

Pennsylvania State Energy Program's Conergy Navy Yard Solar Project

Philadelphia,
Philadelphia County, Pennsylvania



DRAFT
ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL ASSESSMENT

For The
 PENNSYLVANIA STATE ENERGY PROGRAM'S
 CONERGY NAVY YARD SOLAR PROJECT
 PHILADELPHIA, PENNSYLVANIA
 U.S. Department of Energy
 National Energy Technology Laboratory

TABLE OF CONTENTS

| CONTENTS | |
|--|----|
| 1.0 SUMMARY | 5 |
| 1.1 INTRODUCTION AND BACKGROUND | 5 |
| 1.2 PURPOSE AND NEED | 7 |
| 1.3 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT | 7 |
| 2.0 PROPOSED ACTION AND ALTERNATIVES | 8 |
| 2.1 PROPOSED ACTION | 8 |
| 2.2 PENNSYLVANIA'S PROPOSED ACTION | 8 |
| 2.3 NO ACTION ALTERNATIVE | 11 |
| 2.4 ALTERNATIVES CONSIDERED BUT DISMISSED | 11 |
| 3.0 AFFECTED ENVIRONMENT | 12 |
| 3.1 NATURAL RESOURCES | 13 |
| 3.1.1 WATER RESOURCES | 13 |
| 3.1.2 GEOLOGY, TOPOGRAPHY AND SOILS | 16 |
| 3.1.3 VEGETATION AND WILDLIFE | 17 |
| 3.1.4 AIR QUALITY AND CLIMATE CHANGE | 18 |
| 3.1.5 NOISE | 19 |
| 3.2 CULTURAL RESOURCES | 20 |
| 3.2.1 VISUAL RESOURCES | 20 |
| 3.2.2 ARCHEOLOGICAL AND HISTORIC RESOURCES | 21 |
| 3.3 SOCIOECONOMIC RESOURCES | 22 |
| 3.3.1 LAND USE | 22 |
| 3.3.2 PLANNING POLICIES AND CONTROLS | 22 |
| 3.3.3 DEMOGRAPHICS AND ENVIRONMENTAL JUSTICE | 23 |
| 3.4 INFRASTRUCTURE | 24 |
| 3.4.1 ROADWAYS AND TRAFFIC | 24 |
| 3.4.2 POTABLE WATER | 25 |
| 3.4.3 STORMWATER MANAGEMENT | 24 |
| 3.4.4 SANITARY SEWER | 25 |
| 3.4.5 ENERGY SYSTEM | 25 |
| 3.4.6 SOLID WASTE | 26 |
| 3.4.7 HAZARDOUS MATERIALS | 26 |
| 4.0 ENVIRONMENTAL CONSEQUENCES | 27 |
| 4.1 NATURAL RESOURCES | 27 |
| 4.1.1 WATER RESOURCES | 27 |
| 4.1.2 GEOLOGY, TOPOGRAPHY AND SOILS | 29 |
| 4.1.3 VEGETATION AND WILDLIFE | 29 |
| 4.1.4 AIR QUALITY | 29 |
| 4.1.5 NOISE | 33 |
| 4.2 CULTURAL RESOURCES | 33 |

| | |
|--|-----------|
| 4.2.1 VISUAL RESOURCES | 33 |
| 4.2.2 ARCHEOLOGICAL AND HISTORIC RESOURCES | 34 |
| 4.3 SOCIOECONOMIC RESOURCES | 34 |
| 4.3.1 LAND USE | 34 |
| 4.3.2 PLANNING POLICIES AND CONTROLS | 34 |
| 4.3.3 DEMOGRAPHICS AND ENVIRONMENTAL JUSTICE | 35 |
| 4.4 INFRASTRUCTURE | 35 |
| 4.4.1 ROADWAYS AND TRAFFIC | 35 |
| 4.4.2 POTABLE WATER | 36 |
| 4.4.3 STORMWATER MANAGEMENT | 36 |
| 4.4.4 SANITARY SEWER | 36 |
| 4.4.5 ENERGY SYSTEM | 37 |
| 4.4.6 SOLID WASTE | 37 |
| 4.4.7 HAZARDOUS MATERIALS | 37 |
| 5.0 CUMMULATIVE IMPACTS | 38 |
| 6.0 PUBLIC COMMENT | 39 |
| 7.0 LIST OF PREPARERS | 40 |
| 8.0 AGENCIES AND PERSONS CONSULTED | 40 |
| 9.0 REFERENCES | 41 |

APPENDICES

| |
|--|
| APPENDIX 1: SITE MAPS |
| APPENDIX 2: SITE PHOTOGRAPHS |
| APPENDIX 3: PA SHPO RESPONSE LETTER |
| APPENDIX 4: SHPO SUBMISSION |
| APPENDIX 5: HISTORICAL BUILDING DEMOLITION PLAN |
| APPENDIX 6: CONSTRUCTION EQUIPMENT |
| APPENDIX 7: PERMIT APPLICATIONS |
| APPENDIX 8: AGENCIES RETURN CORRESPONDENCE ABOUT PERMITS |
| APPENDIX 9: WETLANDS REPORT |
| APPENDIX 10: SWALE DETAIL |
| APPENDIX 11: FLOOD PLAIN MAP |
| APPENDIX 12: GROUNDWATER TABLE MAP |
| APPENDIX 13: USGS MAP |
| APPENDIX 14: TOPOGRAPHIC MAP |
| APPENDIX 15: AERIAL PHOTOGRAPHY PHOTOGRAPH FROM 1944 |
| APPENDIX 16: SOIL MAP |
| APPENDIX 17: PGC LETTER |
| APPENDIX 18: FALCON LOCATION |
| APPENDIX 19: ARCHEOLOGICAL LETTER |
| APPENDIX 20: NAVY YARD PRELIM PHASE 1 EA |
| APPENDIX 21: FLOODPLAIN MAP WITH ARRAY LAYOUT |
| APPENDIX 22: ELEVATIONS ABOVE 4.2 FLOODPLAIN |
| APPENDIX 23: TEMPORARY ELECTRIC/TRAILER LOCATION |
| APPENDIX 24: FEMA FIRMETTE MAP |
| APPENDIX 25: NPDES PERMIT APPROVAL LETTER |

LIST OF ACRONYMS

| | |
|---------|---|
| BRAC | Base Realignment and Closure |
| CAA | Clean Air Act |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| cy | Cubic Yards |
| dB | Decibels |
| dBA | A-Weighted Decibels |
| dBA LEQ | Decibel Equivalent |
| DCNR | Pennsylvania Department of Conservation and Natural Resources |
| DEP | Pennsylvania Department of Environmental Protection |
| DOE | Department of Energy |
| DOT | Department of Transportation |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| E&S | Erosion and Sedimentation |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| FONSI | Finding of No Significant Impact |
| GHG | Greenhouse Gasses |
| GPIC | Greater Philadelphia Innovation Cluster |
| HAPs | Hazardous Air Pollutants |
| HAZMAT | Hazardous Materials |
| IBA | Important Bird Area |
| MW | Megawatt |
| NAAQS | National Ambient Air Quality Standards |
| NEPA | National Environmental Policy Act |
| OC | On-Center |
| PADEP | Pennsylvania Department of Environmental Protection |
| PADOT | Pennsylvania Department of Transportation |
| PEDA | Pennsylvania Energy Development Authority |
| PCBs | Polychlorinated Biphenyls |
| PGC | Pennsylvania Game Commission |
| PHMC | Pennsylvania Historical and Museum Commission |
| PIDC | Philadelphia Industrial Development Corporation |
| PNDI | Pennsylvania National Diversity Inventory |
| PWD | Philadelphia Water Department |
| SEP | State Energy Program |
| SHPO | State Historic Preservation Officer |
| SWPPP | Stormwater Pollution Prevention Plan |
| USDA | United States Department of Agriculture |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Services |
| USGS | United States Geological Survey |
| VOCs | Volatile Organic Compounds |

1 SUMMARY

1.1 Introduction and Background

Conergy Projects, Inc. (Conergy) proposes to construct and operate a 1.251 Megawatt (MW) solar photovoltaic (PV) facility at the former Navy Yard site in south Philadelphia in Pennsylvania's Philadelphia County to provide up to 1,596 megawatt hours of electricity per year, feeding directly into the distribution grid. After considering a number of alternative PV configurations and acquiring land via a lease to install the facility, the project proponents have identified a final proposed layout that meets the production criteria and minimizes the footprint of the system. The PV panels would be installed on an unused portion of the Navy Yard, which is a capped landfill area that overlooks the Schuylkill River and is immediately south of the Girard Point Bridge. The entire facility would be visible from airplanes landing at Philadelphia International Airport.

The Commonwealth of Pennsylvania selected this project for a \$1,279,000 grant from the Pennsylvania Department of Environmental Protection (PADEP) via the Pennsylvania Energy Development Authority (PEDA). Of this, \$512,441 is proposed to come from a formula grant pursuant to U. S. Department of Energy's (DOE) State Energy Program (SEP). The purpose of the SEP is to promote the conservation of energy and reduce dependence on imported oil by helping states develop comprehensive energy programs and by providing them with technical and financial assistance. States can use their SEP funds for a wide variety of activities related to energy efficiency and renewable energy. See *generally* 42 United States Code (U.S.C.) § 6321 *et seq.* and 10 Code of Federal Regulations (CFR) Part 420. In the *American Recovery and Reinvestment Act of 2009* (Public Law 111-5, 123 Statute 115; Recovery Act), Congress appropriated \$3.1 billion to DOE for the SEP, and Pennsylvania received approximately \$99 million pursuant to a statutory formula for distributing these funds.

In accordance with the National Environmental Policy Act (NEPA), DOE must complete a review of potential environmental impacts of proposals under SEP before making a decision whether to allow states to use the funds for the projects identified by the states. Conergy prepared this environmental assessment (EA), with Pennsylvania's assistance, to analyze the potential environmental impacts of the proposed Photovoltaic Facility. This EA analyzes the following areas of potential environmental impacts: natural resources including water resources, geology, topography and soils, vegetation and wildlife, air quality, and noise; cultural resources including visual, archeological and historical resources; infrastructure including roadways and traffic, potable water, storm water management, sanitary sewer, energy systems, solid waste, and hazardous material; socioeconomic resources including land use, planning policies and control, demographics and environmental justice, and human health and safety.

The proposed solar PV facility would generate emissions-free energy that would not degrade air quality. The use of solar power would offset greenhouse gases and other emissions from fossil fuels used to generate electricity, thereby providing an environmental benefit. The project would also create green construction and green energy maintenance jobs, re-develop a parcel of the Philadelphia Navy Yard that has limited development potential due to the nature of the physical site, and afford the Philadelphia Industrial Development Corporation (PIDC) and the City of Philadelphia with economic development value on a closed landfill.

The proposed project came about after analysis of a variety of options including different sites and different configurations on the selected site. The considered sites included other brownfields, closed and active landfills, large corporate buildings and a local school district's buildings. The other options for the selected site at the Philadelphia Navy Yard included a 1.8

MW design and a 1.5 MW design. Not constructing the project was considered, but would negate the advantages of: creating a wide variety of jobs during construction, creating long-term part-time maintenance positions, assisting the City of Philadelphia in achieving its goal to be a substantial solar energy producer within the next several years.

For this proposed project, the areas of concern with the greatest potential for impact include wildlife, water and storm water management, and historic preservation. This document examines those areas in closer detail.

Wildlife resources were reviewed because of presence of a species important to Pennsylvania. The Pennsylvania Game Commission (PGC) determined that a Pennsylvania Endangered Species, *Falco peregrinus* (Peregrine Falcon) is nesting within 1000 feet of the site. This requires a modified work schedule to minimize impacts, but should have no deleterious impact on wildlife.

The proposed location of the project is within the 100-year floodplain of the Schuylkill River (FEMA 2009). Thus, pursuant to Executive Order 11988, *Floodplain Management*, each Federal agency is required, when conducting activities in a floodplain, to take actions to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Regulations issued by DOE that implement this Executive Order are contained in 10 CFR Part 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements." This regulation requires DOE to prepare a floodplain assessment for any proposed action in the base floodplain, which is the 100-year floodplain (that is, a floodplain with a 1.0 percent chance of flooding in any given year). At 10 CFR 1022.2(b), the regulation also states that whenever possible, DOE shall accommodate requirements of the Executive Order through the applicable NEPA procedures. Accordingly, it is the intent that this EA meet the requirements for a floodplain assessment as described in Section 3.1.1 of the regulation, as well as fulfilling requirements under NEPA.

The Philadelphia Naval Ship Yard Historic District, as listed on the National Register, includes the proposed site. The Pennsylvania Historical and Museum Commission's (PHMC) Bureau for Historic Preservation (the State Historic Preservation Office (SHPO)), according to Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 80) of the Advisory Council on Historic Preservation as revised in 1999 and 1003, was required to consider the project's potential effect upon both historic and archaeological resources. The PHMC has determined that the effect of demolition of two buildings, deemed as contributing in the Historic District, requires mitigation – recordation of the structures - be taken to reduce the effect the proposed project will have on historic resources. PHMC has also determined that there is no adaptive reuse option available and indicated that stipulating recordation in a Memorandum of Agreement, if entered into by all parties, would be sufficient to satisfy these requirements.

1.2 Purpose and Need

DOE's Purpose and Need

DOE's purpose and need is to ensure that SEP funds are used for activities that meet Congress's statutory aims to improve energy efficiency, reduce dependence on imported oil, decrease energy consumption, or promote renewable energy. However, it is not DOE's role to dictate to Pennsylvania how to allocate its funds among these objectives or to prescribe the projects it should pursue.

Pennsylvania's & Conergy's Purpose and Need

PEDA's purpose and need is to take action to help fulfill its mission to finance clean, advanced energy projects in Pennsylvania, including solar energy projects. Applications are evaluated using criteria including but not limited to technical and financial feasibility of the project, number and quality of jobs created or preserved, and other economic benefits for the Commonwealth of Pennsylvania. Projects must show financial commitment from at least one source other than PEDA and demonstrate a net environmental benefit to Pennsylvania. Conergy's purpose and need is to facilitate green job creation, economic development and growth and improve and drive the solar market place in Pennsylvania.

1.3 Scope of This Environmental Assessment

This EA presents information on the potential impacts associated with the distribution of a grant to Conergy for the construction of a solar facility in Philadelphia. This EA was prepared in compliance with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 et seq.); the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations 40 CFR Parts 1500-1508; and DOE NEPA Implementation Procedures 10 CFR 1021.

This EA analyzes the following resource areas:

- Natural Resources – including water resources, geology, topography and soils, vegetation and wildlife, air quality, and noise;
- Historic Resources – including visual, and historical resources;
- Infrastructure – including roadways and traffic, potable water, stormwater management, sanitary sewer, energy systems, solid waste, and hazardous material;
- Socioeconomic Resources – including land use, planning policies, demographics and environmental justice, and human health and safety;

The following resource areas were not carried forward for further analysis:

- Geology, Topography and Soils - the proposed project is not underlain by, or located within an area of, significant geology;
- Vegetation – the proposed project is not located within or adjacent to a wilderness area nor is the area surrounding the proposed project populated by threatened or endangered plant species;
- Noise – the proposed project generates no noise above accepted zoning levels, even during construction;
- Visual Resources – the proposed project does not fall in the sight line of any valued visual resources, such as scenic rivers or parks;
- Archeological Resources – as the area is comprised of landfill material and previously disturbed land, the proposed project contains no archeological resources that are required to be investigated in accordance with the Pennsylvania SHPO;

- Roadways and Traffic – the proposed project should have no impact on roadways and traffic;
- Land Use – the current zoning of the site and surrounding area coincides with the required zoning of the proposed project;
- Planning Policies – the proposed project is synchronous with the intended use stipulated by the Navy Yard Master Plan;
- Demographics and Environmental Justice – implementation of the proposed project would not result in disproportionately high and adverse effects on the health and/or environment of minority and/or low income populations;
- Human Health and Safety – the proposed project would not result in increased risks to human health and safety.

As a result of this EA, if no significant impacts are identified, a Finding of No Significant Impact (FONSI) may be issued by DOE. If potential impacts are identified, an Environmental Impact Statement (EIS) may be required.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 DOE's Proposed Action

DOE's Proposed Action is to allow Pennsylvania to use its SEP funds for a grant to assist in the financing of the Conergy solar project in order to facilitate Pennsylvania's achievement of the objectives of SEP.

2.2 Pennsylvania's Proposed Project

PEDA selected the Exelon-Conergy Solar Energy Center II for a \$1.279 million grant based on its: location on otherwise unusable brownfield site, ideal public viewing access, ability to provide emissions-free energy, creation of jobs during project construction, and generate electricity for the local utility grid. A criterion of the PEDA grant program is that the project must be completed and fully operational by December 31, 2011. The proposed project is the construction of solar facility within the City of Philadelphia that would generate electricity to be sold to the PJM grid as an alternative energy source. The facility would generate approximately 1,596 megawatt hours of electricity.

The proposed project offers benefits to several parties. The PIDC would receive a nominal lease payment from Conergy or the financing company for hosting the solar PV project on its property. Exelon will receive the electricity in to the grid and receive the Renewable Energy Credits, thereby fulfilling its obligations for the alternative energy sources under the Pennsylvania Alternative Energy Portfolio Standards Act of 2004.
(http://www.puc.state.pa.us/electric/electric_alt_energy.aspx)

The Philadelphia Navy Yard is now hosting the Greater Philadelphia Innovation Cluster (GPIC) for Energy Efficient Buildings. The GPIC is described as "a consortium of academic institutions, federal laboratories, global industry partners, regional economic development agencies and other stakeholders that joined forces to secure up to \$130 million in federal grants from the Department of Energy. The funding will foster national energy independence and create quality jobs for the region. The GPIC's efforts are intended to establish The Navy Yard, Philadelphia and the region as the national center for energy efficient research, education, policy and commercialization. (<http://www.sep.benfranklin.org/programs-services/industries-sectors/energy/greater-philadelphia-innovation-cluster/>) Key personnel of the GPIC will be

headquartered at The Navy Yard in a retrofitted building that will become a living laboratory for energy efficient building design." Having a solar facility such as the proposed project complements these efforts and also offers the opportunity to teach the public through scheduled tours held at the facility. The GPIC is an entirely separate project that has no relation to the implementation to the proposed solar PV project. However, the projects lie in close proximity to each other.

Proposed Site

The proposed site is an approximately 8.1 acre parcel which is currently an undeveloped, capped landfill located within the Philadelphia Navy Yard. The Philadelphia Navy Yard is an industrial and commercial former US Navy facility that was transferred out of military ownership in March 2000. As such, the property is presently zoned and permitted for both commercial and industrial operations. The site is currently unused property with overgrown weed vegetation and is solely used for temporary storage by other local facility owners. The Schuylkill River is located west of the property and extends to the Delaware River south of the project site. The proposed project would include demolition of three dilapidated buildings, two of which are eligible for the National Register of Historic Places and which will undergo recordation prior to demolition. A Memorandum of Agreement is being developed between DOE, Pennsylvania DEP, Philadelphia Industrial Development Corporation, Conergy, and the Pennsylvania Historical and Museum Commission, which is Pennsylvania's SHPO. During the construction phase, a one story office trailer would be connected to electrical services onsite, as well as temporary portable sanitation units. A detailed site map illustrating the current property conditions and planned solar PV facility is included in Appendix 1. Site photographs are additionally included as Appendix 2.

The proposed site was capped in order to remediate a waste management area that was previously used for the treatment, storage and disposal of solid waste generated by the U.S. Navy at the Philadelphia Naval Base (US Navy Remedial Action Contract, Contract No N62472-94-D-0398, Delivery Order No. 0029, July 1999 prepared by Foster Wheeler Environmental Corporation). One of the historic buildings referenced was an incinerator building where the waste was burned prior to placement in the landfill. In 1999, the landfill was closed and capped by the US Navy. The top of the cap seal currently exists approximately 18 inches below the existing grade of the site. The construction of the proposed solar facility will not disturb the existing cap. Clean fill material will be added on top of the existing cap, with the solar equipment then placed on top of the clean fill material.

Construction

Construction would include installation of 5,586 solar modules, racking, electrical systems, distribution line, foundation systems for the inverter cabinets, and fencing around the proposed site. This would be performed in accordance with an approved erosion and sedimentation control plan, a National Pollutant Discharge Elimination System (NPDES) permit, and in compliance with all other applicable requirements. Solar installation, including site preparation, PV erection, final commissioning, interconnection line installation, and overall systems tie-in and start-up is planned to be completed by December 31, 2011, to meet the deadlines of the current awarded grant, which proposes to use funding from both the DOE SEP ARRA stimulus program and the Commonwealth of PA's Growing Greener II Bond Initiative.

In order to ensure the integrity of the cap and to ensure its seal, no penetrations would be made to the existing grade during the construction sequence. Construction also would entail clearing and grubbing portions of the current property for appropriate clean fill to be laid down and leveled. Before construction, the entire 8.1 acres would be mowed with a standard lawn mower.

After the mowing is complete approximately 45 trees would be removed from the site in order to prevent shading of the modules on the completed system. The stumps of the trees would be left in the ground as to not disturb the cap and they would be cut to be flush with the existing grade. In addition, the existing man-made swale present on the site would have perforated pipe placed on the bottom and covered with sand and a layer of clean fill on the top. The alterations to the man-made swale were approved during the NPDES application and approval process. The construction equipment planned for use onsite is described in Appendix 6.

In addition, the three current buildings located on the property would be demolished. Two of these buildings are eligible for listing on the National Register of Historic Places. Conergy has approval, in the form of a letter from the PA SHPO found in Appendix 3, for demolition of these buildings as there is no current or planned use of any of the structures. Documentation regarding the historical buildings is located in Appendix 4, including the application to PA SHPO. Currently, a Memorandum of Agreement (MOA) regarding the recordation of the historical structures is being negotiated between all parties. The third building has no historical significance and has been approved for demolition. Conergy would remove the buildings with a demolition company that would first test for any asbestos within the buildings then would demolish the buildings according to the plan located in Appendix 5 and in accordance with the MOA with the PA SHPO. If asbestos is found in the buildings, prior remediation of the asbestos will occur.

There would be two inverters located on the facility, each 500 kilowatt. A distribution line would be routed across the Tasty Baking Company, via an easement to a pole for distribution to the grid. This distribution line would be built up with fill on top of the existing cap. The fill will create a pathway across the northwest portion of the site, a pathway that would be wide enough for vehicles to drive on top. Within this fill would be a concrete duct bank with conduit for the distribution line created as per the National Electric Code (NEC) requirements. This pathway would be at approximately a 1:3 slope, so that vehicles could drive over it, to a surface that would be eight (8') feet wide and one foot six inches (1'-6") deep. This would be a typical run for the detail and extend six hundred forty four (644') foot long across the northwest part of the property. At this point an easement would be established through the Tasty Baking Facility to continue a trenched run to the interconnection point.

Operation

The equipment associated with the proposed project would consist of construction equipment, and electrical equipment after the installation is completed.

The construction equipment will be used onsite during construction only. After the installation is completed, inverters, combiners, medium voltage switchgear, and monitoring equipment will be running for the daily operations of the facility.

Conergy and its Project Partners would operate and maintain the solar energy project according to standard industry procedures and applicable requirements. Routine maintenance of the inverter equipment would be necessary to maximize performance and identify potential problems or maintenance issues. Each inverter would be remotely monitored to ensure operations are proceeding efficiently. Any problems would be reported to operations and maintenance personnel, who would perform both routine maintenance and arrange major repairs. In addition, all roads, pads, and trenched areas would be regularly inspected and maintained to minimize erosion. The road loop portion of the road surrounding the historical buildings will have fill material on top, with solar equipment in the area. The northern part of the

access road will be a dirt road leading to the access fences of the facility. (See maps, Appendix 1)

During the Operations and Maintenance term of the facility (approximately 20 years after installation), there will be occasional module washing required, where a water truck would bring potable water in from offsite to wash and rinse off the modules. Approximately 3,300 gallons of water is expected to be used to wash the entire facility. A low pressure, pressure washer is used to spray the modules, followed by a light scrubbing by either a soft bristled brush or a squeegee. Only fresh water would be used. No chemicals are permitted for cleaning. This process would be completed over approximately a four day period, with half the day actually spraying water, and the other half setting up equipment and scrubbing. Any remaining unused water will leave the site in the water truck. This operation does not require any state or local permits.

2.3 No Action Alternative

Under the No Action Alternative, DOE would not allow Pennsylvania to use its SEP funds for this project. For purposes of this EA, it is assumed that the project would not proceed without SEP funding. This assumption could be incorrect, but it allows for a comparison between the potential impacts of the project as proposed and the impacts of not proceeding with the project. Without the proposed project, Conergy operations would continue as otherwise planned but without the proposed solar project being installed. Additional power would not be supplied to the utility grid. This means that the additional power that the utility is expecting and planning for would not be supplied. Concurrently, the No Action Alternative would deprive the Philadelphia area of a supplier of an efficient, alternative fuel source to local businesses that would serve to reduce regional greenhouse gas emissions. Further, Pennsylvania's ability to use its SEP funds for energy efficiency and renewable energy activities would be impaired, as would its ability to create jobs and invest in the nation's infrastructure in furtherance of the goals of the Recovery Act.

2.4 Alternatives Considered but Dismissed

Based on the current zoning and permitting of the primary site being synchronous with its proposed future use, alternative locations were not deeply explored by Conergy. Additionally, the anticipated success of the facility is largely based on its location.

Alternate locations within the Philadelphia Area of the Exelon Utility region were discussed and evaluated before applying for the PEDDA grant round in April of 2009. These options included both roof-mounted and ground-mounted systems.

From a financial feasibility standpoint, public school buildings, government buildings, landfills and brownfield sites were the options reviewed. Roofs of the local public school buildings were dismissed as an option due to the concerns over the varying structural requirements of the buildings, the lack of one facility able to handle the size of solar array being considered and the limited installation timeline available with the school year. Government buildings were dismissed due mostly to the size limitation and the need for long lead times for lease agreements and approvals. Alternate landfills considered throughout the Southeastern region of Pennsylvania were discounted for several reasons, including lease pricing for the land, feasibility of the cap on the facility for a solar installation without additional pricing for added fill, and on one of the sites the cap on the facility had not been settled for the required time period before construction could begin on the facility. Finally, for other brownfield sites, many of them required remediation prior to re-use or came with liability issues which made financing impossible.

3.0 AFFECTED ENVIRONMENT

To determine if the actions of constructing the project could have environmental impacts, Conergy applied for permits to the relevant governmental agencies and conducted site reconnaissance. Copies of the permit applications and the corresponding agencies' return correspondence are included as Appendix 7 and Appendix 8, respectively.

Table 1 provides a summary of socioeconomic, environmental, and cultural impacts of the No-Action Alternative and the proposed project.

Table 1. Summary of Socioeconomic, Environmental, and Cultural Impacts

| Area of Potential Impact | No-Action Alternative | | Proposed Project | |
|---------------------------------|-----------------------|------------|--|--------------------|
| | Construction | Operations | Construction | Operations |
| Wetlands | Negligible | Negligible | Negligible | Negligible |
| Water Quality/Streams | Negligible | Negligible | Negligible | Negligible |
| Stormwater | Negligible | Negligible | Minimal (regulated through NPDES permit) | Negligible |
| Floodplains | Negligible | Negligible | Minimal | Minimal |
| Groundwater | Negligible | Negligible | Negligible | Negligible |
| Topography | Negligible | Negligible | Negligible | Negligible |
| Soil | Negligible | Negligible | Negligible | Negligible |
| Vegetation | Negligible | Negligible | Negligible | Negligible |
| Wildlife | Negligible | Negligible | Negligible | Negligible |
| Threatened & Endangered Species | Negligible | Negligible | Minimal (modified schedule) | Negligible |
| Parks & Recreation | Negligible | Negligible | Negligible | Negligible |
| Air Quality | Negligible | Negligible | Minor | Minor (Beneficial) |
| Noise | Negligible | Negligible | Negligible | Negligible |
| Visual Resources | Negligible | Negligible | Negligible | Negligible |
| Archeological Resources | Negligible | Negligible | Negligible | Negligible |
| Historic Resources | Negligible | Negligible | Minor (Mitigation) | Negligible |
| Land Use | Negligible | Negligible | Negligible | Negligible |
| Planning | Negligible | Negligible | Negligible | Negligible |
| Demographics | Negligible | Negligible | Negligible | Negligible |
| Environmental Justice | Negligible | Negligible | Negligible | Negligible |
| Roadways & Traffic | Negligible | Negligible | Negligible | Negligible |
| Potable Water | Negligible | Negligible | Negligible | Negligible |
| Sanitary Wastewater | Negligible | Negligible | Negligible | Negligible |

| | | | | |
|------------------------|------------|------------|------------|-----------------------|
| Energy | Negligible | Negligible | Negligible | Minor (Beneficial) |
| Solid Waste | Negligible | Negligible | Minor | Negligible |
| Hazardous Materials | Negligible | Negligible | Negligible | Negligible |

3.1 Natural Resources

3.1.1 Water Resources

Surface Water (Wetlands)

Field inspection reveals an absence of perennial surface water on the site of the proposed project. However, maps of the Project Area prepared by Pennoni Associates dated October 7, 2008, have shown small wetland areas in the vicinity of the Project. Ed Bonner of the Army Corps of Engineers conducted a field view on March 4, 2009. Bonner found “0 linear feet” of non-wetland waters and “0 acres” of wetlands on the site as stated in his report dated June 24, 2009 (Appendix 9). Therefore, there are no surface waters on the site under the jurisdiction of the Army Corps of Engineers or the PADEP.

Stormwater

A NPDES Individual Permit Modification and Plan Revision for NPDES Permit Number PAS10-5312-R was issued on May 6, 2011, from the PADEP to the PIDC. This approved the Erosion and Sedimentation Control Plan for discharge of stormwater from the construction activities of the proposed project on what the original permit refers to as Parcels 2 and 10 of the Philadelphia Navy Yard. A man made swale is present on the site. The swale will be addressed in construction by installing a perforated pipe along the bottom of the swale and covering the swale with sand to act as a filter. The clean fill that will be brought to the site will then be placed on top of the sand. The design of the proposed project was such that no reduction in the swale’s function will result. (Appendix 10).

The total area of disturbance would be less than 10 acres. Ground-disturbing activity requires compliance with the PADEP Chapter 102 erosion control regulations, including the preparation and implementation of an Erosion and Sediment Pollution Control Plan. PADEP in consultation with the PWD is responsible for administering the Erosion Control Program in Philadelphia County. In addition to the required Erosion and Sediment Pollution Control Plan, earthmoving projects that disturb more than 1 acre may require an NPDES Permit. Pursuant to the Chapter 102/NPDES delegation, the PADEP and/or PWD staff reviews the submitted plans, issues NPDES Permits, and performs site inspections. After an Erosion and Sediment Pollution Control Plan is reviewed and determined to be adequate, a determination of adequacy letter is issued. If an NPDES permit is needed, the PADEP (with PWD acceptance) would issue the NPDES permit concurrently with or shortly after the Erosion and Sediment Pollution Control Plan adequacy determination. The letter approving the proposed project’s plan can be found in Appendix 25.

An approved Erosion and Sediment Pollution Control Plan, in compliance with the NPDES permit, would be implemented before, during, and following construction activities. As per the PADEP, plans are required to be available at the construction site.

On-site quality assurance inspectors would ensure that the erosion and sediment pollution control measures are implemented and properly installed and maintained. These measures include: filter socks, sediment fence, and inlet protection. The filter socks and/or sediment fence

would be installed around the entire perimeter of the project site, with additional socks/fence installed around any fill stock piles, concrete pads, and along the perimeter of the swales. The appropriate type of filter sock would be used and maintained according to the erosion and sediment control details located on the approved civil engineering plans for the project. These would be installed and maintained throughout construction of the project until final approval is obtained from the PADEP/PWD for removal of the sock/fence.

Inlet protection would include temporary filter bags installed in all necessary inlets which require erosion and sediment filtering. These bags will be installed by lifting the inlet grate and installing a one inch rebar around the bag for easy removal and maintenance during construction and upon final approval. Inlet protection is not required for an inlet tributary to a sediment basin or trap.

Floodplains

The Flood Insurance Rate Map (FIRM) #4207570189G, with an effective date of January 17, 2007, published by the Federal Emergency Management Agency (FEMA) for Philadelphia, Pennsylvania, was used to determine if the subject property is located within a floodplain. According to the FIRM document, the proposed facility is located within Zone AE and Zone X which corresponds to areas of base flood elevation determined to be 10 feet NAD 83 (North American Datum of 1983) and areas of 0.2% annual chance flood (500 year flood), respectively. Zone X2 is also present which corresponds to areas outside the 0.2% annual chance flood. The subject FIRM information is included in Appendix 11.

No construction would occur in the Federal Emergency Management Agency (FEMA)-designated floodway of the Schuylkill River (Appendix 21), but as per PADEP policy under 25 PA Code Chapter 105, Dam Safety and Waterway Management; the floodway is defined as extending from the stream to 50 feet from the top of the bank of the stream in tidal areas. Thus, a Chapter 105 permit is required and was submitted on June 24, 2011, to PADEP. Under 25 PA Code, Chapter 106, Floodplain Management, the proposed project does not require a permit as solar installations are not public utilities nor is the project being constructed by a government entity. Exclusion from Chapter 106 permitting was confirmed with PADEP.

As seen in Appendix 11, approximately six acres of the project site would be located within the designated floodplains. Currently the stormwater from this site flows into one of two drainage swales and into the tidal portion of the Schuylkill River and the Reserve Basin. The current design of the project will be adding six (6) to twelve (12) inches of fill to some portions of the site, raising the level to above the 100-year floodplain (Appendix 22). This fill will add to the stability of the cap on the landfill portion of this site. As this area is in a tidal segment of the Schuylkill River, elevating this small area will not contribute to any upstream or downstream flooding during a flood event, as the flood elevations are based on tidal forces and not the volume capacity of the floodplain. This was confirmed with FEMA Region III Regional Environmental Manager by PADEP during a phone call on June 28, 2011.

The PV system will be placed on this filled and leveled area on ballasts, as pilings or other soil penetrations would interfere with the capping of the landfill on the site. These ballasts will be constructed of concrete and a portion of the total physical area of some ballasts will be located in the floodplain. There are two different sizes of ballasts being installed. (Table 2 and 3 below). There would be a total of 236 - 7' ballasts and 238 - 9' ballasts, this will equal 15,043 cu.ft. (557 cy) and 18,963 cu.ft. (702 cy) respectively of ballast material that would be located in the floodplain. As indicated in the Chapter 105 permit application, 67,500 cu. ft. (2,500 cy) of clean fill will be added to the PADEP defined floodway.

The maximum volume of fill material that would be brought to the site is 2,500 cy. Cumulatively, the fill and ballasted material total a maximum of 3,759 cy of additional volume that would be brought into the site. The watershed for the Delaware River and the Schuylkill River is approximately 13,500 and 1,916 square miles, respectively. Therefore, given the enormous size of these watersheds, the total volume of ballast and relatively small amount of fill material to be placed within the floodplain at the proposed project site, the proposed project will have a minimal effect on the flood characteristics of these two watersheds, as confirmed by FEMA. Reducing the volume of the flood plain on this property will not affect the elevation of the flood levels on adjacent properties. Also, the demolition of the three current structures could potentially create a de minimis impact related to the floodplains.

Table 2. Ballast/Racking view from side of system

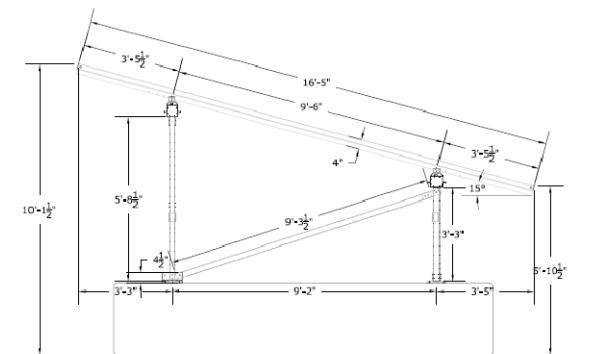
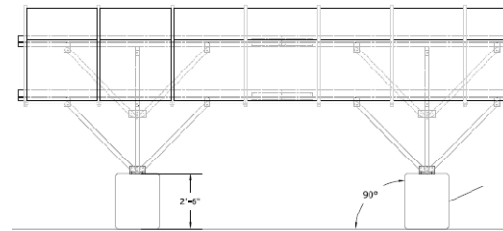
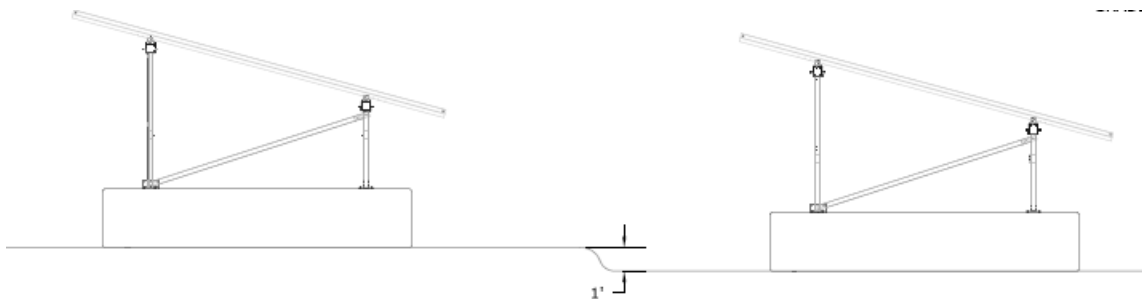


Table 3. Ballast/Racking view from front of system



As part of the design, there are large portions of open space. As can be seen in Table 3 and Table 4, the majority of the ground area would be exposed. This would be the fill material as described in Section 3.1.1 Stormwater. The significant items that are located on the ground will be the ballasts and the inverter equipment pads, which total 2,477 SF in plan area.

Table 4. Solar PV Row design



The PA DEP and PWD approved a Modification and Plan Revision to the Navy Yard NPDES Permit (NPDES Permit No. PAS10-5312-R) for parcels 2 and 10 for the development in the designated floodplain. Conditions of this permit require that all equipment within the flood zone would be water (flood) resistant (as the panel support structures are) or elevated one foot above the base elevation of the designated 100-year floodplain. In addition, the Chapter 105 permit requires frequent inspections of encroachment materials (ballast and fill) for continued safe operations.

Groundwater

As reflected by the water table map of Philadelphia, the water table elevation for the project site is 0 feet. The project site ranges in elevation between sea level and fifteen (15) feet (Appendix 12) with most of the development activity occurring on ground between elevations five (5) feet and fifteen (15) feet.

3.1.2 Geology, Topography and Soils

Geology

As reflected by the Geologic Map of Pennsylvania (1990, revised 2007), located at: <http://www.dcnr.state.pa.us/topogeo/maps/map7.pdf>, the site of the proposed PV facility is underlain by a combination of sand, gravel and silt.

Topography

The subject property is located within United States Geological Survey (USGS), 7½ minute Philadelphia Quadrangle. As indicated by the corresponding 1994 USGS topographic quadrangle map, the proposed site is located at an approximate range elevation of sea level to 15 feet above mean sea level and slopes gently towards two drainage swales that bisect the property and discharge to the Reserve Basin or the Schuylkill River (Appendix 14). The natural topographic gradient is unknown as the area has been disturbed by human activity since sometime prior to 1944. This can be referenced by aerial photographic site analysis indicating human activity at the facility, (Appendix 15).

Soils

The following United States Department of Agriculture (USDA) website was reviewed for data on soils beneath the subject property: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. The subject property is underlain by Trenton Gravel and the soils are classified by the USDA as Urban Soil. The proposed project will be mostly located on a man-made landfill which has been, in some places, capped with an asphalt cap and clean fill soil. Appendix 16 has the soils map for the proposed installation location.

Site preparation and project construction would result in earth disturbance, which is subject to PADEP Chapter 102 requirements. See section 3.1.1 above, Water Resources/Stormwater for additional information on soil erosion controls. The soils beneath the site have not been classified by the USDA as prime or unique farmland.

The total area of disturbance would be less than 10 acres. Ground-disturbing activity requires compliance with the PADEP Chapter 102 erosion control regulations, including the preparation and implementation of an Erosion and Sediment Pollution Control Plan. PADEP, in consultation with the PWD, is responsible for administering the Erosion Control Program in Philadelphia County. In addition to the required Erosion and Sediment Pollution Control Plan, earthmoving projects that disturb more than 1 acre might require an NPDES Permit. Pursuant to the Chapter 102/NPDES delegation, the PADEP and/or PWD staff reviews plans, issues NPDES Permits, and performs site inspections. After an Erosion and Sediment Pollution Control Plan is reviewed and approved, a determination of adequacy letter is issued. If a NPDES permit is needed, the PADEP would issue the NPDES permit concurrently with or shortly after the Erosion and Sediment Pollution Control Plan adequacy determination.

An approved Erosion and Sediment Pollution Control Plan, in compliance with the NPDES permit, would be implemented before, during, and following construction activities. On-site

quality assurance inspectors would ensure that the erosion and sediment pollution control measures are implemented and properly installed and maintained.

3.1.3 Vegetation and Wildlife

The US Fish and Wildlife Service (USFWS), PGC, PA Department of Conservation and Natural Resources (DCNR), and Pennsylvania Fish and Boat Commission (PFBC) are responsible for protecting various plant and animal species and associated habitat in the proposed project area. A primary emphasis of these agencies is to ensure that appropriate actions are taken to reduce or mitigate potential harm to protected species and habitat. To identify potentially affected species and habitat, the project proponents first used the Pennsylvania Natural Diversity Inventory (PNDI), which is found on the DCNR Pennsylvania Affected Environment and Environmental Impacts Natural Heritage Program website (<http://www.naturalheritage.state.pa.us/>). This was followed by direct contact with the DCNR and PGC. PNDI search results did not indicate any reason to coordinate with the PFBC. A letter was written by DOE to the USFWS dated March 23, 2011, requesting comments on the proposed project. A response from this letter has not yet been received to date.

Vegetation

The subject property is located within an urban-industrial area where the land has been previously disturbed and developed. The majority of the site is absent of quality vegetation as the site was previously used for waste processing by the Navy. Most remaining vegetation onsite and in the vicinity consists of grasses, shrubs, and some young trees. As the area has been disturbed for decades, the vegetative species found onsite consist mostly of alien and opportunistic species in primary succession post-disturbance. The PNDI review reported no species of concern onsite. According to the Five Year Operation and Maintenance Contract and user manual, and the Remedial Action Plan Document, current maintenance of the site is completed by the Department of the Navy, which consists of ensuring that the vegetation is mown and that any large trees or shrubs which may disturb the cap of the landfill are removed. (Contract Number N62472-03-D-0802)

Wildlife

The existing wildlife onsite and in the vicinity of the property consists of species commonly found in urban settings, such as small birds, rats and squirrels.

Threatened and Endangered Species

The PNDI review reported one species under PGC jurisdiction within the proposed project area, peregrine falcon (*Falco peregrines*), a Pennsylvania endangered species.

Conergy and its consultants have contacted organizations below to establish if any endangered or threatened species were located on or near the site.

- U.S. Fish and Wildlife Service (<http://ecos.fws.gov>)
- The Pennsylvania Natural Heritage Review (<http://www.gis.dcnr.state.pa.us/hgis-er/default.aspx>)

As described above, a PNDI review reported one species present. Following review of the PNDI report and other project information, PGC instructs no construction be completed March 1 through June 30 within 1000 feet of the nesting site as per state regulations (see Appendix 17, PGC letter dated November 30, 2009). Construction noise and activities are known to disturb the nesting and foraging behaviors of peregrine falcons and other bird species. This site would not be under construction during these timelines. Please reference Appendix 18 for the location of nest belonging to the Pennsylvania endangered peregrine falcon.

The nearest IBA (Important Bird Area) for Pennsylvania is located at John Heinz National Wildlife Refuge, approximately two and a half miles away. This area is separated from the site of the proposed project by I-95, the Philadelphia International Airport, the PWD Southwest Water Pollution Control Plant, various industries and the Penrose Industrial Park, a portion of the Sunoco Refinery and some residences.

<http://iba.audubon.org/iba/viewState.do?state=US-PA>

Wildlife Preserves

A project summary has been sent to USFWS in a letter dated March 23, 2011. A response from this letter has not yet been received to date. The following resources were reviewed:

- U.S. Fish and Wildlife Service National Wildlife Refuge Service (<http://www.fws.gov/refuges/whm/wilderness.html>)
- Pennsylvania Department of Conservation and Natural Resources (<http://www.dcnr.state.pa.us>)

The reviewed resources indicate that the subject property is not located within the vicinity of a wildlife preserve.

Wilderness Areas

A project summary has been sent to USFWS in a letter dated March 23, 2011. A response from this letter has not yet been received as of May 2011. The following resources were reviewed:

- National Wilderness Preservation System (<http://www.wilderness.net>),
- National Park Service (<http://www.nps.gov/parks.html>).
- Pennsylvania Department of Conservation and Natural Resources (<http://www.dcnr.state.pa.us>)

These resources indicate that the subject property is not located within a wilderness area.

3.1.4 Air Quality and Climate Change

Air quality is defined by the concentrations of various air pollutants in the atmosphere. The significance of a pollutant concentration is determined by comparing the concentrations in the atmosphere to the applicable state or national ambient air quality standards, which represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety.

In response to the Clean Air Act (CAA) of 1970 and its subsequent amendments, the U.S. Environmental Protection Agency (USEPA) established the National Ambient Air Quality Standards (NAAQS) which establish the safe levels of exposure to seven (7) criteria air pollutants which include: ozone (O₃); carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); lead (Pb); particulate matter, 10 microns or less (PM₁₀); and particulate matter, 2.5 microns or less (PM_{2.5}). In addition to the criteria pollutants, the USEPA is also concerned with, and regulates, hazardous air pollutants (HAPs) and toxic air pollutants including: metals, nitrogen oxides (NO_x), and volatile organic compounds (VOCs) in accordance with CAA policies.

According to the Environmental Protection Agency Mid-Atlantic Air Protection website (<http://www.epa.gov/reg3airtd/airquality/airquality.htm>), Philadelphia County, Pennsylvania, is in non-attainment for PM_{2.5} and ozone (listed as “moderate”). Philadelphia County is in attainment for carbon monoxide, sulfur dioxide, PM₁₀, nitrogen dioxide, and lead. The Philadelphia Health Department (<http://www.phila.gov/health/AirManagement/>) administers air quality programs in the City. The proposed project does not require any air quality permits.

Construction would be the greatest potential source of emissions associated with the proposed project. The primary sources of air pollutant emissions would be exhaust emissions generated by construction equipment, commuter vehicles, and delivery trucks, as well as fugitive dust from clearing and site grading. Construction activities would occur over the course of less than six months. Operation of the proposed project would result in no emissions of criteria air pollutants or greenhouse gases from operation of the solar generating equipment itself, including the PV modules, inverters, switchgear, transformers, and conductors. Operation of the facility would result in minor emissions from personal and maintenance vehicles, limited delivery trucks, and limited equipment exhaust. However, there would be minor positive impacts to air quality from the proposed facility, since the energy it produces would presumably replace electricity produced by a fossil fuel power plant.

The burning of fossil fuels such as natural gas and coal emits carbon dioxide, which is a greenhouse gas. Greenhouse gases can trap heat in the atmosphere and have been associated with global climate change. The Intergovernmental Panel on Climate Change stated that warming of the earth's climate system is clear, and that most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in concentrations of greenhouse gases caused by human activities (IPCC 2007).

3.1.5 Noise

Noise is generally defined as an unwanted or objectionable sound resulting from volume and/or pitch. Noise levels are measured and expressed in decibels (dB) that are weighted to sounds perceivable by the human ear, known as A-weighted sound level (dBA). Decibels range from zero (0) to 180 and are measured on a logarithmic scale; thus, increasing the number of noise sources does not increase the volume in the same proportion. Over a specific time period, noise levels are averaged and expressed as the noise level equivalent for that period (dBA_{Leq}).

Sensitive noise receptors are generally defined as those locations or areas where dwelling units or other fixed, developed sites of frequent human use occur; however, sensitive noise receptors may also relate to wildlife environments. Resource data including statistics from the US Census (www.census.gov) and aerial photographs indicate that there are no potentially sensitive noise receptors located within the area of the proposed facility.

Currently, the dominant noise source within the vicinity of the proposed project is vehicular traffic and associated noise from the surrounding roadways, especially Interstate 95, which is located immediately north and bridges the proposed project site. Once implemented, the dominant noise originating from the proposed project would be associated with construction activity; however, once completed, there will be no noise generated beyond occasional vehicles there to maintain the site. The Philadelphia Code, Title 10. Regulation of Individual Conduct and Activity, Subsection 10-403 would apply to any noise created during construction.

Reference:

([http://www.amlegal.com/nxt/gateway.dll/Pennsylvania/philadelphia_pa/thephiladelphiacode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:philadelphia_pa](http://www.amlegal.com/nxt/gateway.dll/Pennsylvania/philadelphia_pa/thephiladelphiacode?f=templates$fn=default.htm$3.0$vid=amlegal:philadelphia_pa))

3.2 Cultural Resources

3.2.1 Visual Resources

The visual character of the area was evaluated for potential visual impacts relative to existing and proposed land use in the immediate vicinity of the Proposed Action. The area of visual

influence is determined by estimating the visibility of the proposed facility to viewers from public spaces, with special consideration given to visually sensitive features located in the immediate area.



The site of the Proposed Action is located along the western margin of Philadelphia Navy Yard. The subject property offers views of the surrounding roadways including Basin Bridge Road, S. 26th Street, the Girard Point Bridge, and Langley Avenue (Appendix 1).

Basin Bridge Road is a two (2) lane public road located within Philadelphia Navy Yard that runs north and south and is east of the project site. The road terminates at the intersection of Langley Road and turns into S 26th Street. The proposed facility would be visible from this intersection.

S. 26th Street is a two (2) lane public road that extends along the northeastern boundary of the project site and serves as access to the Philadelphia Navy Yard. The proposed facility would be visible from the intersection of S 26th Street and Langley Avenue.

The Girard Point Bridge is a four (4) lane public bridge that is part of I-95 and is located above the northwestern portion of the project. The proposed facility would be visible from the northern bound side of the Girard Point Bridge. The project site is not directly accessible from this road as it is a bridge over the Schuylkill River.

Langley Avenue is a two (2) lane public road that intersects Basin Bridge Road and S. 26th Street and borders the project site to the north. This road is the access point to the project and access for municipal activity. The proposed facility would be visible from Langley Avenue.

The area surrounding the proposed facility is industrial. Instead of a property used for storage, the area will be a clean, maintained facility with no scrub landscaping.

Vehicular traffic will increase during construction on S. 26th Street, and on a short portion of Langley Avenue into the proposed facility. The vehicles will be for green energy jobs created by the proposed project, as well as delivery vehicles during standard business hours. In addition, there will be construction equipment that is used during the installation that will be on location.

Overall, there are no anticipated visual impacts that would significantly affect nearby residents and users of the project area and surrounding areas as a result of the development of this project.

3.2.2 Archeological and Historic Resources

For the purpose of this EA, the term “archeological resources” refers to cemeteries and prehistoric or historic subsurface sites including buildings and structures that no longer exist. “Historic resources” refers to existing buildings, structures or objects, including historic districts.

Archeological Resources

Based on site research, as confirmed by a project review completed by the Bureau for Historic Preservation, no archeological resources are located onsite or within the immediate vicinity of the proposed project (Appendix 19); therefore, no adverse effect would be anticipated in the implementation of the proposed project. No mitigation of archeological resources would be necessary in conjunction with implementing the proposed project. The Archeological review of this site was originally done for entire vacant 19.1 acres of the property; therefore, the interconnection run across the northwest portion of the property will also have no anticipated adverse effect. Research also indicates that the connection line via the easement on the Tasty Baking property also extends through a highly disturbed area once used for container storage by the Navy (Appendix 15).

Historical Resources

There are three buildings currently located on the property and under the proposed project, all three would be demolished. Two of these buildings are eligible for the National Register of Historical Places. Conergy has approval, in the form of a letter from the PA SHPO (Appendix 3), for demolition of these buildings as there is no current or planned use of any of the structures, with appropriate mitigation through recordation of the buildings. In addition the documentation regarding the historical buildings is located in Appendix 4, within the application to PA SHPO. The third building has no historical reference and is approved to be demolished. Conergy would remove the buildings with a demolition company that would first test for any asbestos within the buildings then would demolish the buildings according to the plan located in Appendix 5. Any asbestos found would be remediated prior to demolition.

3.3 Socioeconomic Resources

3.3.1 Land Use

The proposed project is located in the Philadelphia Naval Business District within the former Philadelphia Navy Yard complex, south of the City of Philadelphia, Pennsylvania. The site of the Proposed Action is located along the western margin of Philadelphia Navy Yard. The

subject property offers views of the surrounding roadways including Basin Bridge Road, S. 26th Street, the Girard Point Bridge, and Langley Avenue, as well as being immediately east of the Schuylkill river.

The land use pattern beyond the boundaries and surrounding the proposed solar energy project site is primarily commercial/industrial. The proposed solar energy project is in the immediate vicinity of the Schuylkill River. The section of river nearest the project area is not an Audubon Pennsylvania-designated IBA, (see Section 3.1.3 for more discussion on IBA)

<http://iba.audubon.org/iba/viewState.do?state=US-PA>.

3.3.2 Planning Policies and Controls

The former Navy Base facility is in an area recommended in the September 2010 “An Industrial Land & Market Strategy for the City of Philadelphia” for designation as an Industrial Protection Area. These areas are explained as “vibrant, employment-rich industrial districts and corridors. Such areas should be protected and receive regulatory support and market certainty that land use policy will remain industrial”. This information was obtained from the City of Philadelphia Planning Commission Website: <http://www.philaplanning.org/>. Although the former Navy Yard is currently attracting new employers and business, the project site itself is a former military landfill, that is capped and therefore useable only for certain very limited purposes. A photovoltaic facility such as the proposed project, which does not disturb the cap, is a use of the site consistent with its limited development potential.

As previously discussed, both the Master Plan for the Navy Yard, and the Philadelphia City Planning Commission details the proposed protection and further industrial development of industrial use properties in existing industrial areas. As such, the development of the property will not result in the displacement of residents.

<http://citymaps.phila.gov/portal/>

3.3.3 Demographics and Environmental Justice

The 2000 U.S. Census provides the basis for analyzing the demographic composition of the area around the project site. Executive Order 12898 requires federal agencies to: 1) identify any disproportionately high and adverse effects on human health or human environment of minority and/or low income populations resulting from federal programs, policies, and activities, and 2) identify alternatives that may mitigate these impacts.

In the Census, persons are self-identified as belonging to one or more racial subgroups: White; Black or African-American; American Indian and Alaska Native; Asian; Native Hawaiian or Other Pacific Islander; or Other Race. The Census also enumerates persons of Hispanic or Latino origin who may be of any race. While race does not imply specific behavioral patterns, this information is useful in understanding the demographic setting and identifying environmental justice communities of concern.

Characterization of a group of persons as a potentially “affected community” requires the fulfillment of one of the three following criteria: 1) a minority population of the affected area that exceeds 50 percent 2) a low-income population based on the Bureau of Census Current Population reports; or 3) a minority population significantly greater than the minority population percentage in the general population, or other appropriate unit of geographic analysis.

Certain cultural, social, occupational, historical, or economic characteristics of an affected community may amplify the environmental effects of an action; a population may be more sensitive and less resilient in adapting to the effects of an action than other communities. The

distribution of the effects within a study area is important. Affected communities would be considered to experience high adverse impacts related to the action.

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

The 2000 US Census indicates that the City of Philadelphia population is 1,517,550, 25.3% of the population are children, 55% of the total population is classified as not white, 18.4% and 22.9% of families and individuals, respectively, are under the poverty level, and the city has a median household income of \$30,749 and the proposed project is located in US Census tract 005000, which has a recorded population of zero (0). The two Census tracts located nearest the proposed project are tract 005200, with a reported population of 1 white person, over the age of 18, over 100% of the poverty level and tract 0051000 with a reported population of 611 persons, 65% black or African American, 24.7% white, 5% Asian, 4.6% Other Race, 1.8% Latino. Of this, 12% are under the age of 18 and 14% are 100% below the poverty level.

The two adjacent Census tracts are not within sight of the proposed project, resulting in no visual impact or impact to property values, either positive or negative. No pathways or uses of resources that are unique to a minority or low-income community have been identified, nor have any disproportionately high adverse impacts on low-income and minority populations been identified. The project site would be fenced; preventing access to the site by the public, and operation of the site would not involve the use or release of harmful substances or create a public health and safety risk to these populations. Construction impacts from air emissions and noise would be minimized through compliance with the City of Philadelphia regulations resulting in no impact on minority or low-income populations in the areas adjacent to the project area. Lack of public access to the site, in addition to lack of hazardous substances during the operation of the proposed project would prevent disproportionate environmental risks and health risks to children. Both the US Census Bureau and the City of Philadelphia Planning Commission websites were consulted to verify this information: www.census.gov and www.philaplanning.org

3.4 Infrastructure

3.4.1 Roadways and Traffic

During the project construction phase, there would be a temporary increase in vehicular traffic on the local roads as described in section 3.2.1. This modest traffic increase would occur for a period of approximately six (6) months. No long-term or permanent impacts to the local transportation systems would occur as a result of this project, as this project requires only a short construction time.

3.4.2 Potable Water

The proposed facility would be located near a 12 inch water main serviced by of the City of Philadelphia municipal service pipeline that supplies Philadelphia Navy Yard. The City of Philadelphia draws its municipal water supply from the Schuylkill River. This service will be

used in case of an emergency for fire extinguishing and any other municipal uses. In accordance with local building codes, the municipal water supply is available for fire suppression.

3.4.3 Stormwater Management

Currently, the stormwater from this site runs into two manmade swales that were created during the initial BRAC plan implementation when the landfill portion of the site was capped. The construction of this proposed project would encompass one of those swales. The plan for the stormwater would be to keep the swale functioning the same way as it was prior to the proposed construction. A perforated pipe will be placed within the length of the swale, so that water can filter into it and drain fluently. A sand material will be put on top of the perforated pipe to filter the stormwater. The sand will be layered up to the top of the swale. On top of that sand would be an approved clean fill material that will be imported to build up the total of the site approximately six (6) to twelve (12) inches so as not disturb the existing cap.

The remaining portions of the construction area will be covered with the approved clean fill material, leaving the existing grade as an impervious surface, to maintain or improve upon the current site hydrology. The fill has been approved by Pennoni Associates (Civil Engineers) and also meets the clean fill requirements of PIDC. The gradation of the fill will allow the stormwater to flow across the property as it does pre-development.

As currently designed, the stormwater from the proposed project flows into one of two manmade drainage swales, which discharge to the tidal portion of the Schuylkill River and the Reserve Basin. The landfill cap was designed to direct drainage to these swales. The proposed project includes placement of six (6) to twelve (12) inches of clean fill to create a buffer to the cap and proper foundation support for the ballasts. The resulting grades will be similar to those existing and will maintain the site drainage patterns.

3.4.4 Sanitary Sewer

There is currently no sanitary sewer service to the site. During the construction phase portable restroom facilities would be provided for the workers and managed in accordance with applicable disposal requirements. After completion, during the operations phase, there is no need for sanitary sewer service.

3.4.5 Energy System

Natural Gas

A municipal natural gas service line extends from the south east corner of the site, runs across Basin Bridge Road, and extends along the road heading north. However, the proposed facility would not utilize natural gas and construction will not disturb the southeast corner of the property by the road, or the Basin Bridge Road surface.

Electricity

Currently there is no active electric service on the site. The closest active electric line is at the utility pole next to 26th Street just south of the entrance to the project site. This would be used to pull temporary electric service during the construction phase for use in the office trailer and for any electrical equipment necessary for the proposed installation (Appendix 23).

Four (4) electrical receptacles would be installed on the inverter pad of the proposed project. The electrical equipment that will be installed during construction of the solar facility will have a

life span of approximately 20 years after the installation is completed. Operation and Maintenance activities of the electrical system will be conducted for the duration of its life to maintain a safe and efficient system.

The interconnection point from the proposed PV installation to the Utility grid is northwest of the project site. A 13,200 Volt Medium Voltage electrical line would be run on top of the existing grade in conduit in a concrete duct bank and covered with the same fill as proposed for the capped portion of the installation. The electric line would run to the existing PECO electrical pole located on the Tasty Baking Company property and would be accessed via a property easement. This is where the photovoltaic plant will be interconnected to the PECO utility grid for distribution. The line in the easement will be approximately 664 ft in length and installed in a trench at a depth of 3 feet below grade, concrete encased and backfilled with topsoil.

3.4.6 Solid Waste

Conergy has classified three types of waste that would be generated during the demolition of the buildings and installation of the proposed PV system.

Demolition waste from the three current structures will be first tested for asbestos, polychlorinated biphenyls (PCBs) and hazardous waste. All items that are determined to be hazardous will be disposed of according to the current regulations. The concrete from the current buildings, if determined safe, will be broken up and placed into the sub levels of the current structures as described in Section 2.2 Construction and in Appendix 5.

The second type of waste would be recyclable components such as cardboard, wooden pallets, and excess installation supplies. These items would either be recycled via local commercial recycling services or, in the case of excess supplies, would be returned to the appropriate warehousing facility. Conergy is also investigating the opportunity to recycle parts of the buildings to local builders, if the components are found to not contain any hazardous or residual materials from past uses.

The third type of waste will consist of limited trash waste. This will consist of items similar to pallet straps, packing foam used for protection during shipping, and other shipping supplies. These types of items will be disposed of using a local trash hauling carrier, according to the local regulations.

All types of waste will be sorted onsite during the construction process and placed in separate containers for disposal according to the local city and state regulations.

3.4.7 Hazardous Materials

Limited volumes of hazardous materials may be used onsite in conjunction with facility construction. During construction all materials will be handled per the appropriate safety regulations and will be stored in approved containers. All materials on site will have manufacturer's instructions and cut sheets, as well as Material Safety and Data Sheets to go along with the material if it is considered potentially hazardous. Additionally, minimal volumes of hazardous materials are expected to be used onsite following construction in association with facility operation and maintenance. The proposed project does not include the storage, management, and/or treatment of hazardous materials.

It is not expected to find any forms of asbestos on the project site. However, if asbestos or any other hazardous material is found on the project site, in all situations it will be removed in such a manner to comply with the applicable federal, state, and local regulations.

Prior to demolition, the existing building will be checked for hazardous materials. If they are located, the items will be removed and contained by a licensed HAZMAT contractor and/or trained personnel in a manner that is consistent with applicable regulations. The items would then be transported by that licensed contractor in a manner that is consistent with applicable DOT regulations. And the contractor will proceed to dispose of the hazardous materials at an appropriate facility in accordance with applicable regulations.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Natural Resources

4.1.1 Water Resources

This section addresses surface water, floodplains and wetlands, and groundwater resources. It provides the information necessary to meet DOE's obligations under 10 C.F.R. Part 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements."

Alternative #1 – The Proposed Project

The NPDES application was reviewed by the City of Philadelphia and the PADEP and an NPDES Individual Permit Modification and Plan Revision for NPDES Permit Number PAS10-5312-R was issued on May 6, 2011 to PIDC. A man made swale is present on the site. The swale will be addressed in construction by placing a perforated pipe along the bottom of the swale and covering the swale with sand to act as a filter. The clean fill that will be brought to the site will then be placed on top of the sand. The design of the swale was such that there will be no alteration to the swales function (Appendix 10).

Wetlands, Surface Water, and Groundwater

In compliance with both the Clean Water Act and Pennsylvania's Clean Streams Law, there are no wetlands or streams within the proposed project site. Overall, the implementation of the proposed project, as designed, would not present a significant risk to the local surface or ground water resources.

Floodplains and Stormwater

Flood Insurance Rate Map (FIRM) #4207570189G, with an effective date of January 17, 2007, published by the FEMA for Philadelphia, Pennsylvania, was used to determine if the subject property is located within a floodplain. According to the FIRM document, the proposed facility is located within Zone AE and Zone X which corresponds to areas of base flood elevation determined to be 10 feet NAD 83 and areas of 0.2% annual chance flood (500 year flood), respectively. Zone X2 is also present which corresponds to areas outside the 0.2% annual chance flood. The inverters are not planned for installation in the 500 year flood area. The subject FIRM information is included in Appendix 11.

In compliance with both the Clean Water Act and Pennsylvania's Clean Streams Law, Conergy has determined that there are no wetlands or streams within the proposed project site (Appendix 9, 20). Although the subject property is largely vacant as a result of previous site activity, grading and general land disturbance associated with facility construction would increase the potential for soil loading into man-made drainage swales onsite with resulting impact to the Schuylkill River. Additionally, the operation of construction equipment onsite, with the associated need for fueling and maintenance, would provide a mechanism for potentially exposing peripheral water resources to petroleum and other chemical contaminants if released

accidentally. Based on the anticipated schedule, construction of the facility would require six (6) months for completion. Potential negative impacts to water resources associated with the implementation of the proposed project would be addressed through the application of the Pennsylvania Erosion and Sediment Control Handbook (1992) minimum standards, including the implementation of a site specific Erosion and Sediment Control (E&S) Plan and a Stormwater Pollution Prevention Plan (SWPPP). Potential impacts to groundwater resulting from surface spills would likewise be addressed by the SWPPP during construction.

PADEP has jurisdiction over stormwater permitting at the proposed site. PADEP requires that Conergy's proposed project be covered under the (general) NPDES permit following approval of a SWPPP by the PWD review. Conergy would conduct all construction activities following the practices detailed in the approved plan. Aside from the ballasting and inverter footprint of the proposed project, the majority of the site would remain surfaced with the existing combination of pervious and impervious material, thus having little impact on stormwater runoff. Because Conergy would create and implement the approved stormwater management and sediment control plan and SWPPP, the proposed project should have no impact on stormwater quantity or quality.

Because the proposed project would be located within the base floodplain, the proposed project location must be evaluated to determine if it is practical in light of its exposure to flood hazards, the extent to which it will aggravate the hazards of others, and the potential to disrupt floodplain values. Past coverage of the property by impermeable surfaces and the existing buildings has irretrievably disrupted the beneficial floodplain values. The project will not create additional increase of flooding for nearby properties, as those properties have been impacted by previous development of the property and development in the tidal flood plain does not impact flood elevations. In addition, a PADEP Chapter 105 permit application has been submitted which covers the work that will encroach on what the PADEP considers the floodway by policy. The FEMA Firmette Map is shown in Appendix 24.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed project would not be completed and the property would remain in its current condition with minimal improvements being implemented to effectively manage stormwater runoff and protect local water resources. Under this alternative, there would be no increased risk to water resources during the construction phase of the project. However, if the project were not implemented, in a major flood event there would not be additional fill protecting the landfill material from exposure to the river. In addition, the objectives of the SEP and Recovery Act would also not be advanced.

4.1.2 Geology, Topography and Soils

Alternative #1 – The Proposed Project

The proposed project, being implemented on top of the existing site within clean fill brought onto the site, would not affect the geology or soils on the site. The addition of clean fill, and its grading, would affect the topography of the site to allow for proper stormwater management. In the lease agreement with PIDC, Conergy is required to ensure that the existing cap will remain undisturbed. Thus, no grading will be done of existing fill, only the fill brought onsite to allow for better drainage of stormwater and proper leveling of panel ballasts.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed project would not be undertaken resulting in no effects to the geology, topography or soil currently occupying the subject property. Also, the objectives of the SEP and Recovery Act would not be advanced.

4.1.3 Vegetation and Wildlife

Alternative #1 – The Proposed Project

The implementation of the proposed project could result in temporary impacts to existing low-quality vegetation during grading and/or construction activity; however, any loss would be insignificant since the proposed project would include full restoration of any damaged areas. Following construction, the operation of the facility would result in no significant change to the existing conditions.

The proposed project would not adversely impact terrestrial wildlife and/or migratory birds, as construction would occur in a currently developed area that offers no critical habitat. No adverse impacts to terrestrial wildlife and/or migratory birds are anticipated from the operation of the facility based on proximity to existing roadways and the current/existing development within the surrounding area. Conergy is proposing using a crushed fill for the top portion of the ground installation. This will mean that no vegetation is planned on being planted. However, if planting does occur, it will only be native varieties to the area.

The proposed project's proximity to the PA endangered species Peregrine Falcon would be mitigated by Conergy following the requirements set forth by PGC for no construction to occur during the critical nesting season of March 1 through June 30. (Appendix 17)

The proposed project is neither: located in proximity to any wildlife preserves nor wilderness areas, thereby no impact to those resources would occur.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the current vegetation and wildlife features of the property would remain unchanged and the solar facility would not be constructed. Also, the objectives of the SEP and Recovery Act would not be advanced.

4.1.4 Air Quality

Alternative #1 – The Proposed Project

Construction would be the greatest potential source of emissions under the proposed project. The primary sources of air pollutant emissions would be exhaust emissions generated by construction equipment, exhaust emissions associated with commute vehicles and delivery trucks, as well as fugitive dust emissions from vegetation clearing and site grading. Construction activities would occur over the course of less than six months. In order to mitigate these impacts, appropriate measures would be implemented during construction activity, including proper engine tuning and the avoidance of unnecessary idling.

Short-term impacts to air quality would occur during construction of the project from construction equipment emissions, increases in local traffic, and the potential increase of fugitive dust when the site is disturbed. Use of construction equipment (i.e., diesel powered construction equipment, as well as delivery vehicles, employee vehicles, etc.) would emit particulate matter (PM10 and PM2.5) carbon monoxide (CO), volatile organic compounds (VOC), sulfur oxides (SOx), and nitrogen oxides (NOx). Use of mobile equipment and earthwork activities would result in fugitive dust emissions.

The project covers 8.1 acres and is scheduled to be built out over a <6-month period. Construction of the proposed project would involve removal of existing vegetation, grading, earthmoving, assembly, and erection of equipment and switchyard facilities. These activities would be staggered, such that different activities are occurring on different areas of the site at any given time. It is expected that the construction activities would result in periodic peak and lull periods of emissions based on the staggering of activities and associated equipment use over time. The source categories contributing to construction emissions include non-road engine exhaust (i.e., on-site construction equipment), construction-related fugitive dust, and mobile sources both on-site and off-site.

On-Site Construction Equipment Emissions

The tables below provide the expected emissions from use of construction equipment on-site. Emission factors were developed from EPA's NONROAD2008a model for construction emissions and conservatively assumed all diesel emission sources are Tier 0 engines. See *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling --Compression-Ignition, NR-009d* (EPA-420-R-10-018, July 2010) tables 4 through 7.

<http://www.epa.gov/oms/models/nonrdmdl/nonrdmdl2010/420r10018.pdf>

Construction emission factors are multiplied by expected hours of operation for each piece of equipment during the <6-month construction period. The hours of operation for construction equipment is conservatively based on a four week operational window at 5 five days per week and 12-hours per day. Total hours of operation used in the emission calculations are 240-hours per piece of equipment.

| Emission Factors Construction Equipment | | | | | | | | | |
|--|-------------|-----|-------------------|------------------|-------------------|---------------------|----------------------|-------------------|-------------------|
| Equipment | Description | HP | VOC lb/hr/unit | CO lb/hr/unit | NOx lb/hr/unit | PM-10 lb/hr/unit | PM-2.5 lb/hr/unit | SO2 lb/hr/unit | CO2 lb/hr/unit |
| Dump Truck | Diesel | 450 | 0.67 | 2.67 | 8.31 | 0.40 | 0.39 | 0.037 | 524.21 |
| Excavator (scrap shear, pneumatic hammer, bucket) | Diesel | 275 | 0.41 | 1.64 | 5.08 | 0.24 | 0.23 | 0.023 | 320.35 |
| Bulldozer | Diesel | 400 | 0.60 | 2.4 | 7.38 | 0.35 | 0.34 | 0.033 | 465.96 |
| Skid Steer | Diesel | 50 | 0.20 | 0.55 | 0.80 | 0.10 | 0.09 | 0.005 | 64.38 |
| Skid Loader | Diesel | 50 | 0.20 | 0.55 | 0.80 | 0.10 | 0.09 | 0.005 | 64.38 |
| Mini Excavator | Diesel | 50 | 0.20 | 0.55 | 0.80 | 0.10 | 0.09 | 0.005 | 64.38 |
| Backhoe | Diesel | 75 | 0.16 | 0.58 | 1.37 | 0.12 | 0.11 | 0.007 | 97.00 |

| Estimated Project Construction Equipment Emissions | | | | | | | | | |
|--|-----------------|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| Equipment | Number of Units | Hours of Operation per unit | VOC tons | CO tons | NOx tons | PM-10 tons | PM-2.5 tons | SO2 tons | CO2 tons |
| Dump Truck | 2 | 240 | 0.16 | 0.64 | 1.99 | 0.10 | 0.09 | 0.009 | 125.82 |
| Excavator (scrap shear, pneumatic hammer, bucket) | 2 | 240 | 0.09 | 0.39 | 1.22 | 0.06 | 0.06 | 0.006 | 76.88 |
| Bulldozer | 2 | 240 | 0.14 | 0.58 | 1.77 | 0.08 | 0.08 | 0.008 | 111.83 |
| Skid Steer | 2 | 240 | 0.05 | 0.13 | 0.19 | 0.02 | 0.02 | 0.001 | 15.45 |
| Skid Loader | 2 | 240 | 0.05 | 0.13 | 0.19 | 0.02 | 0.02 | 0.001 | 15.45 |
| Mini Excavator | 2 | 240 | 0.05 | 0.13 | 0.19 | 0.02 | 0.02 | 0.001 | 15.45 |
| Backhoe | 2 | 240 | 0.04 | 0.14 | 0.33 | 0.03 | 0.03 | 0.002 | 23.28 |
| <i>Construction Equipment Emissions</i> | | | <i>0.58</i> | <i>2.14</i> | <i>5.88</i> | <i>0.33</i> | <i>0.32</i> | <i>0.03</i> | <i>384.16</i> |

Construction-Related Fugitive Dust

Fugitive dust would be generated from site disturbance associated with construction and grading activities. Fugitive dust emissions would be lessened by the application of erosion and sedimentation control measures which would be utilized by the project and otherwise required by the NPDES permit including a rock construction entrance. Using an 8.1 acre construction area, a total suspended particulate (TSP) construction emission factor of 1.2 ton/acre (AP-42 Chapter 13.2.3 Heavy Construction Operations) and a PM10/TSP ratio of 0.306 (developed from data in AP-42 Chapter 13.2.2 Unpaved Roads), emissions of PM10 from fugitive dust generated by construction activities such as grading are estimated to be 2.97 tons for the project. The construction activity would be distributed throughout the project site over several months which would limit concentrations and durations of emissions at any localized point in the vicinity of the Project.

Mobile Sources

Air emissions from mobile sources would be generated from workers and delivery vehicles commuting to and from the Project during construction. Commuter and delivery vehicles would generate tailpipe emissions of VOC, NOx, PM, CO, SO₂, and CO₂ in similar quantities to other vehicles in the area travelling local roads. EPA's Motor Vehicle Emission Simulator (MOVES2010) vehicle emissions model was used to generate emission factors for various types of on-road motor vehicles (in pounds per vehicle mile traveled (lb/VMT)). Output data from the model for light-duty gasoline vehicle (passenger cars) and heavy-duty diesel truck (material/equipment delivery trucks) data were used to calculate the emissions. The longest round-trip distance that delivery trucks or commuter vehicles traveled was estimated to be 65 miles (32.5 miles one way). Also, to be further conservative and to cover both deliveries and workers, it was assumed that 250 round trips were generated for material/equipment delivery vehicles and 2,400 round trips (120 days * 20 vehicles) for Project worker commuter vehicles. The MOVES2010 emission factors for employee commuter and delivery truck traffic were applied to the estimated VMT to quantify the CO₂ and criteria pollutant emissions from on-road mobile sources. A summary of the emissions from on-road mobile sources is provided below.

| Estimated Project Mobile Emissions | |
|---|---------------------------------------|
| Vehicle Type | Vehicle Miles Traveled (VMT) |
| Light Duty Vehicles | 156,000 (2,400 trips * 65 miles/trip) |
| Heavy Duty Vehicles | 16,250 (250 trips * 65 miles/trip) |
| | |
| Pollutant | Tons |
| VOC | 0.11 |
| CO | 0.97 |
| NOx | 0.47 |
| PM-10 | 0.64 |
| SO2 | 0.03 |
| CO2 | 120.10 |

Total Construction Emissions

Based on the calculations outlined above, the total emissions that are expected to result from the construction of the Project are summarized in the table below.

| Total Project Construction Emissions | |
|---|--------|
| Pollutant | Tons |
| VOC | 0.69 |
| CO | 3.11 |
| NOx | 6.35 |
| PM-10 | 3.94 |
| SO2 | 0.06 |
| CO2 | 504.26 |

Operation of the proposed project would result in no emissions of criteria air pollutants or greenhouse gases from operation of the solar generating equipment itself, including the PV modules, inverters, switchgear, transformers, substation, and conductors. Operation of the facility would result in minor emissions from occasional personal and maintenance vehicles, limited delivery trucks, and limited equipment exhaust.

The generation of electricity through the use of emission-free PV arrays is expected to have a net beneficial impact on the emission of combustion-related pollutants. The proposed project would generate approximately 1,596 megawatt hours per year, which would offset greenhouse gases as follows: approximately 1.6 million pounds of CO₂, 2,361 pounds of NO_x and 12,385 pounds of SO_x and other emissions from the use of fossil fuels to generate electricity. This information is generated using PVSyst, the USEPA Power Profiler, and several environmental calculators, including American Clean Energy Environmental benefits calculator: <http://amcleanenergy.com/about-solar/solar-myths-facts>

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed project would not be implemented and the corresponding potential air impacts would not occur. However, failure to construct a solar

manufacturing facility within Metropolitan Philadelphia, Pennsylvania could result in a minimal negative effect on regional air quality. The No Action Alternative would promote the continued use of coal for electricity generation. On March 16, 2011, the EPA stated that power plants are the single largest emitters of mercury to the air. In its notice, the EPA stated in its fact sheet “Proposed Mercury and Air Toxics Standards” (<http://www.epa.gov/airquality/powerplanttoxics/actions.html>) Its desire to reduce HAPs from power plants, specifically those fueled by coal. The proposed project would help achieve that objective. Also, the objectives of the SEP and Recovery Act would not be advanced.

4.1.5 Noise

Alternative #1 – The Proposed Project

As discussed in Section 3.1.5, the implementation of the proposed project would initially result in noise associated with construction. According to the Laborers Health and Safety Fund of North America, most pieces of heavy earth moving equipment operate at 90 dB or below. Given that no more than three pieces of heavy equipment are expected to be operating at any time during construction, the cumulative level of construction site noise onsite should range between 90 dB and 100 dB and rapidly diminish with increasing distance from the limits of disturbance. Upon completion, the operation generates no noise. Compliance with the Philadelphia Code by Conergy and its contractor and lack of sensitive noise receptors should ensure no negative impacts from noise.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed project would not be implemented and no corresponding potential noise impacts would occur. Also, the objectives of the SEP and Recovery Act would not be advanced.

4.2 Cultural Resources

4.2.1 Visual Resources

Alternative #1 – The Proposed Project

Visual impacts are determined by analyzing the existing quality of a view, the sensitivity of a view (as related to important historic and/or cultural sites), and the relationship of the mass and scale of the proposed facility to the existing visual environment. As related to the proposed project, visual impacts can be characterized as follows:

- No visual Impact – occurs when the proposed alterations would not be visible;
- Minor visual impact – occurs when the proposed alterations would be visible but would not interfere with views and would not change the character of the existing views;
- Moderate visual impact – occurs when the proposed alterations would be visible and would interfere with existing views but would not change the character of the existing views;
- Major visual impact – occurs when the proposed alterations would be visible as a contrasting or dominant element that interferes with views and substantially changes the character of the existing views;
- Positive visual impact – occurs when the proposed alterations would improve a view or visual appearance of an area.

As per the inquiry requested of the PHMC site research indicates that overall, there are no anticipated visual impacts from the proposed project that would affect any remaining buildings determined eligible for the National Register of Historic Places, nor are there any nearby

residents to affect as a result of the development of this project. The buildings on site that were deemed historic by the PHMC will be permitted to be demolished as long as a proper recordation sequence is executed.

Therefore, based on current property usage, implementation of the proposed project would present an overall positive visual impact to the surrounding area. The current property contains unkempt plants, trees and buildings, whereas the proposed facility would be maintained properly. Each part of the project was selected with the intent for the project to be aesthetically pleasing and to improve the visual perspective of this area. The mitigation of visual resources in conjunction with project implementation would not be necessary.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed facility would not be constructed and the visual character of the site and surrounding area would remain in its current state. Also, the objectives of the SEP and Recovery Act would not be advanced.

4.2.2 Archeological and Historic Resources

Alternative #1 – The Proposed Project

Based on site research, as confirmed by a project review completed by the Bureau for Historic Preservation, no archeological resources are located onsite or within the immediate vicinity of the proposed project (Appendix 19); therefore, no adverse effect would be anticipated in the implementation of the proposed project. No mitigation of archeological resources would be necessary in conjunction with implementing the proposed project.

The review by the PA SHPO allows for Conergy to remove the two buildings deemed “contributing” to the Philadelphia Naval Ship Yard Historic District, with appropriate mitigation through recordation of the buildings. The involved parties are developing a Memorandum of Agreement to document the requirement of recordation. The recordation of the buildings allows for documentation, which would not occur if the structures were allowed to continue to deteriorate because of the weather and natural conditions.

Alternative #2 – No Action Alternative

Based on the absence of archeological resources within the immediate vicinity of the project site, the No Action Alternative does not have an effect that differs from that of the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

Under the No Action Alternative, the existing historic buildings would remain in place and continue to deteriorate due to weather conditions until such time that they would become a safety hazard and need to be demolished. The PHMC has agreed that there is no adaptive reuse possible for these buildings.. In addition, the past use of the buildings would not lend easily to alternative uses, especially for the incinerator building located at the southern end of the property.

4.3 Socioeconomic Resources

4.3.1 Land Use

Alternative #1 – The Proposed Project

Implementing the proposed project would not introduce a use of the subject property that deviates from its current zoning classification.

Alternative #2 – No Action Alternative

The No Action Alternative would not have an effect that differs from that of the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

4.3.2 Planning Policies and Controls

Alternative #1 - The Proposed Project

Implementing the proposed project would neither result in property development that is contrary to the planning policies and controls detailed by the most recent Navy Yard Master Plan nor plans outlined by the Philadelphia City Planning Commission.

Alternative #2 – No Action Alternative

The No Action Alternative would not have an effect that differs from that of the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

4.3.3 Demographics and Environmental Justice

Alternative #1 - The Proposed Project

The proposed project is isolated from residential properties and/or areas of proposed residential development. Furthermore, the site is currently zoned/used for light industrial purposes, which is consistent with the proposed project. Therefore implementation of the proposed project would not result in disproportionately high and adverse effects on human health or human environment of minority and/or low income populations.

Alternative #2 – No Action Alternative

Based on the current zoning and use of the subject property, the No Action Alternative would not have an effect that differs from the results of implementing the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4 Infrastructure

4.4.1 Roadways and Traffic

Alternative #1 – The Proposed Project

Minimal roadway and traffic impacts are expected to occur during facility construction since the Navy Yard is adjacent to I-95 and the entire Navy Yard site is zoned industrial. The volume of truck traffic would only increase during the construction phase of the project; any increases in traffic volume are anticipated to have a minimal overall effect. Equipment deliveries include approximately 10 deliveries of modules, five deliveries of racking, one delivery of inverters, one delivery of transformers, and four separate deliveries of the electrical switchgear and equipment. The fill material will be delivered on an as needed basis and will be approximately a total of 75 deliveries. There will be approximately 100 deliveries of the concrete ballast blocks due to the size and weight of that equipment. Approximately two deliveries of electrical wiring will be delivered per week during the middle two months of construction. Any equipment that will not be immediately used will be stored in a safe and protected area on site.

As the upgrading and/or extension of the utility service connections will occur through an easement on an adjacent property there are no anticipated disruptions of local traffic patterns.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the current roadway and traffic conditions in the vicinity of the proposed facility would remain unchanged. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4.2 Potable Water**Alternative #1 – The Proposed Project**

The proposed project does not require potable water for operations. Therefore there will be no impact on potable water utilities.

Alternative #2 – No Action Alternative

The No Action Alternative would not have an effect that differs from that of the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4.3 Stormwater Management**Alternative #1 - The Proposed Project**

A NPDES Individual Permit Modification and Plan Revision for NPDES Permit Number PAS10-5312-R was issued on May 6, 2011, from the PADEP to the PIDC. This approved the Erosion and Sedimentation Control Plan for discharge of stormwater from the construction activities of the proposed project on what the original permit refers to as Parcels 2 and 10 of the Philadelphia Navy Yard. A man made swale is present on the site. The swale will be addressed in construction by placing a perforated pipe along the bottom of the swale and covering the swale with sand to act as a filter. The clean fill that will be brought to the site will then be placed on top of the sand. The design of the swale was such that there will be no alteration to the swale's function (Appendix 10). For additional information about the stormwater management plans, please see Section 3.1.1 Stormwater.

An approved Erosion and Sediment Pollution Control Plan, in compliance with NPDES, would be implemented before, during, and following construction activities. On-site quality assurance inspectors would ensure that the erosion and sediment pollution control measures are implemented and properly installed and maintained.

During construction, the following measures will be used to manage the stormwater: filter socks, sediment fence, and inlet protection. The filter socks and or sediment fence would be installed around the entire perimeter of the project site, with additional socks/fence installed around any fill stock piles, concrete pads, and along the perimeter of the swales. The appropriate type of filter sock would be used and maintained according to the erosion and sediment control details located on the approved civil engineering plans for the project. These would be installed and maintained throughout construction of the project until final approval is obtained from the City of Philadelphia/PADEP for removal of the sock/fence.

Inlet protection would include temporary filter bags installed in all inlets which require erosion and sediment filtering. These bags will be installed by lifting the inlet grate and installing a one inch rebar around the bag for easy removal and maintenance during construction and upon final approval. Inlet protection is not required for an inlet tributary to a sediment basin or trap.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the proposed project would not be completed and the property would remain in its current condition with minimal improvements being implemented to effectively manage stormwater runoff and protect local water resources.

4.4.4 Sanitary Sewer**Alternative #1 – The Proposed Project**

There is no sanitary sewer service to the site, and portable restroom facilities would be managed in accordance with applicable laws. Therefore there would be no negative impact to sanitary sewer from the proposed project.

Alternative #2 – No Action Alternative

The No Action Alternative would not have an effect that differs from that of the proposed project. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4.5 Energy System**Alternative #1 – The Proposed Project**

The proposed project would install an electrical service to the site. Currently there is no active service installed. The new electrical service would interconnect at an existing electrical line at a PECO pole located on the Tasty Baking property. This electrical line will then be trenched through the Tasty Baking property and extend in conduit 644 feet on grade with fill over to the point where it will be integrated with the medium voltage run from the project inverter and switchgear.

Alternative #2 – No Action Alternative

Under the No Action Alternative, there would continue to be no electric service to the site would remain in its current configuration. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4.6 Solid Waste**Alternative #1 – The Proposed Project**

During implementation of the proposed project, the generation of solid waste, as demolition debris and predominately recyclable materials, could present potential negative environmental effects as a result of exposure to precipitation events and the subsequent generation of impacted stormwater runoff. Once operational, the facility would generate no waste. During facility construction, solid waste debris would be segregated and appropriately staged, pending removal from the site for disposal, with appropriate measures implemented, as necessary, to prevent exposure to precipitation events and/or the generation of runoff. Following construction, facility operations would not require solid waste mitigation procedures as all imported solid waste material would be processed within a contained environment.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the site of the proposed project would remain unchanged. However, the objectives of the SEP and Recovery Act would not be advanced.

4.4.7 Hazardous Materials

Alternative #1 – The Proposed Project

Limited volumes of hazardous materials such as including lubricants and fuel for construction vehicles may be used onsite in conjunction with facility construction. The proposed project does not include the storage, management, and/or treatment of hazardous materials. However, during the demolition phase of the project, asbestos materials or PCB containing light ballasts may be encountered, which would be removed prior to demolition.

Accordingly, the construction site would be required to accommodate the temporary storage of hazardous material(s), in accordance with USEPA, PADEP and City of Philadelphia regulations.

The storage of all hazardous materials during construction must be compliant with applicable local state and/or federal regulations. Furthermore, the accumulation, handling, containment, transport, treatment and/or disposal of hazardous wastes (if any) generated during construction would be: 1) segregated to reduce hazardous waste volumes to be managed; 2) contained by a licensed HAZMAT contractor and/or trained personnel in a manner that is consistent with applicable regulations; 3) transported by a licensed HAZMAT contractor in a manner that is consistent with applicable DOT regulations; and 4) disposed of at an appropriate facility in accordance with applicable regulations.

Once the project would be completed, there is no use, storage or generation of hazardous materials or wastes during the operation of the project.

Alternative #2 – No Action Alternative

Under the No Action Alternative, the site would remain in its current state which includes potential for environmental interaction with hazardous materials and/or waste only if the landfill cap and or cover materials are disturbed. However, the objectives of the SEP and Recovery Act would not be advanced.

5.0 CUMULATIVE IMPACTS

Per CEQ Regulations (40 CFR 1508.7):

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The proposed project poses the greatest potential to impact stormwater/floodplains, threatened and endangered species, air quality, historic resources, energy and waste. Cumulative impacts of each of these are examined here.

Stormwater impacts during and following construction are subject to an NPDES permit to be issued by PADEP. In issuing a NPDES permit for the proposed project, PADEP will ensure that the discharge of stormwater from the project site will not impact the receiving waters.

With respect to floodplain issues, Executive Order (EO) 11988 (Floodplain Management) requires Federal agencies to minimize occupancy or modification to the floodplain. As indicated on the FIRM map, the project area is located within the zone designated as a special flood

hazard area inundated by the 100-year flood; base flood elevations have been determined. In addition, PADEP regulations, including those under Chapter 105 and Chapter 106 are currently in place to prevent unacceptable impacts from developments to floodplains. As set forth in Section 3.1, the impact from the project is negligible. Adding approximately 200 cy of fill to the PADEP defined floodway, and less than 2,500 cy of total fill to the floodplain will have a very minor impact on the Schuylkill River's total tidal floodplain capacity in this area. Construction activities occurring in the 100-year floodplain would be temporary, and will result in a minor alteration of the existing grade and contours within the affected area. The proposed project's design was selected to minimize the amount of fill needed to bring portions of the site to level, thus minimizing potential harm to and within the floodplain. Additional fill on the existing cap of the onsite landfill will help to protect the watershed from the results of cap erosion, and PADEP requirements under the NPDES and Chapter 105 permits will ensure future monitoring, maintenance, and repair of any damage to the property that may expose landfilled materials. Existing PADEP floodplain regulations should ensure that impacts to unrelated future projects will also be insignificant. No projects currently proposed in the area will add to cumulative impacts to the floodplain.

As stated above, the tidal floodplain is not affected by filling and development, so this Project and others at the Navy Yard would have no impact on the floodplain. Past development at the Navy Yard has generally included increases in impervious surface and resulting runoff quantity and quality. The proposed development, which would maintain or possibly improve the site hydrology, would not add to the cumulative effects.

The identified PA Endangered Species, under state regulations, is required to be protected during nesting season for construction occurring in all but emergency circumstances. In the past, this species had been displaced by human development but has been adapting to urban settings. Presently the Girard Point Bridge, immediately north and bridging the site, has been undergoing preservation since 2009 through Recovery Act funding through the PA DOT. That project also had to address avoidance of the falcon whose nest has continued to be located on pier 26. The work on the proposed project outside the critical nesting season should have little to no impact on the falcon.

As for air quality and energy impacts, regionally, implementing the proposed project would incrementally and cumulatively result in a positive environmental impact to the Metropolitan Philadelphia area primarily by providing an alternative energy source that would produce less Green House Gas (GHG) emissions.

Historic resources at the Navy Yard have been undergoing remodeling and restoration for a number of years. The removal of the two "contributing" structures actually allows for the full recordation of the buildings and the elimination of continued deterioration of structures whose proximity, size and configuration do not lend themselves to any other options.

The waste impacts would only occur during the construction phase and are very minimal, as much of the materials would actually be recycled.

Overall, implementing the proposed project would offer beneficial impacts to the subject property and the immediate area within the vicinity of Philadelphia Navy Yard visually by property cleanup. A blighted property would detract from the overall appearance of the Navy Yard to potential redevelopers of adjacent sites. The solar panels will be a visual boost to what is now a former industrial site with decaying buildings. All of the material that will be brought in

as fill will be neatly graded and all solar panels will be lined neatly as to make the site aesthetically pleasing.

Furthermore, the construction of a solar photovoltaic facility would benefit the Philadelphia economy by creating green jobs, and assisting in electricity production, to reduce grid parity in the Philadelphia area.

6.0 PUBLIC COMMENT

DOE will hold a fifteen (15) day public comment period that will be initiated by the publication of a legal notice in the Philadelphia Inquirer and Philadelphia Daily News. The advertisement invited the public to review the document at two (2) local branches of the Philadelphia Free Library; the Thomas F. Donatucci, Sr. Branch, located at 1935 Shunk Street (20th & Shunk Sts.) Philadelphia, PA 19145-4234, and the Whitman Branch, located at 200 Snyder Avenue, (2nd St. & Snyder Ave.) Philadelphia, PA 19148-2620.

All comments should be directed to DOE with the following contact information:

Mr. Cliff Whyte
US Department of Energy
P.O. Box 880
Morgantown, WV 26507-0880

Email : cliff.whyte@netl.doe.gov
Fax : (304)-285-4403

All comments should include "Conergy EA" in the subject line.

In conjunction with the public comment period, copies of the Draft EA will be forwarded to the DEP, PHMC, and USFWS.

7.0 LIST OF PREPARERS

Conergy Projects, Inc.
101 Lindenwood Drive, Suite 130
Malvern, PA 19355
Peter Hartenstine Project Manager, East Coast. BS Civil Engineering, 4 years professional experience
Lynette Ottinger Executive Assistant and Grant Administrator. BS Business Operations and Information Systems Management, 5 years professional experience

Pennoni
3001 Market Street
2nd Floor, Philadelphia, PA 19104
(215) 222-3000
Patrick Foley PE, Project Engineer. BS Civil Engineering
Tom Friese PE, Senior Engineer and Manager. BAE Architectural Engineering, MS Civil Engineering, 26 years professional experience

Manko, Gold, Katcher and Fox, L.L.C.
401 City Avenue, Suite 500
BalaCynwyd, PA 19004

Jonathan Rinde BA, SUNY Binghamton, 1979, Masters of Regional Planning, University of Michigan, 1981, JD, Temple University, 1989, 7 year's experience as an environmental consultant, 20 year's experience as a lawyer
Michael Nines BS Civil Engineering 12 years professional experience

Pennsylvania Department of Environmental Protection (PADEP)
Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401-4915
Heather Cowley, Regional Energy Manager. BS Environmental Science, 17 years professional experience

8.0 AGENCIES AND PERSONS CONSULTED

Pennsylvania Historic and Museum Commission (PHMC)
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Philadelphia Industrial Development Corporation (PIDC)
2600 Centre Square West
1500 Market Street
Philadelphia PA 19102

Pennsylvania Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Ave
Harrisburg, PA 17110-9797

Pennsylvania Fish and Boat Commission
1601 Elmerton Ave
Harrisburg, PA 17110-9797

U.S. Fish and Wildlife Service
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, PA 16801

PA Historical and Museum Commission
State Museum Building
300 North Street
Harrisburg, PA 17120

Pennsylvania Department of Conservation and Natural Resources
 Bureau of Forestry
 Ecological Services Section
 400 Market St.
 PO Box 8552
 Harrisburg, PA 17105-8552

FEMA Region III – DC, DE, MD, PA, VA, WV

Ms. Catharine McManus
 Regional Environmental Officer
 DHS/FEMA Region III
 615 Chestnut Street
 One Independence Mall, 6th Floor
 Philadelphia, PA 19106-4404
 Phone: 215-931-5510
 Fax: 215-931-5501
 Email: kate.mcmanus@dhs.gov
 Website: www.fema.gov/about/regions/regioniii

Delaware River Basin Commission

www.drbc.net

The Commission is interested in projects affecting water quantity, water quality, aquatic communities, or habitat within the Delaware River Basin.

Ms. Carol R. Collier
 Executive Director
 Delaware River Basin Commission
 PO Box 7360
 25 State Police Drive
 West Trenton, NJ 08628-0360
 Phone: 609-883-9500 (ext. 200)
 Fax: 609-883-9522
 Email: carol.collier@drbc.state.nj.us

Environmental Protection Agency (cont.)

EPA Region 3 – DC, DE, MD, PA, VA, WV

Ms. Barbara Rudnick
 NEPA Program Team Leader
 Environmental Protection Agency
 1650 Arch Street, 3EA30
 Philadelphia, PA 19103
 Phone: 215-814-3322
 Fax: 215-814-2783
 Email: rudnick.barbara@epa.gov
 Website: www.epa.gov/region3

9.0 REFERENCES

Berg, T. M., Edmunds, W.E., Geyer, A. R. and others, *Geologic map of Pennsylvania*, 2nd ed., 1980. Scale 1:250,000 Accessed additionally online via PA Department of Conservation and Natural Resources <http://www.dcnr.state.pa.us/topogeo/pub/map.aspx>

Census (U.S. Census Bureau) 2000. *American FactFinder, Decennial Census, Summary File 1 & Summary File 3*, accessed through <http://factfinder.census.gov>

2000. US Census Bureau American FactFinder. Demographic Profile Highlights. Geographic areas: Census tracts 50, 51, and 52, Philadelphia County, Pennsylvania. Internet Web site: http://factfinder.census.gov/servlet/SAFFacts?_event=&geo_id=05000

EIA (Energy Information Administration) 2008. "U.S. Greenhouse Gas Emissions Increased by 1.4 Percent in 2007," accessed through <http://www.eia.doe.gov/neic/press/press310.html>, December 3.

FEMA (Federal Emergency Management Agency) 2008. Flood Insurance Rate Map for Philadelphia County and Incorporated Areas Panel 189 of 230, Map Number #4207570189G, National Flood Insurance Program, effective date [January 17, 2007]

IPCC (Intergovernmental Panel on Climate Change) 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. <http://www.ipcc.ch/ipccreports/ar4-wg1.htm>

NRCS (Natural Resources Conservation Service) 2010. *U.S. Department of Agriculture, Natural Resources Conservation Service. National Soil Survey Handbook, Title 430-VI*. Available online at: <http://soils.usda.gov/technical/handbook/>

United States Department of Agriculture, 2010. Natural Resources Conservation Service, Web Soil Survey 2.2, National Cooperative Soil Survey, Philadelphia Pennsylvania <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

US Department of Energy (DOE). 2004. Recommendations for the Preparation of Environmental Assessment and Environmental Impact Statements, Second Edition. December 2004. Web site: http://nepa.energy.gov/documents/green_book2004_12_30_final.pdf.

2008. Environmental Justice Strategy. May 2008. Internet Web site: http://nepa.energy.gov/documents/EJ_Strategy_05_08.pdf.

2010. *Environmental Assessment for DOE's Proposed Financial Assistance to Pennsylvania for Frey Farm Landfill Wind Energy Project, Manor Township, Lancaster, PA*. EA-1737. Available online: <http://nepa.energy.gov/1289.htm>

USEPA (U.S. Environmental Protection Agency) 2010. *National Ambient Air Quality Standards (NAAQS)*, accessed through <http://www.epa.gov/air/criteria.html>

2010. *Currently Designated Nonattainment Areas for All Criteria Pollutants*, accessed through <http://www.epa.gov/air/oagps/greenbk/ancl.html>

2009. Mid-Atlantic 8-Hour Ozone Non-Attainment and Maintenance Areas, http://epa.gov/reg3artd/airquality/ozone8hrmaintareas_2.htm

2011. Reducing Toxic Air Emissions from Power Plants, Accessed online
<http://www.epa.gov/airquality/powerplanttoxics/actions.html>

USFWS (U.S. Fish and Wildlife Service) 2009. *View Wetlands Data with Google Earth*,
accessed through <http://www.fws.gov/wetlands/Data/GoogleEarth.html>

1990, revised 2007. Geologic Map of Pennsylvania, accessed through
<http://www.dcnr.state.pa.us/topogeo/maps/map7.pdf>

PV Watts, Accessed online
<http://rredc.nrel.gov/solar/calculators/PVWATTS/version1/US/Pennsylvania/Philadelphia.html>

Power Profiler. United States Environmental Protection Agency, Accessed online
<http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html>

All reference material was accessed between March 9, 2011 and April 21, 2011.