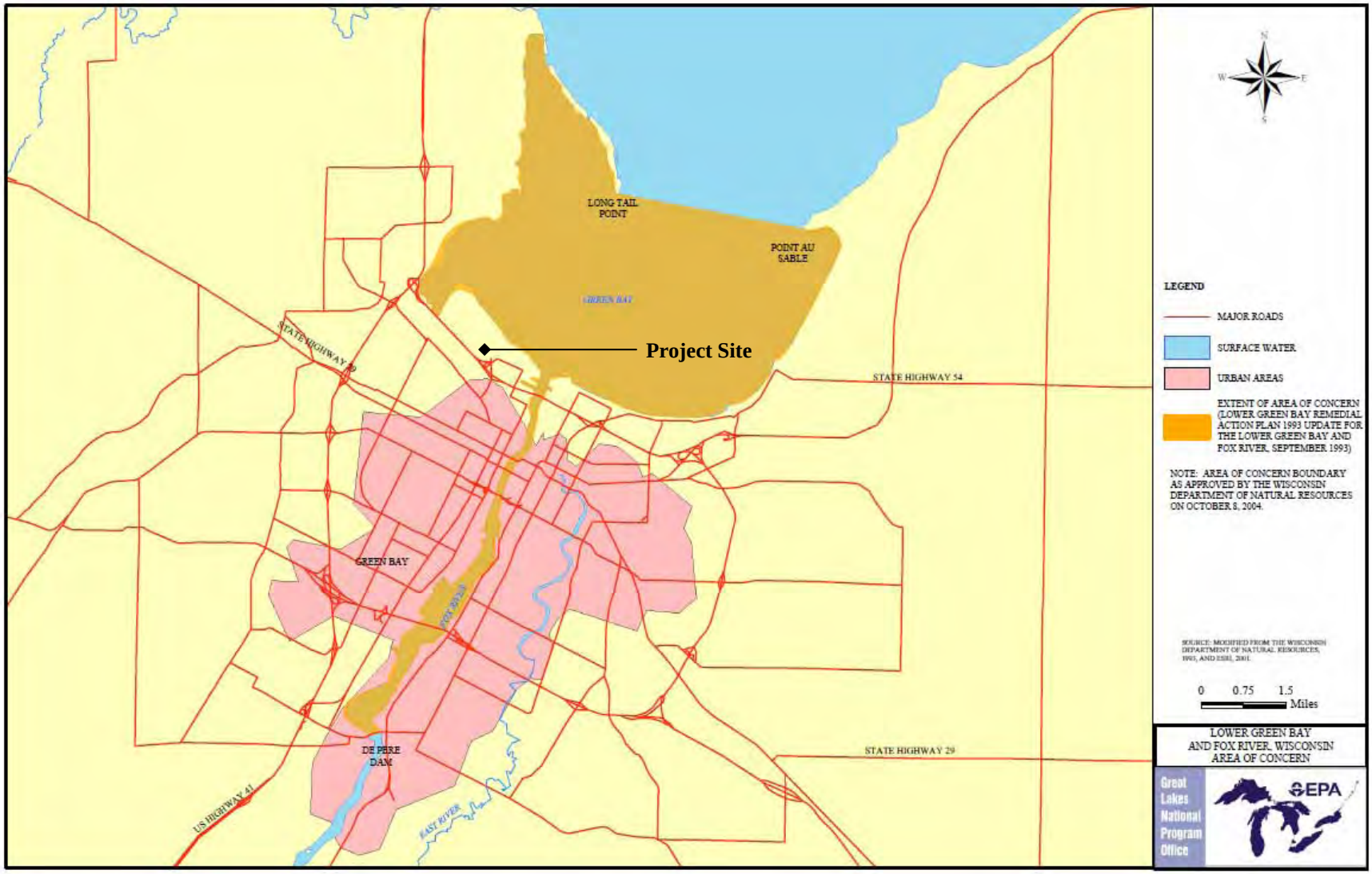


Figure 3-4. Lower Green Bay and Fox River, Wisconsin Area of Concern (Source: EPA 2004)

Storm Water

Storm water on the project site currently flows over the surface in a southerly and southwesterly direction toward I-43 or seeps into permeable areas for groundwater recharge. Surface storm water is directed through open channels/ditches and culverts into existing storm water outfalls, to the Fox River or Green Bay. The storm water infrastructure includes a regulated municipal storm sewer system (MS4) maintained by the City Department of Public Works and overseen by the Green Bay Stormwater Utility. The City is authorized to discharge from the storm sewer system to waters of the United States, in accordance with conditions and NPDES/WPDES requirements. A municipal well is located approximately 2,000 feet west of proposed project site. However, the project site is not located within a wellhead protection plan area.

As noted above, storm water discharge is regulated by the State's WPDES under DNR regulations and the City Ordinance, Chapters 30, "Stormwater Management" and Chapter 31, "Illicit Discharge and Connection." Specifically, Chapter 30 contains provisions regarding storm water management standards and plans (including discharge quantity and quality such as the control of suspended solids and peak flow rates), permitting requirements and procedures, enforcement and penalty, and maintenance agreements. Chapter 31 contains provisions regarding discharge prohibitions and requirements to control storm water pollutants by use of BMPs.

As discussed in Chapter 30, the City requires storm water permits and a storm water management plan for projects involving development of 0.5 acre or more. Additionally, Chapter 34 of the City Ordinances requires an erosion and sediment control permit for new construction activity that would affect a surface area of 4,000 square feet or more.

Floodplains and Wetlands

Executive Order 11998, Floodplain Management (May 24, 1977), directs each Federal agency to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs reflect consideration of flood hazards and floodplain management.

Floodplains are those areas of low elevation adjacent to bodies of water including lakes, wetlands, and rivers that in the event of a flood would be covered with water. A wetland is defined as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation, and which as soils indicative of wet conditions" (DNR 1992). Figure 3-5 shows delineation of floodplains and wetlands areas in the project vicinity. As shown in Figure 3-6, the existing wetland areas within the same area correspond closely with floodplain locations. However, the project site is not located within a floodplain or wetland area. The nearest floodplain to the project site is a 100-year floodplain located on the opposite side of I-43 approximately 350 feet southwest of the project site. Other 100-year floodplains are located in areas approximately 1,500 feet east of the project site. The nearest wetlands (shown as "bayshore wetlands" in the figure) are also located opposite the project site, along I-43.

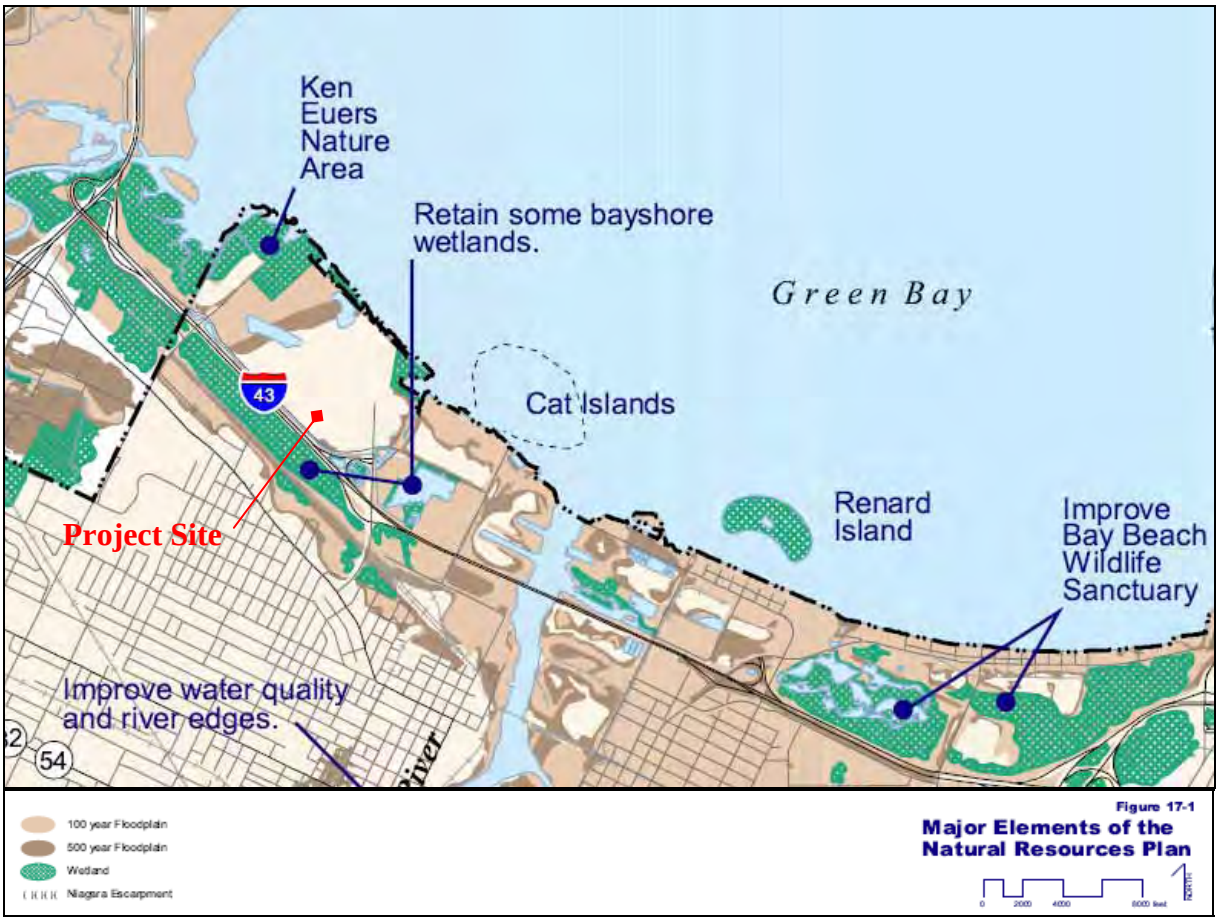


Figure 3-5. 100/500 year Floodplains and Wetlands Map, Green Bay (Source: Green Bay 2003)

3.2.3.2 Discussion of Impacts

Storm Water

Construction

Based on review of project site plans, it is estimated that the majority of the site would be disturbed during construction of the project. Oneida has indicated that a geo-pier system would be used for the deep foundation and that a layer of about 2 feet of compacted rock material would be put over the top of the piers as a base for the concrete slab (VerHaagh 2011). As the proposed project would disturb over 4,000 square feet of land during construction, storm water permit requirements stipulate that the project have an erosion and sediment control plan that would be subject to review and approval by the City. To comply with City regulations and to minimize unwanted runoff of sediments, the project would use tracking pads at all construction ingress and egress, silt fencing or straw bale fencing around all stockpiled topsoil and fill; seed or mulch soil piles; control dust in accordance with DNR Technical Standards 1068; maintain inlet/outlet protection; and remove sediment that may accumulate in the culverts once the site was stabilized. As discussed, the City would review and approve these erosion control measures prior to construction. With implementation of the City regulations and subject to City review

and approval, impacts related to storm water during construction of the proposed project would be minimal.

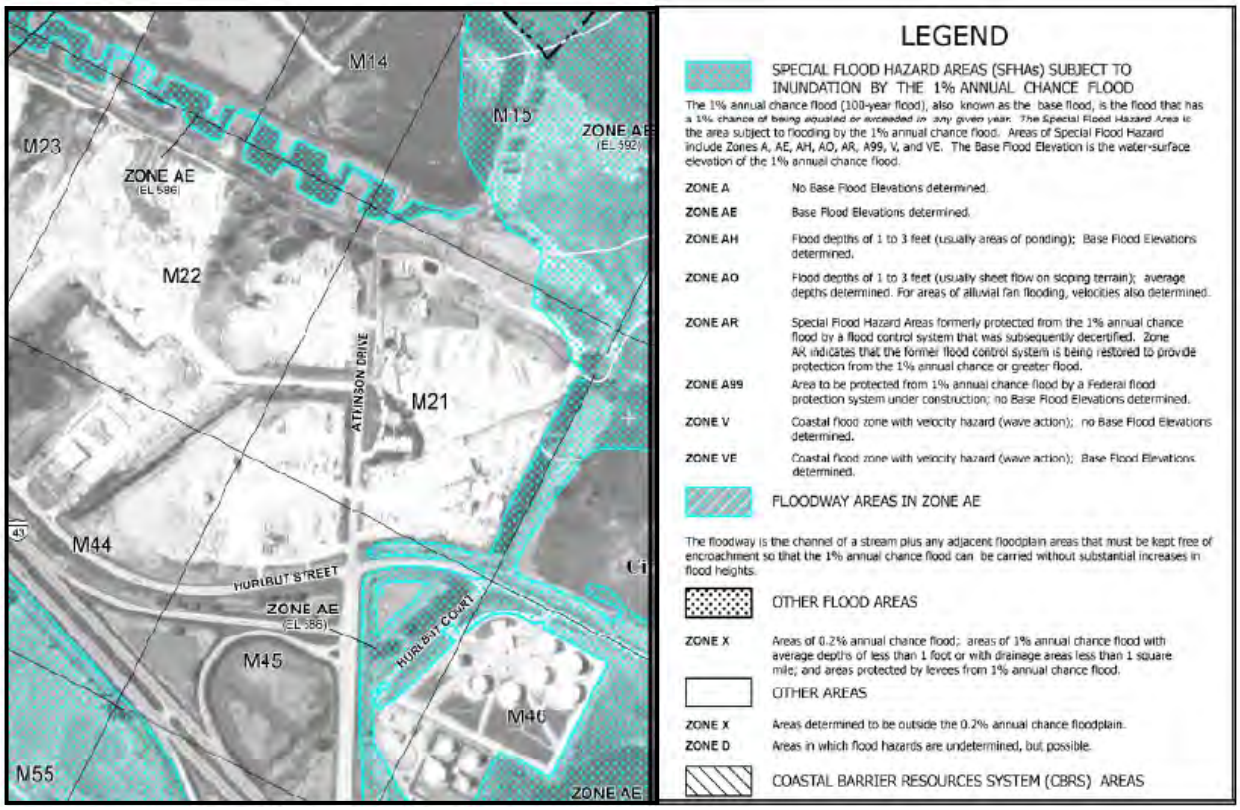


Figure 3-6. Flood Insurance Rate Maps- Green Bay (Source: City of Green Bay, Floodplains, FIRM Rate Map; Effective August 2009)

Operations

Upon completion of construction, the project site would increase impervious area by roughly 170,000 square feet. As such, the project would be required to retain storm water onsite prior to discharge. To accommodate flows, the project would provide approximately six catch basins surrounding the northern and eastern perimeters of the project site that would direct runoff to an onsite storm water retention pond. Storm water runoff would flow in a southerly direction to the storm water retention pond at the southwestern corner of the project site, parallel to Hurlbut Street and I-43. The storm water retention pond is designed for a 100-year storm, capable of accommodating water elevations of 589.42 feet. Figure 3-7 shows the proposed locations of the onsite catch basins and the storm water retention pond.

As noted above, the project would incorporate dust control in accordance with DNR Technical Standards 1068 and would remove sediment that may accumulate in the culverts once the site was stabilized. In addition, inlet and outlet protections would control water output from the storm water retention pond to the existing drainage ditch paralleling Hurlbut Street. Therefore, Oneida expects that the proposed project design including the storm water retention pond and drainage system would adequately control onsite runoff.

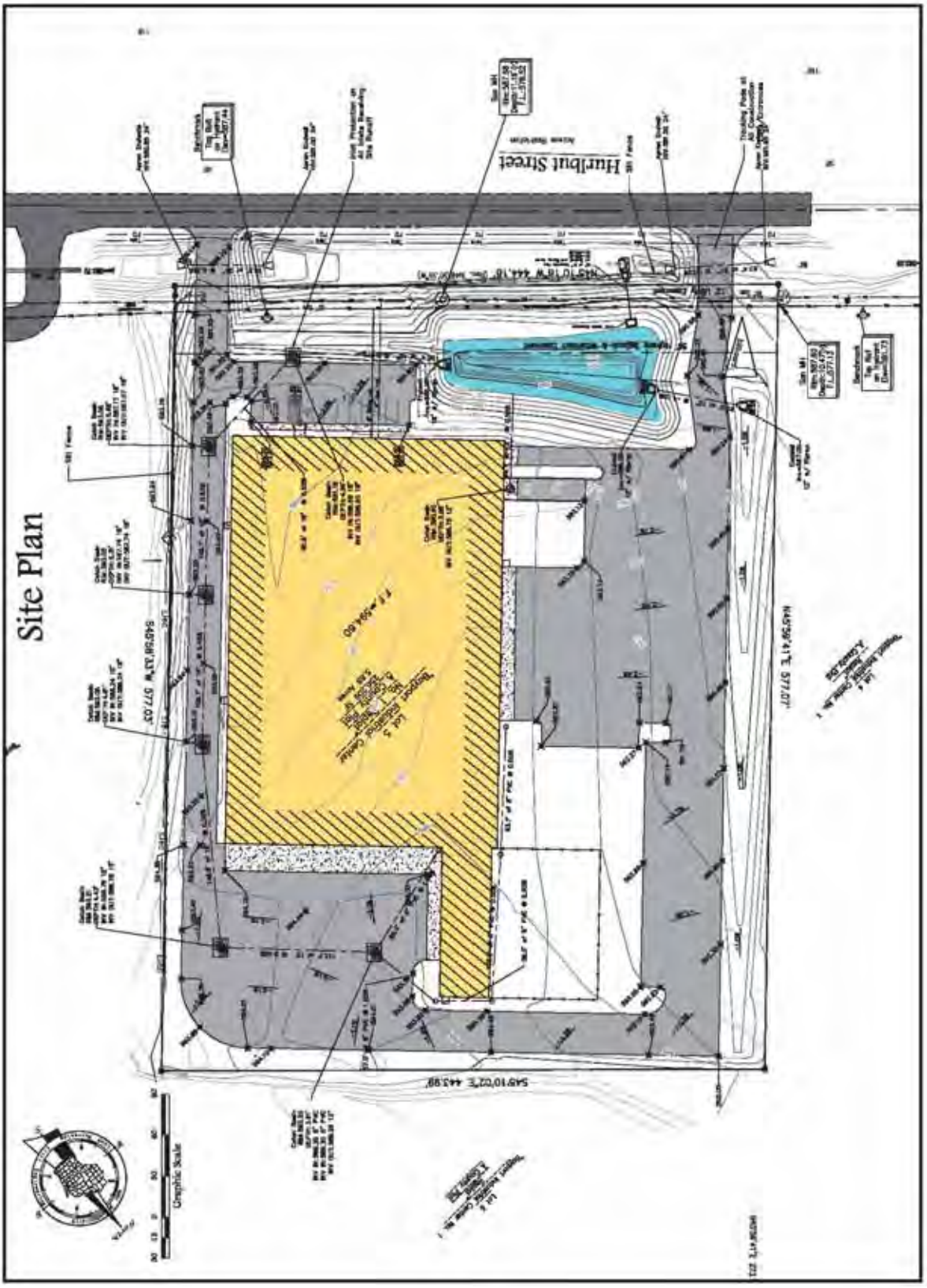


Figure 3-7. Preliminary Layout of Storm Water Retention Pond and Site Drainage

As the project site (5.88 acres) is greater than 0.5 acre, the proposed project would require a storm water permit and a City-approved storm water management plan in accordance with the City's Chapter 30 Stormwater Management ordinance. As noted above, in accordance with City regulations, the project would include storm water control systems to manage existing peak storm water such that flow would not increase from development of the land (Green Bay Ordinance Chapter 30, Stormwater Management). In addition, the project would be subject to DNR 216 subchapter II, regarding industrial storm water discharge regulation.

The storm water retention pond would be equipped with a Type A pond liner, constructed in accordance with municipal storm water regulations and DNR Technical Standard 1001. As such, per City Ordinance Chapter 30, the pond would act as a settling basin and the project would comply with discharge quality requirements for the removal of total suspended solids. Upon retention in the storm water retention pond, storm water would then flow to a drainage ditch that parallels Hurlbut Street and would discharge into Green Bay.

As discussed above, a municipal well is located approximately 2,000 feet west of the project site. City Ordinance Chapter 30 requires the project to provide a 1,200-foot setback for the proposed storm water pond from the municipal water supply wells. The actual setback of the storm water retention pond would be approximately 2,500 feet from the nearest well. Therefore, project operations would comply with the City of Green Bay Ordinance Chapter and be consistent with State regulations.

With implementation of the storm water retention pond, proper management of runoff during operations and compliance with regulations mentioned above, the impacts related to storm water infrastructure during operation of the proposed project would be minimal. Further, for these same reasons, impacts to waters of the United States during project operations would be minimal.

Floodplains and Wetlands

Construction

Based on review of the current Federal Emergency Management Agency flood insurance rate maps for the area and maps developed by the City of Green Bay, the project site is not located within any floodplain or wetlands. In addition, as noted in Section 3.2.1 of this EA, the general area of the proposed project has been used historically for the disposal of waste, primarily dredge materials removed from the harbor area from the 1880s to the 1950s.

As previously noted, the nearest floodplain/wetland identified is located approximately 350 feet southwest of the project site; however it is split from the project site by I-43 and Hurlbut Street. As such, storm water runoff would not directly discharge into this wetland area. Storm water runoff in high enough quantities to get through the retention pond would join the existing drainage channel on Hurlbut Street and enter the City's existing storm water collection system draining toward Fox River and the bay. As previously discussed, construction activities would remain onsite and would be required to implement BMPs as well as provide an erosion sediment control management plan subject to review and approval by the City. As a result, impacts related to floodplains and wetlands during construction would be minimal.

Operations

Operation activities would consist mostly of truck travel similar to existing activity currently occurring in the area. Processing of the MSW would occur indoors with a wastewater treatment system incorporated into the project design. Furthermore, the project includes catch basins surrounding the project facility to convey storm water runoff to a storm water retention pond to limit effluent flow and provide sediment control during rain events. The project would not result in the loss of wetland ecosystem nor would development occur within floodplains. As such, no impacts would result to floodplains and wetlands during project operations.

3.2.4 NOISE

Noise is often referred to as unwanted sound. Sound is the rapid fluctuation of air pressure causing a repeating cycle of compressed and expanding air. The intensity is measured in decibels. In terms of human response, 0 decibels is the threshold of hearing and 140 decibels is considered the threshold of pain. Typically, environmental and occupational sound pressure levels are measured in decibels on an A-weighted scale (dBA). The A-weighted scale de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear [i.e., using the A-weighting filter adjusts certain frequency ranges (those that humans detect poorly)] (Colby et al. 2009). As a frame of reference, the sound of rustling leaves is approximately 10 dBA, conversational speech is approximately 60 dBA, and an aircraft take-off is approximately 120 dBA (EPA 1974). It is also important to note that decibels are a logarithmic scale, so doubling the pressure intensity of a sound does not double the decibel value. If a source is doubled (for example, two jets taking off instead of one), the measured sound level would increase by 3 decibels. To most individuals, a 3-decibel change is considered barely noticeable. On average, an A-weighted sound level increase of 10 decibels is perceived as a doubling of the sound level.

The description of the A-weighted sound also highlights another important concept: most sounds are a combination of air pressure changes over multiple frequencies. As a result, sounds are often measured in terms of their component frequencies; for example, a sound might be made up of "X" decibels at a frequency of 125 cycles per second (or hertz), "Y" decibels at 250 hertz, and so on. Under this terminology, all of the sounds measured within the octave band centered on 125 hertz would be grouped together, as would the sounds within the octave band centered on 250 hertz, and so on. When a sound is described without reference to specific hertz values, it is understood to be a combined or summed value (recognizing that they must be summed logarithmically).

3.2.4.1 Affected Environment

The City of Green Bay regulates noise by establishing maximum allowable sound levels that can be produced in residential, commercial, and industrial zones of the city, as documented in the City Ordinance Code Book, Chapter 27. The City's regulation also sets limits for the sound levels that industrial and commercial zones can impart on quieter zones. That is, the regulations limit how industrial zones can impact commercial and residential zones and how commercial zones can impact residential zones. All of the maximum allowable sound levels are established in terms of both daytime and nighttime values. Table 3-7 provides a summary of the City's noise regulations that could be applicable to the proposed project, within an industrial zone. With

respect to the maximum allowable sound within a zone, the regulation states, "no person shall operate or cause to be operated on private or public property any source of sound in such a manner as to create a sound level which exceeds the limits set for the zone categories." When dealing with private property, most noise regulations set limits at the property boundary. Although Green Bay's regulations do not include such stipulations, it is assumed for purposes of this evaluation that the point of regulation is the property boundary. Otherwise there would appear to be no difference between sound levels generated inside a building and those outside the building, and no difference between sound levels generated far from a property boundary and those generated next to the property boundary. In both cases, however, there would be noticeable differences in impacts to adjacent or nearby property owners.

Table 3-7. Summary of the Applicable Green Bay Noise Regulations

Description	Sound Level (in dBA) by Zones		
	Residential	Commercial	Industrial
Maximum permissible sound level			
Daytime – 7 a.m. to 10 p.m.	57	63	72
Nighttime – 10 p.m. to 7 a.m.	52	58	67
Maximum permissible sound level from an industrial zone into adjacent zones			
Daytime – 7 a.m. to 10 p.m.	64	66	
Nighttime – 10 p.m. to 7 a.m.	60	61	

Source: Green Bay City Ordinance Code Book, Chapter 27 Public Peace and Good Order, Subchapter II Noise (27.201 Regulation of Noise)

The Green Bay noise regulations also set requirements for allowable sound levels in terms of decibel (not A-weighted) by octave band. For simplicity, these values are not shown in Table 3-7, but they are addressed in the evaluation of the sounds that would be produced by the proposed project during operations. It should also be noted that the City regulations exempt construction activities from meeting the daytime criteria shown in the table.

3.2.4.2 Discussion of Impacts

Construction

Temporary increases in noise levels would be expected during construction. Oneida indicates that the nature of the surface and shallow soils at the proposed project site may require the use of geo-piers such as a rammed aggregate pier system for the building's foundation. Should this be necessary, it is assumed that the vertical ramming device used in installing the piers would produce sound similar to an impact pile driver and would likely be the loudest of the construction activities. Pile driving can generate noise levels up to 105 dBA for nearby receptors, but these activities would be expected to occur for a relatively short time (likely no more than a couple of weeks) during the early phases of construction and would be restricted to daytime hours. Also, by the time those sounds traveled to the nearest residence (about 1,500 feet away), they would be reduced by about 40 dBA as a result of normal sound attenuation over distance. The resulting levels of about 65 dBA at the nearest residence would be similar in intensity to loud-speech; thus minor, if any, impacts would be expected. Occupants of the adjacent industrial properties would be the most affected. Also, in addition to sound level decreases by distance, at least a 15-dBA decrease would be expected for people working inside buildings (EPA 1974).

Other heavy equipment including trucks, excavators, bulldozers, and concrete mixers, would be present during construction and would contribute to the noise levels. These sound sources would not be expected to reach the pile-driver-like decibel levels of the ramming device, but could still produce sound levels in the 90- to 100-dBA range under worse-case conditions (Figure 3-8). In addition, noise from these types of construction equipment would likely be present for a greater portion of the construction phase than the pile driving. Thus for worse-case conditions other than installing a rammed aggregate pier system, sound levels at the nearest residences could be within the range of 50 to 60 dBA. This range is typical of sound levels that might be expected in an office, so residences should not be adversely affected. Adjacent industrial properties would experience the highest impacts. Because of the industrial nature of the property and the proximity of I-43 with its associated traffic noise, it is assumed that individuals working in the area are conditioned to a relatively noisy environment. Because of these reasons, impacts related to construction noise from the proposed project would be minimal.

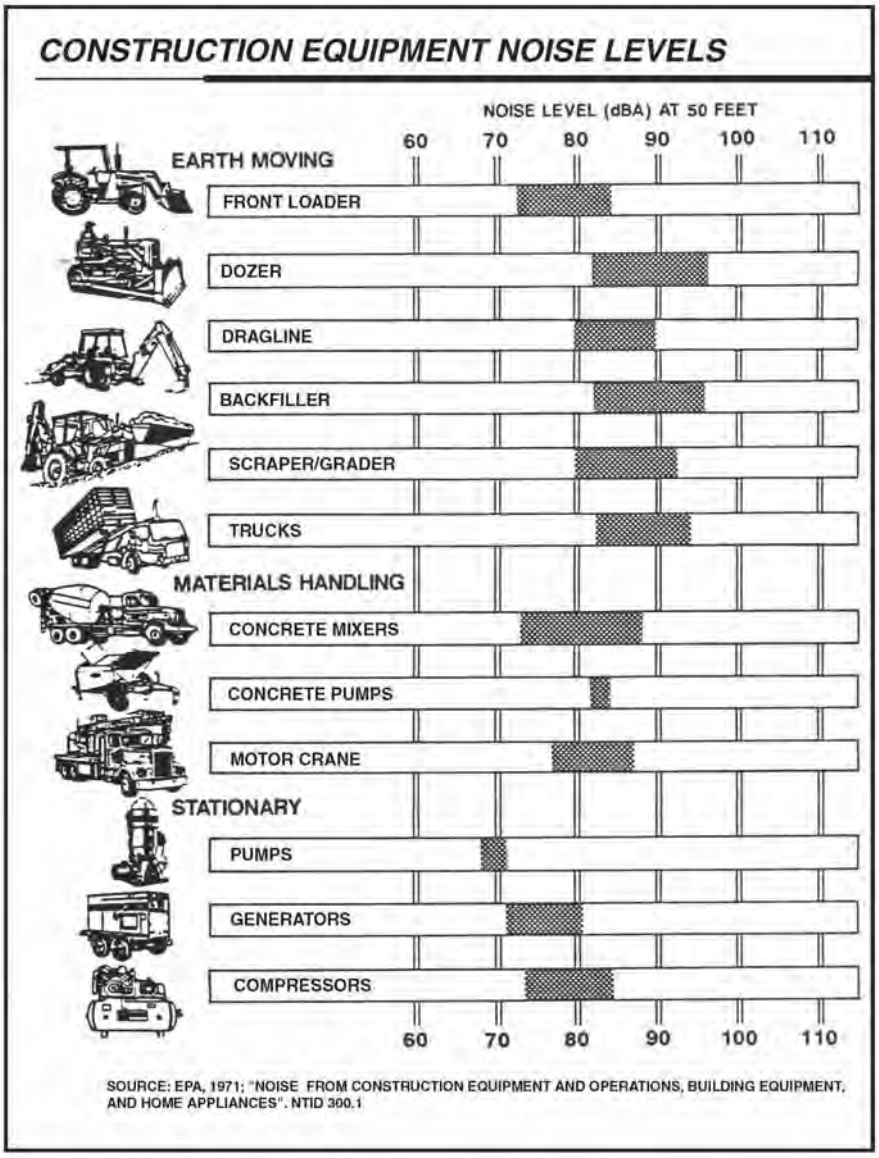


Figure 3-8. Typical Construction Equipment Noise Levels

Operations

The proposed facility would operate 24 hours a day, 7 days a week. One of the noisier aspects of operations would be truck traffic, which would be limited primarily to weekdays during the day shift. Other primary equipment associated with the project would operate for extended hours, but would be located within the building such that there would be a substantial decrease in noise levels before reaching the property line or adjacent receptors. Oneida has identified the radiator coolers for the engine-generator sets as the units of highest concern for noise production because these units would likely run continuously (day and night) and would be located outside of the building. These units would be subject to the City of Green Bay's noise regulations and, because they would operate at night, would have to meet the more stringent requirements applicable to nighttime hours (Table 3-7).

Three generator engines would be located in the narrow extension off the back, northwest corner of the main portion of the building with the radiators located outside in a fenced area immediately to the west of the building extension. The three engines would be positioned in a single row along the building extension; it is assumed each radiator would be directly outside so they also would be in a row with the same separation as the engines. Based on review of preliminary design drawings, the nearest property line to the radiators would be the northern boundary of the lot, approximately 85 feet from the northern-most radiator. This is based on the building extension reaching to within approximately 55 feet of the property line and the center of the northern-most engine being 32 feet from the end of the extension, which was conservatively rounded down to a total of 85 feet since the distance to the property line was scaled. The distance between centerlines of the engines would be 13 feet and 4 inches. Therefore, the distance from the middle radiator to the property line is estimated at 98.3 feet (85 plus 13.3) and the third would be another 13.3 feet away.

Oneida obtained a sound characterization and guarantee for the radiators from the equipment vendor. With both fans running, maximum sound levels would be 67 dBA at 55 feet from the unit (Smithco 2011). For a reference, a simple conservative energy dispersion equation can be used to back-calculate this sound level to show that at 10 feet from the radiator the sound level would be almost 82 dBA, similar to the noise from various types of heavy equipment (Figure 3-8). (Note: The simple sound equation used is described as conservative because it does not include any attenuation that might be caused by atmospheric conditions or blocking of sound waves that might be caused by physical obstacles.) The sound characterization provided by the equipment vendor also provides decibel sound levels at eight different octave bands that correspond to the combined value of 67 dBA. These octave values allow direct comparisons of the radiator sounds with the applicable allowable sound levels set by City noise regulations, as shown in Table 3-8. As noted previously, the applicable noise regulations in this case are those for an industrial area during nighttime. Also shown in the table are the equipment vendor's sound characterization for a single radiator and the calculated sound levels for each radiator as measured at the nearest property line. These values were again calculated using a standard energy dispersion equation that, for the northern-most radiator, accounts for the decrease in sound energy traveling from 55 feet from the sound source to 85 feet. The second-to-last column in the table shows the calculated sound levels at the property line with all three radiators combined and the final column shows those combined sound levels converted to A-weighted, or dBA, values. At the bottom of the last column is a summed value that can be compared with applicable noise standard.

As can be seen in Table 3-8, the equipment vendor guarantees that an individual radiator would meet applicable noise standards at a distance of 55 feet from the unit. The calculations and additional numbers in the table show that combined noise levels from three radiators running at the same time would also meet applicable noise standards at the nearest property line.

Table 3-8. Radiator Sound Levels of the Proposed Project Compared with Maximum Allowable Noise Levels

Octave Band Center Frequency (Hertz) or Total	Noise Regulations – Maximum Allowable Sound Levels[a]		Radiator Sound Characteristics at 55 feet[b]		Calculated Radiator Sound Levels at Nearest Property Line				
					Sound Levels for each Radiator (with distance from radiator to property line shown)			Combined Sound Level from all 3 Radiators, dB	Combined Sound Level (all 3 radiators) Converted to dBA
	dB	dBA	dB	dBA	#1 (85 feet), dB	#2 (98.3 feet), dB	#3 (111.7 feet), dB		
31.5	81								
63	80		73		69.2	68.0	66.8	72.9	46.7
125	75		72		68.2	67.0	65.8	71.9	55.8
250	70		69		65.2	64.0	62.8	68.9	60.3
500	64		64		60.2	59.0	57.8	63.9	60.7
1000	58		61		57.2	56.0	54.8	60.9	60.9
2000	53		54		50.2	49.0	47.8	53.9	55.1
4000	49		50		46.2	45.0	43.8	49.9	50.9
8000	46		44		40.2	39.0	37.8	43.9	42.8
Total		**67**		**67**					**66.4**

a. Source: Green Bay City Ordinance Code Book, Chapter 27 Public Peace and Good Order, Subchapter II Noise (27.201 Regulation of Noise).
b. Source: Smithco 2011.

The City noise regulations also stipulate that the proposed project could not cause nighttime sound levels of more than 52 dBA at the nearest residence (Table 3-7). Considering sound levels decrease by about 6 dBA for each doubling of distance from the source, sounds created by the three radiators would drop to below 52 dBA about halfway to the nearest residence and would drop another 6 dBA by the time they reached the nearest residence. Since sounds produced by the proposed project would be within limits set by City noise regulations, no adverse impacts would be expected, but it is recognized that some individuals may be more sensitive to sounds than others.

3.2.5 TRANSPORTATION

3.2.5.1 Affected Environment

Primary access to the Bayport Industrial Center and Hurlbut Street, where the proposed project would be located, is from I-43 at the Atkinson Drive (also known as Bayport Drive) interchange. Hurlbut Street intersects Atkinson Drive immediately north of the interchange and the proposed project site is just to the northwest. This access route approaches the project site from the southeast. The project site can also be reached from the northwest on Hurlbut Street by using North Military Avenue, which crosses over I-43 (without an interchange) to the northwest of the site. These access roads are shown in Figure 3-9 along with their functional classifications as determined by the Wisconsin Department of Transportation. The expanded view in Figure 3-9

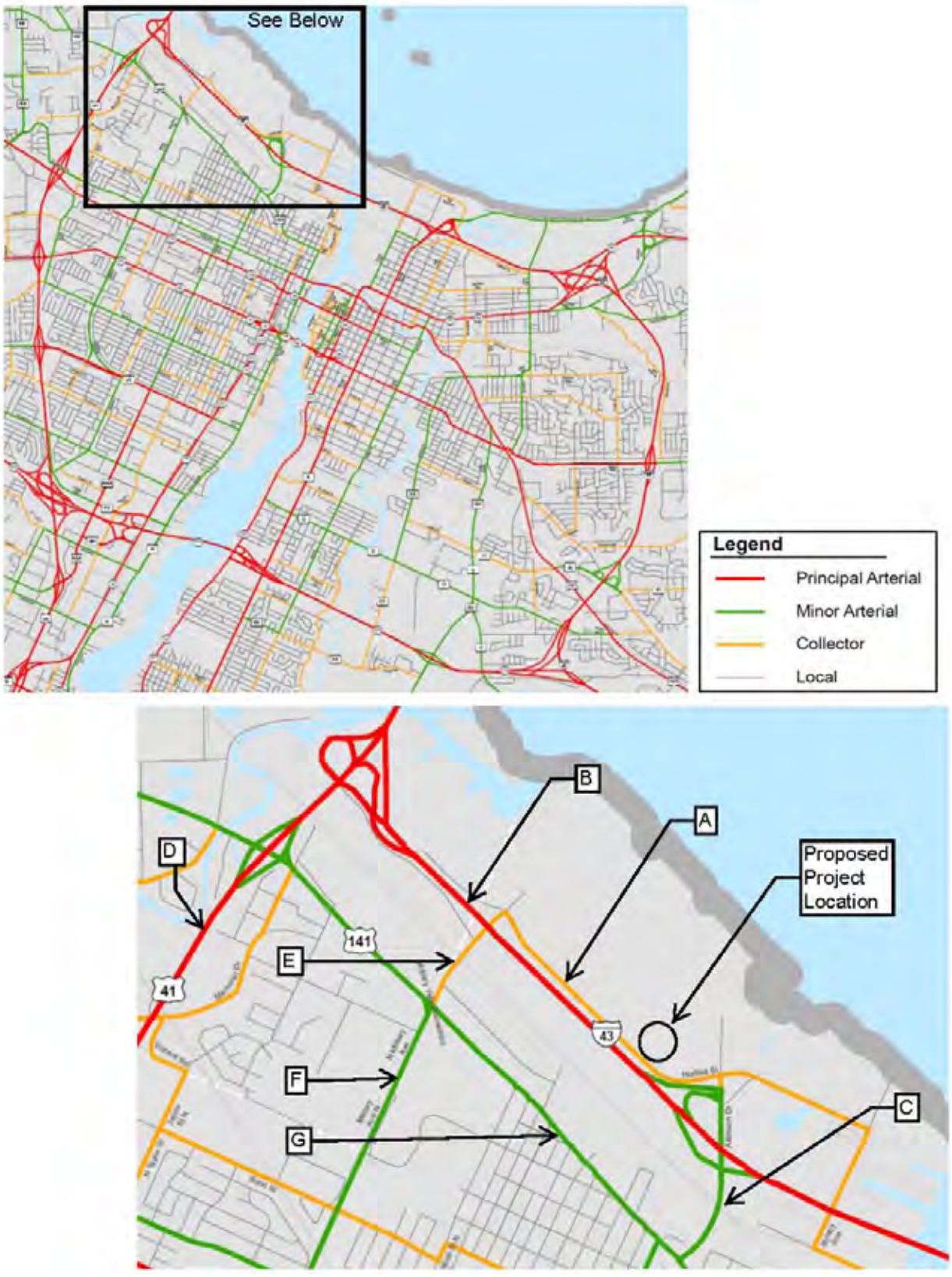


Figure 3-9. Functional Classifications of Roads in the Green Bay and Proposed Project Areas (Source WDOT 2009a) (see Table 3-9 for identification of labeled roads.)

shows the loop of freeways that surround the main downtown area of Green Bay with I-43 providing the east and north sides of the loop, U.S. Highway 41 providing the west side, and State Highway 172 providing the south side. The principal arterials that form this loop provide relatively easy access to the project site from most Green Bay locations. Also, the minor arterials and collectors within the loop provide access across the Interstate and railroad, which separate Hurlbut Street from the main portions of the city.

Table 3-9 lists the primary roadways that would be expected to provide truck and worker passenger car access to the proposed project site. The street identifiers in the table correspond to the labels in Figure 3-9. Table 3-9 includes the functional classification of the roadway or section of roadway labeled in the figure and the annual average daily traffic counts for the applicable section. These traffic counts are representative of 2009 data as determined by the Wisconsin Department of Transportation. A range of counts indicates that the average count varies over the section of road shown in the figure to account for traffic entering and leaving the route.

Table 3-9. Names, Classifications, and Traffic Counts for Specific Roadways in the Area of the Proposed Project

Street Identifier (from Figure 3-9) and Name	Functional Classification[a]	Annual Average Daily Traffic Count[b]
A. Hurlbut Street	Collector	1,700
B. Interstate 43 (I-43)	Principal Arterial	39,000 to 40,100
C. Atkinson Drive (also known as Bayport Drive)	Minor Arterial	9,500
D. State Highway 41	Principal Arterial	58,600
E. N. Military Avenue (northeast of Highway 141)	Collector	1,700
F. N. Military Avenue (southwest of Highway 141)	Minor Arterial	9,200 to 16,600
G. U.S. Highway 141 (also known as Velp Avenue)	Minor Arterial	11,900 to 13,300

a. Source: WDOT 2009a
b. Source: WDOT 2009b

3.2.5.2 Discussion of Impacts

Construction

Construction of the proposed project would involve increased traffic in the Bayport Industrial Center and on the roads providing access to the Industrial Center. It is expected that most of the trucks that would deliver building materials and equipment would access the project site via I-43 and the interchange at Atkinson Drive, although some materials such as concrete could come from facilities located near the project site on the same side of the freeway. Most construction workers would likely access the site by the same route; however, workers traveling from areas within the looped system of highways that encircle Green Bay could easily avoid the freeway system and reach the site using North Military Avenue or Atkinson Drive to cross over the railroad and I-43. Traffic during construction would add to any congestion currently experienced on these roads, particularly during peak, or rush hours because construction workers would likely be driving to and from the site during these hours. Delivery trucks, however, would be expected to arrive and depart during all times of the normal workday. On average, construction would involve 21 workers and would be temporary. Thus, impacts related to transportation from construction of the proposed project would be minimal.

Operations

Operation of the proposed project would involve an estimated 24 garbage trucks delivering solid waste each weekday (Monday through Friday). Materials leaving the facility would include waste unacceptable for the pyrolysis units, recyclables, and char and ash from the pyrolysis process. These materials would be generated seven days a week and, on a daily basis, would require two, three, and two trucks, respectively, for the three categories. (The recyclable materials represent the smallest, or lightest, segment of the three materials, but have conservatively been estimated to require the greatest number of trucks because it is not yet known what type, or size, of pick-up vehicles would be involved.) Since, these materials would be removed during the five-day workweek (Monday through Friday), it would take an average of 10 trucks per day in addition to the trucks delivering waste to the facility. As noted in Section 2.2.3 of this EA, some of the described truck traffic could occur on Saturdays, but rather than consider a reduced average value, this evaluation uses the highest expected daily traffic volume.

It is anticipated that the trucks bringing waste into the facility would travel directly from their normal pick-up routes, which could be anywhere in the area. Similarly, specific markets for recyclable materials have not yet been determined, so origins and destinations for those trucks are unknown. However, it is expected that these trucks, like those removing processed waste residues for delivery to a regional disposal facility, predominantly would use I-43 and the Atkinson Drive interchange.

The number of passenger vehicles traveling to and from the project site would correspond to the number of operations workers. Oneida expects to have up to 30 full-time workers employed at the facility during operations; therefore, the number of vehicles could be as many as 30.

Traffic from project operations could increase the daily traffic count on adjacent roadways by 128, rounded to 130 for purposes of this analysis. The increase in traffic count considers round-trip travel for each of the vehicle groups described.

All traffic during operations would travel on Hurlbut Street, which has the lowest traffic count of any of the access roads (Table 3-9) and, as a consequence, Hurlbut Street would see the largest percentage increase in traffic. Specifically, Hurlbut Street would experience a 7.6 percent increase in vehicle trips when adding 130 vehicle trips to the existing traffic count of 1,700. This might be considered a large percentage increase from a single project, but the base value is not considered to represent a busy road. For example, were 1,700 vehicle trips distributed evenly over a 24-hour period, it would represent a vehicle passing a point in either direction approximately once every 50 seconds. Although, traffic would be expected to be focused during the daytime hours with the heaviest numbers during peak hours, this number of vehicle trips is a small daily total for a road designated as a collector; that is, a road that channels traffic from local roads to higher-classification roads or that provides service to important community locations not served by higher-classification roads. Therefore, the proposed project would not adversely impact existing traffic on Hurlbut Street during facility operations.

Similarly, the addition of 130 vehicle trips on I-43 would represent an addition of about 0.3 percent to the existing traffic on the freeway. This small increase could have the potential to worsen congested conditions at freeway entrances and exits at the Atkinson Drive interchange during peak hours. Other access routes within Green Bay could be similarly affected; existing

congestion potentially could worsen by a small amount. However, with the 130 additional traffic counts spread out among the various roads, it is very unlikely the proposed project would result in a new point of traffic congestion. The traffic counts in Table 3-9 are generally much higher than those that would be attributed to the proposed project and correspondingly, impacts to existing traffic would be minor. In addition, the trucks that would deliver waste to the facility currently contribute to existing traffic in the area. The proposed project would simply divert their routes from their normal travels. Similarly, because the proposed project would reduce the overall volume of waste destined for the regional landfills, there would be a reduction in truck traffic to the landfill that would offset truck traffic to and from the proposed project. However, these reductions in traffic counts would be expected to occur in areas other than those discussed above.

3.2.6 WASTE AND HAZARDOUS MATERIALS

3.2.6.1 Affected Environment

Solid Waste

The City of Green Bay Department of Public Works collects MSW produced onsite and disposes of it at the Winnebago County Sunnyview Regional Landfill located approximately 50 miles southwest of the project site. The Winnebago Landfill is part of a Tri-County Regional Program established between Brown, Outagamie, and Winnebago counties in 2002. Figure 3-10 shows the Tri-County area and the approximate location of licensed landfills in the area. As part of the program, the Winnebago Landfill will remain the Tri-County Regional Landfill through 2011 based on estimated remaining capacity (Winnebago 2011). Once the landfill closes, Outagamie County will host the regional landfill, likely starting in the first quarter of 2012 and at a location

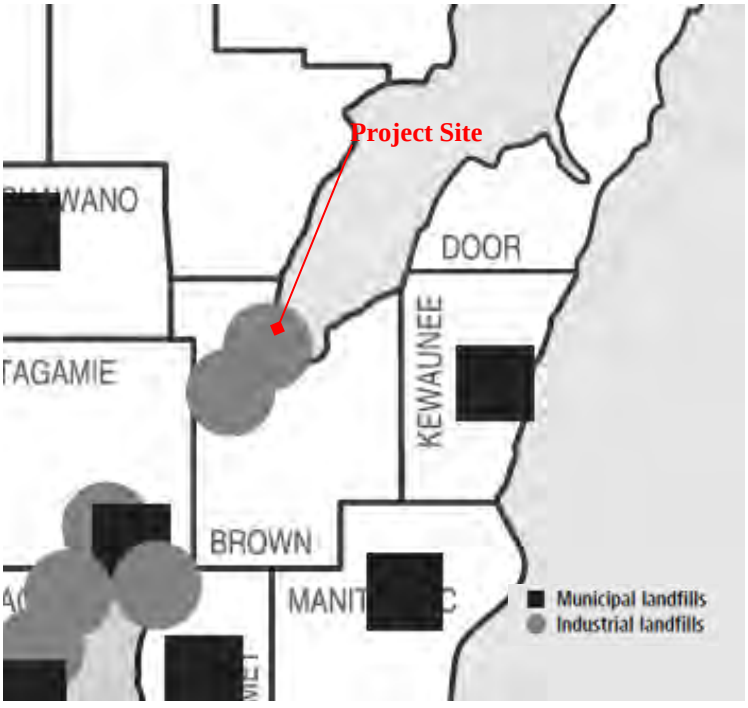


Figure 3-10. Location of Licensed Landfills in Wisconsin (Source: WMM 2010)

approximately 25 miles south of the project site (Long 2011). Brown County does not currently operate a licensed landfill accepting municipal waste but operates industrial landfills that collect paper mill sludge, dredgings, and fly ash (DNR 2011b).

The Winnebago Landfill currently accepts MSW from Brown, Outagamie, and Winnebago counties and handles foundry waste, energy recovery incinerator ash, high-volume industrial cover, shredder fluff cover, construction and debris waste, and others. As of January 2011, the Landfill's estimated remaining capacity was 844,775 cubic yards (DNR 2011c). Table 3-10 shows the amount of solid waste collectively disposed of in the Tri-County region and individually for Winnebago County.

Table 3-10. Tons of Solid Waste Disposed in Regional Program (Winnebago County)

Year	Tri County Regional (Tons)	Winnebago County (Tons)
2005	368,600	163,200
2006	583,300	219,600
2007	628,000	203,200
2008	709,600	283,400
2009	589,000	200,000
2010	579,000	192,000

Source: Winnebago 2011.

The EPA regulates pyrolysis of MSW under Title 40 CFR Part 240, the thermal processing of solid wastes, or the processing of waste material by means of heat. However, the WAC only provides regulation for incinerators and MSW combustors with no distinction for the specific thermal processes such as gasification or pyrolysis. Therefore, for purposes of this EA, DOE expects that the proposed project would be regulated as a solid waste processing facility under WAC NR Chapter 502.08, and as an MSW combustor under WAC NR Ch. 502.13, which regulates MSW combustors, including testing for toxicity characteristics for residue produced by MSW combustors. WAC NR Chapter 502.13 requires that testing be conducted and reported quarterly in the first operating year and annually thereafter for MSW combustors. In case residues fail the test for toxicity, residue would be required to comply with WAC NR Chapter 662 which outlines the method for hazardous waste determination.

WAC NR Chapter 538 encourages the beneficial use of industrial byproducts pending characterization under a specified testing program to determine the correct methods of byproduct reuse. Generators and storage facility operators of industrial byproducts are required to complete an initial certification prior to beneficial reuse and would be subject to annual certification and reporting.

Hazardous Materials

The project site is currently vacant, so there are no hazardous materials present, and current uses of neighboring properties (Section 3.2.1 of this EA) would not be expected to include significant amounts of hazardous materials. However, the concrete company likely maintains some quantities of chemical additives used in concrete to change characteristics or allow it to maintain

its workability for a longer period. Some of these materials might be considered hazardous on their own, but would not be expected to present hazards to adjoining properties. As noted in Section 3.2.1.1, other industrial uses to the southeast of the project site include a couple of petroleum product tank farms and a calcium carbonate processing plant that involve routine management of bulk quantities of hazardous materials.

3.2.6.2 Discussion of Impacts

Solid Waste

Construction

During construction, the proposed project would use common construction materials that may include concrete, concrete block, asphalt, metals, gypsum board, glass and ceramic items, and similar materials. Waste generated during facility construction would be stored properly onsite, likely in large roll-off bins, until it was transported off-site to the appropriate landfill facility. Portable chemical toilets would be provided onsite and removed by a licensed contractor.

Operations

The proposed project would employ up to 30 workers on-site and individuals would be working seven days a week, 24 hours a day. It is anticipated that personnel and activities supporting operation of the facility would produce small quantities of typical office waste and it is expected most of this type waste would be processed on-site. Waste that the facility could not process (such as hazardous materials used in operations) would be diverted to an appropriate storage facility or landfill through a contracted vendor. As such, waste produced by operational support activities would have a negligible impact on the capacity of the landfills in the area.

The remainder of this discussion focuses on the wastes that would be generated from the facility processes, including those removed during shredding and separating actions as well as the residues from the pyrolysis units. The MSW that would be delivered to the facility is considered feedstock to the facility's processes and was characterized in Section 2.2.3 of this EA. As discussed in Section 2.2.3 of this EA, the project generally would receive approximately 313 tons of raw MSW per weekday, which would be processed over a 7-day week; therefore, the total raw MSW received can also be expressed as an average of 223 tons per day over a 7-day week (see Table 2-1). Based on the 2009 Wisconsin State-Wide Characterization Study (DNR 2010), also discussed in Section 2.2.3, the waste stream composition estimated for the project would consist primarily of residential waste with the potential to include up to 5 percent industrial, commercial, institutional (ICI) waste for processing. These MSW types generally consist of everyday items commonly used and thrown away, such as packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries and come from homes, schools, hospitals, and businesses.

Figure 3-11 represents a breakdown of the amount of solid waste to be processed in the facility on a daily basis over a seven-day workweek. As shown, it is estimated that the project would sort the 223 tons of waste and process a dry weight of 150 tons of feedstock MSW, or 188 tons wet weight, resulting in 30 tons of industrial byproduct after the pyrolysis process.

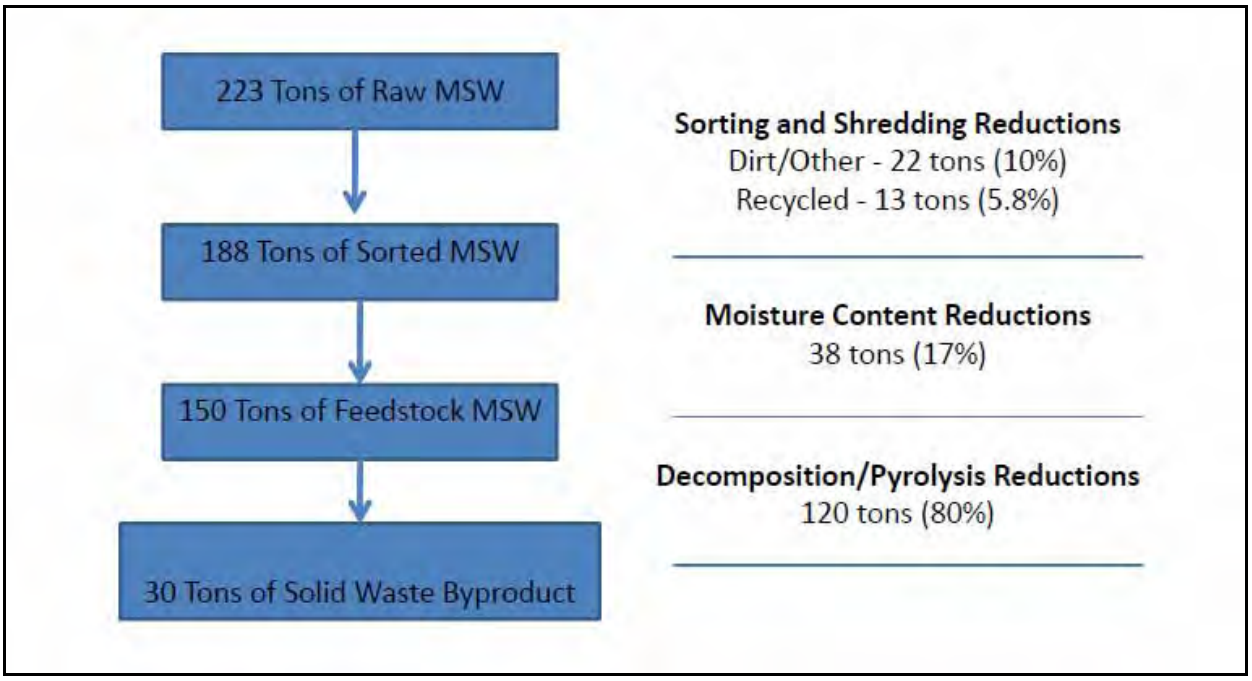


Figure 3-11. Solid Waste Flow Diagram

Oneida would sort and shred the raw MSW to extract recyclables as well as undesirable and unacceptable materials. Those recyclables and unacceptable materials are discussed below.

Recyclable Materials

Recyclable materials sorted from raw MSW are expected to be composed of plastics and metals, amounting to 5.8 percent of the feedstock, or 13 tons per day. Recyclables would be primarily polyethylene terephthalate (PET or #1 plastic) and high-density polyethylene (HDPE or #2 plastic) plastic containers, and aluminum cans and other scrap metals. PET and HDPE plastics would be manually removed while the aluminum and steel would be captured by magnets. Clean paper and cardboard would be collected and baled and moved off-site as recycled product. Steel would be gathered with a cross belt magnet, compacted, baled, and moved off-site as a recycled product.

Unacceptable Waste

Unacceptable waste would include any waste deemed unacceptable for processing by Federal or State laws, regulations, rules or orders, or by the facility's licenses or permits, or by Oneida, such as the following:

- Hazardous waste
- Infectious waste
- Electronics identified in Wisconsin Statutes section 287.07(5)
- Lead acid batteries
- Firearms, ammunition and explosives
- Propane tanks
- Municipal wastewater treatment plant sludge
- Agricultural wastes

- Soil
- Concrete, stone, and other noncombustible inorganic materials, except to the extent that such materials are not separable from the MSW.

An estimated 22 tons of unacceptable waste and non-processable items (10 percent of raw MSW) would be separated from the feedstock. Waste with no Btu (British thermal unit) value, such as construction materials including sheet rock, concrete block, glass, tiled materials, or those that do not produce energy, would not be processed. Other unusable materials such as dirt, dust, and broken glass would be sorted from incoming raw MSW and stored for disposal.

The materials removed and sorted from the raw MSW would be recycled or disposed of according to State and Federal waste management practices and regulations. The plastics, metals, and paper material would be picked up by a contractor for recycling. Material with no energy content or value would be discarded in a local landfill such as the regional landfill. Hazardous materials would be picked up by a contractor and disposed of appropriately.

To date, Oneida has not secured arrangements for the waste supply, but has initiated discussions with Brown County, the City of Green Bay, and several local waste haulers. It is anticipated that the MSW supply would come primarily from the City or the County, and additional waste would come from independent waste haulers. In addition, prior to operations, the project would be required to obtain a plan of operation approval and an operating license from DNR (WAC, NR Chapter 502.08). DNR has initiated this process and is currently in the process of issuing operation permits for the facility.

Altogether, the amount of raw waste processed by the facility would relieve the appropriate regional landfill (now the Winnebago Landfill and in the future the Outagamie Landfill) of an estimated 62,400 tons of MSW per year, (13 tons of removed recyclables and, including moisture, 158 tons of pyrolysis reduction per day over 365 days per year), representing approximately 11 percent of the total MSW produced by the Tri-County area in 2010.

Solid Waste Byproduct

Once pyrolysis is complete, the decomposition of the waste would result in a solid waste byproduct or residue, containing slag, fly ash, carbon char, soot and bottom ash. The amount of solid waste residue would total 30 tons per day or 20 percent of the dry weight of the processed feedstock MSW.

Based on design data, the byproduct may be usable for beneficial purposes or applications in various construction activities. The ash could be used for daily cover at lined landfills, roadbed construction, or concrete applications. However, changes to equipment operations and feedstock could alter composition and the reuse potential of the solid byproducts. Therefore, analytical testing would be required to determine reuse feasibility and to ensure that the byproducts (if to be reused) would not exceed thresholds of pollutants in accordance with WAC NR Chapters 502.08 (Solid Waste), 538 (Beneficial Reuse), 661, and 662 (Hazardous Waste). Beneficial reuse would be subject to annual toxicity testing and certification/sampling pursuant to EPA SW-846 Sampling Methods, and DNR Table 1 through 3a in WAC NR Chapter 538, pending DNR review and approval (WAC NR Chapter 502.13). For conservative analysis, this EA assumes that project byproducts would not be reused and would be disposed of appropriately. If not

hazardous, the byproduct would be disposed of as an industrial waste at the regional landfill. If determined to be hazardous, the byproducts would be stored in compliance with EPA pursuant to 40 CFR 261 and sent to an appropriate landfill for disposal. Because the City of Green Bay does not provide collection of industrial or hazardous waste, Oneida would contract with local waste disposal vendors to haul the byproduct wastes offsite.

There is no specific regulation for handling the pyrolysis byproduct, but general waste management regulations are applicable. The State does not consider fly ash, bottom ash waste, slag waste, and flue gas emission control waste generated from the combustion of coal or other fossil fuels hazardous waste [WAC NR Chapter 661.04(2)]. Therefore, the State currently allows the beneficial reuse of these byproducts as appropriate (WAC NR Chapter 538). Given the State's regulation on byproduct reuse derived from fossil fuel resources, it is noted that a portion of the byproduct from the project could also contain reusable carbon char and ash. Based on final testing by Oneida, the project may be able to reuse carbon char and ash in accordance with State regulations, or the material may have to be managed as waste. In either case, impacts would be minimal.

Hazardous Materials

In this discussion, hazardous materials are basically considered to be anything that could present contamination or pollution in the environment or health concerns if released or spilled. In addition to flammable syngas that would be generated, stored, and combusted (Section 2.2.1 of this EA), hazardous materials that would be present in the proposed facility include the following (King 2011):

- Each engine-generator unit and its cooling systems would hold about 150 gallons of oil and 190 gallons of ethylene glycol, respectively. There would likely be a 30-gallon make-up tank for engine oil, but otherwise these materials would be limited to the quantities in service in the equipment. Oneida indicates that replacement materials would be brought to the facility and used materials would be removed for recycling when maintenance was performed.

- The engine-generator units would include emission control equipment that used a catalyst consisting of various metal and glass oxides. Up to about 1,000 gallons of this material would be stored at the site inside the catalyst housing vessel in the offgas system. This material is considered to be of low hazard to health and has no fire or reactivity hazards.

- The shredders, separators, and baling equipment in the building would contain between 500 and 600 gallons of hydraulic fluid and would require various types of oils, greases, and lubricants in quantities ranging from 0.5 to 5 gallons. Some small amounts of these type materials might be kept at the facility in addition to that in service, but as with the engine-generator units, replacement quantities would be brought in at the time of maintenance.

In addition to the materials above, there may be instances in which Oneida would remove hazardous materials from the MSW brought into the facility. These materials would be removed if observed in the tipping area at the front of the process or in the manual sorting area. Such materials would be stored at the facility only until arrangements could be made for its removal

and proper disposition. Overall, hazardous materials at the proposed facility would be expected to relatively minor in quantity and hazard. These materials would be managed in accordance with standard industrial practices and in accordance with any specific manufacturer's recommendations or, if applicable, regulatory requirements. Potential impacts from hazardous materials at the proposed facility would be minimal.

3.2.7 UTILITIES AND ENERGY

3.2.7.1 Affected Environment

This section discusses utility services the proposed project would obtain from the City of Green Bay or private companies, including water (drinking), sewer, electricity, and natural gas. These are the only utility and energy resources that could potentially be affected by the proposed project.

Drinking Water

Drinking water in the City of Green Bay is provided by the Green Bay Water Utility. The Utility obtains water from both Lake Michigan and groundwater wells; however, because of past overuse of groundwater sources, wells typically produce less than 1 percent of the Utility's drinking water (GBWU 2010a). The vast majority of the Utility's water is withdrawn from the main body of Lake Michigan approximately 27 miles east of Green Bay and the associated pumping station has a capacity of about 42 million gallons per day (GBWU 2010b). The Utility's drinking water treatment facility, located east of the city, but within Brown County, also has a capacity of 42 million gallons per day (GBWU 2010b). Nine groundwater wells, with a combined capacity of about 11.4 million gallons per day, are maintained and identified as being available for emergency use. The Green Bay Water Utility provides retail service to all of the City of Green Bay and has also provided wholesale service to the Village of Ashwaubenon and Town of Scott since 2006 and in May of 2011 started providing wholesale service to the Village of Hobart (DNR 2011d).

During the five-year period from 2005 through 2009, the Green Bay Water Utility produced an average of about 18.4 million gallons of drinking water per day. In 2009, the highest water usage for a single day was 27.7 million gallons and for the peak month of July 2009, the average drinking water usage was about 24 million gallons per day. Also in 2009, each residential connection or customer used an average of about 150 gallons per day, while each industrial connection used an average of about 35,700 gallons per day (GBWU 2010b).

Sewer

The Green Bay Metropolitan Sewerage District (GBMSD), a municipal corporation governed by a five-member commission appointed by Brown County, provides wastewater management in the area. The GBMSD serves 18 different cities, villages, and towns (GBMSD 2011a), and operates two wastewater treatment plants: one in the City of Green Bay and one in the City of De Pere. The facility in Green Bay, located on the east side of the Fox River near its mouth, is the larger of the two treatment plants and serves all of Green Bay as well as a majority of the adjacent communities. The Green Bay treatment plant has the capacity to treat 49 million gallons per day on a regular basis and can manage influent rates up to 160 million gallons per day for short periods of time (GBMSD 2011b).

During the six-year period from 2004 through 2009, the Green Bay treatment plant treated an average of 29.3 million gallons per day (GBMSD 2010). In its 2009 Annual Report, GBMSD described a construction project, started in 2009, that would integrate operations of the Green Bay and De Pere treatment plants. One of the outcomes of the GBMSD construction project was described as diverting a flow of 3.6 million gallons per day from the De Pere plant to the Green Bay plant (GBMSD 2010). With this project in place, average flow to the Green Bay treatment plant would be expected to be about 33 million gallons per day. The Green Bay treatment plant operates under a WPDES permit that establishes specific limits on concentrations of pollutants in the plant's treated effluent, which discharges to the Fox River. GBMSD reports that the Green Bay treatment plant is the recipient of a "Platinum 8" award from the National Association of Clean Water Agencies for eight years of 100-percent compliance with its permit (GBMSD 2011c).

GBMSD implements an industrial pretreatment program designed to control industries that discharge wastewater to their sewer system. The District reports that roughly a third of the influent to the Green Bay treatment plant is from industrial sources (GBMSD 2009). The pretreatment program is consistent with State and Federal regulations developed under the premise that the wastewater treatment plants must have the authority to control industrial discharges as necessary to ensure the treatment plants can meet their own discharge permits (in this case, the WPDES permit). GBMSD has evaluated influent and effluent requirements for both of its plants, considering both metal and organic compound contaminants, and developed local limits that can be applied, as applicable, to industrial users (GBMSD 2009). In cases where industries wish to discharge wastewater to the sewer system, GBMSD uses a permit system to regulate what it determines to be significant industrial users. These permits establish effluent limits for the discharge and specific monitoring requirements for the industry to ensure the limits are met. Under the program, GBMSD also conducts unannounced monitoring of the industry's wastewater discharge to verify compliance and, at least annually, inspects facilities inspections to review all operations producing wastewater (GBMSD 2011d).

Electricity

The Wisconsin Public Service Corporation (WPS), a privately owned utility, provides electrical service for northeastern and central Wisconsin as well as an adjacent portion of Upper Michigan (WPS 2011a). Within its service area, which includes all but the western edges of Brown County (PSC 2010), WPS operates 21,700 miles of electrical distribution lines and 123 substations in providing electricity to about 439,000 customers. WPS also has an electrical generating capacity (based on summer capacity ratings) of 2,180 megawatts, which includes the utility's share of several jointly owned facilities (Integrys 2011a). This generating capacity also includes the 372.5-megawatt capacity of the Pulliam coal-fired power plant located at the mouth of the Fox River and wholly owned by WPS. In addition to its own production, WPS purchases about 30 percent of the electricity it supplies to its customers. This allows WPS to avoid heavy usage of its generating plants that are more expensive to operate and, thus, keep overall costs down (WPS 2011b). In 2010, WPS supplied 15.6 million megawatt-hours of electricity to its customers (Integrys 2011b). Over the 8,760 hours in a year, this equates to an average load of 1,780 megawatts. WPS reports that its peak electrical demand in 2010 was 2,292 megawatts and occurred on August 12 during the normally heavy summer loads (Integrys 2011a).

In 2009, about 60 million megawatt-hours of electricity were generated within the State of Wisconsin and about 66.3 million megawatt-hours of electricity were sold to power users within the state (DOE 2011a). These total electricity values equate to an average production of about 6,850 megawatts and an average use load of about 7,570 megawatts over the year. Peak values would be greater.

Natural Gas

WPS also provides natural gas service to much of the same area it provides electric service, including most of Brown County and all of the area in the vicinity of Green Bay (PSC 2008). WPS maintains 7,850 miles of distribution and transmission mains and 87 gate stations in providing natural gas service to 318,000 customers (Integrys 2011a). WPS purchases natural gas directly from producers and marketers and contracts with the ANR Pipeline Company to move the gas from production areas in Louisiana, Oklahoma, Texas, and Canada to its Wisconsin service area. ANR also provides storage capabilities until natural gas is needed (WPS 2011b). In 2010, WPS supplied 70.5 billion cubic feet of natural gas to its customers (Integrys 2011b). In 2009, about 387 billion cubic feet of natural gas were used within the state of Wisconsin (DOE 2011b).

3.2.7.2 Discussion of Impacts

Utility and energy needs of the proposed project would be small during construction. As a result, the following discussions are limited to impacts that would be anticipated during operations of the proposed project.

Drinking Water

The proposed project would require fresh water from the Green Bay Water Utility for the following uses, with their estimated quantities:

- Personal needs of the employees – Estimating 50 gallons per worker per 8-hour shift and assuming that all 30 employees were present on the same day, water demand for this use could be as high as 1,500 gallons per day.

- Non-contact cooling water system – As described in Section 2.2.1, various elements of the energy recovery process would require cooling, which would be accomplished through heat exchange with non-contact cooling water. The heated water would then be cooled in one of three cooling towers and recirculated into the system. This cooling system would lose water from evaporation and drift (loss as small particles or droplets) in the cooling tower, as well as through blowdown to keep levels of dissolved solids in the system's water down. Oneida has estimated that the cooling system would have to be replenished for its losses at a rate of about 18,100 gallons per day.

- Routine washdowns – Operation of the facility would involve routine washdowns of certain areas and components. It is estimated this would require about 120 gallons per day.

The proposed facility would be connected to the existing water main that runs along-side Hurlbut Street. The 19,700-gallon daily requirement of the proposed project would be considered a

relatively minor industrial use. The Green Bay Water Utility reports that in 2009, the top seven industrial water users had water demands ranging from about 240,000 gallons per day to over 2 million gallons per day (GBWU 2010a). The proposed project's water demand represents about 0.047 percent of the 42 million gallon daily capacity of the Green Bay Water Utility's Lake Michigan pump station and water treatment plant. Considering it supplied an average of 18.4 million gallons per day over the period of 2005 through 2009, the Utility has had an excess capacity of 23.6 million gallons per day. Some of this excess is now being directed to the Village of Hobart as a result of a new service agreement with that community, but it is expected the Utility will continue to have excess capacity well into the future. In addition to the quantities identified above, the cooling water system and the gas wash system would each require an initial charge of water to fill the system. In the case of the gas wash system, water extracted from the waste would subsequently provide the source of water. Since these would be one-time, or isolated needs, their impacts would be minor and are not included with the daily water demands.

DOE concludes that the amount of water that would be required to support the proposed project would be minor in comparison with the capability of the Green Bay Water Utility to provide water to the area. As such, impacts to the water supply or the Utility's ability to provide water to its current customers from operation of the proposed project would be minimal.

Sewer

The proposed project would produce wastewater that would be discharged to the GBMSD sewer system. The primary components of the project that would produce wastewater and the estimated amounts generated are described as follows:

- Personal needs of the employees – Estimating 30 gallons per worker per 8-hour shift and assuming that all 30 employees were present on the same day, wastewater produced from the proposed project could be as high as 900 gallons per day.

- Water extracted from the solid waste – As described in Section 2.2.3, some moisture in the incoming solid waste would be expected to drain from the waste when the waste is dumped to the floor of the tipping area or sent through the shredder, and remaining moisture would be driven off when the waste is sent through the pyrolysis units. In each case, the water would be collected and contained for subsequent discharge to the sewer system. At an estimated 17 percent of the incoming waste, the extracted water would total about 9,090 gallons per day.

- Blowdown from the cooling water system – Water would drain from the cooling system at a constant rate of about 75 gallons per day.

- Routine washdowns – Routine washdowns of certain areas and components of the facility would result in about 120 gallons per day going to the facility's drains.

The proposed project would generate wastewater in the amount of approximately 10,200 gallons per day. Wastewater from restrooms and the blowdown from the non-contact cooling water system would drain directly to the GBMSD sewer lines. Water extracted from the waste as well as any wash water reaching the building's process area floor drain system would drain to a collection tank within the building and be treated as needed to meet GBMSD discharge

requirements. Treatment capabilities would consist of three components: a membrane filtration system, dissolved air flotation, and ozonation. The membrane filtration would be used to remove floating particulate and oil residue; the dissolved air flotation would remove any free oil and sludge, and the ozone treatment would destroy light hydrocarbons.

Oneida has begun discussions with GBMSD and expects that the facility would be required to obtain an industrial user permit for its industrial wastewater discharges. In addition to being required to meet the District's local limits for metal and organic compound contaminants (Section 3.2.7.1), the facility's wastewater would also be required to be within normal operating parameters established for residential sewage. These operating parameters would include numerical limits for characteristics such as biochemical oxygen demand, suspended solids, phosphorus, and nitrogen. To issue a permit for the proposed facility's wastewater discharges, GBMSD would have to review and approve the project's pretreatment system to ensure it would be capable of achieving specific discharge limits so the District would be able to maintain compliance with its own discharge permit. Monitoring requirements would be developed by the District and included in the industrial user permit to verify the pretreatment system's capability to meet discharge limits and to ensure that capability was maintained.

The proposed facility's wastewater discharge under the industrial user permit primarily would be water drained or evaporated from MSW. As such, oils and greases are expected to be the primary contaminants of concern. The dissolved air flotation step of the facility's wastewater treatment system is commonly used in the petroleum industry for removal of petroleum products from wastewater (DNR 2007) and should provide adequate pretreatment in this case, before discharge to the sewer. Toxic metals and organic compounds would not be expected to be present at levels of concern, but the facility's wastewater treatment system would remove most suspended contaminants and the ozonation step would be effective in breaking-up dissolved organic compounds. It is anticipated that wastewater produced by the proposed facility would comply with the chemical and characteristic limits set by GBMSD, but the ultimate proof would be in the facility obtaining the necessary discharge permit and meeting its requirements. The volume of wastewater discharged from the proposed facility would not present a problem. The Green Bay treatment plant has a normal treatment capacity of about 49 million gallons per day and an average influent of about 33 million gallons per day. The 10,200 gallons per day contributed from the proposed facility represents about 0.021 and 0.031 percent of the capacity and average influent values, respectively.

Based on the above, DOE concludes that the amount of wastewater that would be discharged from the proposed facility would be minor in comparison with the capacity of the Green Bay treatment plant. Further, pending the District's review and approval, it is anticipated that the proposed facility would meet discharge limits established by the District. Therefore, impacts related to wastewater from operation of the proposed project would be minimal.

Electricity

The proposed project would require 0.75 to 0.95 megawatt of electricity for normal operations, and this would be obtained by connecting to WPS's electrical grid. With the facility operating under steady conditions (that is, producing syngas and running the electrical generators), the three generators would produce up to a combined 4.6 megawatts of electricity that Oneida would sell to WPS, who has requested that the project have separate connections for the electricity

demand and production, so power from the generators would never be directed back to the facility. However, with the facility operating fully, the net effect would be a supply of 3.65 to 3.85 megawatts to the grid. Since there would be times when the pyrolysis units were in start-up mode and there would be no syngas in the storage tanks, the net effect of the facility could range from requiring up to 0.95 megawatts of electricity to adding about 3.85 megawatts to the electrical grid.

Both the maximum electricity demand and the maximum electricity that could go to the grid would be minor when compared with the amount of electricity currently supplied and generated in the region. The maximum demand of 0.95 megawatts represents 0.053 percent of the average load of 1,780 megawatts provided by WPS and 0.013 percent of the average daily amount used in the state of Wisconsin. The maximum net amount of electricity that would be supplied to the grid, 3.85 megawatts, represents 0.18 percent WPS' generating capacity of 2,180 megawatts and 0.056 percent of the state's average production of 6,850 megawatts.

Based on the above, the amount of electricity that could potentially be required for project operations would be small in comparison with the amount supplied to the area and would represent only a minor increase in electrical demand. Similarly, when the proposed project is producing electricity, it would provide an increment of added capacity to the grid, but the amount of electricity involved is minor compared to the area's and state's needs. For these reasons, impacts related to electricity usage and supply from operation of the proposed project would be minimal.

Natural Gas

The proposed project would not be expected to require natural gas during construction or decommissioning. During facility operations, the pyrolysis units would be heated with natural gas until syngas was available to fuel the burners. That is, natural gas would be used during system startup and possibly during system upsets or in instances where the syngas energy content is too low to support the pyrolysis units' burners. Each of the pyrolysis unit burners would have a maximum heat input rate of 2.5 million Btu per hour. Natural gas sold in Wisconsin has an average heat content of about 1,014 Btu per cubic feet (DOE 2011c). Therefore, each burner would require up to 2,466 cubic feet of natural gas per hour, with all three units requiring up to about 7,400 cubic feet per hour. If all three units were heated with natural gas for a full day (24 hours), as much as 178,000 cubic feet of natural gas could be consumed. This maximum volume represents about 0.092 percent of the amount of natural gas WPS supplies on a daily basis and about 0.017 percent of the amount of natural gas used in the state of Wisconsin on a daily basis.

The preceding evaluation is a worse-case condition, and although it could possibly occur for short durations, it would not be expected to continue beyond a few days per year at most. Not only does the proposed project intend to replace the use of natural gas with syngas, but the pyrolysis process should be exothermic (that is, the reactions give off heat) once it gets going. Accordingly, with the exception of startup, the amount of fuel required to maintain the necessary system temperature is anticipated to be well below the maximum capacity of the burners.

It is assumed the proposed facility would also be heated with natural gas. Based on a 2003 Commercial Buildings Energy Consumption Survey DOE compiled, the average building energy use for space heating in the portion of the Midwest area that includes Wisconsin was 44,300 Btu

per square foot of building space (DOE 2008). The proposed building would be 64,000 square feet, plus a 3,000-square-foot mezzanine; therefore, it would take roughly 2,968 million Btu of natural gas per year to heat the building. At 1,014 Btu per cubic foot, this equates to about 2.93 million cubic feet of natural gas per year. Based on a conservative assumption that this volume of gas was consumed in 100 days of heating, this would result in an average of 29,300 cubic feet per day, a much smaller value than considered for worse-case use by the pyrolysis heaters. Similarly, it can be reasoned that the amount of natural gas that would be required to heat the facility would be a minor amount of that supplied by WPS on a daily basis or the amount used in the state of Wisconsin on a daily basis.

The amount of natural gas that could potentially be required to support the proposed project's pyrolysis process would be minor in comparison with the amount of natural gas already transported to the general area and with that currently used in the state. For these reasons, impacts related to natural gas use and supply from operation of the proposed project would be minimal.

3.2.8 BIOLOGICAL RESOURCES

3.2.8.1 Affected Environment

The proposed project would occur within an area zoned and subdivided for industrial development. The 5.88-acre lot where the facility would be constructed is vacant and currently covered with low vegetation and includes several trees; properties on three sides of the lot are heavily disturbed (Figure 2-3) and the fourth side is bordered by Hurlbut Street and its right-of-way. Recent uses of the site include farming and disposal of dredge spoils. Figures 3-5 and 3-6 show extensive flood zone and wetlands areas around the site (Section 3.2.3), but not extending into the site. This appears to be the result of past activities that added sufficient fill material to much of the Bayport Industrial Center area to change its elevation and characteristics. Thus the proposed project site has been heavily disturbed and long removed from its natural setting. Vegetation, and possibly some animal life, has reestablished itself in the lot during the time it has not been used, but the relatively small size of the property and the on-going activities from the surrounding and adjacent uses have likely kept this to a minimum.

The primary concern with respect to biological resources is the potential for any species of concern (that is, species considered threatened or endangered) to occur within the proposed project site or be in close enough proximity to be adversely affected by the proposed project. As such, the remaining analysis regarding biological resources regards compliance with the *Endangered Species Act of 1973,* as amended (16 U.S.C. 1531 *et seq*.) with respect to Federal threatened and endangered species and State species of concern.

Federal Threatened and Endangered Species

Table 3-11 provides information on the status of Federal threatened and endangered species associated with Brown County, Wisconsin, as identified on the USFWS Midwest Region Website (http://www.fws.gov/midwest/). The table also shows the candidate species for the entire Midwest region because the website does not identify specific county of occurrence. However, the information on the range of these species can be used to determine if they have a potential relation to land in Brown County.

The dwarf lake iris is the only Federally listed species identified as occurring in Brown County, Wisconsin, and is found only on the northern shores of Lakes Michigan and Huron. The plant's primary distribution is within Michigan and centers on the region of the Strait of Mackinac that connects Lake Michigan to Lake Huron. Outlying areas where the plant is also found include Wisconsin's Door Peninsula (Michigan DNR 2004), which is the strip of land that separates Green Bay (the lake feature) from the main body of Lake Michigan (Figure 1-1).

Table 3-11. Federal Threatened and Endangered Species

Species (Common and Scientific Name)	Status	Information on Habitat/Range
Listed Species Found in Brown County[a]		
Dwarf lake iris (plant) (*Iris lacustris*)	Threatened	Partially shaded sandy-gravelly soils on lakeshores
Candidate Species Found in USFWS, Midwest Region[b]		
Sprague's pipit (bird) (*Anthus spragueii*)	Candidate	Its range does not include Wisconsin
Eastern massasauga (rattlesnake) (*Sistrurus catenatus catenatus*)	Candidate	Its range includes Wisconsin and is included on the State's listing[c], but State information indicates it is not found in Brown County[d]
Ozark hellbender (salamander) (*Cryptobranchus alleganiensis bishopi*)	Candidate	Its range does not include Wisconsin
Arkansas dater (fish) (*Etheostoma cragini*)	Candidate	Its range does not include Wisconsin
Grotto sculpin (fish) (*Cottus sp.*)	Candidate	Its range does not include Wisconsin
Neosho mucket (mussel) (*Lampsilis rafinesqueana*)	Candidate	Its range does not include Wisconsin
Rabbitsfoot (mussel) (*Quadrula cylindrical cylindrical*)	Candidate	Its range does not include Wisconsin
Rayed bean (mussel) (*Villosa fabalis*)	Candidate	Its range does not include Wisconsin
Sheepnose (mussel) (*Plethobasus cyphyus*)	Candidate	Its range includes Wisconsin, but its current range map does not include the region of Brown County
Spectaclecase (mussel) (*Cumberlandia monodonta*)	Candidate	Its range includes Wisconsin, but its current range map does not include the region of Brown County
Dakota skipper (butterfly) (*Hesperia dacotae*)	Candidate	Its range does not include Wisconsin
Short's bladderpod (plant) (*Lesquerella globosa*)	Candidate	Its range does not include Wisconsin

a. Source: USFWS 2011a
b. Source: USFWS 2010 (unless noted otherwise)
c. Source: DNR 2009a
d. Source: DNR 2009b

Brown County extends for a short distance onto the Door Peninsula, but most of the peninsula's land area is within Wisconsin's Kewaunee and Door counties. Of the three counties, Kewaunee has the least amount of shoreline along Green Bay. According to USFWS data, the dwarf lake iris is found only within Door and Brown counties in Wisconsin (USFWS 2011a). Wisconsin data provides further detail on the plant's distribution in Brown County, identifying the dwarf lake iris as occurring only within land area of Township 25 North, Range 22 East (DNR 2009b). The land area of this Township, which includes Benderville, is within the Door Peninsula and in the very northeast corner of Brown County, starting approximately 5 miles northeast, up the coast of the bay from the City of Green Bay. The known range of the dwarf lake iris, at its closest point, is therefore about 10 miles from the project site, along the coastline of the bay.

As shown in Table 3-11, the USFWS currently identifies 12 candidate species in the Midwest Region, but only 3 (the eastern massasauga rattlesnake and the sheepnose and spectaclecase freshwater mussels) are identified with known distributions that include Wisconsin. Based on USFWS maps, the current range of both mussel species do not include Brown County or other nearby Wisconsin counties (USFWS 2011b, 2011c). With regard to the eastern massasauga, a guide prepared by the USFWS shows the range of the snake extending into Wisconsin, but only the southern half; reaching about as far north as Sheboygen, but well south of Green Bay (Johnson et al. 2000). As noted in Table 3-11, this is consistent with data available from the State, which shows the snake as occurring within Wisconsin (DNR 2009a), but not in Brown County (DNR 2009b).

As noted in Section 1.4.4, the USFWS has provided written concurrence that no Federally-listed, proposed, or candidate species would be expected to occur within the project area and that there is no critical habitat present.

State Species of Concern

The State of Wisconsin maintains a list of species it considers to be threatened, endangered, or of special concern because they are known or suspected of being rare in the state and natural communities native to the state (DNR 2009a). The State's database of these species includes known range characteristics in terms of counties and for surveyed Townships within the counties. Table 3-12 provides information on the status of State threatened, endangered, and special concern species associated with Township 24 North, Range 20 East within Brown County, Wisconsin, as identified on the State's Department of Natural Resources Website (http://dnr.wi.gov). The proposed project site is within Section 23 of this Township, which also includes much of the City of Green Bay as well as land areas to the north and west of Green Bay. The table also identifies habitat (or natural communities) designated by the State to be of concern.

Based on the information in Table 3-12, the proposed project location would not be expected to contain the natural communities identified for special concern in the region. Since the project site has been filled with dredge materials, its increased elevation no longer supports the potential for wetlands to be present (Section 3.2.3), and it is not a forested area. Considering the plant and animal species identified in the table, some might be found in areas near the proposed project, particularly nearer to the water, but it is unlikely that these species would be present on the project site. The project site has been heavily disturbed in the past, is currently surrounded by industrial operations that would be disturbing to most wildlife, and does not have suitable habitat for the identified species.

3.2.8.2 Discussion of Impacts

Construction

Construction activities would disturb most, if not all, of the 5.88-acre project site. It is possible that some small species of wildlife have re-established themselves in the property, but the surrounding industrial use and roadways have likely limited such activity. Any wildlife in the relatively small parcel would be driven out during construction and any habitat in the parcel likely would be destroyed. As noted above, it is unlikely that any species or habitat identified as sensitive by Federal or State agencies is present at the site. As such, the effects of construction

activities could be adverse on individual members of a species that might be on the site, but no species-wide impact would occur and there would be minimal impacts on biological resources of the region.

Table 3-12. State Threatened, Endangered, and Special Concern Species and Habitat in Project Region

Species (Common and Scientific Name) or Community[a]	Status[a]	Information on Habitat/Range[b]
Natural Communities		
Emergent Marsh	NA	Wetland community consisting of open marsh, lake, riverine, and estuarine communities with permanent standing water.
Shrub-carr	NA	Wetland community dominated by tall shrubs such as red-osier dogwood, silky dogwood, meadowsweet, and various willows. Canada bluejoint grass is often very common.
Northern Dry-mesic Forest	NA	Forest community with mature stands dominated by eastern white and red pines, sometimes mixed with red oak and red maple.
Vascular Plants		
Northern Bog Sedge (*Carex gynocrates)*	SC	Found in cold, wet neutral to calcareous conifer swamps.
Seaside Crowfoot (*Ranunculus cymbalaria*)	THR	Found in sandy or muddy shores and marshes, ditches and harbors along Lake Michigan, and salted roadsides near the city of Superior.
Reptiles		
Blanding's Turtle (*Emydoidea blandingii*)	THR	Semi-terrestrial species, generally utilizing a wide variety of aquatic habitats. Overwinters in standing water, but may travel over a mile to find suitable sandy soil for nesting.
Wood Turtle (*Glyptemys insculpta*)	THR	Semi-terrestrial species preferring clean rivers and streams with moderate to fast flows and adjacent riparian wetlands and upland deciduous forests. Overwinters in streams and rivers.
Amphibians		
American Bullfrog (*Lithobates catesbeianus*)	SC/H	Found through the state in any permanent body of water, though its distribution is patchy. Overwinters in water.
Birds		
Peregrine Falcon (*Falco peregrinus*)	END	Prefers relatively inaccessible rock ledges on the sides of steep bluffs and ledges on highrise buildings in urban areas.
Common Moorhen (*Gallinula chloropus*)	SC/M	Prefers shallow marshes, especially where shallow lakes are rimmed with ample marsh vegetation.
Bald Eagle (*Haliaeetus leucocephalus*)	SC/P	Prefers large trees in isolated areas in proximity to large areas of surface water, large complexes of deciduous forest, coniferous forest, wetland and shrub communities. Large rivers and lakes with nearby tall pine trees are preferred for nesting.
Forster's Tern (*Sterna forsteri*)	END	Prefers large semi-permanent and permanently flooded wetlands that support extensive growths of cattail and hardstem bulrush.

a. Source: DNR 2009b.
b. Source: DNR 2009c.
THR – Threatened.
END – Endangered.
SC – Special concern.
SC/H – Special concern, take regulated by establishment of open/closed seasons.
SC/M – Special concern, fully protected by Federal and State laws under the *Migratory Bird Treaty Act.*
SC/P – Special concern, fully protected.

Operations

Operation of the proposed facility would not result in any adverse impact to biological resources beyond those associated with construction of the facility. Most activities would be indoors, and with the parcel of land fully developed there would be little potential habitat or opportunity for wildlife to move back into the area. The surrounding area is already used for industrial purposes and project operation would not be expected to have additional effects on biological resources outside of the industrial park. The facility's operation would include added noise and air emissions; however, because of the industrial nature of the site the proposed facility would not adversely affect biological resources of outside areas. Therefore, impacts related to biological resources from operation of the proposed project would be minimal.

3.2.9 CULTURAL RESOURCES

3.2.9.1 Affected Environment

Historic Background

From the early 1700s to the early 1800s, the area of Green Bay and the mouth of the Fox River was a hub for the fur trade. The French established fur posts in the area in 1717 near a series of large Menominee villages and an ethnically mixed community sprang up (WHS 2011b). The habitants built a small fort on the east side of the Fox River during this time, which subsequently was taken over by British troops and traders, but later abandoned and allowed to deteriorate. In 1816, American troops took possession of the territory and construction of Fort Howard began. After an 1820 outbreak of malaria, the fort was abandoned in favor of Camp Smith, which was located on higher ground, away from the river. Within two years the troops were directed back to Fort Howard. In 1841, the Fort was abandoned again when the troops were sent to Florida to fight in the Seminole Wars. It was reoccupied for a short period and decommissioned in 1853 (WHS 2011b).

Maps of the time period show the Fort Howard Military Reservation extending from Fox River in the southeast to Duck Creek in the northwest and lying adjacent to Green Bay (the water body) (Jung 2001). This would include all of what is now designated as the Bayport Industrial Center as well as the area of the Pulliam power plant to the southeast and the Bayport Confined Disposal Facility to the north. Although specific buildings from the Fort Howard Military Reservation still stand in their relocated home at Camp Smith, which is now Heritage Hill State Park in Allouez (just south of the City of Green Bay), the Fort's archaeological remains have never been located (WHS 2011b). There is some belief that archaeological remains may be underneath the railroad yard and/or tracks, but the Wisconsin Historic Society indicates recent archaeological testing was unable to locate any remains.

Present Environment

DOE performed a search of the National and State Registers of Historic Places to identify historic places near the proposed project site. The National Park Service has provided the National listing in a format that can be accessed via Google Earth, so the properties can be located via the Internet. Figure 3-12 provides the results of the data search for properties closest to the project site. The information obtained via Google Earth was compared to a State listing for Brown County (WHS 2011c) and determined to be consistent (that is, the same historical properties were identified in both sources of information). Table 3-13 provides pertinent

information for the sites shown in the figure. As can be seen in the table, the closest registered historic property is located more than 1 mile from the project site.

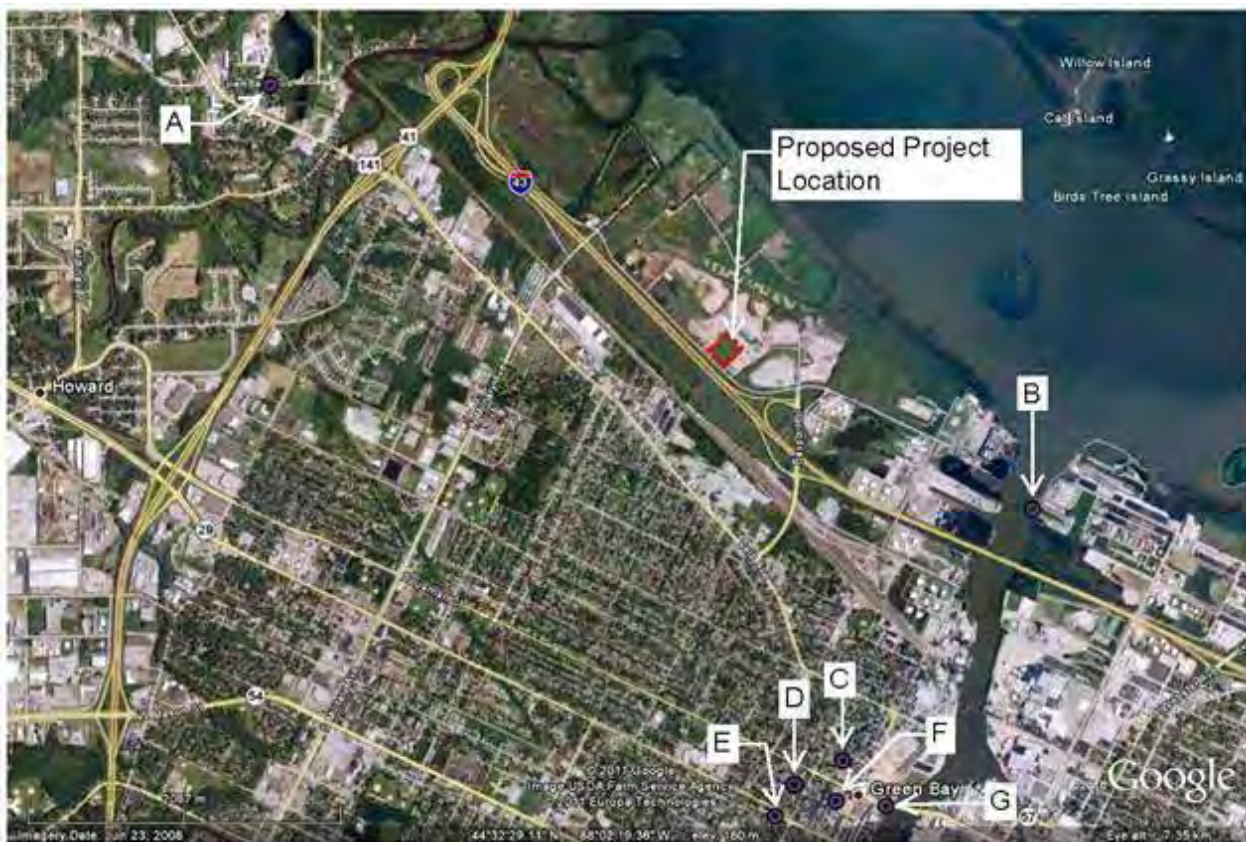


Figure 3-12. Locations of Properties on the National and State Registers of Historic Places

3.2.9.2 Discussion of Impacts

The area of potential effect for this project is limited to the footprint of the project; that is, the approximately 444-foot wide and 577-foot deep, 5.88-acre lot designated Parcel No. 6-3043 at 1230 Hurlbut Street in Green Bay, Wisconsin (Figures 2-2 and 2-4) and adjacent areas from which the proposed facility and its construction would be visible. Ground-disturbing activities would be limited to the area within the project site and the short access roads that would connect the lot to Hurlbut Street (going through Hurlbut Street's right-of-way). Although the project would represent a relatively permanent alteration of the property's appearance, there are no historic properties in close proximity that would be adversely affected. Once constructed, it is unlikely the proposed facility would be visible from the nearest historic properties (Figure 3-12), but even if it were, its visual impact would be consistent with other industrial facilities in the immediate area. The site is surrounded by property owned and used by Peters Concrete Company, Northeast Asphalt Company, and Martell Construction, as well as the other nearby industrial uses described in Section 3.2.1 of this EA.

Table 3-13. Historic Properties Closest to the Proposed Project Site

ID	Historic Place Name	Address	NPS Ref. No. and National Listing Date	State Listing Date	Distance to Project Site (miles)
A	Rioux, Angeline Campeau, House	2183 Glendale Ave., Howard	94001251 10/1994	06/1994	2.1
B	Grassy Island Range Lights	100 Bay Beach Rd. Green Bay	04001484 01/2005	11/2004	1.4
C	Broadway – Dousman Historic District	Part of 200 and 300 block N. Broadway, 300 and 400 block Dousman St, part of 300 block N. Chestnut St., Green Bay	99000330 03/1999	01/1999	1.7
D	Oakland – Dousman Historic District	Roughly bounded by Dousman St., Oakland Ave., Shawano Ave., Antoinette and Francis Sts., Green Bay	88000455 04/1988	01/1989	1.8
E	Fisk, Joel S., House	123 N. Oakland Ave., Green Bay	78000420 08/1978	01/1989	1.9
F	Broadway – Walnut Historic District	100 N. and part of 100 S. block Broadway; 100 N. block Pearl St.; 400 block W. Walnut St., Green Bay	99000817 07/1999	01/1999	1.9
G	Chicago and North Western Railway Passenger Depot	202 Dousman St., Green Bay	99001633 12/1999	04/1999	1.9

Note: Not shown in the figure are several other historic properties in Green Bay to the southeast, across the Fox River.

The project site itself is not known to be of any historical or archaeological significance. As described in Section 3.2.1, the entire property is fill land as a result of a relatively long history of being used for disposal of dredge materials. Old records and maps indicate that more than 150 years ago the land was part of the Fort Howard military reservation, but the State has not identified any archaeological evidence of the Fort in the proposed project area.

In summary, there are no nearby historical properties that would be adversely affected within the area of potential effect. The project footprint has no known or suspected historical or archaeological significance because it has been completely disturbed and altered over the last 40 to 50 years. Therefore, the project would have no effects on cultural resources within the area of potential effect.

3.2.10 AESTHETICS AND VISUAL RESOURCES

3.2.10.1 Affected Environment

Aesthetic and visual resources generally refer to the scenic or visual quality (that is, visual appeal) of the landscape. This includes all natural and manmade objects (moving and stationary) that are visible on the landscape. The potential for odor concerns was addressed in Section 3.2.2 of this EA and will not be repeated in this section, but it is recognized that odors might also be considered an issue of aesthetics.

The visual character of the proposed project site is that of a parcel of land that has not been disturbed for some time, containing grasses and a few trees, but which is surrounded by heavily disturbed property on three sides and roads on the fourth. The proposed location near the shore

of Green Bay of Lake Michigan has the potential for a scenic vista out across the water. Specifically, about 0.8 mile to the north of the project site lies the Ken Eurs Nature Area and about 2.6 miles to the southeast lies the Bay Beach Amusement Park and about 3.5 miles to the southeast is the Bay Beach Wildlife Sanctuary. All three of these features take advantage of the natural setting on the shore of the bay. In between, however, lies a strip of land and the mouth of the Fox River, which have been used historically for industrial purposes associated with the Fox River harbor and bulk materials that could easily be brought to the region via boat or barge. As was described in Section 3.2.1 of this EA, the proposed project site and land to the north-northwest were used in the past for the deposition of materials dredged from the harbor area. The area to the south-southeast is used for the bulk storage of petroleum products and minerals, as well as coal used in the Pulliam power plant.

The proposed project site is on land that has been designated by the City of Green Bay for industrial usage. The visual quality of the project site and the land that surrounds it is consistent with that usage. The presence of I-43 as the southwest boundary of this strip of industrial land is also consistent with its visual quality.

3.2.10.2 Discussion of Impacts

Construction

Construction of the proposed project would involve the presence of heavy equipment, construction workers and their vehicles, trucks delivering building materials and equipment, and dust and vehicle exhaust emissions. All of these items would be in contrast to the current appearance of the project site, but would be less of a contrast in comparison to the visual landscape of the surrounding area. Truck traffic currently frequents the immediate area due to the presence of the adjacent concrete and construction companies. Outside of the current Bayport Industrial Center workforce, those most likely to be affected by the change in visual landscape during construction would be those traveling by the site on I-43.

Operations

Once constructed and in operation, the facility's appearance would be new to the site, but not unusual in comparison to other buildings in the Industrial Center. The City's review of the construction plans for the proposed facility includes verifying it meets appearance standards established for the Industrial Center. There would be an increase in truck traffic to and from the area as a result of the proposed project, but waste dumping and processing would take place entirely within the building, thus this element of the project would not impact the area's visual landscape. The proposed facility would have a maximum height of about 35 feet above ground level. The stacks from the three engine-generator sets would extend to a height of about 60 feet above the ground. Other than the stacks, there would be no unusually tall features associated with the building. Three small cooling tower units would be located outside the northeast side of the building and under the right atmospheric conditions could create visible steam plumes.

In conclusion, the visual landscape of the proposed project site would change with the presence of the energy recovery facility; however, the altered landscape would remain consistent with the existing surrounding property and with the City of Green Bay's intended use for that site. As such, impacts related to visual resources from the proposed project would be minimal.

3.2.11 HUMAN HEALTH AND SAFETY

3.2.11.1 Affected Environment/Background

Occupational health and safety is concerned with occupational and worker hazards during routine operations. The U.S. Department of Labor, Bureau of Statistics maintains statistics on workplace injuries, illnesses, and fatalities. These statistics consider the potential for total recordable cases; days away from work, days of restricted work activity or job transfer; and worker fatalities in the work environment. The incidence rates (cases per 100 full-time workers for nonfatality statistics and cases per 100,000 full-time workers for fatality statistics) maintained by the Bureau of Labor Statistics are calculated separately for different industries based on the reported health and safety cases for that particular industry. A full-time worker is assumed to work 2,000 hours per year. The health and safety incident categories are defined as follows:

- Total recordable cases – The total number of work-related deaths, illnesses, or injuries that result in the loss of consciousness, days away from work, restricted work activity or job transfer, or required medical treatment beyond first aid.

- Non-fatal incidents – Days away from work, or days of restricted work activity or job transfer – Cases that involve days away from work, or days of restricted activity or job transfer, or both.

- Worker fatality – Cases that involve the death of a worker.

In order to minimize the effect of industrial health and safety hazards, industries must comply with all applicable regulations that relate to industrial health and safety, including Occupational Safety and Health Administration requirements to have a health and safety plan in place before starting work.

3.2.11.2 Discussion of Impacts

Construction

For facility construction activities, DOE used the Bureau of Labor Statistics incident rates from the industry category "nonresidential building construction" (NAICS Code 2362) for 2009. The total non-fatal recordable cases incidence rate for the year was 3.6 injuries per 100 full-time employees (each working 2,000 hours during the year), and the days away from work, days of restricted work activity or job transfer incidence rate was 1.7 injuries per 100 full-time employees (BLS 2010a). For the equipment installation and operational testing activities, DOE used the Bureau of Labor Statistics incident rates from the category "commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance" (NAICS Code 8113). This category best represents the type of work that would be involved in this portion of project construction. The total non-fatal recordable cases incidence rate for this category was 5.4 injuries per 100 full-time employees, and the days away from work, days of restricted work activity or job transfer incidence rate was 2.6 injuries per 100 full-time employees (BLS 2010a).

DOE estimates that there would be 21 construction workers on average at the site during the eight-month construction period. This represents a total of 168 worker-months, or 14 worker-years. Assuming 2,000 hours per worker-year as used in the incident rate development, estimates of incident occurrences can be calculated as follows:

Construction recordable cases
(14 worker-years)(3.6 incidents/100 worker-years) = 0.50 incidents

Construction days away from work
(14 worker-years)(1.7 incidents/100 worker-years) = 0.24 incidents

DOE estimates that there would be 10 workers normally at the site during the two-month equipment installation and testing period. This represents a total of 20 worker-months, or almost 1.7 worker-years. Estimates of incident occurrences can be calculated as follows:

Equipment installation and testing recordable cases
(1.7 worker-years)(5.4 incidents/100 worker-years) = 0.09 incidents

Construction days away from work
(1.7 worker-years)(2.6 incidents/100 worker-years) = 0.04 incidents

Accordingly, DOE estimates there could be 1 total recordable cases (calculated at a combined 0.59) and likely no incidents involving days away from work (calculated at a combined 0.28) during project construction. Oneida would implement standard practices for the construction industry to reduce risks to workers. This would include, but not be limited to, complying with Occupational Safety and Health Agency regulation "Safety and Health Regulations for Construction" (29 CFR Part 1926).

In 2009, there were 55 fatalities in the "nonresidential building construction" industry category and 19 fatalities in the "commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance" category (BLS 2010b), which had average employments of 798,700 and 189,100 workers, respectively (BLS 2010a). With construction involving 14 worker-years and equipment installation involving 1.7 worker years, an estimate of the number of fatalities that might occur based on statistics from similar work can be calculated as follows:

Construction fatalities
(14 worker-years)(55 fatalities/798,700 worker-years) = 0.001 fatalities

Equipment installation and testing fatalities
(1.7 worker-years)(19 fatalities/189,100 worker-years) = 0.0002 fatalities

Based on these estimates, a fatality during construction would be very unlikely. The calculated value of about 0.001 can be otherwise thought of as 1 chance in 1,000 that a fatality would occur.

Since the construction activities associated with the proposed facility would be located within the 5.88-acre proposed project site, which is within an industrial park, health and safety impacts to the offsite public during construction would be minimal and limited to the minor increases of

criteria air pollutants such as particulate matter and construction vehicle exhausts. These minor impacts would be typical of any construction site and would be temporary.

Operations

The proposed project would involve up to 30 full-time employees during operations. DOE used the Bureau of Labor Statistics incident rates from the industry category "waste treatment and disposal" (NAICS Code 5622) for 2009. The total non-fatal recordable cases incidence rate for the year was 4.8 injuries per 100 full-time employees, and the days away from work, days of restricted work activity or job transfer incidence rate was 3.2 injuries per 100 full-time employees (BLS 2010a). With 30 workers and an assumed 20-year life for the facility, there would be a total of 600 worker-years involved in project operations and estimates of incident occurrences can be calculated as follows:

Operations recordable cases

(600 worker-years)(4.8 incidents/100 worker-years) = 28.8 incidents

Operations days away from work

(600 worker-years)(3.2 incidents/100 worker-years) = 19.2 incidents

Accordingly, DOE estimates there could be 28 to 29 recordable cases and of those 19 to 20 incidents would involve days away from work during the entire operations phase. As with construction, Oneida would implement standard practices for the waste management industry to reduce risks to workers. This would include, but not be limited to, complying with the Occupational Safety and Health Agency regulation "Occupational Safety and Health Standards" (29 CFR Part 1910).

In 2009, there were 9 fatalities in the "waste treatment and disposal" industry category (BLS 2010b), which had an average employment of 99,900 workers (BLS 2010a). With 20-years of operations involving 600 worker-years, an estimate of the number of fatalities that might occur based on statistics from similar work can be calculated as follows:

Operations fatalities

(600 worker-years)(9 fatalities/99,900 worker-years) = 0.054 fatalities

Based on this estimate, a fatality during operations would be unlikely. The calculated value of about 0.054 can be otherwise thought of as about 1 chance in 19 (the inverse of 0.054) that a fatality would occur over a 20-year operations phase.

Operation of the proposed project would involve truck traffic to deliver solid waste to the facility and to remove processed waste residues and recyclable materials removed from the waste stream. DOE believes these are basically ongoing activities and that the project would even reduce regional transportation due to reducing the amount of waste that would have to go to regional landfills. Accordingly, DOE believes transportation associated with the facility's operation does not represent a new source of health and safety concerns that needs to be addressed in this document.

Health and safety impacts to the offsite public from operation of the proposed facility would be limited to a minor increase in risk from transportation accidents in the area near the proposed site

and the potential health impacts associated with the projected air emissions addressed in Section 3.2.2 of this EA. The increased risk from transportation accidents would be negligible since the relative increase in traffic in the area would be very small. The potential health impacts from the air quality emissions discussed previously would be minimal since the proposed facility would be required to operate under a DNR air quality permit, which would control the amount of toxic materials or pollutants that could be released from the facility.

Emergency Response Plan

In the event of an emergency, the proposed project would implement the Emergency Response Plan that was developed for Oneida using criteria established in 29 CFR 1910.120, 1910.38, and 1910.156 and that has been approved by the Green Bay Fire Marshall. In addition, Oneida met and consulted several times with the Green Bay Fire Department to develop emergency response actions for the proposed project, including the designation of an Emergency Response Management Team that would be responsible for implementing the Plan during an emergency. The Emergency Response Plan further identifies the response and action plan to be taken by employees during a power outage, or disastrous event. Emergency equipment would be stored onsite, including fire control and personal protective equipment. In the event of a fire, the Fire Department would be alerted and all pyrolysis and gasification units would be shut down. For natural disasters, including hurricanes and earthquakes, Oneida would conduct a thorough inspection of the plant after such an event for possible leaks or damaged equipment and to ensure proper operation. The Emergency Response Plan will be reviewed and submitted to the Fire Department for approval annually.

3.2.12 SOCIOECONOMICS

3.2.12.1 Affected Environment

The socioeconomic impact area, also called the region of influence, for the proposed project is Brown County, Wisconsin. Brown County is largely metropolitan with a large population and a substantial labor force, larger than any of the contiguous counties. The majority of the county workforce resides in Brown County. Therefore, the area most likely to experience socioeconomic impacts from the proposed project is Brown County.

Green Bay is one of 24 incorporated towns, villages, and cities in Brown County (Brown County 2011). Brown, Kewaunee, and Oconto counties comprise the U.S. Census Bureau Green Bay, WI metropolitan statistical area (code 24580). Table 3-14 compares population, employment, and income figures for Brown County and the state of Wisconsin. The county's estimated population of about 247,000 persons in 2009 reflects a 9.1 percent growth since 2000 (USCB 2010a). The City of Green Bay had a 2009 population of about 101,000 people (USCB 2010b).

Table 3-14. Estimated Population, Employment, and Income Demographics for Brown County and the State of Wisconsin

Demographic	Brown County	Wisconsin
Population (2009)	247,000	5.6 million
Nonfarming jobs (2008)	182,000	3.5 million
Unemployment (January 2011)	7.3 percent	7.4 percent
Per capita income (2008)	$37,800	$37,800
Total personal income (2008)	$9.2 billion	$212.6 billion
Living in poverty (2008)	8.8 percent	10.5 percent

Source: USCB 2010a; BEA 2010a, b, c, d; BLS 2010a.

The county's employment and population figures reflect the county's strong industrial base and growth rate, which has been about 70 percent higher than state levels over the last 20 years. The county had about 182,000 nonfarming jobs in 2008 (BEA 2010a). The county's employment base is well diversified with nine industrial sectors that each account for at least 5 percent of the jobs. Table 3-15 lists the sectors and percentages.

Table 3-15. Brown County Workforce, 2008

Employment Sector	Percent
Manufacturing	14.3
Health care and social assistance	10.5
Retail trade	10.3
Government and government enterprises	10.0
Accommodation and food services	7.3
Finance and insurance	7.3
Construction	5.4
Transportation and warehousing	5.0
Administrative and waste services	5.0

Source: BEA 2010a.

The Brown County unemployment rate was 7.3 percent in January 2011, down from 8.6 percent in January 2010 (BLS 2011a) and representing about 9,900 people out of work in the county (USCB 2010c). For comparison, the national unemployment rate was 9.0 percent in January 2011 (BLS 2011b).

In 2000, Brown County residents held about 80 percent of the jobs in Brown County. Residents of nearby Oconto and Outagamie counties each held between 4 and 5 percent of the jobs in Brown County, while residents of Kewaunee and Shawano counties collectively held just under 5 percent of the jobs. People who lived outside those areas held the remainder (USCB 2003a). Approximately 92 percent of Brown County residents who travel to work commuted to a worksite in Brown County (USCB 2003b).

In 2008, the total personal income in Brown County was about $9,200 million (BEA 2010d). The 2008 per capita income in Brown County at $37,800 was the same as the Wisconsin per capita income (BEA 2010c). In 2008, approximately 8.8 percent of Brown County residents and 10.5 percent of Wisconsin residents were living in poverty (USCB 2010a).

3.2.12.2 Discussion of Impacts

Employment impacts include the loss or gain of two kinds of jobs, direct and indirect. Direct jobs result from a project when new workers are hired. Indirect jobs result from the multiplier effect in which new, directly employed workers spend their earnings and thereby create a greater demand for goods and services than existed before the new direct jobs. The number of jobs a project creates, including the original job, is called the direct effect employment multiplier. Similarly, each dollar spent on goods and services by workers in a newly created position becomes income to the recipient, who saves a portion, pays taxes with a portion, and spends the rest. In turn, this spending becomes income to someone else, and so on. The number of times the final increase in consumption exceeds the initial dollar spent is called the direct effect earnings multiplier. These economic multipliers and others are normally generated through the use of models that use region- and industry-specific economic factors as input. For purposes of this EA, DOE used averages of multipliers generated by the USACE for 108 of its projects that occurred over various parts of the country (USACE 2001).

Construction

The construction phase would last about 8 months. The average construction workforce during that timeframe is estimated at 21 persons. It is expected that most of these individuals would come from the existing workforce within the immediate area (that is, from within Brown County). Therefore, there would be no increase in the permanent population expected as a result of project construction. The equipment that would be installed in the facility would likely be manufactured outside of Brown County. Therefore, new permanent indirect jobs in the area would be unlikely to occur. Because there would be no project-related change in the population of the area, there would be minimal impacts to population, employment and income, community infrastructure, and public services. There would be a small, one-time boost in the economy from the construction and installation of the facility equipment. The projected total project cost of about $23 million would represent an estimated $12 million in additional income in the areas of the equipment manufacturers as well as the Brown County area of construction. With multipliers to include the effects of indirect earnings, the estimated final earnings effect would be about $20 million in these areas. Assuming this was all realized in a single year and in Brown County, it would represent a very small increase (less than 0.22 percent) in the total income within Brown County (Table 3-14).

Operations

Operation of the proposed project would involve up to 30 new jobs. It is anticipated these direct jobs would be filled by people currently living in Brown County with the exception of the project potentially bringing in a limited number of individuals with specific expertise, if needed, to manage the facility's operation. Using multipliers to account for the indirect jobs that would be generated, the total number of new jobs (direct and indirect) is estimated to be approximately 40. It is expected these indirect jobs would also be filled by Brown County residents. Because there would be minor, if any, project-related change in the population of the area, there would be minimal impact to community infrastructure or public services. The added employment and income would be expected to have a beneficial, though minor, effect on the local economy. The projected 40 new direct and indirect jobs would represent a very minor increase (about 0.022 percent) to the existing Brown County workforce (Table 3-14).

3.2.13 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* and associated implementing guidance, establishes the framework for identifying impacts to low-income and minority populations. Executive Order 12898 directs Federal agencies to "promote nondiscrimination in Federal programs substantially affecting human health and the environment, and provide minority and low-income communities access to public information on, and an opportunity for public participation in matters relating to human health or the environment." Executive Order 12898 also directs agencies to identify and consider disproportionately high and adverse human-health, social, economic, or environmental effects of their actions on minority and low-income communities and provide opportunities for community input to the process, including input on potential effects and mitigation measures.

3.2.13.1 Affected Environment

Table 3-16 compares racial and ethnic data about persons in the City of Green Bay, Brown County, and the state of Wisconsin. In 2009, the aggregate percent of all racial minorities (Black, American Indian or Alaskan Native, Asian, Native Hawaiian or other Native Islander, or persons of two or more races) was 8.4 percent in Brown County and about 10.6 percent in Wisconsin (USCB 2010a). Persons of Hispanic

Table 3-16. Racial and Ethnic Characteristics in Green Bay, Brown County, and Wisconsin

Race or ethnicity	Green Bay, 2000 (percent)[a]	Brown County, 2009 (percent)[b]	Wisconsin, 2009 (percent)[b]
White	85.9	91.6	89.4
Black	1.4	1.9	6.2
American Indian/Alaska Native	3.3	2.6	1.0
Asian	3.8	2.5	2.2
Hawaiian/Other Native Islander	<0.05	<0.05	<0.05
Reporting two or more races	2.0	1.4	1.2
Hispanic or Latino origin[c]	7.1	6.6	5.3

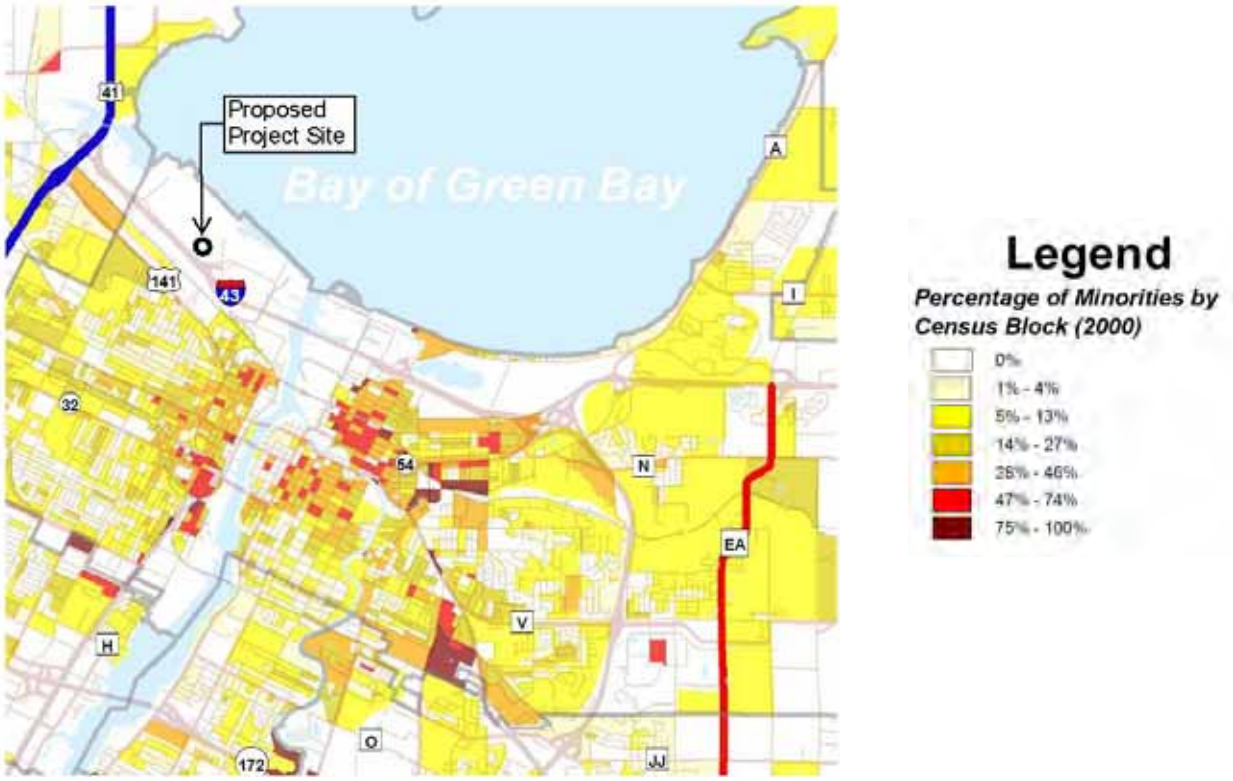
a. Source: USCB 2009.
b. Source: USCB 2010a.
c. Persons of Hispanic or Latino origin may be of any race and are included in racial categories.

or Latino origin made up about 6.6 percent of the population in Brown County and about 5.3 percent of the population in Wisconsin (USCB 2010a). The proposed project site is in Green Bay, which had a 2000 population that was 85.9 percent white and 7.1 percent Hispanic or Latino origin (USCB 2009). People of Hispanic or Latin origin may be of any race, so are included in applicable race categories.

Figure 3-13 provides a general distribution of minority population within the Green Bay area based on 2000 Census block data. The figure shows no minority population in the immediate area of the proposed project site, but this is an industrial area with no residences apparent in aerial views. The closest area shown with a non-zero minority population is the yellow-coded area to the west. This area, lying between U.S. Highway 141 and the railroad tracks, is zoned "General Industry," the same as the project site (Green Bay 2008). This area is made up primarily of commercial properties, but several residences are present in the southeast portion of

the strip of land, almost directly across the I-43 and railroad right-of-ways from the project site. These represent the closest residences to the project site, at a distance of about 0.3 mile. The yellow coding on Figure 3-13 indicates this area is characterized with a minority population that is slightly lower than that in the city as a whole, but comparable to the average minority population of Brown County.

Northwest of the yellow coded strip of land is a strip of orange-coded land that also lies between the railroad tracks and Highway 141. This strip of land, which is as close as about 0.7 mile from the proposed project site, is shown with a relatively high 28 to 46 percent minority population. This land is in the Village of Howard and is zoned primarily as "Highway Commercial" with several parcels designated as "General Industrial" (Howard 2010). Based on aerial views, only a few residences are located in this strip of land, with most of the area appearing to contain commercial uses. It appears likely that the high percentage of minorities in this area is attributed to a relatively small number of individuals. In the area of the proposed project site, the closest zoned residential areas are on the southwest side of U.S. Highway 141.



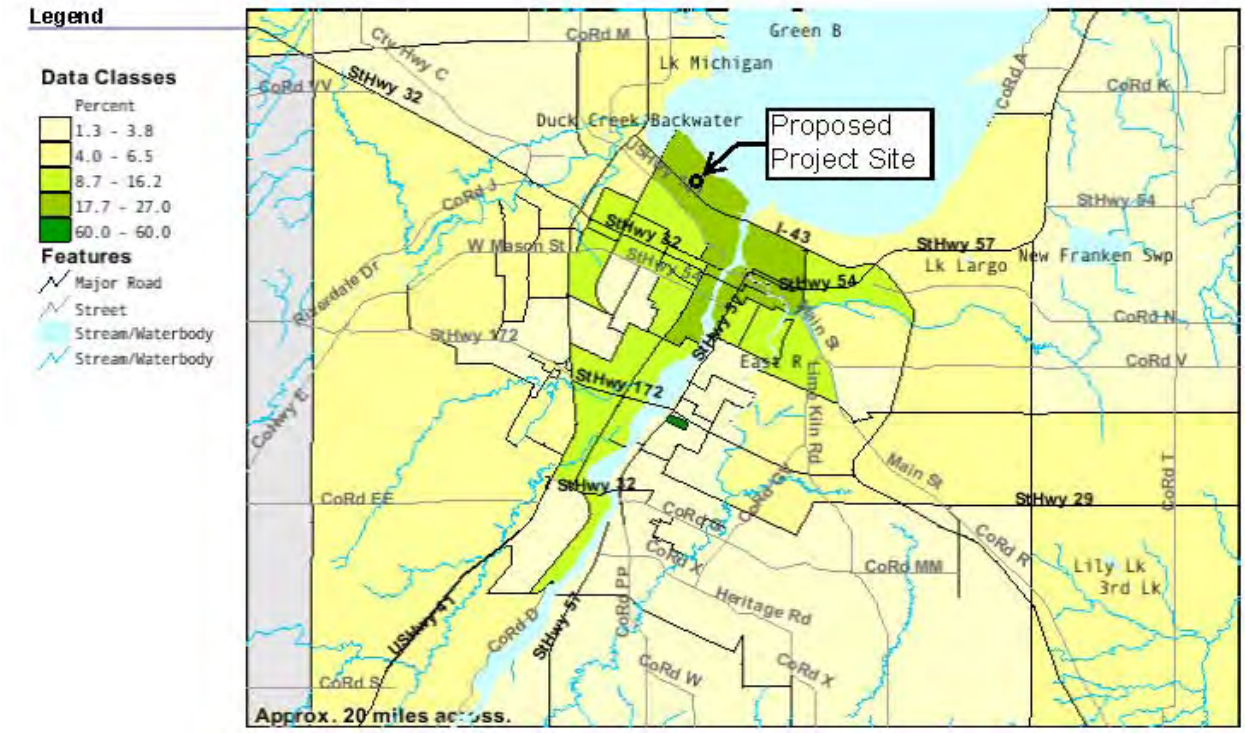
Source: Brown 2010.

Figure 3-13. Percentage of Minorities in the Green Bay Area

Over the five-year period from 2005 through 2009, an average of about 15.5 percent of the population of the City of Green Bay and about 10.3 percent of the population of Brown County lived below the poverty level (USCB 2010c, 2010d). This is compared with averages of 11.1 and 13.5 percent for Wisconsin and the United States, respectively, over the same period (USCB 2010e). Figure 3-14 provides general distribution of individuals within the Green Bay area living below the poverty level based on 2000 Census tract data (the most recent data with this level of detail currently available). For direct comparison to the information in Figure 3-14, the

2000 Census data indicate 10.5 and 6.9 percent of city and Brown County individuals, respectively, lived below the poverty level (USCB 2000a, 2000b). In both cases, the number of individuals living in poverty was notably lower in 2000 than in the 2005 through 2009 timeframe.

As can be seen in Figure 3-14, the proposed project site is identified as being in an area where the number of individuals living below the poverty level, at 17.7 to 27 percent, is above the average for both the City of Green Bay and Brown County. As with the minority population discussion, this is somewhat misleading for the area immediately surrounding the project site, as there appear to be no residential areas on the northeast side of the railroad tracks. There is, however, a small group of residences almost directly across I-43 and the railroad tracks from the proposed project site and a larger group of residences about 0.9 mile to the southeast, both of which are in the same grouping (that is, 17.7 to 27 percent in poverty) as the proposed project site. Residential areas to the southwest, across U.S. Highway 141 are in the lighter green grouping (8.7 to 16.2 percent poverty), which appears to include poverty level percentages that are about average for the City of Green Bay.



Source: USCB 2000c.

Figure 3-14. Percentage of Individuals Below the Poverty Level by 2000 Census Tract

3.2.13.2 Discussion of Impacts

Minority Populations

Independent of whether there might be high and adverse impacts, there is no evidence that a minority population would be disproportionately affected by the proposed project. Based on 2000 Census data (Figure 3-13), properties surrounding the proposed project site either have no identified minority population or have minority percentages typical for the City of Green Bay

and Brown County. Properties farther away from the proposed project site, are identified with higher than average minority populations; however, individuals in these locations would not experience greater effects than those located closer to the project site. As noted previously, the zero minority population identified in the immediate area of the project site may be misleading because there are no residences in that area. However, the conclusion is the same; that is, no minority population would be disproportionately affected by the proposed project.

Low-Income Populations

Unlike the distribution of minority populations, the distribution of low-income populations in the area may have potential for concern because the proposed project location appears to be in the midst of an area with a higher than average rate of poverty. The area is designated with 17.7 to 27 percent of the individuals living below the poverty level rate (Figure 3-14). This range can be compared with 10.5 percent for all of Green Bay in 2000 and 6.9 percent for all of Brown County in 2000. The lack of residences in the immediate area of the project site is relevant to any evaluation of effects to low-income populations. In the area of the project site, the "17.7 to 27 percent" classification extends from the shore of the bay southwest to Highway 141 (Velp Avenue) (Figure 3-14). In this area, the railroad parallels I-43 and Highway 141, about mid-way between the two roads. Based on aerial views of the site, there are no residences on the north side of the railroad tracks, and there are only a few locations where there are residences between Highway 141 and the railroad tracks, with the closest about 0.3 mile west of the project site. Considering areas with larger groupings of residences, the closest primary residential area within the "17.7 to 27 percent" classification appears to be about 0.9 mile to the southeast of the project site, lying south of the railroad and between Bayport Drive and the Fox River. The closest large grouping of residences, however, is about 0.5 mile southwest of the project site, in an area shown in Figure 3-14 with 8.7 to 16.2 percent of the individuals living below the poverty level rate; that is, a poverty rate typical of the City of Green Bay in 2000. The conclusion of this short analysis is that the closest residences to the proposed project site are within a zone identified as having higher than average population living in poverty, but the number of residences in this closest area is small (estimated at less than 10 residences) and is still at least 0.3 mile from the site. The closest large group of residences is about 0.5 mile from the project site and is in an area with poverty rates that are typical for the City of Green Bay.

Based on the evaluations in this EA, DOE concludes that the proposed project would not involve high and adverse impacts. However, rather than simply concluding there would be no impacts related to environmental justice, the following discussion conservatively describes the types of effects that might be experienced by that portion of the population living closest to the project site and who also happen to live in an area with higher than average poverty rates. The closest residents are separated from the proposed project site (from west to east) by the railroad, I-43, and Hurlbut Street in addition to the right-of-ways associated with each. The resource areas under which there could be effects to people in proximity to the project site are land use, air quality, noise, transportation, waste and hazardous materials, and aesthetics and visual resources, which are addressed in the following short discussions.

- Land Use – The proposed project site is zoned "General Industry" as is the location of the nearest residences. The proposed project is consistent with this land use and therefore, would have no adverse land use effects at the site of the project or at the location of the nearest residences.

- Air Quality – The proposed project would include emissions control equipment and the emissions would be in compliance with NAAQS. At a distance of 0.3 mile there is minimal reason to believe the closest residence would experience unique air quality conditions associated with the proposed project.

- Noise – At a distance of 0.3 mile, noise from the proposed project would be greatly reduced and the closest residences would likely be unable to distinguish project sounds from those of traffic on I-43.

- Transportation – There would be increased truck traffic associated with the proposed project; however, this would be most noticeable at the facility site, on Hurlbut Street, and at the Bayport Drive interchange with I-43. At a distance of 0.3 mile and across the railroad and I-43, it is unlikely the nearest residence would notice any change.

- Waste and Hazardous Materials – Wastes generated at the facility (for example, the char or ash from the pyrolysis units and the waste removed from the feedstock) would be removed routinely for proper disposition. Hazardous materials would not be present in quantities unusual for an industrial facility with heavy equipment, considered unusually hazardous, or cause increased risks to residences at a distance of 0.3 mile.

- Aesthetics and Visual Resources – At the location of the nearest residence, the viewscape in the direction of the proposed project would change due to the addition of a new building, but at 0.3 mile, it would be expected to have little effect and would blend in with similar buildings in the Bayport Industrial Center.

3.3 No-Action Alternative

Under the No-Action Alternative, DOE and BIA would not authorize the use of Federal funds for the proposed project, and the Federal agencies assume for the purposes of this EA that the project would not proceed without this assistance. It is anticipated, however, that the proposed project site would remain an area designated for industrial use and available for some other project. As compared to effects with the proposed project, resource areas would be impacted as follows if the project did not proceed:

- Land Use – The proposed site would not be developed at this time, but would remain designated “General Industry.”

- Air – There would be no impacts to local air quality, methane emissions from landfills would continue at current rates, and electric generation would remain at current rates of fossil fuel usage.

- Water – There would be no changes to storm water runoff from the site and, similar to the proposed project, there would be no impacts to floodplains and wetlands.

- Noise – There would be no change in the noise characteristics of the project site.

- Transportation – There would be no effects to traffic or transportation characteristics in the area of the proposed project and there would be no decrease in the existing truck traffic to the regional landfill.

- Waste and Hazardous Materials – Waste would continue to be disposed of at the Winnebago County regional landfill at current rates and once available to receive waste, to the Outagamie County landfill. As the population in the Green Bay area is expected to continue to increase, it is anticipated that there would be an increase in solid waste disposal at landfills and the capacity of the existing landfills would continue to decrease at current rates. There would be no hazardous materials managed at the project site.

- Utilities and Energy – There would be no change in water, electricity, or natural gas demand and there would be no additional wastewater requiring treatment through the Sewerage District. There would also be no additional electricity supplied to the regional electrical grid.

- Biological Resources – There would be no potential effects to biological resources on the project site.

- Cultural Resources – There would be no potential for impacts to cultural resources from the proposed project.

- Aesthetics and Visual Resources – There would be no potential for impacts to aesthetics and visual resources from the proposed project.

- Health and Safety – There would be no workforce associated with the construction, operation, or decommissioning of the energy recovery facility and there would be no potential for associated impacts to the health and safety of the workforce or to members of the public in the area.

- Socioeconomics – The potential positive benefits of the proposed project, including the infusion of money and jobs into the economy, would not occur.

- Environmental Justice – There would be no potential for disproportionate effects to minority or low-income populations.

If the project did proceed without Federal funding, the potential environmental impacts would be essentially identical to those under DOE's and BIA's Proposed Action (that is, providing assistance that allows the project to proceed).

3.4 Irreversible and Irretrievable Commitments of Resources

A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource or limit those factors that are renewable only over long periods of time. Examples of nonrenewable resources are minerals, including petroleum. An irretrievable commitment of resources refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. Examples of irretrievable resources are the loss of

a recreational use of an area. While an action may result in the loss of a resource that is irretrievable, the action may be reversible. Irreversible and irretrievable commitments of resources are primarily related to construction activities.

For the proposed project, resources consumed during construction of the project, including labor, fossil fuels and construction materials, would be committed for the life of the project, which is assumed to be 20 years. (However, it is recognized that the actual life of the proposed facility may be greater.) Nonrenewable fossil fuels would be irretrievably lost during construction through the use of gasoline- and diesel-powered construction equipment. The expenditure of Recovery Act funding from DOE would be irreversible. The proposed project would represent a new commitment of land, but the land was heavily disturbed in the past and the proposed project would not be considered irreversible use of the land since it could be restored to its current condition sometime in the future.

3.5 Unavoidable Adverse Impacts

Unavoidable adverse impacts associated with the proposed project include:

- Increased emissions of fugitive dust and exhaust from vehicles and equipment during construction and increased emissions of criteria pollutants, formaldehyde, and acetaldehyde during operations;
- Increased noise during construction and operations;
- Increased traffic in the area of the project site; and
- Increased water demand, sewage production, and natural gas usage during operations.

These impacts are temporary, in the case of the construction noise and air emissions, and long-term, in regard to the increased emissions of criteria pollutants, increased traffic, and utility needs during operations. Overall, impacts of the proposed project on the environment and human health would be minimal.

3.6 The Relationship Between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Short-term use of the environment, as the term is used in this document, is that used during the life of the project, whereas long-term productivity refers to the period of time after the project has been decommissioned, the equipment removed, and the land reclaimed and stabilized. The short-term use of the project area for the proposed project would not affect the long-term productivity of the area. If it is decided at some time in the future that the energy recovery facility has reached its useful life, facility could be decommissioned and the site reclaimed, re-contoured, and re-vegetated to resemble the pre-disturbance conditions. The installation of an energy recovery facility at this site would not preclude using the land for purposes that were suitable prior to this project.

4. CUMULATIVE IMPACTS

Cumulative impacts are those potential environmental impacts that result 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 actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The discussions in Chapter 3 presented the affected environment, then evaluated the potential impacts of the proposed project within that environment. Existing land uses and activities in the area of the proposed project, such as the adjacent concrete and construction companies, are inherently part of the affected environment. As a result, the proposed project's cumulative impacts with those of past and on-going actions were inherent to the evaluations in Chapter 3. This chapter, therefore, focuses on cumulative impacts of actions that could begin in the same general timeframe as the proposed project or that might occur in the reasonably foreseeable future. Further, because the impacts of the proposed project generally would be minor and localized, DOE focused the evaluation of cumulative impacts on activities within the city of Green Bay.

4.1 Reasonably Foreseeable Future Actions

Oneida has no plans to expand the size of the facility or the nature of its operations, so there are no future plans for the facility that should be considered as a possible cumulative impact. In order to identify any future actions in the area, DOE contacted the Green Bay Planning Department. When asked about future projects, the Department first responded "there are no pending zonings, site plans or proposed developments . . . in the vicinity of the project site" (Neumeyer 2011). Asked about any proposed projects within the city, the Planning Department provided a printout from the Department's database of pending projects or sites being tracked for City review and approval. Table 4-1 provides a listing of the projects and Figure 4-1 shows their approximate locations and distance from the proposed project site.

Three projects are located within 2 miles of the proposed project site, including Gerczak Liquor (0.43 mile), Baycare Health Systems (1.96 miles), and Lok-Safe Storage (1.26 miles). However, none of the projects identified would be large construction actions or would involve changes to the city's layout, infrastructure, or zoning. Rather, these projects appear to be the types of projects that routinely occur within a city as commercial entities expand, relocate, or go out of business, or when changes are made to residences.

Table 4-1. Pending Projects Identified by the Green Bay Planning Department

	Green Bay Address	Project Description
1	1244 Velp Avenue	Relocation of Gerczak Liquor
2	626 Pinehurst Avenue	2,050-square-foot addition to Martin Elementary
3	301 N. Adams Street	Expand existing outdoor seating area at Koko Sushi
4	2600 Larsen Road	12,505-square-foot addition to an existing building, Green Bay Botanical Garden
5	164 N. Broadway	Parking lot expansion/improvements at Baycare Health Systems
6	1112 S. Military Avenue	Raze main building and other structures, and pave over the area – Broadway Automotive
7	607 Liberty Street	Add 3 silos to the property (2,500 square feet)
8	2524 Remington Court	Construction of a new single family, single story attached garage
9	1610 Stiles Road	Installation of Lok-Safe storage garages
10	1230 Lime Kiln Road	Two commercial/storage buildings for Multi-Craft Realty
11	332 S. Monroe Avenue	A drive-thru addition on Flowers on the Move
12	3025 Bay Settlement Road	Raze building and landscape
13	2080 University	Unspecified action at the Lindells IV Super Value retail store
14	211 Bedford Road	Unspecified action at a residential property
15	1400 N. Baird Street	Unspecified action at the North Baird Trailer Court
16	1611 State Street	Process building and site for Tetratech
17	1114 Main Street	Change of use and a new patio for Club Royale
18	400 Block Terrace Lake Court	Not described (incomplete address – so not shown in Figure 4-1)

Source: Neumeyer 2011

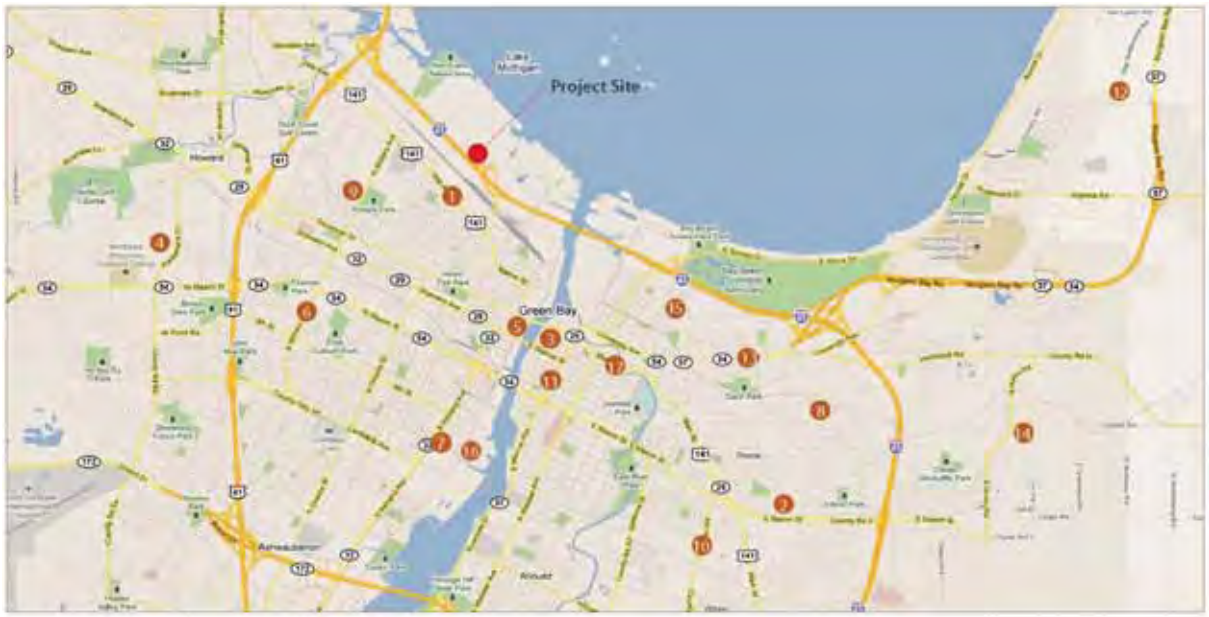


Figure 4-1. Approximate Location of Pending Projects near the Proposed Project Site (and distances).

4.2 Summary of Cumulative Impacts

The following discussion addresses the potential, or non-potential, for the proposed project to have cumulative impacts with the projects listed in Table 4-1. The discussion is presented in terms of the same resource areas evaluated in Chapter 3.

Land Use

The proposed project and the reasonably foreseeable projects would be reviewed and approved by the City's Planning Department and, as a result, are expected to be consistent with existing zoning and land use plans. In addition, because the project sites are distant from one another, the potential for cumulative impacts to land use would be very unlikely.

Air Quality

The reasonably foreseeable projects and the proposed project could result in cumulative impacts to air quality in the form of construction-type air emissions (that is, fugitive dust and vehicle emissions) should this activity occur at the same time. However, these types of emissions would be of relatively short duration and the emission sites would likely be spread-out over the city, so a single location would not be expected to experience air quality problems. None of the City projects appear to involve long-term air emissions beyond those associated with space heating.

Water Resources

Neither the proposed project nor the reasonably foreseeable projects would involve potential to impact water resources other than possibly runoff and erosion-type concerns that might occur during construction. It is anticipated that these projects would adhere to permitting requirements including the WPDES regulations and the implementation of BMPs during construction to ensure less than significant effects to water resources. In addition, with the city's relatively flat topography and considering the Planning Department's involvement in reviewing project plans, adverse cumulative impacts to water resources from runoff would not be expected to occur.

Noise

If the reasonably foreseeable project and the proposed project were in close proximity to each other, there could be cumulative noise impacts, particularly during construction. However, as shown in Figure 4-1, the distances between the projects should effectively eliminate the potential for cumulative noise impacts.

Transportation

None of the reasonably foreseeable projects appear to involve the potential for notable effects on transportation except possibly during construction when workers and materials would be moving to new locations. Construction-related traffic associated with these projects could travel the same primary roads as new traffic caused by the proposed project. However, the reasonably foreseeable projects are at a sufficient distance from the proposed project site that it is unlikely that cumulative traffic impacts would occur. None of the reasonably foreseeable projects would involve construction traffic in large volumes or for long durations, which would further act to make cumulative transportation impacts less likely.

Waste and Hazardous Materials

If the reasonably foreseeable projects and the proposed project were constructed at the same time, there could be a cumulative increase in the amount of construction debris produced and requiring disposal. However, none of the projects, either individually or in combination, appear sufficiently large to significantly impact existing waste management capabilities or capacities. None of the reasonably foreseeable projects are clearly identifiable as involving hazardous materials and even if they did, there would be minimal potential to result in cumulative impacts from hazardous materials.

Human Health and Safety

Construction of the reasonably foreseeable projects and proposed project would all involve the potential for worker injury. This potential for injury would be cumulative only in the fact that the more construction work is performed, the higher the risk for injury. There is no reason to believe, however, that the same individuals would be involved in the different projects, so there would be no cumulative risk of injury to any individual.

Utilities and Energy

The reasonably foreseeable projects could involve additional demands for drinking water and energy or result in additional production of sewage for treatment and, therefore, represent demands or needs that would have a cumulative effect with those of the proposed project. However, none of the projects appear require unusually high demands or needs in the areas of water, sewage, or energy. Additionally, based on the evaluations provided in Chapter 3, there are no identified capacity problems in the existing infrastructure. As such, it is anticipated that the existing utilities and energy capacity and infrastructure would be able to accommodate these projects.

Biological Resources

The proposed project is not expected to have adverse impacts on biological resources of the proposed site. Similarly, the reasonably foreseeable projects appear to be within developed properties, so there would not be adverse cumulative impacts on biological resources.

Cultural Resources

The proposed project is not expected to have adverse impacts on cultural resources of the proposed site or vicinity. The reasonably foreseeable projects do not appear to involve culturally significant properties, but if there were a potential to affect such properties, the City review should identify potential concerns and require mitigation measures as necessary. As a result, cumulative impacts to cultural resources are not expected.

Aesthetics and Visual Resources

The proposed project is not expected to have adverse impacts on the aesthetics or visual resources of the proposed site. The reasonably foreseeable projects are well separated from the site of the proposed project such that cumulative aesthetic and visual resource impacts are not expected.

Socioeconomics

The proposed project would have minor beneficial impacts on the area's economy due to the influx of construction monies and new jobs. The reasonably foreseeable projects could have

similar beneficial impacts as a result construction activities; however, the cumulative impacts are expected to have minor positive effects on the area's economy.

Environmental Justice

Because the reasonably foreseeable projects are reasonably distant from each other and from the proposed project, it is very unlikely that the same group of low-income or minority populations could be affected by more than a single project. Therefore, no cumulative impacts to environmental justice would be expected.

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NOTE: In a couple of instances, information provided by individuals on the sign-in sheets at the April 12, 2011, public meeting was illegible. If either names or addresses could be read, online "White Pages" were used to complete the information. In at least two cases, a name could not be deciphered or linked to a mailing or email address and, as a result, nothing was entered in the list above.

Appendix B:
Consultation Letters, Other Correspondence, and Postings

This appendix contains copies of correspondence and postings associated with the Oneida Energy Recovery Project, including consultation letters between the DOE and the Wisconsin State Historic Preservation Officer (SHPO), the U.S. Fish and Wildlife Service (USFWS), and potentially affected Indian tribes. Items in this appendix are grouped by correspondents and presented in the following order:

Notice of Scoping Postcard
Mailed on March 31, 2011

NOTICE OF SCOPING

The U.S. Department of Energy (DOE) has published a Notice of Scoping and Public Meeting regarding the:

Oneida Seven Generations Corporation: Energy Recovery Project; Green Bay, Wisconsin - DOE/EA 1862

Oneida Seven Generations is proposing to use American Reinvestment and Recovery Act funds from DOE and a loan guarantee from the Bureau of Indian Affairs for the construction of a waste to energy facility. The facility will use pyrolysis, an advanced waste conversion technology to convert municipal solid waste into electricity. The project is proposed within the Bayport Industrial Center, in Green Bay, Wisconsin. The Notice of Scoping and Public Meeting is available for review on the Golden Field Office Public Reading Room website:

http://www.eere.energy.gov/golden/Reading_Room.aspx

A public scoping meeting will be held from 6 to 8:30 pm on April 12, 2011 at: Chappel Elementary School, 205 N. Fisk Street, Green Bay, WI. Interested persons are invited to submit comments on the potential impacts of the proposed action by **April 15, 2011**. Comments received will be considered in preparation of the Draft Environmental Assessment. Please mail comments to Melissa Rossiter, Department of Energy Golden Field Office, 1617 Cole Boulevard, Golden, CO 80401, or send them by email to Melissa.Rossiter@go.doe.gov.

Department of Energy
Washington, DC 20585

March 30, 2011

SUBJECT: Notice of Scoping – Oneida Seven Generations Corporation: Energy Recovery Project, Green Bay, Wisconsin (DOE/EA-1862)

The U.S. Department of Energy (DOE) and Bureau of Indian Affairs (BIA) are proposing to authorize the expenditure of Federal funds for a project in Green Bay, Brown County, Wisconsin. The Oneida Seven Generations Corporation, chartered and owned by the Oneida Tribe of Indians of Wisconsin, is proposing to construct a facility to process municipal solid waste and convert its energy content into electricity. Construction would include a facility to accommodate handling of solid waste, house three pyrolytic gasification systems, and three internal combustion engine generators that would be fired with the synthetic gas generated in the pyrolytic systems. The generators would have the capacity to produce a combined 5 megawatts of electricity, which would be used to power the facility with the excess being sold to the local utility company. The project would be beneficial to the country's energy objectives by providing electricity from a renewable resource, and it would convert the solid waste into a stable, reduced volume material that could be disposed in a landfill or potentially used in concrete or road beds. The facility also would be available for other tribes and municipalities to learn about the process of converting waste into electricity. The attached Project Description and Location provides additional information on the proposed project.

Pursuant to the requirements of the *National Environmental Policy Act* (42 U.S.C. 4321 et seq.; NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500 to 1508), and DOE NEPA implementing procedures (10 CFR Part 1021), DOE, with the BIA as a cooperating agency, is preparing a draft Environmental Assessment (EA) to:

- Identify any adverse environmental effects and potential associated mitigation measures should the proposed action be implemented;
- Evaluate viable alternatives to the proposed action, including a no action alternative;
- Describe the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity;
- Characterize any irreversible and irretrievable commitments of resources that would be involved should this proposed action be implemented; and
- Analyze past, present, and reasonably foreseeable actions to evaluate potential cumulative impacts.

Probable Environmental Effects/Issues Scoped for the Environmental Assessment

The EA will describe and analyze potential impacts on the environment that would be caused by the project and, as applicable, will identify possible mitigation measures to reduce or eliminate those impacts. At a minimum, the EA will evaluate the impacts that could affect:

- Land Use;
- Air Quality;

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- Water Resources;
- Waste Management and Hazardous Materials;
- Noise;
- Infrastructure;
- Traffic and Transportation;
- Aesthetics and Visual Resources;
- Health and Safety;
- Socioeconomics; and
- Environmental Justice.

Development of a Reasonable Range of Alternatives

NEPA requires DOE to consider a reasonable range of alternatives to the proposed action during an environmental review. The definition of alternatives is governed by the "rule of reason"; that is, an EA must consider a reasonable range of options that could accomplish the agency's purpose and need and reduce environmental effects. Reasonable alternatives are those that could be feasible based on environmental, technical, and economic factors. The No-Action Alternative will be addressed as well.

Public Scoping

DOE invites the public; Federal, State, and local agencies; and American Indian Tribes to identify issues they feel DOE should consider in the EA. DOE will post this letter, as well as the draft EA, when available, in the DOE Golden Field Office online reading room:
http://www.eere.energy.gov/golden/reading_room.aspx

A public scoping meeting will be held from 6 to 8:30 p.m. on April 12, 2011 at:
Chappel Elementary School
205 N. Fisk Street, Green Bay, WI.

The DOE Golden Field Office welcomes your input throughout the NEPA process. To ensure DOE receives your comments in time for consideration in the draft EA, please provide them on or before April 15, 2011, to:

Melissa Rossiter
NEPA Document Manager
U.S. Department of Energy, Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401
melissa.rossiter@go.doe.gov

We look forward to hearing from you.

Sincerely,

Melissa Rossiter
NEPA Document Manager

Attachment: Project Description and Location

ATTACHMENT – PROJECT DESCRIPTION AND LOCATION

ONEIDA SEVEN GENERATIONS CORPORATION: ENERGY RECOVERY PROJECT

The U.S. Department of Energy (DOE) is proposing to authorize a loan of up to $2 million in Federal funds through Wisconsin's Department of Commerce to the Oneida Seven Generations Corporation (Oneida) for the Energy Recovery Project. The Bureau of Indian Affairs (BIA) of the U.S. Department of Interior is similarly proposing to provide federal funding of up to $584,000 for the project; additionally, BIA is considering providing a loan guarantee of up to $19 million. The Oneida project would include the design, construction, and commissioning of a solid waste-to-electricity power plant in the Bayport Industrial Center in Green Bay, Brown County, Wisconsin.

When completed, municipal solid waste would be brought into the facility, shredded, and conveyed into one of three pyrolytic gasification systems. In these closed systems, the waste would be heated under controlled conditions to decompose through pyrolysis and produce flammable synthetic gas consisting primarily of hydrogen, carbon monoxide, and hydrocarbons such as methane, ethane, and propane. This synthetic gas would be collected and used as fuel to maintain operation of the pyrolitic systems and to fire three internal combustion engine generators. The three generators would have a combined capacity of 5 megawatts of electricity, which would be used to run the facility with the remainder being sold to the local electrical utility. The facility would have a natural gas connection to provide fuel to the pyrolitic systems during start-up and the facility's electrical connection could draw electricity from the grid when necessary; but once synthetic gas was being produced at full capacity, the facility would be energy-self-sufficient and there would be excess electrical energy going to the grid.

Waste from the pyrolytic gasification systems would be a carbon char and ash, in a volume of about 15 percent of the original municipal solid waste. Depending on the specific constituents in the waste product, it is expected that at least a portion of the waste stream would be usable as a concrete ingredient or as road bed material. The reduced-volume waste that cannot be reused would go to a state-approved landfill.

The proposed facility would process an estimated 150 tons of municipal solid waste per day. It is expected that this quantity of waste would require approximately 10 trucks of waste going in and out of the facility each day, five days per week. Although, the facility would operate 24-hours per day, five days per week (with the night shift used for maintenance activities), waste deliveries would be limited to Monday through Friday during day shift hours. Removal of processed waste and recyclable materials removed from the incoming municipal waste would be expected to require up to an additional 7 trucks per weekday. The proposed facility would be designed to accommodate up to 300 tons of municipal solid waste per day in case incoming waste is of low energy content. Such conditions would have a corresponding increase in truck traffic to and from the facility.

The proposed location for the Oneida facility is within the Bayport Industrial Center, adjacent to Hurlbut Street and Interstate 43 in the northern section of Green Bay near the bay. The land is currently a vacant industrial lot. The property is serviced by the City of Green Bay Water Utility and the Green Bay Metropolitan Sewerage District. Figure 1 shows the proposed project site in relation to the general region of Green Bay. Figure 2 shows an aerial view of the project site with an outline of the parcel of property where the facility would be constructed. Finally, Figure 3 provides a preliminary drawing of how the proposed facility and its access roads might be laid out within the identified parcel of property.

The building depicted in Figure 3 would be about 64,000 square feet in size with a 3,000 square-foot mezzanine. It would house the primary process equipment and the waste handling areas, as well as an area for offices and employee support facilities. Outside the building, there would be an outdoor area for exterior cooling units, fencing, employee parking, a truck scale, and access roads. The lot size is 5.88 acres and it is estimated that essentially all of the land will be disturbed during construction. In addition to the 64,000 square feet of building, there would be about 2.5 acres of asphalt or concrete surfaces installed to provide roadways, parking areas, access ramps, and equipment pads.

Figure 1. Map of Green Bay, Wisconsin, area and proposed project location.

Figure 2. Aerial view of proposed project location.

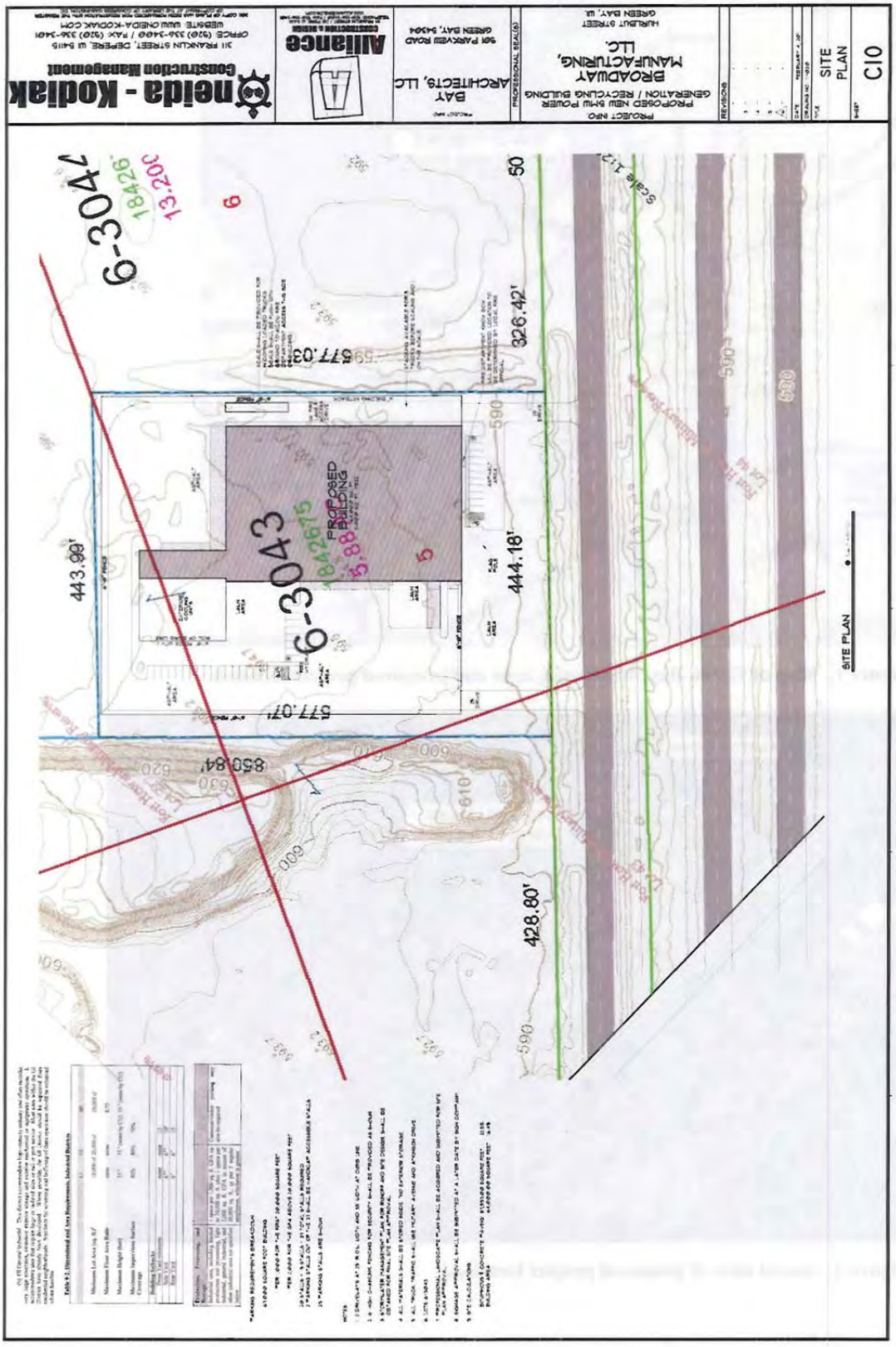

Figure 3. Preliminary drawing of proposed facility layout.

Department of Energy
Washington, DC 20585

March 8, 2011

Michael E. Stevens
State Historic Preservation Officer
Administrator, Division of Historic Preservation – Public History
Wisconsin Historical Society
816 State St.
Madison, WI 53706-1482

RE: Oneida Seven Generations Corporation's Energy Recovery Project, Green Bay, Wisconsin

Dear Mr. Stevens:

The U.S. Department of Energy (DOE) is proposing to provide a loan through the Wisconsin Department of Commerce State Energy Program to the Oneida Seven Generations Corporation, chartered and owned by the Oneida Tribe of Indians of Wisconsin, for a project in Green Bay, Brown County, Wisconsin. Oneida is proposing to construct a facility to process municipal solid waste and convert its energy content into electricity. The Bureau of Indian Affairs (BIA) is also proposing to authorize expenditure of Federal funds for the same project. If approved, the proposed project would be partially funded by DOE through the *American Recovery and Reinvestment Act of 2009* (Pub. L. 111-5, 123 Stat. 115; ARRA). Therefore, this project must meet the requirements for a Federal undertaking under Section 106 of the *National Historic Preservation Act* (16 U.S.C. 470 et seq.; NHPA) as implemented by 36 CFR Part 800. The purpose of this letter is to fulfill part of DOE's obligations under NHPA Section 106 by formally initiating consultation.

Attached to this letter is a completed "Request for SHPO Comment and Consultation on a Federal Undertaking" form obtained from the State of Wisconsin web site. A detail project description, maps, and other information requested in the form are provided as attachments to the form. DOE has no reason to believe the project would cause any adverse effects to historic or archaeological resources in the project area, which is within an area being developed as an industrial park, specifically the Bayport Industrial Center. The parcel of land proposed for the new facility is currently a vacant grassy area approximately one half mile from the shore of Green Bay of Lake Michigan. The area has been previously disturbed, including being covered with fill material.

DOE's Golden Field Office, Colorado, is preparing an environmental assessment (EA) for the proposed project under the Council on Environmental Quality's *National Environmental Policy Act* (NEPA) implementing regulations (40 CFR Parts 1500 to 1508) and DOE NEPA implementing procedures (10 CFR 1021). We are requesting any comments or concerns you might have on the potential for this project to affect important properties, or if you concur with the findings presented in the attached form that there would be no adverse affects, a response to that effect. Please provide any input you might have to:

Melissa Rossiter
NEPA Document Manager
Golden Field Office
U.S. Department of Energy
1617 Cole Blvd.

Golden, CO 80401-3305
Desk Phone: (720) 356-1566
Blackberry: (720) 291-1602
Melissa.Rossiter@go.doe.gov

DOE will include correspondence with your agency in an appendix to the EA. We will send a Notice of Availability for the draft EA to you and respond to any specific comments you have. Because this is an ARRA project, we would appreciate a quick response to our request for consultation. If you have any questions or require clarification, please contact me as noted above. Thank you in advance for your consideration.

Sincerely,

Melissa Rossiter
NEPA Document Manager

Attachment: Completed "Request for SHPO Comment and Consultation on a Federal Undertaking" Form (w/attachments)

HP-05-07 (8/15/03) For SHPO Use Only. Case # _____

REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL UNDERTAKING

Submit one copy with each undertaking for which our comment is requested. Please print or type. Return to:

Wisconsin Historical Society, Division of Historic Preservation, Office of Preservation Planning, 816 State Street, Madison, WI 53706

Please Check All Boxes and Include All of the Following Information, as Applicable:

I. GENERAL INFORMATION

☑ **This is a new submittal.**
☐ **This is supplemental information relating to Case #:_____ and title:_____**
☐ **This project is being undertaken pursuant to the terms and conditions of a programmatic or other interagency agreement. The title of the agreement is** _____

a. Federal Agency Jurisdiction (Agency providing funds, assistance, license, permit):

b. Federal Agency Contact Person: Melissa Rossiter Phone: 1-720-356-1566

c. Project Contact Person: Same as above Phone: _____

d. Return Address: 1617 Cole Blvd., Golden, CO Zip Code: 80401-3305

e. Email Address: Melissa.Rossiter@go.doe.gov

f. Project Name: Oneida Seven Generations Corporation: Energy Recovery Project

g. Project Street Address: 1230 Hurlbut Street (Parcel #6-3043)

h. County: Brown City: Green Bay Zip Code: 54303

i. Project Location: Township 24 N., Range 20 E., E/W (circle one), Section 23, Quarter Sections NE 1/4

j. Project Narrative Description—Attach Information as Necessary.

k. Area of Potential Effect (APE). Attach Copy of U.S.G.S. 7.5 Minute Topographic Quadrangle Showing APE.

II. IDENTIFICATION OF HISTORIC PROPERTIES

☐ Historic Properties are located within the project APE per 36 CFR 800.4. Attach supporting materials.
☑ Historic Properties are not located within the project APE per 36 CFR 800.4. Attach supporting materials.

III. FINDINGS

☑ No historic properties will be affected (i.e., none is present or there are historic properties present but the project will have no effect upon them). Attach necessary documentation, as described at 36 CFR 800.11.
☐ The proposed undertaking will have no adverse effect on one or more historic properties located within the project APE under 36 CFR 800.5. Attach necessary documentation, as described at 36 CFR 800.11.
☐ The proposed undertaking will result in an adverse effect to one or more historic properties and the applicant, or other federally authorized representative, will consult with the SHPO and other consulting parties to resolve the adverse effect per 36 CFR 800.6. Attach necessary documentation, as described at 36 CFR 800.11, with a proposed plan to resolve adverse effect(s).

Authorized Signature: _____ Date: _____

Type or print name: Melissa Rossiter, NEPA Document Manager

IV. STATE HISTORIC PRESERVATION OFFICE COMMENTS

☐ Agree with the finding in section III above.
☐ Object to the finding for reasons indicated in attached letter.
☐ Cannot review until information is sent as follows: _____

Authorized Signature: _____ Date: _____

ATTACHMENT 1 - TO REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL PROJECT

Item I.j – Project Narrative Description

Oneida Seven Generations Corporation: Energy Recovery Project

The U.S. Department of Energy (DOE) is proposing to authorize a loan of up to $2 million in Federal funds through Wisconsin's Department of Commerce to the Oneida Seven Generations Corporation (Oneida) for the Energy Recovery Project. The Bureau of Indian Affairs (BIA) of the U.S. Department of Interior is similarly proposing to provide federal funding of up to $584,000 for the project; additionally, BIA is considering providing a loan guarantee of up to $19 million. The Oneida project would include the design, construction, and commissioning of a solid waste-to-electricity power plant in the Bayport Industrial Center in Green Bay, Brown County, Wisconsin.

When completed, municipal solid waste would be brought into the facility, shredded, and conveyed into one of three pyrolytic gasification systems. In these closed systems, the waste would be heated under controlled conditions to decompose through pyrolysis and produce flammable synthetic gas consisting primarily of hydrogen, carbon monoxide, and hydrocarbons such as methane, ethane, and propane. This synthetic gas would be collected and used as fuel to maintain operation of the pyrolitic systems and to fire three internal combustion engine generators. The three generators would have a combined capacity of 5 megawatts of electricity, which would be used to run the facility with the remainder being sold to the local electrical utility. The facility would have a natural gas connection to provide fuel to the pyrolitic systems during start-up and the facility's electrical connection could draw electricity from the grid when necessary; but once synthetic gas was being produced at full capacity, the facility would be energy-self-sufficient and there would be excess electrical energy going to the grid.

Waste from the pyrolytic gasification systems would be a carbon char and ash, in a volume of about 15 percent of the original municipal solid waste. Depending on the specific constituents in the waste product, it is expected that at least a portion of the waste stream would be usable as a concrete ingredient or as road bed material. The reduced-volume waste that cannot be reused would go to a state-approved landfill.

The proposed facility would process an estimated 150 tons of municipal solid waste per day. It is expected that this quantity of waste would require approximately 10 trucks of waste going in and out of the facility each day, five days per week. Although, the facility would operate 24-hours per day, five days per week (with the night shift used for maintenance activities), waste deliveries would be limited to Monday through Friday during day shift hours. Removal of processed waste and recyclable materials removed from the incoming municipal waste would be expected to require up to an additional 7 trucks per weekday. The proposed facility would be designed to accommodate up to 300 tons of municipal solid waste per day in case incoming waste is of low energy content. Such conditions would have a corresponding increase in truck traffic to and from the facility.

The proposed location for the Oneida facility is within the Bayport Industrial Center, adjacent to Hurlbut Street and Interstate 43 in the northern section of Green Bay near the bay. The land is currently a vacant industrial lot. The property is serviced by the City of Green Bay Water Utility and the Green Bay Metropolitan Sewerage District. Figure 1 shows the proposed project site in relation to the general region of Green Bay. Figure 2 shows an aerial view of the project site with an outline of the parcel of property where the facility would be constructed. Finally, Figure 3 provides a preliminary drawing of how the proposed facility and its access roads might be laid out within the identified parcel of property.

The building depicted in Figure 3 would be about 64,000 square feet in size with a 3,000 square-foot mezzanine. It would house the primary process equipment and the waste handling areas, as well as an area for offices and employee support facilities. Outside the building, there would be an outdoor area for exterior cooling units, fencing, employee parking, a truck scale, and access roads. The lot size is 5.88 acres and it is estimated that essentially all of the land will be disturbed during construction. In addition to the 64,000 square feet of building, there would be about 2.5 acres of asphalt or concrete surfaces installed to provide roadways, parking areas, access ramps, and equipment pads.

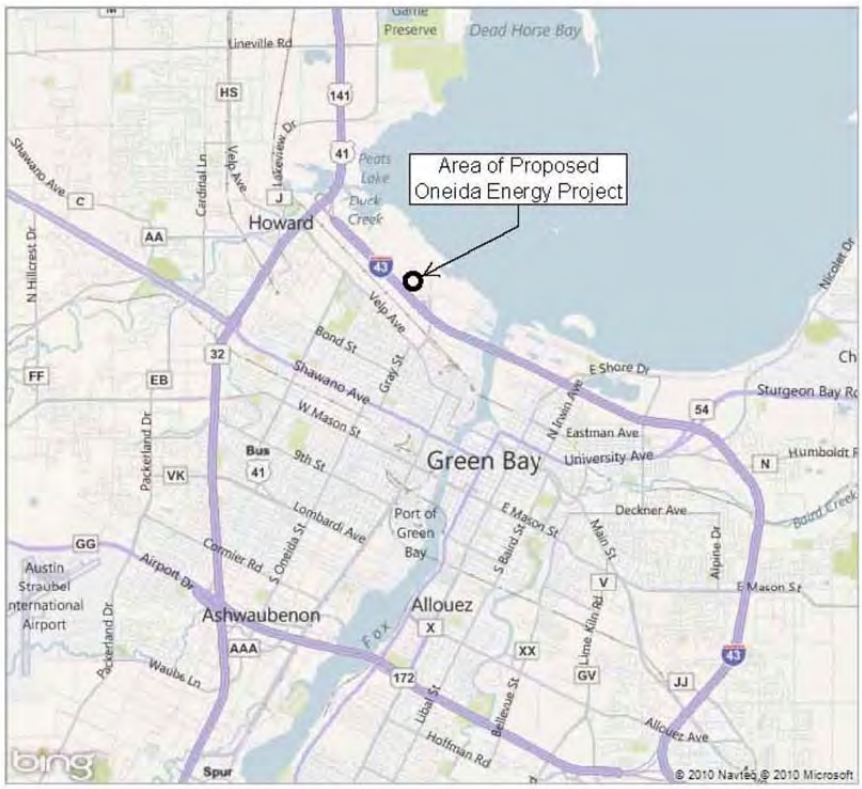

Figure 1. Map of Green Bay, Wisconsin, area and proposed project location.

Figure 2. Aerial view of proposed project location.

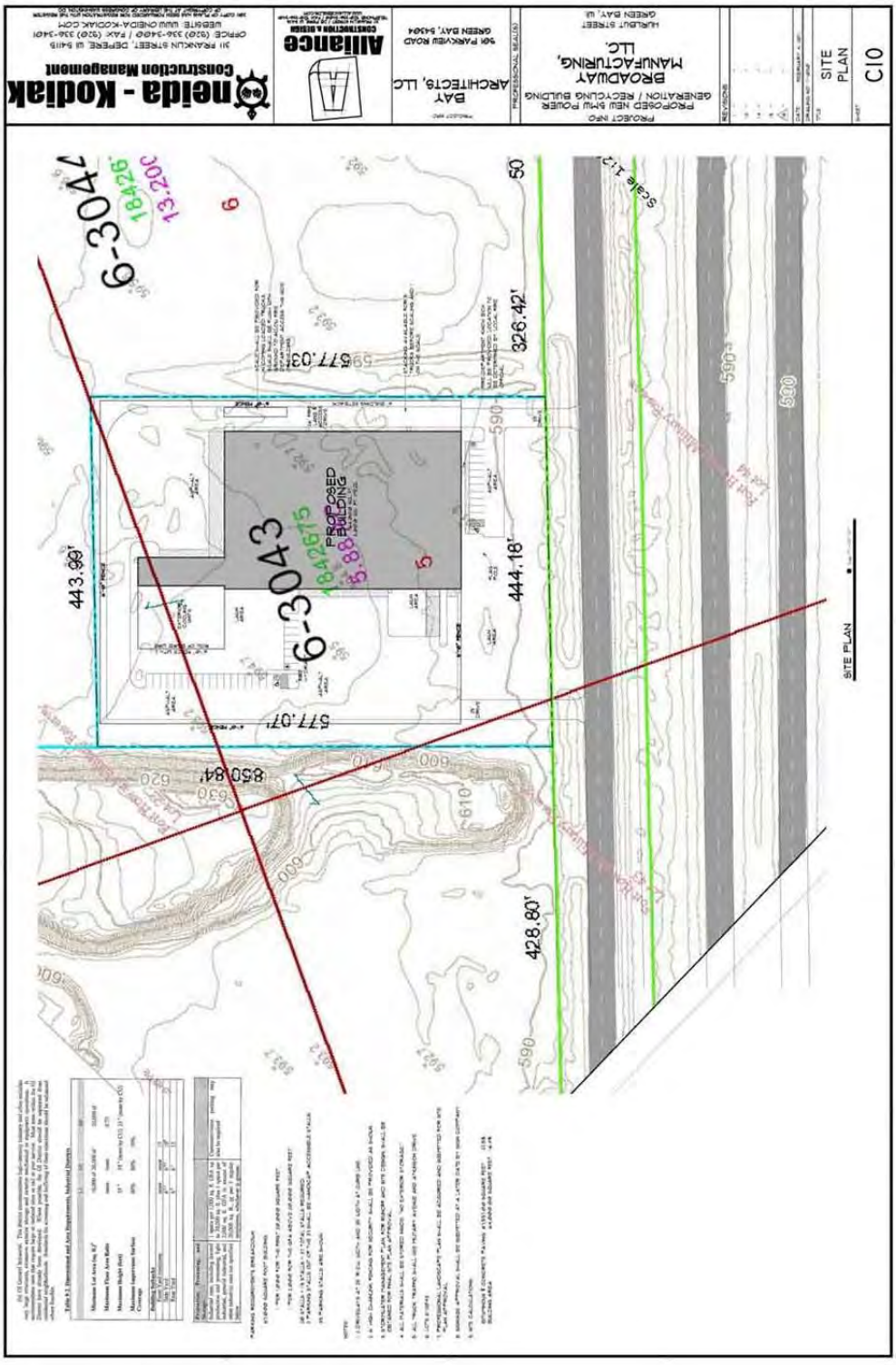

Figure 3. Preliminary drawing of proposed facility layout.

Oneida Energy Recovery Project

Attachment 1, Page 4

ATTACHMENT 2 - TO REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL PROJECT

Item I.k – Area of Potential Effect (APE),

Copy of U.S.G.S. 7.5 Minute Topographic Quadrangle Showing APE

Enclosed is a copy of U.S.G.S. map "Green Bay West, WI" (44088-E1-TF-024, 1992) with the proposed APE marked. The proposed APE is the footprint (disturbed area) of the proposed project. Justification for this APE is provided in Attachment 3.

ATTACHMENT 3 - TO REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL PROJECT

Item II – Identification of Historic Properties, Supporting Materials

DOE performed a search of the National and State Registers of Historic Places to identify historic places near the proposed project site. The National Park Service has plotted the National listing into Google Earth layers so the properties can be located via the internet. Figure 3-1 provides the results of the data search for properties closest to the project site. The information obtained via Google earth was compared to a state listing for Brown County and determined to be consistent. (That is, the same historical properties were identified in both sources of information.) Table 3-1 provides pertinent information for the sites shown in the figure. As can be seen in the table, the closest registered historic property is well over a mile from the project site.

Area of Potential Effect (APE)

The APE is proposed as the footprint of the project; that is, the approximately 444-foot wide and 577-foot deep lot designated Parcel #6-3043 at 1230 Hurlbut Street in Green Bay, Wisconsin. Ground disturbing activities will be limited to the area within the 5.88-acre lot and the short access roads that would connect the lot to Hurlbut Street (going through Hurlbut Street's right-of-way). Although the project would permanently alter the appearance of the property, there are no historic properties in close proximity that would be adversely affected. Once constructed, it is unlikely the proposed facility would be visible from the nearest historic properties (Figure 3-1), but even if it were, its visual impact would be consistent with other industrial facilities in the immediate area. The site is surrounded by property owned and used by Peters Concrete Company, Northeast Asphalt Company, and Martell Construction.

The project site itself is not known to be of any historical or archaeological significance. The entire property was verified by the Wisconsin Department of Natural Resources (DNR) and the U.S. Army Corps of Engineers to be fill land. This is consistent with environmental analysis documents prepared by the Corps in the mid-1970s. Property starting approximately 0.3 mile to the north of the proposed project site is now designated as the Bayport Confined Disposal Facility (CDF). This property is used for disposition of dredge materials removed during maintenance of Green Bay Harbor and which are deemed unsuitable for open water disposal due to contaminants that have reached the harbor sediments. Prior to this designation, a larger 400-acre tract of land that included the Bayport CDF as well as the proposed project site, was called the Green Bay Diked Disposal Area. In the Corps' 1976 Final EIS, *Maintenance Dredging and Continued Disposal of Dredge Materials at Green Bay Harbor*, it was indicated that when the 400-acre tract was originally designated by the City of Green Bay "it was predominantly in a wetland condition, however, its exact quality and condition was not well documented." The Final EIS then states "the entire site has been filled to varying depths obliterating its original condition."

Oneida also performed a review of Wisconsin DNR and Green Bay Historical Preservation Commission records and found no evidence to indicate the proposed project would have any cultural impacts. Oneida's review indicates that the most recent use of the property, before being developed for industrial purposes, was for growing vegetables in a truck farm operation.

Conclusion

In summary, the APE is proposed as the project footprint because that would be the extent of ground disturbing activities and there are no nearby historical properties that would be adversely affected. The project footprint has no known or suspected historical or archaeological significance because it has been completely disturbed and altered over the last 40 to 50 years. Therefore, there would be no historic properties affected within the APE.

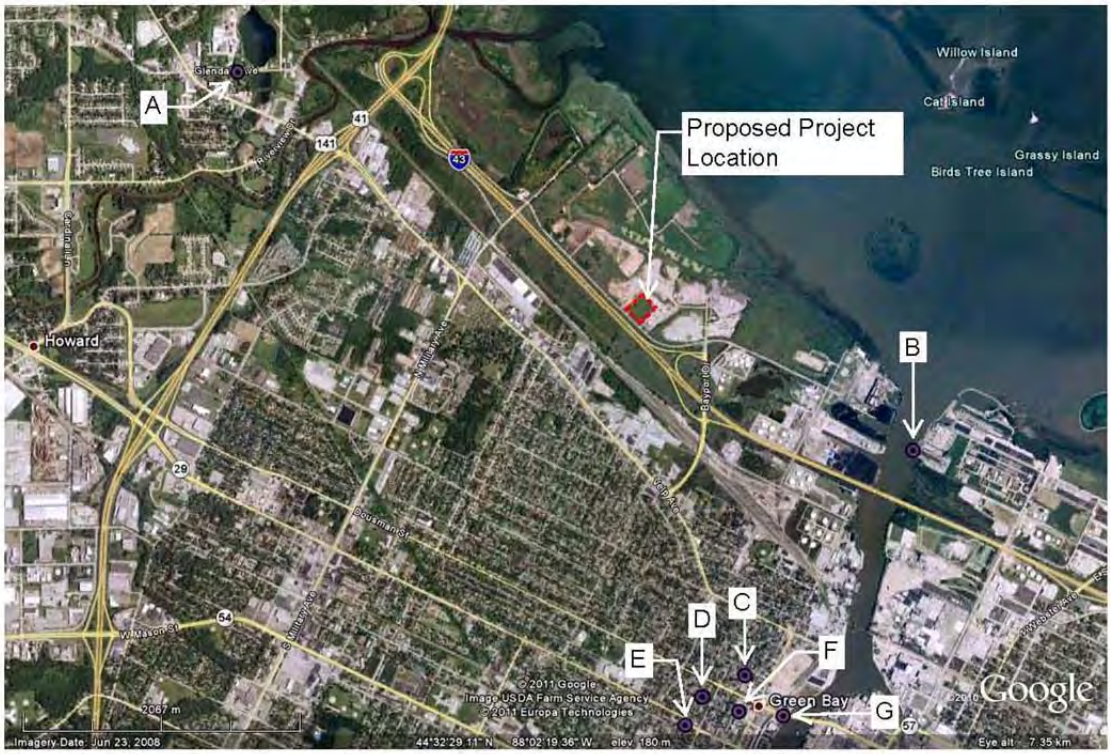

Figure 3-1. Locations of properties on the National and State Register of Historic Places.

Table 3-1. Historic properties closest to the proposed project site.

ID	Historic Place Name	Address	NPS Ref. No. and National Listing Date	State Listing Date	Distance to Project Site (miles)
A	Rioux, Angeline Campeau, House	2183 Glendale Ave., Howard	94001251 10/1994	06/1994	2.1
B	Grassy Island Range Lights	100 Bay Beach Rd. Green Bay	04001484 01/2005	11/2004	1.4
C	Broadway – Dousman Historic District	Part of 200 and 300 block N. Broadway, 300 and 400 block Dousman St, part of 300 block N. Chestnut St., Green Bay	99000330 03/1999	01/1999	1.7
D	Oakland – Dousman Historic District	Roughly bounded by Dousman St., Oakland Ave., Shawano Ave., Antoinette and Francis Sts., Green Bay	88000455 04/1988	01/1989	1.8
E	Fisk, Joel S., House	123 N. Oakland Ave., Green Bay	78000420 08/1978	01/1989	1.9
F	Broadway – Walnut Historic District	100 N. and part of 100 S. block Broadway; 100 N. block Pearl St.; 400 block W. Walnut St., Green Bay	99000817 07/1999	01/1999	1.9
G	Chicago and North Western Railway Passenger Depot	202 Dousman St., Green Bay	99001633 12/1999	04/1999	1.9
Not shown in the Figure - several other historic properties in Green Bay to the southeast, across the Fox River					

-----Original Message-----
From: Duchrow, Daniel J - WHS
[mailto:Daniel.Duchrow@wisconsinhistory.org]
Sent: Monday, April 25, 2011 1:40 PM
To: Rossiter, Melissa
Subject: Oneida Seven Generations Corp. - DOE/EA 1862

Good Afternoon, Melissa. I just wanted to contact you about the above referenced project. If this project is located within the reservation boundaries of the Oneida Nation of Wisconsin, you need to contact Ms. Corina Williams, Tribal Historic Preservation Officer. Her contact info is: 3703 Hillcrest Dr., P.O. Box 365, Oneida, WI 54155 - phone (920) 490-2095.

If this project is not located within the reservation boundaries, please forward hard copies only (not via email) of the EA (draft and final) and other relevant information, when this information becomes available. You may send them directly to my attention. Thank you.

Dan Duchrow

Operations Program Associate

Wisconsin Historical Society

Division of Historic Preservation and Public History

816 State Street, Room 303

Madison, WI 53706

608-264-6505 (voice)

608-264-6504 (fax)

Dan.Duchrow@wisconsinhistory.org <mailto:o@wisconsinhistory.org>

www.wisconsinhistory.org <http://www.wisconsinhistory.org/>

Collecting, Preserving and Sharing Stories Since 1846

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

April 08, 2011

Louise Clemency, Field Supervisor
U.S. Fish and Wildlife Service
Green Bay Ecological Services Office
2661 Scott Tower Drive
New Franken, WI 54229

Dear Ms. Clemency:

RE: U.S. Department of Energy Request for Informal Consultation for the Oneida Seven Generations Corporation's Energy Recovery Project, Green Bay, Brown County, Wisconsin

The U.S. Department of Energy (DOE) is proposing to authorize a subgrant through the Wisconsin Department of Commerce State Energy Program to the Oneida Seven Generations Corporation, chartered and owned by the Oneida Tribe of Indians of Wisconsin, for Oneida's proposed project: construction and operation of the Energy Recovery Project in Green Bay, Brown County, Wisconsin. Oneida proposes to construct a facility to process municipal solid waste and convert its energy content into electricity. The Bureau of Indian Affairs is also proposing to authorize expenditure of Federal funds for the same project and would be a cooperating agency. If approved, the proposed project would be partially funded by DOE through the *American Recovery and Reinvestment Act of 2009* (Pub. L. 111-5, 123 Stat. 115; Recovery Act).

The proposed facility would process about 150 tons of municipal solid waste per day. The waste brought into the facility would be shredded and sorted to remove recyclables (such as metals and plastics), dirt, and glass. The remaining waste stream would then be conveyed into one of three identical gasification systems. In these closed systems, the waste would be subjected to controlled high-heat, low-oxygen conditions to decompose, through a process called pyrolysis, and produce flammable synthetic gas consisting primarily of hydrogen, carbon monoxide, and hydrocarbons such as methane, ethane, and propane. This synthetic gas would be collected and used as fuel to maintain operation of the pyrolitic systems as well as to fire three internal combustion engine generators. The three generators, with a combined capacity of 5 megawatts, would provide enough electricity to power the facility and allow Oneida to sell power to the local electrical utility.

The proposed facility would be located in the Bayport Industrial Center, adjacent to Hurlbut Street and Interstate 43 in the northern section of Green Bay near the bay. The 5.88-acre parcel of land is currently a vacant industrial lot in the northeast quarter of Section 23, Township 24 North, Range 20 East. Figure 1 shows the proposed project site in relation to the general region of Green Bay. Figure 2 shows an aerial view of the project site with an outline of the parcel of property where the facility would be constructed. Past use of this property includes disposal of dredge materials removed from the nearby harbor. When the general area was evaluated in the mid-1970s by the U.S. Army Corps of Engineers for continued use for dredge spoils, the site had already been filled to varying depths, obliterating its original condition.

To comply with Section 7(a)(2) of the *Endangered Species Act*, DOE reviewed the U.S. Fish and Wildlife Service (USFWS), Midwest Region's online list of Federally endangered and threatened species (at http://www.fws.gov/midwest/endangered/) that are known to occur in Brown County, Wisconsin. The only listed species identified from this review was:

- Dwarf lake iris (*Iris lacustris*) – threatened

The same USFWS website identified 12 additional species the Midwest Region considers as candidate species for listing. Of those 12, only the following 3 were noted with known ranges that included Wisconsin:

- Eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) – candidate
- Sheepnose (mussel) (*Plethobasus cyphyus*) – candidate
- Spectaclecase (mussel) (*Cumberlandia monodonta*) – candidate

DOE is requesting verification of this information on listed and candidate species that could potentially be associated with Brown County, Wisconsin, and identification of any other listed or proposed species or designated or proposed critical habitat that may be present in the proposed project area.

DOE is currently preparing an environmental assessment for this project to meet the requirements of the *National Environmental Policy Act*. Based on a preliminary review of information on USFWS and State of Wisconsin websites, it appears that the known ranges for the listed species and the candidate species identified above do not include the proposed project site; this will be presented in the draft environmental assessment, which you will be able to review during the public comment period. DOE will include correspondence with your office in an appendix to the environmental assessment and will send notification of availability of the draft assessment to your office and respond to any specific comments you might have. At this time, we anticipate implementing a 15-day public comment period on the draft document.

Please forward the results of your review and any requests for additional information to the DOE's Golden Field Office using the contact information provided below:

Melissa Rossiter
NEPA Document Manager
Golden Field Office
U.S. Department of Energy
1617 Cole Blvd.
Golden, CO 80401-3305
Office: (720) 356-1566
Cell: (720) 291-1602
Melissa.Rossiter@go.doe.gov

Because this is a Recovery Act project, we would appreciate a quick response to our request for informal consultation. If you have any questions or require clarification, please contact me as noted above. Thank you in advance for your consideration.

Sincerely,

Melissa Rossiter
NEPA Document Manager

Enclosure: Site location map and aerial view of proposed project location

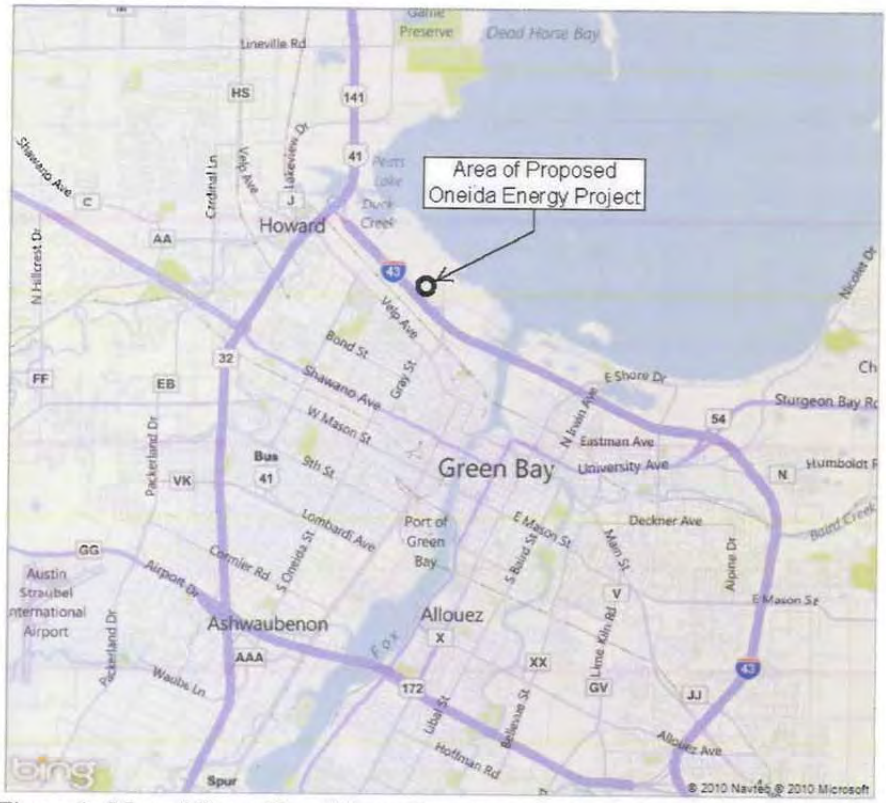

Figure 1. Map of Green Bay, Wisconsin, area and proposed project location.

Figure 2. Aerial view of proposed project location.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Green Bay ES Field Office
2661 Scott Tower Drive
New Franken, Wisconsin 54229-9565
Telephone 920/866-1717
FAX 920/866-1710

May 12, 2011

Ms. Melissa Rossiter
Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

re: Oneida's Seven Generations Corporation's
Energy Recovery Project
City of Green Bay
Brown County, Wisconsin

Dear Ms. Rossiter:

The U.S. Fish and Wildlife Service (Service) has received your letter dated April 8, 2011, requesting comments on the subject project. The project involves the construction of a facility to process municipal solid waste. This site is located in the City of Green Bay, Brown County, Wisconsin. We have reviewed the information provided in your letter and our comments follow.

Federally-Listed Species, Proposed and Candidate Species, and Critical Habitat

Due to the project location, no federally-listed, proposed, or candidate species would be expected within the project area. No critical habitat is present. This precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended. Should additional information on listed or proposed species or their critical habitat become available or if project plans change or if portions of the proposed project were not evaluated, it is recommended that you contact our office for further review.

We appreciate the opportunity to respond. Questions pertaining to these comments can be directed to Ms. Jill Utrup 920-866-1734.

Sincerely,

Jill Utrup
Acting Field Supervisor

Appendix C:
Summary of EA Scoping Comments

In order to maximize public participation and input in the environmental review process for the Oneida Energy Recovery Project, DOE initiated a public scoping period from March 31 to May 15, 2011. During this time, DOE sent a Notice of Scoping postcard to 75 stakeholders, including local, State, and Federal government agencies, American Indian governments, natural resources agencies, landowners, and other interested individuals and organizations, and held a public meeting in the City of Green Bay on April 12, 2011. This Appendix summarizes the many comments DOE received either by correspondence (primarily emails) or verbally at the public meeting.

Because of the large number of, and often extensive, comments received, short summary statements capturing the principal concerns or issues were developed and arranged in topical categories or bins. The topical bins used are as follows:

1) NEPA Process
2) Environmental – General
3) Project Funding/Financials
4) Project Description
5) Project Viability
6) Project Selection and Approval
7) Technology
8) Facility Operations
9) Air Quality
10) Aesthetics and Visual Resources
11) Biological Resources
12) Environmental Justice
13) Geology and Soils
14) Health and Safety
15) Land Use
16) Noise
17) Socioeconomics
18) Transportation
19) Utilities and Energy
20) Waste and Hazardous Materials
21) Water Resources

This appendix contains a table of comment summaries for each of the above topics. Also contained in each table is a check mark "X" that links the comment to a specific comment document or documents. The "Key" table on the next page identifies the individual comment documents by the individual or group that submitted them. In order keep Tables 1 through 21 to the single page width, multiple comments from a single individual were grouped under a single document number. For example, the "Key" table shows multiple comment documents for commenter number "2." Comment summaries with number "2" marked can be linked to one or more of the three comment documents shown in the "Key" table for commenter number 2. In this manner DOE could review the information in the topical tables and not only identify the important issues, but get a feel for the number of commenters that might hold similar feelings.

Key Table – Commenter number designations used in comment summary tables

1	Banaszak, Don – member of the public – scoping comments – 5-12-11
2	Berggren, John, PE – member of the public – scoping comments – 4-11-11 letter submitted at scoping meeting
	Berggren, John, PE – member of the public – scoping comments – 4-26-11
	Berggren, John, PE – member of the public – scoping comments – 5-10-11
3	Blaylock, Joseph & Lorrie – members of the public – scoping comments – 4-8-11
4	Blakley – EPA, Region 5 – January 25, 2011 letter, turned in at scoping meeting
5	Brown-Schaible, Karen – member of the public – scoping comments – April 12, 2011 letter submitted at scoping mtg
6	Chaudoir, Joanne – member of the public – scoping comments – April 12, 2011 letter submitted at scoping mtg.
	Chaudoir, Joanne – member of the public – scoping comments – 4-30-11 (basically same as above)
	Chaudoir, Joanne – member of the public – scoping comments – 5-7-11
	Chaudoir, Joanne – member of the public – scoping comments – 5-10-11
	Chaudoir, Joanne – member of the public – scoping comments – 5-10-11(2)
	Chaudoir, Joanne – member of the public – scoping comments – 5-12-11
	Chaudoir, Joanne – member of the public – scoping comments – 5-12-11(2)
	Chaudoir, Joanne – member of the public – scoping comments – 5-15-11
7	Dorff, Ned – Green Bay Alderman – scoping comments – note submitted at scoping mtg
8	Erickson, Bernie – Brown County Supervisor, District 7 – note submitted at scoping mtg
9	Filcher, John – Incinerator Free Brown County – scoping comments – 4-10-11
	Filcher, John – Incinerator Free Brown County – scoping comments – April 12, 2011 letter submitted at scoping mtg
10	Flowers, Diana – Alternative Investment Management, LLC – scoping comments (Oneida comments) – 5-9-11
	Flowers, Diana – Alternative Investment Management, LLC – scoping comments (Oneida comments) – 5-11-11
11	Greenaction for Health and Environmental Justice – interest group – March 7, 2011 comments submitted at scoping mtg
12	Greenfield, Jan – Neighbors Against the Burner – scoping comments – 4-10-11
13	Grzezinski, Dennis – Midwest Environmental Advocates – scoping comments – 5-13-11
14	Krieg, Rich – member of the public – scoping comments – 4-12-11 comment form submitted at scoping mtg.
15	Lemoine, Charlene – Waukesha County Environmental Action League (WEAL) – scoping comments – 5-12-11
16	Lindstrom, Daniel – City of Green Bay – scoping comments – 4-12-11 comment form submitted at scoping mtg.
17	Linzmeyer, Paul – Sustainable Green Bay – scoping comments – February 18, 2011 letter submitted at scoping mtg.
18	Mahjoob, Latif – American Combustion Technology – air emission information submitted at scoping mtg
19	Miller, Joseph, PhD – Physicians for Social Responsibility – scoping comments – 5-13-11
20	Pfeifer, Marcy – member of the public – scoping comments – April 12, 2011 letter submitted at scoping mtg. (same as 4-13)
	Pfeifer, Marcy – member of the public – scoping comments – 4-13-11
	Pfeifer, Marcy – member of the public – scoping comments – 4-23-11
	Pfeifer, Marcy – member of the public – scoping comments – 4-28-11
	Pfeifer, Marcy – member of the public – scoping comments – 4-29-11
	Pfeifer, Marcy – member of the public – scoping comments – 4-29-11(2) (same as 4-13-11)
	Pfeifer, Marcy – member of the public – scoping comments – 5-13-11
21	Runge, Troy – Wisconsin Bioenergy Initiative – March 1, 2011 letter submitted at scoping mtg.
22	Saff, Ron, MD – member of the public – scoping comments – 4-10-11
23	Severson, Glen & Donna – members of the public – scoping comments – 4-9-11
24	Uram, Eric – Sierra Club – extension request – 4-15-11
25	Werner, Shahla, PhD – Sierra Club – scoping comments – 5-10-11
26	Williams, Scott – reporter – questions on NEPA process – 4-8-11
27	Transcript of comments at Green Bay Scoping Meeting of April 12, 2011

.

Table C-1. NEPA Process

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. An EIS should be done.		X				X							X		X				X								X
2. Request for an extension on scoping comment period									X															X			

Table C-2. Environmental - General

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Lack of environmental impact studies and historical evidence in US to determine safety and impact to environment	X	X				X																					
2. Concern over fate of toxins		X																									
3. Has Oneida applied for all necessary Clean Air Act permits									X											X							
4. Concerned that there is no identified agency currently guaranteeing oversight and enforcement of Clean Air Act and Clean Water Act violations on the site																											X

Table C-3. Project Funding / Financials

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Wants to see details of funding and financial assurance - will repayment be made if project fails, what are the loan interest rates - would loans and subsidies be transferred if facility sold or ownership is transferred															X												
2. Questions if Oneida would be eligible for additional funding if the project is expanded															X												
3. Concern whether project would be built without stimulus money and whether Oneida has anything to lose because of the Federal funding						X																					
4. Concern about economic losses to Brown County Port and Solid Waste from diversion of solid waste and recycling materials									X																		X
5. Project being proposed by a for-profit corporation showing an expectation of being economically sustainable, creating jobs, and extending the life of the Brown County landfill																	X										X

Table C-4. Project Description

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Questions whether this is a prototype facility with associated unknowns as to potential impact to health and the environment and has concern over contradictory information put out by Oneida in this regard						X			X		X				X												X
2. Concern over unsubstantiated or contradictory information being put out, including the number of pyrolysis gasification facilities in the US or the world, efficiency of thermal oxidizer, ability to meet EPA and California air standards, amount of residues, hours of operation, amount of waste processed.						X			X		X				X				X						X		
3. Concern over contradictory information on whether the proposed facility is modeled after the IES plant in Romoland, CA and that the Romoland facility had harmful emission levels and other problems					X	X			X		X																X
4. Questions whether the proposed facility would be considered incineration or "green energy"						X			X		X				X												X
5. Questions whether this can be considered a recycling facility, and if Wisconsin has a recycling law wouldn't it be a violation for facility to take recyclables						X					X		X		X										X		
6. Questions whether facility can rightly be considered as producing renewable energy. Contends Wisconsin statutes do not deem incineration of solid waste for energy recovery as renewable energy.						X					X		X	X						X		X			X		X
7. Questions discrepancies on how much power the plant would produce - 5 MW or 6.4 MW						X			X		X																
8. Questions why project description includes language implying DOE's endorsement and, if so, what is such an endorsement based on													X		X												
9. Confusion over whether this facility is a MSW combuster, a renewable energy facility, or a SW facility.																				X							
10. Concern about whether facility is already being designed for more than 3 pyrolysis units - i.e., 300 tons per day				X					X											X							
11. Concern that activity at the old Ashwaubenon site on Packerland Drive may be the pyrolysis facility being moved back																				X							
12. The EA needs to provide real data on other, similar facilities, if they exist, as to emissions, management of waste, materials recycled, power produced, etc., so the decision makers and public can evaluate the potential impacts													X														

Table C-4. Project Description																											
Summarized Scoping Comment	**Applicable Comment Set**																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
13. Concern about the gas that would be produced by the facility, what it consists of, and where it would go																											X
14. Concern over name change to Broadway Manufacturing, LLC as another example of project inconsistencies																											X

Table C-5. Project Viability																											
Summarized Scoping Comment	**Applicable Comment Set**																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. Questions viability of the technology based on cited failures in other countries, including Germany, Australia, Malaysia, and Japan.						X			X		X									X							X
2. Who would be responsible for clean-up were the facility to shut-down?						X			X																		X
3. Studies show cost of generating energy from solid waste is too high and why municipal subsidies are required.						X						X	X	X						X			X				
4. Concern that a detailed economic analysis would show the project is not visible - citing costs of facility and work force compared to tipping fees and energy sale, just don't add up.																									X		X
5. Believe "Precautionary Principle" applies - e.g., the project proponent has the burden of proof to show the facility is not harmful since there is a lack of scientific information						X																					
6. Concern over project being "first system of its kind"									X																		
7. In favor of project, believes it will demonstrate viability of creating energy from unrecyclable portions of municipal waste, and believes it will be viable considering both economic and energy returns																					X						X
8. In favor of project - have observed pilot tests and believe technology is viable - technically and mechanically sound																											X

Table C-6. Project Selection and Approval																											
Summarized Scoping Comment	**Applicable Comment Set**																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. Questions how community approval was obtained before the process started.						X																					
2. Questions value of waste to energy projects. If waste-to-energy facilities have value, why are there so many groups and experts opposed to them?						X					X	X		X						X							
3. Questions value of project's small power production compared to economy and health risks						X																					
4. Questions Oneida selection of this project rather than large recycling plant employing many as was proposed to them.						X																					
5. Questions burning resources rather than recycling them and whether this is consistent with Wisconsin statutes allow						X							X		X				X						X		
6. Federal funding should be going to "zero waste" programs rather than waste to energy												X	X	X					X								X
7. Other alternatives such as anaerobic digestion, smart grid, fuel cell, geothermal, kinetic energy, solar, and wind projects represent better alternatives.												X	X		X												X
8. Against project because it would compete with wind and solar for renewable energy credits and have negative impacts on waste reduction, recycling and composting															X								X				
9. Recommend DOE not authorize funding.																			X								
10. Recommend the project not be used as a model for tribes and municipalities for the management of SW or the production of electricity																			X								
11. Relying on DOE, DNR, and EPA to review and verify the science behind this process and that it is not dangerous to human health							X																				X
12. Urge DOE to approve the Oneida project - in favor of new technology to reduce landfill use and generate electrical power								X																			
13. Questions if DOE will withhold funding until City of Green Bay holds required public hearing for a Conditional Use Permit, which it failed to hold									X																		X
14. Wants to know specific locations of other sites considered; what level of analysis was conducted and why it was rejected; and the process and professionals that made the decision									X																		
15. Supports the project																	X										X
16. In favor of the project as long as its shown to be safe and friendly to the environment																											X

Table C-6. Project Selection and Approval																											
Summarized Scoping Comment	**Applicable Comment Set**																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
17. Questions why the facility isn't being constructed in Ashwaubenon or on tribal lands																											X
18. Questions why this project is being "fast tracked" for approval by Green Bay																											X
19. Conditional Use Permit done according to statutes - documentation is available																X											

Table C-7. Technology																											
Summarized Scoping Comment	**Applicable Comment Set**																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. Questions if claims of technology being closed loop are false and if they are being made because absence of oxygen prevents formation of dioxins, furans, etc.						X			X		X														X		X
2. Details of the processing technology are needed to appropriately evaluate the project																									X		
3. Concern that more efficient pollution controls simply pass toxins to filter water, scrubber water, fly ash and bottom ash.						X																					
4. Questions claims of combustion in absence of oxygen - waste streams already contain oxygen									X		X																
5. Questions claims of complete destruction of all pollutants made by equipment manufacturer																											
6. Questions whether technology can actually produce power since there are no successful examples											X																
7. Pyrolysis is an environmentally sound way of disposing of solid waste and producing energy																	X										X
8. Questions claims of waste volume reduction - if all discharge streams, including air emissions, are added, the amount of waste is larger than in the beginning																											X
9. Believes technology is energy inefficient and would like to see an energy balance that shows how much energy it takes to raise the temperature to create the energy																											X

Table C-8. Facility Operations

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern over facility being in operation long enough to substantiate funding (longevity history in other countries is poor)	X																										
2. Concern over designer, builders, and owners lack of experience with this type of potentially hazardous process.		X				X			X		X									X							X
3. Questions contradictory statements on operations schedule of facility and if operating only 5 days per week wouldn't start up and cool down be hard on the equipment						X																			X		
4. Questions information indicting that Oneida plans to pursue used tires as a primary fuel source - issues with storage, fires, adding to landfills where they currently cannot go, etc.					X				X				X		X					X							
5. Questions if public will have input on operational plans such as changes in feedstock, hours of operation, and other modifications															X												
6. What are the characteristics of the waste that would go into the pyrolysis process.																				X							
7. A precise characterization of the feedstock is needed to evaluate the impacts of the facility.					X				X				X												X		X
8. Questions if waste can legally be stored over the weekend (since receipt only occurs on week days)																									X		
9. Believes facility's receipt of magazines, newspaper, corrugated cardboard and office paper would be against State regulations													X												X		
10. How will the process handle the constantly varying heat value in the in coming waste? And how will regulatory agencies ever get a true indication of the toxins that could be involved since the waste varies.						X																					
11. Concern that a not yet defined portion of Green Bay's regulations for solid waste disposal facilities would allow gasification of hazardous waste, medical waste, and industrial waste									X																		X

Table C-9. Air Quality

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern that it would involve hazardous air emissions with serious health and environmental concerns - dioxin and mercury are examples of specific concerns	X				X	X			X		X	X	X	X					X	X		X	X		X		X
2. Don't believe owners touting of no smoke stacks.		X				X																	X				X
3. Concern over impact to the already poor air quality in the Green Bay area. (citing May 9, 2011 article in Green Bay Press Gazette identifying GB as 23rd among 277 US metropolitan areas in terms of short-term particle pollution)		X			X	X			X														X				X
4. Concern that air emissions from these type facilities lead to acid rain, smog, and ozone						X																					
5. Questions whether emission estimates are verifiable due to lack of technology history - would like to see examples of emissions from others						X							X		X												
6. Concern over impacts of fine particulates on people and wildlife and on lack of tests to detect them						X							X						X	X		X	X		X		X
7. Concern that facility will add to global warming (GHG emissions) and one asked if it could create a microclimate						X																			X		
8. How and how often would emissions be monitored and what type of emissions control equipment would be included													X		X												
9. Provide potential to emit of all Clean Air Act pollutants, including start-up and shut-down actions				X					X											X							
10. Concern that toxins will reach environment and food chain, such as dairy products after animals graze on contaminated fields					X	X			X																		
11. Concern over EPA regulations and the 3-year delay to address incinerators						X																					
12. In favor of project, believes air emissions will be less than coal-fired power plants in the region and that air permit process will ensure suitably low air emissions																					X						
13. In favor of project, have since testing and witnessed clean air coming out																											X

Table C-10. Aesthetics and Visual Resources

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern about aesthetics of the facility and how people in the area will feel about it and if property value will decrease						X																					
2. Concern about odor that would be produced from the facility, including need to stockpile waste (since only receiving 5 days per week)					X	X			X																		
3. Questions facility lighting and its impacts						X			X																		
4. Based on seeing building plans, believes the facility will be aesthetically pleasing																											X

Table C-11. Biological Resources

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern for impacts of wildlife from noise and air emissions, including birds around lake and river and in the Wildlife Sanctuary 2 or 3 miles away						X																					X

Table C-12. Environmental Justice

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Questions Federal policy of supporting/ promoting waste management activities with Native Indians often resulting in toxic processes and landfills on Indian lands - actions that would be less welcome in more affluent communities																				X							
2. Concern of project being located in predominantly low income or minority neighborhood and having disproportionately adverse effects									X																		X

Table C-13. Geology and Soils

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. How will soils be affected by the facility - this is an agricultural state						X																					
2. Concern over whether there are site elevations or slopes that could be unstable or result in erosion, or if there are other soil issues									X																		
3. Concern over seismic hazards or faults/fractures or other hazards associated with the terrain									X																		

Table C-14. Health and Safety

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern for safety of operations and potential for accidents, including potential for heating chamber rupture and release of toxins.		X				X			X																		X
2. Believe the project would be unhealthy for the community			X																	X							
3. Concern for long-term health impacts and who will be monitoring for such impacts.						X																					
4. Questions what type of training and safeguards will be required by DOE?																				X							
5. Are there appropriate public safety and emergency response plans									X																		

Table C-15. Land Use

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern of whether city's compost pile is adjacent to site and if it could become contaminated from toxic emissions and ash.						X																					
2. What is the proximity of the project site to schools (public or private), daycare centers or nursery schools, other children's play areas, nursing homes, or elderly or low income, hospitals, etc.?									X											X							X
3. Concern for health affects to nearby transportation routes, recreation areas									X											X							X
4. Are there critical habitat areas, state or local natural areas, or historic, scientific, or archaeological areas on the proposed site?																				X							
5. Are there remediation sites (e.g., NPL sites) or other contaminated sites at or near the project site, including landfills, USTs, or other unresolved hazardous material issues									X																		
6. Were there unique past uses of the site that could affect or be affected by the project?									X																		
7. Is the project compatible with existing land use?									X																		
8. The site is in an industrial area so that impacts to quality of life is minimized																	X										X
9. Development of the site would restore some of the value of this potentially contaminated site																	X										

Table C-16. Noise

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Contradictory information has been put out on the amount of noise that would be produced - Oneida says no noise due to heavy insulation, ACTI says sound would be like 3 jet engines but it would go straight up.						X																					X
2. Concern on how much noise would be produced and its impacts to people and wildlife.						X																					
3. What are noise sources in the area, what are the noise contours for the project, and what procedures or guidelines are in place that would allow neighbors to formally complain									X																		

Table C-17. Socioeconomics																												
Summarized Scoping Comment	**Applicable Comment Set**																											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. Only a small number of jobs would be created						X																					X
2. Believe the project would be economically unwise.			X																								

Table C-18. Transportation																												
Summarized Scoping Comment	**Applicable Comment Set**																											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. Concern over need for Traffic Study with traffic counts and impacts to neighborhoods.		X							X																		X
2. Concern for hazardous materials moving in and out of facility, routes they will travel, and how spills would be handled.		X							X											X							X
3. Concern for wear and tear on the roads cause by garbage trucks and who will pay						X																					
4. Concern for garbage blowing off of trucks						X																					
5. Concern over actual number of truck deliveries per day - believes there have been mis-representations									X																		
6. Concern over the mitigation measures that might be needed to reduce traffic impacts, including biking and pedestrian pathways									X																		

Table C-19. Utilities and Energy																												
Summarized Scoping Comment	**Applicable Comment Set**																											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
1. How much energy will the facility require and if the pyrolysis process has problems what is the back-up for energy													X		X												
2. Would renewable energy credits be applied to all energy produced, or just that sold to utilities?													X		X												
3. Is there adequate water supply available such that other users in the area would not be affected									X																		
4. Is municipal sewer system available, is capacity available, and will treatment capabilities be adversely affected									X																		

Table C-20. Waste and Hazardous Materials

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern for disposal of hazardous waste (HW) end product and if cost has been included in project	X	X				X			X				X		X												X
2. Questions use of char or ash as road base or concrete additive; that is, being inert and non-hazardous - based on what examples						X			X				X		X										X		
3. Questions how and how often char and ash would be tested and how it will be disposed if HW and how it will be disposed if not HW													X		X												
4. How and where will pyrolysis waste be disposed of? And if tires are involved wouldn't it have to go to a special landfill? Who will oversee proper disposal?						X														X					X		
5. Concern that ash going to a landfill will blow around. (And asked if the technology expert at the "Open House" indicated the ash would be put into sealed containers.)						X																					X
6. The project cannot claim reduction of waste volume going to landfill if waste is originally banned from landfilling													X														
7. Need a full inventory of hazardous materials and applicable safety precautions									X																		X

Table C-21. Water Resources

Summarized Scoping Comment	Applicable Comment Set																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1. Concern about composition of storm water discharges.		X							X																		X
2. Questions how Bay and Fox River water will be protected from toxins.					X	X			X				X														X
3. Concern whether there would be erosion from construction or operations						X																					
4. Concern about whether wetlands would be impacted						X			X																		
5. Questions how much water would be needed to support the process, how much would be recirculated and where wastewater would go													X		X												
6. Concern about the toxic materials that could be in the facilities wastewater													X							X							X
7. Concern of whether groundwater could be affected						X			X																		X
8. What monitoring and testing would be done on the wastewater discharges?													X														
9. Concern whether the project site is within coastal barrier resource area or if there are drainages, streams, rivers, or coastlines near									X																		
10. Is the project site is within a floodplain									X																		
11. Concern over whether the watershed could be impacted																											X

Appendix D:
White Paper: Pyrolysis Overview/Background

Oneida Seven Generations Corporation Energy Recovery Project, Green Bay, Wisconsin

White Paper: Pyrolysis Overview/Background

Prepared for DOE by Ailene Batoon, New West Technologies

On April 12, 2011, DOE conducted a scoping meeting on the proposed project to solicit comments and get input on the Draft Environmental Assessment (EA) from the public. DOE received a mix of comments, many including public concerns about the viability of pyrolysis technology, those facilities in operation, and its disguise as an incineration project. This paper was prepared to address those comments.

Based on the scoping comments received, DOE conducted comprehensive research on pyrolysis and gasification plants around the world including the International Environmental Solutions (IES) Romoland Facility (Romoland), a small-scale pilot pyrolysis project in Romoland, California. The Romoland Facility was a demonstration facility, processing approximately 30 tons of waste per day, experimenting with different types of wastes prior to selecting the pyrolysis of post-recycled municipal solid waste (MSW). Romoland was one of the few pyrolysis plants in the nation that processed MSW under jurisdiction of one of the most stringent air quality regulations in the nation, the South Coast Air Quality Management District (SCAQMD). The plant was fined on December 8, 2009, for "operating equipment which puts contaminants in the air without having a permit to operate."[1] The public scoping comments DOE received during the EA process indicated that Romoland violated its air permits by exceeding SCAQMD regulatory thresholds for pollutants. However, DOE contacted SCAQMD for clarification and learned that IES violated SCAQMD regulations by operating its facility during demonstrations without an air permit. Romoland was fined for this violation during a SCAQMD visit. For reasons unknown to SCAQMD, IES did not submit final permit applications and subsequently decommissioned the facility. SCAQMD speculates that the facility may have moved to a location outside SCAQMD's jurisdiction.[2] Based on further research, DOE learned that the IES equipment once operated in Romoland was moved to Menifee, California,where it was contracted to a private company. The operation subsequently relocated to Mecca, California, where it was set up for commercial scale processing of tires.[3]

IES currently is in the process of demonstrating pyrolysis technology on a larger scale for the Los Angeles County Department of Public Works (DPW). On April 20, 2010, Los Angeles County approved a Memorandum of Understanding for three conversion technology demonstration projects that included the award of a contract to IES for the purpose of developing solid waste handling alternatives in Los Angeles. IES has been contracted to demonstrate its

1. South Coast Air Quality Management District, Facility Information Detail Database, Facility ID: 122334, International Environmental Solutions Corporation, Notices of Violation, Notice Number P49741.
2. Phone Communication with Richard Tambura and Amir Dahjbad Dejbakhsh (Senior Engineer), Permitting Department, South Coast Air Quality management District.
3. County of Los Angeles Department of Public Works, Board Motion April 20, 2010, Item No. 44 Conversion Technologies in Los Angeles County Six Month status Update: October 2010 through April 2011 Update, April 21, 2011; Available online at: http://file.lacounty.gov/bc/q2_2011/cms1_159240.pdf.

low-temperature advanced pyrolysis technology to convert solid waste feedstock into a synthesis gas (syngas) that would be used to generate electric power. DOE contacted the Los Angeles County DPW, and inferred that the IES research and demonstration facility would be of commercial scale with an initial capacity of 184 tons per day, for a process using one module. At this time, the County and IES are "jointly exploring other potential options to conduct the test phase of this project."[4]

The pyrolysis and gasification of MSW is used all over the world, particularly in Japan and parts of Europe and Scandinavia. Denmark, for example, has been converting waste to energy for over a century, including through the use of pyrolysis plants.[5] Within the United States, refuse-derived fuel systems and pyrolysis units were introduced in the late 1970s. At that time, the U.S. Environmental Protection Agency had proposed several pyrolysis waste-to-energy demonstration projects, including the Baltimore Pyrolysis Plant powered by Monsanto, a $26 million demonstration project that was plagued with operational problems hindering it from operating successfully, and the El Cajon Plant, a $14 million project in Southern California that also experienced troubles during operations. It may be that the failure of these plants to materialize a successful operational plant has given the technology a negative reputation. However, it should be noted that the equipment utilized during pyrolysis is highly variable.[6] The equipment utilized in the 1970s was not as advanced as recent technology. Today, there are numerous successful plants in operation around the world and in the United States that utilize various forms of pyrolysis to process different resources to produce energy. Resources range from MSW to strict use of post-recycled waste, tires, auto shredder residues, sewage sludge, and others for conversion into different end-products including steam to power boilers or turbines to syngas for combustion into electricity, or into liquid biofuels.

At this time there is no single collective database that documents all of these pyrolysis facilities. DOE researched literature and found several databases for use; however, none were comprehensive databases that displayed consistent, similar information. The databases researched include the International Energy Agency website, which tracks conversion technology projects now in development or construction in the United States; the Zeus Global Gasification Database, which follows more than 300 facilities; the DOE National Energy Technology Laboratory Gasification Worldwide Database; and other literature that tracks pyrolysis/gasification technologies around the world.[7] Given the varying information obtained, and because the scope of research required to provide a comprehensive review of these facilities exceeds the scope of the analysis for this project, DOE research focused on literature review of the viability of the technology rather than those facilities that are in operation today or proposed for operation in the future. Further, as pyrolysis equipment and technology advance, the viability of a facility becomes dependent on more than one variable. The differing equipment heated to

4. Ibid.; Phone communication with Coby Skye, LA County Department of Public Works, May 26, 2011.
5. RenoSam and Ramboll, The most efficient waste management system in Europe, Waste-to-energy in Denmark,© 2006.
6. Haverland, Rick, and Sussman, David, USEPA, Baltimore, A Lesson in Resource Recovery (SW-712), Presentation at the American Society of Civil Engineers Environmental Engineering Division Specialty Conference, July 10- July 12, 1978; Garbe, Yvonne, USEPA, Technology Update from the US EPA Office of Solid Waste Management Programs, "Demonstration of Pyrolysis and Materials Recovery in San Diego, California," Reprinted from Waste Age, December 1976.
7. Pytlar, Jr., Theodore, Vice President- Solid Waste Group, Dvirka and Bartilucci Consulting Engineers, "Status of Biomass Gasification and Pyrolysis Facilities in North America,"~~,~~ NAWTEC 18-3521; Proceedings of the 18th Annual North American Waste to Energy Conference, 2010 ASME.

differing degrees to produce differing end products, the differing feedstock, and the different operators of these facilities are all variables that can affect successful operations.

What has been recognized, based on DOE's research, is that pyrolysis of MSW is a technology that has advanced to an adequate stage to result in MSW reduction benefits, energy generation benefits, and has subsequently produced greenhouse gas benefits over incineration technology and the continuous use of fossil fuel resources. According to a life-cycle assessment of MSW conversion to energy modeling of pyrolysis/gasification technologies, pyrolysis/gasification is environmentally favorable due to the lower emissions associated with the system.[8] Further, research conducted by the University of California at Riverside indicates that, "independently verified emissions tests results show that pyrolysis and gasification plants throughout the world with waste feedstocks meet each of their respective air quality emission limits." Advanced air pollution control strategies and equipment that were not available ten years ago "are no longer a barrier."[9]

Public comments received during the scoping process include concern regarding the project as an "incineration project in disguise." However, this is a misconception, as the two technologies are similar but not comparable. Pyrolysis is a type of thermal conversion technology similar to gasification that differs from the direct combustion process of an incinerator. Pyrolysis technology decomposes waste at elevated temperatures in the absence of or near absence of oxygen. Pyrolysis typically occurs at temperatures between 400 and 800 degrees Celsius (C) [750 and 1,500 degrees Fahrenheit (F)]. As the temperature increases, the product distribution (or the form of the product) can be altered. Pyrolysis of products at lower temperatures typically produces more liquid products, whereas higher temperatures produce gas. The products can include syngas, oil, and fine particulate matter (char), which have a clear and more manageable air emission profile. The syngas that is produced can be cleaned using scrubbers and subsequently can be used for electricity generation purposes by various methods. The speed at which pyrolysis occurs is also a factor in determining the product distribution. Slow pyrolysis (carbonization) can be used to maximize the yield of solid char. This process requires slow decomposition at low temperatures.[10] Fast pyrolysis, in comparison, is often used to maximize the yield of liquid products, through condensation of gas molecules into liquid.

While related, pyrolysis and gasification are different. Gasification is more reactive than pyrolysis. Gasification involves the use of air, oxygen, hydrogen, or steam/water as a reactive agent. Gasification processes vary considerably; typical gasifiers operate at elevated temperatures between 700 and 800 degrees C (1,300 and 1,500 degrees F). The chemistry that takes place with gasification includes different reactions depending on the process input, thus providing a range of outputs for specific uses. Similar to pyrolysis, the syngas that is produced

8. Zaman, AtiqUz, "Life Cycle Environmental Assessment of Municipal Solid Waste to Energy Technologies," Global Journal of Environmental Research 3 (3):155-163, EESI School of Architecture and the Built Environment , KTH- Royal Institute of Technology, Stockholm Sweden, IDOSI Publications, 2009.
9. University of California Riverside, Evaluation of Emissions from Thermal Conversion Technologies Processing Municipal Solid Waste and Biomass Final Report, Riverside CA, June 21, 2009.
10 . Yan, W., et al., "Experimental Studies on low-temperature pyrolysis of municipal household garbage- temperature influence on pyrolysis product distribution," Renewable Energy 30 (2005) 1133-1142, Received May 16, 2004; Accepted September 20, 2004.

can be cleaned or scrubbed for electricity generation. General by-products associated with gasification include glassy slag and fine particulate matter (char).

In comparison, incineration processes require large quantities of oxygen, converting waste to carbon dioxide, water and non-combustible materials with solid residue. The solid residue consists of bottom ash and fly ash. To date, air pollution control strategies and equipment have made incinerator projects a practical technology for use around the world.

To date, regulatory agencies around the country are looking into thermal conversion processes to alleviate landfill shortage concerns. States across the nation, including Nevada, Oregon, California, New York, and Florida, are looking for alternatives to landfill disposal due to the shortage of land available for landfills. Combined with increasing fuel costs and increasing solid waste, these waste conversion technologies are viewed as an effective management tool to alleviate increasing landfill shortages.[11]

Based on its research, DOE has compiled information about waste-to-energy facilities using pyrolysis technology or a combination of pyrolysis and gasification technology either in construction, operation, or proposed for operation, as presented on the next page. This list is not meant to be comprehensive, but it provides a sample of the number and types of facilities that use this technology for processing of MSW. As shown in the table, it is evident that the use of pyrolysis technology for processing solid waste is global. There are multiple commercial plants either proposed or currently in operation. The processing of waste using pyrolysis has been around for generations and, similar to other technologies, is expected to continue to evolve and advance.

11. URS, Conversion Technology Evaluation Report Prepared for the County of Los Angeles Department of Public Works and the Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force's Alternative Technology Advisory Subcommittee, August 18, 2005.

Pyrolysis Technology Around the World

Facility/Supplier Name	Location	Country	Capacity	Primary Feedstock	Syngas/Waste Heat Utilization
Cleveland Public Power- MSWE Plant/ Princeton Environmental Group	Cleveland, OH	USA	900-1,500 TPD	MSW	Boiler- 20 MW
Conrad Industries	Chehalis, WA	USA		Plastics	
Graveson Energy Management	Summit, NJ	USA		MSW	
North American Power Company	Las Vegas, NV			MSW, industrial, medical, plastic	Boiler
Pan American Resources, Inc.	Pleasanton, CA			MSW	
LACDPW/ International Environmental Solutions	Riverside, CA	USA	180 TPD (pilot)	MSW	
Waste Gen UK Ltd	Gloucester	UK	110,000 TPY	MSW	Boiler
Utility Savings & Refund, LLC	Newport Beach, CA	USA	150 TPD	carbon-based material	BioOil
Global Energy Solutions, Inc. Sarasota, FL	Claims 4 plants in operation around the world			MSW	Boiler
Interstate Waste Technologies Malvern, PA	3 Plants: Italy- 100 TPD, Japan- 330 TPD, Germany- 792 TPD		289,000 TPY	MSW	Boiler/IC
Compact Power Holdings PLC/Compact Power Ltd.	Avonmouth	UK	8,000 TPY	MSW- Special wastes, mainly clinical medical waste	Boiler
Mitsui Babcock - R-21	Toyohashi City	Japan	400 TPD	MSW	8.7 MW
	Koga Seibu		260 TPD	MSW; Sewage Sludge	4.5 MW
	Yame Seibu		220 TPD	MSW	2.0 MW
	Nishiiburi		210 TPD	MSW	2.0 MW
	Ebetsui City		140 TPD	MSW	2.0 MW
	Kyoboku Regional		160 TPD	MSW	1.5 MW
WasteGen/Techtrade	Hamm	Germany	353 TPD	MSW; Sewage Sludge	power generation
	Burgau	Germany	154 TPD	MSW, Sewage Sludge	power generation

Facility/Supplier Name	Location	Country	Capacity	Primary Feedstock	Syngas/Waste Heat Utilization
Thide Environment	Arras	France	40,000 TPY	Household Wastes	Industrial Stream
	Dreux	Paris	6,400 TPY (pilot)	MSW, Industrial Waste, & sludge	
	Izumo	Japan	70,000 TPY		
	Itoigawa	Japan	25,000 TPY		
	Nakaminato	Japan	8,000 TPY		
IET Energy/ Entech Renewable Energy System		Singapore	72 TPD	Food Processing Wastes	4.0 MWt (Steam)
		Korea	60 TPD	MSW	power generation
		Korea	30 TPD	MSW	power generation
		Hong, Kong	58 TPD	MSW	power generation
	Genting/Sri Layang	Malaysia	60 TPD	MSW (WDF)	6.9 MWt
	P.N.G.		40 TPD	MSW	syngas
	Chung Gung Municipality	Taiwan	30 TPD	MSW	2.3 MWt (steam)
		Australia	15 TPD	MSW (WDF)	power generation
		Indonesia	15 TPD	MSW (WDF)	power generation
PKA	Aalen	Germany	27,000 TPY	MSW	syngas
	Freiberg	Germany		MSW;Industrial waste w/ high aluminum content	
Compact Power Holdings PLC/Compact Power Ltd.	Bristol	UK	9,000 TPY	Clinical & Special Waste	Heat for Autoclave
Ensyn	Renfrew	Ontario, Canada		Residual Wood	Fuel oil replacement
Future Energy GmbH (Formerly Noell)	Freiberg	Germany	5,760 TPY	MSW	
			12,000 TPY (pilot)	Sewage Sludge	
Thermoselect	Chiba	Japan	100,000 TPY	Industrial Waste	
	Mutsu	Japan	50,000 TPY	MSW	

Compiled by DOE Golden Field Office during work conducted on the Draft Environmental Assessment for Oneida Seven Generations Corporation: Energy Recovery Project, Green Bay, Wisconsin (DOE/EA-1862).
MSW= municipal solid waste.
tpd= tons per day.
tpy= tons per year.