Environmental Assessment Solar Power Energy Farm

March 2022

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ACHP	Advisory Council on Historic Preservation
AFI	Air Force Instruction
AFFF	Aqueous film forming foam (AFFF)
AFMAN	Air Force Manual
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
APZ	Accident Potential Zones
ATCT	Air Traffic Control Tower
BASH	Bird/Wildlife Aircraft Strike Hazard
BGS	Below Ground Surface
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
CZ	Clear Zones
DAFB	Dover Air Force Base
DCMP	Delaware Coastal Management Program
DNA	Deoxyribonucleic Acid

DNERR	Delaware National Estuarine Research Reserve
DNHI	Delaware National Heritage Inventory
DNREC	Delaware Natural Resources and Environmental Control
DOD	Department of Defense
DODI	Department of Defense Instructions
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EM	Engineer Manuals
EO	Executive Orders
ESA	Endangered Species Act
ESS	Electrical Substation
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ICRMP	Integrated Cultural Resources Management Plan
IL	Limited Industrial District
IPAC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Registry of Historic Places
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Per-and Polyfluoroalkyl Substances
PM2.5	Particulate Matter 2.5 micrometers or smaller
PM10	Particulate Matter 10 micrometers or smaller
PNNL	Pacific Northwest National Laboratory
PV	Photovoltaic
QD Arcs	Quantity-Distance Arcs
RCRA	Resource Conservation Recovery Act
SGHAT	Solar Glare Hazard Analysis Tool
SHPO	Delaware State Historic Preservation Office
SOW	Scope of Work
SOx	Sulfur Oxides
U.S.C	United States Code
USACE	U.S. Army Corps of Engineers
USAF	The United States Air Force
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
VL	Vacant Lot (Preferred Alternative; located northwest of the base recycling center [Building 65])

1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

This Environmental Assessment (EA) has been prepared to evaluate the potential environmental impacts associated with the Proposed Action - redeveloping a portion of government-owned land into a solar power energy farm (solar farm) at Dover Air Force Base (DAFB). As the project is located on lands administrated by the Department of Defense (DOD), it is subject to the provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (U.S.C.) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) regulations, Title 40, Code of Federal Regulations (CFR) 1500-1508 (CEQ 2005) and 32 CFR 989 Environmental Impact Analysis Process (EIAP). Note that the CEQ regulations have recently changed (Final Rule dated July 16th, 2020). As the Scope of Work (SOW) for this EA is dated March 20, 2020, this document follows the regulations that were in force on the SOW date.

DAFB is located in Dover, Delaware and spans an area just under 7,000 acres (Figure 1). The base opened on December 17, 1941, in response to the attack on Pearl Harbor. DAFB is home to the DOD's largest aerial port. Other notable facilities on base include a deoxyribonucleic acid (DNA) identification laboratory and mortuary.

1.2 Purpose and Need of the Proposed Action

The need for the Proposed Action is to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. The purpose of the Proposed Action is to increase DAFB's energy security and reduce the purchase of commercially generated electrical power. DAFB proposes to meet this objective by redeveloping a portion of base-owned land into a solar farm.

1.3 Decision to be Made

After analysis of the EA, DAFB and the U.S. Army Corps of Engineers (USACE), Philadelphia District, will select one of the following options to proceed:

- Select the alternative that best addresses the purpose and need, and implement this alternative through authorization of a Finding of No Significant Impact (FONSI);
- Determine that further environmental impact analysis is required and develop an Environmental Impact Statement (EIS);
- Reject the Proposed Action through selection of the No Action Alternative.

1.4 Summary of Environmental Requirements

1.4.1 National Environmental Policy Act

NEPA (42 U.S.C 4321-4347) was passed in 1970 and requires federal agencies to analyze the environmental impacts of their Proposed Actions before implementation. This law helps protect environmental resources within lands owned and administered by the federal government. Under NEPA, the CEQ was established with the intent of overseeing the NEPA process and enforcing regulations. Provisions to NEPA (40 CFR 1500-1508) were developed by the CEQ to provide further guidance.

As this project is located on lands administrated by the DOD, it is subject to the NEPA process. The United States Air Force (USAF) has interpreted NEPA and developed supplemental environmental guidelines, detailed in Air Force Instruction (AFI) 32-7061, which were consulted in this EA.

1.4.2 Additional Environmental Statutes and Regulations

Several laws, standards, and guidance documents were consulted in preparation of this EA. The following is a list of resources derived from AFIs, Executive Orders (EOs), Acts, Air Force Manuals (AFMANs), Engineer Manuals (EMs), CFRs, Department of Defense Instructions (DODIs), and Technical Orders applicable to the Proposed Action:

- 42 U.S.C. 4321 et seq., NEPA;
- 33 U.S.C., 1251 et seq., Clean Water Act (CWA);
- 42 U.S.C., 7401 et seq., Clean Air Act (CAA) (1963, amended in 1990);
- 7 U.S.C. 136, 16 U.S.C. 1531 et seq., Endangered Species Act (ESA);
- 16 U.S.C. 703 et seq., Migratory Bird Treaty Act (MBTA);
- 42 U.S.C. 6901 et seq., Resource Conservation Recovery Act (RCRA);
- 29 CFR, Occupational Safety and Health Standards;
- 32 CFR 989, EIAP;
- 40 CFR 93.153, Air Conformity Determination;
- 40 CFR 1500 through 1508, CEQ NEPA regulations;
- 54 U.S.C. 300101 et seq., National Historic Preservation Act (NHPA);
- EOs 11988 and 11990, Floodplain Management and Protection of Wetlands;
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations;
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks;
- EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management;
- EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance;
- EO 13175, Consultation and Coordination with Indian Tribal Governments;
- AFI 11-202, General Flight Rules;
- AFI 13-201, Airspace Management;
- AFI 13-212, Range Planning and Operations;
- AFI 32-7062, Air Force Comprehensive Planning;
- AFI 32-7064, Natural Resources Management;
- AFI 32-7065, Cultural Resources Management;
- DODI 4165.57 and AFI 32-7063, Air Installation Compatible Use Zone (AICUZ) Programs; and
- USACE EM 385-1-1, General Safety Requirements.
- AFMAN 91-201
- 2017-2036 Air Force Energy Flight Plan

1.5 Interagency and Intergovernmental Coordination and Consultations

In accordance with the NEPA, tribal, state, and federal agencies were contacted regarding this Proposed Action and the resources under their purview.

A pre-final copy of this Environmental Assessment was sent to the Delaware Natural Resources and Environmental Control (DNREC) Delaware Coastal Management Program (DCMP) for review on July 26, 2021. The DCMP coordinated this review with several other DNREC Divisions including: 1) Division of Water, Groundwater Discharges Section. 2) Division of Water, Water Supply Section, 3) Division of Waste and Hazardous Substances, and 4) Division of Climate, Coastal and Energy, Energy Section (Appendix A). The information provided by DNREC during this early consultation is included throughout this EA. The DNREC Environmental Review Section was also contacted regarding the presence of federally and state listed threatened or endangered species within the potential project areas.

Due to historical land use in the immediate area, there is a potential for cultural and natural resources to exist on or near the site. Coordination with the Delaware State Historic Preservation Office (SHPO) occurred through a letter of inquiry regarding the presence of known archeological or cultural sites in the project area. Additionally, the following Federally Recognized Native American Tribes were contacted regarding this proposed action and the presence of artifacts and areas of significance: Delaware Nation, Delaware Tribe of Indians, and the Stockbridge-Munsee Community Band of Mohican Indians. While not required by Section 106 of the National Historic Preservation Act (NHPA - Public Law 89-665; 54 U.S.C. 300101 et seq.) to coordinate with State Recognized Native American Tribes, DAFB also contacted the Lenape Indian Tribe of Delaware and the Nanticoke Indian Association.

The United States Fish and Wildlife Service's (USFWS) Chesapeake Bay Ecological Services Field Office was engaged through the Information for Planning and Consultation (IPAC) online website regarding the potential presence of federally listed threatened or endangered species or critical habitat known to occur in the project area (USFWS 2021).

As part of the public review process, this EA will be announced in Delaware State News and made available for public review at the DAFB Museum and on the DAFB webpage.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Overview

DAFB proposes to redevelop a portion of government-owned land into a solar farm. The solar farm will be comprised of fixed photovoltaic (PV) solar panels, which convert sunlight into electricity. Specifications of PV solar panels vary between manufactures; therefore, there are a variety of dimensions, arrays, and mounting options available on the market. Exact project details will hinge on cost, efficiency considerations, and the selected site location. Sites requiring a belowground connection to one of DAFB's electrical substations (ESS) may require clearing, grading, and cable trenching.

The electrical output of the proposed solar farm will vary depending on the selected alternative. A range of potential outputs was calculated for each action alternative listed below using data from Ong et al. (2013). The land use requirement data in this reference is divided into two categories - direct area and total area. According to Ong et al. (2013), "The total area corresponds to all land enclosed by the site boundary. The direct area comprises land directly occupied by solar arrays, access roads, substations, service buildings, and other infrastructure".

Using the small PV project (>1 megawatt [MW] to <20 MW) data provided in Table ES-1 of Ong et al. (2013), land use requirements for a fixed PV array range from 5.5 acres/MW (direct area) to 7.6 acres/MW (total area). These values are used below to calculate the potential output for the three Action Alternatives.

2.2 Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center

Under the Preferred Alternative, DAFB would redevelop the vacant lot (VL) northwest of the base recycling center (Building 650) into a solar farm (Figures 2 and 4). The Preferred Alternative is located in the northwestern region of DAFB (Figures 2 and 4). This 3.3-acre parcel can support a solar farm with an output ranging from 0.4 MW to 0.6 MW. This solar grid would be connected to DAFB's North ESS via underground conduit. The north substation is adjacent to the Preferred Alternative (Figure 2).

2.3 Alternative 1 - Skeet Range Location

Under Alternative 1, DAFB would redevelop a portion of the former Skeet Range into a solar farm. Note that this range also contained a former grenade launcher practice range. The Skeet Range is located in the southeastern portion of DAFB (Figures 2 and 3). This 29-acre parcel can support a solar farm with an output ranging from 3.8 MW to 5.3 MW. This solar grid would be connected to DAFB's South ESS via underground conduit. The linear distance from the former Skeet Range to the South ESS is 1.3 miles (Figure 2).

2.4 Alternative 2 - Bergold Farm Location

Under Alternative 2, DAFB would redevelop a portion of Bergold Farm into a solar farm. Bergold Farm is adjacent to DAFB to the east (Figures 2 and 5). This 40-acre parcel can support a solar array capable of producing between 5.2 MW to 7.2 MW. This solar grid would be connected to DAFB's South ESS via underground conduit. The linear distance from the subject portion of Bergold Farm to the South ESS is 1.6 miles (Figure 2).

2.5 Alternative 3 -No Action Alternative

Under the proposed No Action Alternative, DAFB would not redevelop base-owned land into a solar farm. As a result, DAFB would not be able to offset/supplement the use of commercially generated electrical power with a renewable source (i.e., solar power) and the base's energy security would remain unimproved.

3.0 RESOURCES ELIMINATED FROM FURTHER ANALYSES

After analysis of all potential impacts resulting from the Alternatives, the following resource categories were determined to be minimally or not affected and were dismissed from further analysis.

3.1 Aesthetics and Visual Resources

Visual and aesthetic resources are defined as objects or features that possess emotional, physical, or mental value which evoke a visual experience in the viewer. The three sites under consideration for the solar farm have all been developed to varying degrees. While the development of a solar farm would alter the physical layout of the selected site, the overall aesthetic of the site would remain largely unchanged; therefore, these resources have been eliminated from further analysis.

3.2 Air Quality

Air quality standards are federally regulated under the CAA. The National Ambient Air Quality Standards (NAAQS) regulated and enforced by the U.S. Environmental Protection Agency (USEPA), help protect people and the environment against harmful air pollutants. As of April 30, 2021, Dover, Delaware is in attainment for levels of carbon monoxide (CO), nitrogen oxides (NOx), particulate matter – 2.5 micrometers or smaller (PM2.5), particulate matter – 10 micrometers or smaller (PM10), sulfur oxides (SOx), lead, and ozone. The Action Alternatives analyzed in this EA will produce minor construction-related emissions, no operational emissions, and will have a minor positive effect on regional air quality; therefore, this resource has been eliminated from further analysis.

3.3 Geological Resources

The three sites under consideration for the solar farm share the same geological characteristics. The terrain throughout is mostly level to gently sloping with some ponding occurring in depressional areas. No notable above-ground geological resources exist in the project area; therefore, this resource has been eliminated from further analysis.

3.4 Noise

Exposure to noise pollution can be hazardous to human health and wellbeing. Depending on the duration and intensity of exposure, negative effects can range in severity from annoyance, hearing loss, or even physical pain. Aside from a short, temporary period of noise related to construction activities, the Alternatives analyzed in this EA would not impact existing noise levels in or near DAFB (i.e., no operational noise); therefore, this resource has been eliminated from further analysis.

3.5 Socioeconomics

Socioeconomics comprises the basic attributes and resources associated with the human environment, particularly population and economic activity. Socioeconomic impacts would be considered significant if the Proposed Action resulted in a substantial shift in population trends

or notably affected regional employment, earnings, or community resources. None of the Alternatives analyzed in this EA would alter or impact local or regional socioeconomics; therefore, this resource has been eliminated from further analysis.

3.6 Environmental Justice

EO 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations) and EO 13045 (Protection of Children from Environmental Health Risks and Safety Risks) require that all federal agencies address the effects of policies on minority communities, low-income populations, and children. No human populations - low income, minority, or otherwise - would be negatively impacted by the Alternatives analyzed in this EA and children would not be exposed to increased health and safety risks. Therefore, environmental justice is not carried forward for detailed analysis in this EA.

4.0 AFFECTED ENVIRONMENT

4.1 Biological Resources

Biological resources refer to the living resources of an area (i.e., plant and animal communities) whether native or naturalized, and the habitats within which they exist.

Vegetation types include terrestrial plant communities and the individual species that comprise them. The affected environment for vegetation is considered to be those communities and species that may be impacted by Proposed Actions.

Wildlife generally includes all mammal, fish, amphibian, bird, reptile, and invertebrate species. Wildlife also includes bird species classified under the Federal Migratory Bird Act, as well as the Bald Eagle Protection Act. The effects of a project must account for impacts to migratory birds and bird "species of concern" as defined by EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. Special status wildlife species are protected under separate legislation. DAFB's depredation permit strictly adheres to USFWS' rules and regulations and allows the base to conduct depredation activities to eliminate strike hazards, including migratory birds, from the airfield.

Special Status Species are plant and animal species listed as endangered or threatened by either the ESA or by state legislation. Species under consideration for listing of special status by the USFWS, are also considered when assessing a project's impacts.

4.1.1 Existing Conditions

Based on previous biological assessments on DAFB property, species of state concern that been identified include the eastern meadowlark (*Sturnella magna*), bobolink (*Dolichonyx oryzivorous*), fourspine stickleback (*Apeltes quadratus*), mud sunfish (*Acantharcus pomotis*), green frog-fruit (*Phyla lanceolata*), and hysop-leaf hedge nettle (*Stachys hyssopifolia*) (DAFB 2003). Yellow passionflower (*Passiflora lutea*), tickseed sunflower (*Bidens coronata*), and tiny-headed goldenrod (*Euthamia microcephala*) are rare state plant species that were historically identified on DAFB property (DNHI 1993).

The following species have been previously identified on DAFB for state concern for breeding only - American redstart (*Setophaga ruticilla*), broad-winged hawk (*Buteo platypterus*), cliff swallow (*Petrochelidon pyrrhonota*), bank swallow (*Riparia riparia*), black vulture (*Coragyps atratus*), great blue heron (*Ardea herodias*), American kestrel (*Falco sparverius*), black and white warbler (*Mniotilta varia*), common moorhen (*Gallinula chloropus*), and grasshopper sparrow (*Ammodramus savannarum*) (DAFB 2003).

The subsections that follow describe available biological resources at the three specific locations on DAFB property being evaluated for installation of the solar energy project.

4.1.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The vegetative community of the Preferred Alternative is analogous to a typical urban maintained lawn. There are no trees, saplings, or shrubs present onsite (Figure 3).

Wildlife/migratory birds - According the USFWS IPaC tool, 12 species of migratory birds may utilize the Preferred Alternative site (Table 4-1).

Special Status Species - No federally listed species, critical habitats, refuge lands, or fish hatcheries are located within the Preferred Alternative (Appendix B). The DNREC Division of Fish and Wildlife database search indicates that there are currently no records of state-rare or federally listed plants, animals, or natural communities at the Preferred Alternative location. This Preferred Alternative does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve (Appendix C).

4.1.1.2 *Alternative 1 - Skeet Range Location*

The vegetative community of the Skeet Range location is analogous to a typical maintained lawn with mowed areas and minimal tree, sapling, and shrubs present at the site (Figure 4).

Wildlife/migratory birds - According to the USFWS IPaC tool, 22 species of migratory birds may utilize the Skeet Range location (Table 4-1).

Special Status Species - No federally listed species, critical habitats, refuge lands, or fish hatcheries are located within the Skeet Range project area (Appendix B). The DNREC Division of Fish and Wildlife database search indicates that there are currently no records of state-rare or federally listed plants, animals, or natural communities at the Skeet Range location. This Alternative does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve (Appendix C).

4.1.1.3 *Alternative 2 - Bergold Farm Location*

The vegetative community of the Bergold Farm location is analogous to a typical old field habitat that is periodically mowed. There are some trees, saplings, and shrubs present in a 0.05 acre man-made irrigation pond located in the southeastern portion of this site (Figure 5).

Wildlife/migratory birds - According to the USFWS IPaC tool, 22 species of migratory birds may utilize the Bergold Farm site (Table 4-1).

Special Status Species - No federally listed species, critical habitats, refuge lands, or fish hatcheries are located within the Bergold Farm location (Appendix B). The DNREC Division of Fish and Wildlife database search indicates that there are currently no records of state-rare or federally listed plants, animals, or natural communities at the Bergold Farm location. This Alternative does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve (Appendix C).

4.2 Cultural Resources

Cultural resources display physical evidence of past human activity. This includes sites, structures, landscapes, objects, or natural features that are significant to a group of people traditionally associated with them. Specifically, cultural resources include: archaeological sites, architectural properties, ethnographic resources, other historical resources related to human activities, society, and cultural institutions. Cultural resources also encompass locations of important historic events and aspects of the natural environment, such as natural features of the land or biota, which are part of traditional lifeways and practices.

Locations of historical significance are recorded by the National Registry of Historic Places (NRHP), which lists prehistoric, historic, and ethnographic locations considered significant at the national, state, or local level. Resources listed on the NRHP have been evaluated based on uniform standards found in 36 CFR 60.4 for their significance and integrity as it pertains to culture, archaeology, history, architecture, or engineering. Valid listed criteria are considered historic properties. Resources with undetermined status are treated as historic properties until otherwise decided.

Several laws, regulations, and EOs address cultural resources at the federal level. The most prominent being the NHPA. Section 106 of the NHPA requires federal agencies to consider the effect of their actions on historic properties. The Advisory Council on Historic Preservation (ACHP) publishes regulations for implementation of section 106 (36 CFR 800). These regulations describe the process for identifying and evaluating historic properties. This includes assessing the effects of federal actions on historic properties as well as avoiding, minimizing, or mitigating any adverse effects. The NHPA ensures that federal agency decisions concerning the treatment of historic properties consider cultural and historical values.

The DOD has a responsibility to American Indian tribes (Tribes) to protect tribal cultural resources and to consult with Tribes on a government-to-government basis regarding resources. Section 101(d)(6) of the NHPA mandates that Federal agencies consult with Federally Recognized Tribes and other Native American peoples who have cultural ties or occupied the site in the past. NEPA implementing regulations relate to the NHPA in this regard, as well as to the American Indian Religious Freedom Act (AIRFA) (42 U.S.C. 1996), EO 13007 Indian Sacred Sites (61 Federal Register [FR] 26771), EO 13175 Consultation and Coordination with Indian Tribal Governments (65 FR 67249) and the Executive Memorandum on Government to Government Relations with Native American tribal leaders and those with knowledge of their cultural resources and significance. The DOD Annotated American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with Native American governments, requires an assessment of actions that may have the potential to significantly impact Native American lands, resources, or rights prior to decision making. Native American governments are included in the decision-making process for projects that could affect lands and resources of great historical significance, therefore preserving them for future generations.

The DOD and USAF implements policies and procedures regarding the management of cultural resources that are relevant to proposed projects, the most relevant guidance being AFI 32-7065, Cultural Resources Management. DAFB re-approved the installation-wide Integrated Cultural Resources Management Plan (ICRMP) in 2020. This plan integrates the implementation of the DOD and USAF policies and procedures regarding historic preservation (DAFB 2020). Its purpose

is to define the responsibilities, requirements, and methods for managing cultural resources located on DOD administered lands at DAFB. It was developed in consultation with SHPO and Tribes that have historic connections with the land and resources managed by DAFB. The ICRMP is a comprehensive plan for cultural resources on or managed by the installation within the context of DAFB's mission.

The current conditions of cultural resources for the three locations identified for possible installation of a solar farm on Dover AFB property are summarized in the sections below.

4.2.1 Existing Conditions

4.2.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The Preferred Alternative, located in the western extent of the Dover AFB installation, is surrounded by highly developed land with present-day infrastructure (i.e., roadways, parking lots, buildings) (Figure 3). The Preferred Alternative, and adjacent areas, has been subject to previous cultural and archaeological resource investigations (Heite 1995, DAFB 2020). Site 7K-D-132 (Hoffecker Site) was identified near the Preferred Alternative, located near the north gate of DAFB, north of two rows of trees planted along an old farm road. Aerial imagery from 1948 depict trees and a farm site associated with this location, indicating that the property was occupied during the 20th century.

4.2.1.2 *Alternative 1 - Skeet Range Location*

Limited information exists regarding cultural resources at the Skeet Range location as this area has not been adequately surveyed. Recent utilization of this location as a skeet range, representing present-day development and/or disturbance (Figure 4), may limit this location as a site for significant cultural resource value.

4.2.1.3 *Alternative 2 - Bergold Farm Location*

The Bergold Farm location, located along the eastern extent of DAFB (Figure 5), has been previously investigated for cultural and archaeological resources including Phase I (Furgerson and O'Reilly 2006) and Phase II (Crowl et al. 2013) surveys. The Bergold Farm location was historically a tenant farm, with historic buildings demolished in the 1960s when the current Facility (Building 1908) on this property was constructed (DAFB 2020). The existing property consists of old field vegetation that is periodically mowed and maintained (Figure 5).

4.3 Hazardous Materials and Waste

Improper disposal of hazardous waste and materials pose serious threat to human and environmental health. The toxicity and effects of hazardous waste and materials are characterized by their quantity, concentration, and physical, chemical, or infectious characteristics. Sources of hazardous material and waste are numerous. At DAFB, major sources include fuel, lubricants, paints, oil, cleaners, and sealants. These wastes were historically disposed of in various on-base locations including 12 landfills and three fire training areas.

Shallow on-site groundwater is contaminated with volatile organic compounds (VOCs) from former waste disposal practices and site operations. The site's long-term remedy included removal and decontamination of site structures, excavation and disposal of contaminated soil and gravel, land use controls, and monitored natural attenuation of groundwater contaminants. Construction of the remedy took place between 1992 and 2006. Contaminant monitoring at DAFB is ongoing. There is a restriction on groundwater use from the Columbia Aquifer covering the entirety of the DAFB due to the prevalence of multiple contaminant groundwater plumes at the Base. Note that work necessary for the development of the selected alternative will not interfere with any investigation or remedial action conducted under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA) or DNREC's Tanks program. In addition, future construction in areas of existing or proposed groundwater wells will be coordinated with DNREC, Division of Waste and Hazardous Substances, Remediation Section and DAFB's Environmental Manager.

The base potable groundwater well system serves about 10,000 people and is routinely monitored by the Air Force. No contaminants have ever been reported in this system.

4.3.1 Existing Conditions

4.3.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Historically, a small area of low-level solvent contamination in groundwater has been located near the Preferred Alternative site. No source areas specific to this location have been identified during past investigations; therefore, the DAFB Installation Restoration program is addressing the affected groundwater at this site under Area 5. Groundwater monitoring wells DM335S and DM335D are located approximately 500 feet to the southeast of the center of the Preferred Alternative site (just south of Building 650; Figure 3). The 2018 Five-Year Review for Area 5 indicates that tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene were detected in groundwater monitoring wells DM335S and DM335D during a May 2017 sampling event. All concentrations were below Remedial Action Objectives (Oak Ridge National Laboratory and AECOM 2018). The Five-year Review found that the remedy at Area 5 is protective of human health and the environment (Oak Ridge National Laboratory and AECOM 2018).

4.3.1.2 *Alternative 1 - Skeet Range Location*

The Skeet Range is located in a potential area of environmental contamination, owing to its use as a shooting range for skeet and sporting clays for many years until its closure in June 2014. This area also served as a grenade launcher practice range. Clay trap and skeet targets are composed mainly of dolomitic limestone but also petroleum pitch and fluorescent paint. The primary environmental concern with the composition of these targets is the presence of polycyclic aromatic hydrocarbons (PAHs), which are present in the petroleum pitch (Baer et al. 1994). Additionally, significant accumulations of lead and munitions-related contaminants at shooting/grenade launcher ranges over years of use can pose a significant environmental concern depending on location and hydrogeologic setting. Disturbance of contaminated media may occur during the construction phase of the solar energy project. Further site investigation should be completed to determine if remediation activities are recommended prior to initiating construction activities.

4.3.1.3 *Alternative 2 - Bergold Farm Location*

In 2006, a C-5 aircraft crashed on the Bergold Farm property, approximately 1,000 feet northeast of the proposed solar farm location. Jet fuel from the crash was released into the soil and groundwater at this location. Additionally, Aqueous film forming foam (AFFF) was sprayed on the downed aircraft and, due to the use of AFFF, Significant levels of per- and polyfluoroalkyl substances (PFAS) are also present at this site. This site is being addressed as site SS510 under the DAFB Environmental Restoration Program. Investigation and remediation activities at this site are ongoing.

4.4 Airspace

Airspace resources encompass all activities associated with flight operations as well as the space available to aircraft immediately above the geopolitical boundaries of the United States and associated territories. The construction and operation of a solar energy farm has the potential to impact airspace resources in two primary ways: 1) PV panels can create glare that may affect the air traffic control tower (ATCT) and pilots approaching the DAFB runways, and 2) the potential "lake effect" where certain bird species, such as waterfowl, are attracted to solar panel arrays and may negatively impact airspace operations through increased air strikes with aircraft. DAFB has an on-going Bird/Wildlife Aircraft Strike Hazard (BASH) program that minimizes aircraft exposure to potentially hazardous wildlife strikes.

4.4.1 Existing Conditions

4.4.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The Preferred Alternative is located approximately 0.5 miles southwest of the nearest DAFB runway (Figure 3). Current development and use of the Preferred Alternative site does not impact airspace.

4.4.1.2 *Alternative 1 - Skeet Range Location*

The Skeet Range location is located approximately 0.8 miles south of the nearest DAFB runway (Figure 4). Current development and use of the Skeet Range location does not impact airspace.

4.4.1.3 *Alternative 2 - Bergold Farm Location*

The Bergold Farm location is located approximately 0.6 miles southeast of the nearest DAFB runway (Figure 5). Current development and use of the Bergold Farm site does not impact airspace.

4.5 Land Use

Land use analysis involves an assessment of the current characterization and zoning of the project area and how Action Alternatives could change property usage and current zoning schemes. Two sources of land use information are used in this analysis: 1) The DAFB General Plan (436 AW 2001), and 2) Air Installation Compatible Use Zone Update (AICUZ; Parsons 2010).

Dover Air Force Base is divided into districts that align with land use zones as defined by the installation's General Plan (436 AW 2001). Each district has designated land uses that help to define facility operations.

In the AICUZ (Parsons 2010), DAFB has delineated land use areas identified as Clear Zones (CZ) and Accident Potential Zones (APZI and AZPII) across the base and surrounding area (Figure 6). These buffer areas have been identified to ensure safe aviation practices, and to minimize impacts on the public, staff, and infrastructure from accidental and/or operational issues that may arise during DAFB operations.

Clear Zones have the highest accident potential of the three zones (27 percent of accidents studied occurred in this area). APZ I and AZPII are areas that possess somewhat less accident potential (ten percent and six percent of the accidents studied occurring in these zones, respectively). Table 4.3 of the AICUZ evaluates the land use compatibility of 77 different land uses with various Accident Potential Zones. Only one land-use is compatible with clear zones (agriculture, except livestock) and 32 land uses are compatible with AZPI (some manufacturing activities, some retail sites, some transportation activities, agriculture, and utilities).

4.5.1 Existing Conditions

4.5.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The current land condition of the Preferred Alternative consists of an urbanized maintained lawn, with no trees, saplings, or shrub cover (Figure 3). The location is surrounded by roadways (e.g., South Bay Road to the southwest), parking lots, buildings, and the North ESS. The Preferred Alternative location has an "open space" land use designation in the General Plan (436 AW 2001). The Preferred Alternative is not within the boundaries of a CZ or APZ, but this parcel is close (within approximately 500 feet) to the CZ near the southern end of the 01/19 Runway (Figure 6).

4.5.1.2 *Alternative 1 - Skeet Range Location*

The current land condition of the Skeet Range location consists of a typical maintained lawn, with minimal tree, sapling, and shrub cover (Figure 4). The Skeet Range location is bordered by US Route 1 to the south/southwest, Route 9 to the east, and Reno Street to the west. The Alternative 1 location is within the "outdoor recreation" land use designation in the General Plan (436 AW 2001). This Alternative is not within the boundaries of a CZ or APZ (Figure 6).

4.5.1.3 *Alternative 2 - Bergold Farm Location*

The current land condition of the Bergold Farm location consists of a typical old field habitat, that is periodically mowed and maintained, with minimal tree, sapling, and shrub cover (Figure 5). The Bergold Farm location is bordered by an open field to the south, Bergold Lane to the east, and Route 9 to the west. The Alternative 2 location has an "open space" land use designation in the General Plan (436 AW 2001). Alternative 2 is not within the boundaries of a CZ and APZ, but this parcel borders the CZ and APZ near the southeast end of the 14/32 Runway (Figure 6).

4.6 Infrastructure

Infrastructure is defined as the physical and organizational structures that enable operational, societal, and enterprise activities to occur. Such structures include buildings, roads, bridges, powerlines, and more.

For the DAFB property, existing infrastructure permits the mission and goals of the installation to operate efficiently and effectively. The predominate infrastructure currently present on the DAFB installation includes buildings, roadways and parking lots, aviation infrastructure (runways), and above- and below-ground utilities.

New infrastructure that would be associated with a solar energy project on DAFB property would include the solar panel arrays, sub-surface infrastructure to connect the new solar farm to the existing DAFB power grid, and potential new or upgraded infrastructure at existing ESS.

4.6.1 Existing Conditions

4.6.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Existing above-ground infrastructure at the Preferred Alternative location is minimal. Surrounding infrastructure adjacent to the Preferred Alternative includes South Bay Road to the southwest, and multiple buildings and parking lot areas on DAFB property (Figure 3). The North ESS is located directly adjacent to the Preferred Alternative (Figure 2).

4.6.1.2 *Alternative 1 - Skeet Range Location*

Above-ground existing infrastructure on the Skeet Range location is minimal (Figure 4). Surrounding infrastructure adjacent to the Skeet Range location includes US Route 1 to the south/southwest, Route 9 to the east, and Reno Street to the west, with a building and parking lot area located directly north on DAFB property (Figure 4).

4.6.1.3 *Alternative 2 - Bergold Farm Location*

Above-ground existing infrastructure on the Bergold Farm location is minimal (Figure 5). Surrounding infrastructure adjacent to the Bergold Farm location includes Bergold Lane to the east, and Route 9 to the west. The present-day structure on the Bergold Farm property is Building 1908 (Pallet and Net Storage Facility) which is located directly north of the Alternative 2 location (Figure 5).

4.7 Water Resources

Water resources evaluated in this EA include groundwater, surface waters, wetlands, and floodplains. Groundwater includes all subsurface hydrologic resources. Surface waters includes lakes, rivers, streams, and their tributaries. Wetlands are defined by USACE as "…areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs,

and similar areas" (33 CFR Part 328) and are subject to federal regulatory authority under Section 404 of the CWA and EO 11990, Protection of Wetlands. The use of the online National Wetlands Inventory (NWI) is a good first source to identify wetlands and deepwater habitats in an area but it should be noted that NWI maps were developed using aerial image analysis with limited field verification.

Field-verified, jurisdictional wetland surveys have occurred at DAFB on at least four separate occasions: 1) The 1992 limited delineation (436 AW 2001); 2) The 1998 installation-wide delineation (DAFB 2004); 3) The 2003/2004 limited delineation (DAFB 2004); and 4) The 2009 installation wide delineation (DAFB 2009). All delineations were conducted using methodology described in the USACE Wetland Delineation Manual (USACE 1987). The current 2009 delineation identified 35 features totaling 67.8 acres of jurisdictional Waters of the U.S. and Wetlands (DAFB 2009).

Floodplains are governed under EO 11988, Floodplain Management, which requires federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with any proposed action as well as to avoid direct or indirect support of floodplain development whenever there is a practicable alternative.

The nation's waters are protected under the statutes of the CWA, with a goal of maintenance and restoration of the chemical, physical, and biological integrity of the nation's waters to support "the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water." Under the CWA Section 402, it is illegal to discharge any point or nonpoint source pollution into any surface water without a permit from the National Pollutant Discharge Elimination System (NPDES). The USEPA administers the NPDES permitting program at DAFB.

According to the State of Delaware's Coastal Zone Management Plan, the entire state falls within the Coastal Zone area. Federal agencies are required to follow state coastal management policies when conducting projects or issuing permits that could affect coastal resources. The DNREC Coastal Program manages the Delaware's Coastal Zone Management Federal Consistency reviews to ensure that state and federal actions in the Coastal Zone are consistent and coordinated. A formal Federal Consistency Determination was not completed as part of this Environmental Assessment. Instead, the draft EA was provided to the DNREC Coastal Program for a courtesy review. Note that a formal Federal Consistency Determination will be required prior to the construction of the selected Alternative.

As part of this courtesy review, DNREC Division of Water, Groundwater Discharges Section and Water Supply Section provided recommendations regarding groundwater depth and recharge potential. DNREC suggested that a location with a deeper groundwater table is preferred to a location with a shallower groundwater table and that sites that are not in wellhead protections areas or areas of excellent groundwater recharge potential should be preferable to sites that are located in these areas. As per a November 3, 2021, communication from DNREC (Appendix A), the Preferred Alternative and the other Action Alternatives are not located within a wellhead protection area or an area of excellent groundwater recharge.

4.7.1 Existing Conditions

4.7.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

No state or federally regulated wetlands or surface waters are present on the Preferred Alternative site. Additionally, the Preferred Alternative is located within an "Area of Minimal Flood Hazard", and outside of any designated floodplain and flood hazard areas, as designated by the Federal Emergency Management Agency (FEMA). The Preferred Alternative location is within Delaware's Coastal Zone. According to the US Geological Survey (USGS 2000), depth to groundwater under average conditions at the VL ranges between 10 and 15 feet below ground surface (BGS).

4.7.1.2 *Alternative 1 - Skeet Range Location*

No state or federally regulated wetlands or surface waters are present on the Skeet Range site. FEMA flood mapping indicates that Alternative 1 is located within an "Area of Minimal Flood Hazard" and is outside of the 100-year floodplain. The Skeet Range is within Delaware's Coastal Zone. According to the USGS (2000), depth to groundwater under average conditions at the Skeet Range ranges between 5 and 10 feet BGS.

4.7.1.3 *Alternative 2 - Bergold Farm Location*

While the NWI indicated that there are no wetlands or surface waters present on the Bergold Farm site, the 2009 installation-wide wetland delineation identified a 0.05 acre man-made irrigation pond located along the northeastern boundary of this parcel (DAFB 2009; Figure 5). This pond is isolated with no surface water connections to other waters of the U.S. FEMA flood mapping indicates that this location is located within an "Area of Minimal Flood Hazard" and is outside of the 100-year floodplain. The Bergold Farm site falls within the Delaware Coastal Zone. According to the USGS (2000), depth to groundwater under average conditions ranges from approximately 5 to 10 feet BGS at Bergold Farm.

4.8 Health and Safety

Adverse impacts to safety occur when the construction or operation of the Proposed Action results in a substantial increase in risk to the safety of personnel, the public, or property. Three primary safety categories are considered herein:

Construction Safety – Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA) and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors. In addition, there are some areas of contaminated soil and shallow groundwater at DAFB. During the construction of the selected alternative, steps will be taken to minimize or eliminate worker exposure to any affected media (e.g., soil, groundwater, etc.). These steps may include, but will not be limited to, site-specific health and safety training,

following a contaminated material management plan, worker exposure monitoring (as necessary), etc.

Explosive Safety – One of DAFB's primary functions is to receive, store and transport munitions. In accordance with AFMAN 91-201 guidance, DAFB is required to maintain Quantity-Distance Arcs (QD Arcs) around stored munitions. QD Arcs act as safety zone buffers surrounding munition and explosives to facilitate civilian safety and base security. Solar field construction, operations, and maintenance activities that occur within these QD Arcs would be less safe than activities that are located outside the arcs.

Airfield Safety – The primary components of the DAFB airfield infrastructure include runways, overruns, taxiways, aprons, ramps, hazardous cargo areas, and safety clearances and imaginary surfaces where non-airfield development is constrained or discouraged. These areas include CZs and APZs (Figure 6). CZs are areas on the ground, located at the ends of each runway. They possess a high potential for accidents, and their use is restricted to be compatible with aircraft operations. APZs are areas on the ground located beyond the clear zone of each runway. They possess a potential for accidents, and land use in these areas is governed by several DOD directives. At DAFB these APZs are divided into APZ I and APZ II. APZ I begins at the outer end of the CZ and is 5,000 feet long and 3,000 feet wide. APZ II begins at the outer end of APZ I and is 7,000 feet long and 3,000 feet wide (Figure 6). As discussed in Section 4.5 of this EA, the DAFB AICUZ (Parsons 2010) lists only one land-use that is compatible with DAFBs CZs (agriculture, except livestock) and 32 land uses are compatible with APZ I (some manufacturing activities, some retail sites, some transportation activities, agriculture, and utilities).

Section 4.3 of the DAFB AICUZ (Parsons 2010) lists uses that should be restricted and/or prohibited for runways. One of these restricted uses relates to anything that would cause either direct or indirect light emissions that would interfere with the ATCT or pilot vision. Under certain conditions, the glare from photovoltaic panels can be considerable and may reduce the visibility of pilots and air traffic controllers (Sreenath et al. 2021). The main factors that influence the glare occurrence are the sun's position; panel tilt, height, angle, surface texture, and color; and location of PV module (Sreenath et al. 2021).

4.8.1 Existing Conditions

4.8.1.1 *Preferred Alternative - Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Current health and safety considerations at the VL location result from periodic mowing. The VL location is not within the boundaries of a CZ, APZ (Figure 6), or QD Arc. No known environmental contamination exists at the VL and there are no photovoltaic panels installed at this location.

4.8.1.2 *Alternative 1 - Skeet Range Location*

Current health and safety considerations at the Skeet Range result from periodic mowing. The Skeet Range location is not within the boundaries of a CZ, APZ (Figure 6), or QD Arc. Given that this location has been used in the past for skeet shooting and grenade launcher practice, there is the potential for hazardous material to be within the boundaries of this area (e.g., elevated lead concentrations in soil). There are no photovoltaic panels installed at this location.

4.8.1.3 *Alternative 2 - Bergold Farm Location*

Current health and safety considerations at the Bergold Farm location result from periodic mowing of the existing field. Note that the north portion of the Bergold Farm parcel is within a CZ and APZ, however, the parcel under consideration for the Proposed Action is not within these boundaries but is directly adjacent to the CZ and APZ I associated with runway 32 (Figure 6). This location is not within any of DAFBs QD Arcs. Environmental contamination at this location includes jet fuel and PFAS from the 2006 C-5 crash. Affected media include soil and groundwater.

5.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

5.1 Biological Resources

Potential impacts to avian species are the primary environmental consequence for biological resources associated with the development of a solar energy project on DAFB property. No federal threatened or endangered wildlife species have been identified, and overall biological diversity on AFB property has been identified to be low based on the urbanized setting of the installation (DAFB 2003). The three potential locations for the solar energy installation are heavily impacted by development (Preferred Alternative) or consist of mowed lawn/field vegetation comprised of short turf grasses (Skeet Range, Bergold Farm).

Impacts to avian species from the installation of solar energy projects are hypothesized to occur via both direct and indirect effects. Direct effects include impact trauma by hitting infrastructure and exposure to concentrated solar energy from solar tower facilities (not applicable to solar panel installation on DAFB property) (Smith and Dwyer 2016). Indirect effects are hypothesized to occur due to reductions in available foraging, nesting or refugia habitat, or alterations in behavior (Smith and Dwyer 2016). Indirect effects from solar energy installations on avian species are not well documented in the literature and are thus assumed to be minor and short-term in duration (i.e., operating only during construction and/or decommissioning of solar energy infrastructure).

Impact trauma (direct effect) from hitting solar panel infrastructure is thus the only effect with the potential to negatively affect avian species on DAFB. It has been hypothesized that certain bird species, such as waterfowl, are attracted to solar panel arrays in what has been termed the "lake effect" (Kagan et al. 2014), by which avian species may perceive the reflective surfaces of solar panels as bodies of water and collide with infrastructure when attempting to land. Based on research to date, however, there is no empirical data available to evaluate attraction of avian species to solar panel arrays, including both resident and migratory bird species (Walston et al 2015).

The "lake effect", more broadly, may have the potential to negatively impact airspace operations and/or health and safety of DAFB personnel through increased air strikes with aircraft. See Section 5.4 and 5.8, respectively, for additional information and assessment regarding potential airspace and health and safety consequences.

In summary, while there is a potential for negative impacts to avian species from the Action Alternatives, the magnitude of direct effects on avian species is considered far less for energy installations such as solar panel arrays compared with other anthropogenic sources of mortality for birds (e.g., outdoor cats, buildings, communication towers, automobiles) based on published data to date (Loss et al. 2015; Smith and Dwyer 2016).

5.1.1 Impacts and Significance of Effects

5.1.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Minor negative impacts to biological resources at the VL location are possible from the installation of the solar panels. While the current land use and vegetative composition at this location is not ideal habitat for plant or wildlife species (Figure 3), minor negative short-term effects may occur during installation of solar panels (e.g., construction traffic, noise impacting wildlife behavior) and minor negative long-term effects may occur for habitat loss. It is also possible that minor beneficial effects may be realized in the long-term with additional cover (shade) and heterogeneity that solar panel installations may provide wildlife species.

For avian species, in particular, direct effects of a solar panel array installation at the VL location are likely to be lowest relative to the Skeet Range and Bergold Farm locations (assuming direct avian impacts are proportional to project footprint). Also, the short-term construction impacts associated with connecting the solar panels to the North ESS are expected to be less at this location relative to the other Action Alternatives as the DAFB North ESS is directly adjacent to this site (Figure 2).

5.1.1.2 *Alternative 1 – Skeet Range Location*

Moderate negative impacts to biological resources at the Skeet Range location are possible from the installation of the solar panels. While the current land use and vegetative composition at this location is not ideal habitat for plant or wildlife species (Figure 4), moderate negative short-term effects may occur during installation of solar panels at the 29 acre Skeet Range (e.g., construction traffic, noise impacting wildlife behavior). Minor beneficial effects may be realized in the long-term with additional cover (shade) and heterogeneity that solar panel installations may provide wildlife species.

Because the potential impacts to avian species, in particular, is proportional to the size of the solar panel installation and associated energy output, the Skeet Range location (representing a 29-acre parcel and supporting 3.8 MW to 5.3 MW of energy production), is more likely to have an impact on avian species relative to the much smaller VL location. Conversely, installation of solar panel arrays at the Skeet Range location is likely to have a smaller effect on avian species compared to the larger Bergold Farm location. In addition, the short-term construction impacts associated with connecting the solar panels to the South ESS are expected to be greater at this location relative to the Preferred Alternative as the DAFB South ESS is approximately 1.3 miles (straight line distance) from the western edge of the Skeet Range (Figure 2).

5.1.1.3 *Alternative 2 – Bergold Farm Location*

Moderate negative impacts to biological resources at the Bergold Farm location are possible from the installation of the solar panels. While the current old field habitat is maintained via periodic mowing (Figure 5), moderate negative short-term impacts may occur during installation of solar panels at the Bergold Farm location (e.g., construction traffic, noise impacting wildlife behavior).

Relative to the Skeet Range and VL locations, the construction of a solar field at the Bergold Farm location is likely to result in greater impacts to avian species based on the larger footprint

(40 acres [Bergold Farm] vs. 29 acres [Skeet Range] vs. 3.3 acres [VL]) and greater distance to the closest ESS (1.6 miles [Bergold Farm] vs. 1.3 miles [Skeet Range] vs. 0.08 miles [VL]). It is possible that some minor beneficial effects may be realized in the long-term with the additional cover (shade) and habitat heterogeneity that solar panel installations may provide wildlife species.

5.1.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, no impacts to biological resources, including avian species, would occur because the installation of a solar energy project would not occur.

5.2 Cultural Resources

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on any district, site, object, building, or structure included in, or eligible for inclusion in, the NRHP. The following analysis details the anticipated direct and indirect effects of the Action Alternatives and No Action Alternative on cultural resources at DAFB. Potential effects were identified through application of Section 106 Criteria of Adverse Effects (36 CFR 800.5) to historic properties, and by consultation with SHPO. Specific criteria for identifying effects on historic properties include:

- Physical destruction of or damage to a portion of a property;
- Physical alteration of a property;
- Removal of a property from its historic location;
- Change in the character of a property's use or physical characteristics that contribute to its historic significance;
- Introduction of visual, atmospheric, or auditory elements that diminish the integrity of a property's significant historic features;
- Neglect of a property that results in deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of a properties historic significance (36 CFR 800.5[a][2]).

The following Federally Recognized Native American Tribes were contacted via email in December of 2020: Delaware Nation, Delaware Tribe of Indians, and the Stockbridge-Munsee Community Band of Mohican Indians. In addition, two State Recognized Native American Tribes were also contacted via email in December of 2020: Lenape Indian Tribe of Delaware, and Nanticoke Indian Association. These tribes were asked for information regarding the presence of cultural or historical resources of tribal significance within the three Action Alternative locations. Two tribes responded to this inquiry. The Stockbridge-Munsee Community stated that DAFB is not within their area of interest and the Delaware Nation requested a copy of the pre-final EA for review and comment. The Delaware Nation also requested that a cultural survey be performed on any site chosen as a location for the solar farm (if not already completed). A copy of the pre-final EA was sent to the Delaware Nation in August of 2021 and no comments have been received for inclusion in this EA.

5.2.1 Impacts and Significance of Effects

5.2.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

DAFB consulted with the Delaware SHPO, Division of Historical and Cultural Affairs regarding the Preferred Alternative. The SHPO was provided with the location of the Preferred Alternative and a graphic artists' renderings of how this project might look once constructed (Appendix D). Given this material, the SHPO concluded that the construction of a solar energy farm at the Preferred Alternative location will have **no impact** on any historic properties.

Previously identified archaeological resources near the VL location include the Hoffecker Site (7K-D-132 in the ICRMP; K06956 in SHPO database). Based on a Phase II site investigation (Bupp et al. 2002), the present-day disturbed context of area associated with and surrounding the VL location, it was determined that 7K-D-132 was not eligible for NRHP listing. The Delaware SHPO agreed with the determination that the site was not eligible for listing (DAFB 2020). In addition, the VL location is not close enough to water to have potential for prehistoric archaeological resources. The SHPO concluded the December 15, 2021, email by stating that, with regard to archeological resources, the VL location would be the SHPOs preferred location as it has already been surveyed and evaluated (Appendix D).

5.2.1.2 *Alternative 1 – Skeet Range Location*

To date, the Skeet Range location has not been adequately surveyed for historical and archeological resources. Therefore, there is a possibility that these resources may exist at this site and the construction of the Proposed Action may have a **minor negative impact** on these resources.

5.2.1.3 *Alternative 2 – Bergold Farm Location*

Based on previous investigations at the Bergold Farm location, the site was determined to be ineligible for NRHP listing, and no further investigation was identified (Crowl et al. 2013). Earlier investigations that identified cultural and/or archaeological sites on the property (7K-D-125 and 7K-D-126) were determined to be mid-nineteenth to twentieth century trash scatter. It was determined that the Bergold Farm site does not represent a relevant example of a common tenant farm site and does not have the potential to result in significant cultural and/or archaeological research value. The Delaware SHPO agreed with the determination that the Bergold Farm location was not eligible for listing in the NRHP (DAFB 2020). Therefore, the construction of the Proposed Action at this location is likely to have **no impact** on cultural or archeological resources.

5.2.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, **no impacts** to cultural resources would occur because the installation of a solar energy project would not occur.

5.3 Hazardous Materials and Waste

5.3.1 Impacts and Significance of Effects

5.3.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Minor negative impacts to hazardous materials are possible from the construction of the solar panels at the VL site. Environmental contamination in the form of tetrachloroethene, trichloroethene, and cis-1,2-dichloroethene have been detected in shallow and deep groundwater adjacent to this location. However, the Five-year Review found that the remedy at Area 5 is protective of human health and the environment (Oak Ridge National Laboratory and AECOM 2018). Disturbance of potentially contaminated shallow groundwater may occur during the construction phase of the solar farm but construction and operations activities will follow all applicable DAFB and OSHA regulations and guidance.

5.3.1.2 *Alternative 1 – Skeet Range Location*

Moderate negative impacts to hazardous materials are possible from the construction of the solar panels at the Skeet Range. Environmental contamination in the form of lead, PAHs, and other contaminants associated with skeet and sporting clay fragments, as well as unretrieved munitions, may be present in surface soils at the Skeet Range location based on many years of use as a shooting and grenade launcher practice range. Disturbance of potentially contaminated soils may occur during the construction phase of the solar farm. Disturbance of skeet/clay fragments and spent munitions may result in redistribution and re-working of potential contaminants vertically and horizontally in the localized soils. Further site investigation should be completed at the Skeet Range site to determine if remediation may be warranted prior to initiating construction activities for the solar farm.

5.3.1.3 *Alternative 2 – Bergold Farm Location*

Moderate negative impacts to hazardous materials are possible from the construction of the solar panels at the Bergold Farm location. Environmental contamination in the form of jet fuel and PFAS constituents associated with the 2006 C-5 crash are present in soils and groundwater at this location. Disturbance of affected soil and groundwater may occur during the construction phase of the solar farm.

5.3.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, **no impacts** to hazardous material and waste would occur because the installation of a solar energy project would not occur.

5.4 Airspace

As discussed in Section 4.4, there are two primary mechanisms by which the construction and operation of the Proposed Action can impact airspace resources: 1) glare from PV panels may affect the ATCT and pilots approaching DAFB runways, and 2) the potential "lake effect" drawing birds closer to DAFB thereby increasing the potential for air strikes with aircraft. These mechanisms are addressed in this section.

The Federal Aviation Administration (FAA 2013) outlines methods and procedures to evaluate the potential impacts of glare, including the adaption of a modeling framework known as the Solar Glare Hazard Analysis Tool (SGHAT). The standard of impact from glare at airports from solar panel installations includes categorized ocular hazards, based on modeled results from SGHAT, as follows:

- Green - low potential for an after-image
- Yellow - potential for after-image
- Red - potential for retinal burn

The FAA solar policy standard prohibits glare on ATCTs but permits low potential for an after-image on pilots approaching the airport runways (green category) (FAA 2013).

DAFB has conducted at least two recent glare studies to evaluate the potential impacts of solar panel arrays to airspace operations (Barrett 2016, PNNL 2017). The Barrett (2016) glare study was conducted at two sites - (1) the Skeet Range location, and (2) a portion of the Bergold Farm location (referred to as the APZ site in Barrett 2016). The PNNL (2017) study was conducted to evaluate the glare potential from a roof-mounted PV system installation on multiple DAFB buildings. As ocular impact assessment is specific to the location and design of the PV array, additional SGHAT modeling should be conducted following final site selection and engineering design to ensure compliance with FAA solar policy standards.

Regarding the "lake effect", it has been hypothesized that some bird species mistake PV panel reflections for surface water and attempt to land near the panels. If the PV panels are located on or near an airport this mistake could increase BASH potential. DeVault et al. (2014) conducted a comparative study to evaluate bird utilization of solar panel installations at airports in comparison to adjacent grassland habitat. Their results suggest that bird species richness (the number of species present in a defined area) was reduced in solar panel array installations relative to adjacent grassland habitat. However, a calculated Bird Hazard Index (BHI) that measures seasonal mass (weight) of birds per area surveyed was lower in solar panel installation areas, particularly for bird species especially hazardous to aircraft (species ≥ 1.1 kg in weight) (DeVault et al. 2014). Thus, the authors conclude that the conversion of airport grasslands to solar panel installations would not result in greater hazards associated with bird-aircraft collisions (DeVault et al. 2014).

5.4.1 Impacts and Significance of Effects

5.4.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The 2017 glare study (PNNL 2017) evaluated the glare potential from hypothetical roof-mounted PV systems on multiple DAFB buildings. The SGHAT model used in this study identified 57 buildings at DAFB that are suitable for rooftop solar PV installation (i.e., these projects would meet FAA solar policy glare standards if constructed). Four of these suitable buildings are located between 200 to 400 feet from the center of the Preferred Alternative location (buildings 650, 767, 768, and 769; Figure 3). Given that the Preferred Alternative is located among four of the suitable buildings (PNNL 2017) it follows that, with the appropriate project-specific adjustment of panel tilt angle and azimuth, similar conclusions regarding glare would be likely for the Preferred Alternative. Therefore, it is concluded that glare from a PV installation at the Preferred Alternative location is likely to have **no impacts** on DAFBs flight paths or ATCT. However, it is

recommended that a site-specific glare analysis be conducted for the Preferred Alternative prior to construction if this location is selected.

Potential impacts from increased bird strikes with aircrafts at the VL location is presumed minimal, given a lack of empirical evidence to evaluate the hypothesized "lake effect" of solar panel installations on avian species, the small size of this parcel, and the surrounding infrastructure. In addition, the existing DAFB BASH program would minimize any strike risk brough about by the construction of the Preferred Alternative.

5.4.1.2 *Alternative 1 – Skeet Range Location*

The SGHAT model predicted that a solar panel array constructed at the Skeet Range location with a tilt angle of 30° and azimuth of 210° would comply with FAA solar policy standards (Barrett 2016). Therefore, the construction of the solar panels at the Alternative 1 location is expected to have **no impact** of the airspace of DAFB.

Potential impacts from increased bird strikes with aircrafts at the Skeet Range location is presumed minimal, given a lack of empirical evidence to evaluate the hypothesized "lake effect" of solar panel installations on avian species. In addition, the current Bird/Wildlife Aircraft Strike Hazard (BASH) Program (Dover AFB Instruction 91-212, April 2019) would mitigate any increase in BASH risk associated with the installation of the solar panel array at the Skeet Range location.

5.4.1.3 *Alternative 2 – Bergold Farm Location*

The SGHAT model predicted that a solar panel array constructed at the Bergold Farm location with a tilt angle of 30° and azimuth of 110° eliminated glare impacts to the ATCT and runways 1,14, and 19. This model indicated that there is a "low potential for after-image" associated with runway 32 under this configuration, but these results were compliant with FAA policy (Barrett 2016). However, it should be noted that the Bergold Farm location used in Barrett 2016 (referred to as the APZ site) was approximately 1,600 feet to the northeast of the Alternative 2 location. Given that these locations are relatively close to each other, it is concluded that, with the appropriate project-specific adjustments (panel tilt angle and azimuth), glare from a PV installation at the Alternative 2 location is also likely to be compliant with FAA policy (i.e., have **no impact**). However, if this location is selected, it is recommended that a site-specific glare analysis be conducted prior to construction.

Similar to the other alternatives, potential BASH issues are not anticipated upon construction of a solar field at this location due to lack of empirical evidence for the "lake effect" and existing DAFB BASH program.

5.4.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, **no impacts** to airspace would occur because the installation of a solar energy project would not occur.

5.5 Land Use

5.5.1 Impacts and Significance of Effects

5.5.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

The Preferred Alternative location has a land use designation of "open space" in the General Plan (436 AW 2001). This parcel is bordered to the northeast by parcels with a "industrial" and "administrative" land use. Therefore, the conversion of this 3.3 acre parcel to an "industrial" land use via the construction of the Preferred Alternative would not be inconsistent with the surrounding land uses. The VL location is not within the boundaries of a CZ or APZ (Figure 6). Therefore, it is anticipated that the construction of a solar field at this location would have **no impact** on land use at DAFB.

5.5.1.2 *Alternative 1 – Skeet Range Location*

Selection of the Skeet Range location alternative would result in the conversion of a maintained lawn to solar panel arrays. While the construction of Alternative 1 will convert the land use of this 29-acre parcel from "outdoor recreation" to "industrial", the area adjacent to the proposed solar farm will still be available for recreational opportunities. In addition, Alternative 1 is not located within the boundaries of a CZ or APZ (Figure 6). Therefore, it is anticipated that the construction of a solar field at this location would have **no impact** on land use at DAFB.

5.5.1.3 *Alternative 2 – Bergold Farm Location*

While the construction of Alternative 2 would result in the conversion of 40 acres of land from an "open space" land use (436 AW 2001) to an "industrial" land use, the area adjacent to the proposed solar farm will still be maintained as open space and the solar farm/industrial land use would be compatible with the remaining open space. In addition, Alternative 2 is not within the boundaries of a CZ and APZ, but this parcel does border the CZ and APZ near the southeast end of the 14/32 Runway (Figure 6). Therefore, it is anticipated that the construction of a solar field at this location could have **minor negative** impact on land use at DAFB.

5.5.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, **no impacts** to land use would occur because the installation of a solar energy project would not occur.

5.6 Infrastructure

5.6.1 Impacts and Significance of Effects

5.6.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

New sub-surface infrastructure to connect power from the VL location to the existing power grid of DAFB is anticipated to have the lowest impact of the three Action Alternatives as this location is directly adjacent to the North ESS (Figure 2) and will require a minimal amount of underground conduit to connect to the existing power grid. Short-term minor negative impacts to

the North ESS may occur during construction of the solar energy project, but this project will increase energy resiliency at DAFB by adding between 0.4 to 0.6 MW of renewable energy to the power grid. Therefore, in the long-term, the construction of a solar field at this location is expected to have a **beneficial impact** on DAFB's infrastructure.

5.6.1.2 *Alternative 1 – Skeet Range Location*

New sub-surface infrastructure to connect power from the Skeet Range location to the existing power grid of DAFB is anticipated to include approximately 1.3 miles of underground conduit, connecting to the South ESS (Figure 2). It is anticipated that new infrastructure to connect power to the existing grid would be sited along existing underground utility corridor(s), and thus no impacts to resources on DAFB property are expected. Short-term and minor impacts would likely occur during construction of the solar energy project. Ultimately, the construction of a solar field at the Skeet Range will increase energy resiliency at DAFB by adding between 3.8 to 5.3 MW of renewable energy to the power grid. Therefore, in the long-term, the construction of a solar field at this location is expected to have a **beneficial impact** on DAFB's infrastructure.

5.6.1.3 *Alternative 2 – Bergold Farm Location*

New sub-surface infrastructure to connect power from the Bergold Farm location to the existing power grid of DAFB is anticipated to include approximately 1.6 miles of underground conduit, connecting to the South ESS (Figure 2). It is anticipated that new infrastructure to connect power to the existing grid would be sited along existing underground utility corridor(s), and thus no impacts to resources on DAFB property are expected. Short-term and minor impacts would likely occur during construction of the solar energy project. Ultimately, the construction of Alternative 2 will increase energy resiliency at DAFB by adding between 5.2 to 7.2 MW of renewable energy to the power grid. Therefore, in the long-term, the construction of a solar field at this location is expected to have a **beneficial impact** on DAFB's infrastructure.

5.6.1.4 *Alternative 3 – No Action Alternative*

The goal of the Proposed Action is to support the achievement of the goals outlined in the 2017-2036 Air Force Energy Flight by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. This will increase DAFB's energy security and reduce the purchase of commercially generated electrical power. Therefore, the No Action Alternative will have a **minor negative** impact on DAFB's energy infrastructure because the solar field, which would assist DAFB in achieving a portion of their anergy security goals, will not be constructed.

5.7 Water Resources

5.7.1 Impacts and Significance of Effects

5.7.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

There are no wetlands or surface water features present at the VL site, nor does the site fall within a FEMA-designated floodplain or flood hazard area. The VL site is located within Delaware's Coastal Management Area and a formal Federal Consistency Determination will be required prior to the construction of a solar field at this location.

Of the three Action Alternatives, the Preferred Alternative has the largest depth to groundwater. According to the USGS (2000), the depth to groundwater at this location under average recharge conditions ranges from 10 to 15 feet below the ground surface. DNREC (Appendix A) advised that sites with a deeper groundwater table are preferable relative to sites with shallower groundwater depths. In addition, once constructed the small footprint of the Preferred Alternative (3.3 acres and 0.08 miles from the North ESS) will generate less impervious surface to affect groundwater recharge.

Potential effects to nearby surface water bodies from stormwater runoff during construction activities will be mitigated via the implementation of an approved Erosion and Sediment Control Plan (ESC Plan) and stormwater Best Management Practices (BMPs). In general, the potential for stormwater impacts to surface water is proportional to the size of the construction footprint. The footprint of the Preferred Alternative is, by far, the smallest of the three Action Alternatives. In sum, the construction of the solar field at this location has the potential to have a **minor negative impact** on water resources.

5.7.1.2 *Alternative 1 – Skeet Range Location*

There are no wetlands or surface water features present at the Skeet Range location, nor does the site fall within a FEMA-designated floodplain or flood hazard area. This site is located within Delaware's Coastal Management Area and a formal Federal Consistency Determination will be required prior to the construction of a solar field at this location.

The groundwater depth at this site (5 to 10 feet BGS) is shallower than the Preferred Alternative (USGS 2000). DNREC (Appendix A) advised that sites with a deeper groundwater table are preferable relative to sites with shallower groundwater depths. In addition, once constructed the footprint at the Skeet Range location (29 acres and 1.3 miles to the South ESS) may generate more impervious surface than the Preferred Alternative. This impervious surface may affect groundwater recharge at this location.

Effects to nearby surface water bodies from stormwater runoff during construction activities are potentially greater for the Skeet Range location as the construction footprint is larger than the Preferred Alternative and the surface soil may be impacted by skeet/clay target fragments and spent munitions and lead from spent bullets and shot. Potential stormwater runoff effects to nearby surface water bodies during construction activities will be mitigated via the implementation of the ESC plan and stormwater BMPs.

In sum, relative to the Preferred Alternative, the shallow groundwater, large construction footprint, large post-construction impervious surface, and the potential for lead-affected soil indicate that the construction of the solar field at the Skeet Range location has the potential to have a **moderate negative** impact on water resources.

5.7.1.3 *Alternative 2 – Bergold Farm Location*

The development of a solar energy farm at the Bergold Farm location may impact an isolated, 0.05 acre man-made irrigation pond located on the northeastern boundary of this parcel (DAFB 2009; Figure 5). Given the location of the wetland feature, the project area could be modified slightly to avoid impacts to this small wetland. If construction of the Proposed Action impacts this wetland,

a USACE 404 permit would be required. This permit may include wetland mitigation requirements.

The Bergold Farm location does not fall within a FEMA-designated floodplain or flood hazard area, but it is located within Delaware's Coastal Management Area and a formal Federal Consistency Determination will be required prior to the construction of a solar field at this location.

The groundwater depth at this site (5 to 10 feet BGS) is also shallower than the Preferred Alternative (USGS 2000). Construction at sites with a deeper groundwater table is preferable to sites with shallower groundwater depths (DNREC; Appendix A). In addition, the post-construction footprint of the Bergold Farm solar field (40 acres and 1.6 miles to the South ESS) will generate the most impervious surface of all the Action Alternatives, which in turn will affect groundwater recharge.

Effects to nearby surface water bodies from stormwater runoff during construction activities are potentially greater for the Bergold Farm location as the construction footprint is larger than the other Action Alternatives and the surface soil is affected by jet fuel and PFAS constituents. Potential stormwater runoff effects to nearby surface water bodies during construction activities will be mitigated via the implementation of the ESC plan and stormwater BMPs.

In sum, relative to the Preferred Alternative, the shallow groundwater, large construction footprint, large post-construction impervious surface, affected soil, and the potential to impact a 0.05 acre isolated wetland indicate that the construction of the solar field at the Bergold Farm location has the potential to have a **moderate negative** impact on water resources.

5.7.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, DAFB would not develop a solar energy project on base-owned land; therefore, **no impacts** to water resources would occur.

5.8 Health and Safety

5.8.1 Impacts and Significance of Effects

5.8.1.1 *Preferred Alternative – Vacant Lot Northwest of the Base Recycling Center (Building 650)*

Solar field construction and operations activities will follow all applicable DAFB and OSHA regulations and guidance. There is no evidence regarding the presence of hazardous materials or contaminated media at the VL location; therefore, exposure to these items is not expected during project construction or operation. This alternative is not within a QD arc.

Regarding airfield safety, the Preferred Alternative is not within the boundaries of a CZ or APZ (Figure 6) and the PNNL (2017) report indicated that, with the appropriate pre-construction, site-specific SGHAT modeling to adjust panel tilt angle and azimuth, it is not likely that this project will have glare impacts on DAFBs flight paths or ATCT. Therefore, it is concluded that the construction of the solar panels at the Preferred Alternative will have **no impact** on health and safety of DAFB military or civilian personnel or that of the surrounding public.

5.8.1.2 *Alternative 1 – Skeet Range Location*

Solar field construction and operations activities will follow all applicable DAFB and OSHA regulations and guidance. This alternative is not within any facility QD Arc, but past use of this area as a skeet shooting range has potentially impacted soil and groundwater. Should soil or groundwater contamination be present above health and safety standards, workers may be exposed during installation and operation of this solar energy project. If Alternative 1 is selected, a site investigation may be warranted to document and assess potential health and safety concerns associated with developing the site for solar energy generation.

Regarding airfield safety, the Skeet Range location is not within the boundaries of a CZ or APZ (Figure 6) and the SGHAT model indicated that a FAA-compliant solar panel array can be designed at this location (Barrett 2016). Further, if this location is selected for the Proposed Action, additional glare modeling would be conducted during the design phase to ensure compliance with FAA glare standards.

Given the potential for affected media (e.g., soil, groundwater) at the Skeet Range location, it is concluded that the construction of the solar panels at this location has the potential to have a **minor negative** impact on the health and safety of DAFB military or civilian personnel or that of the surrounding public.

5.8.1.3 *Alternative 2 – Bergold Farm Location*

Solar field construction and operations activities will follow all applicable DAFB and OSHA regulations and guidance. Environmental contamination in the form of jet fuel and PFAS constituents associated with the 2006 C-5 crash are present in soils and groundwater at this location. Exposure to affected soil and groundwater may occur during the construction phase at this location. This alternative is not within a QD arc.

Regarding airfield safety, the Bergold Farm location is directly adjacent to the runway 32 CZ and APZ I (Figure 6) and, while the SGHAT model indicated that a FAA-compliant solar panel array can be designed at this location, this model also indicated that there is a "low potential for after-image" associated with runway 32 under this design (Barrett 2016). If this location is selected for the Proposed Action, additional glare modeling would be conducted during the design phase to ensure compliance with FAA glare standards.

Given the proximity of the Bergold Farm site to the runway 32 CZ and APZ I and the "low potential for after-image" associated with runway 32 designation, and the presence of affected media (e.g., soil, groundwater) at this location, it is concluded that the construction of the solar panels at the Alternative 2 location has the potential to have a **moderate negative** impact on the health and safety of DAFB military or civilian personnel or that of the surrounding public.

5.8.1.4 *Alternative 3 – No Action Alternative*

Under the No Action Alternative, the Proposed Action would not be built. Under this alternative there would be **no impacts** to health and safety considerations at DAFB.

6.0 CUMULATIVE AND ADVERSE EFFECTS

6.1 Cumulative Impacts

In accordance with the NEPA guidance that was applicable when the Scope of Work (SOW) for this EA was produced (March 20, 2020), it is necessary to consider the cumulative impacts from the implementation of the Action Alternatives and the No Action Alternative when also considering past, present, and future projects at and near DAFB. Cumulative impacts are defined as "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 actions" (40 CFR 1508.7).

DAFB's Community Planner was consulted regarding past, present, and future off-site projects adjacent to the base that should be considered in this cumulative analysis. In addition, a list of projects to be evaluated in an upcoming Installation Development EA (SOW dated April 28, 2021) was added to this list. Note that the Community Planner and the Installation Development EA SOW did not identify any off-site projects, so this cumulative analysis focuses on recent, current, and planned projects within the current boundary of DAFB (Table 6-1).

6.1.1 No Action Alternative

There would be no cumulative impacts from the No Action Alternative since no solar facility would be constructed at DAFB. The lack of a solar energy source would reduce the resiliency of the base, but not to a major extent.

6.1.2 Action Alternatives

For the purpose of the cumulative impacts discussion, all Action Alternatives are considered together in this section.

Biological Resources. No significant cumulative effects on biological resources would be expected. Negligible to minor, adverse effects on biological resources would be expected from an Action Alternative and the projects listed in Table 5-1. Many of the proposed projects have been or will be constructed in areas that are previously disturbed (e.g., building, asphalt, or maintained lawn areas) and do not contain important biological habitats.

Cultural Resources. No cumulative effects on cultural resources would be expected from the construction of any of the Action Alternatives. The construction of a solar field Action Alternative and the past, present, and future construction of the projects listed in Table 6-1 are closely coordinated with the SHPO and the affected Native American Tribes. Therefore, any land or resources (e.g., buildings, viewsheds, etc.) that would be impacted by demolition or construction activities would be evaluated prior to project implementation. If any of these resources are determined to be eligible for the NRHP, these projects would need to avoid, minimize, or mitigate the impacts.

Hazardous Materials and Wastes. No significant cumulative effects on hazardous materials and wastes would be expected. Short-term, minor, adverse effects could occur as a result of increases in hazardous materials and wastes associated with the construction, demolition and/or repair of the 51 projects listed in Table 6-1, but this waste will be appropriately managed according to local, state, and federal regulations, and the mid-to-long-term beneficial impacts associated with these projects (i.e., improving the current and future national security operations and mission readiness status of DAFB) outweigh these short-term minor impacts.

Air Space - No significant cumulative effects on air space would be expected. None of the projects listed in Table 6-1 have been or would be constructed within a CZ, APZI, or APZII. Glare from the solar field Action Alternative will be modeled following final site selection and engineering design to ensure compliance with FAA solar policy standards regarding glare impacts.

Land Use - No significant cumulative effects on land use would be expected. The construction of an Action Alternative would require a redesignation of a small area of "open space" or "outdoor recreation" to and "industrial" land use, but the new solar farm would be compatible with nearby land uses. The past, present, and future construction of the projects listed in Table 6-1 are generally consistent with DAFB planning documents and land use designations.

Infrastructure - No significant cumulative effects on infrastructure would be expected. Long-term, minor, beneficial effects would be expected from the construction of a solar field Action Alternative (increased energy resiliency) and infrastructure projects listed on Table 6-1. Taken together, these projects will ensure that the installation can sustain its current and future national security operations and mission readiness status.

Water Resources - No significant cumulative effects on water resources would be expected. The Action Alternatives evaluated herein and the projects listed in Table 6-1 may result in short-term, minor, adverse effects associated with increased soil runoff and sedimentation, and long-term, minor, adverse effects associated with the increase in impervious surfaces. However, implementation of an approved ESC plan and storm water BMPs during and after construction would minimize the potential for adverse effects resulting from erosion and transport of sediments in stormwater runoff.

Health and Safety. No significant cumulative effects on safety would be expected. The Proposed Action and projects presented in Table 6-1 would result in a short-term, minor, adverse effect on construction safety risks. Long-term, minor, beneficial effects on safety would be expected from replacing older structures with modern facilities, maintaining fitness facilities (e.g., running track, softball fields, tennis court), increasing energy resiliency and security (e.g., solar field and burying overhead utilities), and repairing facility gates and perimeter fencing.

6.2 Unavoidable Adverse Impacts

This EA identifies any unavoidable adverse impacts that would be required to implement the Action Alternatives and the significance of the potential impacts to resources and issues. Title 40 of the Code of Federal Regulations §1508.27 specifies that a determination of significance requires consideration of context and intensity. Construction of an Action Alternative would impact the local project area at DAFB. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable adverse impacts associated with implementing a solar field Action Alternative would include:

- Short-term – Potential erosion and sedimentation from soils disturbance, a temporary increase in fugitive dust and air emissions during construction, intermittent noise, and minor alterations to local traffic and airfield operations. However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and compliance with permit conditions would minimize these potential impacts.
- Long-term – Depending on the selected Action Alternative, between 3.3 and 40 acres of maintained lawn will be converted into an area of solar arrays, access roads, substations, service buildings, and other infrastructure. The land use classification for the selected Action Alternative will change from "open space" or "outdoor recreation" to "industrial".

For an Action Alternative to be constructed, these impacts would occur. The action is required to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. The Proposed Action will increase DAFB's energy security and reduce the purchase of commercially generated electrical power.

6.3 Reasonable and Prudent Measures and Best Management Practices

The Proposed Action Alternative would not result in significant adverse effects on the land or the surrounding area. However, BMPs and other minimization measures would be implemented to further eliminate or reduce the impacts. These general BMPs are summarized as follows:

- Clearing and grubbing would be timed with construction to minimize the exposure of cleared surfaces. Such activities would not be conducted during periods of wet weather. Construction activities would be staged to allow for the stabilization of disturbed soils.
- Fugitive dust-control techniques such as watering and stockpiling would be used to minimize adverse effects. All such techniques would conform to the applicable regulations.
- Soil erosion-control measures such as mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and hardened stream crossings would be utilized as appropriate.
- Areas of impervious surface should be minimized to the extent practicable.

- Contractors would be required to do the following to prevent pollutants from reaching the environment: 1) perform daily inspections of equipment, 2) maintain appropriate spill-containment materials onsite, 3) store all fuels and other materials in appropriate containers, and 4) conduct equipment maintenance activities at appropriate off-site facilities.
- Construction equipment would be used only as necessary during the daylight hours and would be maintained to the manufacture's specifications to minimize noise impacts.

6.4 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from implementation of an Action Alternative is evaluated from the standpoint of short-term effects and long-term effects.

The negative short-term construction impacts and the conversion of land use to and "industrial" classification would be minor compared to the positive benefits associated with the long-term increase in energy resiliency and security and the concomitant decrease in the regional production of greenhouse gases and other criteria pollutants (e.g., CO, NO_2, PM2.5, PM10, SO_2, Lead, and ozone).

6.5 Irreversible and Irretrievable Commitments of Resources

NEPA regulations (40 CFR) § 1502.16) require a discussion of any irreversible or irretrievable commitments of resources which would be involved with the implementation of an Action Alternative. An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Irreversible is a term that describes the loss of future options associated with nonrenewable resources (e.g., minerals, cultural resources, soil productivity, fossil fuel used during construction). Irretrievable is a term that applies to the loss of production, harvest, or use of natural resources (e.g., agricultural production, forest resources).

There are no known mineral deposits, forest resources, or agricultural areas within the boundaries of the Action Alternatives. Construction of an Action Alternative will convert some open space (i.e., Preferred Alternative – 3.3 acres; Alternative 1 - 29 acres; Alternative 2 - 40 acres). Land used in the construction of an Action Alternative is considered an irreversible commitment during the time period that the land is used for the solar farm. However, if a greater need arises for this land or if the solar farm is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will be necessary or desirable in the future.

Some fossil fuels, labor, and construction materials will be used during the construction and operation of an Action Alternative. Additionally, some labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not

retrievable. However, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources.

The commitment of above-referenced resources is based on the concept that the energy resiliency and security of DAFB will benefit from the construction of a solar energy farm. Moreover, the regional air quality will benefit from the addition of a renewable resource. These benefits are anticipated to outweigh the commitment of these resources.

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TABLES

Table 4-1. List of migratory bird species identified through the US Fish & Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system.

Common Name	Scientific Name	Bird of Conservation Concern?	Preferred Alternative	Skeet Range	Bergold Farm
American Oystercatcher	*Haematopus palliatus*	Yes		X	X
Bald Eagle	*Haliaeetus leucocephalus*	No	X	X	X
Black Skimmer	*Rynchops niger*	Yes		X	X
Bobolink	*Dolichonyx oryzivorus*	Yes	X	X	X
Buff-breasted Sandpiper	*Calidris subruficollis*	Yes	X	X	X
Clapper Rail	*Rallus crepitans*	Yes		X	X
Dunlin	*Calidris alpina arcticola*	Yes	X	X	X
Gull-billed Tern	*Gelochelidon nilotica*	Yes		X	X
Hudsonian Godwit	*Limosa haemastica*	Yes		X	X
Least Tern	*Sterna antillarum*	Yes		X	X
Lesser Yellowlegs	*Tringa flavipes*	Yes	X	X	X
Prothonotary Warbler	*Protonotaria citrea*	Yes	X	X	X
Red-throated Loon	*Gavia stellata*	Yes		X	X
Ruddy Turnstone	*Arenaria interpres morinella*	Yes	X	X	X
Rusty Blackbird	*Euphagus carolinus*	Yes	X	X	X
Seaside Sparrow	*Ammodramus maritimus*	Yes		X	X
Semipalmated Sandpiper	*Calidris pusilla*	Yes	X	X	X
Short-billed Dowitcher	*Limnodromus griseus*	Yes	X	X	X
Snowy Owl	*Bubo scandiacus*	Yes	X	X	X
Whimbrel	*Numenius phaeopus*	Yes		X	X
Willet	*Tringa semipalmata*	Yes		X	X
Wood Thrush	*Hylocichla mustelina*	Yes	X	X	X

Table 6-1: Past, Present, and Reasonably Foreseeable Projects on DAFB

Project Number	Project Name	Military Construction or Project Number	Fiscal Year
New Construction			
1	Security Forces Complex – Southeast and South Sides of Base	FJXT103000	2016
2	Install Concrete Pad and Gate	N/A	2017
3	Civil Engineering Compound – West and South Sides of Base	FJXT173000	N/A
4	Museum Conference Center	FJXT123002	N/A
5	LRS Parts Store	N/A	2024
6	SFS Indoor Training Facility	N/A	2027
7	Multi-Phase Hangar Complex	N/A	2024-2035
8	New Ammunition Storage Facility	N/A	2023-2026
Facility Renovation and/or Repair			
9	Building 212 (Child Development Center) Renovation	FJXT151032	N/A
10	Repair Multiple Roofs	N/A	2017
11	Repair HVAC and 1st Floor Interiors B203	N/A	2017
12	Repair Exterior Finishes Air Traffic Control B502	N/A	2017
13	Repair Bay Fire Suppression System B550		2018
14	Repair Taxiway Echo	N/A	2020
15	Maintain N. Ramp Pavement – Replace Spall Damaged Slabs	N/A	2019
16	Repair Munitions Gate Road Pavement	N/A	2018
17	Repair Computer Room Exhaust System B310	N/A	2018
18	Maintain Exterior Paint	N/A	2018
19	Repair Perimeter Security Fence	N/A	2023
20	Tree Trimming	N/A	2022-2025
21	Repair Building 635	N/A	2024
22	Repair Building 721	N/A	2024
Infrastructure			
23	Recreational Vehicle Parking Expansion	FJXT115003	2011
24	Softball Field Improvements	FJXT121122	2013
25	Intersection of Atlantic Street and Evreux Street Realignment	FJXT111249	2015
26	Type III Hydrant System Construction	FJXT073020	2017
27	Maintain Roofs Multiple Buildings	N/A	2017
28	Airfield Rubber Removal and Stripping	N/A	2017
29	Add/Alter Dorm Landscaping	N/A	2017
30	Aircraft Maintenance Hangar	N/A	2017

Table 6-1: Past, Present, and Reasonably Foreseeable Projects on DAFB

Project Number	Project Name	Military Construction or Project Number	Fiscal Year
31	Stormwater Maintenance Papa Row Swale	N/A	2017
32	Maintain/Improve Running Trail	N/A	2017
33	Maintain/Improve Playing Fields	N/A	2017
34	Maintain Exterior Paint B401	N/A	2017
35	Improve Outdoor Patio B403	N/A	2017
36	Maintain Surface Refinishing Tennis and Basketball Courts	N/A	2017
37	Overhead Utilities Burying	N/A	2018
38	Construct LRS Personnel Door and Stairway for Fire Egress and Operations B639	N/A	2018
39	Repair (SUS) EOD Shop B727 and Construct Secure Parking	N/A	2018
40	Relocate Base Running Track	N/A	2023
41	Repair/Construct South Ramp	N/A	2025
42	Repair/Construct Taxiway Hotel	N/A	2026
43	Relocate Gate 5	N/A	2024
44	Reconfigure Eagle Way	N/A	2026
Demolition			
45	PMEL Facility 913 and 919	N/A	2017
46	Building 789	N/A	2023
47	Building 459	N/A	N/A
48	Facility 716	N/A	2025
49	Demolition and Reconstruction of the Dover AFB Middle School/Welch Elementary School	N/A	N/A
Other			
50	Environmental Compliance Support for Storm Water Programs	N/A	2017
51	Allied Support for DFAC Refrigerator Pad and Kitchen Receptacles B403	N/A	2017

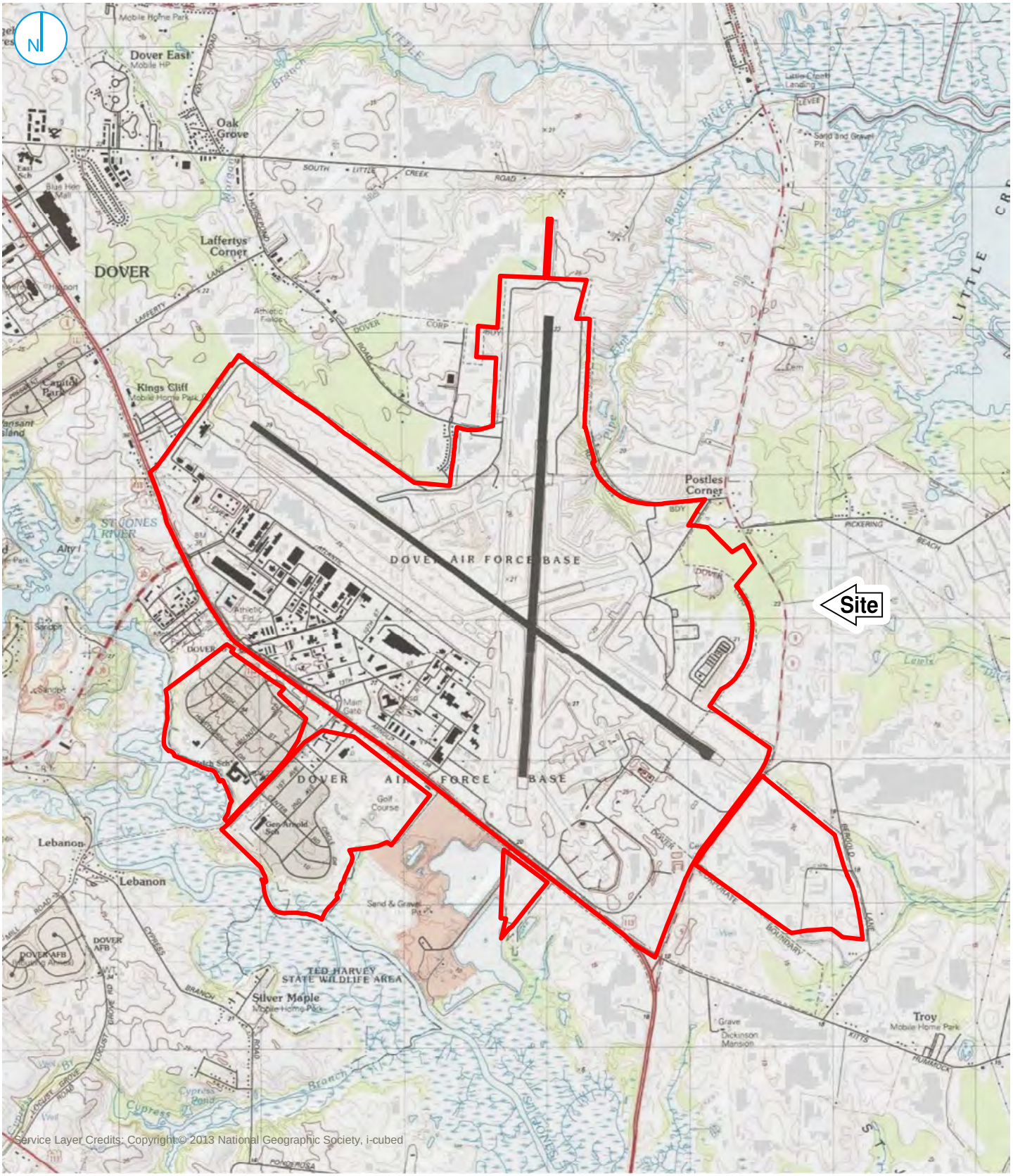
Sources:

DAFB's Community Planner was consulted regarding past, present, and future off-site projects adjacent to the base that were considered for the 2019 Land Aquisition EA for DAFB.

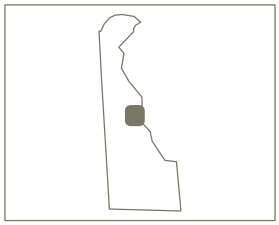
Projects were also taken from the April 28, 2021 Scope of Work for the forthcoming Installation Development EA

FIGURES

I:\Us-Acoe-Phila.12124\STDS\GIS\Solar_Farm\MXD\Figure1_DAFB.mxd



PROJECT: 1940076149 | DATED: 1/24/2022 | DESIGNER: RADOMIDM



KEY MAP

Map Scale: 1:1:48,000;
Map Center: 75°27'56"W 39°7'45"N

0 2,000 4,000 Feet

SITE LOCATION
SOLAR FARM ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 01

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

I:\Us-Acoe-Phila.12124\STDS\GIS\Solar_Farm\MXD\Figure2_Site_Locations.mxd

PROJECT: 1940076149 | DATED: 3/24/2021 | DESIGNER: RADOMIDM

LEGEND

ALTERNATIVE BOUNDARY

ELECTRICAL SUBSTATION (ESS)

0 1,250 2,500 Feet

ALTERNATIVE LOCATIONS

SOLAR FARM
ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 02

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

I:\Us-Acoe-Phila.12124\STDS\GIS\Solar_Farm\MXD\Figure4_FieldArea.mxd

PROJECT: 169000XXXX | DATED: 12/4/2020 | DESIGNER: RADOMIDM

LEGEND

BOUNDARY OF VACANT LOT NORTHWEST OF BUILDING 650

650 - Number indicate buildings that were included in the 2017 glare assessment for roof-mounted photovoltaic solar opportunities

0 150 300 Feet

PREFERRED ALTERNATIVE - VACANT LOT NORTHWEST OF BUILDING 650

SOLAR FARM ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 03

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

I:\Us-Acoe-Phila.12124\STDS\GIS\Solar_Farm\MXD\Figure2_Skeet_Range.mxd

PROJECT: 169000XXXX | DATED: 12/4/2020 | DESIGNER: RADOMIDM

LEGEND

SKEET RANGE BOUNDARY

0 150 300 Feet

ALTERNATIVE 1 - SKEET RANGE

SOLAR FARM ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 04

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

A RAMBOLL COMPANY

RAMBOLL

I:\Us-Acoe-Phila.12124\STDS\GIS\Solar_Farm\MXD\Figure5_Bergold.mxd

PROJECT: 169000XXXX | DATED: 12/4/2020 | DESIGNER: RADOMIDM

LEGEND

- BERGOLD FARM BOUNDARY
- MAN-MADE IRRIGATION POND

0 250 500 Feet

ALTERNATIVE 2 - BERGOLD FARM

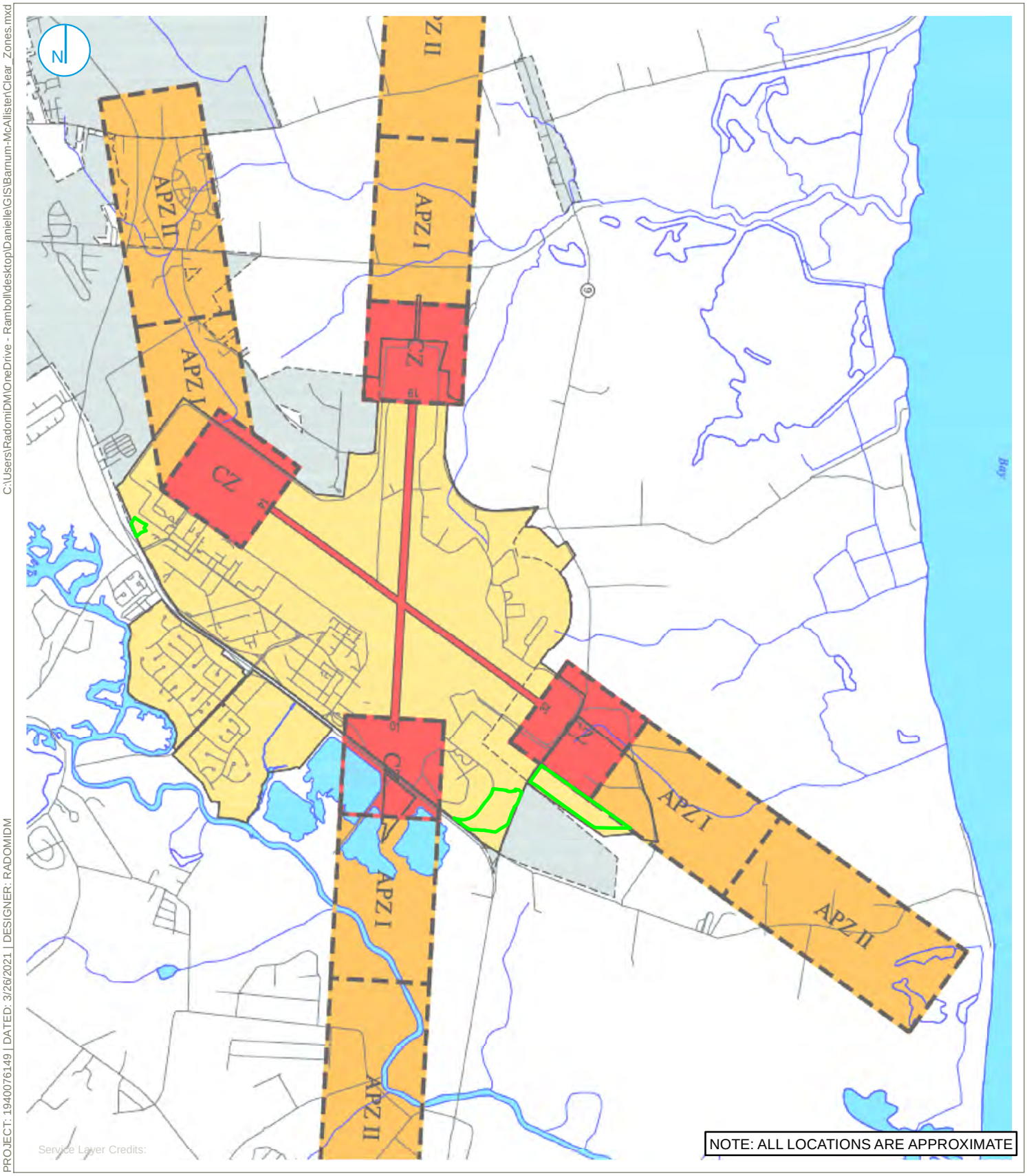
SOLAR FARM ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 05

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL



C:\Users\RadomiDM\OneDrive - Ramboll\desktop\Danielle\GIS\Barnum-McAllister\Clear_Zones.mxd

PROJECT: 1940076149 | DATED: 3/26/2021 | DESIGNER: RADOMIDM

LEGEND

- CLEAR ZONE
- ACCIDENT POTENTIAL ZONE
- DAFB
- MUNICIPAL BOUNDARY
- RUNWAY
- ROADWAY
- ALTERNATIVE LOCATIONS

0 2,000 4,000 Feet

CLEAR ZONES AND ACCIDENT POTENTIAL ZONES

SOLAR FARM ENVIRONMENTAL ASSESSMENT

DOVER AIR FORCE BASE
DOVER, DELAWARE

FIGURE 06

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

APPENDIX A – DNREC COMMENTS ON PRE-FINAL ENVIRONMENTAL ASSESSMENT AND WELLHEAD PROTECTION AREAS

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF CLIMATE, COASTAL & ENERGY
STATE STREET COMMONS
100 W. WATER STREET, SUITE 7B
DOVER, DELAWARE 19904

DELAWARE COASTAL MANAGEMENT PROGRAM

PHONE
(302) 739-9283

September 9, 2021

V. Lyle Trumbull, PhD
Ramboll
301 E. Germantown Pike
East Norriton, PA 19401

RE: Delaware Coastal Management Program — Request for Comments on the Pre-Final Environmental Assessment for Dover Air Force Base (DAFB) Solar Power Energy Farm (FC 2021.0027)

Dear Dr. Trumbull,

The Delaware Coastal Management Program (DCMP) of the Delaware Department of Natural Resources and Environmental Control (DNREC) appreciates the opportunity to review and comment on the above referenced pre-final Environmental Assessment (EA), received by this office on July 26, 2021. On behalf of the DAFB, Ramboll has prepared a pre-final EA to identify and evaluate environmental impacts associated with redeveloping a portion of DAFB-owned land into a solar farm.

PROPOSED ACTION

DAFB proposes to construct a solar farm comprised of fixed photovoltaic (PV) solar panels that convert sunlight into electricity to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy. Three alternative sites were considered as part of the pre-final EA. Each location varies in size, electrical output and connection capabilities. Alternative 1 at the former Skeet Range can support a solar farm with an output ranging from 3.8 MW to 5.3 MW and would be connected to DAFB's south electrical substation, 1.2 miles away, via underground conduit. Alternative 2 at the vacant lot on the Former National Testing Area can support a solar farm with an output ranging from 0.4 MW to 0.6 MW and would be connected to the adjacent, north electrical substation via underground conduit. Alternative 3 at the Bergold Farm can support a solar array capable of producing between 5.2 MW to 7.2 MW and would be connected to DAFB's south electrical substation, 1.6 miles away, via underground conduit.

EARLY COORDINATION PRIOR TO FEDERAL CONSISTENCY REVIEW

As described in Section 4.7 "Water Resources" of the pre-final EA, pursuant to the Coastal Zone Management Act (CZMA) of 1972, as amended, each federal agency activity within or outside the coastal zone that can have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs. Federal agencies are advised to provide state agencies with a consistency determination at the earliest practicable time in the planning or reassessment of an activity, and also before the federal agency reaches a significant point of decision-making in its review process.

Ramboll has provided the pre-final EA to DCMP for early coordination purposes prior to regulatory engagement in order to gather input regarding potential project-related impacts to Delaware's coastal resources and uses and potential actions that can be taken to minimize these impacts (e.g., construction windows, Best Management Practices, etc.).

Ramboll has noted within the pre-final EA that a federal consistency determination will be required before construction of the selected Alternative commences.

COMMENTS

The DNREC DCMP coordinated the review of the pre-final EA with networked partners. The following agencies participated in this review:

DNREC, Division of Water, Groundwater Discharges Section
DNREC, Division of Water, Water Supply Section
DNREC, Division of Waste and Hazardous Substances
DNREC, Division of Climate, Coastal and Energy, Energy Section

Based on consultation with networked partners, the DCMP would like to proffer the following recommendations and guidance while Alternatives are considered:

Groundwater Resources
As it relates to groundwater resource protection, a deeper groundwater table, such as at the Skeet Range location, is preferable compared with a shallower site.

Placement of impervious cover can result in loss of groundwater recharge. If a project or portion of a project were to take place in a wellhead protection area (WHPA) or an area of excellent ground water recharge potential (ERA), it is recommended to keep impervious cover down to approximately 20% within the WHPA or ERA. Exceedances beyond 20% may be authorized if some conditions are met, including mitigation. Measures may include a climatic water balance analysis to determine the amount of groundwater recharge that would be lost from constructing the project compared to pre-construction conditions. An infiltration structure (basin, gallery, etc.) with the capability to replenish a volume that meets or exceeds the amount lost on an annual basis would be required. Locations of WHPAs and ERAs can be found online at the State of Delaware's FirstMap.

Waste and Hazardous Substances
Work necessary for the development of the selected solar farm alternative should not interfere with any investigations or remedial actions conducted under Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), or DNREC's Tanks Program.

In consultation with DNREC, Division of Waste and Hazardous Substances, Remediation Section (DNREC-RS), it is recommended the DAFB Environmental Manager is consulted prior to development to avoid impacting existing or proposed groundwater monitoring wells on site, including wells for the ongoing Remedial Investigation to evaluate the extent of Per- and polyfluoroalkyl substances (PFAS) contamination. Additionally, it is recommended that steps are taken to minimize or eliminate worker exposure to any contaminated soil or groundwater and to protect the health and safety of workers. Health and safety training and following a contaminated materials management plan (or equivalent) may be helpful.

DNREC-RS agrees with the statement in Section 5.3.1.1 of the pre-final EA: "Further site investigation should be completed at the Skeet Range site to determine if remediation may be warranted prior to initiating construction activities for the solar farm."

Thank you for your early coordination with the DCMP, implementing the federal consistency provision of the CZMA, prior to official regulatory engagement. If you have any questions, please contact me or Kristi Lieske of my staff at (302) 739-9283.

Sincerely,

Kimberly B. Cole, Administrator
Delaware Coastal Management Program

KBC/kl

cc: File FC 2021.0027
Ping Wang, DNREC DW
Doug Rambo, DNREC DW
Mindy Anthony, DNREC DWHS
Tom Noyes, DNREC DCCE

Lyle Trumbull

From: Lieske, Kristi M (DNREC) <Kristi.Lieske@delaware.gov>
Sent: Wednesday, November 3, 2021 3:39 PM
To: Lyle Trumbull
Subject: RE: Comment Letter for Solar Farm at DAFB

Hi Lyle,

Sorry for the delay in response. I heard back from our Water Supply Section and confirmed that none of the sites have a WHPA or area of excellent groundwater recharge within them. He sent this screenshot of a picture of the sites overlayed with WHPA in blue circles and excellent groundwater recharge areas in the blue hashed areas.

Please let me know if you have any further questions or anything I can help with!

Take care,
Kristi

From: Lyle Trumbull <Lyle.Trumbull@ramboll.com>
Sent: Monday, October 18, 2021 3:04 PM
To: Lieske, Kristi M (DNREC) <Kristi.Lieske@delaware.gov>
Subject: RE: Comment Letter for Solar Farm at DAFB

Thanks Kristi. We do appreciate your help with this.

From: Lieske, Kristi M (DNREC) <Kristi.Lieske@delaware.gov>
Sent: Monday, October 18, 2021 2:44 PM
To: Lyle Trumbull <Lyle.Trumbull@ramboll.com>
Subject: RE: Comment Letter for Solar Farm at DAFB

Hi Lyle,

Thanks for reaching out regarding the Wellhead Protection Areas (WHPA). According to my search, there are a couple WHPAs on DAFB property, but it doesn't look like they are within the boundaries of any of the proposed solar farm sites. I am going to double check with our Water Supply Section though to ensure I am not missing anything.

I will let you know as soon as I hear back from them.

Also, just for your information and for future work, I wanted to share our DNREC NavMap site. It is a little more user-friendly than the State of Delaware's FirstMap. I should have guided it to you earlier! Alas, here it is:
https://dnrec.maps.arcgis.com/apps/webappviewer/index.html?id=573d0ba17dd04c0eb2d7a8f15f74f5d4

Talk to you soon,
Kristi

From: Lyle Trumbull <Lyle.Trumbull@ramboll.com>
Sent: Monday, October 18, 2021 7:40 AM
To: Lieske, Kristi M (DNREC) <Kristi.Lieske@delaware.gov>
Subject: RE: Comment Letter for Solar Farm at DAFB

Kristi,

Thanks again for this comment letter. I have finally had the chance to review in detail and I have a question for your groundwater group.

I can't seem to find information related to Wellhead Protection at the State of Delaware's FirstMap site. Can you please ask the appropriate person whether there are wellhead protection areas (WHP) within Dover Air Force Base and, If so, do the three candidate sites on the attached figure differ with regard to this parameter (i.e., site x is in a WHPA but site y and z are not).

Thanks in Advance, Lyle

V. Lyle Trumbull, PhD

Emergency Response & Environmental Assessment
004-APPLIED SCIENCE/NATURAL RESOURCES & RESTORATION

C 610-710-1919
lyle.trumbull@ramboll.com

Ramboll
301 E. Germantown Pike
East Norriton, PA 19401
USA
https://ramboll.com

From: Lieske, Kristi M (DNREC) <Kristi.Lieske@delaware.gov>
Sent: Friday, September 10, 2021 9:38 AM
To: Lyle Trumbull <Lyle.Trumbull@ramboll.com>
Subject: Comment Letter for Solar Farm at DAFB

Good morning Lyle,

Thank you for the opportunity to review and comment on the pre-final Environmental Assessment for the solar farm at Dover Air Force Base. Please find attached Delaware Coastal Management Program's comment letter providing guidance and comments at this early coordination phase of the project.

As plans for the solar farm progress, please do not hesitate to contact Tom Noyes (thomas.noyes@delaware.gov) with the Energy Section in DNREC, Division of Climate, Coastal, and Energy to use as a resource.

Please let me know if you have any questions.

Thank you,
Kristi

Kristi Lieske
Planner IV
DNREC Delaware Coastal Programs
100 W. Water St. Ste 7B, Dover, Delaware 19904
(302) 739-9136

APPENDIX B - USFWS INFORMATION FOR PLANNING AND CONSULTATION (IPAC) SYSTEM AND NATIONAL WETLAND INVENTORY (NWI) RESULTS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: March 26, 2021
Consultation Code: 05E2CB00-2021-SLI-0927
Event Code: 05E2CB00-2021-E-02246
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (VACANT LOT)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2021-SLI-0927
Event Code: 05E2CB00-2021-E-02246
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (VACANT LOT)
Project Type: POWER GENERATION
Project Description: The need for the Proposed Action is to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. The purpose of the Proposed Action is to increase DAFB's energy security and reduce the purchase of commercially generated electrical power. DAFB proposes to meet this objective by redeveloping a portion of base-owned land into a solar farm

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.133983099999995,-75.49261524607981,14z

Counties: Kent County, Delaware

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: March 26, 2021
Consultation Code: 05E2CB00-2021-SLI-0926
Event Code: 05E2CB00-2021-E-02247
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (SKEET RANGE)

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2021-SLI-0926
Event Code: 05E2CB00-2021-E-02247
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (SKEET RANGE)
Project Type: POWER GENERATION
Project Description: The need for the Proposed Action is to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. The purpose of the Proposed Action is to increase DAFB's energy security and reduce the purchase of commercially generated electrical power. DAFB proposes to meet this objective by redeveloping a portion of base-owned land into a solar farm.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.1094853,-75.45375221036328,14z

Counties: Kent County, Delaware

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: March 26, 2021
Consultation Code: 05E2CB00-2021-SLI-0928
Event Code: 05E2CB00-2021-E-02250
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (BERGOLD FARM)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2021-SLI-0928
Event Code: 05E2CB00-2021-E-02250
Project Name: ENVIRONMENTAL ASSESSMENT: DOVER AIRFORCE BASE SOLAR POWER ENERGY FARM (BERGOLD FARM)
Project Type: POWER GENERATION
Project Description: The need for the Proposed Action is to support the goals of the 2017-2036 Air Force Energy Flight Plan by supplying a portion of DAFB's electricity demand with renewable energy generated on the installation. The purpose of the Proposed Action is to increase DAFB's energy security and reduce the purchase of commercially generated electrical power. DAFB proposes to meet this objective by redeveloping a portion of base-owned land into a solar farm.

Project Location:

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Counties: Kent County, Delaware

Endangered Species Act Species

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Critical habitats

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For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

APPENDIX C - DNREC DIVISION OF FISH AND WILDLIFE RESPONSE

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
RICHARDSON & ROBBINS BUILDING
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

DIRECTOR'S OFFICE

PHONE
(302) 739-9910

January 19, 2021

Tami S. Calhoun
Dover Air Force Base
600 Chevron Ave.
Dover Air Force Base, DE 19902

Re: DAF 2021 Solar Farm

Dear Tami Calhoun:

Thank you for contacting the Species Conservation and Research Program (SCRP) about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project.

State Natural Heritage Site
A review of our database indicates that there are currently no records of state-rare or federally listed plants, animals or natural communities at this project site. As a result, at present, this project does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve which are two criteria used to identify "Designated Critical Resource Waters" in the Army Corps of Engineers (ACOE) Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property.

Fisheries
After reviewing the project description, it does not appear that any waterways will be impacted; therefore, there are no fisheries concerns at present.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,

Katie Kadlubar
Environmental Review Coordinator
Phone: (302) 735-8665
6180 Hay Point Landing Road
Smyrna, DE 19977

(See invoice on next page)

INVOICE - PAYMENT DUE

It is our policy to charge a fee for this environmental review service. This letter constitutes an invoice for $35.00 ($35.00/hour for a minimum of one hour). Please make your check payable to "Delaware Division of Fish and Wildlife" and submit to:

DE Division of Fish and Wildlife
89 Kings Hwy.
Dover, DE 19901
ATTN: Brandi Henderson

In order for us to properly process your payment, you must reference "DAF 2021 Solar Farm**" on your check.**

cc: Brandi Henderson, Fish and Wildlife Accounting Specialist; Code to 72900

APPENDIX D – DELAWARE SHPO RESPONSE AND RENDERINGS OF FUTURE PROJECT AT THE PREFERRED ALTERNATIVE LOCATION

From:	CALHOUN, TAMI S GS-12 USAF AMC 436 CES/CEIEC
To:	Lyle Trumbull
Cc:	sterling.h.johnson@usace.army.mil; SEIP, STEVEN M GS-14 USAF AMC 436 CES/CEN
Subject:	FW: Solar EA at DAFB
Date:	Thursday, December 16, 2021 7:45:34 AM
Attachments:	DAFB02.jpg DAFB03.jpg DAFB05.jpg DAFB01.jpg DAFB04.jpg

---

Good morning,
I was out sick yesterday so I just received this today.

SHPO response to the EA received! (See below)

Thanks,
Tami

Tami Calhoun
436th Civil Engineering Sq/Environmental
Natural and Cultural Resources, NEPA
Alt HazMat/HazWaste/Toxics/EMS
Office: 302-677-5691
Cell/Telework: 302-222-9098
DSN: 445-5691
tami.calhoun.2@us.af.mil

From: Briggs, Kara (DOS) <Kara.Briggs@delaware.gov>
Sent: Wednesday, December 15, 2021 11:47 AM
To: CALHOUN, TAMI S GS-12 USAF AMC 436 CES/CEIEC <tami.calhoun.2@us.af.mil>
Subject: [Non-DoD Source] Solar EA at DAFB

Good Morning Tami,
Thank you for your diligence in attempting to obtain as requested the additional information required for our office to make a determination with this proposed project.

As you recently explained, the plans/drawings for this project do not yet exist and as such you are not able to provided them for my review. However, your submission of proposed project location images (attached) were greatly appreciated. This information was reviewed in coordination with one of our archaeologists, Sarah Carr who then provided the following determination:

Based on the materials submitted, the proposed undertaking will have no adverse effect on any historic properties. The Hoffecker Site (K06956) is within the potential APE. In 2002, Parsons completed a Phase II investigation on the site (NADB #43624). Extensive excavations

were conducted on the project area and found the site not eligible for the National Register of Historic Places (NRHP). Otherwise the APE is not close enough to water to have potential for prehistoric archaeological resources. Historic aerials and topographic maps show a fair amount of disturbance on the parcel, so there is low potential for historic archaeological resources as well. This location would be the preferred option in regards to archaeological resources, as it has already been surveyed and evaluated.

Please let me know if you have any additional questions.

Thank you,
Kara

Kara A. Briggs
Architectural Historian
Tax Credit Program Manager
21 The Green| Dover, DE 19901
tel (302) 736-7400
Historical and Cultural Affairs

website | **vCard** | **map** | **email**

Notice: all state employee email addresses now end in @delaware.gov

PREFERRED ALTERNATIVE RENDERINGS

Attachment D **Graphic artists' renderings of the proposed solar energy farm at the Preferred Alternative location (Vacant Lot at the Former National Testing Area)**

Dover Air Force Base – Solar Power Energy Farm Environmental Assessment, Dover, DE

Rendering no.	Date
1	Fall of 2021

Graphic artists' rendering of the proposed solar farm at the Preferred Alternative location. This rendering is facing northwest.

Dover Air Force Base – Solar Power Energy Farm Environmental Assessment, Dover, DE

Rendering no.	Date
2	Fall of 2021

Graphic artists' rendering of the proposed solar farm at the Preferred Alternative location. This rendering is facing north-northwest.

Dover Air Force Base – Solar Power Energy Farm Environmental Assessment, Dover, DE

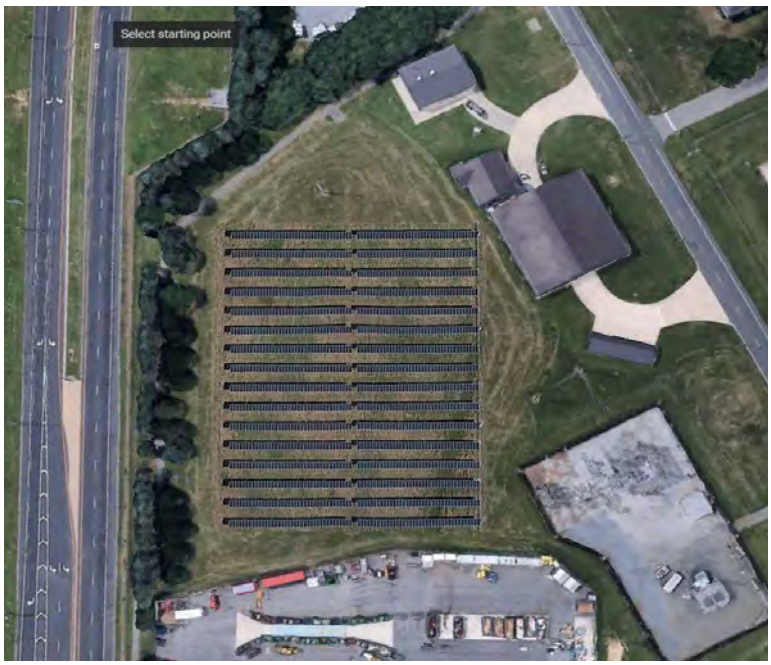
Rendering no.	Date
3	Fall of 2021

Graphic artists' rendering of the proposed solar farm at the Preferred Alternative location. This rendering is facing northwest.

Dover Air Force Base – Solar Power Energy Farm Environmental Assessment, Dover, DE

Rendering no.	Date
4	Fall of 2021

Graphic artists' rendering of the proposed solar farm at the Preferred Alternative location. This rendering is an aerial view of the proposed project.



Dover Air Force Base – Solar Farm Environmental Assessment, Dover DE

Rendering no.	Date
5	Fall of 2021

Graphic artists' rendering of the proposed solar farm at the Preferred Alternative location. This rendering is facing northwest.