

DRAFT

ENVIRONMENTAL ASSESSMENT
FOR
CONSTRUCTION, OPERATION, AND
MAINTENANCE OF SOLAR PHOTOVOLTAIC
SYSTEMS AT NAVAL BASE VENTURA
COUNTY, PORT HUENEME, CALIFORNIA

JUNE 2015



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Cover Sheet

Responsible Federal Agency: U.S. Department of Navy

Cooperating Agencies: None

Title: Environmental Assessment for Construction, Operation, and Maintenance of Solar Photovoltaic Systems at Naval Base Ventura County Port Hueneme, California

Location: Naval Base Ventura County Port Hueneme, California

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Abstract:

The United States (U.S.) Department of the Navy (Navy) has prepared an Environmental Assessment (EA) to analyze the potential environmental impacts of the Construction, Operation, and Maintenance of Solar Photovoltaic (PV) Systems at Naval Base Ventura County Port Hueneme, California. The analysis considers construction, operation, and maintenance of a PV system at Naval Base Ventura County Port Hueneme. As part of the proposed project, the Navy would enter into an agreement with a local electric utility provider (private partner) to construct and operate a solar PV system at NBVC Port Hueneme with a contract duration of up to 37 years, with 35 years of system(s) service and 2 years for construction and decommissioning. The agreement would ensure fair compensation for the use of Navy lands where renewable energy generation would occur. The lease would support on-base generation of renewable energy for on- and off-base consumption via a private partner. In accordance with 10 U.S.C. §2667, the leases would provide for consideration (rent) to be paid in an amount not less than the fair market value of the leasehold interest, either in cash or in kind.

The Navy identified five sites (Parcels 9, 13, 16, 17, and 18) as potential locations for PV systems. Three alternatives as well as a No Action Alternative are considered. The Proposed Action/Alternative 1 consists of the installation of a ground-mounted PV system at all five parcels, and includes a combined acreage of approximately 45.25 acres (18.3 hectares). Implementation of the Proposed Action/Alternative 1 would result in a renewable energy generation asset up to 10 megawatts (MW) in capacity. Alternative 2 considers construction, operation, and maintenance at Parcels 13, 16, 17, and 18 for a total of 17.25 acres (7 hectares). Alternative 2 would result in a renewable energy generation asset up to 6 MW in capacity. Alternative 3 considers construction, operation, and maintenance at Parcels 9 and 13 for a total combined approximately 40 acres (16.2 hectares) and a renewable energy generation asset up to 9 MW in capacity.

The Proposed Action/Alternative 1 and Alternatives 2 and 3 would support the Navy's goal of having 1 Gigawatt of renewable energy under contract by the end of 2015.

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ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Traffic
APCD	Air Pollution Control District
APE	Area of Potential Effects
AR	Army Regulation
ARB	Air Resources Board
BMP	Best Management Practice
BSA	Biological Study Area
°C	degrees Celsius
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
CSP	Concentrated Solar Power
CUP	Conditional Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DoD	Department of Defense
DWQ	Department of Water Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
<i>FR</i>	<i>Federal Register</i>
GCL	Geosynthetic Clay Layer
GDL	Geosynthetic Drainage Layer
GIS	Geographic Information System
GHG	Greenhouse Gas
GW	Gigawatt
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
JLUS	Joint Land Use Study
KOP	key observation point
LID	Low Impact Development
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MW	Megawatt

NAAQS	National Ambient Air Quality Standards
NAVFAC	Naval Facilities Engineering Command
NAVSEA OP	Naval Sea Systems Command Operations
NEPA	National Environmental Policy Act
NO	nitric oxide
NO _x	nitrogen oxides
NO ₂	nitrogen dioxide
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NBVC	Naval Base Ventura County
O ₃	ozone
PCB	polychlorinated biphenyl
PM _{2.5}	fine particulate matter less than or equal to 2.5 microns in diameter
PM ₁₀	suspended particulate matter less than or equal to 10 microns in diameter
PPA	Power Purchase Agreement
PV	photovoltaic
ROI	Region of Influence
RONA	Record of Non-Applicability
RWQCB	Regional Water Quality Control Board
SECNAV	Secretary of the Navy
§	Section
SHPO	State Historic Preservation Officer
SO ₂	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
US-101	U.S. Highway 101
VOC	volatile organic compound
1GW	1 Gigawatt

Executive Summary

ES.1 Introduction/Background

The Department of the Navy has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] §4321, as amended), the Council on Environmental Quality (CEQ) implementing regulations for procedural provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508 [1997]), and Navy Procedures Implementing NEPA (32 CFR 775 [2004]). It presents an analysis of the potential environmental impacts of a proposed project and alternatives, including the No Action Alternative, pertaining to the Construction, Operation, and Maintenance of a Solar Photovoltaic (PV) System at Naval Base Ventura County (NBVC or Base) Port Hueneme, California.

The purpose of the proposed project is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations through the construction and operation of a solar PV system. The proposed project is needed to meet the renewable energy standards put forth by the 1 Gigawatt Initiative, Executive Order 13514, and the Secretary of the Navy Energy Goals. The policy for energy security and increased production of energy from alternative sources by 2020 includes a requirement in any potential agreement (or real estate outgrant) entered into by the Navy with a private partner that project infrastructure be ‘micro-grid-ready’. ‘Micro-grid ready’ means that the Navy would have the option to use any energy produced on base in the event of an area power outage or other circumstances.

A PV system would be developed to generate renewable energy at NBVC Port Hueneme under an acquisition strategy based on Model 2, Model 3, or a combination of Models 2 and 3.

Under a Model 2 acquisition strategy, the Navy and a private partner would enter into a lease agreement (or a real estate outgrant) to allow the private partner to use Navy land to construct, operate, and own the PV systems. The private partner would sell the generated power to customers outside the Navy. The approximate contract duration would be up to 37 years, with 35 years for operation and 2 years for construction and returning the land to pre-construction conditions. This acquisition strategy maximizes the total capacity (size) of the system based on available land, and is not limited by NBVC Port Hueneme’s electrical load.

In support of the Secretary of the Navy energy goals, the Navy would use the real estate action in accordance with 10 U.S.C. §2667 to ensure fair compensation for the use of Navy lands. The lease terms would enable the Navy to enhance NBVC Port Hueneme’s capability and energy security by ensuring or providing for the following:

- Legal access to renewable power during regional grid outage
- No capital cost to the Navy to install the specified on-site renewable energy
- No fees to access the power during emergency conditions (standard rates apply)
- A foundation to develop an on-base micro-grid

Under a Model 3 acquisition strategy, the Navy would enter into a Power Purchase Agreement (PPA) and license the land to allow a solar private partner to construct, operate, and own a solar PV system on the NBVC Port Hueneme. Once the systems are operational, the Navy would purchase and use all electricity generated from the systems. Standard PPA durations are approximately 20-years with a 5-year extension option. Upon contract expiration of the PPA, per Federal Acquisition Regulations 52.251-5(d), the solar power private partner would be required to remove the systems and return all project sites to pre-construction condition. This acquisition strategy limits the total capacity (size) of the system based on NBVC Port Hueneme's electrical load, and does not utilize the total amount of land available.

NBVC Port Hueneme personnel identified potential sites suitable for construction of a solar PV system. Site selection considered locations where long-term economically viable projects could be constructed without adversely affecting mission requirements.

Three alternatives were identified that met the reasonable alternative screening criteria described in Section 2.1. The Navy identified five sites (see Figure ES-1) as potential locations to be analyzed for construction and operation of a PV system at NBVC Port Hueneme. These sites include an existing landfill or vacant areas. Parcels 13, 16, 17, and 18 are topographically flat and are either paved or covered with vegetation. Parcel 9 is the location of a closed landfill and is gently mounded with a swale that serves as a retention area for rainfall. Project areas are described in detail in Sections 2.2.1 through 2.2.5. The Proposed Action/Alternative 1 consists of the installation of a ground-mounted PV system at all five parcels. The total acreage of the combined five sites would be 45.25 acres (18.3 hectares). Figure ES-1 shows the locations of the project areas. The Proposed Action/Alternative 1 includes the construction phase, operation of the PV system, and maintenance. Implementation of the Proposed Action/Alternative 1 would result in a renewable energy generation asset up to 10 megawatts in capacity.

Resource areas analyzed in detail in this EA include the following:

- Land Use
- Cultural Resources
- Biological Resources
- Air Quality and Climate Change
- Water Resources
- Traffic and Circulation
- Utilities
- Public Health and Safety
- Visual Quality

No significant impacts were identified. Table ES-1 provides a summary of each resource and the impacts identified during the analyses presented in Chapter 3.

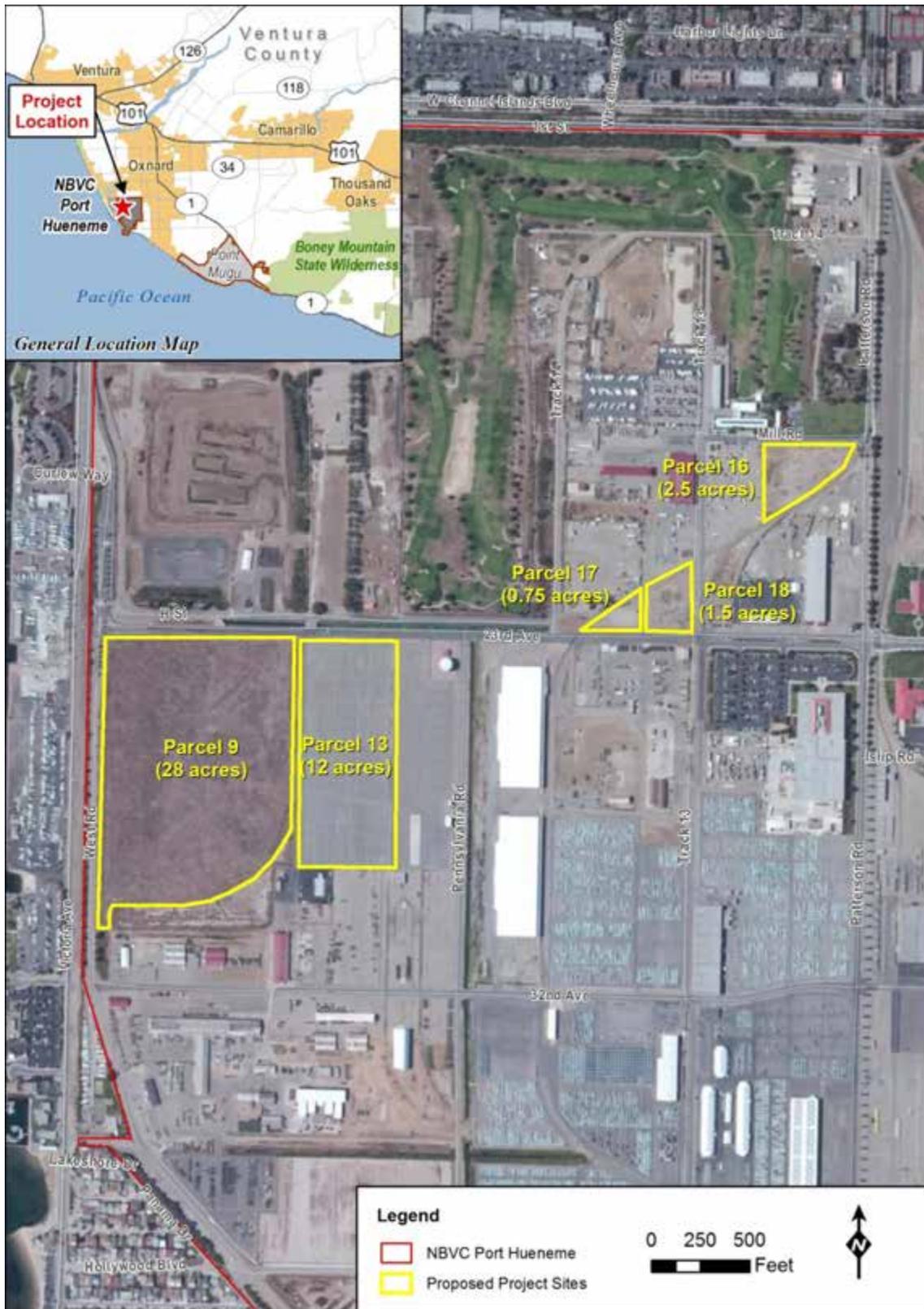


Figure ES-1. Parcels 9, 13, 16, 17, and 18

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Land Use	<p>No Significant Impacts</p> <p>With construction, operation, and maintenance of the Proposed Action/Alternative 1, there would be a long-term change in land use to renewable energy for all five parcels. Implementation of the proposed project at Parcels 9, 13, 16, 17, and 18 would be compatible with surrounding land uses. Construction at Parcel 9 would be conducted in accordance with the restrictions set forth in the IRP Site 14 Postclosure Maintenance Plan, which defines the conditions under which the Parcel can be developed for a variety of suitable land uses. The long-term changes in land use would be an insignificant impact and no conservation and environmental protection measures are proposed.</p>	<p>No Significant Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p>	<p>No Significant Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>
Cultural Resources	<p>No Impacts</p> <p>There are no cultural resources on or eligible for the National Register of Historic Places (NRHP) within the Area of Potential Effects (APE). Quarters D (north of Parcel 16) has been significantly altered by existing development, and the World War II railroad alignments (adjacent to Parcels 16, 17, and 18) are not NRHP-eligible. There would be no impacts to cultural resources.</p> <p>Conservation and Environmental Protection Measures</p> <p>If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the NRHP and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.</p>	<p>No Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p> <p>Conservation and Environmental Protection Measures</p> <p>would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p> <p>Conservation and Environmental Protection Measures</p> <p>would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>
Biological Resources	<p>No Significant Impacts</p> <p>Potential insignificant impacts could include the following:</p> <ul style="list-style-type: none"> • Temporary and indirect impacts to less mobile wildlife species from construction and/or demolition. • Temporary impacts to nearby migratory bird habitat from construction dust and noise. • Removal of up to 45.25 acres (18.3 hectares) of nonnative grassland, disturbed habitat, and previously developed areas with low ecological value associated with the project sites. 	<p>No Significant Impacts</p> <p>Similar to those describe for the Proposed Action/ Alternative 1; however, the PV system would exclude Parcel 9.</p> <p>Conservation and Environmental Protection Measures</p>	<p>No Significant Impacts</p> <p>Similar to those describe for the Proposed Action/ Alternative 1; however, the PV system would only be constructed, operated, and maintained on Parcels 9 and 13.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Biological Resources (Continued)	<ul style="list-style-type: none"> • Potential impacts to non-federally listed rare reptile species caused by construction activities, such as clearing and grubbing, site grading, and trenching. • Potential impacts to non-federally listed rare bird and mammal species due to loss of potential foraging habitat caused by construction activities. • Indirect insignificant potential “lake effect” impacts associated with bird strikes on the solar PV arrays. <p>Conservation and Environmental Protection Measures To protect migratory birds, mowing, clearing, and grading of any vegetated areas would be conducted during the nonbreeding season (October through February) when feasible. If occurring during the breeding season, nest search survey would be conducted by a qualified biologist. Active nests would be provided with a buffer. Nighttime construction would not occur. Operational lighting would provide minimal lighting while allowing for safe operation and sized at the lowest height possible.</p> <p>Preconstruction survey for burrowing owls would be conducted on Parcel 9 within 30 days prior to ground disturbance to prevent direct take of burrowing owls if burrowing owls begin to occupy the site. If burrowing owls or active burrows are found, protective measures would be implemented (e.g., protection in place, passive relocation).</p> <p>No construction or other disturbance would occur within 656 feet (200 meters) of any active owl burrow during the nesting season (CDFG 2012). If necessary, passive relocation would be coordinated with an NBVC Natural Resource Specialist. Relocation during the breeding season would not be permitted under any circumstances.</p> <p>Any burrow occupied by a burrowing owl within 150 feet (46 meters) of construction activities, during any time of the year, would have noise/disturbance barriers placed near the burrows to minimize impacts.</p> <p>A bird conservation program would be implemented to monitor site conditions and track avian mortality due to potential insignificant “lake effect” impacts both pre- and post-construction.</p>	would be the same as described for the Proposed Action/ Alternative 1.	Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.	
Water Resources	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Impacts
	Storm Water With operations, impacts to storm water from the additional impervious	Similar to those described for the	Similar to those described for the	There would be no change in

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
<p>Water Resources (Continued)</p>	<p>areas would be negligible. There would be no change in existing grades, runoff characteristics, patterns, or flow rates. During construction, no grading would occur at Parcel 9. The pre-project runoff amounts would be the same for post-project conditions.</p> <p>Hydrology Surface disturbance (e.g., grading, localized excavation) would occur during construction and trenching for underground electrical conduits. During construction, storm water runoff from the project sites could result in a slight increase in turbidity. Construction, however, would not degrade the local water quality or adversely affect current uses of local surface waters.</p> <p>Floodplains The project area is not located within a 100-year floodplain. Project structures would not increase the potential for flooding in local surface water bodies, restrict or redirect runoff flows, or cause localized flooding at project areas, and no significant impacts to floodplains would occur.</p> <p>Groundwater Construction and maintenance during operations would not require the use of NBVC Port Hueneme-supplied groundwater. Construction at Parcel 9 would adhere to the restrictions set forth in the Postclosure Maintenance Plan for Site 14 Landfill Final Cover (Tetra Tech 2004) to prevent damage to the cover.</p> <p>Conservation and Environmental Protection Measures Implementation of the Proposed Action/Alternative 1 would include obtaining a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. As part of the permit, a Storm Water Pollution Prevention Plan (SWPPP) incorporating BMPs would be developed. All construction activities with the potential of affecting water quality due to runoff would be conducted in accordance with SWPPP requirements.</p> <p>The private partner would be required to prepare a spill response plan. The spill response plan would address the requirements to incorporate BMPs.</p> <p>The private partner may be required to apply for municipal separate storm sewer system permit to meet the planning and land development requirements.</p> <p>A Soil Erosion and Sedimentation Control Plan would be prepared by the private partner. During construction, erosion and sediment in storm water</p>	<p>Proposed Action/Alternative 1, except that the PV system would not occur at Parcel 9; therefore, the potential for groundwater impacts would be lessened.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>Proposed Action/Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>existing conditions; therefore, no impacts would occur.</p>

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Water Resources (Continued)	<p>runoff would be controlled through BMPs and regular inspection of construction conditions.</p> <p>Post-construction revegetation with native species would occur. Top soil would be retained and re-used in revegetation of temporary disturbance areas. No significant amount of soils would be removed from the sites. Soils may be cut and relocated near the sites for grading.</p> <p>To minimize erosion potential during project construction, parking and driving would be restricted to designated areas, and no off-road vehicular traffic, including parking or driving in undisturbed areas, would be allowed.</p>			
Air Quality	<p>No Significant Impacts</p> <p>Implementation of the Proposed Action/Alternative 1 would result in localized, short-term effects on air quality at NBVC Port Hueneme. During operation, emissions of nitrogen oxide (NO_x), sulfur dioxide (SO₂), and carbon dioxide equivalent (CO₂e) would be reduced by lower consumption of grid-supplied electricity, and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also reduce emissions produced from conventional non-renewable generating sources. As total construction emissions would be below the <i>de minimis</i> thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur under the Proposed Action/Alternative 1.</p> <p>Conservation and Environmental Protection Measures</p> <p>Particulate matter emissions from construction and operations activities would be minimized through dust abatement measures, including the following:</p> <ul style="list-style-type: none"> • Applying soil stabilizers to disturbed, inactive portions of the project site to help bind soil together and make it less susceptible to erosion • Replacing ground cover in disturbed areas with a bonding or adhesive agent that is used for hydraulic seeding and/or appropriate native plant species, as appropriate • Watering exposed soil in disturbed areas with adequate frequency for continued moist soil • Suspending excavation and grading activities during periods of high wind activity • Cleaning (washing) all vehicles before they leave the project site • Locating staging areas as far away from sensitive receptors as 	<p>No Significant Impacts</p> <p>Similar to those described under the Proposed Action/ Alternative 1, except lessened slightly because Parcel 9 would not be developed.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those described under the Proposed Action/ Alternative 1, except lessened slightly because construction, operation, and maintenance of a PV system would only occur on Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Air Quality (Continued)	<p>practicable</p> <ul style="list-style-type: none"> Limiting idling time and scheduling construction truck trips during non-peak hours to the extent practicable to reduce peak-hour vehicle exhaust emissions 			
Traffic and Circulation	<p>No Significant Impacts</p> <p>There would be a temporary minor increase in traffic associated with construction. Trips associated with these activities include the delivery of construction materials and equipment, and the removal of construction debris. There would be a negligible increase in traffic associated with operations and maintenance. These trips would be periodic and would not regularly contribute to local or regional traffic.</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 13, 16, 17, and 18. Therefore, traffic generated during activities would be slightly less.</p>	<p>No Significant Impacts</p> <p>Similar to those described for Proposed Action/Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 9 and 13. Therefore, traffic generated during construction activities would be slightly less.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>
Utilities	<p>No Significant Impacts</p> <p>Water Minimal water would be used during construction to reduce fugitive dust during construction. No impacts to potable water use would occur.</p> <p>Solid Waste Negligible amounts of solid waste would be generated during demolition and construction, as well during operation, from personnel managing and working within the project sites.</p> <p>Energy Implementation of Proposed Action/Alternative 1 would result in the generation of an estimated 10 megawatts of renewable energy. Electrical wiring would either be trenched into the ground, installed overhead, or a combination of both to make the connection. Some modification to existing electric facilities at the point of connection would be required.</p> <p>Energy demand on NBVC Port Hueneme would not be increased as a result of the Proposed Action/Alternative 1. The Proposed Action/Alternative 1 would generate electrical power via the PV project, which would offset existing electrical demands.</p> <p>Conservation and Environmental Protection Measures</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, although at a reduced scale. Alternative 2 would contribute up to an estimated 6 MW toward the Navy's renewable energy goal of 1 GW by the end of Year 2015.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Significant Impacts</p> <p>Potential impacts would be similar to those described for the Proposed Action/Alternative 1, although at a reduced scale. Alternative 3 would contribute up to an estimated 9 MW toward the Navy's renewable energy goal of 1 GW by the end of Year 2015.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Utilities (Continued)	Significant impacts to utilities would not occur. Nevertheless, a Solid Waste Management Plan and Hazardous Waste Management Plan would be prepared to manage solid waste and potential hazardous waste encountered during construction. Hazardous waste generation would be minimized to the extent possible through identifying recycling or reclamation options. Section 2.6.6 provides detailed descriptions of these conservation and environmental protection measures.		Alternative 1.	
Public Health and Safety	No Significant Impacts	No Significant Impacts	No Significant Impacts	No Impacts
	<p>Installation Restoration Program Contaminated groundwater and hazardous chemicals are present on Parcel 9. The geosynthetic clay cover of the landfill cannot be punctured during construction of the PV system or damaged due to overstressing of the static load of the PV system ballasts. The private partner would design the project based on the requirements and restrictions outlined in the IRP Site 14 Postclosure Maintenance Plan to avoid impacts to public health and safety.</p> <p>Hazardous and Toxic Materials and Waste The private partner would be responsible for the safe identification and disposal of any broken or unusable panels identified during construction, operations, and maintenance in accordance with applicable laws and regulations. Any accidental spills would be addressed per measures specified in an Environmental Protection Plan to be prepared prior to construction. Operations and maintenance of the proposed PV system would not produce hazardous materials and waste.</p> <p>Asbestos-Containing Material and Lead-Based Paint The Proposed Action/Alternative 1 does not include building demolition activities that would cause on-station workers to encounter lead-based paint and asbestos. All construction-related waste would be disposed of in accordance with applicable laws and regulations.</p> <p>Conservation and Environmental Protection Measures The conservation and environmental protection measures outlined in Section 2.6, including preparation of an Environmental Protection Plan described in Section 2.6.1 and hazardous waste management, solid waste management, and health and safety plans described in Section 2.6.6, would be included as part of the project design with implementation of the Proposed Action/Alternative 1.</p>	<p>Similar to those described for the Proposed Action/Alternative 1, except the impacts would be lessened because construction, operation, and maintenance would not occur on Parcel 9.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>Similar to those described for the Proposed Action/Alternative 1, except the impacts would be lessened because construction, operation, and maintenance would only occur on Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table ES-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Visual Quality	<p>No Significant Impacts</p> <p>Construction Impacts The visual landscape would be temporarily affected by construction of the proposed solar facilities and ancillary features, including graded maintenance roads, perimeter fencing, and freestanding electrical equipment including the electrical current inverters and grid connection switchgear. Given the inherent visual aspects of construction activities, temporary viewshed disturbances would result from the staging, stockpiling, and placement of PV panels; construction-related traffic and equipment; temporary debris storage; and standard ground-clearing operations. During construction, direct impacts to sensitive viewers would be moderate to high, due primarily to the number of viewers along the affected vehicular corridors. Measures would be designed to minimize potential visual effects within 0.5 mile (0.8 kilometer) from stationary and linear KOPs and would reduce visual contrast from moderate to weak. Regardless of these measures, no significant impacts would occur from construction of the Proposed Action/Alternative 1.</p> <p>Operational Impacts Direct impacts to affected viewsheds would decline in contrast and memorability from levels described under construction impacts with the exception of Parcel 9. Visual change would be most apparent to viewers near Parcel 9. As such, no significant impacts would occur from operation of the Proposed Action/Alternative 1. Indirect and minor viewshed impacts would result from disturbance by occasional maintenance operations and as-needed equipment replacement.</p> <p>Conservation and Environmental Protection Measures Impact avoidance and minimization measures would be implemented to avoid and/or minimize color contrast that could result from implementation of the project. Visual contrast of vertical PV system elements within the landscape would be minimized by using the same or similar colors for surface coatings of the project area boundary fencing. The surface of the public-facing side of the project area fencing may include a fabric covering, or “scrim,” to conceal or obstruct PV system views.</p>	<p>No Significant Impacts</p> <p>Similar to those discussed under the Proposed Action/ Alternative 1, except the impacts would be reduced because the PV system would not be constructed, operated, and maintained on Parcel 9.</p> <p>Conservation and Environmental Protection Measures Would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those discussed under the Proposed Action/ Alternative 1, except the impacts would be reduced because the PV system would only be constructed, operated, and maintained on Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures Would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Key:

- APE = Area of Potential Effects
- CO₂e = carbon dioxide equivalent
- No_x = nitrogen oxide
- NRHP = National Register of Historic Places
- SO₂ = sulfur dioxide

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1.0 Purpose and Need for Project

1.1 INTRODUCTION/BACKGROUND

The United States (U.S.) Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Section [§] 4321, as amended), the Council on Environmental Quality (CEQ) implementing regulations for procedural provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508 [1997]), and Navy Procedures Implementing NEPA (32 CFR 775 [2004]). It presents an analysis of the potential environmental consequences of the Construction, Operation, and Maintenance of a Solar Photovoltaic (PV) System at Naval Base Ventura County (NBVC or Base) Port Hueneme, California.

1.1.1 History and Mission of Naval Base Ventura County Port Hueneme

The mission of NBVC Port Hueneme is to support and enable the Fleet, Fighter, and Family by providing effective and efficient readiness from the shore. NBVC Port Hueneme was formed in 2000 through the merger of Naval Air Station Point Mugu and Naval Construction Battalion Center Port Hueneme. NBVC Port Hueneme is comprised of three main facilities: Point Mugu, Port Hueneme, and San Nicolas Island. It serves as a mobilization site, deep-water port, railhead, and airfield to support Commander, Navy Region Southwest. NBVC Port Hueneme supports approximately 80 tenant commands with a Base population of more than 19,000 personnel.

At Port Hueneme, NBVC operates the only deep-water port between Los Angeles and San Francisco. NBVC Port Hueneme consists of approximately 1,650 acres of land, including approximately 16 miles (26 kilometers) of rail with dedicated access for on- and off-loading military freight for the various branches of service. The port is the west coast homeport of the Navy Seabees and supports the training and mobilization requirements for more than 2,600 active-duty personnel.

1.1.2 SECRETARY OF THE NAVY AND THE RENEWABLE ENERGY PROGRAM OFFICE

The Secretary of the Navy (SECNAV) has directed the development of an accelerated plan to produce 1 gigawatt (GW) of renewable energy capacity by the Navy by the end of 2015. One GW equals 1,000 megawatts (MW). The Navy's intended outcome is to have the 1 GW of renewable energy under contract by the end of 2015. Assistant SECNAV (Energy, Installations & Environment) has established a Renewable Energy Program Office to maintain focus and supply resources to obtain 1 GW of renewable energy within the SECNAV-directed timeline.

The Navy has developed acquisition strategies based on three separate models to procure or generate renewable energy to meet SECNAV goals. Figure 1-1 depicts the three renewable energy models.

Model 1: Off-base generation for on-base consumption

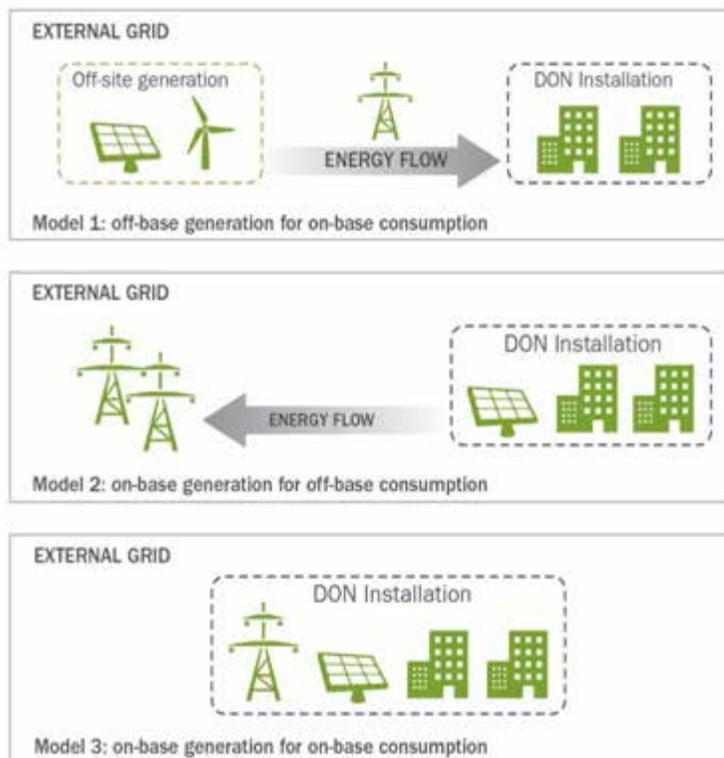
- Navy purchases new renewable energy generation for on-base load
- Renewable energy generation provides price stability and diversifies energy portfolio
- Acquisition: Inter-Agency Agreement

Model 2: On-base generation for off-base consumption

- Private partner produces on Navy property and exports energy to grid (allows for much higher capacity of product versus Model 3)
- Navy to receive energy security via lease terms
- Acquisition: Real estate outgrant

Model 3: On-base generation for on-base consumption

- Navy consumes all energy generated
- Provides price stability and diversifies energy portfolio
- Potential opportunity to increase energy security through micro-grid integration
- Acquisition: Power Purchase Agreement



DON = Navy
 10 U.S.C. 2911 Energy Performance Goals and Master Plan

Figure 1-1. Renewable Energy Models

Model 1 is an acquisition strategy that is being independently pursued with the Western Area Power Administration to purchase bundled energy for the entire Navy Region Southwest and will not be analyzed in this document. The model(s) proposed for this NBVC Port Hueneme renewable energy project are “Model 2”, “Model 3”, or a “combination of Models 2 and 3”. These are described in detail in Chapter 2.0, Section 2.2, Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18.

Under a Model 2 acquisition strategy, the Navy and a private partner would enter into a lease agreement (or a real estate outgrant) to allow the private partner to use Navy land to construct, operate, and own the PV systems. The private partner would sell the generated power to customers outside the Navy. The approximate contract duration would be up to 37 years, with 35 years for operation and 2 years for construction and returning the land to pre-construction condition. This acquisition strategy maximizes the total capacity (size) of the system based on available land, and is not limited by NBVC Port Hueneme’s electrical load.

In support of the SECNAV energy goals, the Navy would use the real estate action in accordance with 10 U.S.C. §2667 to ensure fair compensation for the use of Navy lands. The lease terms would enable the Navy to enhance NBVC Port Hueneme’s capability and energy security by ensuring or providing for the following:

- Legal access to renewable power during regional grid outage

- No capital cost to the Navy to install the specified of on-site renewable energy
- No fees to access the power during emergency conditions (standard rates apply)
- A foundation to develop an on-base micro-grid

In keeping with the authority of 10 U.S.C. §2667, outgrants (leases) under Model 2 shall provide for consideration (rent) to be paid, either in cash or in-kind, in an amount not less than the fair market value of the lease. Potential projects provided by the private partner to apply towards rents as in-kind consideration would meet necessary environmental regulations and requirements under separate reporting.

Under a Model 3 acquisition strategy, the Navy would enter into a Power Purchase Agreement (PPA) and license the land to allow a solar private partner to construct, operate, and own a solar PV system on NBVC Port Hueneme. Once the systems are operational, the Navy would purchase and use all electricity generated from the systems. Standard PPA durations are approximately 20 years with a 5-year extension option. Upon contract expiration of the PPA, per Federal Acquisition Regulations 52.251-5(d), the solar power private partner would be required to remove the systems and return all project sites to pre-construction condition. This acquisition strategy limits the total capacity (size) of the system based on NBVC Port Hueneme's electrical load, and does not utilize the total amount of land available.

Under both Models 2 and 3 acquisition strategies, the land impact, function of the facility, and conservation and environmental protection measures would be nearly identical. The only notable difference would be the construction and routing of electrical distribution lines to serve either the public grid or internal Navy micro-grid. There is also a possibility that a combination of Models 2 and 3 would be implemented where some power generated would be used by the Navy and some by outside customers.

The model(s) analyzed for this proposed NBVC Port Hueneme renewable energy project would be "Model 2", "Model 3", or a "combination of Models 2 and 3".

1.2 PROJECT LOCATION

NBVC Port Hueneme is located within the City of Port Hueneme in coastal Ventura County, California (Figure 1-2). NBVC Port Hueneme is bordered by the City of Port Hueneme to the north and east; the City of Oxnard to the east, north, and west; and Channel Islands Harbor to the west. Silver Strand Beach and the Pacific Ocean border the southern portion of NBVC Port Hueneme, and Port Hueneme Beach is southeast of the Port Hueneme Harbor entrance channel. The port facility is located on the agricultural Oxnard Plain, about 60 miles (97 kilometers) northwest of Los Angeles, on the southern California coast.



Figure 1-2. Regional Location Map

1.3 LEGAL REQUIREMENTS, POLICY DIRECTIVES, AND NAVY GUIDANCE

The federal government has provided directives to federal agencies like the Navy that require these agencies to reduce energy use, reduce reliance on traditional fossil fuel-based energy sources, and increase the consumption and production of renewable energy sources at their installations. Renewable energy sources include wind, solar, geothermal, biomass, and other sustainable methods. The following is a brief summary of these federal requirements and Navy initiatives.

- **Executive Order (EO) 13514**, October 5, 2009, Federal Leadership in Environmental, Energy, and Economic Performance sets federal energy requirements in several areas, including: Accountability and Transparency; Strategic Sustainability; Performance Planning; Greenhouse Gas (GHG) Management; Sustainable Buildings and Communities; Water Efficiency; Electronic Products and Services; Fleet and Transportation Management; and Pollution Prevention and Waste Reduction. This EO states that all federal agencies are to increase the use of renewable energy and implement renewable energy generation projects on federal property.
- **SECNAV Energy Goals**, October 14 2009, the Secretary of Navy established five aggressive renewable energy goals for the Navy's shore-based installations to meet by 2020. The goals pertain to improving fuel use in aircrafts as well as energy reduction and production. The goal most pertinent to this document is "*the Navy will produce at least 50 percent of shore-based energy requirements from alternative sources.*"
- **1Gigawatt Initiative**, October 1 2012, in support of the SECNAV Energy goals, Secretary Mabus chartered the 1 Gigawatt (1GW) Task Force to enable the Navy to procure 1GW of renewable energy generation capacity by 2020. 1GW of renewable energy generation directly addresses several of the mandates and goals for which the Navy is accountable: EO 13514 GHG reduction, the 10 U.S.C. §2911 "25 by 25" mandate (25 percent by 2025), Energy Policy Act 2005 graduated renewable energy targets, and EO 13423 renewable energy consumption goals, in addition to the Secretary's departmental goals. To reach the 50 percent renewable energy generation goal (which the 1GW goal directly supports) in a cost-effective fashion, the Navy must purchase or facilitate the production of significant quantities of renewable energy while reducing power consumed through energy efficiencies. Therefore, the overall Navy energy strategy includes both lines of effort: deploy renewable energy in support of the 1GW goal and simultaneously bring the 50-percent renewable energy generation goal closer by reducing overall energy consumption.

1.4 PURPOSE AND NEED FOR THE PROJECT

The purpose of the proposed project is to increase Navy installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy installations through the construction and operation of a solar PV system. The proposed project is needed to meet the renewable energy standards put forth by the 1 GW Initiative, EO 13514, and the SECNAV Energy Goals. The policy for energy security and increased production of energy from alternative sources by 2020 includes a

requirement in any potential agreement (or real estate outgrant) entered into by the Navy with a private partner that project infrastructure be 'micro-grid-ready'. 'Micro-grid ready' means that the Navy would have the option to use any energy produced on base in the event of an area power outage or other circumstances.

1.5 DECISION TO BE MADE

The decision to be made as a result of the analysis in this EA is to decide whether an environmental impact statement (EIS) needs to be prepared. An EIS would need to be prepared if it is determined that the Proposed Action/Alternative 1 or other alternative ultimately selected for implementation would have significant impacts to the human or natural environment. Should an EIS be deemed unnecessary based on the analysis of environmental impacts for the alternative selected, the decision would be documented in a Finding of No Significant Impact (FONSI).

1.6 SCOPE OF ANALYSIS

NBVC Port Hueneme conducted a review of current Base land uses to identify potential feasible locations to construct and operate a PV system. Current land use, surrounding land uses, and available space were considered for each site. This review resulted in the identification of five sites considered for evaluation in the preparation of this EA. The five site locations considered are described in Sections 2.2.1 through 2.2.5.

Resource areas analyzed in detail in this EA include the following:

- Land Use
- Cultural Resources
- Biological Resources
- Air Quality and Climate Change
- Water Resources
- Traffic and Circulation
- Utilities
- Public Health and Safety
- Visual Quality

Six additional resource areas were considered, but were not carried forward for detailed analysis in this EA because there would be no impacts (or only negligible impacts) on these resources from implementation of the alternatives. In accordance with the intent of NEPA and the Navy's policy to prepare concise and focused EAs, analyses of coastal resources; public services; noise; topography, geology, and soils; socioeconomics; and environmental justice were deemed unnecessary given the scope of the proposed project alternatives considered. Brief descriptions of these resource areas, their relationship to the proposed project alternatives, and the rationales for eliminating them from detailed analysis follow.

Coastal Resources: The Coastal Zone Management Act (CZMA) of 1972 (16 USC §1451) encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program where participating states submit a Coastal Management Plan to the National Oceanic and Atmospheric Administration for approval. California has an approved Coastal Management Plan. Each state defines its coastal zone in accordance with the CZMA. Excluded from any coastal zone are lands, the use of which by law is subject solely to the discretion of the federal government or which is held in trust by the federal government (16 U.S.C. §1453). The proposed project is entirely contained within the boundaries of NBVC Port Hueneme and is federal government property, thus specifically excluded from California's coastal zone.

Under the CZMA, federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. The Navy conducted an effects analysis as part of its determination of the action's effects to coastal uses or resources for purposes of federal consistency review under the CZMA. This was done to factually determine whether the action (even if conducted entirely within a federal enclave) would affect any coastal use or resource. None of the alternatives would have any effects on public access or public recreation since the sites are restricted from the public access and there is no recreational use of the proposed sites. None of the alternatives would affect biological productivity, water quality, or sensitive biological species since the sites are void of endangered or threatened species and any sensitive habitats or species. None of the alternatives would increase human health risk or environmental exposure to hazardous materials or hazardous wastes. None of the alternatives would disturb archeological sites or other cultural resources, substantially alter the visual character of the area, or generate regionally significant air emissions. Therefore, none of the alternatives would result in impacts to coastal uses and resources.

The Navy considered the effects that the proposed project alternatives would have on coastal uses and resources for the purposes of federal consistency review under the CZMA and determined there would be no reasonably foreseeable direct or indirect effects on coastal uses and resources. The Navy prepared a Coastal Consistency Negative Determination for submittal to the California Coastal Commission for concurrence.

Public Services: Public services include schools, police protection, fire and emergency medical services, and hazardous materials response. There are no public schools on NBVC Port Hueneme. Elementary school children living on and around NBVC Port Hueneme attend schools in the Hueneme School District, and high school students attend schools in the Oxnard Union High School District. Neither construction nor operation of a solar PV system would require additional personnel relocating to the area; consequently, there would be no additional burden on local schools. Therefore, none of the alternatives would result in impacts to public schools.

Public services provided on NBVC Port Hueneme include police protection (security force), federal fire and emergency medical services, and hazardous materials response (Navy 2012). The NBVC Port Hueneme security force protects activities and their facilities, materials,

equipment, personnel, and documents. Additional police protection is provided by the City of Oxnard Police Department and the Ventura County Sheriff's Department through mutual aid agreements. The NBVC Fire Department provides fire and emergency medical services to the Base. An agreement with the City of Oxnard and the Ventura County Fire Department augments these services. The comprehensive public services offered within the surrounding communities and on NBVC Port Hueneme to support current station operations would not be affected by the construction and operation of a solar PV system on NBVC Port Hueneme. The extremely minor and temporary potential impact on police protection, fire and emergency medical services, and hazardous materials response because of construction activities that would occur with implementation of a selected alternative would not degrade the level of public services currently offered on base. Furthermore, additional public services would not be required. Therefore, none of the alternatives would result in impacts to public services.

Noise: While there are human noise receptors near the project sites, noise that would be generated during construction of the proposed project would be short-term and would only take place during daylight hours. No long-term operations-related noise is expected from the solar PV systems. All applicable federal and Navy regulations would be followed during construction. The closest noise receptors at NBVC Port Hueneme would be on-base personnel working in nearby facilities or living in nearby housing, off-base individuals using South Victoria Avenue, a residential area located approximately 1,300 feet (396 meters) to the south of Parcel 9, and members of the public using the marine facilities associated with the Channel Islands Harbor. On NBVC Port Hueneme, noise levels from construction would be consistent with mission-related operations. Sound levels would be reduced by transmission loss through building/residence walls. Construction equipment noise would be reduced to levels that are within the acceptable range as determined by the federal government for on-base noise receptors and local and municipal noise ordinances for off-base noise receptors. Therefore, the alternatives would only result in negligible noise-related impacts.

Topography, Geology and Soils: The five sites considered for construction and operation of solar PV power systems development on NBVC Port Hueneme have been previously graded, paved, or otherwise disturbed. Parcel 9 is a closed landfill with an installed cover, over which a layer of soil and vegetation has been emplaced to prevent erosion. Parcels 13, 16, 17, and 18 are relatively flat, have been previously graded, and are either paved or partially paved. Only minimal additional grading might be required during construction, and no large cuts, fills, or alterations to drainage pathways would occur. Erosion of surface soils from PV panel drip lines during precipitation would be controlled using soil additives. The Navy has not identified any sources of soil contaminants that would affect the project sites during construction or operation of the proposed project. In addition, the conservation and environmental protection measures for storm water and erosion described in Section 2.6.5 would be incorporated into the construction phase of the selected alternative to further reduce any potential impacts. Therefore, only negligible impacts to topography, geology, and soils would result from implementation of the alternatives.

Socioeconomics. Construction and operation of a PV system on NBVC Port Hueneme would have no demonstrable long-term socioeconomic effect on the surrounding community. It would not attract a long-term worker population to the project vicinity nor affect the need for housing in

the area. It is expected that the crews required for the proposed construction activities would be comprised of local contractors in the surrounding county areas. Proposed operations would not require a regular staff of on-Base workers. Implementation of the alternatives would have short-term beneficial effects to the economy, as temporary construction jobs would be created. The overall effects on the local and regional economy and socioeconomic environment would be negligible.

Environmental Justice: EO 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations – directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The law also directs each agency to develop a strategy for implementing environmental justice. The EO is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

As the alternatives would take place within the NBVC Port Hueneme property boundaries, there would be no disproportionately high environmental or health impacts on low-income or minority populations. Therefore, Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations) impacts would not occur.

1.7 PUBLIC PARTICIPATION

Prior to preparing the EA, the Navy published and distributed initial project announcements in the form of postcards mailed to the public and other interested parties in the community. The postcards were mailed on December 19, 2014 and provided the Navy point of contact and address to submit all comments and questions by January 5, 2015. In addition, the Navy printed a Notice of Intent to Prepare an EA in local newspapers for 3 consecutive days. The Notice of Intent was published in the Ventura County Star, a daily publication, from December 19, 2014 through December 21, 2014, and in the Vida Newspaper Oxnard, a weekly publication, on December 18, 2014.

The Navy published and distributed the Draft EA for a 15-day Public Comment Period, as announced by a Notice of Availability published in the 'Notices' sections of the following local newspapers:

- Ventura County Star, a daily newspaper (3 consecutive days [Friday, June 5, 2015 through Sunday, June 7, 2015])
- Vida Newspaper Oxnard, a weekly newspaper (Thursday, June 4, 2015)

The Notice of Availability described the proposed project, solicited public comments on the Draft EA, provided dates of the public comment period, and announced that copies of the Draft EA were available for review at:

- E.P. Foster Library, 651 East Main Street, Ventura, California 93001
- Oxnard Main Library, 251 South 'A' Street, Oxnard, California 93030
- South Oxnard Library, 4300 Saviers Road, Oxnard, California 93033

- City of Port Hueneme (Ray D. Prueter Library), 510 Park Avenue, Port Hueneme, California 93041

and online at <http://www.cniv.navy.mil/NBVCSolarPV>.

All applicable comments submitted during the Draft EA public comment period will be considered during preparation of the Final EA. The Final EA and FONSI, if applicable, will be available for public review at the libraries listed above and on the Commander, Navy Region Southwest website. The Notice of Availability for the Final EA and FONSI, if applicable, will appear in the newspapers listed above. Appendix A of the Final EA will include a summary of the comments received on the Draft EA.

1.8 INTERGOVERNMENTAL COORDINATION

The Navy invites public participation in decision-making on new proposals through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better federal decision-making. Agencies, organizations, and members of the public with a potential interest in the proposed project are encouraged to participate. Appendix A provides a summary of public participation and interagency coordination and consultation conducted in support of preparation of this EA.

Interagency and Intergovernmental Coordination is a federally mandated process for informing and coordinating with other governmental agencies regarding federal proposed actions. NEPA requires that federal agencies responsible for preparing NEPA analyses and documentation do so “in cooperation with State and local governments” and other agencies with jurisdiction by law or special expertise (42 U.S.C. §4331[a] and 4332[c]).

The Navy notified relevant federal, state, and local agencies about the project. Near-by cities were provided copies of the Draft EA for their review and comment.

The Navy coordinated with the following governmental agencies during the preparation of this EA:

- California State Historic Preservation Officer (SHPO)
- California Coastal Commission
- Department of Toxic Substances Control
- Regional Water Quality Control Board (RWQCB)
- Santa Ynez Band of Chumash Indians
- City of Oxnard
- City of Camarillo
- City of Port Hueneme

2.0 Description of Proposed Action and Alternatives

2.1 REASONABLE ALTERNATIVE SCREENING FACTORS

CEQ Regulations for Implementing the Procedural Provisions of NEPA establish policies for federal agencies, including “using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will minimize adverse effects of these actions on the quality of the human environment” (40 CFR 1500.2 [e]). The Reasonable Alternatives Screening Factors described in Section 2.1 were applied by the Navy to hone the number of alternatives that meet the Navy’s Purpose of and Need for the Proposed Action. This EA only carries forward for detailed analysis those alternatives that could meet the purpose of and need for the project as defined in Chapter 1.0 and the below-listed reasonable alternative screening factors.

1. Contribute to SECNAV’s goal of obtaining 1 GW of renewable energy by the end of 2015 by providing a sufficiently sized parcel of land for PV system placement.
2. Be a suitable location and/or design capable of providing electricity at or below the current cost of traditional power (e.g., orientation/location/slope relative to the sun for generating higher amounts of power, or a lower system cost relative to output).
3. Be consistent with the Naval Sea Systems Command Operations (NAVSEA OP) 5 Volume 1 Ammunition and Explosives Safety Ashore Manual, which directs explosives planning and safety policies of the Navy.
4. Be consistent with NBVC Port Hueneme’s environmental policy per the Navy’s Environmental Management Systems Program (Naval Operations Instruction 5090.1, Chapter 1).
5. Be consistent with the NBVC Port Hueneme Integrated Natural Resources Management Plan (INRMP) and Integrated Cultural Resources Management Plan (ICRMP).
6. Be consistent with Navy security requirements and support installation security mission.

2.2 PROPOSED ACTION/ALTERNATIVE 1: CONSTRUCTION, OPERATION, AND MAINTENANCE OF GROUND-MOUNTED PV SYSTEMS ON PARCELS 9, 13, 16, 17, AND 18

Under the Proposed Action/Alternative 1, PV systems would be developed on Parcels 9, 13, 16, 17, and 18 (Figure 2-1) to generate renewable energy at NBVC Port Hueneme under either a “Model 2”, “Model 3”, or “combination of Models 2 and 3” acquisition strategy (see Figure 1-1 and Section 1.1.2). The approximate duration of the project would be up to 37 years with 35 years for operation and 2 years for construction and decommissioning (returning the land to pre-construction condition). The anticipated construction period is 1 year.

The Navy would enter into an agreement with a private partner to construct and operate a solar PV system at NBVC Port Hueneme. The agreement would ensure fair compensation for the use of Navy lands where renewable energy generation would occur. The lease would support on-base generation of renewable energy for on- and off-base consumption via a private partner. In accordance with 10 U.S.C. §2667, the leases would provide for consideration (rent) to be paid in an amount not less than the fair market value of the leasehold interest, either in cash or in kind.

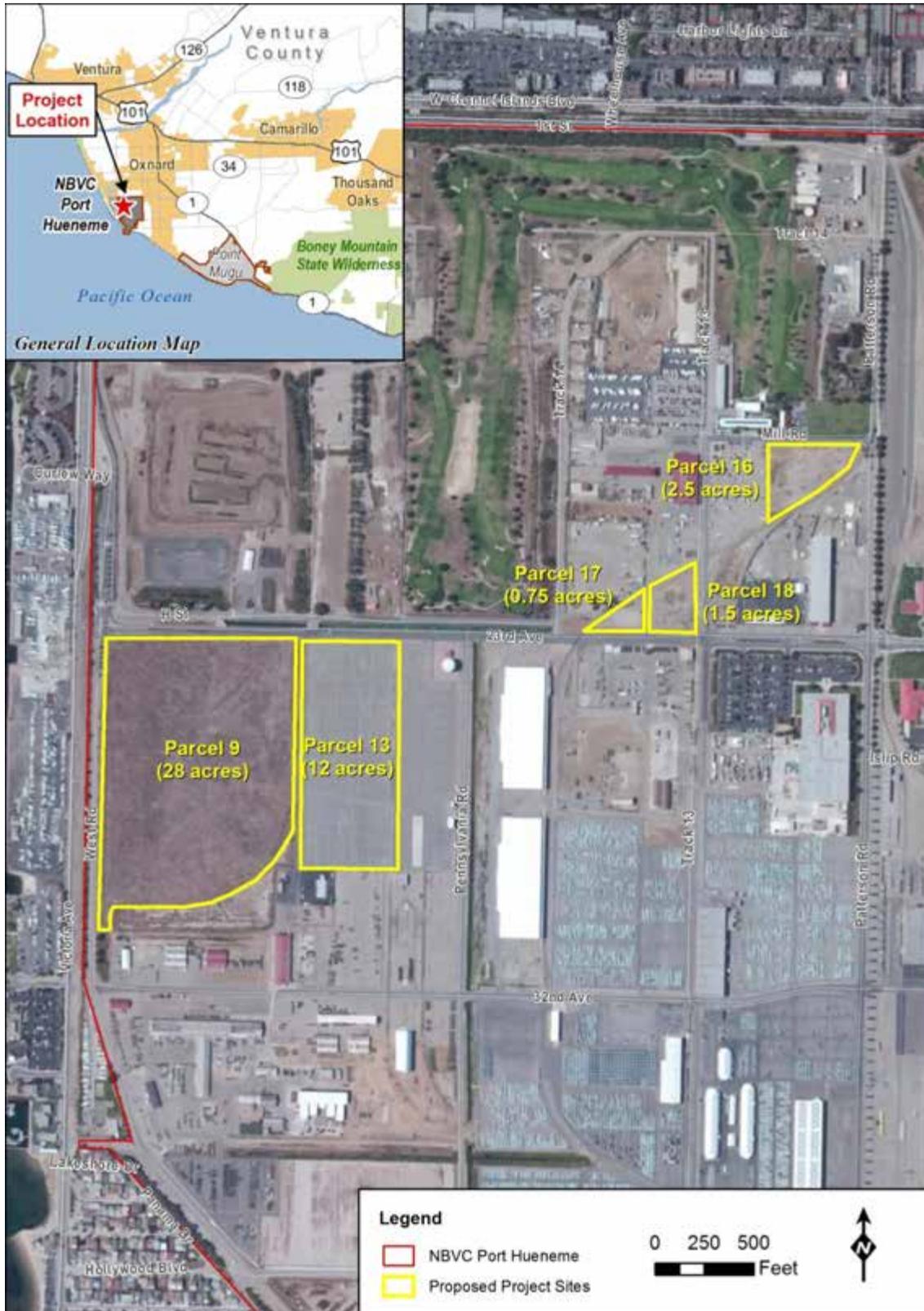


Figure 2-1. Parcels 9, 13, 16, 17, and 18

Construction and operation of a PV system using all five parcels would generate up to 10 MW of renewable energy at NBVC Port Hueneme, which would be capable of producing 15,660,000 kilowatt hours, which is enough to power 28,115 homes and eliminate 9,553 tons of carbon dioxide (CO₂) emissions per year.

The Proposed Action/Alternative 1 consists of installation of ground-mounted PV systems at all five project areas. The total acreage of the combined five sites would be approximately 45 acres (18 hectares). The Proposed Action/Alternative 1 includes the construction phase, operation, and maintenance of a PV system. Implementation of the Proposed Action/Alternative 1 would result in a renewable energy generation asset up to 10 MW in capacity. Parcels 9, 13, 16, 17, and 18 are described below.

2.2.1 PARCEL 9

Parcel 9 is a 28-acre (11.3-hectare) site located on a closed landfill south of 23rd Avenue and east of West Road. The topography is gently mounded with a demonstrated swale on the southern end because of its current land use as a closed landfill. The swale dips into a topographically flat area that serves as a retention area for rainfall. The area is connected to an outfall that flows into the municipal system. There are 5 raised landfill gas vents and five settlement markers incorporated into the design of the landfill cover.

2.2.2 PARCEL 13

Parcel 13 is a flat, 12.5-acre (5-hectare) site located on a mostly paved lot south of 23rd Avenue, east of West Road, and adjacent to Parcel 9 on Toledo Road. Rail tracks are present on the eastern boundary of Parcel 13. These tracks, associated with the Ventura County Railway, are currently not in operation. It has several groundwater monitoring wells currently installed. The project area is currently vacant or unused.

2.2.3 PARCEL 16

Parcel 16 is a flat, 2.5-acre (1-hectare) vacant, unused lot south of Mill Road, north of 23rd Avenue, west of Patterson Road, east of Track 13, and northeast of Parcel 18. Railroad tracks that originate from the remains of a railroad marshalling yard immediately east of Patterson Road and about 100 feet (30 meters) from the northeast corner of Parcel 16 pass along the south margin of Parcel 16. A major portion of the paved northwestern area of the project area is used as a parking lot for personnel working at Building PH-850.

2.2.4 PARCEL 17

Parcel 17 is a flat, 0.75-acre (0.3-hectare) vacant, unused lot located north of 23rd Avenue between Tracks 13 and 14. Railroad tracks that originate from the remains of a railroad marshalling yard immediately east of Patterson Road cross the north margin of Parcel 17.

2.2.5 PARCEL 18

Parcel 18 is a flat, 1.5-acre (0.6-hectare) partially vacant lot located north of 23rd Avenue and east of Parcel 17. Railroad tracks that originate from the remains of a railroad marshalling yard immediately east of Patterson Road cross the north margin of Parcel 18.

2.2.6 GROUND-MOUNTED PHOTOVOLTAIC PANELS

Ground-mounted solar PV systems would be built on relatively flat, undeveloped land. In areas with surface vegetation, ground-mounted solar PV systems may require the site to be cleared and grubbed. Access to ground-mounted systems would be restricted by a fence. A ground-mounted system would occupy all of the space contained within its fence line, and the area may include the construction of all-weather gravel roads between the rows of solar panels and around the site perimeter for maintenance access. Ground-mounted systems require either an underground or an overhead electrical line to provide electrical feedback to the nearest point of connection. A typical configuration for this type of system is to install vertical members into the ground, with panel mounting hardware, frames, motors, and/or the solar panels themselves affixed atop the constructed mounting structure. Foundations would be built on engineered fill or native soil at a minimum of 24 inches (61 centimeters) below adjacent grade or finished grade (typical for combined footings) (see Figure 2-2, Panel Mounting Methods, “Concrete Foundation Support Option”). If pole footings were used, each footing would consist of a 4-inch (10-centimeter) cross-sectional area and would require a depth of 4 feet to 6.5 feet (1.2 meters to 2 meters) below ground surface. Pole footings and pile depth indicated are typical approximations. The actual pile depth would be dependent on site geotechnical data and final structure design. Pile spacing would depend on the final design configuration proposed by the installer.

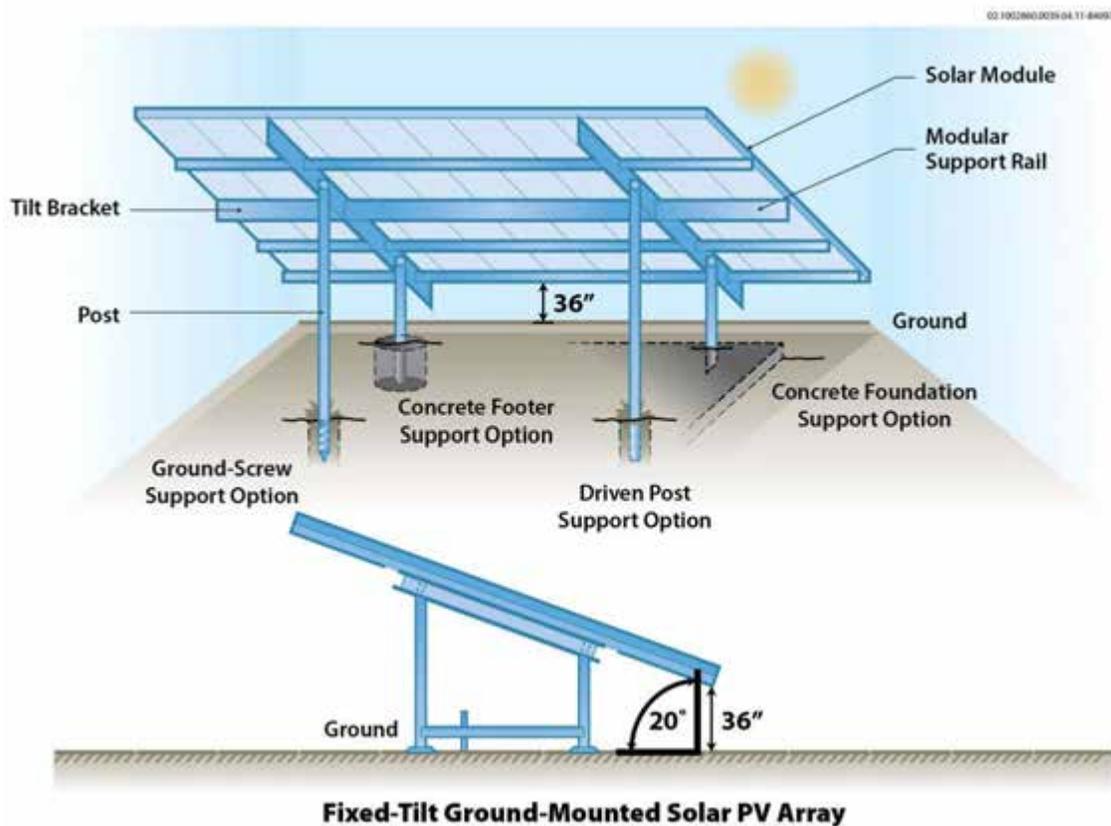


Figure 2-2. Panel Mounting Methods

Because Parcel 9 is a closed landfill with a subsurface cap installed, the panel mounting method would be altered to comply with the requirements contained in the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* (Tetra Tech 2004). This plan outlines the land uses appropriate for a closed landfill and restrictions required when considering construction on a closed landfill site. Three basic types of land use are suitable for the final cover. They are nonstructures, structures, and shallow underground utilities.

Nonstructure land uses deemed suitable for the final cover include:

- Open space
- Parking lots
- Storage areas
- Staging areas
- Parks
- Golf courses
- Cover surfaces other than nonirrigated vegetation as long as they protect and maintain the integrity of the geosynthetic clay layer (GCL) and geosynthetic drainage layer (GDL)

These nonstructure land uses are subject to requirements related to protection from increased water infiltration and erosion.

Specific structure land uses deemed suitable for the final cover are not detailed in the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* because appropriate structure types are too numerous. Rather, the plan provides guidelines and requirements when considering appropriate structures for development on the landfill final cover. These requirements include those set forth for nonstructures and the following:

- Gas control and monitoring
- Differential settlement analysis
- Loading to ensure bearing capacity, slope stability, and acceptable settlement
- Sufficient cover soil to protect the GCL and GDL

Shallow underground utilities deemed suitable for the final cover include:

- Electricity
- Cable
- Telephone
- Gas
- Steam
- Water
- Wastewater

All underground utilities must be placed above the GDL. Restrictions on other liquids are outlined to avoid damage to, or impairment of, surface vegetation, the GCL, or the GDL if leaking occurs. Microtunneling and horizontal drilling are not recommended installation techniques because of the high risk of damaging the GDL or GCL. Trenchless, continuous-coiled utility installation is preferred. In the case where backhoe trenching is necessary, depth of cut must be carefully controlled.

Subsurface placement of vertical supports and utility trenching would be conducted in adherence with the requirements of the plan, including a limit on earthwork to a depth of 2 feet (0.6 meter). An alternative foundation structure, including the use of concrete ballasts, would be considered for Parcel 9.

Two types of ground-mounted systems may be constructed at the project sites, depending on the private partner's site design: (fixed-tilt panel systems or tracker-mounted panel systems). Fixed-tilt solar arrays would remain stationary; whereas tracker-mounted arrays would be mounted on an axis and would be free to move throughout the day to maintain the best sun angle and maximize power output (see Figure 2-3, Fixed-Tilt Panel versus Single-Axis Tracking). It is estimated that the highest point of the solar array for a ground-mounted solar PV system would not exceed 8 feet (2.4 meters) above the ground surface and would depend on the solar PV system type (i.e., fixed-tilt or tracker-mounted) and tilt of the arrays. Fixed-tilt panels would maintain a fixed height, whereas the maximum height of tracker-mounted arrays would vary as the arrays move to track the sun. Ground-mounted panels would be approximately 5 feet (1.5 meters) wide and 3 feet (0.9 meter) long. The number of panels in each array, the type of ground-mounted system used, and the array configuration would depend on the private partner site design.

The conceptual design would allow for the most efficient placement and configuration of PV panels on the property. Installation of the panels and associated infrastructure would be conducted by the private partner or by private partner designated contractors. Once the systems are operational, the private partner would be responsible for maintenance and operation of the facilities. The private partner would also be responsible for the disposal of the facilities and restoration of the sites to existing conditions at the end of the agreement period.

2.2.7 CONSTRUCTION

It is estimated that the construction phase would require up to 1 year. Construction activities would be conducted in accordance with the conservation and environmental protection measures described in Section 2.6. Facilities to be constructed include solar PV panels, steel tracking structure, inverters, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the PV system. The ground-mounted systems would be enclosed by 8-foot-high chain link panels with barbed-wire outriggers in accordance with force protection standards. The purpose of the fencing would be to provide a safety barrier for unintended access to the site and equipment and as a security measure to protect from vandalism and theft.

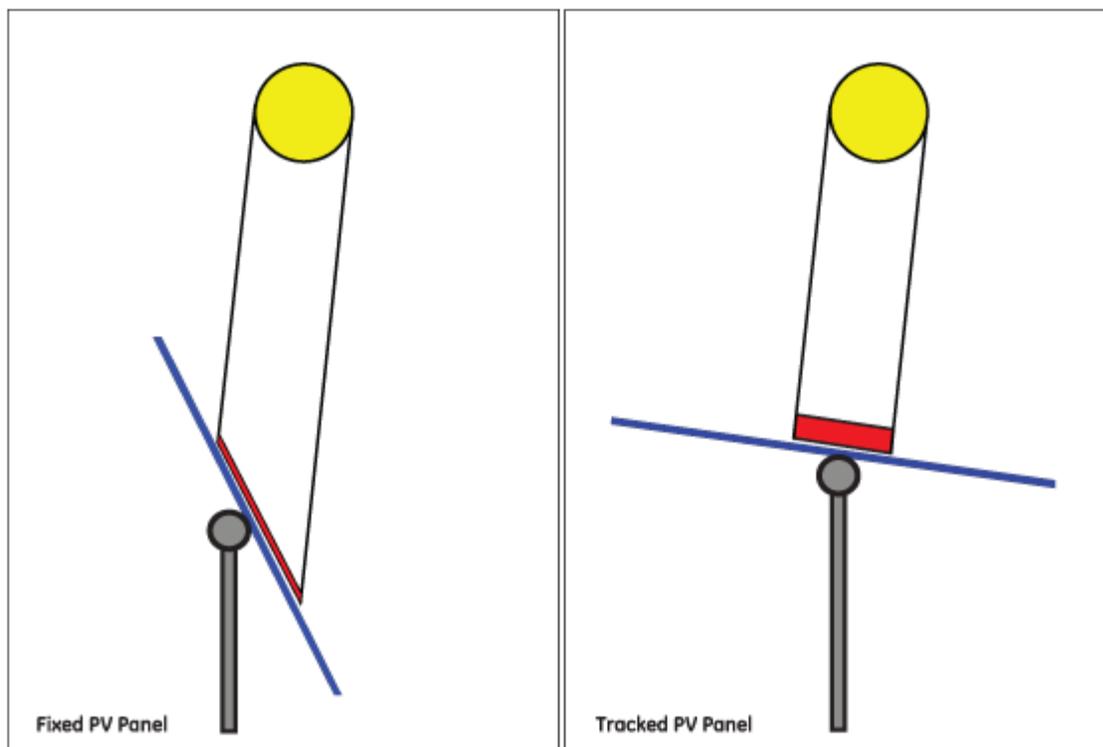


Figure 2-3. Fixed-Tilt Panel versus Single-Axis Tracking

Construction and installation of ground-mounted PV panels may involve the following site preparations:

- Grading to bare mineral soil (no vegetation and no intact root structures) to remove vegetation
- Installation of underground electrical lines (3 feet [1 meter] deep as required by Unified Facilities Criteria (UFC) codes except for Parcel 9 where the Post-Closure Maintenance Plan requires a maximum depth of 2 feet [0.6 meter])
- Boring or digging to a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface to accommodate support poles and footings, depending on support system design
- Installation of poles to connect the solar PV system to an electrical grid
- Placement of 6 to 8 inches (15 to 20 centimeters) of weed-free gravel over areas, as necessary
- Installation of fencing around the perimeter of the project
- Designation of temporary staging areas and construction equipment storage areas
- Placement of dumpsters to separate recyclable construction debris
- Use of equipment to install the PV arrays, including bulldozers, scrapers, backhoes, pile drivers, water trucks, trenchers, and truck-mounted mobile cranes

Trenching would be conducted between panels and in other areas as needed to install, connect, and bury power lines. Power lines may also be strung overhead on poles to a single connection point that would connect the PV system to a power grid, either public or a Navy micro-grid. Exact locations are not known at this time; however, prior to trenching, the private partner would conduct the appropriate geotechnical surveys in accordance with the relevant laws and regulations to ensure the area to be trenched is clear. The number of poles that would be placed is unknown at this time. For Parcel 9, all subsurface site preparations would be conducted in accordance with the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* (Tetra Tech 2004), including limiting depth of earth work to less than 2 feet (0.6 meter).

Construction would create debris that would be removed by the private partner upon completion of installation of the PV system. All materials would be disposed of in compliance with a project-specific Solid Waste Management Plan that adheres to Navy guidelines described in Section 2.6.6.

2.2.8 OPERATION AND MAINTENANCE

With a Model 2 acquisition strategy, the PV system would connect to the public electrical grid. With a Model 3 acquisition strategy, the PV system would connect to an internal Navy grid. A combination of Models 2 and 3 would allow for both types of connections. Operations activities would include, but not be limited to, use of all aspects of the project site, including use of access roads; electrical and mechanical systems; and maintenance and repair.

Inspections of the PV system would be conducted as required by the private partner to ensure infrastructure is in good operating condition. Panel cleaning would occur on an as needed basis determined by the private partner or a designated contractor. Panels are typically cleaned when efficiency and energy production are diminished. Water used to clean panels would be trucked in by the private partner. Any repairs or regular service would be conducted by the private partner or a designated contractor with access to NBVC Port Hueneme using existing roads. The private partner or a designated contractor would comply with all Navy regulations applicable to conducting work activities on Base and the conservation and environmental protection measures described in Section 2.6.

2.2.9 ACCESS

During construction, operations, and maintenance activities, NBVC Port Hueneme would be accessed from either the Victoria Gate on Victoria Avenue (commercial vehicles on Monday through Friday) or the Sunkist Gate on 23rd Avenue (all privately owned vehicles and commercial vehicles on weekends). No access improvements would be required as part of the Proposed Action/Alternative 1.

2.3 ALTERNATIVE 2: CONSTRUCTION, OPERATION, AND MAINTENANCE OF A GROUND-MOUNTED PV SYSTEM ON PARCELS 13, 16, 17, AND 18

Implementation of Alternative 2 would be the same as for the Proposed Action/Alternative 1, except that the PV system would only be constructed, operated, and maintained at Parcels 13, 16, 17, and 18 for a total combined acreage of 17.25 acres (7 hectares). Implementation of

Alternative 2 would result in a renewable energy generation asset up to 6 MW in capacity towards the Navy's renewable energy goal of 1 GW by the end of Year 2015. Under Alternative 2, the conservation and environmental protection measures would be the same as described for the Proposed Action/Alternative 1.

2.4 ALTERNATIVE 3: CONSTRUCTION, OPERATION, AND MAINTENANCE OF GROUND-MOUNTED PV SYSTEMS ON PARCELS 9 AND 13

Alternative 3 would be the same as the Proposed Action/Alternative 1, except that the PV system would only be constructed, operated, and maintained on Parcels 9 and 13, a 28-acre (11.3-hectare) closed landfill and a 12.5-acre (5-hectare) vacant parking lot, respectively. Implementation of Alternative 3 on the combined approximately 40 acres (16.2 hectares) would result in a renewable energy generation asset up to 9 MW in capacity towards the Navy's renewable energy goal of 1 GW by the end of the Year 2015. Under Alternative 3, the conservation and environmental protection measures would be the same as described for the Proposed Action/Alternative 1.

2.5 NO ACTION ALTERNATIVE

If the No Action Alternative were selected, a PV system would not be constructed and operated on the five project areas evaluated in this EA. Land uses for Parcels 9, 13, 16, 17, and 18 would continue under current operations.

The No Action Alternative provides a measure of the baseline/existing conditions against which the impacts of the alternatives can be compared. In this EA, the No Action Alternative is described in Chapter 3 as the Affected Environment. The No Action Alternative is analyzed by resource area in Chapter 3 on the assumption that operations would be maintained at the status quo (no new land use would occur on the five project areas).

2.6 CONSERVATION AND ENVIRONMENTAL PROTECTION MEASURES

This section presents proposed conservation and protection measures that would be incorporated as part of the design, construction, operations, and maintenance stages of the alternatives to minimize the potential for impacts to health and safety, air quality, biological resources, cultural resources, and visual resources. These measures also address storm water, erosion, solid waste, and hazardous waste. The conservation and protection measures presented here are included as part of the impact analysis in Chapter 3.

2.6.1 ENVIRONMENTAL PROTECTION PLAN

The private partner would submit an Environmental Protection Plan for approval by the Navy prior to commencement of construction. Prior to submittal of the plan, the private partner would meet with the Navy to discuss the implementation of the initial plan, and possible subsequent additions to the plan, including reporting requirements, and methods for administration of the plan. The plan would discuss measures the contractor would take to prevent or control releases

of contaminants into the air, soil, and water during construction. Specifically, the plan would address:

- Weed control in temporary disturbance and laydown areas; placement of weed-free gravel, as needed; use of best management practices (BMPs) to reduce migration of weeds during construction; and adherence with the Base Integrated Pest Management Plan
- Management and removal of trash and rubbish
- Human waste management (sewage, trash)
- Air pollution controls on equipment and operations
- Dust control
- Application of paints and coatings
- Fire prevention precautions
- Recycling of project waste or demolition debris
- Contractor parking and laydown areas
- Temporary utility services
- Limits on construction activity due to wildlife or habitat
- Procedures if site contamination is discovered
- Preservation procedures if historical, archaeological, or paleontological artifacts are discovered.
- Clearing and grubbing
- Equipment maintenance and fueling
- Hazardous materials use by the contractor
- Hazardous waste storage and disposal
- Smoking plan
- Grading plan

2.6.2 AIR QUALITY

Particulate matter emissions from construction and operations activities would be minimized through dust abatement measures, including:

- Applying soil stabilizers to disturbed, inactive portions of the project site to help bind soil together and make it less susceptible to erosion
- Replacing ground cover in disturbed areas with a bonding or adhesive agent that is used for hydraulic seeding and/or native plant species, as appropriate
- Watering exposed soil in disturbed areas with adequate frequency for continued moist soil

- Suspending excavation and grading activities during periods of high wind activity
- Cleaning (washing) all vehicles before they leave the project site
- Locating staging areas as far away from sensitive receptors as practicable
- Limiting idling time and scheduling construction truck trips during non-peak hours to the extent practicable to reduce peak-hour vehicle exhaust emissions

2.6.3 BIOLOGICAL RESOURCES

The following conservation and environmental protection measures would be included in the alternatives to reduce the potential for significant impacts to sensitive biological resources.

Construction

- Preconstruction surveys would be conducted on Parcel 9 by a qualified biologist within 30 days prior to ground disturbance to document the presence or absence of sensitive species.
- To reduce the potential for attracting predators during construction, the project site would be kept clean of debris, as much as feasible.
- All vehicle traffic would be restricted to construction areas and currently established dirt or paved roads. No off-road vehicle use would be permitted.
- The NBVC Port Hueneme Environmental Division would be notified if any wildlife is encountered and found to be in harm's way due to construction activity.

Operations

- Mowing, clearing, and grading of any vegetated areas would be conducted during the nonbreeding season (October through February at NBVC Port Hueneme), when feasible. Unapproved vegetation clearing or grading outside and within the vicinity of the approved project footprints would be reported to the Navy Project Manager within 24 hours of discovery. If vegetation clearing occurs between March 1 and September 31, a nesting bird survey would need to be conducted by a qualified biologist.
- All light posts and permanent nighttime lighting installed to support operations would be selected to provide the lowest illumination possible while still allowing for safe operations. To prevent disturbance to potential sensitive natural resources, lighting would be set at the lowest height possible and would be shielded so that it would be directed only toward areas needing illumination.
- A bird conservation program would be developed and implemented to regularly monitor site conditions and track avian mortality.

2.6.4 CULTURAL RESOURCES

If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the National Register of Historic Places (NRHP) and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.

2.6.5 STORM WATER AND EROSION

Storm Water Pollution Prevention Plans and Spill Prevention Plans

Since the project's construction phase would disturb more than 1 acre (0.4 hectare), coverage under the National Pollution Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity ("General Permit") would be required prior to project construction. The General Permit is issued by the California Environmental Protection Agency's (Cal/EPA's) State Water Resources Control Board (SWRCB) for construction-related discharges as regulated by the SWRCB pursuant to Department of Water Quality (DWQ) Order 2009-009-DWQ. As part of the permit, a Storm Water Pollution Prevention Plan (SWPPP) incorporating BMPs would be developed by the private partner. All construction activities with the potential of affecting water quality due to runoff would be conducted in accordance with SWPPP requirements.

The private partner would be required to prepare the Notice of Intent for the SWPPP and pay appropriate NPDES fees and surcharges to the RWQCB to obtain a waste discharge number for implementation of the Proposed Action/Alternative 1. At the completion of work, the private partner would prepare and file a Notice of Termination.

In addition to the SWPPP, the private partner would be required to prepare a spill response plan. The spill response plan would include Base points of contact in the event of a large spill and an Environmental Division point of contact in the event of a small spill. The spill response plan would also address the requirements to incorporate BMPs (e.g., placing drip pans under any diesel tanks, conducting training, and using appropriate personal protective equipment in accordance with safety data sheets).

The private partner may be required to apply for a municipal separate storm sewer system permit to meet the planning and land development requirements contained in Part 4, Section E of the Los Angeles RWQCB Order R4-2010-0108 for new development and redevelopment projects (County of Ventura 2011).

Erosion Control

As a federal landowner, the Navy is required to control and prevent soil erosion from activities on its properties by implementing conservation and environmental protection measures (Soil Conservation Act, 16 U.S.C. § 5901). A Soil Erosion and Sedimentation Control Plan would be prepared by the contractor and approved by the NBVC Port Hueneme Environmental Division prior to commencement of land disturbance activities. During construction, erosion and sediment in storm water runoff would be controlled through the use of BMPs. Erosion control practices, as outlined in the SWPPP, would be inspected and reviewed frequently and revised as required to accommodate current construction phasing and conditions. The private partner would submit Erosion and Sediment Control Inspection Reports (on a form provided at the preconstruction conference or included within the SWPPP) to the Contracting Officer once every 7 days and within 24 hours of a storm event producing 0.5 inch (1.3 centimeters) or more of rain.

Erosion control BMPs would be implemented to control runoff and minimize erosion in sloped areas of construction. Erosion control measures could include sand bags, silt fencing, earthen

berms, water breakers, fiber rolls, sediment traps, erosion control fabric, or seed-free certified straw bales. The contractor supervisor would be in charge of overseeing the installation and removal of erosion control measures, unless the device is designed to remain in place post-construction (e.g., erosion control fabric).

Any post-construction revegetation with native species would occur in coordination with and approval of the Base Natural Resources Manager. Top soil would be retained and re-used in revegetation of temporary disturbance areas. No significant amount of soils would be removed from the sites. Soils may be cut and relocated in the vicinity of the sites for grading purposes.

To minimize erosion potential during project construction, parking and driving would be restricted to designated areas, and no off-road vehicular traffic, including parking or driving in undisturbed areas, would be allowed.

2.6.6 SOLID WASTE, HAZARDOUS WASTE, AND HEALTH AND SAFETY

Solid Waste Management Plan

Should the proposed construction of a PV system exceed a cost of \$100,000 and generate greater than 1 ton of construction debris, the private partner would develop a Solid Waste Management Plan in accordance with Command Navy Region Southwest Instruction 11350.1B. This plan would ensure that the Navy's recycling and solid waste diversion goals are included during construction of the project. The private partner would be required to recycle construction materials to the maximum extent possible. The current Navy goal for recycling construction and demolition debris is 50 percent. Non-hazardous waste and debris would be disposed of at the local Class III landfill.

Hazardous Waste Management Plan

The private partner would submit a Hazardous Waste Management Plan for approval prior to commencement of construction activities. This plan may be included as part of the overall Environmental Protection Plan. Management and disposal of hazardous waste would comply with applicable federal, state, and local regulations. The State of California recognizes that PV systems can create hazardous waste streams, and any broken or damaged units that cannot be recycled would be managed as hazardous waste. The private partner would be required to coordinate hazardous waste shipments with the NBVC Port Hueneme Environmental Division to ensure a representative is available to review waste profiles and sign manifests.

The contractor would be required to submit a Safety Data Sheet for all hazardous materials used during the project to the Base Environmental Division for review prior to commencement of work. The Safety Data Sheet would be kept at a designated location at the project site and be available to all workers during normal business hours.

Hazardous wastes would be recycled or managed and properly disposed of in a licensed Class I or II waste disposal facility authorized to accept the waste. The private partner would minimize the generation of hazardous waste to the maximum extent practicable through the identification of recycling and reclamation options as alternative to landfill disposal. Some hazardous wastes could be recycled, including used oils from equipment maintenance and oil-contaminated materials, such as spent oil filters, rags, or other cleanup materials. Used oil would be recycled,

and oil- or heavy metal-contaminated materials (e.g., filters) requiring disposal would be disposed of in a Class I waste disposal facility.

The private partner would take all necessary precautions to avoid mixing clean and contaminated wastes. The private partner would identify and evaluate recycling and reclamation options as alternatives to land disposal.

The private partner would be required to coordinate shipments with the NBVC Port Hueneme Environmental Division and would properly manage and dispose of hazardous waste per applicable federal, state, and local environmental regulations, including stipulations per the Base's 90-day hazardous waste accumulation sites as directed under their hazardous waste management program.

Health and Safety Plan

The private partner would submit a Health and Safety Plan for approval prior to commencement of construction activities. The Health and Safety Plan for the project would address site-specific health and safety issues, including specific emergency response services and procedures and evacuation measures. All project construction activities would be conducted in accordance with the approved Health and Safety Plan.

2.6.7 VISUAL RESOURCES

Impact avoidance and minimization measures would be implemented to avoid and/or minimize color contrast that could result from implementation of the project. Visual contrast of vertical PV system elements within the landscape would be minimized by using the same or similar colors for surface coatings of the project area boundary fencing. The surface of the public-facing side of the project area fencing may include a fabric covering, or "scrim," to conceal or obstruct PV system views.

These measures would not apply to the surfaces of the PV panels themselves. The surfaces of the solar panels and support structures would be maintained, as necessary, by the private partner.

2.7 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

NBVC Port Hueneme reviewed available Base locations to identify sites available for construction of a PV system. Factors considered in site selection included locations where available acreage was sufficient to allow for a PV system that would produce renewable energy sufficient to offset the cost of system installation and loss of acreage that could potentially be available to support mission requirements.

NBVC Port Hueneme is facility dense and not configured to offer large segments of vacant land suitable for construction and operation of a PV system. In addition, current military operational and mission constraints limit the availability of suitable acreage. As such, no other vacant and/or unused areas met the purpose and need for the project and satisfied the reasonable alternative screening factors (Section 2.1, Reasonable Alternative Screening Factors).

3.0 Affected Environment and Environmental Consequences

This chapter presents the affected environment in the area of potential effect and environmental consequences of implementing the Proposed Action/Alternative 1, Construction, Operation, and Maintenance of Solar PV Systems at NBVC Port Hueneme. Resources considered for this analysis include:

- 3.1. Land Use
- 3.2. Cultural Resources
- 3.3. Biological Resources
- 3.4. Water Resources
- 3.5. Air Quality/Climate Change
- 3.6. Traffic and Circulation
- 3.7. Utilities
- 3.8. Public Health and Safety
- 3.9. Visual Quality

Table 3.0-1 presents a summary of the impacts.

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Land Use	<p>No Significant Impacts</p> <p>With construction, operation, and maintenance of the Proposed Action/Alternative 1, there would be a long-term change in land use to renewable energy for all five parcels. Implementation of the proposed project at Parcels 9, 13, 16, 17, and 18 would be compatible with surrounding land uses. Construction at Parcel 9 would be conducted in accordance with the restrictions set forth in the IRP Site 14 Postclosure Maintenance Plan, which defines the conditions under which the Parcel can be developed for a variety of suitable land uses. The long-term changes in land use would be an insignificant impact and no conservation and environmental protection measures are proposed.</p>	No Significant Impacts	No Significant Impacts	No Impacts
Cultural Resources	<p>No Impacts</p> <p>There are no cultural resources on or eligible for the National Register of Historic Places (NRHP) within the Area of Potential Effects (APE). Quarters D (north of Parcel 16) has been significantly altered by existing development, and the World War II railroad alignments (adjacent to Parcels 16, 17, and 18) are not NRHP-eligible. There would be no impacts to cultural resources.</p> <p>Conservation and Environmental Protection Measures If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the NRHP and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.</p>	<p>No Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>The same as those described for the Proposed Action/ Alternative 1.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.</p>	No Impacts
Biological Resources	<p>No Significant Impacts</p> <p>Potential insignificant impacts could include the following:</p> <ul style="list-style-type: none"> • Temporary and indirect impacts to less mobile wildlife species from construction and/or demolition. • Temporary impacts to nearby migratory bird habitat from construction dust and noise. • Removal of up to 45.25 acres (18.3 hectares) of nonnative grassland, disturbed habitat, and previously developed areas with low ecological value associated with the project sites. 	<p>No Significant Impacts</p> <p>Similar to those describe for the Proposed Action/ Alternative 1; however, the PV system would exclude Parcel 9.</p> <p>Conservation and Environmental Protection Measures</p>	<p>No Significant Impacts</p> <p>Similar to those describe for the Proposed Action/ Alternative 1; however, the PV system would only be constructed, operated, and maintained on Parcels 9 and 13.</p>	No Impacts

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Biological Resources (Continued)	<ul style="list-style-type: none"> • Potential impacts to non-federally listed rare reptile species caused by construction activities, such as clearing and grubbing, site grading, and trenching. • Potential impacts to non-federally listed rare bird and mammal species due to loss of potential foraging habitat caused by construction activities. • Indirect insignificant potential “lake effect” impacts associated with bird strikes on the solar PV arrays. <p>Conservation and Environmental Protection Measures To protect migratory birds, mowing, clearing, and grading of any vegetated areas would be conducted during the nonbreeding season (October through February) when feasible. If occurring during the breeding season, nest search survey would be conducted by a qualified biologist. Active nests would be provided with a buffer. Nighttime construction would not occur. Operational lighting would provide minimal lighting while allowing for safe operation and sized at the lowest height possible.</p> <p>Preconstruction survey for burrowing owls would be conducted on Parcel 9 within 30 days prior to ground disturbance to prevent direct take of burrowing owls if burrowing owls begin to occupy the site. If burrowing owls or active burrows are found, protective measures would be implemented (e.g., protection in place, passive relocation).</p> <p>No construction or other disturbance would occur within 656 feet (200 meters) of any active owl burrow during the nesting season (CDFG 2012). If necessary, passive relocation would be coordinated with an NBVC Natural Resource Specialist. Relocation during the breeding season would not be permitted under any circumstances.</p> <p>Any burrow occupied by a burrowing owl within 150 feet (46 meters) of construction activities, during any time of the year, would have noise/disturbance barriers placed near the burrows to minimize impacts.</p> <p>A bird conservation program would be implemented to monitor site conditions and track avian mortality due to potential insignificant “lake effect” impacts both pre- and post-construction.</p>	would be the same as described for the Proposed Action/ Alternative 1.	<p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/ Alternative 1.</p>	

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Water Resources	<p>No Significant Impacts</p> <p>Storm Water With operations, impacts to storm water from the additional impervious areas would be negligible. There would be no change in existing grades, runoff characteristics, patterns, or flow rates. During construction, no grading would occur at Parcel 9. The pre-project runoff amounts would be the same for post-project conditions.</p> <p>Hydrology Surface disturbance (e.g., grading, localized excavation) would occur during construction and trenching for underground electrical conduits. During construction, storm water runoff from the project sites could result in a slight increase in turbidity. Construction, however, would not degrade the local water quality or adversely affect current uses of local surface waters.</p> <p>Floodplains The project area is not located within a 100-year floodplain. Project structures would not increase the potential for flooding in local surface water bodies, restrict or redirect runoff flows, or cause localized flooding at project areas, and no significant impacts to floodplains would occur.</p> <p>Groundwater Construction and maintenance during operations would not require the use of NBVC Port Hueneme-supplied groundwater. Construction at Parcel 9 would adhere to the restrictions set forth in the Postclosure Maintenance Plan for Site 14 Landfill Final Cover (Tetra Tech 2004) to prevent damage to the cover.</p> <p>Conservation and Environmental Protection Measures Implementation of the Proposed Action/Alternative 1 would include obtaining a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. As part of the permit, a Storm Water Pollution Prevention Plan (SWPPP) incorporating BMPs would be developed. All construction activities with the potential of affecting water quality due to runoff would be conducted in accordance with SWPPP requirements.</p> <p>The private partner would be required to prepare a spill response plan. The spill response plan would address the requirements to incorporate BMPs.</p> <p>The private partner may be required to apply for municipal separate</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, except that the PV system would not occur at Parcel 9; therefore, the potential for groundwater impacts would be lessened.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Water Resources (Continued)	<p>storm sewer system permit to meet the planning and land development requirements.</p> <p>A Soil Erosion and Sedimentation Control Plan would be prepared by the private partner. During construction, erosion and sediment in storm water runoff would be controlled through BMPs and regular inspection of construction conditions.</p> <p>Post-construction revegetation with native species would occur. Top soil would be retained and re-used in revegetation of temporary disturbance areas. No significant amount of soils would be removed from the sites. Soils may be cut and relocated near the sites for grading.</p> <p>To minimize erosion potential during project construction, parking and driving would be restricted to designated areas, and no off-road vehicular traffic, including parking or driving in undisturbed areas, would be allowed.</p>			
Air Quality	<p>No Significant Impacts</p> <p>Implementation of the Proposed Action/Alternative 1 would result in localized, short-term effects on air quality at NBVC Port Hueneme. During operation, emissions of nitrogen oxide (NO_x), sulfur dioxide (SO₂), and carbon dioxide equivalent (CO₂e) would be reduced by lower consumption of grid-supplied electricity, and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also reduce emissions produced from conventional non-renewable generating sources. As total construction emissions would be below the <i>de minimis</i> thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur under the Proposed Action/Alternative 1.</p> <p>Conservation and Environmental Protection Measures</p> <p>Particulate matter emissions from construction and operations activities would be minimized through dust abatement measures, including the following:</p> <ul style="list-style-type: none"> • Applying soil stabilizers to disturbed, inactive portions of the project site to help bind soil together and make it less susceptible to erosion • Replacing ground cover in disturbed areas with a bonding or adhesive agent that is used for hydraulic seeding and/or appropriate native plant species, as appropriate 	<p>No Significant Impacts</p> <p>Similar to those described under the Proposed Action/ Alternative 1, except lessened slightly because Parcel 9 would not be developed.</p> <p>Conservation and Environmental Protection Measures</p> <p>would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those described under the Proposed Action/ Alternative 1, except lessened slightly because construction, operation, and maintenance of a PV system would only occur on Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures</p> <p>would be the same as described for the Proposed Action/ Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Air Quality (Continued)	<ul style="list-style-type: none"> Watering exposed soil in disturbed areas with adequate frequency for continued moist soil Suspending excavation and grading activities during periods of high wind activity Cleaning (washing) all vehicles before they leave the project site Locating staging areas as far away from sensitive receptors as practicable Limiting idling time and scheduling construction truck trips during non-peak hours to the extent practicable to reduce peak-hour vehicle exhaust emissions 			
Traffic and Circulation	<p>No Significant Impacts</p> <p>There would be a temporary minor increase in traffic associated with construction. Trips associated with these activities include the delivery of construction materials and equipment, and the removal of construction debris. There would be a negligible increase in traffic associated with operations and maintenance. These trips would be periodic and would not regularly contribute to local or regional traffic.</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/ Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 13, 16, 17, and 18. Therefore, traffic generated during activities would be slightly less.</p>	<p>No Significant Impacts</p> <p>Similar to those described for Proposed Action/ Alternative 1, except that the PV system would be constructed, operated, and maintained at Parcels 9 and 13. Therefore, traffic generated during construction activities would be slightly less.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>
Utilities	<p>No Significant Impacts</p> <p>Water Minimal water would be used during construction to reduce fugitive dust during construction. No impacts to potable water use would occur.</p> <p>Solid Waste Negligible amounts of solid waste would be generated during demolition and construction, as well during operation, from personnel managing and working within the project sites.</p> <p>Energy Implementation of Proposed Action/Alternative 1 would result in the generation of an estimated 10 megawatts of renewable energy. Electrical wiring would either be trenched into the ground, installed</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/ Alternative 1, although at a reduced scale. Alternative 2 would contribute up to an estimated 6 MW toward the Navy's renewable energy goal of 1 GW by the end of Year 2015.</p> <p>Conservation and</p>	<p>No Significant Impacts</p> <p>Potential impacts would be similar to those described for the Proposed Action/ Alternative 1, although at a reduced scale. Alternative 3 would contribute up to an estimated 9 MW toward the Navy's renewable energy goal of 1 GW by the end of Year 2015.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Utilities (Continued)	<p>overhead, or a combination of both to make the connection. Some modification to existing electric facilities at the point of connection would be required.</p> <p>Energy demand on NBVC Port Hueneme would not be increased as a result of the Proposed Action/Alternative 1. The Proposed Action/Alternative 1 would generate electrical power via the PV project, which would offset existing electrical demands.</p> <p>Conservation and Environmental Protection Measures Significant impacts to utilities would not occur. Nevertheless, a Solid Waste Management Plan and Hazardous Waste Management Plan would be prepared to manage solid waste and potential hazardous waste encountered during construction. Hazardous waste generation would be minimized to the extent possible through identifying recycling or reclamation options. Section 2.6.6 provides detailed descriptions of these conservation and environmental protection measures.</p>	<p>Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	
Public Health and Safety	<p>No Significant Impacts</p> <p>Installation Restoration Program Contaminated groundwater and hazardous chemicals are present on Parcel 9. The geosynthetic clay cover of the landfill cannot be punctured during construction of the PV system or damaged due to overstressing of the static load of the PV system ballasts. The private partner would design the project based on the requirements and restrictions outlined in the IRP Site 14 Postclosure Maintenance Plan to avoid impacts to public health and safety.</p> <p>Hazardous and Toxic Materials and Waste The private partner would be responsible for the safe identification and disposal of any broken or unusable panels identified during construction, operations, and maintenance in accordance with applicable laws and regulations. Any accidental spills would be addressed per measures specified in an Environmental Protection Plan to be prepared prior to construction. Operations and maintenance of the proposed PV system would not produce hazardous materials and waste.</p> <p>Asbestos-Containing Material and Lead-Based Paint The Proposed Action/Alternative 1 does not include building demolition activities that would cause on-station workers to encounter</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, except the impacts would be lessened because construction, operation, and maintenance would not occur on Parcel 9.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those described for the Proposed Action/Alternative 1, except the impacts would be lessened because construction, operation, and maintenance would only occur on Parcels 9 and 13.</p> <p>Conservation and Environmental Protection Measures would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Public Health and Safety (Continued)	<p>lead-based paint and asbestos. All construction-related waste would be disposed of in accordance with applicable laws and regulations.</p> <p>Conservation and Environmental Protection Measures The conservation and environmental protection measures outlined in Section 2.6, including preparation of an Environmental Protection Plan described in Section 2.6.1 and hazardous waste management, solid waste management, and health and safety plans described in Section 2.6.6, would be included as part of the project design with implementation of the Proposed Action/Alternative 1.</p>			
Visual Quality	<p>No Significant Impacts</p> <p>Construction Impacts The visual landscape would be temporarily affected by construction of the proposed solar facilities and ancillary features, including graded maintenance roads, perimeter fencing, and freestanding electrical equipment including the electrical current inverters and grid connection switchgear. Given the inherent visual aspects of construction activities, temporary viewshed disturbances would result from the staging, stockpiling, and placement of PV panels; construction-related traffic and equipment; temporary debris storage; and standard ground-clearing operations. During construction, direct impacts to sensitive viewers would be moderate to high, due primarily to the number of viewers along the affected vehicular corridors. Measures would be designed to minimize potential visual effects within 0.5 mile (0.8 kilometer) from stationary and linear KOPs and would reduce visual contrast from moderate to weak. Regardless of these measures, no significant impacts would occur from construction of the Proposed Action/Alternative 1.</p> <p>Operational Impacts Direct impacts to affected viewsheds would decline in contrast and memorability from levels described under construction impacts with the exception of Parcel 9. Visual change would be most apparent to viewers near Parcel 9. As such, no significant impacts would occur from operation of the Proposed Action/Alternative 1. Indirect and minor viewshed impacts would result from disturbance by occasional maintenance operations and as-needed equipment replacement.</p> <p>Conservation and Environmental Protection Measures Impact avoidance and minimization measures would be implemented to avoid and/or minimize color contrast that could result from</p>	<p>No Significant Impacts</p> <p>Similar to those discussed under the Proposed Action/Alternative 1, except the impacts would be reduced because the PV system would not be constructed, operated, and maintained on Parcel 9.</p> <p>Conservation and Environmental Protection Measures Would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Significant Impacts</p> <p>Similar to those discussed under the Proposed Action/Alternative 1, except the impacts would be reduced because the PV system would only be constructed, operated, and maintained on Parcels 9 and 13.</p> <p>Conservation and Environmental Would be the same as described for the Proposed Action/Alternative 1.</p>	<p>No Impacts</p> <p>There would be no change in existing conditions; therefore, no impacts would occur.</p>

Table 3.0-1. Summary of Potential Impacts and Conservation and Environmental Protection Measures

Resource	Proposed Action/Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
Visual Quality (Continued)	implementation of the project. Visual contrast of vertical PV system elements within the landscape would be minimized by using the same or similar colors for surface coatings of the project area boundary fencing. The surface of the public-facing side of the project area fencing may include a fabric covering, or “scrim,” to conceal or obstruct PV system views.			

Key:

- APE = Area of Potential Effects
- CO₂e = carbon dioxide equivalent
- No_x = nitrogen oxide
- NRHP = National Register of Historic Places
- SO₂ = sulfur dioxide

3.1 LAND USE

Definition of Resource

Land use refers to the various ways in which land might be used or developed, the kinds of activities allowed, and the type and size of structures permitted. Land use is regulated by management plans, policies, ordinances, and regulations that determine the types of uses that are allowable and protect specially designated areas and environmentally sensitive resources.

Management Plans

The following plans serve as the primary management tools to coordinate the protection of natural resources and Navy mission requirements on Navy-owned land.

Integrated Natural Resources Management Plan (INRMP)

The NBVC Port Hueneme INRMP (Navy 2012), a planning document required by the Sikes Act, is the base's primary tool for providing a viable framework for future management of natural resources on lands it owns or controls. The INRMP provides land use categories and descriptions of NBVC Port Hueneme lands.

NBVC Activity Overview Plan

The NBVC Port Hueneme Activity Overview Plan (Navy 2006) documents NBVC Port Hueneme activities and facilities, including siting, design, purpose, and functional interrelationship, to meet the requirements of NBVC Port Hueneme's mission.

3.1.1 AFFECTED ENVIRONMENT

NBVC Port Hueneme is located within the City of Port Hueneme's limits. The Base is bounded on the southwest by the residential communities of Silver Strand and Hollywood-by-the-Sea, on the northwest by commercial development associated primarily with Channel Islands Marina, on the north by commercial development, on the east by residential uses, and on the southeast by port development associated with the Port of Hueneme. NBVC Port Hueneme encompasses approximately 1,650 acres (670 hectares) of flat, mostly developed, or paved lands with residential, industrial, and commercial land uses. There are 36 miles (58 kilometers) of road and 16 miles (26 kilometers) of rail at NBVC Port Hueneme (Navy 2012).

Hueneme Beach lies directly south of the easternmost portion of the base, and Ormond Beach lies farther to the southeast. Silver Strand Beach adjoins the southernmost portion of the base. The facilities within NBVC Port Hueneme are used for providing test and evaluation, in-service engineering, and integrated logistics support for surface warfare combat systems, subsystems, and related expendable ordnance of the Navy Surface Fleet.

The base property is comprised of 11 major land uses, including housing; community support; logistics; port operations; training; research, development, testing, and evaluation; administration; natural resources; ordnance; open space; and public works. Nearly half of the land use acreage is devoted to logistics land uses. The operations category includes Research, Development, Testing, & Evaluation and port operations land uses, which were formerly segregated in the Naval Base Ventura County Activity Overview Plan of 2006 (Navy 2006). The main training area for construction activities is at the northwest corner of the base, and a smaller

training site is in the central eastern portion. The housing area is along the central eastern boundary of the site. Integrated into the housing areas are a variety of community and recreational support facilities. Natural resources management area land uses are along the drainage canals that run parallel to and intersect Pennsylvania Road, and at sandy beach and dune habitat near the harbor entrance. Natural resources management area land uses include one Installation Restoration Program (IRP) site (IRP 14), a 33-acre landfill that is now capped and covered with annual grassland vegetation. Approximately 28 acres of IRP Site 14 comprise Parcel 9.

Parcel 9

Parcel 9 is a 28-acre (11.3-hectare) site located on IRP Site 14, a closed Navy-owned landfill south of 23rd Avenue and east of West Road. Its land use designation is Open Space in the *Naval Base Ventura County Activity Overview Plan (2006)*. The topography is gently mounded with a demonstrated swale on the southern end. The swale dips into a topographically flat area that serves as a retention area for rainfall. The area is connected to an outfall that flows into the municipal system. There are five landfill gas vents and five settlement markers incorporated into the design of the landfill cover.

IRP Site 14 (Parcel 9) was a 33-acre (13.4 hectare) landfill that is now closed, capped, and covered with annual grassland vegetation. The closed landfill operated from the 1950s through the 1970s and the types of waste materials discarded at Site 14 included dredge spoils, transformer fluids, oily bilge water, lubricating oil, diesel fuel, gasoline, Stoddard solvent, trichloroethene, thinners, and rubbish. Pesticides and residues from burning may also have been disposed of on site. The final cover for the landfill was completed in July 2000 using existing soils as the foundation layer, a geosynthetic clay liner as the low-permeability layer, a geosynthetic drainage layer to provide subsurface drainage, and a vegetative soil layer (the drainage layer is not included in the storm water detention area). The cover was designed as a single mound with drainage and the ability to accommodate a wide range of future land uses including non-structures, structures, and shallow underground utilities.

The Seabees use the land north of Parcel 9 across 23rd Avenue, which bisects NBVC Port Hueneme in the northern portion. To the west, off the base and across Victoria Boulevard is Channel Island Harbor. South of Parcel 9, the adjacent land is used by the Seabees. East of Parcel 9 across West Road is Parcel 13.

Parcel 13

Parcel 13 is a flat, 12.5-acre (5-hectare) site located on a mostly paved lot south of 23rd Avenue, east of West Road, and adjacent to Parcel 9 on Toledo Road. Rail tracks are present on the eastern boundary of Parcel 13. These tracks, associated with the Ventura County Railway, are currently not in operation. The Parcel 13 land use designation is Public Works in the *Naval Base Ventura County Activity Overview Plan (2006)*. It has several groundwater monitoring wells currently installed. The project area is currently vacant or unused and not under lease.

The eastern edge of land used by the Seabees is to the north of Parcel 13. The adjacent land use is the same as for Parcel 9 along with the southern edge of the NBVC Port Hueneme Golf Course. South of Parcel 13, the adjacent land use is the same as for Parcel 9. East of Parcel 13, the land is used for logistics.

Parcel 16

Parcel 16 is a flat, 2.5-acre (1-hectare) vacant, unused lot south of Mill Road, north of 23rd Avenue, west of Patterson Road, and of Track 13, and northeast of Parcel 18. Railroad tracks originating from the east side of Patterson Road pass along the south margin of Parcel 16 and the north margins of Parcels 17 and 18. Its land use designation is Public Works in the Naval Base Ventura County Activity Overview Plan (2006). A major portion of the paved northwestern area of the project area is used as a parking lot for personnel working at Building PH-850. Adjacent land uses to the north of Parcel 16 are Building PH-850 and the NBVC Port Hueneme Golf Course. To the east, west, and south are paved areas, portions of which are unused with some portions used for parking.

Parcel 17

Parcel 17 is a flat, 0.75-acre (0.3-hectare) vacant, unused lot located north of 23rd Avenue between rail tracks 13 and 14. It is located adjacent and to the west of Parcel 18. Railroad tracks originating from the east side of Patterson Road pass along the north margin of Parcel 17. Its land use designation is Public Works in the Naval Base Ventura County Activity Overview Plan (2006). Adjacent land uses for Parcel 17 to the north, east, and south are paved areas, portions of which are unused with some portions used for parking.

Parcel 18

Parcel 18 is a flat, 1.5-acre (0.6-hectare) partially vacant lot located north of 23rd Avenue and northeast of Parcel 17. Railroad tracks originating from the east side of Patterson Road pass along the north margin of Parcel 18. Its land use designation is Public Works in the Naval Base Ventura County Activity Overview Plan (2006). A major portion of the paved northwestern area of the project area is used as a parking lot.

Adjacent land use for Parcel 18 to the immediate north is the NBVC Port Hueneme Golf Course. To the south, across Track 14 which runs southwest to northeast and serves as the southern boundary of the project area, is a paved operations area. East of Parcel 18 is Patterson Road and to the west is a paved parking area.

3.1.2 ENVIRONMENTAL CONSEQUENCES

The following sections analyze the potential environmental impacts associated with construction and operation of the alternatives.

3.1.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

With implementation of the Proposed Action/Alternative 1, all project areas would be developed for renewable energy generation. This would constitute a long-term change in land use to renewable energy generation for each project area; however, the land use designations, or categories under which a variety of physical land uses can take place, as stated in the Naval

Base Ventura County Activity Overview Plan (2006), would not change except for Parcel 9. With implementation of the Proposed Action/Alternative 1, the land use designation Open Space as defined in the Naval Base Ventura County Activity Overview Plan (2006) would change to Public Works for Parcel 9. The *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* (Tetra Tech 2004) provides standards, guidelines, and restrictions for development of suitable land uses for Parcel 9. The solar PV system on Parcel 9 would be constructed with adherence to the standards and requirements put forth in the Postclosure Maintenance Plan and would be a compatible land use with existing and surrounding land uses.

Construction, operation, and maintenance of solar PV systems at Parcels 13, 16, 17, and 18 would be consistent with the current land use designation of Public Works in the NBVC Port Hueneme Activity Overview Plan. The land use designation as stated in the Activity Overview Plan would not change and construction, operation, and maintenance of solar PV systems would be compatible with the current land use designation and surrounding land uses.

The solar PV system would constitute a passive land use that would be compatible with all adjacent land uses. Therefore, implementation of the Proposed Action/Alternative 1 would not have a significant impact on land use.

The Navy would enter into an agreement with a private partner to construct and operate a solar PV system at NBVC Port Hueneme. The final lease agreement would outline the requirements and conditions under which the private partner would develop the proposed project areas to ensure compatibility with applicable Navy land use plans and regulations.

3.1.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

With implementation of Alternative 2, Parcels 13, 16, 17, and 18 would be developed for renewable energy. The analysis contained in Section 3.1.2.1 for Parcels 13, 16, 17, and 18 is appropriate for Alternative 2. The solar PV system would constitute a passive land use that would be compatible with all adjacent land uses. Therefore, implementation of Alternative 2 would not have a significant impact on land use.

3.1.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

With implementation of Alternative 3, Parcels 9 and 13 would be developed for renewable energy. The analysis contained in Section 3.1.2.1 for Parcels 9 and 13 is appropriate for Alternative 3. The solar PV system would constitute a passive land use that would be compatible with all adjacent land uses. Therefore, implementation of Alternative 3 would not have a significant impact on land use.

3.1.2.4 No Action Alternative

With the No Action Alternative, construction, operation, and maintenance of a PV system at NBVC Port Hueneme would not occur and there would be no changes from current land uses. Therefore, no impacts to land use would occur with implementation of the No Action Alternative.

3.2 CULTURAL RESOURCES

Definition of Resource

Cultural resources consist of prehistoric and historic archaeological sites; historic buildings, structures, and districts; and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment resources of historic or aesthetic significance.
- Traditional cultural resources may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

Cultural resources that are listed in the NRHP or eligible for listing in the NRHP are “historic properties” as defined by the National Historic Preservation Act (NHPA). The list was established under the NHPA and is administered by the National Park Service on behalf of the Secretary of the Interior. The NRHP includes properties on public and private land. Properties can be determined eligible for listing in the NRHP by the Secretary of the Interior or by consensus of a federal agency official and the applicable SHPO. An NRHP-eligible property has the same protections as a property listed in the NRHP. The historical properties include archaeological and architectural resources.

Regulatory Setting

Cultural resources are governed by a variety of federal laws and regulations, including the NHPA, Archaeological and Historic Preservation Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act. Federal agencies’ responsibility for protecting historic properties is defined primarily by Sections 106 and 110 of the NHPA. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties that may be present, in accordance with 36 CFR § 800. NBVC Port Hueneme does not possess a signed Programmatic Agreement with SHPO; therefore, standard Section 106 consultation with SHPO would be required for this project.

Section 110 of the NHPA requires federal agencies to establish—in conjunction with the Secretary of the Interior—historic preservation programs for the identification, evaluation, and protection of historic properties. The NBVC Port Hueneme ICRMP documents cultural resources and identifies processes for their management and protection at NBVC Port Hueneme. The document addresses legal, regulatory, and policy requirements, and the installation’s formal processes for managing these requirements within specific areas of responsibility at NBVC Port Hueneme. Cultural resources also may be covered by state, local, and territorial laws.

3.2.1 AFFECTED ENVIRONMENT

The cultural resources analysis is based on (1) records on file at the NBVC Port Hueneme Environmental Planning and Conservation Branch Public Works Department, which maintains records of all known archaeological and historic built resources on NBVC Port Hueneme; (2) the ICRMP for NBVC (Navy 2010); (3) commercially available historic aerial photographs; and (4) published sources on the natural and cultural history of the Port Hueneme area.

3.2.1.1 Cultural Setting

Cultural Setting

Archaeological evidence indicates that humans had arrived in coastal southern California by about 13,000 years ago. The earliest directly dated materials come from the Channel Islands, although the discovery of a fragmentary Clovis projectile point near Santa Barbara (Erlandson et al. 1987) suggests concurrent mainland occupation as well. Substantial populations were established on the mainland by about 9,000 years ago, with the appearance throughout the region of sites of the California Millingstone Horizon (Glassow et al. 2007). In the Ventura/Santa Barbara region, Millingstone peoples are thought to be directly ancestral to the Chumash who occupied the area at historic contact. Marked by relatively high frequencies of milling tools, Millingstone sites are frequently found near the coast, where they may have been positioned to take advantage of resources associated with early Holocene lagoons. After about 4,000 years ago, the record indicates increasing sociocultural complexity, intensified use of terrestrial resources such as acorns, and an increasing focus on maritime adaptations. By historic contact, the Chumash had developed a complex social organization supported by hereditary political offices, extensive and formalized trade networks that included the Channel Islands, and a monetary economy based on shell bead currency (Glassow et al. 2007).

European colonization of the region was initiated with the Portola expedition that passed through the Ventura area in August 1769. This was followed by the establishment of San Buenaventura Mission in 1782, initiating a livestock-based economy that lasted for more than a century (Beller et al. 2011). As this economy declined rapidly in the 1870s due to a combination of drought and the ecological effects of cattle and sheep grazing, attention shifted to agriculture. Initially, the focus was on barley, corn, and lima beans, but by the late 1880s sugar beets, which thrived on the alkalai soil, were established as one of the major crops in the Oxnard area. The project vicinity continued to be used for agriculture throughout the early 20th century, until the establishment in 1941 of the Advanced Base Depot, designed to support the Navy Seabees. This facility was renamed the Naval Construction Battalion Center in 1945, and in 2000 was officially designated as part of Naval Base Ventura County.

3.2.1.2 Archaeological Resources

Records on file at NBVC Port Hueneme indicate that there are no archaeological resources recorded within or near the five project sites.

3.2.1.3 Architectural Resources

There are no buildings or structures within any of the project sites, except for five raised landfill gas vents and five settlement markers on Parcel 9 that would remain on-site after

construction of the proposed project. However, records provided by the NBVC Port Hueneme Cultural Resources Division indicate that two historic structures are located in the immediate vicinity: (1) Quarters D and associated structures, and (2) railroad tracks associated with the Ventura County Railroad.

- **Quarters D Complex:** Located on the west side of Patterson Road and approximately 250 feet (75 meters) north of Parcel 18, the Quarters D complex includes Quarters D, Building 581, and Structure 346, as well as their associated landscaping (Wills and Self 1995). The Quarters D building was constructed in 1918 and was later used as military family housing. Along with the associated Building 581 and the surrounding landscaping, Quarters D has been evaluated as a historic district eligible for the NRHP under Criterion C as a representation of the California Bungalow style of architecture. Structure 346 constructed in 1944 was assessed as a non-contributing element to the district (Wills and Self 1995). The Quarters D Complex is currently vacant.
- **Ventura County Railway:** The remains of a railroad marshalling yard are located immediately east of Patterson Road and about 100 feet (30 meters) from the northeast corner of Parcel 16. Connecting tracks cross Patterson Road and pass along the south margin of Parcel 16 and the north margins of Parcels 17 and 18. The remains of rail tracks are also present on the eastern boundary of Parcel 13. The Ventura County Railway railroad tracks were constructed during World War II as an extension of the Ventura County Railroad, which was incorporated in 1903 and used during the early 20th century primarily to transport agricultural products. While the original Ventura County Railroad alignment was assessed as eligible for the NRHP for its local significance (Garner 1991) and is a Ventura County Landmark (Harris and Sanders 1995), the portions that were extended into NBVC Port Hueneme during and after World War II lack both physical and contextual integrity and have been determined to be ineligible for the NRHP (Dolan 2005).

3.2.1.4 Traditional Cultural Resources

The Navy consults with federally recognized Indian Tribes on actions with the potential to impact Indian lands, protected tribal resources or rights under treaties, and issues of concern to Tribal Governments on Navy lands. For the proposed project, NBVC Port Hueneme is currently consulting with the Santa Ynez Band of Chumash Indians.

3.2.2 ENVIRONMENTAL CONSEQUENCES

NEPA analyses focus on properties that are listed in, eligible for listing in, or potentially eligible for inclusion in the NRHP.

The area of potential effect (APE) for cultural resources is the geographic area or areas within which an undertaking (project, activity, program, or practice) may cause changes in the character or use of any historic properties present. The APE is influenced by the scale and nature of the undertaking and may be different for various kinds of effects caused by the undertaking. For this proposed project, the Navy determined that the APE includes 45.25 acres (18.3 hectares) and includes an area defined as the perimeters of Parcels 9, 13, 16, 17, and 18.

On May 29, 2015, the Navy consulted with SHPO regarding the eligibility and finding of no historic properties affected within APE. On INSERT DATE, the SHPO concurred with the Navy's determination eligibility and finding of no historic properties affected within APE. Appendix A contains a copy of the Navy's correspondence with the SHPO. The Final EA will include the SHPO's letter of concurrence (TO BE ADDED).

3.2.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

Quarters D, located about 245 feet (75 meters) north of Parcel 18, would not be physically affected, and because the setting has already been significantly altered by subsequent development, the Proposed Action/Alternative 1 would not adversely affect this property. The World War II railroad alignments adjacent to Parcels 13, 16, 17, and 18 lack both physical and contextual integrity and are not eligible for the NRHP under any criteria. Therefore, no significant impacts to cultural resources would result from implementation of Proposed Action/Alternative 1.

Conservation and Environmental Protection Measures

If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the National Register of Historic Places (NRHP) and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.

3.2.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcel 13, 16, 17, and 18

No impacts to any significant cultural resources would result from the implementation of this alternative. Therefore, no significant impacts to cultural resources would result from implementation of Alternative 2.

Conservation and Environmental Protection Measures

If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the National Register of Historic Places (NRHP) and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.

3.2.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

No impacts to any significant cultural resources would result from the implementation of this alternative. Therefore, no significant impacts to cultural resources would result from implementation of Alternative 3.

Conservation and Environmental Protection Measures

If subsurface archaeological deposits were detected during construction, all work in the discovery area would cease until the Navy Cultural Resources Manager could make a determination regarding the significance of the resource. The potential resource would be evaluated against the eligibility criteria for inclusion on the National Register of Historic Places (NRHP) and, if it were found to be potentially eligible, a treatment plan detailing either preservation in-place or mitigation of impacts through data recovery would be developed and implemented.

3.2.2.4 No Action Alternative

No PV system would be developed under the No Action Alternative; therefore, there would be no impacts to cultural resources.

3.3 BIOLOGICAL RESOURCES

Definition of Resource

Biological resources include plant and animal species and the habitats within which they occur.

This section describes the plant and wildlife species that occur or have the potential to occur within or adjacent to the project sites (i.e., Parcels 9, 13, 16, 17, and 18), and, thus, may be directly or indirectly affected. Throughout this section, discussions of these resources are organized as follows: (1) vegetation communities and other land types, (2) federal listed plants, (3) non-federally listed special-status plants, (4) federally listed wildlife, (5) critical habitat, (6) non-federally listed rare wildlife, and (7) wildlife corridors.

Regulatory Setting

Federal regulations and standards applicable to resources that occur within the Biological Study Area (BSA) are described below.

Federal Endangered Species Act, Section 7

The federal Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531 et seq.) directs the U.S. Fish and Wildlife Service (USFWS) to identify and protect endangered and threatened species and their critical habitat, and to provide a means to conserve their ecosystems. Section 9 of the ESA makes it unlawful for a person to take a listed animal without a permit. "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (16 U.S.C. § 1532[19]). Through regulations, the term "harm" is interpreted to include actions that modify or degrade habitats to a degree that significantly impairs essential behavioral patterns, including breeding, feeding, or sheltering. Section 7 of the ESA outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat.

Section 7(a)(2) directs all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§ 703–712) is the primary legislation in the United States established to conserve migratory birds. The MBTA makes it unlawful to take or possess migratory birds, except as permitted by USFWS. 50 C.F.R. § 10.13 lists the avian species protected by the MBTA, and 70 *Federal Register (FR)* 28907–28908 provides a list of nonnative species that are not protected by the MBTA. “Take” under the MBTA is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect” protected birds (50 C.F.R. § 10.12).

In 2000, the U.S. Court of Appeals for the District of Columbia ruled that federal agencies are subject to the take prohibitions of the MBTA (see *Humane Society v. Glickman*, 217 F.3d 882 [DC Cir., 2000]). In response to this ruling, EO 13186, Protection of Migratory Bird Populations, was issued in January 2001, directing federal agencies to develop and implement a Memorandum of Understanding (MOU) with USFWS to promote the conservation of bird populations. An MOU between the Department of Defense (DoD) and USFWS was established on 31 July 2006. This MOU describes specific actions that should be taken by DoD to advance migratory bird conservation; minimize the take of migratory birds; and ensure DoD operations (other than military readiness activities) are consistent with the MBTA (DoD 2007). The MOU does not authorize take of migratory birds. The MOU pertains to certain activities associated with the project sites, including the construction and operation of utilities, and alternative energy development.

The 2003 National Defense Authorization Act provides that the Secretary of the Interior can exercise his/her authority under the MBTA to prescribe regulations to exempt DoD from the MBTA take prohibitions during military readiness activities authorized by the Secretary of Defense. A final rule authorizing incidental take of migratory birds during military readiness activities was published in February 2007 (72 *FR* 8931–8950). Implementation of the proposed project alternatives analyzed herein does not fall under the military readiness activities identified in this final rule; therefore, it is subject to the provisions of the MBTA and the MOU between DoD and USFWS (Navy 2012).

Sikes Act

The Sikes Act of 1960 (16 U.S.C. §§ 670a–670o, as amended by the Sikes Act Improvement Act of 1997, Pub. Law No. 105-85) requires facilities to manage natural resources via an approved INRMP, which serves to manage ecosystems. The NBVC Port Hueneme INRMP addresses cooperative processes for non-federally regulated resources, including, but not limited to, the conservation and protection of non-federally listed species, and species management (Navy 2012). Additionally, the INRMP addresses climate change and how NBVC Port Hueneme highlights how the Navy’s Energy Demonstration Facility incorporates the use of photovoltaics to promote environmentally sustainable technologies (Navy 2012).

3.3.1 AFFECTED ENVIRONMENT

Existing condition information portrayed in the text and tables includes biological resources located within or adjacent to Parcels 9, 13, 16, 17, and 18. The figures in this section illustrate the spatial distribution of biological resources under existing conditions, and focus on the project limits associated with each alternative.

Biological Study Area and Survey Methods

To provide for an appropriate environmental analysis, a BSA was established for biological resources that are of importance or that are protected under federal law or statute. The BSA is defined as the five noncontiguous parcels, which total 45.25 acres (18.3 hectares) plus a 500 foot (150-meter) buffer area surrounding each parcels. The parcels include Parcel 9 (28 acres [11.3 hectares]), Parcel 13 (12.5 acres [5 hectares]), Parcel 16 (2.5 acres [1 hectare]), Parcel 17 (0.75 acre [0.3 hectare]), and Parcel 18 (1.5 acres [0.6 hectare]), plus a 500-foot (150-meter) buffer surrounding each site (Figure 3.3-1).

Biological resources data reviewed to prepare the Biological Resources section of this EA and additional field surveys conducted include the following:

- INRMP, NBVC Port Hueneme (Navy 2012)
- Summary Report: Delineation of Areas within Corps Jurisdiction at Naval Base Ventura County (USACE 2008)
- California Department of Fish and Wildlife California Natural Diversity Database (CDFW 2014)
- Parcel 9 Landfill Monitoring Reports (Rincon 2008–2013)
- Communications with Navy Natural Resources Specialist Brandon Barr (Barr 2014)

In addition, existing information reviewed included geographic information system (GIS) data from the Navy, which provided information on the status, distribution, and known locations of sensitive biological resources within and surrounding the BSA.

In order to supplement existing information, a reconnaissance biological resources survey was conducted for the project sites on 10 December 2014 (AECOM 2015b and Appendix B). The purpose of the general reconnaissance survey was to further assess the presence and condition of natural resources in support of this EA.

3.3.1.1 Vegetation Communities and Land Types

Vegetation communities described herein were mapped during the reconnaissance survey conducted at the project sites (AECOM 2015b). Vegetation community descriptions are based on Holland (1986). Nine vegetation communities and other land cover types were identified within the BSA during the reconnaissance survey: four riparian and wetland vegetation communities, two upland vegetation communities, and three other cover types. The vegetation communities and land types that exist within the project sites are displayed in Figure 3.3-1, summarized in Table 3.3-1, and described below.

The project sites are generally topographically flat, with the exception of Parcel 9 where the topography is gently mounded with a swale that serves as a retention area for rainfall. Parcel 13 is primarily paved, and is usually vacant but occasionally used for temporary parking. Parcels 16 and 17 are vacant and currently unused. Parcel 18 is primarily paved, with the northwestern portion used for parking. The 500-foot (152-meter) survey buffer surrounding the project areas consists primarily of previously developed or disturbed land cover types devoid of vegetation communities (Figure 3.3-1). However, pockets of upland, riparian and wetland vegetation types are present within the buffer area (Figure 3.3-1).

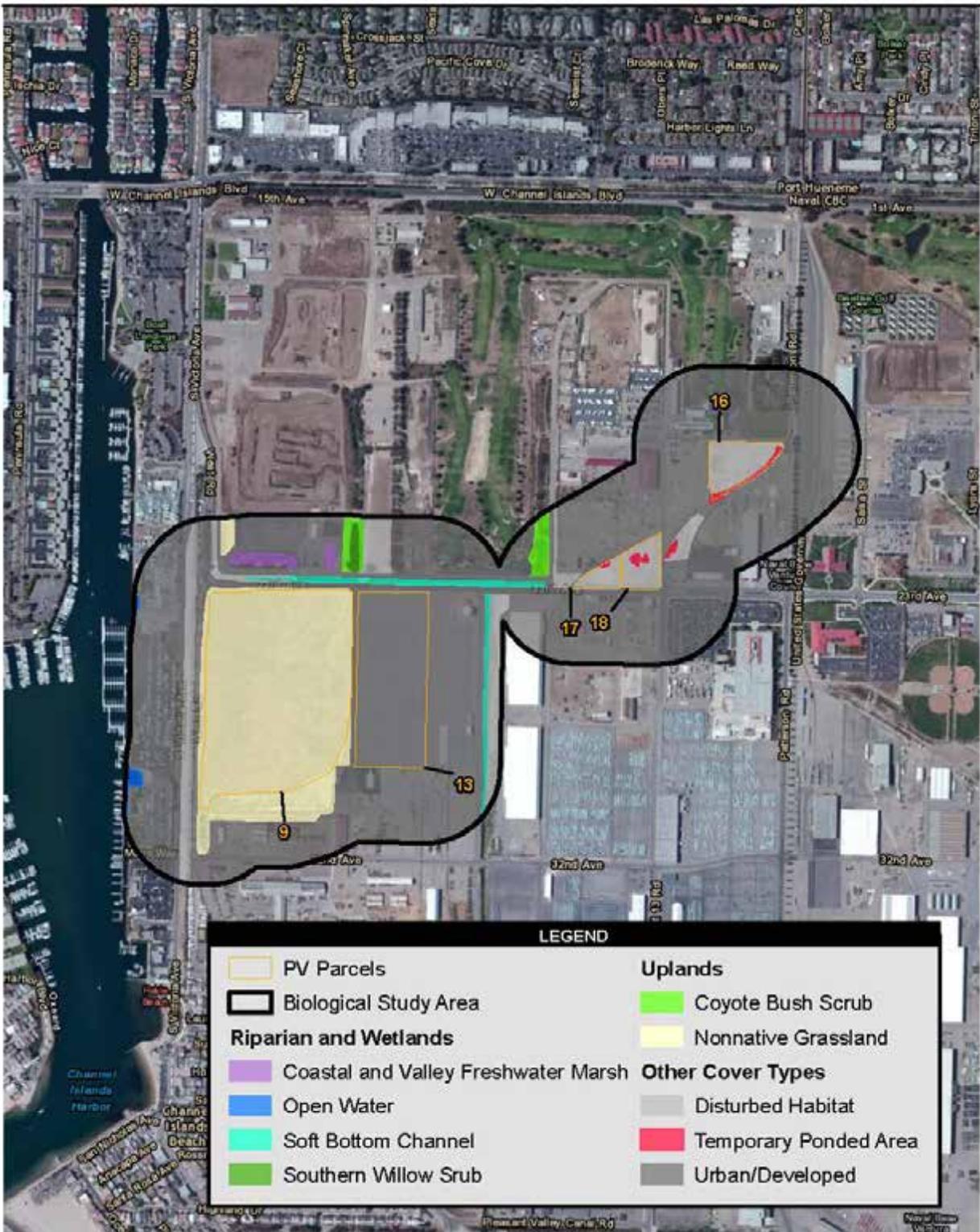


Figure 3.3-1 Vegetation Communities and Cover Types

Table 3.3-1. Vegetation Community and Cover Type Acreages (Hectares)

Vegetation Community and Cover Type	Parcel 9	Parcel 13	Parcel 16	Parcel 17	Parcel 18	Buffer	Total ¹
Riparian and Wetlands							
Coastal and valley freshwater marsh	-	-	-	-	-	1.17 (0.473)	1.17 (0.473)
Open water	-	-	-	-	-	0.59 (0.238)	0.59 (0.238)
Soft-bottom channel	-	-	-	-	-	2.67 (1.080)	2.67 (1.080)
Southern willow scrub	-	-	-	-	-	0.44 (0.178)	0.44 (0.178)
Uplands							
Coyote bush scrub	-	-	-	-	-	1.76 (0.712)	1.76 (0.712)
Nonnative grassland	27.923 (11.3)	-	-	-	-	6.96 (2.816)	33.883 (14.487)
Other Cover Types							
Disturbed habitat	-	-	2.39 (0.967)	0.86 (0.348)	1.30 (0.526)	10.47 (4.237)	15.02 (6.078)
Temporary ponded areas	-	-	0.13 (0.052)	0.03 (0.012)	0.12 (0.048)	0.15 (0.060)	0.43 (0.174)
Urban/Developed	-	12.56 (5.082)	-	0.03 (0.012)	0.08 (0.032)	122.82 (49.703)	135.49 (54.818)
Total¹	27.923 (11.3)	12.56 (5.082)	2.52 (1.019)	0.92 (0.372)	1.50 (0.606)	147.03 (59.500)	192.453 (77.879)

¹ Acreages discussed in text were rounded after summation.

Coastal and Valley Freshwater Marsh

Freshwater marsh is found in two areas in the northeastern portion of the buffer area near Parcels 9 and 13 (Figure 3.3-1). This community is found in areas appearing to be permanently flooded by storm water runoff in the BSA. The marsh mainly consists of dense stands of broad-leaved cattail (*Typha domingensis*) and southern bulrush (*Schoenoplectus californicus*).

Soft-bottom Channel

Soft-bottom channels occur in the northern and central portions of the buffer area around Parcels 9 and 13 (Figure 3.3-1). The soft-bottom channels are constructed floodways that are seasonally flooded. The soft-bottom channels are mostly unvegetated although some ruderal species are present, such as horseweed (*Conyza canadensis*), golden crownbeard (*Verbesina encelioides*), cheeseweed (*Malva parviflora*), smilo grass (*Stipa miliacea*), western ragweed (*Ambrosia psilostachya*), and five-hook bassia (*Bassia hyssopifolia*). The soft-bottom channel north of Parcel 9 and east of Parcel 13 had recently been excavated to remove contaminated soil. During the excavation process most of the vegetation was removed.

Southern Willow Scrub

Southern willow scrub vegetation is found in the storm water drainage north of Parcels 9 and 13 (Figure 3.3-1). This community is mainly composed of southern arroyo willow (*Salix lasiolepis*). Other associated species include coyote bush (*Baccharis pilularis*), mule fat (*Baccharis salicifolia*), sand bar willow (*Salix exigua*), and nonnative trees such as Brazilian pepper tree (*Schinus terebithifolius*).

Open Water

Open water is found in one area to the west of the buffer area of Parcel 9 (Figure 3.3-1). This cover type is the open water marine area associated with the Channel Islands Harbor.

Coyote Bush Scrub

Coyote bush scrub is found in two areas in the northern portion of the buffer area near Parcels 9, 13, and 17 (Figure 3.3-1). This community is mainly composed of coyote bush. Other associated species include mule fat and southern arroyo willow.

Nonnative Grassland

Nonnative grassland occurs in Parcel 9 and in the northern and southern portions of the buffer area near Parcel 9 (Figure 3.3-1). These areas of nonnative grassland are composed of nonnative annual grasses, such as foxtail chess (*Bromus madritensis* ssp. *madritensis*), ripgut grass (*Bromus diandrus*), and wild oat (*Avena barbata*). Other common species include greenstem filaree (*Erodium moschatum*), redstem filaree (*Erodium cicutarium*), crown daisy (*Glebionis coronaria*), Australian saltbush (*Atriplex semibaccata*), short-pod mustard (*Hirschfeldia incana*), and telegraph weed (*Heterotheca grandiflora*).

Disturbed Habitat

Disturbed habitat is any land that has been permanently altered by previous human activity, including grading, repeated clearing, vehicular damage, or dirt roads. Disturbed habitat within the BSA consists of areas of compacted soil that are mostly unvegetated. Parcels 13, 16, 17, and 18 are entirely composed of disturbed habitat. Disturbed habitat also occurs within the buffer area around these project areas (Figure 3.3-1).

Temporary Poned Areas

Temporary ponded areas occur in Parcels 16, 17, and 18 and within the buffer area east of Parcel 18 (Figure 3.3-1). These temporary ponded areas are small, primarily unvegetated depressional areas within compacted soil that pond water for short durations after rain. The duration of ponding depends on rainfall, but it is likely that ponding is for short periods given that no wetland or vernal pool plant indicator species were observed nor were the ponded areas connected to other wetland features. No wetlands or vernal pools are known to exist in the immediate vicinity. Due to the historical and ongoing disturbance in the area, the lack of nearby wetlands or vernal pools, and the lack of wetland or vernal pool indicator plant species (from previous growing seasons or currently growing) or vernal pool branchiopods, the temporary ponded areas cannot be classified as wetlands or vernal pools, and no protocol surveys would be required. Therefore, these areas would not be regulated by the U.S. Army Corps of Engineers (USACE).

Urban/Developed

Developed habitats are areas where construction has occurred and native vegetation is no longer supported. Developed land is characterized by permanent structures and could include pavement or hardscape, and also includes ornamental plantings in residential or commercial areas. Urban/developed areas occur throughout the BSA and Parcel 13 is composed entirely of a paved parking lot (Figure 3.3-1).

Waters of the United States

No waters of the United States (including federally defined wetland) occur within the project sites. The temporary ponded areas within the project sites are not waters of the United States and are therefore not under the USACE regulatory jurisdiction. However, there are waters of the United States located outside of the project sites, within the buffer associated with the BSA. These areas are depicted in Figure 3.3-1 and include soft-bottom channel, coastal and valley freshwater marsh, southern willow scrub, and open water.

USACE conducted a jurisdictional delineation of areas within NBVC Port Hueneme in 2006 and 2007 (USACE 2008). In the delineation report, USACE assessed the known jurisdictional areas within NBVC Port Hueneme, in light of updated guidance, and concluded the following:

- The tidally influenced area associated with the port remains unchanged from prior assessments, and Clean Water Act (CWA) jurisdiction extends to the high tide line;
- The limits of USACE jurisdiction over the drainage canals (i.e., the soft-bottom channels within the buffer area) correspond to the ordinary high water mark along the canals, including wetlands along the banks of the drainage canals; and
- Drainages and ponds that appear excavated out of uplands were not considered under USACE jurisdiction.

3.3.1.2 Federally Listed Plants

Vegetation communities and land cover types for the project sites consist of nonnative grassland, temporary ponded areas, and urban/developed or disturbed habitat. Because the project sites lack native vegetation communities, and based on information provided in data searches (Barr 2014; CDFW 2014) and the INRMP, it was concluded that no federally listed plant species have the potential to occur on the project sites. Therefore, federally listed plant species are not discussed further in this document.

3.3.1.3 Federally Listed Wildlife

Biological reconnaissance and habitat assessment surveys were conducted for the BSA in December 2014, and suitability for listed wildlife species was determined (AECOM 2015b and Appendix B). Based on the habitat suitability assessments, the only federally listed species with potential to occur within the BSA as occasional flyover species are the California least tern (*Sterna antillarum browni*) and western snowy plover (*Charadrius alexandrinus nivosus*) (CDFW 2014). These species breed outside and to the south-southwest of the BSA and NBVC Port Hueneme, at Hollywood Beach, approximately 2,000 feet (610 meters) from the project sites (Barringer 2013) (Figure 3.3-2). The California least tern is known to forage in the harbor at NBVC Port Hueneme (Navy 2012). No federally listed wildlife species are known to occur within the BSA nor would any listed species use habitat within the BSA for breeding or foraging.



Figure 3.3-2 Biological Study Area and Special Status Species Data

3.3.1.4 Critical Habitat

There are no critical habitat designations within the BSA for federally listed wildlife species. The closest occurrence of critical habitat for the western snowy plover is located outside of NBVC Port Hueneme, approximately 2,000 feet (610 meters) from the BSA, extending along the shoreline from the mouth of the Santa Clara River, south to the opening of the Channel Islands Harbor. No critical habitat designations have been published for the California least tern. In addition, there are no critical habitat designations within the BSA for federally listed plants.

3.3.1.5 Non-federally Listed Rare Plant Species

Through the NBVC Port Hueneme INRMP, the protection and conservation of various non-federally listed rare plant species are addressed. Vegetation communities and land cover types for the project sites consist of nonnative grassland, temporary ponded areas, disturbed habitat, and urban/developed areas. Based on the lack of native vegetation and the presence of development and disturbance within the majority of the project sites, and information provided in data searches (Barr 2014; CDFW 2014) and the INRMP (Navy 2012); it was concluded that no non-federally listed rare plant species occur on NBVC Port Hueneme.

3.3.1.6 Non-federally Listed Rare Wildlife Species

Through the NBVC Port Hueneme INRMP, conservation and environmental protection measures have been developed for various non-federally listed rare wildlife species. Fourteen non-federally listed wildlife species that have a very low potential to occur on the project sites include the following:

- Coast horned lizard (*Phrynosoma blainvillii*)
- Coast patch-nosed snake (*Salvadora hexalepis virgultea*)
- Coastal whiptail (*Aspidoscelis tigris stejnegeri*)
- San Bernardino ring-necked snake (*Diadophis punctatus modestus*)
- Silvery legless lizard (*Anniella pulchra pulchra*)
- South coast garter snake (*Thamnophis sirtalis infernalis*)
- Two-striped garter snake (*Thamnophis hammondi*)
- Burrowing owl (*Athene cunicularia*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Long-eared myotis (*Myotis evotis*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western small-footed myotis (*Myotis ciliolabrum*)
- Yuma myotis (*Myotis yumanensis*)

One additional non-federally listed rare wildlife species, the Yellow warbler (*Setophaga petechial*), has the potential to occur within the survey buffer areas surrounding Parcels 9 and 13.

Coast Horned Lizard

The coast horned lizard is a California Species of Special Concern. Although not documented on NBVC Port Hueneme, this species has the potential to occur on the installation (Navy 2012). The coast horned lizard prefers to inhabit semi-open scrub habitats. Parcel 9 provides a low potential for the coast horned lizard to occur within the project sites, as well as the buffers around Parcels 9 and 13 (AECOM 2015b).

Coast Patch-Nosed Snake

The coast patch-nosed snake is a California Species of Special Concern. Although not documented on NBVC Port Hueneme, this species has the potential to occur on the installation (Navy 2012). The coast patch-nosed snake prefers sage scrub and chaparral habitats. There is a low potential for the species to occur on Parcel 9, as well as within the buffers around Parcels 9 and 13 (AECOM 2015b).

Coastal Whiptail

The coastal whiptail is known to prefer a variety of open habitats, including grasslands, scrub, chaparral, woodland, and riparian vegetation. Although not documented on NBVC Port Hueneme, this species has the potential to occur on the installation (Navy 2012). Coastal whiptail has a low potential to occur on Parcel 9 and within the buffers associated with Parcels 9 and 13 (AECOM 2015b).

San Bernardino Ring-Necked Snake

The San Bernardino ring-necked snake prefers coastal sage scrub, chaparral, woodlands, and dry desert habitats. Although not documented on NBVC Port Hueneme, this species has the potential to occur on the installation (Navy 2012). Within the BSA, the San Bernardino ring-necked snake has a low potential to occur on Parcel 9, as well as within the buffers around Parcels 9 and 13 (AECOM 2015b).

Silvery Legless Lizard

The silvery legless lizard is a California Species of Special Concern that prefers to inhabit well-drained soils, including dunes, sandy beaches, and alluvial floodplain. Although not documented on NBVC Port Hueneme, this species may occur on the installation, most likely in the sand verbena/beach bursage habitat on the southeast portion of NBVC Port Hueneme (Navy 2012). Based on the 2014 habitat assessment surveys, the silvery legless lizard has a low potential to occur on Parcel 9, as well as within the buffers around Parcels 9 and 13 (AECOM 2015b).

South Coast Garter Snake

The south coast garter snake is a California Species of Special Concern. The habitats for this species include streams, ponds, vernal pools, grasslands, sage scrub, oak woodlands, and other moist habitats. Although not documented on NBVC Port Hueneme, this species has the potential to occur on the installation (Navy 2012). Within the BSA, the south coast garter snake has a low potential to occur on Parcel 9, as well as within the buffers around Parcels 9 and 13 (AECOM 2015b).

Two-Striped Garter Snake

The two-striped garter snake is a California Species of Special Concern that prefers moist habitats, including streams, ponds, vernal pools, and oak woodlands. However, the two-striped garter snake also can inhabit grasslands and sage scrub vegetation. The species has not been documented on NBVC Port Hueneme, but suitable habitat occurs on the installation (Navy 2012). Within the BSA, the two-striped garter snake has a low potential to occur on Parcel 9, as well as within the buffers around Parcels 9 and 13 (AECOM 2015b).

Western Burrowing Owl

The burrowing owl is considered by USFWS to be a Bird of Conservation Concern at the national level (Klute et al. 2003). It is protected under the MBTA and is a California Species of Special Concern that is declining throughout its range, especially California's coastal populations. The burrowing owl typically occupies open areas, including low-growing grasslands, borders of agricultural fields, canals, rock outcrops, and other areas that support suitable burrows (including open pipes, ground squirrel burrows, and debris piles). Although the burrowing owl is not known to breed within Ventura County, the species was documented on NBVC Port Hueneme in the winter of 2003 in a Seabee training area located north of Parcels 9 and 13 (Figure 3.3-2). Within the BSA, the burrowing owl has a low potential to occur on Parcel 9, and within the buffers associated with Parcels 9 and 13 (AECOM 2015b).

Loggerhead Shrike

The loggerhead shrike is considered a California Species of Special Concern and is protected under the MBTA. The species prefers open grasslands, sage scrub, desert areas, or areas with open vegetation and perches from which to hunt. There is a high potential for the loggerhead shrike to forage in and around Parcel 9 (AECOM 2015b). This species has only been recorded on one occasion during the winter at Port Hueneme and no nesting is expected to occur within the BSA.

Yellow Warbler

The yellow warbler is considered a California Species of Special Concern. The species is also protected under the MBTA. Yellow warblers occur in riparian vegetation that supports multi-layered structure providing dense areas to nest and open areas to forage. On NBVC Port Hueneme, the yellow warbler has been documented as a breeding species in riparian habitats (Navy 2012) and has a high potential to breed within the buffer of Parcels 9 and 13 (AECOM 2015b). There is an undocumented report of the yellow warbler breeding on base; however, this report has not been confirmed.

Long-Eared Myotis

The long-eared myotis utilizes a variety of habitats, including coniferous forests (tree cavities and snags), caves, mines, and loose or exfoliating bark. Although the long-eared myotis has not been observed on NBVC Port Hueneme, it has the potential to occur on the installation (Navy 2012) and has a low potential to forage within the BSA (AECOM 2015b).

Townsend's Big-Eared Bat

The Townsend's big-eared bat is a Candidate for listing under the California ESA and a California Species of Special Concern. The species prefers rocky areas; pine forests; arid desert scrub habitats; and areas with caves, mines, abandoned buildings, and other areas for

roosting. Although Townsend's big-eared bat has not been observed on NBVC Port Hueneme, it has the potential to occur on the installation (Navy 2012) and has a low potential to forage within the BSA (AECOM 2015b).

Western Mastiff Bat

The western mastiff bat is a California Species of Special Concern that occurs in areas with large open roosts such as high cliffs with rock fissures. Other habitats include forests, grasslands, woodlands, scrub vegetation, and urban environments. Although western mastiff bat has not been observed on NBVC Port Hueneme, it has the potential to occur on the installation (Navy 2012) and has a low potential to forage within the BSA (AECOM 2015b).

Western Small-Footed Myotis

The western small-footed myotis occurs in caves and mines, under bridges, in buildings, and in other protected areas near open water. Although western small-footed myotis has not been observed on NBVC Port Hueneme, it has the potential to occur on the installation (Navy 2012) and has a low potential to forage within the BSA (AECOM 2015b).

Yuma Myotis

The Yuma myotis prefers caves, mines, the underside of bridges, buildings, and other sheltered features near open water. Although Yuma myotis has not been observed on NBVC Port Hueneme, it has the potential to occur on the installation (Navy 2012) and has a low potential to forage within the BSA (AECOM 2015b).

3.3.1.7 Migratory Birds

Almost all birds in California are afforded protection under the regulatory authority of the MBTA. The nonnative grassland vegetation within Parcel 9 represents suitable foraging habitat for raptors and small passerine-type birds. The southern willow scrub vegetation within the buffer to the north of Parcels 9 and 13 has the potential to support nesting riparian bird species, such as the yellow warbler. The willow scrub vegetation can also be used as avian stopover habitat during migration. The other project areas are either already developed (e.g., parking lots) or are highly disturbed and would not be expected to provide any valuable biological resource value to migratory birds. Mugu Lagoon, located at the southern end of NBVC Point Mugu, is approximately 5 miles (7.9 kilometers) southeast of the BSA. Mugu Lagoon is located along the Pacific Flyway, where it provides important nesting, foraging, and stopover habitat for migratory birds in the western United States (Onuf 1987). The National Audubon Society recognizes Mugu Lagoon and the Santa Clara River as globally Important Bird Areas that provide essential habitats to a variety of bird species that are dependent upon coastal resources (California Audubon Society 2015). The Santa Clara River Important Bird Area is located approximately 4 miles (6.4 kilometers) north of the project sites, north of NBVC Port Hueneme. Mugu Lagoon is considered an important shorebird staging site (Harrington and Perry 1995). Avian use of the lagoon has been documented at up to 60,000 shorebirds in a single day, while waterfowl counts have reached 100,000 annually (Partners In Flight 2015). As such, the nonnative grassland within Parcel 9 represents suitable foraging habitat for raptors and small passerine birds, and potentially shorebirds that are resident species or migrating into and/or through the area via the Pacific Flyway.

3.3.1.8 Wildlife Corridors

Wildlife movement activities typically fall into one of three movement categories: local and regional dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions), regional seasonal migration, and local movements related to home range activities (foraging for food or water, defending territories, and searching for mates, breeding areas, or cover).

At the local level, avian wildlife species are likely to use Parcel 9 for movements related to dispersal and home range activities, including western meadowlark (*Sturnella neglecta*) and loggerhead shrike (*Lanius ludovicianus*). Additionally, avian species migrating along the Pacific Flyway could potentially fly over the BSA in a north/south direction, between Mugu Lagoon and the Santa Clara River. The biological surveys conducted in 2014 within the BSA recorded 38 wildlife species, including 34 avian species and four mammal species. Avian species documented within the BSA included, but were not limited to, the following: great egret (*Ardea alba*), California towhee (*Melospiza crissalis*), American crow (*Corvus brachyrhynchos*), and various shorebird species, and other birds that would be considered in the category of dispersal and home range. Mammal species detected within the BSA were species that have been able to adapt to the urbanization on NBVC Port Hueneme, including raccoon (*Procyon lotor*), desert cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Otospermophilus beecheyi*). These species would be expected to utilize local movement corridors to disperse between the vegetated and disturbed portions of the BSA and adjacent areas.

Regional wildlife movement through the BSA is either no longer viable or is severely degraded due to the extensive development surrounding NBVC Port Hueneme. Native habitats on NBVC Port Hueneme have been severely fragmented (Navy 2012) and do not provide a route for regional wildlife movement.

3.3.2 ENVIRONMENTAL CONSEQUENCES

The following sections analyze the potential environmental impacts associated with construction and operation of the Proposed Action/Alternative 1 and other alternatives. This includes permanent and temporary direct and indirect impacts that may occur to biological resources.

3.3.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

The Proposed Action/Alternative 1 project sites for the analysis of effects to biological resources consist of Parcels 9, 13, 16, 17, and 18, and the surrounding buffer area within the boundaries of NBVC Port Hueneme. The total acreage of the combined five sites would be 45.25 acres (18.3 hectares). The Proposed Action/Alternative 1 would be entirely confined to terrestrial habitats.

Construction and Operations Impacts

Impacts that would result from construction and operation of Proposed Action/Alternative 1 include the following:

- Permanent direct impacts are irreversible construction-related impacts from new facilities and associated infrastructure. It is assumed that there would be 100 percent permanent direct impacts to all vegetation communities and habitats within the Proposed Action/Alternative 1 footprint.
- Potential permanent indirect impacts are operational-associated impacts that affect adjacent resources, including the presence of new structures that could provide additional perch locations for raptors and other avian predators, thereby increasing predation on nearby and adjacent nesting birds. There is the potential for an increase in trash, which may lead to an increase in predatory and scavenging species.
- Potential temporary indirect impacts are construction-associated activities and impacts that affect adjacent resources. Potential temporary indirect impacts are caused by project construction (e.g., construction-generated fugitive dust, erosion, noise, ambient lighting, runoff, and sedimentation) and are evaluated for habitats occupied by migratory birds covered under the MBTA. Generally, temporary indirect impacts for faunal species were considered up to 500 feet (152 meters) from the Proposed Action/Alternative 1 area. Similar potential temporary indirect impacts caused by project construction are evaluated for plant communities and other special-status species deemed appropriate per the NBVC Port Hueneme INRMP.

Impacts would be minor due to the relatively small size of the affected area and amount of suitable habitat in surrounding areas. The Proposed Action/Alternative 1 area is surrounded primarily by disturbed habitat and development, in addition to highly fragmented natural habitat (e.g., pockets of southern willow scrub and coyote bush scrub) (Figure 3.3-1). Land disturbing construction activities could result in minor impacts to individuals of less-mobile wildlife species within the Proposed Action/Alternative 1 area. Areas temporarily disturbed during construction would be restored to their original condition following construction, resulting in no long-term impacts to these areas. Long-term impacts would occur in the relatively small areas associated with the construction of footings for the PV panels. Therefore, there would be no significant impacts from implementation of the Proposed Action/Alternative 1.

Additionally, the footprint of the PV solar sites would occur entirely in maintained annual grassland (nonnative, mowed), or disturbed/developed areas. Annual grassland (mowed) has low value as habitat for most species but provides insect habitat that could attract reptiles and birds for foraging. Burrowing mammals (e.g., ground squirrel) were observed within the BSA during project surveys, but not within the nonnative grasslands in the Proposed Action/Alternative 1 area (i.e., not on Parcel 9) (AECOM 2015b). The Proposed Action/Alternative 1 area represents a relatively small portion of the existing nonnative or otherwise disturbed habitat on NBVC Port Hueneme (Figure 3.3-1), and the BSA (with the exception of the fragmented pockets of southern willow scrub and coyote bush scrub within the buffer north of Parcel 9) consists of low-quality habitats for both native plants and animals. Therefore, the loss of this low-quality habitat with implementation of the Proposed Action/Alternative 1 would not represent an appreciable adverse impact to habitat or associated common wildlife species.

No federally listed species are likely to occur and no critical habitat has been designated within the BSA. Thus, no impacts would occur to federally listed species or critical habitat from construction, operation, and maintenance of the Proposed Action/Alternative 1. Noise, dust, or

other construction-related effects would not impact federally or state listed sensitive or other species covered under the MBTA associated with the western snowy plover and California least tern colony at Hollywood Beach to the west of NBVC Port Hueneme, or Mugu Lagoon to the southeast, because all project activities would be restricted to the Proposed Action/Alternative 1 area. Hollywood Beach is located approximately 2,000 feet (610 meters) from the Proposed Action/Alternative 1 area. Construction and operations noise at this distance is expected to be approximately the same as what currently occurs at these locations. Since no federally listed species have been documented, nor has critical habitat been designated for the Proposed Action/Alternative 1 area or the immediate vicinity, indirect impacts to these resources would not occur; therefore, consultation under Section 7 of the ESA would not be required and there would be no impacts.

Vegetation Communities and Land Types Impacts

As summarized in Table 3.3-1, construction of the PV solar facilities would result in the removal of 45.25 acres (18.3 hectares) of nonnative grassland, disturbed habitat, and previously developed areas associated with the solar sites. These areas do not support habitat for federally or state listed plant species. These vegetation communities and land types are not regulated resources, and have relatively low ecological value due to lack of native species components and relatively low use by native wildlife species. Therefore, implementation of the Proposed Action/Alternative 1 would not result in significant impact to nonnative grassland, disturbed habitat, or previously developed areas.

Federally Listed Wildlife

No federally listed threatened and endangered species are likely to occur within the BSA of Proposed Action/Alternative 1. Suitable habitat exists within the Proposed Action/Alternative 1 area for common raptor species and other passerine-type birds. The nonnative grassland and disturbed habitats are not considered suitable areas to support threatened and endangered species on NBVC Port Hueneme.

Temporary impacts to threatened and endangered terrestrial species would not occur from noise and habitat disturbances associated with construction activities given the distance from suitable habitat (i.e., the western snowy plover and California least tern nesting area at Hollywood Beach, and the migratory bird high-use area at Mugu Lagoon) that supports threatened and endangered species. In addition, threatened and endangered terrestrial species at Hollywood Beach and Mugu Lagoon are already habituated to moderate levels of noise associated with vehicle, large truck, and boat traffic. Increases in noise levels from construction activities to the ambient noise environment would be negligible and temporary.

Construction would occur on nonnative grasslands, previously disturbed habitat, and cleared or developed areas. Permanent loss of 45.25 acres (18.3 hectares) of nonnative grassland, disturbed habitat, and previously developed areas would occur under the Proposed Action/Alternative 1. Therefore, habitat removal would be negligible and would not negatively affect habitat use by any threatened or endangered species. Construction activities would result in short-term impacts from disturbance to terrestrial wildlife but would not further threaten the existence of any protected species or critical/sensitive habitats. Additionally, NBVC Port

Hueneme personnel would continue to manage habitats according to the INRMP, which is designed to protect and benefit threatened and endangered species. Therefore, there would be no significant impacts to threatened and endangered species from implementation of the Proposed Action/Alternative 1. Since there are no anticipated impacts to federally listed species and/or designated critical habitat, consultation under Section 7 of the ESA would not be required.

Critical Habitat

No federally designated critical habitat occurs within the BSA. Therefore, implementation of Proposed Action/Alternative 1 would not result in impacts to federally designated critical habitat.

Non-federally Listed Rare Plant Species

No non-federally listed rare plant species have the potential to occur on any of the parcels considered under the Proposed Action/Alternative 1. A habitat assessment of all five parcels, including the Parcel 9 swale, was conducted to support the preparation of this EA and no non-federally listed rare plant species were observed. Therefore, implementation of Proposed Action/Alternative 1 would not result in impacts to non-federally listed rare plant species.

Non-federally Listed Rare Wildlife Species

Reptiles

Seven non-federally listed rare reptile species have a low potential to be affected by the implementation of the Proposed Action/Alternative 1. These species include the coast horned lizard, coast patch-nosed snake, coastal whiptail, San Bernardino ring-necked snake, silvery legless lizard, south coast garter snake, and two-striped garter snake. These species are very unlikely to be present because the proposed project sites and buffer areas offer only small patches of potentially suitable habitat; however, if present, potential impacts to these species could be caused by construction activities, such as clearing and grubbing, site grading, and trenching for electrical infrastructure. In the unlikely event that one or more of these species are present, they would occur at such low densities due to the lack of potentially suitable habitat, that implementation of the Proposed Action/Alternative 1 would not result in significant impacts to the species.

Birds

Three non-federally listed rare bird species have a very low potential to be affected by implementation of the Proposed Action/Alternative 1. These three species include the western burrowing owl, loggerhead shrike, and yellow warbler.

Although the western burrowing owl is known to occur on NBVC Port Hueneme north of Parcels 9 and 13, it has not been documented within the Proposed Action/Alternative 1 project areas. The western burrowing owl could potentially use the proposed project sites for foraging, but it is not known to breed within Ventura County. Parcel 9 and the Parcel 9 buffer area represent suitable stopover and foraging habitat for the loggerhead shrike. The yellow warbler has the potential to be affected by implementation of the Proposed Action/Alternative 1 due to the presence of suitable breeding and stopover habitat within the Parcel 9 and Parcel 13 buffers. There is an unconfirmed report that the yellow warbler may be breeding on NBVC Port Hueneme, but this has not been documented by surveys.

Potential impacts to the three bird species could be caused by direct and indirect effects of construction activities such as clearing and grubbing, site grading, and trenching for electrical infrastructure. Direct impacts would be associated with the permanent loss of foraging habitat within the Proposed Action/Alternative 1 development footprint, and would be considered an adverse but not a significant impact to these species. Indirect impacts within the buffer areas would be related to construction and would be temporary. In the unlikely event that one or more of these species do occur within the Proposed Action/Alternative 1 project development footprint, they would occur at very low densities in areas with a limited amount of potentially suitable habitat. Therefore, implementation of the Proposed Action/Alternative 1 would not result in significant impacts to these species.

Mammals

Five non-federally listed rare mammal species have a very low potential to be affected by implementation of the Proposed Action/Alternative 1. These five species include long-eared myotis, Townsend's big-eared bat, western mastiff bat, western small-footed myotis, and Yuma myotis. The five species listed have not been documented on NBVC Port Hueneme and there is the low potential for them to occur due to lack of suitable roosting habitat. There is suitable, but limited foraging habitat for these species within the BSA.

Potential impacts to the five mammal species could be caused by direct and indirect effects of construction activities. Direct impacts would be associated with the permanent loss of foraging habitat within the Proposed Action/Alternative 1 development footprint, and would be considered an adverse but not a significant impact to these species. Indirect impacts within the buffer areas would be related to construction and would be temporary. In the unlikely event that one or more of these species do occur within the Proposed Action/Alternative 1 project development footprint, they would occur at very low densities in areas with a limited amount of potentially suitable habitat. Therefore, implementation of the Proposed Action/Alternative 1 would not result in significant impacts to these species.

Migratory Birds

Potential impacts to migratory birds protected under the MBTA could result from construction activities such as clearing and grubbing, site grading, and trenching for electrical infrastructure, and through indirect impacts associated with bird strikes on the solar PV arrays, potentially induced by the "lake effect" (USFWS 2015). Lake effect is discussed further under Bird Strikes ("Lake Effect").

Parcels 13, 16, 17, and 18 are paved or partially paved and considered disturbed. Parcel 9 provides suitable habitat to support foraging for migratory bird stopovers in the area. However, more suitable habitat providing nesting, foraging, and stopover opportunities, including Mugu Lagoon located on the Pacific Flyway at the southern end of NBVC Point Mugu approximately 5 miles (7.9 kilometers) southeast of the BSA and the Santa Clara River located approximately 4 miles (6.4 kilometers) north of the project sites, are located in the surrounding areas. Therefore, removal of Parcels 9, 13, 16, 17, and 18 with implementation of the Proposed Action/Alternative 1 would not constitute a significant impact.

Wildlife Corridors

Due to the prior development of the region surrounding NBVC Port Hueneme, regional wildlife corridors are no longer viable, and therefore Proposed Action/Alternative 1 would not result in any impacts to regional wildlife movement. Additionally, the project would not sever any local movement corridors by isolating patches of vegetation. Therefore, implementation of the Proposed Action/Alternative 1 would not result in any adverse impacts to wildlife movement corridors.

Bird Strikes (“Lake Effect”)

The Navy has received comments on the potential for the phenomenon known as "lake effect" to contribute to bird mortality at solar PV projects associated with the Navy's proposed construction and operation the Proposed Action/Alternative 1. Lake effect is the phenomenon whereby birds can be attracted to solar PV projects because they share several characteristics with bodies of water, namely large, smooth, dark surfaces that reflect horizontally polarized sunlight and skylight. This section specifically addresses comments expressing the concern that birds may collide with solar PV panels if they mistake the panels for a body of water. It provides an assessment of the technologies currently used by utility-scale solar facilities, highlights the difference between bird mortality associated with these solar technologies and that of the Proposed Action/Alternative 1, discusses the available lake effect literature, and outlines the Navy's responsibilities under NEPA in light of the unavailability and/or incompleteness of information about this phenomenon.

Overview of Solar Technology

Three types of utility-scale solar power technologies are in operation today: (1) parabolic trough solar technology, which uses curved mirrors to focus solar energy to heat fluid-filled pipes, which produce steam to power a turbine; (2) PV technology, which converts solar energy directly into electricity using PV cells made of a dark, semiconductor material; and (3) concentrated solar power (CSP) technology, which uses hundreds of thousands of highly reflective mirrors (heliostats) to concentrate solar energy (flux) at the top of a tower, where it heats water to produce steam. The steam powers turbines to produce electricity (IEA 2014).

Avian Mortalities on Solar Projects Representing Three Technologies

Avian mortalities have been documented at three utility-scale solar projects in southern California (USFWS 2014; KCET 2013; Ironwood Consulting 2012, 2013). The USFWS Forensics Laboratory recently released a report summarizing the causes of bird mortalities at three solar facilities in southern California: Genesis, which uses parabolic trough solar technology; Desert Sunlight, which uses PV solar technology; and the Ivanpah Solar Electric Generating System (ISEGS), which uses CSP technology (USFWS 2014). This summary is the only agency-led study on avian mortality at solar facilities to date. The report reveals that a large proportion of birds killed on these three projects die from striking project components for one of several reasons: because panels or heliostats are oriented vertically; after birds have become crippled by solar flux (i.e., singeing of flight feathers); or as a result of apparently mistaking the solar arrays for water. Because the Proposed Action/Alternative 1 would use solar PV technology, the remainder of this discussion will focus primarily on reports of lake effect at PV projects, and does not focus on bird mortalities on CSP or parabolic trough projects.

The USFWS study does not differentiate between non-lake effect-related and lake effect-related mortalities resulting from impact trauma, as the cause of bird deaths found within the arrays often could not be determined because comprehensive necropsies were not performed. The study does state; however, that "birds for which the primary habitat is water, including coots, grebes, and cormorants, were over-represented in mortalities at the Desert Sunlight facility (44 percent) compared to Genesis (19 percent) and Ivanpah (10 percent)" (USFWS 2014). Eight of the birds from Desert Sunlight were grebes, which are unable to easily take off from land. This suggests a link between predation and stranding or impact resulting from the birds confusing the arrays with water (USFWS 2014).

The presence of water on or near a PV project may also influence the likelihood that birds will confuse the arrays for water. The USFWS study noted that birds are attracted to a water feature at Desert Sunlight and habituated to the presence of an accessible aquatic environment, and may therefore be more likely to misinterpret the arrays as water (USFWS 2014). However, unpublished data from some PV installations in the western United States indicate that birds may be attracted to PV projects even in the absence of nearby aquatic habitat (BERC 2013). While the collective evidence suggests that lake effect does contribute to avian mortalities on solar PV projects, no scientifically rigorous studies have been conducted to test the validity of this conclusion.

Data Gaps

Scientific studies on avian mortality on solar projects are currently lacking. The USFWS Forensics Laboratory study emphasizes their incomplete knowledge on the scope of avian mortalities at the three solar projects. In addition, this dataset, which represents the best available summary of avian mortality data on solar projects, was not suitable for statistical analysis. Collection of the carcasses was opportunistic, that is, not according to a pre-determined sampling protocol. There was no attempt to quantify the number of carcasses removed by scavengers, or to compare mortality rates to baseline data on bird diversity or abundance (USFWS 2014). Conclusions based entirely on observational (non-experimental) data cannot be proven statistically, and it is therefore impossible to understand how accurate and precise the data are, and whether the data are biased. As concluded in an analysis for a 40 MW PV facility in Kern County, California, "there is no empirical evidence that PV facilities lead to significant avian mortality resulting from contact or collision with PV panels" (Kern County 2014).

A certain proportion of avian mortalities resulting from panel strikes may not be attributable to lake effect at all. Some collisions, like when a low-flying bird strikes a vertically oriented heliostat or panel, are unrelated to lake effect. Lake effect seems to be most influential when panels or heliostats are oriented horizontally, collectively forming a smooth, continuous surface (USFWS 2014). Conversely, heliostats appear to pose a greater risk for birds at ISEGS when they are oriented vertically (USFWS 2014). These collisions likely stem from the same conditions that cause birds to strike large windows, namely that the surface reflects vegetation or sky; birds are much less likely to strike a surface when it reflects the ground (Klem 1990). Sheet glass used in commercial and residential buildings has been well established as a hazard for birds (Klem 1990, 2006; Klem et al. 2004; Loss et al. 2014). Systematic studies on window strikes have concluded that birds "are easily deceived by and strike reflected images of habitat

and sky on windows” when they are titled vertically, but are less likely to strike windows angled to reflect solid ground (Klem 1990). Window strike data may provide clues about the cause of lake effect and generate research questions, but cannot stand in place of empirical research on lake effect. As mentioned, the USFWS study does not differentiate between lake-effect-related and non-lake-effect-related mortalities resulting from impact trauma. In fact, it may be difficult to tell based on the carcass alone, making it impossible to obtain a true estimate of lake effect-caused mortalities without additional information on the causes of lake effect. Clearly, there is a need for additional research, and until further data are obtained, drawing accurate conclusions on the extent and significance of avian mortality on solar projects is impossible.

Project-Specific Conclusion and the Navy's Responsibility Under NEPA

The Proposed Action/Alternative 1 includes the installation of ground-mounted solar PV arrays at NBVC Port Hueneme. Estimating the likelihood that birds may be injured or killed due to lake effect as a result of the Proposed Action/Alternative 1 is effectively impossible at this time because of the lack of studies on this phenomenon as it relates to solar projects. Under Section 1502.22 of the CEQ Regulations for Implementing NEPA-applied here by analogy to development of an EA- "when an agency is evaluating reasonably foreseeable ... adverse effects on the human environment ... and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking" 40 CFR. § 1502.22. If the information in question "is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant," the agency must include the information (within its EA). However, if the information "cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include (the following four elements): (1) a statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable ... adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating (such) adverse impacts ...; and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. 40 CFR § 1502.22(a)-(b)(1)-(4). The discussion below expands upon these four elements.

Element 1 is addressed in detail in the above discussion of available literature pertaining to lake effect. To summarize, avian mortalities have been reported on several large solar projects utilizing different types of solar technologies. Causes of death include impact trauma, predation, and, for CSP projects, burns from solar flux. Of the birds that die of impact trauma, some may have struck vertically oriented panels, and others may have crash-landed, mistaking PV arrays for a body of water due to the lake effect phenomenon. However, additional studies are needed, and accurate conclusions about the scope or significance of avian mortalities due to lake effect cannot be drawn without them. The means of obtaining this information is known, and would involve the execution of many independent studies. These studies should focus on quantifying the number of birds killed through lake effect-related impact trauma on solar projects in different habitats and geographic locations, and which utilize different technologies. Studies should determine which species are most vulnerable to lake effect and what characteristics of a solar project or the environment influence its likelihood to attract birds via lake effect, and should compare lake effect-related mortality rates across a number of different solar projects.

Obtaining these data would take years, perhaps decades, and millions of dollars, and collaborations among the solar industry, agencies, and scientists. The best studies would be undertaken by entities independent of the solar industry using standardized survey methods (which have yet to be developed), carefully planned and executed over multiple years, and published in peer-reviewed journals. The wind energy industry experienced a similar lack of data pertaining to bird mortalities on wind projects 20 years ago, and agencies are just beginning to finalize guidelines and best practices to reduce avian mortality. Therefore, the cost of obtaining these data is exorbitant.

With respect to element 2, the incomplete and/or unavailable data concerning lake effect-related bird collisions at solar PV power facilities is clearly relevant to assessing potential impacts associated with the Proposed Action/Alternative 1, and would—if obtainable as a practical matter—enable the Navy to make a better-informed overall decision. However, it is not necessary for the Navy to have or obtain such information in order to make a reasoned choice among potential alternatives. While acknowledging the incompleteness of the current data on the topic, it seems reasonable to conclude that any lake effect-related bird strikes at solar power facilities would not rise to the level of a significant impact for purposes of NEPA analysis (see discussion below), and is in fact likely relatively insignificant.

With respect to element 3, as with element 1, the discussion above summarizes the existing credible scientific evidence relevant to evaluating potential bird collision impacts at solar power facilities.

With respect to element 4, although it is not practical for the Navy to obtain the data needed to draw accurate conclusions about lake effect, based on the available data, it is clear that utility-scale solar power projects have the potential to adversely affect birds. However, this effect is not likely to be substantial for the Proposed Action/Alternative 1. Solar projects kill far fewer birds each year than the primary sources of human-caused avian mortality worldwide. For example, plate-glass windows kill an estimated 365 million to 988 million birds each year in the United States alone (Loss et al. 2014). Conversely, of the 233 bird carcasses found on the three solar projects mentioned above, only a fraction of those deaths could potentially be attributed to lake effect. While acknowledging the incompleteness of the current data on the topic, this analysis concludes that any lake effect-related bird strikes at the proposed solar PV array location(s) would not rise to the level of a significant impact for purposes of NEPA analysis.

Summary

Based on the above analysis, there would be no significant impact to biological resources from implementation of the Proposal Action/Alternative 1.

Conservation and Environmental Protection Measures

To further reduce less than significant impacts that could occur with implementation of the Proposed Action/Alternative 1, the following conservation and environmental protection measures would be incorporated into the project design and planning under implementation of the Proposed Action/Alternative 1.

Avoidance of Nesting Birds

To reduce the risk of take of nesting birds protected under the MBTA, mowing, clearing, and grading of any vegetated areas would be conducted during the nonbreeding season (October through February at NBVC Port Hueneme), when feasible. If mowing, clearing, or grading of vegetated areas must occur during the breeding season (March through September at NBVC Port Hueneme), a nest search survey would be conducted by a qualified biologist. Any active nests found during the survey would be provided with a buffer (buffer size would be determined based on each situation by the installation wildlife biologist) and avoided until the birds have fledged. No nighttime construction (including the use of lighting) would occur during the aforementioned nesting seasons. If lighting were required for operations, all light posts and permanent nighttime lighting associated with the project would be selected to provide the lowest illumination possible while still allowing for safe operations. To prevent disturbance to potential sensitive natural resources, lighting would be set at the lowest height possible and would be shielded so that it would be directed only toward areas needing illumination.

Minimize Impacts to Burrowing Owl and Burrows

NBVC Port Hueneme has suitable habitat for burrowing owls; however, this species has not been recorded within the project area (Navy 2012) or observed since 2003. Additionally, the 2014 reconnaissance survey did not reveal the presence of burrowing owls or any active burrows within the proposed project areas. NBVC Port Hueneme conducts routine maintenance on Parcel 9 to minimize the disturbance of the soil cap covering the closed landfill at this location. As such, there is minimal opportunity for the construction of animal burrows that would be suitable for the burrowing owl. However, burrowing owls could move onto the Proposed Action/Alternative 1 area given the presence of suitable habitat. Thus, to minimize any potential impacts to burrowing owls, preconstruction surveys would be conducted on Parcel 9 by a qualified biologist within 30 days prior to ground disturbance to prevent direct take of burrowing owls. If burrowing owls or active burrows were found within the project sites at NBVC Port Hueneme before or during construction, protective measures would be implemented. If burrowing owls and their habitat can be protected in place or adjacent to the project sites, the use of buffer zones, visual screens, or other measures would be used to minimize disturbance impacts from project activities. No construction or other disturbance would occur within 656 feet (200 meters), of any active owl burrow during the nesting season (CDFG 2012). If any burrows were located within the project sites, owls would be passively relocated by a qualified biologist. Artificial burrows would be constructed at a ratio of 2 to 1 for every impacted burrow. Siting of the artificial burrows would be coordinated with an NBVC Natural Resource Specialist.

Minimize Impacts of the “Lake Effect”

Conservation and environmental protection measures related to potential “lake effect” impacts to birds from the implementation of the Proposed Action/Alternative 1 include the development and implementation of a bird conservation program to regularly monitor site conditions and track avian mortality both pre- and post-construction.

3.3.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

The project area for Alternative 2 would be the same as described for the Proposed Action/Alternative 1, except that the PV system would exclude Parcel 9, a 28-acre (11.3-hectare) closed landfill.

Vegetation Communities and Land Types

The potential impacts from Alternative 2 to vegetation communities and land types would be similar to those described for the Proposed Action/Alternative 1; however, as shown in Table 3.3-1, Alternative 2 would only result in the removal of 17.25 acres (7 hectares) of disturbed habitat, temporary ponded areas, and urban/developed lands. Therefore, there would be no significant impacts to vegetation communities and land types with implementation of Alternative 2.

Federally Listed Wildlife

Like the Proposed Action/Alternative 1, no threatened and endangered species are likely to occur within the Alternative 2 project area. Therefore, there would be no significant impacts to federally listed wildlife with implementation of Alternative 2.

Critical Habitat

Like the Proposed Action/Alternative 1, no federally designated critical habitat occurs within the Alternative 2 project area. Therefore, there would be no impacts to critical habitat with implementation of Alternative 2.

Non-federally Listed Rare Plant Species

No non-federally listed rare plant species are known to exist on NBVC Port Hueneme. Therefore, there would be no impacts to non-federally listed rare plant species with implementation of Alternative 2.

Non-federally Listed Rare Wildlife Species

Like the Proposed Action/Alternative 1, Parcels 13, 16, 17, and 18 would be developed for renewable energy generation; however, Parcel 9 would not be developed. The insignificant impacts to non-federally listed rare wildlife species identified for the Proposed Action/Alternative 1 would be reduced with the implementation of Alternative 2 because the cover types associated with Alternative 2 (higher proportion of urban/developed and otherwise disturbed habitat) support fewer biological resources. Therefore, there would be no significant impacts to non-federally listed rare wildlife species from implementation of Alternative 2.

Migratory Birds

Very little suitable habitat (higher proportion of urban/developed and otherwise disturbed areas) exists in the Alternative 2 project area to support raptors and other bird species; however, there remains the slight potential for migratory birds to use the Alternative 2 project area. Therefore, impacts from implementation of Alternative 2 to migratory birds, including common raptor species and other passerine-type birds, would be the same insignificant impacts described under the Proposed Action/Alternative 1, except they would be further reduced due to the removal of Parcel 9 from the proposed project area.

Bird Strikes (“Lake Effect”)

The potential impacts to birds through the “lake effect” from implementation of Alternative 2 would be the same as described for the Proposed Action/Alternative 1. Therefore, implementation of Alternative 2 would not result in significant adverse impacts to special status species.

Summary

Based on the above analysis, there would be no significant impact to biological resources from implementation of Alternative 2.

Conservation and Environmental Protection Measures

Conservation and environmental protection measures for Alternative 2 would be the same as described under the Proposed Action/Alternative 1.

3.3.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

The project area for Alternative 3 would be the same as described for the Proposed Action/Alternative 1, except that the PV system would only be constructed, operated, and maintained on Parcels 9 and 13.

Vegetation Communities and Land Types

The potential impacts from Alternative 3 to vegetation communities and land types would be similar to those described for the Proposed Action/Alternative 1; however, as shown in Table 3.3-1, Alternative 3 would only result in the removal of 40.5 acres (16.4 hectares) of nonnative grassland and existing development (parking lot). Therefore, there would be no significant impacts to vegetation communities and land types with implementation of Alternative 3.

Federally Listed Wildlife

Like the Proposed Action/Alternative 1, there would be no significant impacts on threatened and endangered species. No threatened and endangered species are likely to occur within the Alternative 3 project area. Therefore, there would be no significant impacts to federally listed wildlife with implementation of Alternative 3.

Critical Habitat

Like the Proposed Action/Alternative 1, no federally designated critical habitat occurs within the Alternative 3 project area; therefore, there would be no impacts to critical habitat from implementation of Alternative 3.

Non-federally Listed Rare Plant Species

No non-federally listed rare plant species are known to exist on NBVC Port Hueneme. Therefore, there would be no impacts to non-federally listed rare plant species with implementation of Alternative 3.

Non-federally Listed Rare Wildlife Species

Impacts to non-federally listed rare wildlife species from implementation of Alternative 3 would be similar to the insignificant impacts described under the Proposed Action/Alternative 1. Parcels 9 and 13 are common to both alternatives; however, with the removal of Parcels 16, 17, and 18, those insignificant impacts to non-federally listed rare wildlife species for Alternative 1 would be further reduced. Therefore, there would be no significant impacts to non-federally listed rare wildlife species with implementation of Alternative 3.

Migratory Birds

Impacts to migratory birds, including common raptor species and other passerine-type birds would be the same as described under the Proposed Action/Alternative 1, except they would be reduced due to the removal of Parcels 16, 17, and 18. Therefore, there would be no significant impacts to migratory birds with implementation of Alternative 3.

Bird Strikes (“Lake Effect”)

The potential impacts to birds through the “lake effect” from implementation of Alternative 3 would be the same as described for the Proposed Action/Alternative 1. Therefore, implementation of Alternative 3 would not result in significant adverse impacts to special status species.

Summary

Based on the above analysis, there would be no significant impact to biological resources from implementation of Alternative 3.

Conservation and Environmental Protection Measures

Conservation and environmental protection measures for Alternative 3 would be the same as described under the Proposed Action/Alternative 1.

3.3.2.4 No Action Alternative

Under the No Action Alternative, the construction, operation, and maintenance of a PV system would not occur on the project areas identified in this EA; therefore, there would be no change, and thus no impacts, to biological resources at NBVC Port Hueneme from implementation of the No Action Alternative.

3.4 WATER RESOURCES

Definition of Resource

Water resources include water that is suitable for use and encompasses the water of rivers, lakes, canals, reservoirs, seas and oceans; groundwater; soil moisture; the frozen water of mountain and polar glaciers; and the water vapor of the atmosphere. This section focuses on groundwater, surface water, and water quality.

This section describes the existing hydrology and water quality conditions that occur within and adjacent to NBVC Port Hueneme. For the purposes of evaluating hydrology and water quality, the project sites are described as the areas proposed for construction, operation, and

maintenance of a PV system at NBVC Port Hueneme. Literature and existing background data reviewed included:

- Best Available Floodplain Maps web viewer (California Department of Water Resources 2013)
- California's Groundwater Bulletin 118 (California Department of Water Resources 2004)
- Federal Emergency Management Agency Stay Dry v. 3.0 (FEMA 2013)
- Final Integrated Natural Resources Management Plan for Naval Base Ventura County, Port Hueneme, Port Hueneme, California (Navy 2012)

Regulatory Setting

Laws and regulations protect water quality by establishing compliance standards or waste discharge requirements. These mandates require implementation of design, construction, and operational controls that address structural and non-structural BMPs for water quality, management, treatment, and protection. Applicable regulations and associated agencies are described below.

Executive Order 11988 – Floodplain Management

EO 11988 requires federal agencies to “avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development where there is a practicable alternative.”

Clean Water Act

CWA P.L. 92-500, as amended; 33 U.S.C. §§ 1251 et seq. issued in 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. Administration of the Act is delegated to the SWRCB in California and the local RWQCB. The RWQCB sets water quality standards and criteria for water bodies in its regional plan and issues and enforced NPDES permits. Sections of the CWA relevant to water resources include:

- Section 303(d) – requires states to adopt water quality standards for surface waters of the U.S. The law requires priority rankings be established and action plans, referred to as Total Maximum Daily Loads, be developed to improve water quality. The RWQCB publishes the list of water quality limited segments in the region.
- Section 401 – A Water Quality Certification must be obtained for any activity that may result in discharge to a water body. In California, these certifications are issued by the SWRCB under the auspices of the RWQCB.

Sikes Act

The Sikes Act requires facilities to manage ecosystems, including watersheds and wetlands via an approved INRMP. Consistent with the goals of the Sikes Act, the use of low impact development (LID) techniques helps to maintain the natural landscape and its hydrology.

Energy Independence and Security Act Section 438

Under this section (Storm Water Runoff Requirements for Federal Development Projects), the sponsor of any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 square feet (465 square meters) must use site planning, design,

construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property. This applies to the temperature, rate, volume, and duration of flow.

Due to the low threshold of mandatory implementation (i.e., projects greater than 5,000 square feet [465 square meters]), this legislation has become the primary regulatory driver for federal facilities with respect to storm water management and LID implementation (USEPA 2009).

LID techniques, such as retention and detention ponds, can attenuate peak flows associated with increased development and impervious surface while simultaneously reducing the volume of storm water runoff discharged to surface waters.

Other Federal LID Guidance

In addition to identifying solutions to the existing storm drain conveyance system required of this study and complying with NPDES requirements, Navy policy also calls for the integration of LID techniques into future systems, as provided by the guidance, standards, and goals specified in the following documents:

- Department of the Navy Low Impact Development Policy for Storm Water Management Memorandum (Navy 2007)
- UFC: Low Impact Development (UFC 3-210-10; DoD 2010)

As stated by federal criteria (UFC 3-210-10; DoD 2010), storm water management solutions must meet technical performance criteria in accordance with applicable state and local BMP-related requirements. For example, an infiltration trench must provide a minimum level of pollutant removal and meet other performance requirements. Regulatory bodies specifically encourage the use of LID techniques and other innovative storm water management solutions that reduce pollution associated with runoff. Many already encourage the use of bioretention, filter strips, vegetated buffers, grassed swales, and infiltration trenches. In some cases, storm water credits may be given for using LID approaches.

Federal Antidegradation Policy

The Federal Antidegradation Policy of 1968 protects existing uses, water quality, and national water resources. It directs each state to adopt a statewide policy that includes the following primary provisions.

- Maintain and protect existing instream uses and the water quality necessary to protect those uses.
- Where existing water quality is better than necessary to support fishing and swimming conditions, maintain and protect water quality unless the state finds that allowing lower water quality is necessary for important local economic or social development.
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, maintain and protect that water quality.

3.4.1 AFFECTED ENVIRONMENT

The following discussions provide a description of the existing conditions for each of the categories under water quality resources at NBVC Port Hueneme. This section addresses storm water, regional hydrology, floodplains, and groundwater resources that would potentially be disturbed by construction activities on NBVC Port Hueneme.

3.4.1.1 Storm water

Parcels 9 and 13 are located on fill material according to U.S. Geological Survey soils survey data. Parcel 9 is a closed landfill and is graded as an almost 20-foot (6-meter)-high, gently sloped "mound" that drains away from the center towards the adjacent streets to the north and west. Existing concrete drainage ditches to the south and to the northwest collect and convey surface runoff from the site, where it flows into the municipal system. Parcel 13 is a flat, rectangular, asphalt-paved area draining towards the south. Neither site is accepting off-site flow from adjacent parcels or streets.

The three remaining eastern parcels, Parcels 16, 17, and 18, are approximately bounded to the west by track 14 (along the golf course), to the north by Mills Road, and to the south and east by the alignments of 23rd Avenue and Patterson Road, respectively.

Based on site visits and photographs, Parcels 16 and 18 have known ponding issues due to the existing flat contours and earthen sump on both the sites. Temporary ponded areas occur in Parcels 16, 17, and 18 and within the buffer area east of Parcel 18 (see Figure 3.3-1 above in the Biological Resources section of this EA). These temporary ponded areas are small, largely unvegetated depressional areas within compacted soil that pond water for short durations after rain. There are existing inlets on Parcels 17 and 18 at the southern end, along 23rd Avenue. Parcels 16, 17, and 18 are also bounded by an existing rail line that functions as a hydraulic barrier. Due to the location of these sites along existing streets and rail lines, none appears to be accepting significant off-site flow.

The Photo Log and Figures 1 and 2 in the *Hydrologic Analysis for Port Hueneme Solar Development Tech Memo* dated January 23, 2015 (Appendix C) provide more information on the location and characteristics of the parcels.

Pre-project runoff rates for the 100-year storm were calculated for the five parcels using the Ventura County Hydrology Time of Concentration Calculator and are presented in Table 3.4-1. Parcels 17 and 18 are combined in the analysis below since they are adjacent to each other and have the same flow patterns.

The Hydrologic Analysis for Port Hueneme Solar Development Tech Memo dated January 23, 2015 (Appendix C) includes a more detailed discussion of the existing conditions.

Table 3.4-1. Pre-Project Runoff Rates for the 100-Year Storm

Watershed Designation	Area ac/(ha)	C (-)	TC (min)	i100 (in/hr)	Q100 (cfs)
Parcel 9	28.0 (11.3)	0.84	5.04	5.10	120.07
Parcel 13	12.5 (5)	0.95	7.83	3.95	46.94
Parcel 16	2.5 (1)	0.84	5.40	5.10	10.72
Parcel 17 & 18	2.25 (0.9)	0.84	5.16	5.10	9.65
TOTAL:	45.3 (18.3)	-	-	-	-

C = concentration of flow

TC = shortest time of concentration of flow

i100 = maximum rainfall intensities, inches per hour, at 100-Year flood

Q100 = total quantity per foot, cubic foot per second, at 100-Year flood

ac = acres

ha = hectares

min = minute

in/hr = inches per hour

cfs = cubic feet per second

3.4.1.2 Regional Hydrology

Regional hydrology, surface water drainage, and floodplains encompassing the project sites and surrounding areas are described below.

NBVC Port Hueneme is located within the McGrath Lake-Frontal Pacific Ocean hydrologic sub-unit of the South Coast Hydrologic Region. The primary surface water features at NBVC Port Hueneme include four drainage channels, a tidal channel, wetlands at the northwestern corner of the installation, and Port Hueneme Harbor. There are no natural streams on the installation.

Buildings and pavement surfaces that are impermeable cover most of the installation resulting in a high amount of surface runoff during storms. Surface water flow at the installation is in response to intermittent seasonal rainfall. Storm water ultimately discharges into the Port Hueneme Harbor through a network of drainage channels that parallel roadways and intercept overland flows. Storm water in the northern portion of the installation drains offsite into Channel Islands Harbor through the Channel Island Boulevard Canal immediately north of the installation. NBVC Port Hueneme drainage canals carry surface water through the installation from surrounding urban and agricultural land use discharges (Navy 2012).

Floodplains

The Federal Emergency Management Agency Flood Zone for the project sites at NBVC Port Hueneme is moderate (FEMA 2013), and the project site is within a 500-year floodplain (California Department of Water Resources 2013).

3.4.1.3 Groundwater

NBVC Port Hueneme lies in the Oxnard Plain Sub-Basin of the Santa Clara River Valley Basin. Underlying the Oxnard Plain is a substantial aquifer system that is the primary source of water

for the region. The major freshwater resources for NBVC Port Hueneme and its surroundings include the Oxnard Plain Sub-basin aquifers, an un-named stream, an overflow pond, and artificial drainages. The groundwater aquifers beneath the Oxnard Plain are contained in sand and gravel deposits associated with the development of the Santa Clara River, its floodplain, delta, and estuary. The Oxnard and Fox Canyon aquifers are considered the two primary freshwater-bearing units. Depth to groundwater at the project sites is approximately 5 feet (1.5 meters). Freshwater recharge of the aquifers beneath the Oxnard Plain and NBVC Port Hueneme occurs naturally from rainfall, infiltration through the Santa Clara Riverbed, and artificial seepage areas in Saticoy and El Rio operated by the United Water Conservation District northwest of the installation (Navy 2012).

Parcel 9 is an Installation Restoration cleanup site. This parcel was a 33-acre (13.4 hectare) landfill that is now capped and covered with annual grassland vegetation. The site has been shown to contain chemicals known to be hazardous to both human health and the environment. These contaminants are present primarily in site soils at variable depths, although they have also been detected in samples of site groundwater. The final cover for the landfill was completed in July 2000 using existing soils as the foundation layer, a geosynthetic clay liner as the low-permeability layer, a GDL to provide subsurface drainage, and a vegetative soil layer (the drainage layer is not included in the storm water detention area). The storm water detention area (4.3 acres) was constructed to hold 13 acre-feet of runoff, enough for the design storm event of 10.8 inches (Tetra Tech 2004).

3.4.2 ENVIRONMENTAL CONSEQUENCES

The following section describes potential impacts to water resources that could result from implementation of the alternatives. Impacts to water resources have been evaluated based on an understanding of the project components, construction equipment and building methods, and how the project areas would be used and maintained with implementation of the proposed project. All impacts from the alternatives are described as they would occur with implementation of the conservation and environmental protection measures presented in Section 2.6.5.

3.4.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

The Proposed Action/Alternative 1 consists of the installation of a ground-mounted PV system on Parcels 9, 13, 16, 17, and 18. The total acreage of the combined two sites would be approximately 45.25 acres (18.3 hectares). The Proposed Action/Alternative 1 includes the construction phase, operation of the PV system, and maintenance.

Storm water

An analysis of the 100-year storm runoff from the proposed project sites for the post-project conditions was developed per the Ventura County Hydrology Manual in order to determine impacts, if any. Due to the method of installation of the PV system, there would be a negligible amount of additional impervious area. No mass grading would be required, and the existing ground cover would be replaced with gravel for access roadways. The only exception is Parcel 13, which is already paved and would remain paved. With no increase in impervious area, no change in existing grades, and no change in the permeability of ground cover,

there would be no change in the runoff characteristics, patterns, or flow rates due to the Proposed Action/Alternative 1. The PV facilities would be placed directly on top of the landfill potentially using large concrete blocks depending on the final design; therefore, the landfill would not be graded. The runoff patterns would also continue to sheet flow to match existing conditions, potentially alleviating the need for new on-site drainage facilities. The existing drainage structures within Parcels 9, 17, and 18 would remain undisturbed during construction and would not require modification since there is no increase in runoff. The pre-project runoff amounts presented in Section 3.4.1.1 would be the same for the post-project condition. Therefore, there would be no significant impacts from storm water from implementation of the Proposed Action/Alternative 1.

Hydrology

Surface disturbance (e.g., grading, localized excavation) would occur during construction of the solar PV panels and trenching for underground electrical conduits. During construction, storm water runoff from the project sites could result in a slight increase in turbidity. Potential impacts from an increase in turbidity would be minimized with implementation of BMPs (e.g., watering soils, silt fencing), development of grading plans, and adherence to erosion and storm water management practices, as described in Section 2.6.5, to contain soil and runoff on the project sites. Construction associated with the Proposed Action/Alternative 1 would not degrade the local water quality or adversely affect current uses of local surface waters.

During project operation, water required for solar panel washing would be supplied by the private partner and the NBVC Port Hueneme water supply would not be used. The ground-mounted solar PV panels would be cleaned as needed by the private partner. The majority of the solution used to clean the panels would evaporate on the surface of the solar PV panels; however, insignificant amounts of the solution may drip off the solar panels and would be absorbed into the soil.

With implementation of the conservation and environmental protection measures described in Section 2.6.5, including obtaining the necessary permits, complying with permit conditions, and following procedures in the SWPPP and spill prevention plan, impacts from the implementation of the Proposed Action/Alternative 1 would be reduced. However, regardless of these measures, no significant hydrology-related impacts would occur from implementation of the Proposed Action/Alternative 1.

Floodplains

Under the Proposed Action/Alternative 1, construction of the solar PV systems at NBVC Port Hueneme would not occur within the 100-year floodplain; however, it would occur within the 500-year floodplain. The Navy would minimize potential impacts to the floodplains with implementation of conservation and environmental protection measures described in Section 2.6.5 and under regional hydrology. The Proposed Action/Alternative 1 would be consistent with the regulations described in EO 11988, Floodplain Management. Therefore, project structures would not increase the potential for flooding in local surface water bodies, restrict or redirect runoff flows, or cause localized flooding on Parcels 9, 13, 16, 17, or 18, and no significant impacts to floodplains would occur with implementation of the Proposed Action/Alternative 1.

Groundwater

With the Proposed Action/Alternative 1, water required for dust suppression during construction would be supplied to the sites via water trucks by the private partner, and construction of the Proposed Action/Alternative 1 would not require the use of NBVC Port Hueneme-supplied groundwater.

Any surface improvements to Parcel 9 must maintain the integrity of the landfill cover, especially with regard to surface drainage that may be concentrated and cause erosion. The construction of the project would not exceed the capacities of underdrain, drainage control devices or structures, the detention area, or the surrounding storm drain network. The project would be designed based on the guidelines outlined in *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* (Tetra Tech 2004) to avoid damage to the cover. Existing groundwater wells installed on Parcel 9 would remain intact and continue to be monitored during and after project construction.

The Navy would continue to manage groundwater resources in a manner consistent with federal and state laws and regulations. Therefore, the Proposed Action/Alternative 1 would not result in significant impacts to groundwater at NBVC Port Hueneme.

Conservation and Environmental Protection Measures

Implementation of the Proposed Action/Alternative 1 would include obtaining a NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. As part of the permit, a SWPPP incorporating BMPs would be developed by the private partner and all construction activities with the potential of affecting water quality due to runoff would be conducted in accordance with SWPPP requirements.

In addition to the SWPPP, the private partner would be required to prepare a spill response plan that would include NBVC Port Hueneme points of contact in the event of a large spill and an Environmental Division point of contact in the event of a small spill. The spill response plan would also address the requirements to incorporate BMPs.

The private partner may be required to apply for municipal separate storm sewer system permit to meet the planning and land development requirements contained in Part 4, Section E of the Los Angeles RWQCB Order R4-2010-0108 for new development and redevelopment projects (County of Ventura 2011).

A Soil Erosion and Sedimentation Control Plan would be prepared by the private partner and approved by the NBVC Port Hueneme Environmental Division prior to commencement of land disturbance activities. During construction, erosion and sediment in storm water runoff would be controlled through the use of BMPs and regular inspection of on-site construction conditions. Erosion control measures would be implemented to control runoff and minimize erosion in sloped areas of construction.

Any post-construction revegetation with native species would occur in coordination with and approval of the Base Natural Resources Manager. Top soil would be retained and re-used in revegetation of temporary disturbance areas. No significant amount of soils would be removed from the sites. Soils may be cut and relocated near the sites for grading purposes.

To minimize erosion potential during project construction, parking and driving would be restricted to designated areas, and no off-road vehicular traffic, including parking or driving in undisturbed areas, would be allowed. A more detailed description of conservation and environmental protection measures related to water quality is located in Section 2.6.5.

3.4.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

Implementation of Alternative 2 would be the same as described for the Proposed Action/Alternative 1, except that the solar PV system would only be constructed, operated, and maintained on Parcels 13, 16, 17 and 18 (totaling approximately 17 acres). Under Alternative 2, potential impacts to storm water, surface hydrology, floodplains, and groundwater would be similar to those described under the Proposed Action/Alternative 1, but would be reduced because the proposed project would not occur on Parcel 9. Project structures would not increase the potential for flooding local surface water bodies, restrict or redirect runoff flows, or cause localized flooding at the NBVC Port Hueneme project site. Therefore, no significant impacts to water resources would occur with the implementation of Alternative 2.

Conservation and Environmental Protection Measures

Implementation of Alternative 2 would include the same conservation and environmental protection measures described for incorporation into the project design of the Proposed Action/Alternative 1. A more detailed description of conservation and environmental protection measures related to water quality is located in Section 2.6.5.

3.4.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

Implementation of Alternative 3 would be the same as described for the Proposed Action/Alternative 1, except that the PV system would only be constructed, operated, and maintained on Parcels 9 and 13, a 28-acre (11.3-hectare) closed landfill and a 12.5-acre (5-hectare) vacant parking lot, respectively. Under Alternative 3, potential impacts to storm water, surface hydrology, floodplains, and groundwater would be similar to those described under the Proposed Action/Alternative 1, but would be reduced because the proposed project would only occur on Parcels 9 and 13. Project structures would not increase the potential for flooding local surface water bodies, restrict or redirect runoff flows, or cause localized flooding at the NBVC Port Hueneme project sites. Therefore, no significant impacts to water resources would occur with the implementation of Alternative 3.

Conservation and Environmental Protection Measures

Implementation of Alternative 3 would include the same conservation and environmental protection measures described for incorporation into the project design of the Proposed Action/Alternative 1. A more detailed description of conservation and environmental protection measures related to water quality is located in Section 2.6.5.

3.4.2.4 No Action Alternative

With the No Action Alternative, construction, operation, and maintenance of a PV system on NBVC Port Hueneme would not occur and there would be no change to baseline water resources. Therefore, no impacts to water resources would occur with the No Action Alternative.

3.5 AIR QUALITY

Definition of Resource

Air quality is defined by ambient air concentrations of specific pollutants determined by the USEPA to be of concern related to the health and welfare of the general public and the environment and are widespread across the United States. A region's air quality is influenced by many factors, including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The primary pollutants of concern, called "criteria pollutants," include carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead. Under the Clean Air Act, the U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) (40 CFR 50) for these pollutants.

Areas that are and have historically been in compliance with the NAAQS are designated as "attainment" areas. Areas that violate a federal air quality standard are designated as "nonattainment" areas. Areas that have transitioned from nonattainment to attainment are designated as "maintenance" areas and are required to adhere to maintenance plans to ensure continued attainment. The NAAQS represent the maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare. Short-term standards (i.e., 1-, 3-, 8-, and 24-hour periods) are established for pollutants contributing to chronic health effects.

The Clean Air Act requires states to develop a general plan to attain and maintain NAAQS in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. These plans, known as State Implementation Plans, are developed by state and local air quality management agencies and submitted to USEPA for approval.

Ambient Air Quality

Ambient air quality is determined by the atmospheric concentrations of regulated air pollutants at specific locations deemed by air quality management agencies to be generally representative of local or regional conditions. The air pollutant concentrations measured at a specific location are determined by local and regional air pollutant emissions rates, local meteorology, and atmospheric chemistry. Emissions source considerations include types, rates, and locations of air pollutant emissions into the atmosphere. Wind speed and direction, vertical temperature and pressure gradients, and precipitation patterns affect the dispersal, dilution, and removal from the atmosphere of air pollutants. Lower ambient concentrations of these air pollutants generally indicate higher air quality. Regulatory agencies monitor ambient air quality to document

compliance with state and federal air quality standards, and these monitoring data are reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume).

California has identified four additional pollutants for ambient air quality standards: visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The California Air Resources Board (ARB) has also established the more stringent California Ambient Air Quality Standards (CAAQS). Areas within California in which ambient air concentrations of a pollutant are higher than the state and/or federal standard are considered to be nonattainment for that pollutant.

Table 3.5-1 provides a list of NAAQS and CAAQS.

Table 3.5-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS ¹		CAAQS ²
		Primary ³	Secondary ⁴	Concentration ⁵
Ozone (O ₃) ⁶	1-Hour	---	---	0.09 ppm (180 µg/m ³)
	8-Hour	0.075 ppm (147 µg/m ³)	Same as Primary	0.070 ppm (137 µg/m ³) ⁹
Carbon Monoxide (CO)	1-Hour	35 ppm (40 mg/m ³)	---	20 ppm (23 mg/m ³)
	8-Hour	9.0 ppm (10 mg/m ³)	---	9.0 ppm (10 mg/m ³)
Nitrogen Dioxide (NO ₂)	1-Hour	0.1 ppm (188 µg/m ³)	---	0.18 ppm (338 µg/m ³)
	Annual Average	0.053 ppm (100 µg/m ³)	Same as Primary	0.03 ppm (56 µg/m ³)
Sulfur Dioxide (SO ₂) ⁷	1-Hour	0.075 ppm (196 µg/m ³)	---	0.25 ppm (715 µg/m ³)
	3-Hour	---	0.5 ppm (1,300 µg/m ³)	---
	24-Hour	---	---	0.04 ppm (114 µg/m ³)
Suspended Particulate Matter (PM ₁₀)	24-Hour	150 µg/m ³	Same as Primary	50 µg/m ³
	Annual Arithmetic Mean	---	---	20 µg/m ³ (8)
Fine Particulate Matter (PM _{2.5})	24-Hour	35 µg/m ³	Same as Primary	---
	Annual Arithmetic Mean	15 µg/m ³	Same as Primary	12 µg/m ³ (8)
Lead ⁹	Rolling 3-Month Average	0.15 µg/m ³	Same as Primary	1.5 µg/m ³
Hydrogen Sulfide (H ₂ S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m ³)
Sulfates (SO ₄)	24-Hour			25 µg/m ³
Visibility Reducing Particles	8-Hour (10am-6pm, PST)			In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.
Vinyl chloride ⁹	24-Hour			0.01 ppm (26 µg/m ³)

Sources: USEPA 2012a; Cal/EPA ARB 2013a

Notes:

1. NAAQS (other than O₃, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth-highest 8-hour

concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is not to be exceeded more than once per year on average over 3 years. The 24-hour standard is attained when the 3-year average of the weighted annual mean at each monitor within an area does not exceed 150 µg/m³. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, do not exceed 35 µg/m³. The annual standard is attained when the 3-year average of the weighted annual mean at single or multiple community-oriented monitors does not exceed 15 µg/m³.

2. CAAQS for O₃, CO (except Lake Tahoe), SO₂ (1- and 24-hour), NO₂, PM₁₀ and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse impacts of a pollutant.
5. Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.
6. The federal 1-hour O₃ standard was revoked for most areas of the United States, including California on June 15, 2005.
7. Final rule signed June 2, 2010. The 1971 annual and 24-hour SO₂ standards were revoked in that same rulemaking.
8. On June 5, 2003, the Office of Administrative Law approved the amendments to the regulations for the state ambient air quality standards for particulate matter and sulfates. Those amendments established a new annual average standard for PM_{2.5} of 12 µg/m³ and reduced the level of the annual average standard for PM₁₀ to 20 µg/m³. The approved amendments were filed with the Secretary of State on June 5, 2003. The regulations became effective on July 5, 2003.
9. The Cal/EPA ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health impacts determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants in sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Key:

CAAQS	= California Ambient Air Quality Standards
µg/m ³	= micrograms per cubic meter
mg/m ³	= milligrams per cubic meter
NAAQS	= National Ambient Air Quality Standards
Ppm	= parts per million
PST	= Pacific Standard Time

In addition to the NAAQS for criteria pollutants, national standards exist for hazardous air pollutants, which are regulated under Section 112(b) of the 1990 Clean Air Act Amendments. The National Emission Standards for Hazardous Air Pollutants regulate hazardous air pollutant emissions from stationary sources (40 CFR Part 61). Hazardous air pollutants emitted from mobile sources are called Mobile Source Air Toxics. Mobile source air pollutants are compounds emitted from highway vehicles and non-road equipment that are known or suspected to cause cancer or other serious health and environmental effects. Unlike the criteria pollutants, there are no NAAQS for benzene and other hazardous air pollutants. The primary control methodologies for these pollutants for mobile sources involves reducing their content in fuel and altering engine operating characteristics to reduce the volume of pollutants generated during combustion.

Permitting

New Source Review (Preconstruction Permit)

New major stationary sources and major modifications at existing major stationary sources are required by the Clean Air Act to obtain an air pollution permit before commencing construction. This permitting process for major stationary sources is called New Source Review and is required whether the major source or major modification is planned for nonattainment areas or

attainment and unclassifiable areas. In general, permits for sources in attainment areas and for other pollutants regulated under the major source program are referred to as Prevention of Significant Deterioration permits, while permits for major sources emitting nonattainment pollutants and located in nonattainment areas are referred to as nonattainment New Source Review permits. Additional Prevention of Significant Deterioration permitting thresholds apply to increases in stationary source GHG emissions.

Title V (Operating Permit)

The Title V Operating Permit Program consolidates all Clean Air Act requirements applicable to the operation of a source, including requirements from the State Implementation Plan, preconstruction permits, and the air toxics program. It applies to stationary sources of air pollution that exceed the major stationary source emission thresholds, as well as other non-major sources specified in a particular regulation.

Climate Change and Greenhouse Gases

The USEPA defines climate change as any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period of time (USEPA 2012). Climate change may result from natural factors (e.g., changes in the sun's intensity or slow changes in the Earth's orbit around the sun), natural processes within the climate system (e.g., changes in ocean circulation), and human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification, etc.).

GHGs are gases that trap heat in the atmosphere, causing a greenhouse effect. According to the Intergovernmental Panel on Climate Change, increased atmospheric levels of CO₂ are correlated with rising temperatures, and concentrations of CO₂ have increased by 31 percent above pre-industrial levels since 1750. Climate models show that temperatures will probably increase by 1.4 to 5.8 degrees Celsius (°C) by the year 2100 (Intergovernmental Panel on Climate Change 2007).

The global warming potential of a GHG indicates the global warming potency of a GHG relative to CO₂. The global warming potential enables comparison of the warming effects of different GHGs. Global warming potential uses a relative scale that compares the warming effect of the gas in question with that of the same mass of CO₂. The CO₂ equivalent (CO₂e) is a measure used to sum the effect of emissions of various GHGs based on their global warming potential when projected over a specified time period (generally 100 years). The CO₂e for a gas is obtained by multiplying the mass of the gas (in tons) by its global warming potential.

The USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule on September 22, 2009. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions as CO₂e are required to submit annual reports to the USEPA. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and EOs. Most recently, EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management, and EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, were enacted to address GHGs, including GHG emissions inventory, reduction, and reporting.

Climate change, by its nature, is a cumulative impact resulting from multiple GHG sources. However, despite its inherently cumulative nature, climate change may have effects on particular facilities or areas. Therefore, the cumulative impacts of climate change are discussed in Section 4.4.4. The direct emissions of GHG from the proposed project are presented in Section 3.5.2.

Local Air Quality Designations

California is divided into 15 air basins defined by generally similar meteorological and geographic conditions. Air basins in which ambient concentrations of a criteria air pollutant exceed the NAAQS are considered to be nonattainment areas for that air pollutant under the federal Clean Air Act. Nonattainment areas for some criteria air pollutants are further classified, depending upon the severity of their air quality problem, to facilitate their management:

- O₃: marginal, moderate, serious, severe, and extreme
- CO: moderate and serious; and
- PM: moderate and serious

Areas that have attained the NAAQS may be designated as attainment areas or as maintenance areas, subject to maintenance plans showing how the area will continue to meet the NAAQS.

Primary and Secondary Air Pollutants

Air pollutants are classified as either primary or secondary pollutants. Primary air pollutants, such as CO, SO₂, lead, particulates, and hydrogen sulfide, are emitted directly into the atmosphere. Secondary air pollutants, such as O₃, are formed through atmospheric chemical reactions. Such reactions usually involve primary air pollutants and normal constituents of the atmosphere. Sunlight and meteorological conditions, such as temperature and humidity, also can affect atmospheric chemistry. Air pollutants, such as organic gases and particulates, are a combination of primary and secondary pollutants. PM₁₀ and PM_{2.5} are generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. PM₁₀ also may result from agricultural operations, travel on unpaved roads, and wind erosion of bare soils.

Compounds that react to form secondary air pollutants are referred to as precursors. O₃ precursors fall into two broad groups of chemicals: nitrogen oxides (NO_x) and organic compounds. NO_x includes both nitric oxide (NO) and NO₂. Organic compound precursors of O₃ are routinely described by a number of different terms, including volatile organic compounds (VOCs), reactive organic compounds, and reactive organic gases. PM_{2.5} also can be formed through chemical reactions or by the condensation of gaseous pollutants into fine aerosols. NO_x and SO₂ are precursors of PM_{2.5}. Precursors generally are monitored and regulated to control atmospheric concentrations of the associated criteria pollutants.

General Conformity

The USEPA General Conformity Rule applies to federal actions occurring in federal nonattainment or maintenance areas when the total emissions of nonattainment pollutants

(or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year) vary from pollutant to pollutant and depend on the severity of the nonattainment status.

A conformity applicability analysis is the first step of a conformity evaluation and assesses if a federal action must be supported by a conformity determination. This is typically accomplished by quantifying applicable emissions that are projected to result due to implementation of the federal action. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then the conformity evaluation process is completed.

3.5.1 AFFECTED ENVIRONMENT

NBVC Port Hueneme is located in Ventura County, which is within the South Central Coast Air Basin. The South Central Coast Air Basin is comprised of three air pollution control districts, the Ventura County Air Pollution Control District (APCD), the San Luis Obispo County APCD, and the Santa Barbara APCD. The South Central Coast Air Basin has a combined population of approximately 1.55 million people. The California ARB has designated the South Central Coast Air Basin as being in nonattainment for O₃, nonattainment for PM₁₀, attainment for PM_{2.5}, and attainment for SO₂. The Santa Barbara County APCD portion of the South Central Coast Air Basin is unclassified for PM_{2.5}, and is a nonattainment area for NO₂ and CO (Cal/EPA ARB 2013a).

The USEPA has designated the South Central Coast Air Basin as being in nonattainment for O₃, unclassified for PM₁₀, unclassified/attainment for PM_{2.5}, NO₂, CO, and lead, and attainment for SO₂ for the Ventura County portion of the air basin. The San Luis Obispo County and Santa Barbara County portions are designated unclassified (USEPA 2013a).

The most recent emissions inventory for the South Coast Air Basin is shown in Table 3.5-2.

Table 3.5-2. South Central Coast Air Basin 2012 Estimated Average Emissions (tons per day)

TOG	ROG	CO	NO _x	SO _x	PM	PM ₁₀	PM _{2.5}
183.0	77.1	328.8	70.6	2.2	76.2	43.3	13.0

Source: Cal/EPA ARB 2013b

Key:

CO = carbon monoxide

NO_x = oxides of nitrogen

PM = total particulate matter

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

ROG = reactive organic gases

SO_x = oxides of sulfur

TOG = total organic gases

Sensitive Air Quality Receptors

Some members of the population (e.g., children, elderly, persons with respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise) are especially sensitive to emissions of air pollutants and should be given special consideration when evaluating air quality impacts from projects. Structures that house these persons or places where they gather are defined as sensitive receptors, and include residences, schools, daycare centers, playgrounds, parks, and healthcare facilities (including hospitals and nursing homes).

For this air quality analysis, the following sensitive on-base and off-base receptors within 0.25 mile or 1,320 feet (0.4 kilometer) of the project sites have been considered in this analysis:

- Residential areas south of Parcel 9 across Lakeshore Drive (1,258 feet [383 meters])
- Residential areas northwest of the northwest point of Parcel 9 across Channel Island Harbor (1,005 feet [306 meters])
- Bachelors' Officers Quarters/Bachelors' Enlisted Quarters located 1,000 feet (305 meters) east of Parcel 17
- NBVC Port Hueneme Golf Course located 435 feet (132 meters) west of Parcel 17 and 259 feet (79 meters) north of Parcel 16 across Mill Road

3.5.2 ENVIRONMENTAL CONSEQUENCES

This section discusses the effects on existing ambient air quality that may occur from the implementation of the alternatives using the criteria specified under NEPA Section 1502.16. To compare effects, this analysis defines the temporal scale (time), extent (area), and intensity of effects for each alternative.

Methodology

Potential impacts to air quality were assessed by developing emission estimates associated with proposed construction and operation of solar PV sites at NBVC Port Hueneme with each alternative. Temporary air emissions from construction were calculated based on estimates in terms of:

- Number and types of equipment that would be used during construction of the solar PV systems
- Acreage of the disturbed sites during construction
- Duration of the construction work
- Total electrical output in MWh per year

These data were used as input for air emissions calculations from construction. For construction equipment vehicle exhaust, two sets of emission factors were used to determine construction emissions: (1) non-road equipment emission factors for equipment that is not licensed for on-road travel; and (2) on-road emission factors for vehicles used during the construction phase of the project. For the non-road emission factors, the USEPA NONROAD Model was used (USEPA 2005); for on-road emission factors, the California EMFAC v2011 emission factor database was used (Cal/EPA ARB 2011).

Fugitive dust emissions from site preparation work, which may include scraping, grading, loading, digging, compacting, light duty vehicle travel, and other operations, were estimated using emission factors from Cal/EPA ARB Section 7.7, Building Construction Dust (Cal/EPA ARB 2002 and USEPA 1999). Per the emissions estimation methodology of Section 7.7 (Cal/EPA ARB 2002), the construction emission factors used are assumed to include the effects of typical control measures, such as routine watering for dust suppression.

Construction emissions would be assumed to occur between 2015 and 2017. The duration of project-related construction activities would be 1 year for all Alternatives; therefore, all construction emissions were considered to occur in 1 year for the General Conformity analysis.

Electricity production would occur whether the electrical energy production from the solar PV facilities is consumed off base (Model 2), on base (Model 3), or a combination of the two scenarios. Annual emissions reductions are assumed to begin between 2016 and 2018, and would be realized for each year the solar PV systems would be in operation. Year 2010 eGRID non-baseload output emission rates for the Western Electricity Coordinating Council California subregion (USEPA EPA 2014) were used to estimate emission reductions.

3.5.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

Emissions would occur during construction as the result of combustion of fuel in off-road construction equipment and on-road vehicles. Construction-related traffic generation would include equipment delivery, onsite and offsite vehicle and construction equipment, and automobile trips for construction workers in personal vehicles. Conservation and environmental protection measures for dust abatement, as presented in Section 2.6.2, would be followed to minimize emissions to the extent practicable.

Table 3.5-3 shows the estimated construction emissions generated under the Proposed Action/Alternative 1 and the applicable General Conformity *de minimis* thresholds. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-3. Estimated Construction Emissions under the Proposed Action/Alternative 1

	Emissions (tons per year)							
	NO _x	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CO ₂ e
Construction Emissions	1.89	0.89	0.14	0.07	7.62	0.90	471.97	476.59
General Conformity <i>de minimis</i> Threshold	100	N/A	50	100 ¹	70	100	N/A	N/A

Key:

CO = carbon monoxide

CO₂ = carbon dioxide

CO₂e = carbon dioxide equivalent, considering CO₂ plus CH₄ and N₂O adjusted for their global warming potential

N/A = not applicable, *de minimis* thresholds need not be considered when the project area is in attainment for the criteria pollutant(s) in question.

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

SO₂ = sulfur dioxide

VOCs = volatile organic compounds

Notes: ¹Threshold is 100 tons/year when considered as an atmospheric precursor to PM_{2.5}

Table 3.5-4 shows the estimated emissions reduced through use of solar PV systems and reduced consumption of existing non-renewable supplied electricity. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-4. Estimated Annual Emissions Reduced by the Proposed Action/Alternative 1

Pollutant	Emissions (tons per year)
CO₂e	8,190
NO_x	3.55
SO₂	1.5

Key:

CO₂e = carbon dioxide equivalent

NO_x = oxides of nitrogen

SO₂ = sulfur dioxide

Implementation of the Proposed Action/Alternative 1 would result in localized, short-term effects on air quality at NBVC Port Hueneme. During operation, emissions of NO_x, SO₂, and CO₂e would be lowered by reduced consumption of grid-supplied electricity, and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also reduce emissions produced from conventional non-renewable generating sources such as traditional fossil fuel-based energy. As total construction emissions would be below the *de minimis* thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur under the Proposed Action/Alternative 1.

A Record of Non-Applicability (RONA) has been completed for project development at NBVC Port Hueneme in accordance with the Clean Air Act (see Appendix D).

Conservation and Environmental Protection Measures

Particulate matter emissions from construction and operations activities would be minimized through dust abatement measures, including:

- Applying soil stabilizers to disturbed, inactive portions of the project site to help bind soil together and make it less susceptible to erosion
- Replacing ground cover in disturbed areas with a bonding or adhesive agent that is used for hydraulic seeding and/or appropriate native plant species, as appropriate
- Watering exposed soil in disturbed areas with adequate frequency for continued moist soil
- Suspending excavation and grading activities during periods of high wind activity
- Cleaning (washing) all vehicles before they leave the project site
- Locating staging areas as far away from sensitive receptors as practicable
- Limiting idling time and scheduling construction truck trips during non-peak hours to the extent practicable to reduce peak-hour vehicle exhaust emissions

3.5.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

With Alternative 2, construction emissions would occur from the same activities described under the Proposed Action/Alternative 1, and the same conservation and environmental protection measures would apply.

Table 3.5-5 shows the estimated construction emissions generated with Alternative 2 and the applicable General Conformity *de minimis* thresholds. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-5. Estimated Construction Emissions with Alternative 2

	Emissions (tons per year)							
	NO _x	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CO _{2e}
Construction Emissions	1.22	0.61	0.09	0.05	3.95	0.49	312.73	315.45
General Conformity <i>de minimis</i> Threshold	100	N/A	50	100 ¹	70	100	N/A	N/A

Key:

CO = carbon monoxide

CO₂ = carbon dioxide

CO_{2e} = carbon dioxide equivalent, considering CO₂ plus CH₄ and N₂O adjusted for their global warming potential
 N/A = not applicable, *de minimis* thresholds need not be considered when the project area is in attainment for the criteria pollutant(s) in question.

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

SO₂ = sulfur dioxide

VOCs = volatile organic compounds

Notes: ¹Threshold is 100 tons/year when considered as an atmospheric precursor to PM_{2.5}

Table 3.5-6 shows the estimated emissions reduced through use of solar PV systems and reduced consumption of existing non-renewable supplied electricity. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-6. Estimated Annual Emissions Reduced by Alternative 2

Pollutant	Emissions (tons per year)
CO _{2e}	5,460
NO _x	2.36
SO ₂	1.00

Key:

CO_{2e} = carbon dioxide equivalents

NO_x = oxides of nitrogen

SO₂ = sulfur dioxide

Implementation of Alternative 2 would result in localized, short-term effects on air quality at NBVC Port Hueneme. During operations, emissions of NO_x, SO₂, and CO_{2e} would be lowered by reduced consumption of grid-supplied electricity and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also reduce emissions produced from conventional non-renewable generating sources such as traditional fossil fuel-based energy. As total construction emissions would be below the *de minimis* thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur with Alternative 2.

A RONA has been completed for project development at NBVC Port Hueneme in accordance with the Clean Air Act (see Appendix D).

Conservation and Environmental Protection Measures

The same conservation and environmental protection measures described for the Proposed Action/Alternative 1 would be incorporated into the design of Alternative 2.

3.5.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

With Alternative 3, construction emissions would occur from the same activities described under the Proposed Action/Alternative 1, and the same conservation and environmental protection measures would apply.

Table 3.5-7 shows the estimated construction emissions generated with Alternative 3 and the applicable General Conformity *de minimis* thresholds. Emissions of pollutants subject to General Conformity are below their respective *de minimis* values. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-7. Estimated Construction Emissions with Alternative 3

	Emissions (tons per year)							
	NO _x	CO	VOCs	SO ₂	PM ₁₀	PM _{2.5}	CO ₂	CO _{2e}
Construction Emissions	1.78	0.87	0.14	0.07	6.28	0.76	445.74	449.89
General Conformity <i>de minimis</i> Threshold	100	N/A	50	100 ¹	70	100	N/A	N/A

Key:

CO = carbon monoxide

CO₂ = carbon dioxide

CO_{2e} = carbon dioxide equivalent, considering CO₂ plus CH₄ and N₂O adjusted for their global warming potential

N/A = not applicable, *de minimis* thresholds need not be considered when the project area is in attainment for the criteria pollutant(s) in question.

NO_x = oxides of nitrogen

PM_{2.5} = fine particulate matter less than or equal to 2.5 microns in diameter

PM₁₀ = suspended particulate matter less than or equal to 10 microns in diameter

SO₂ = sulfur dioxide

VOCs = volatile organic compounds

Notes: ¹Threshold is 100 tons/year when considered as an atmospheric precursor to PM_{2.5}

Table 3.5-8 shows the estimated emissions reduced through use of solar PV systems and reduced consumption of existing non-renewable supplied electricity. Detailed construction equipment assumptions and emissions calculations are provided in Appendix D.

Table 3.5-8. Estimated Annual Emissions Reduced by Alternative 3

Pollutant	Emissions (tons per year)
CO_{2e}	6,825
NO_x	2.95
SO₂	1.25

Key:

CO_{2e} = carbon dioxide equivalents

NO_x = oxides of nitrogen

SO₂ = sulfur dioxide

Implementation of Alternative 3 would result in localized, short-term effects on air quality at NBVC Port Hueneme. During operation, emissions of NO_x, SO₂, and CO_{2e} would be lowered by reduced consumption of grid-supplied electricity and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also reduce emissions produced from conventional non-renewable generating sources such as traditional fossil fuel-based energy. As total construction emissions would be below the *de minimis* thresholds and operation emissions would result in beneficial effects to air quality, no significant adverse impacts to air quality would occur with Alternative 3.

A RONA has been completed for project development at NBVC Port Hueneme in accordance with the Clean Air Act (see Appendix D).

Conservation and Environmental Protection Measures

The same conservation and environmental protection measures described for the Proposed Action/Alternative 1 would be incorporated into the design of Alternative 3.

3.5.2.4 No Action Alternative

With the No Action Alternative, no solar PV sites would be constructed and operated. Consumption of grid-supplied electricity would remain unchanged and there would be no short-term air emissions from construction. Therefore, there would be no impacts to air quality with implementation of the No Action Alternative.

3.6 TRAFFIC AND CIRCULATION

Definition of Resource

Transportation and circulation refers to the movement of vehicles on roadway networks. Primary roads, such as major interstates, are designed to move traffic and do not necessarily provide access to all adjacent areas. Secondary roads (or surface streets) are used to gain access to residential and commercial areas, hospitals, and schools. Operating conditions and the adequacy of roadway systems and intersections are described in terms of their average daily traffic (ADT) volumes and level of service (LOS). The LOS measure is an indicator of a roadway's ability to accommodate vehicular movement. LOS describes operational conditions as influenced by speed, travel time, freedom to maneuver, safety, driving comfort, and convenience. LOS measures range from good (LOS A) to gridlock (LOS F). The study area for transportation and circulation includes the NBVC Port Hueneme and the intersections at its primary access gates.

3.6.1 AFFECTED ENVIRONMENT

NBVC Port Hueneme encompasses 1,650 acres of mostly developed coastal land in Ventura County, California, approximately 60 miles northwest of the City of Los Angeles (Figure 2-1). The installation is bordered by the City of Port Hueneme to the west and north, the City of Oxnard to the east, and Channel Islands Harbor to the west. Silver Strand Beach borders the southwest, and Port Hueneme Beach is southeast of the Port Hueneme Harbor entrance channel. Highways that serve as access to NBVC Port Hueneme include State Highway 1 and U.S. Highway 101 (US-101).

The US-101 freeway is the only freeway linking the Oxnard/Port Hueneme area to the Los Angeles Basin to the south and Ventura and Santa Barbara to the north. Trucks traveling to and from locations in the Oxnard/Port Hueneme area use the US-101 freeway as the primary access route to destinations outside of the study area. State Route 1 and State Route 126 also fulfill secondary roles as regional corridors for trucks traveling to and from the study area.

A comprehensive network of local roadways serves NBVC Port Hueneme. Local roadways that serve the project area are described below.

- **Victoria Avenue** – Victoria Avenue runs in a north-south direction and serves as the western border of NBVC Port Hueneme. The roadway currently has four lanes (two lanes in each direction) for a majority of its length in the study area. Selected locations

near 5th Street and Channel Islands Boulevard have been widened to provide an additional lane in one or both directions of travel.

- **Channel Islands Boulevard** – Channel Islands Boulevard provides four lanes of travel between Victoria Avenue and Rose Avenue, and serves as the northern boundary of NBVC Port Hueneme. Between Rose Avenue and Rice Avenue, the street narrows to a single lane in each direction.
- **Ventura Road** – Ventura Road is a four-lane arterial roadway that travels north and south through both the City of Port Hueneme and the City of Oxnard in the study area. The roadway is located along the eastern edge of NBVC Port Hueneme and intersects Hueneme Road just east of the main gate to the Port of Hueneme.
- **Hueneme Road** – Hueneme Road is an east-west arterial roadway that travels between the Port of Hueneme on the west and Naval Air Station Point Mugu on the east. It varies in width from two lanes to four lanes within the study area. Hueneme Road is the southern boundary of NBVC Port Hueneme and is designated as a preferred access route for trucks in the City of Oxnard General Plan.
- **Oxnard Boulevard** – Oxnard Boulevard is a major north-south arterial roadway in the City of Oxnard. The street is currently designated as State Route 1 or Pacific Coast Highway between Pleasant Valley Road and Interstate 101 (US-101). Oxnard Boulevard serves as a primary access route to downtown Oxnard.

Existing conditions and LOS at key intersections near the NBVC Port Hueneme are summarized in Table 3.6-1. As shown in the table, the intersections with the heaviest congestion during peak-hour conditions are Victoria Avenue at Monaco Drive (near the northwest corner of NBVC Port Hueneme) and Ventura Road at Channel Islands Boulevard (at the northeast corner of NBVC Port Hueneme), although traffic conditions are still reasonably free at these times.

Table 3.6-1. Level of Service (LOS) Summary During A.M. and P.M. Peak Hours

Intersection	Existing LOS	
	A.M.	P.M.
Channel Islands Blvd at Victoria Ave ¹	A	B
Victoria Ave at Monaco Dr ¹	B	B
Victoria Ave at 5th St ²	B	A
Ventura Rd and Channel Islands Blvd ²	B	B
Port Hueneme Rd at Ventura Rd ²	A	A
Port Hueneme Rd at Saviers Rd ²	A	A

LOS A = free flow; LOS B = reasonably free flow; LOS C = stable flow, at or near free flow; LOS D = approaching unstable flow; LOS E = unstable flow, operating at capacity; LOS F = forced or breakdown flow.

Source: ¹ Associated Transportation Engineers 2012. ² Cities of Port Hueneme/Oxnard 2008.

The *Cities of Port Hueneme/Oxnard Truck Traffic Study* Final Report (Cities of Port Hueneme/Oxnard 2008) provided ADT count volumes for a single day on January 15, 2008. The roadways, locations, and ADT count volumes for several roadways near NBVC Port Hueneme are shown in Table 3.6-2.

Table 3.6-2. Existing Roadway Daily Traffic Counts

Roadway	Location	ADT (veh/day) Total
Victoria Avenue	Between Channel Islands Boulevard and 5th Street	31,793
Victoria Avenue	North of 5th Street	39,101
Ventura Road	Between Hueneme Road and Channel Islands Boulevard	28,538
Ventura Road	North of Channel Islands Boulevard	16,834
Oxnard Boulevard	North of 5th Street	28,696
Hueneme Road	Between Ventura Road and Saviers Road	14,190
Hueneme Road	Between Saviers Road and Rice Avenue	13,512
Channel Islands Boulevard	Between Victoria and Ventura Road	32,519
Channel Islands Boulevard	Between Ventura Road and Rose Avenue	31,679

Source: Cities of Port Hueneme/Oxnard 2008

Existing daily traffic conditions, as well as morning and evening peak hour volumes are summarized from this study. Approximately 28,000 vehicles enter and exit the base daily. In the morning, most vehicles are entering NBVC Port Hueneme (peak of 1,750 vehicles per hour); in the afternoon, most vehicles exit. At midday, the volumes entering and exiting are relatively equal and make up the highest two-way total for a typical day (Cities of Port Hueneme/Oxnard 2008). With respect to hourly traffic volumes, the peak hours display normal weekday trends (i.e., heavy entering in the A.M. and exiting in the P.M.). The peak hour for total two-way traffic movement is noontime for both weekdays and weekends. The highest traffic volume on NBVC Port Hueneme occurs on 23rd Avenue at the Sunkist Gate where approximately 15,000 vehicles were counted in a 24-hour period. Once on NBVC Port Hueneme, however, the volumes drop dramatically and range from ADT volumes of 5,700 vehicles down to less than 100 vehicles.

This same study (Cities of Port Hueneme/Oxnard 2008) also conducted a three-day survey of truck drivers entering NBVC Port Hueneme through the Victoria Gate in March 2008. On average, 92 trucks entered NBVC through the Victoria Avenue gate each day. About half (52 percent) of the trucks entered NBVC Port Hueneme between 6:00 AM and 10:00 AM, with 32 percent of all trucks entering during the morning peak period of 6:00 AM to 8:00 AM. These truck trips comprise about 5 percent of the total number of trucks that travel on Victoria Avenue on a daily basis. Since this study, security requirements at the Victoria Gate have increased. To mitigate traffic-related conflicts, NBVC Port Hueneme now only allows commercial trucks to

enter the base through Victoria Gate; however, all vehicles can still use the Victoria Gate to exit the base. All three inbound lanes at Victoria Avenue gate have been made accessible exclusively for staging, screening, searching, and processing commercial trucks, alleviating congestion and back-up.

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

With implementation of the Proposed Action/Alternative 1, traffic would increase during construction of the PV systems on Parcels 9, 13, 16, 17, and 18 from moving workers, construction equipment, PV system infrastructure, and construction debris to and from NBVC Port Hueneme. It is assumed that the duration of construction would be 1 year, and would require a peak workforce of 60 individuals and the use of up to 35 commercial trucks and pieces of heavy construction equipment at any given time. However, heavy construction equipment (e.g., forklifts, cranes) would generally remain on site during time periods requiring their use, rather than entering and exiting NBVC Port Hueneme on a daily basis. Commercial trucks delivering parts, supplies, and water for dust suppression are assumed to enter and leave on a daily basis. This analysis assumes that up to 12 commercial trucks and pieces of heavy construction equipment may enter and leave on any given day. Although construction workers may carpool or use company-provided vans for their daily commutes, this analysis conservatively assumes that all 60 workers will commute in their personal vehicles.

During weekdays, commercial trucks and heavy construction equipment traveling to the project sites via the Victoria Gate, a commercial truck-only gate (effective as of 29 September 2014), would proceed to the project sites via 23rd Avenue or West Road. During the weekends, when the Victoria Avenue gate is closed and traffic entering and exiting the base is reduced, commercial trucks and heavy construction equipment would enter via the Sunkist Gate and would proceed to the project site via 23rd Avenue. Construction workers using their privately owned vehicles or company-owned ridesharing vehicles would use the Sunkist Gate and proceed to the project site via 23rd Avenue during all days of the week.

Identified impacts are described below for the construction phase and the operations and maintenance phase of the Proposed Action/Alternative 1. No significant impacts to traffic and circulation were identified.

Construction Impacts

During construction, there would be an approximate 13 percent increase in daily traffic and circulation over baseline conditions anticipated at the Victoria Gate due to commercial trucks and heavy construction equipment entering the base. There would be a less than 0.1 percent increase from baseline conditions at the Sunkist Gate during weekdays due to construction worker commutes. This represents a minor and temporary increase in traffic and circulation when compared to the data from the traffic study completed in 2008; however, the additional traffic would be negligible and would not contribute to further congestion on NBVC Port Hueneme or local area roadways serving NBVC Port Hueneme. The private party's construction contractor would coordinate with NBVC Port Hueneme Force Protection/Security to ensure that

traffic associated with implementation of the Proposed Action/Alternative 1 would not contribute to traffic and circulation congestion.

Overall, implementation of the Proposed Action/Alternative 1 would result in less than a 0.03 percent increase in the total number of vehicles entering and exiting NBVC Port Hueneme on a daily basis. The minor increase in vehicles to support construction of the proposed PV systems would not alter the LOSs for the principal roadways that serve NBVC Port Hueneme and the cities of Port Hueneme and Oxnard. Overall, construction-related impacts would be minor and temporary. Therefore, there would be no significant construction-related impacts to traffic and circulation from implementation of the Proposed Action/Alternative 1.

Operations and Maintenance Impacts

Operations and maintenance activities associated with the PV systems on Parcels 9, 13, 16, 17, and 18 would require only minimal vehicle and equipment support. PV systems operate passively without the need for onsite personnel. Periodic system inspections, PV panel cleaning, and as-needed equipment repairs would result in less than one vehicle trip per week and would not result in impacts to traffic and circulation either on NBVC Port Hueneme or on the surrounding roadways. Therefore, there would be no significant impacts to traffic and circulation from operations and maintenance activities with implementation of the Proposed Action/Alternative 1.

3.6.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

With implementation of Alternative 2, the impacts would be the same as described for the Proposed Action/Alternative 1 except they would be even more negligible because the reduced scale of construction would require a reduced workforce (up to 40 personnel) and an average of only nine commercial vehicles and pieces construction equipment entering on a daily basis. Operations- and maintenance-related vehicle trips would also be reduced from those described under the Proposed Action/Alternative 1. Therefore, there would be no significant impacts to traffic and circulation with implementation of Alternative 2.

3.6.2.3 Alternative 3: Construction, Operation, and Maintenance of a Ground-Mounted PV Systems on Parcels 9 and 13

With implementation of Alternative 3, the impacts would be the same as described for the Proposed Action/Alternative 1 except they would be even more negligible because the reduced scale of construction would require a reduced workforce (up to 55 personnel) and an average of only 11 commercial vehicles and pieces construction equipment entering on a daily basis. Operations- and maintenance-related vehicle trips would also be reduced from those described under the Proposed Action/Alternative 1. Therefore, there would be no significant impacts to traffic and circulation with implementation of Alternative 3.

3.6.2.4 No Action Alternative

With the No Action Alternative, PV systems would not be constructed and baseline traffic and circulation would remain unchanged. Therefore, there would be no traffic and circulation impacts from implementation of the No Action Alternative.

3.7 UTILITIES

Utilities would typically encompass any wet or dry utility that currently serves the existing project sites. This would include potable water, wastewater, solid waste management, energy, and communication services. The proposed project sites at NBVC Port Hueneme do not have any current potable water or communication facilities and have limited existing wastewater and energy facilities. Due to the nature of the proposed project, there would be no increased demand for wastewater or communication services. Although these services are discussed and identified below, potential impacts to these services are not analyzed because they would not be changed as a result of the proposed project. Therefore, this section and subsequent analysis will focus on potable water, solid waste management, and energy only since these are the utilities that would be affected by the proposed project.

3.7.1 AFFECTED ENVIRONMENT

3.7.1.1 Potable Water

Parcel 17 has a fire hydrant located in the north corner of the parcel that would remain after construction of the proposed project. NBVC Port Hueneme receives potable water from the Port Hueneme Water Agency, which is the wholesale provider for the City of Port Hueneme, the Channel Islands Community Services District, and NBVC Point Mugu. Irrigation water for landscaping is provided from both on-installation water wells and the United Water Conservation District (Navy 2014). None of the parcels analyzed for the proposed project uses or conveys potable water.

3.7.1.2 Wastewater

All wastewater generated at NBVC Port Hueneme is pumped through the City of Port Hueneme sewer system to the City of Oxnard sewer system, where it is conveyed to the Oxnard Regional Wastewater Treatment Plant for secondary treatment and discharge (Navy 2014). However, none of the parcels analyzed for the proposed project generates or conveys wastewater. Therefore, as stated above, this resource is not analyzed further for impacts.

3.7.1.3 Solid Waste

Solid waste from NBVC Port Hueneme is conveyed by a private contractor to an approved landfill in Oxnard, California (Navy 2014). None of the parcels currently generates or conveys solid waste.

3.7.1.4 Energy

Energy utilities consist of electricity and natural gas. Electricity for NBVC Port Hueneme is purchased from Southern California Edison and through power broker Western Area Power Administration and is distributed via both overhead and underground distribution electrical systems. Installation activities conducted at NBVC Port Hueneme consumed 44,263 MW hours of electricity in Fiscal Year 2013 (Navy 2014). Natural gas is provided at NBVC Port Hueneme by Southern California Gas Company and is maintained by NAVFAC Southwest Public Works. Parcel 16 has power poles in the middle and around the periphery of the parcel. The power poles in the middle would be removed during construction of the Proposed Action/Alternative 1.

Existing electrical distribution facilities are located along the south side of 23rd Avenue, the east side of West Street, and adjacent to 32nd Avenue.

3.7.1.5 Communications

The five parcels under consideration for the proposed project do not support communication systems. The proposed project would neither require nor affect communication services on NBVC Port Hueneme. Therefore, as stated above, this resource is not analyzed further for impacts.

3.7.2 ENVIRONMENTAL CONSEQUENCES

This section discusses the impacts of the proposed project on existing utilities, as well as the impacts of any proposed utilities. With implementation of the proposed project, there would be no increase in demand for water or communication services. Therefore, this section will focus on potential impacts to potable water, solid waste, and energy only.

3.7.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

Potable Water

None of the project sites within the Proposed Action/Alternative 1 uses or conveys potable water. During construction, water would be supplied by the private partner via trucks to control fugitive dust. During operations, water would be supplied by the private partner for panel cleaning as needed. Therefore, Proposed Action/Alternative 1 would have no significant impact to potable water use.

Solid Waste

Clearing of the sites for construction may generate some debris requiring removal during construction. However, no significant export of fill would be required as the sites are already graded and flat. Debris such as power poles would be recycled if possible or otherwise disposed of properly offsite to solid waste facilities with adequate capacity to accept the waste. Although it is not anticipated, it is possible that unknown hazardous materials could be exposed during construction activities. A Hazardous Waste Management Plan would be prepared as part of the Proposed Action/Alternative 1 to manage potential hazardous waste.

During operation, minimal amounts of solid waste would be generated from personnel managing and working within the project sites. Such waste would be recycled or disposed of with the other solid waste generated from NBVC Port Hueneme and conveyed by a private contractor to an approved landfill in Oxnard, California. The small volumes of solid waste temporarily generated during project construction and periodically generated during maintenance would be transported offsite to solid waste facilities that have adequate capacity to accept the waste. Therefore, there would be no significant impacts from solid waste generation from the implementation of the Proposed Action/Alternative 1.

Energy

Implementation of Proposed Action/Alternative 1 would result in the generation of up to 10 MW of renewable energy. The Proposed Action/Alternative 1 would require connection to the existing electrical distribution system as described below. Natural gas service is not required.

Existing electrical distribution facilities are located along the south side of 23rd Avenue, the east side of West Street and adjacent to 32nd Avenue. Electrical wiring would either be trenched into the ground, installed overhead, or a combination of both to make the connection. If trenched, the temporarily disturbed area would be re-vegetated and/or restored to pre-project conditions. Some modification to the electric facilities at the point of connection would be required. Since all modifications would be to existing facilities, there would be no significant change to existing conditions.

Energy demand on NBVC Port Hueneme would not be increased as a result of the Proposed Action/Alternative 1. The Proposed Action/Alternative 1 would generate electrical power via the PV project, which would offset existing electrical demands.

Through the construction and operation of a PV system, the Proposed Action/Alternative 1 would develop renewable energy generating assets at NBVC Port Hueneme. It would contribute to meeting the renewable energy standards put forth by EOs 13423 and 13514, the DoD's Energy, Environment, and Climate Change Programs, and the SECNAV energy goals based on the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007, which includes the requirement to produce 50 percent of the Navy's shore-based energy requirements from alternative sources as well as the 1 GW renewable energy goal.

Based on the above analysis, there would be no significant impact to utilities from implementation of the Proposal Action/Alternative 1.

Conservation and Environmental Protection Measures

The following conservation and environmental protection measures would be incorporated into the Proposed Action/Alternative 1:

- Development of a Solid Waste Management Plan in accordance with Command Navy Region Southwest Instruction 11350.1B to ensure that Navy recycling and solid waste diversion goals are included during construction of the project.
- Minimization of hazardous waste generation, including construction waste material, to the maximum extent practicable through the identification of recycling and reclamation options as alternatives to landfill disposal. Hazardous wastes that cannot be recycled would be segregated, managed, and properly disposed of in a licensed Class I or II waste disposal facility authorized to accept the waste.
- Development of a Hazardous Waste Management Plan for approval prior to commencement of construction activities that would comply with applicable federal, state, and local regulations. The State of California recognizes that PV systems can create hazardous waste streams, and any broken or damaged units that cannot be recycled would be managed as hazardous waste. Hazardous waste shipments would be coordinated with the NBVC Port Hueneme Environmental Division to review waste profiles and sign manifests.

- Coordination of shipments with the NBVC Port Hueneme Environmental Division to properly manage and dispose of hazardous waste per applicable federal, state, and local environmental regulations, including the requirements of the NBVC Port Hueneme 90-day hazardous waste accumulation points as outlined in the NBVC Port Hueneme hazardous waste management program.

Section 2.6.6 provides detailed descriptions of these conservation and environmental protection measures.

3.7.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

With implementation of Alternative 2, up to 6 MW of energy would be produced to contribute towards the Navy's renewable energy goal of 1 GW by the end of Year 2015. Impacts from the implementation of Alternative 2 would be the same as described for the Proposed Action/Alternative 1 except that impacts would be lower due to the smaller project area.

Therefore, there would be no significant impact to utilities from implementation of Alternative 2.

Conservation and Environmental Protection Measures

The conservation and environmental protection measures described under the Proposed Action/Alternative 1 would be incorporated into the project design with implementation of Alternative 2. Section 2.6.6 provides a detailed description of these measures.

3.7.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

With implementation of Alternative 3, the combined 40.5 acres (16.4 hectares) would contribute up to an estimated 9 MW toward the Navy's renewable energy goal of 1 GW by the end of the Year 2015. Impacts from the implementation of Alternative 3 would be the same as described for the Proposed Action/Alternative 1, except that impacts would be lower due to the smaller project area. Therefore, there would be no significant impact to utilities from implementation of Alternative 3.

Conservation and Environmental Protection Measures

The conservation and environmental protection measures described under the Proposed Action/Alternative 1 would be incorporated into the project design with implementation of Alternative 3. Section 2.6.6 provides a detailed description of these measures.

3.7.2.4 No Action Alternative

With the No Action Alternative, construction, operation, and maintenance of a PV system would not occur and there would be no change to utilities. Therefore, there would be no impacts to utilities from implementation of the No Action Alternative.

3.8 PUBLIC HEALTH AND SAFETY

Definition of Resource

For the purposes of this analysis, public health and safety refers to elements of the proposed project that could affect the health and safety of employees, families, temporary workers at NBVC Port Hueneme, and the public in surrounding communities.

This section describes current conditions on Parcels 9, 13, 16, 17, and 18 on NBVC Port Hueneme with respect to public health and safety, and evaluates the potential hazards associated with the following:

- Installation Restoration Program
- Hazardous and toxic materials and waste generated by the project
- Lead-based paint and asbestos-containing materials

Implementation of the proposed project would include security fencing surrounding the PV development sites during construction, operation, and maintenance. Because these sites would be subject to surveillance and protection by NBVC Port Hueneme security personnel, potential safety hazards associated with unauthorized access to these locations are not analyzed in detail in this EA.

Regulatory Setting

EM 385-1-1

This manual prescribes the safety and health requirements for all Naval Facilities Engineering Command activities and operations. The provisions of EM-385-1-1 implement and supplement safety and health standards and requirements contained in 29 CFR 1910, 29 CFR 1926, 29 CFR 1960, 30 CFR 56, EO 12196, Department of Defense Instruction 6055.1, Department of Defense Instruction 6055.3, Army Regulation (AR) 40-5, AR 385-10, AR 385-11, AR 385-40, and Federal Acquisition Regulation Clause 52.236-13. Where more stringent safety and occupational health standards are set, the more stringent standards apply.

Other Federal Health and Safety Requirements

As outlined in the Navy Occupational Safety and Health Program, all proposed construction and operation activities must meet the requirements of EO 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), 64 *FR* 30851 (1999), and EO 13148 (Greening the Government through Leadership in Environmental Management), 65 *FR* 24595 (2000). These requirements address pollution prevention and reduction at the source, and for pollution that cannot be prevented or recycled, treatment in an environmentally safe manner.

Resource Conservation and Recovery Act

Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, defines hazardous wastes. A hazardous waste is a solid waste or combination of wastes which, due to its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in either serious irreversible, or incapacitating reversible illness, or may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, disposed of, or otherwise managed. A solid waste is a hazardous waste if it exhibits any ignitable, corrosive, reactive, or toxic characteristic; or if it is listed in Subpart D of RCRA.

Hazardous Material Transportation Act

In 1990 and 1994, the HMTA was amended to improve the protection of life, property, and the environment from the inherent risks of transporting hazardous material in all major modes of commerce. The U.S. Department of Transportation developed hazardous materials regulations that govern the classification, packaging, communication, transportation, and handling of hazardous materials, as well as employee training and incident reporting (49 CFR Parts 171-180). The transportation of hazardous materials is subject to both RCRA and U.S. Department of Transportation regulations.

3.8.1 AFFECTED ENVIRONMENT

3.8.1.1 Installation Restoration Program

The DoD has established the IRP as a means to identify, investigate, and remediate or control hazardous waste sites located at military installations. The IRP is intended to be a tool for the identification and cleanup of any contaminant releases that could endanger public health, welfare, or the environment.

One IRP site, IRP Site 14, is a closed landfill located on Parcel 9, one of the proposed project sites. It has a remedy in place that has ongoing operation and maintenance requirements. Parcel 13 is located adjacent to IRP Site 14 (Parcel 9) on Toledo Road. IRP Site 14 was a 33-acre (13.4 hectare) landfill that is now closed, capped, and covered with annual grassland vegetation. The closed landfill operated from the 1950s through the 1970s and the types of waste materials discarded at Site 14 included dredge spoils, transformer fluids, oily bilge water, lubricating oil, diesel fuel, gasoline, Stoddard solvent, trichloroethene, thinners, and rubbish. Pesticides and residues from burning may also have been disposed of on site. The site has been shown to contain chemicals known to be hazardous to both human health and the environment. The chemicals of concern were identified as Aroclor-1260 (a polychlorinated biphenyl [PCB]), toxaphene (a pesticide), polynuclear aromatic hydrocarbons, and antimony (a metal). These contaminants are present primarily in site soils at variable depths, although they have also been detected in samples of site groundwater (Tetra Tech 2004). The final cover for the landfill was completed in July 2000 using existing soils as the foundation layer, a geosynthetic clay liner as the low-permeability layer, a GDL to provide subsurface drainage, and a vegetative soil layer (the drainage layer is not included in the storm water detention area). The *Final IRP Site 14 Postclosure Maintenance Report* sets forth the requirements, restrictions, and guidelines for managing IRP Site 14; in addition, it contains specific restrictions on compatible land uses, including development of the site for a variety of other uses.

No IRP sites affect Parcels 16, 17, and 18. The nearest two are IRP Site 15 and IRP Site 16. IRP Site 15, the transformer storage yard, is located to the west-northwest of Parcel 16, was used from the late 1970s through the early 1980s as a transformer storage area. IRP Site 15 is currently used as a storage area for trucks, machinery, equipment, and large containers. IRP Site 16, the paint storage yard, is located west of Track Number 13 Road to the north-northwest of Parcels 17 and 18. From 1942 until 1980, the site was used to collect waste paint and thinners. IRP Site 16 is currently used as a parking lot for base vehicles (NBVC Site Management Plan 2009).

3.8.1.2 Hazardous Materials/Hazardous Waste

Hazardous materials are used for various operations throughout NBVC Port Hueneme and are managed under Instruction 4110.1, Hazardous Materials Control and Management. Hazardous materials include batteries, lubricants, paints, adhesives, pesticides, herbicides, and sealing compounds. Most of the hazardous materials are used for facility operations. These materials are stored at various locations throughout NBVC Port Hueneme. Hazardous wastes generated from use of hazardous materials are managed according to RCRA Subtitle C (40 CFR Parts 260-280) regulations administered by the USEPA, unless otherwise exempted by CERCLA actions. Hazardous wastes are regulated by the Cal/EPA Department of Toxic Substances Control under the California Health and Safety Code, Sections 25100 through 67188. These regulations require that wastes be handled, stored, transported, disposed of, or recycled according to defined procedures.

3.8.1.3 Asbestos-Containing Materials and Lead-Based Paint

The Occupational Safety and Health Administration developed safety and health regulations for construction in 40 CFR Part 1926; 40 CFR 1926.1101 that specifically address asbestos. Human exposure to lead has been determined to be an adverse health risk by the USEPA and Occupational Safety and Health Administration. Lead-based paint is defined as paint that contains a total lead content of more than 600 parts per million. Building demolition exposing workers and the environment to asbestos-containing material and lead-based paint is not included in the proposed project.

3.8.1.4 Safety and Environmental Health

Occupational health, a key element of the Navy Occupational Safety and Health program, includes explosive, nuclear, aviation, industrial, and off-duty safety. All proposed construction and operation activities must be conducted in accordance with the guidelines set forth in EM-385-1-1, the Navy's safety and health manual for all Naval Facilities Engineering Command activities and operations. In addition, all proposed construction and operation activities must meet the requirements of EO 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), 64 *Federal Register* 30851 (1999), and EO 13148 (Greening the Government through Leadership in Environmental Management), 65 FR 24595 (2000). These requirements would be contained in all construction plans for the proposed project and would ensure, wherever feasible, that pollution would be prevented or reduced at the source; pollution that cannot be prevented or recycled would be treated in an environmentally safe manner; and disposal or other releases to the environment would be employed as a last resort.

3.8.2 ENVIRONMENTAL CONSEQUENCES

3.8.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

Installation Restoration Program

As described in Section 3.8.1.1, there are no IRP sites near Parcels 13, 16, 17, and 18. With implementation of the Proposed Action/Alternative 1, Parcel 9 would be developed for renewable energy generation. Contaminated groundwater and chemicals known to be hazardous to both human health and the environment are present on Parcel 9 (IRP Site 14).

The geosynthetic clay cover of the landfill cannot be punctured during construction of the PV system or damaged due to overstressing of the static load of the PV system ballasts. As a result, the contractor would design the project based on the requirements addressed in the Design Basis Report (Tetra Tech 1998). The requirements address structural improvements on the geosynthetic clay cover of the landfill, additional protection for the cover system, construction within 1,000 feet of the final cover, storm drainage characteristics, and case-by-case exemptions to these requirements.

Surface improvements would maintain cover integrity and shallow underground utilities would be built according to the guidelines in the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover* (Tetra Tech 2004) to maintain the integrity of the landfill cover and minimize potential impacts to public health and safety. Furthermore, to help ensure that all proposed design elements at Parcel 9 are consistent with all guidelines in the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover*, the Navy would provide any design elements to the following state regulatory entities for review and comment:

- California Department of Toxic Substance Control
- Los Angeles RWQCB
- California Department of Resources Recycling and Recovery

Therefore, because the project components on Parcel 9 would be designed based on the requirements addressed in the Design Basis Report (Tetra Tech 1998) and in accordance with the *Postclosure Maintenance Plan for Site 14 Landfill Final Cover*, implementation of the Proposed Action/Alternative 1 would not have a significant impact to public health and safety from IRP sites on NBVC Port Hueneme.

Hazardous and Toxic Materials and Waste

Construction of the Proposed Action/Alternative 1 would include the installation of PV panels that would be transported on base via trucks. The State of California recognizes that PV systems can create hazardous waste streams, and any broken or damaged units that cannot be recycled would be managed as hazardous waste. The private partner would be responsible for the safe identification and disposal of broken or unusable panels identified during construction, operations, and maintenance in accordance with applicable laws and regulations. The private partner would coordinate hazardous waste shipments with the NBVC Port Hueneme Environmental Division to ensure a representative reviews waste profiles and signs manifests.

All construction-related waste would be disposed of in accordance with the conservation and environmental protection measures described in Section 2.6.6. Any accidental spills and leaks from equipment used during construction, operation, and maintenance would be addressed under an Environmental Protection Plan (see Section 2.6.6) prepared prior to site work and corrective procedures would be identified. Therefore, implementation of the Proposed Action/Alternative 1 would not result in significant adverse impacts to public health and safety from hazardous and toxic materials and waste.

Asbestos-Containing Material and Lead-Based Paint

No building demolition would occur with implementation of the Proposed Action/Alternative 1; therefore, there would be no asbestos-containing material-related or lead-based paint-related impacts to public health and safety from implementation of the Proposed Action/Alternative 1.

Safety and Environmental Health

Project construction activities would be conducted in accordance with Navy regulations and the approved Health and Safety Plan (Section 2.6.6). Therefore, implementation of the Proposed Action/Alternative 1 would not have a significant impact to safety and environmental health.

Conservation and Environmental Protection Measures

The conservation and environmental protection measures outlined in Section 2.6, including preparation of an Environmental Protection Plan described in Section 2.6.1 and hazardous waste management, solid waste management, and health and safety plans described in Section 2.6.6, would be included as part of the project design with implementation of the Proposed Action/Alternative 1.

3.8.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted PV System on Parcels 13, 16, 17, and 18

Impacts to public health and safety with implementation of Alternative 2 would be similar to those described for the Proposed Action/Alternative 1, except that the solar PV system would not be constructed, operated, and maintained on Parcel 9, a 28-acre (11.3-hectare) closed landfill. Therefore, there would be no significant impacts to public health and safety with implementation of Alternative 2.

Conservation and Environmental Protection Measures

The conservation and environmental protection measures described for the Proposed Action/Alternative 1 would be included in the project design with implementation of Alternative 2.

3.8.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9 and 13

Impacts to public health and safety with implementation of Alternative 3 would be the same as those described for the Proposed Action/Alternative 1, except that the PV system would only be constructed, operated, and maintained on Parcels 9 and 13, a 28-acre (11.3-hectare) closed landfill and a 12.5-acre (5-hectare) vacant parking lot, respectively. Therefore, implementation of Alternative 3 would not have a significant impact to public health and safety.

Conservation and Environmental Protection Measures

The conservation and environmental protection measures described for the Proposed Action/Alternative 1 would be included in the project design with implementation of Alternative 3.

3.8.2.4 No Action Alternative

With the No Action Alternative, construction and operation of PV systems at NBVC Port Hueneme would not occur. Existing conditions would remain as described in Section 3.8.1, Affected Environment. Therefore, there would be no impacts to public health and safety with the No Action Alternative.

3.9 VISUAL QUALITY

This section is largely summarized from a detailed Viewshed Analysis conducted for this project. The complete Viewshed Analysis is included as Appendix E of this EA.

Definition of Resource

Visual quality is an evaluation of the attributes of natural and man-made features that comprise the visual characteristics of a given area or “viewshed.” These features form the overall impression that an observer receives of an area or its landscape character. Topography, water, vegetation, man-made features, and the degree of panoramic views available are examples of visual characteristics of an area.

Regulatory Setting

National Environmental Policy Act

Sections 101-b and 102-2 of NEPA provide guidance on the federal government’s responsibility to consider aesthetically and culturally pleasing surrounds and federal actions that significantly affect the quality of the visual landscape.

National Historic Preservation Act

The NHPA includes language on protecting the visual integrity of sites listed or eligible for the NRHP. Impacts to visual resources protected by NHPA are discussed in Section 3.2, Cultural Resources.

3.9.1 AFFECTED ENVIRONMENT

3.9.1.1 Existing Visual Character and Quality

The visual character of the area surrounding the proposed project sites is defined as a mosaic of widely varying land uses each contributing a distinct visual identity. Examples of these land uses are open spaces, including the Pacific Ocean, beaches, and public park spaces; densely developed residential neighborhoods along wide collector and arterial roadways; and visitor-serving commercial enterprises, hotels, light-industrial/harbor related-development, and resort commercial such as private yacht clubs and marinas.

The most prominent cultural disturbances in the project sites are roadway corridors, surrounding commercial developments, and historical landform modifications adjacent to the proposed project sites as they contribute high-contrast surfaces, manufactured topography, moving objects, moving and fixed light sources, and urbanizing elements like large-scale signage and traffic signals.

Existing visual resources were assessed by evaluating vividness, intactness of the visual conditions, and unity as presently experienced. Vividness is the visual power or memorability of landscape components as they combine in distinctive patterns. Intactness is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. Unity is the visual coherence and compositional harmony of the landscape considered as a whole, which frequently attests to the careful design of individual manmade components in the landscape.

3.9.1.2 Viewer Sensitivity and Exposure Levels

The quality of a visual landscape is largely determined by the extent of the public's interest in, and concern for, a particular view. For purposes of evaluating this public concern, Viewer Response is composed of two elements: *Viewer Sensitivity* and *Viewer Exposure*. These elements combine to form a method of predicting how the public might react to visual changes brought about by an action.

Viewer sensitivity is defined as both the viewers' concern for scenic quality and the viewers' response to change in the visual quality that compose the view. To establish a measurable threshold for this concern, views are assigned a value of visual sensitivity. The public is generally concerned about areas possessing a high degree of visual character or quality, and these views typically contain highly visible or memorable landscape elements. Publicly accessible views from or within residential areas are generally considered to have greater visual sensitivity than views of, or from, more urbanized locations. *Viewer exposure* is assessed by measuring the number of viewers experiencing potential changes in their visual environment. Those viewers are sorted by activity, duration of view, speed at which the viewer is traveling, and the resulting positions of the viewer relative to proposed changes.

Two general *Viewer Groups* were considered for the evaluation of viewer exposure, awareness, and response: vehicular viewers and recreational/pedestrian viewers. Very few direct foreground views exist of the proposed project sites. Vehicular viewers typically have a low to moderate awareness of the parcels and viewers would experience potential visual changes most directly along only one view corridor (S. Victoria Avenue). Although viewer sensitivity within this group is generally low due to the shorter durations of exposure, and proposed changes would remain largely consistent with viewer expectations of the site; vehicular viewers represent the largest population of affected viewers with unobstructed/partially obstructed, immediate foreground views.

Recreational/pedestrians viewers comprise the second primary viewer group potentially affected by the proposed project. Viewer sensitivity within this group is generally considered moderate to high due to typically longer-duration exposure to proposed changes, and often more purpose-driven expectations of a visual setting (e.g., coastal public access, waterfront restaurants, and park settings.) Because the proposed project is physically and visually adjacent to Channel Islands Harbor, viewer sensitivity and viewer expectation of stronger visual cohesion/higher visual quality would be higher than average; however, viewers in this group would experience long-duration, foreground-middleground views (Parcel 9, particularly) from points along S. Harbor Boulevard.

3.9.1.3 Key Observation Points

Visual resources were evaluated for the project viewshed, or the area from which the project could be visible. The methodology used to establish landscape scenery and an inventory for the proposed project included manual digitizing from detailed aerials, data download from the U.S. Geological Survey, geographic information system spatial analyses, and field verification. Land surface modeling was used to delineate viewsheds, identify locations of viewer sensitivity, including residences, recreation sites, trails, and roads. Project-specific visibility and distance

zone analyses and mapping were conducted using geographic information system (ArcGIS) software.

A field investigation was conducted to discover and disclose the relationships of proposed project areas' elements with existing onsite landscape characteristics and locations of viewer sensitivity to establish a baseline visual condition to which potential changes could be compared. Because it was not feasible to analyze all views of the project area, four key observation points (KOPs) were selected for their ability to simultaneously represent existing conditions and authentically depict the effects of implementation of the proposed project. These four KOPs were selected based on a composite evaluation of the preceding project and corridor analyses as publicly accessible viewer concentration points, such as street intersections serving as ingress/egress to adjacent neighborhoods. The locations of chosen KOPs are illustrated in Figure 3.9-1. Current conditions and simulated views for each KOP are provided in Section 3.9.2 and depicted in Figures 3.9-2a and 3.9-2b through 3.9-5a and 3.11-5b to best illustrate the potential impacts of the proposed project.

Parcel 9

As detailed in the Viewshed Analysis study (Appendix E), only one of five parcels (Parcel 9) considered for development with the proposed project is currently visible to the public. Parcel 9 is a 28-acre (11.3-hectare) site located on a closed landfill bounded on the north by 23rd Avenue and on the west by West Road. It is located north of 32nd Avenue and west of Pennsylvania Road. Because of its current land use as a closed landfill, the topography is gently mounded gaining elevation from north to south and west to east with a demonstrated swale on the southern end that serves as a retention area for rainfall to the south. There are five raised landfill gas vents and five settlement markers incorporated into the design of the landfill cover. To more accurately describe existing visual conditions and potential effects of proposed project activities on this parcel, existing visual conditions have been subdivided into two smaller viewshed units: Hollywood Beach and South Victoria Avenue corridor.

Hollywood Beach

The Hollywood Beach viewshed subarea is located to the west of NBVC Port Hueneme between Peninsula Road and the Pacific Ocean. Land uses include several hotels and restaurants, public parks (Peninsula Park and Harbor View Park), and public attractions including Ventura County Maritime Museum and Channel Islands National Marine Sanctuary Visitors Center. Dense, two- and three-story residential developments line the western frontage of S. Harbor Boulevard and extend west to Hollywood Beach.

Motorists and pedestrians traveling through this area experience intermittently obstructed immediate foreground and foreground-middleground views across Channel Islands Harbor when facing north, east, and south; however, views west are fully obstructed by existing residential development until the southern terminus of S. Harbor Boulevard at Channel View Park. Existing visual character in this area is defined primarily by coastal architectural styles, beach-inspired public art and signage, and palm tree-lined streets and alleyways. Large parking lots separate harborside development and public open spaces from S. Harbor Boulevard.

Depending on precise viewer location, views across Channel Islands Harbor of the proposed project range from partially to fully obstructed by building structures, heavily used marina slips, vegetation, and ongoing Harbor maintenance activities (dredging). Vividness, unity, and intactness are moderate to moderately strong in this viewshed unit and overall visual character/quality is moderate.

South Victoria Avenue Corridor

This viewshed unit is located immediately west of the proposed project, parallel with and adjacent to the western boundary of NBVC Port Hueneme; bound on the north by West Channel Islands Boulevard and the south by San Nicholas Avenue. Land uses throughout the majority of the corridor are heavily focused on maritime support and include facilities providing boat storage, repair, and private boat launches. South of Murre Way, the corridor becomes more densely lined with one- and two-story residential buildings, small neighborhood markets and restaurants, and public beach access to Silver Strand Beach.

Parcel 9 is separated from S. Victoria Avenue and this viewshed unit by uniformly spaced shade trees, security fencing, and an on-base frontage road paralleling the fence line. Immediately adjacent to Parcel 9 is a lot used as open parking for large tractor-trailer/boat haulers, as well as general off-street parking.

Motorists and pedestrians traveling through this area experience occasionally direct, but most often partially obstructed, immediate foreground views when facing north, east, and south. Views west across Channel Islands Harbor are partially to fully obstructed by roadside fencing, structures, and occupied boatslips within the marinas. However, occasional open views across the water toward S. Harbor Drive and Hollywood Beach are available at specific points. Existing visual character in this area is heavily influenced by the semi-industrial appearance of these purpose-driven land uses, and vividness, unity, and intactness are low throughout this corridor; as such, existing visual quality is low in this location.

Additional Locations Considered

In addition to the KOPs, five additional locations were considered in the analysis, based on the nature of land uses and visual characteristics present in those locations.

West Channel Islands Boulevard and S. Patterson Road is located approximately 0.31 mile (0.48 kilometer) north of Parcel 16, this view was anticipated to illustrate the southern viewshed along S. Patterson Road, as experienced by vehicular viewers approaching the “North Gate” at NBVC Port Hueneme. This location was initially studied as a KOP due to its proximity and potential line of sight to Parcels 16, 17, and 18 of the proposed project and number of average daily viewers. However, field investigation determined that due to dense existing vegetation along West Channel Islands Boulevard and the northern perimeter of NBVC Port Hueneme and intervening building structures, the proposed project would not be publicly visible in this location or from surrounding publicly accessible locations and implementation of the proposed project would not alter existing visual character or quality.

West Channel Islands Boulevard and South Victoria Avenue is located approximately 0.47 mile (0.76 kilometer) north of Parcels 9 and 13. This intersection was studied initially as a

KOP due to its proximity to all parcels of the proposed project and number of average daily viewers passing through this intersection. Field investigation determined that due to dense existing vegetation along South Victoria Ave and on base in the northwest corner of NBVC Port Hueneme, existing intervening building structures, and existing landform alteration (earthen berms), the proposed project area would not be visible from this location or those immediately surrounding it; therefore, implementation of the proposed project would not alter existing visual character or quality.

Channel View Park is located 0.39 mile (0.63 kilometer) from the nearest boundary of the Parcel 9 at the southern terminus of South Harbor Boulevard. Potential viewer groups included pedestrian/recreational and vehicular viewers; however, field investigation determined that visibility of the proposed project area ranges from extremely limited to not visible; therefore, implementation of the proposed project would not alter existing visual character or quality.

Peninsula Park is located approximately 0.31 mile (0.50 kilometer) from the nearest boundary on the western edge of the Peninsula Road adjacent to the Hampton Inn Channel Islands property. Potential viewer groups included pedestrian/recreational and vehicular viewers; however, field investigations determined visibility of the proposed project ranges from extremely limited to not visible; therefore, implementation of the proposed project would not alter existing visual character or quality.

Channel Islands Beach access and parking for Silver Strand Beach is located 0.48 mile (0.77 kilometer) south of the nearest boundary along San Nicholas Avenue. Potential viewer groups included pedestrian/recreational and vehicular viewers; however, field investigations determined that visibility of the proposed project area is fully obstructed by high-density marina operations, multi-story residential development, and existing mature vegetation. Viewers facing northwest experience unobstructed views across Channel Islands Harbor toward the Santa Paula range in the background. Existing visual quality is moderately high in this location.

3.9.2 ENVIRONMENTAL CONSEQUENCES

Project visibility and potential impacts to visual resources have been considered at the selected KOPs previously discussed in Section 3.11.1. KOP locations are illustrated in Figure 3.9-1. Photographs of each existing views for each selected KOP and visual simulations prepared to clearly illustrate the potential visual impacts of implementation of the project alternatives are presented as Figures 3.9-2a and 3.9-2b through 3.9-5a through 3.9-5b.

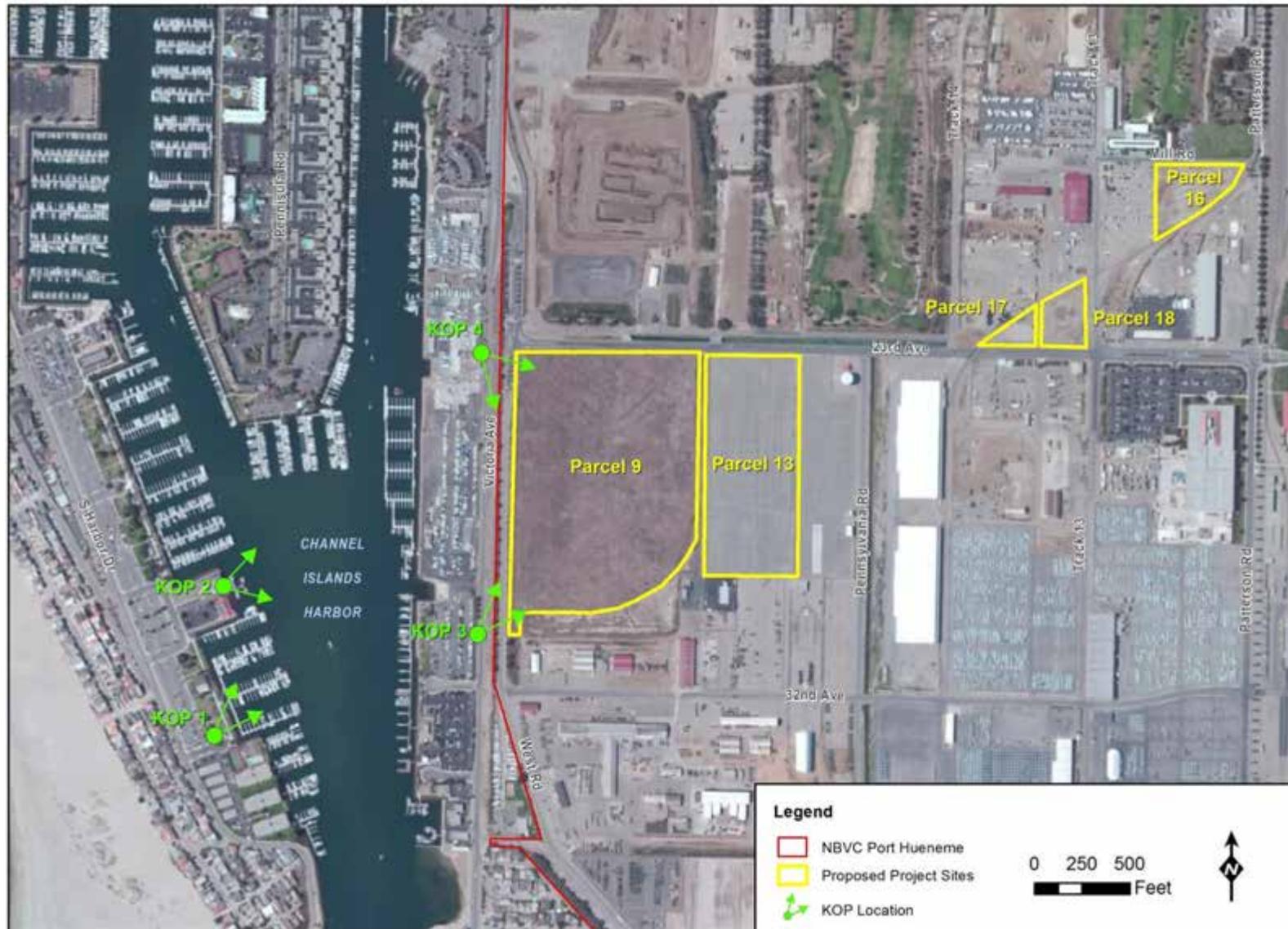


Figure 3.9-1. KOP Location Map



Figure 3.9-2a. KOP 1 Facing East toward Parcel 9 across Channel Islands Harbor from Harbor View Park – illustrates a typical view recreational/pedestrian visitors to the Hollywood Beach, restaurant, commercial, and yacht club developments on the eastern edge of South Harbor Boulevard experience. Visual character includes maritime architecture, boat masts, and active port operations. Occasional background views of the Santa Paula Range and South Mountain with elevations over 2,300 feet (701 meters) are possible.



Figure 3.9-2b. Simulation – With the Proposed Action/Alternative 1 and Alternative 3, viewers would experience long-duration foreground-middleground views of Parcel 9 past views of shimmering white light, deep blues from the water surface in the foreground, and greens, greys, and browns in the foreground-middleground. There would be temporary, short-term construction views and long-term, but temporary operations views. Perimeter fencing with a fabric screen (“scrim”) would partially obstruct views and limit potential project visibility.



Figure 3.9-3a. KOP 2 Facing East toward Parcel 9 across the Harbor from the Channel Islands Maritime Museum – illustrates a typical view experienced by recreational/pedestrian visitors and tourists visiting adjacent waterfront attractions. Viewers in this location experience medium- to long-duration foreground-midleground views of the proposed project area (Parcel 9), though views are partially to fully obstructed from this edge of Channel Islands Harbor. Existing visual character and quality for KOP 2 is the same as described in Figure 3.9-2a for KOP 1.



Figure 3.9-3b. KOP 2 Simulation – With the Proposed Action/Alternative 1 and Alternative 3, viewers would experience medium- to long-duration foreground-midleground views though views would be partially to fully obstructed from this edge of Channel Islands Harbor. The views experienced would be past shimmering white light and deep blues from the water surface in the foreground, and greens, greys, and browns in the foreground-midleground. The installation of perimeter fencing with fabric screening (“scrim”) surrounding the proposed project site would further obstruct views and limit potential project visibility.



Figure 3.9-4a. KOP 3 Faces North Toward Parcel 9 Along S. Victoria Avenue – illustrates a typical view experienced by vehicular viewers located approximately 110 feet (33.5 meters) from the western NBVC Port Hueneme boundary. Similar unobstructed, immediate foreground views of Parcel 9 exist along this corridor; however, most viewers pass Parcel 9 at speeds between 25 and 50 miles (40.2 to 80.4 kilometers) per hour and have a short-duration exposure. Direct at-grade views are somewhat obstructed by perimeter fencing.



Figure 3.9-4b. KOP 3 Simulation – With the Proposed Action/Alternative 1 and Alternative 3, vehicular viewers would experience fully and partially obstructed, short duration foreground views from this and similar locations along S. Victoria Avenue. Fabric-covered fencing around the perimeter of the solar PV system would buffer direct, at-grade views, but direct foreground views of the PV system would remain above the fence line (installation would follow the existing vertical profile of Parcel 9 and appear above the fencing until vanishing over the highest point on Parcel 9).



Figure 3.9-5a. KOP 4 Facing Southeast Toward Parcel 9 from the Southbound Lane of S. Victoria Avenue – Illustrates a typical view experienced by vehicular viewers located approximately 160 feet (48.8 meters) from the western NBVC Port Hueneme boundary. Similar unobstructed, immediate foreground views of the proposed project area exist along this corridor; however, most viewers travel at the posted speed limit of 50 miles per hour (80.4 kilometers per hour) and have limited duration exposure of visual changes at NBVC Port Hueneme.

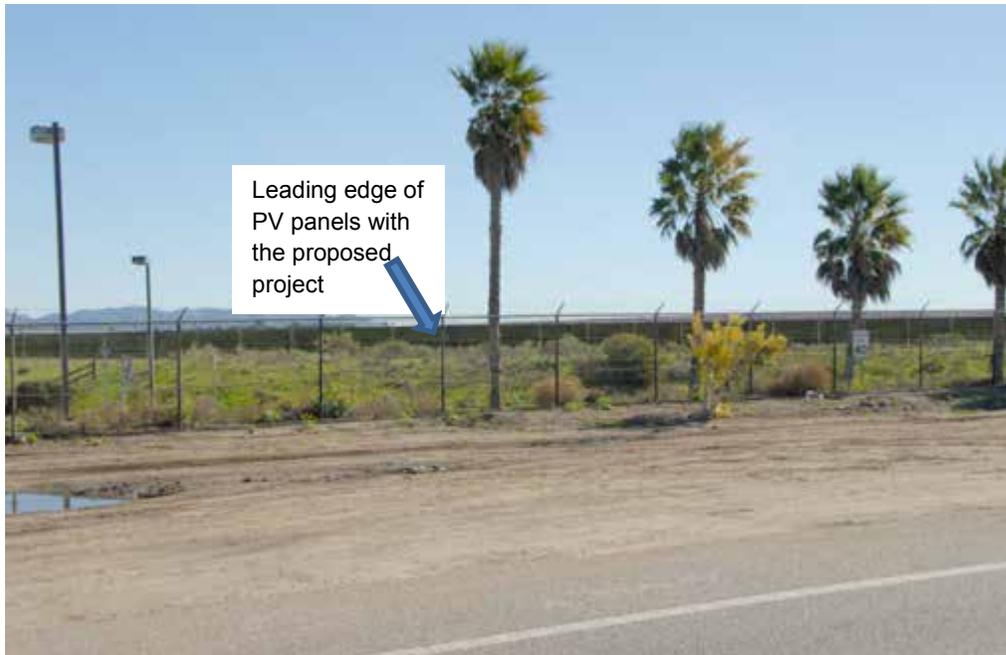


Figure 3.9-5b. KOP 4 Simulation – With the Proposed Action/Alternative 1 and Alternative 3, vehicular viewers would experience short-duration, immediate foreground views of the proposed project site. A fabric-screened fence around the perimeter of the PV system would be constructed, which would buffer direct, at-grade views from S. Victoria Avenue. Direct foreground views of the PV system would remain above the fence line as described under Figure 3.9-4b, KOP 3.

3.9.2.1 Proposed Action/Alternative 1: Construction, Operation, and Maintenance of Ground-Mounted PV Systems on Parcels 9, 13, 16, 17, and 18

Under the Proposed Action/Alternative 1, ground-mounted solar PV systems would be constructed and operated at Parcels 9, 13, 16, 17, and 18 on land totaling approximately 45.25 acres (18.3 hectares). The solar PV system on Parcel 9 would be located on a closed landfill with some topographic relief that is visible from a number of off-base areas. The solar PV panel systems that would be constructed and operated on Parcels 13, 16, 17, and 18 would be located on disturbed lands with virtually no topographic relief that are essentially screened from public views by intervening existing dense vegetation, building structures, and/or existing landform alteration (earthen berms). Therefore, although conditions surrounding Parcels 13, 16, 17, and 18 are discussed below, the discussion in this section focuses primarily on potential impacts to public views of Parcel 9.

Potential Impacts

Summary of Construction Impacts

The visual landscape surrounding all parcels would be temporarily affected by construction of the proposed solar facilities and ancillary features, including graded maintenance roads, perimeter fencing, and freestanding electrical equipment including electrical current inverters and grid connection switchgear. Given the inherently dynamic visual aspects of construction activities, temporary viewshed disturbances would result from the staging, stockpiling, and placement of PV panels and electrical current inverter stations; construction-related traffic and equipment; temporary debris storage; and standard ground-clearing operations for construction.

Due to the presence of ongoing construction and various types of heavy equipment in use both on and off base, existing bulk materials storage, and site grading operations unrelated to the Proposed Action/Alternative 1, the visual contrast of construction phase activities would range from weak to moderate depending on distance of the observer from Parcel 9 most notably. In all cases, construction activities occurring in the immediate foreground view of the observer, particularly along S. Victoria Avenue, would cause greater temporary impacts to the visual landscape than those appearing at farther distances (the majority of the project areas).

During this temporary construction period, viewer response would be moderate to high, due primarily to the number of viewers along the affected vehicular corridors. Project construction activities, as discussed previously, that are located within 0.5 mile (0.8 kilometer) of high or moderate sensitivity viewers and that have moderate contrasts and/or impacts to the visual landscape would be short term. Measures designed to minimize potential visual effects within 0.5 mile (0.8 kilometer) from stationary and linear KOPs, such as the use of fabric-covered fencing to obstruct or screen views, would reduce visual contrast from moderate to low. However, even without incorporation of these measures into project designs, construction-related impacts from implementation of the Proposed Action/Alternative 1 would be less than significant.

Summary of Operations Impacts

The Proposed Action/Alternative 1 would be contained within NBVC Port Hueneme boundaries behind existing perimeter fencing, which would obstruct views of the proposed PV system.

Additionally, the proposed PV system would be enclaved behind additional project fencing that could include measures to minimize impacts to visual resources, such as a fabric covering or “scrim,” to further obstruct views. Because of the relatively low height (less than 8 feet [2.4 meters]) of proposed PV panels, incorporation of conservation and environmental protection measures, including the use of fabric covered fencing or “scrim”, and resultant weak visual contrast, viewers passing through the project area are unlikely to notice a considerable change in visual character or to consider the visual character diminished under the Proposed Action/Alternative 1. Additionally, PV panels and support structures would be dull and drab in color and appearance and would not create a significant contrast with existing viewsheds.

Direct impacts to affected viewsheds would decline in contrast and memorability from levels described under construction impacts with the exception of Parcel 9. Because of the low vertical profile of proposed facilities and proposed screening measures, viewers passing by are unlikely to notice a considerable change in visual character or to consider the visual character substantially diminished for the overwhelming majority of parcels developed with Proposed Action/Alternative 1. However, visual change would be most apparent to viewers near Parcel 9 due to the proximity, aspect, and exposure of the parcel to a higher number of viewers with direct foreground viewing opportunities, and partially obstructed foreground-middleground views across Channel Islands Harbor.

As such, implementation of the Proposed Action/Alternative 1 would introduce a moderate degree of contrast to the existing visual setting; it would be viewed at immediate foreground distances by medium sensitivity viewers and foreground-middleground distances by high sensitivity viewers, and the resulting level of viewer response would be moderate. Incorporation of project design considerations and other measures designed to avoid, minimize, or mitigate potential visual effects within 0.5 mile (0.8 kilometer) from stationary and linear KOPs would reduce visual contrast from moderate to weak. However, even without incorporation of these measures into project designs, operations-related impacts from implementation of the Proposed Action/Alternative 1 would be less than significant.

Indirect viewshed impacts would result from disturbance by occasional maintenance operations and as-needed equipment replacement associated with the Proposed Action/Alternative 1. These maintenance operations would be conducted on an as needed basis and would be short-term (a day or several days). Therefore, maintenance-related impacts from implementation of the Proposed Action/Alternative 1 would be less than significant.

Conservation and Environmental Protection Measures

Although no significant impact to visual resources is anticipated, the potential for noticeable changes in the landscape would be minimized with incorporation of the following measure into the project design (see Section 2.6.7):

- Reduce visual contrast of vertical elements within the landscape by using the same or similar colors for surface coatings of site boundary fencing. This would include the installation of fabric-covered fencing (“scrim”) to further obstruct views of the proposed project area from publicly accessible locations.

3.9.2.2 Alternative 2: Construction, Operation, and Maintenance of a Ground-Mounted Photovoltaic System at Parcels 13, 16, 17, and 18

Under Alternative 2, a ground-mounted solar PV system would be constructed and operated on Parcels 13, 16, 17, and 18.

Potential Impacts

With implementation of Alternative 2, Parcel 9, the only parcel that could be viewed from a publicly accessible location, would not be developed for renewable energy generation. As the completed project would not be visible from any publicly accessible locations for Parcels 13, 16, 17, and 18, impacts to visual quality would be less than significant with implementation of Alternative 2.

Conservation and Environmental Protection Measures

Although no significant impact to visual resources is anticipated, the potential for noticeable changes in the landscape would be minimized with incorporation of the following measure into the project design (see Section 2.6.7):

- Reduce visual contrast of vertical elements within the landscape by using the same or similar colors for surface coatings of site boundary fencing. This would include the installation of fabric-covered fencing (“scrim”) to further obstruct views of the proposed project area from publicly accessible locations.

3.9.2.3 Alternative 3: Construction, Operation, and Maintenance of Ground-Mounted Photovoltaic Systems at Parcels 9 and 13

Under Alternative 3, a ground-mounted solar PV system would be constructed and operated only at Parcels 9 and 13. The mounded surface of Parcel 9 offers topographic relief that is visible from a number of off-base areas. The solar PV system on Parcel 13 would be located on disturbed land with virtually no topographic relief that is essentially screened from public views by intervening structures and/or topographic relief.

Potential Impacts

Impacts to visual quality with implementation of Alternative 3 would be the same as those described under the Proposed Action/Alternative 1. Direct impacts to viewers and existing visual quality would be moderate, as Alternative 3 would introduce the same degree of contrast experienced with implementation of the Proposed Action/Alternative 1. Therefore, there would be no significant impacts on visual quality with implementation of Alternative.

Conservation and Environmental Protection Measures

Although no significant impact to visual resources is anticipated, the potential for noticeable changes in the landscape would be minimized with incorporation of the following measure into the project design (see Section 2.6.7):

- Reduce visual contrast of vertical elements within the landscape by using the same or similar colors for surface coatings of site boundary fencing. This would include the installation of fabric-covered fencing (“scrim”) to further obstruct views of the proposed project area from publicly accessible locations.

3.9.2.4 No Action Alternative

Under the No Action Alternative, construction, operation, and maintenance of a PV system would not occur and there would be no change to baseline visual quality. Therefore, no significant impacts to visual quality would occur with implementation of the No Action Alternative.

4.0 Cumulative Impacts

4.1 DEFINITION OF CUMULATIVE IMPACTS

CEQ regulations implementing NEPA require that the cumulative impacts of a Proposed Action be assessed (40 CFR Parts 1500–1508). A cumulative impact is defined as the following: the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

CEQ's guidance for considering cumulative effects states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ 1997).

The first step in assessing cumulative effects, therefore, involves identifying and defining the scope of other actions and their interrelationship with the Proposed Action or alternatives. The scope must consider other projects that coincide with the location and timetable of the Proposed Action and other actions. Section 4.2 identifies relevant past, present, and reasonably foreseeable future actions, including both military actions in the region as well as other federal and non-federal actions. Projects were selected because they are either similar to the Proposed Action, large enough to have far reaching effects, or in proximity to the Proposed Action. Section 4.3 provides an analysis of cumulative impacts for relevant environmental resources and further defines the geographic boundaries for relevant projects for each resource area.

4.2 PAST, PRESENT, AND REASONABLY FORESEEABLE PROJECTS

Considered in the Cumulative Analysis is information on past, present, and reasonably foreseeable future projects and their associated impacts. Information on area projects was gathered through a review of available environmental documentation and in coordination with the Navy. A list of the cumulative projects, summary information, and their associated impacts are presented below.

4.2.1 HOMEPORTING OF THE LITTORAL COMBAT SHIPS ON THE WEST COAST OF THE UNITED STATES, NBVC PORT HUENEME

The Navy completed an EA in May 2012 to homeport up to 16 Littoral Combat Ships at Naval Base San Diego and use a combination of existing military assets in the Southern California area (e.g., Naval Base San Diego, NBVC Point Mugu, NBVC Port Hueneme, Naval Station North Island) to provide berthing space, ship hotel services (e.g., utilities), tug service, maintenance support, drydocking facilities, fueling services, ordnance handling and storage, cargo and mission module handling and storage, support facilities, and aviation asset support. Existing facilities, Buildings 362 and 364 at NBVC Point Mugu; and Building 1392 at NBVC Port Hueneme are being used, with minor improvements (i.e., interior renovations and minor exterior

site improvements) required for some of the existing facilities used. The homeporting is occurring between Fiscal Year 2013 and 2020. The project is within 1 mile (1.6 kilometers) of the proposed PV project sites.

4.2.2 BIODIESEL FUEL PROCESSING FACILITY EXPANSION PROJECT AT NBVC PORT HUENEME

The Navy has proposed to expand the biodiesel fuel processing test facility at NBVC Port Hueneme. The Biodiesel Expansion Project would include expansion of the 0.46-acre (0.19-hectare) facility to allow for the production rate of up to 10,000,000 gallons per year or 27,400 gallons (104 cubic meters) of biodiesel per day. Major new project components would include expanded use of solar technology and the installation of algae ponds, anaerobic digesters, and gasifiers. If implemented, the facility's total footprint would be expanded by 0.56 acre (0.23 hectare), to a total of 1.02 acres (0.41 hectare). The Final Biodiesel Fuel Processing Facility Expansion EA was completed in January 2015, and the FONSI was signed in March 2015. The project will be located approximately 1 mile (1.6 kilometers) northeast of the proposed PV project sites.

4.2.3 JOINT LAND USE STUDY, NBVC PORT HUENEME, COUNTY OF VENTURA, AND SURROUNDING CITIES

The Ventura County Transportation Commission, in cooperation with other jurisdictions, agencies and organizations in Ventura County, is in the process of preparing a Joint Land Use Study (JLUS) to address compatibility planning around NBVC, including NBVC Port Hueneme. The goal of the JLUS is to reduce current and potential compatibility issues between NBVC Port Hueneme and surrounding areas while accommodating new growth and economic development, protecting public health and safety, and sustaining the operational missions of NBVC Port Hueneme.

The JLUS will assess compatibility of regional man-made land uses factors, including safety zones, vertical obstruction, local housing availability, infrastructure extensions, antiterrorism/force protection, noise, vibration, dust/smoke/steam, light and glare, alternative energy, air quality, frequency spectrum, public trespassing, cultural resources sites, legislative initiatives, and interagency coordination. The JLUS will also assess compatibility of natural resources, such as water quality and quantity, threatened and endangered species, and marine environments and competition for scarce resources, such as land, air, and sea spaces, frequency spectrum capacity, and transportation.

The JLUS will make recommendations involving amendments and revisions to communities' comprehensive plans and traditional land use and development controls, such as zoning, subdivision regulations, structural height restrictions, as well as promotion of planned unit development concepts. Additional actions may include amending local building codes to require increased sound attenuation in existing and new buildings, land exchanges, transfer of development rights, and real estate disclosure.

4.2.4 NAVY CONSTRUCTION AND OPERATION OF SOLAR PHOTOVOLTAIC SYSTEMS AT MULTIPLE INSTALLATIONS IN CALIFORNIA

The Navy has prepared an EA evaluating the potential environmental impacts from the Navy allowing a solar power private partner to construct, operate, and own solar PV systems on five Navy Region Southwest installations: Naval Air Facility El Centro; Naval Support Activity Monterey's Main Site and Navy Annex; Naval Weapons Station Seal Beach; Naval Weapons Station Seal Beach Detachment Norco; and NBVC Port Hueneme. This would include the installation of ground-mounted, carport-mounted, and rooftop-mounted PV systems. Specific installation details would vary slightly based on the project site and the solar power developer's site design. The Proposed Action at NBVC Port Hueneme is a carport-mounted solar PV system rated at up to 300-kilowatt capacity. The generation facility would be located on 1.46 acres (0.59 hectare) in a paved parking area south of Highland Drive within in the southwestern portion of the installation. The estimated total output from the carport-mounted solar PV system would be 432.8-megawatt hours per year.

4.2.5 VIRTUAL TEST CAPABILITY PORT HUENEME DIVISION NSWC SURFACE WARFARE ENGINEERING FACILITY

This project included the proposed development and operation of the virtual test capability at the Surface Warfare Engineering Facility, NBVC Port Hueneme. The virtual test capability electronically connects Navy facility assets (e.g., laboratories and ranges) with Navy fleet assets (e.g., aircraft and ships). The network allows engineers and technicians to integrate the use of Navy systems and hardware (radars, directors, and launchers), software (computer programs), and communications devices (satellites and radios). The virtual test capability is built upon an existing surface warfare engineering facility, equipment, and operation programs. The Final EA was completed in May 2000. Construction is ongoing as new equipment and systems are installed, tested, and then removed or replaced with new equipment for testing or training. Routine testing of systems at the Surface Warfare Engineering Facility occurs in accordance with the Final EA.

4.2.6 PORT HUENEME CONTAMINATED SEDIMENT DREDGING AND CONFINED AQUATIC DISPOSAL SITE CONSTRUCTION

This project included the dredging of sediments contaminated with elevated concentrations of chemicals, including metals, pesticides, tributyltin, and PCBs, within Port Hueneme Harbor and their placement and confinement in an engineered subaqueous Confined Aquatic Disposal facility. The Final EA was completed in March 2008. This project used excavated clean sediments to construct the Confined Aquatic Disposal facility and related beach nourishment, and was completed in 2008 through 2009.

4.2.7 PORT HUENEME 2012 INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

The Port Hueneme INRMP was revised in 2012. A memorandum was also prepared in 2012 that determined that the EA and FONSI completed for the 2002 Port Hueneme INRMP sufficiently met the NEPA requirements for the 2012 Port Hueneme Revised INRMP. The likely

and occurring effects of the Revised INRMP would not be significantly different or qualitatively more severe than what was documented in the 2002 INRMP EA and FONSI. Therefore, no additional NEPA documentation is required for the 2012 Port Hueneme Revised INRMP.

4.3 GEOGRAPHIC SCOPE OF THE CUMULATIVE EFFECTS

For this analysis, a geographic scope, or region of influence (ROI), for each cumulative effects issue was established. The ROI is generally based on the natural boundaries of the resources affected, rather than jurisdictional boundaries. The geographic scope may be different for each cumulative effects issue. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed project alternatives. However, if the proposed project alternatives are determined to have no direct or indirect effects on a resource, no future cumulative effects analysis is necessary. ROIs are defined in Section 4.4 for each resource listed below. Because ROIs vary for different resources, not all of the projects discussed in Section 4.2 would be located within the ROIs defined for a particular resource.

4.3.1 TIME FRAME OF THE CUMULATIVE EFFECTS ANALYSIS

A time frame for each issue related to cumulative effects has been determined. The time frame is defined as the long-term and short-term duration of the effects anticipated. Long-term can be as the longest lasting effect. Time frames, like geographic scope, can vary by resource. Each project in a region has its own implementation schedule, which may or may not coincide or overlap with the schedule for implementing the Proposed Action. This is a consideration for short-term impacts from the Proposed Action. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Proposed Action.

Past actions are projects that have been approved and/or permitted, and that have either very recently completed construction/implementation or have yet to complete construction/be implemented. Present actions are actions that are ongoing at the time of the analysis. Reasonably foreseeable future actions are those for which there are existing decisions, funding, or formal proposals, or which are highly probable based on known opportunities or trends. However, these are limited to within the designated geographic scope and time frame. Reasonably foreseeable future actions are not limited to those that are approved for funding. However, this analysis does not speculate about future actions that are merely possible, but not highly probable based on information available at the time of this analysis.

For this cumulative effects analysis, the time frame considered for cumulatively considerable projects includes projects recently approved or completed that are not yet addressed as part of the existing conditions of the area, projects under construction, and projects that are in the environmental review or planning process and for which enough information is available to discern their potential impacts. Projects for which no or insufficient information is known, or for which substantial uncertainty exists regarding the project, are considered speculative and are not evaluated as part of this analysis.

4.4 CUMULATIVE IMPACTS ANALYSIS

This section addresses the potential cumulative impacts of the Proposed Action in conjunction with the aforementioned cumulative projects. These projects represent past, present, and reasonably foreseeable actions with the potential for cumulative impacts when considered in conjunction with the potential impacts from the Proposed Action. However, if a project would not result in direct or indirect impacts on a resource area, it would not contribute to a cumulative impact on that resource area and no further evaluation from a cumulative impact perspective is warranted. One resource, Cultural Resources, does not meet these criteria. Therefore, the Proposed Action would not cumulatively contribute to impacts to Cultural Resources, and they are not evaluated further in this section.

4.4.1 LAND USE

For land use, the geographic extent for cumulative impacts is defined as all the land within the boundaries of NBVC Port Hueneme. The proposed project in this EA would take place upon land currently set aside for the Navy's use. Surrounding land uses are compatible. The projects identified within Section 4.2 either entail compatible use of NBVC Hueneme land and facilities, or are located outside the boundaries of NBVC Port Hueneme and would not create any incompatible land uses or otherwise affect other ongoing land uses. The impacts of the proposed project, when combined with the impacts of the projects described in Section 4.2, would not be cumulatively significant.

4.4.2 BIOLOGICAL RESOURCES

For biological resources, the geographic extent for cumulative impacts is generally defined as the 45.25-acre (18.3-hectare) area encompassing the five project parcels proposed for PV development, plus a 500-foot (150-meter) buffer surrounding each site. However, this geographic extent is conceptually expanded to account for individual species that inhabit a larger regional area and may potentially occur at or near the project parcels only intermittently or in transit, such as migratory birds.

As described in Section 3.3.3, the proposed project area is surrounded by vacant lots, disturbed habitat, and development. Trenching for installation of electrical conduit and transmission lines could result in minor impacts to individuals of less-mobile wildlife species at the project sites. Areas disturbed during construction would be restored to their original condition following construction, resulting in no long-term impacts. As described in Section 3.3, identified vegetation communities and land types at the project parcels lack suitable habitat to support federally or state listed species, the biological resources considered for this cumulative analysis. These topics are addressed in more detail below.

Special Status Plant Species

Construction of the PV solar system on the project sites would result in the disturbance of 45.25 acres (18.3 hectares) of nonnative grassland, disturbed habitat, and previously developed areas. These areas do not support habitat for federally or state listed plant species. Therefore, the project would not cumulatively contribute to impacts from other regional projects, and would therefore not result in cumulative significant impacts.

Special Status Wildlife Species

Construction of the PV solar system on the project parcels could result in impacts to special status wildlife species such as silvery legless lizard and burrowing owl, as well as other migratory birds protected under the MBTA. Potential impacts to these species could be caused by construction activities, such as clearing and grubbing, site grading, and trenching for electrical infrastructure, and through indirect impacts associated with bird strikes on the solar PV panels potentially induced by the “lake effect.” Similarly, projects discussed under Section 4.2 that would require land disturbance could likewise adversely affect wildlife through habitat disturbance during construction and operations. Of the projects described in Section 4.2, the Biodiesel Fuel Processing Facility Expansion project is the geographically closest to the project sites considered in this EA. However, because of the relatively small size of land area that would be affected by the Biodiesel Fuel Processing Facility Expansion (less than 0.5 acre [0.2 hectare]), impacts would be extremely minor. Further, the less than 0.5 acre (0.2 hectare) of land area considered for the expansion is disturbed, low quality habitat that is also unsuitable to support special status wildlife species.

Other area projects that could cumulatively contribute to impacts to biological resources are development projects located more than 3.5 miles away that would improve or expand existing facilities on already disturbed land. For all projects described in Section 4.2, BMPs have been developed and applicable laws and regulations would be adhered to during project implementation. The project analyzed in this EA includes conservation and environmental protection measures described in Section 2.6.3. Further, all reasonably foreseeable projects would be subject to similar measures because of the potential presence of MBTA and other special-status species in the vicinity. Therefore, the cumulative impacts identified for these species from the proposed project, in conjunction with other projects on and in the regional vicinity, would not be cumulatively significant.

4.4.3 WATER RESOURCES

The geographic extent for cumulative effects on water resources is defined as the five parcels identified for PV development at NBVC Port Hueneme and the water bodies that may receive surface water flows from the parcels. Potential impacts to water resources may include increases in sedimentation into local water bodies, the increase in impermeable surfaces that would alter volumes or patterns of surface flows or increase flooding potential, and the discharge of construction-related waste materials that could affect downstream water quality. Surface water in the area generally flows east to west from the foothills to the Pacific Ocean. The City of Oxnard is located in a natural basin; thus, surface water flows toward the center of the basin.

The proposed project in this EA would require surface disturbance (e.g., grading, localized excavation) during the construction of the solar PV systems, but would have limited potential to transport sediment and runoff to waterways. The inclusion of BMPs, and adherence to erosion and storm water management practices as described in Section 2.6.5, would further reduce the potential for substantial transport of sediment and storm water runoff. The Biodiesel Fuel Processing Facility Expansion Project is located near Parcels 16, 17, and 18 and surface water

flows in this area would generally drain to the same channel. However, the Biodiesel project is well below the 1-acre threshold of land disturbance that would require a storm water management plan and thus has a very low potential to contribute to a cumulatively significant impact. Other regional projects described in Section 4.2 either would not contribute to surface water flow or would contribute such minor amounts when considering their proposed projects with their relative geographic distance, that there would be only trivial cumulative effects on surface water. Therefore, the impacts identified for water resources from the Proposed Action, in conjunction with other projects on and in the regional vicinity, would not be cumulatively significant.

4.4.4 AIR QUALITY AND CLIMATE CHANGE

The geographic extent for cumulative effects on air quality is defined as areas within the South Central Coast Air Basin. As described in Section 3.5, activities associated with the construction, operation, and maintenance of the proposed project would produce emissions that would remain substantially below all emission significance thresholds. Emissions from other projects potentially would contribute to ambient pollutant impacts generated from the proposed project, but they would also be subject to review by the Ventura County APCD and would be required to comply with the State Implementation Plan-approved Rules and Regulations adopted by the Ventura County APCD. Operation of the solar PV systems proposed under this action would reduce long-term emissions generated from conventional non-renewable generating sources, thereby resulting in beneficial effects to air quality throughout the air basins. In addition, the Biodiesel Expansion Project would indirectly reduce emissions of most criteria pollutants in the region by substituting up to 50 million gallons of petroleum diesel with biodiesel blends. Therefore, air quality impacts due to the minor amounts of emissions produced from the proposed project, in combination with emissions and reductions from cumulative projects, would not be substantial enough to contribute to an exceedance of an ambient air quality standard. As a result, the proposed project would produce less than significant cumulative air quality impacts.

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact to global climate change would only occur if GHG emissions associated with the proposed project were to combine with such emissions from other man-made activities in such a way as to appreciably increase climate change impacts on a global scale.

Currently, there are no formally adopted or published NEPA thresholds of significance for GHG emissions. Therefore, in the absence of an adopted or science-based NEPA significance threshold for GHGs, this EA compares GHG emissions estimated for the proposed project to the U.S. net GHG emissions inventory of 2011 (USEPA 2013b) to determine the relative increase in proposed GHG emissions.

As described in Section 3.5, the proposed project would produce nominal amounts of criteria pollutant emissions. The CO₂e emissions associated with the net U.S. sources in 2011 is approximately 5,797 million metric tons. Emissions of GHGs from the proposed project would

equate to very minimal amounts of the U.S. inventory. As a result, they would not substantially contribute to global climate change. Therefore, GHG emissions from proposed project would produce less than significant cumulative impacts to global climate change.

In addition, emissions of NO_x, SO₂, and CO₂e would be reduced (refer to Section 3.5, Tables 3.5-2 and 3.5-3) at NBVC Port Hueneme because consumption of grid-supplied electricity would be decreased, and would more than offset the short-term construction emissions within the first year of operation. Subsequent years of operation would also avoid emissions produced from conventional non-renewable generating sources. In addition, operation of the Biodiesel Expansion Project would indirectly reduce emissions of CO₂e in the region by substituting up to 50 million gallons of petroleum diesel with biodiesel blends.

Overall, the proposed project would produce only small amounts of GHG during a short time frame. Therefore, when added to the impacts from the past and reasonably foreseeable future projects, no significant cumulative impacts related to GHG emissions or climate change would result from implementation of the proposed project.

4.4.5 TRAFFIC AND CIRCULATION

The geographic extent for cumulative effects on traffic and circulation is defined as the network of roadways that feeds traffic to and from NBVC Port Hueneme and the surrounding communities (see Section 3.6.2). The changes to traffic and circulation described for the proposed project, when combined with other projects at NBVC Port Hueneme and within adjacent areas, would temporarily increase traffic in the project area. These impacts would include a temporary, small increase in traffic approaching and leaving NBVC Port Hueneme and a minor increase in traffic on base. Not all construction activities for the projects described in Section 4.2 would occur concurrently and schedules are unknown at this time. The Biodiesel Expansion Project would contribute the most notable increase to traffic entering and leaving NBVC Port Hueneme on a daily basis; estimated to require up to 20 truck trips per day. Assuming the Biodiesel Expansion Project's operations phase and the proposed project's construction phase coincided, this would result in up to 32 additional commercial vehicle trips entering the Victoria Gate during weekdays. This represents an approximate 35 percent increase in daily entry traffic at the Victoria Gate, but would not be expected to create backup onto Victoria Avenue, as baseline traffic conditions at this gate have been exceptionally low since access changes were made in September 2014, and all three lanes at this gate are dedicated to commercial vehicle staging and inspection. The temporary traffic increases resulting from the proposed project combined with all other cumulative projects would not be of sufficient quantities to affect the current LOSs on key roadways in the project area, and there would be no significant cumulative impacts related to traffic and circulation from implementation of the proposed project.

4.4.6 UTILITIES

There would be beneficial impacts to energy associated with implementation of the proposed project. Production of a renewable energy source that could supply electricity to the surrounding community or NBVC Port Hueneme would aid in conservation of fossil fuels, reduce the Navy's and the surrounding communities' dependence on non-renewable energy sources, increase energy security, and improve infrastructure. The proposed project, when considered in combination with identified impacts to utilities from other regional projects described in Section 4.2, would not result in significant impacts to utilities and would in fact slightly offset the impacts of the projects described in Section 4.2 that would increase energy demands on NBVC Port Hueneme and in the region. When considered with the carport-mounted solar PV system to be constructed at NBVC Port Hueneme, the proposed project would result in a net beneficial cumulative impact. Therefore, no significant adverse cumulative impacts related to utilities would result from implementation of the proposed project.

4.4.7 PUBLIC HEALTH AND SAFETY

The geographic extent for cumulative effects on public health and safety is defined as the work areas at and immediately surrounding Parcels 9, 13, 16, 17, and 18 on NBVC Port Hueneme. The risk elements identified in Section 3.8 of this EA are tied to specific geographic locations (e.g., the landfill IRP site at Parcel 9) and do not normally extend or move to other locations. These risk elements are also normally associated with discrete activities and workforce populations (e.g., workers operating equipment on the face of the landfill), and would not apply to other populations on or off NBVC Port Hueneme. Therefore, when added to the impacts from the past and reasonably foreseeable future projects, no significant cumulative impacts related to public health and safety would result from implementation of the proposed project.

4.4.8 VISUAL QUALITY

The geographic extent for cumulative effects on visual quality is defined as the viewshed boundary of Parcels 9, 13, 16, 17, and 18 on NBVC Port Hueneme along an approximate 2-mile (3.2-kilometer) corridor. With the Proposed Action, ground-mounted solar PV systems would be constructed and operated in outlease areas; consequently, permanent visual changes would occur at the site(s). Cumulative impacts on visual resources would consist of the aggregate effects of the proposed solar PV systems and other projects, actions, and processes that could degrade the viewshed within the proposed project area. The ROI for aesthetics consists of NBVC Port Hueneme and adjacent public areas. The NBVC Port Hueneme PV systems would change the existing sites, but visibility would be effectively limited to a project viewshed bounded by West Channel Islands Boulevard to the north, South Victoria Avenue to the east, San Nicholas Avenue to the south, and South Harbor Boulevard to the west. The viewshed is composed of the Channel Islands Harbor and the unincorporated neighborhoods of Hollywood Beach and Silver Strand Beach, both a part of Channel Islands Beach, a census-designated place outside of the corporate boundaries of the adjacent cities of Oxnard and Port Hueneme. Any proposed project development on parcels other than Parcel 9 would essentially be screened from public views by existing intervening dense vegetation, building structures, and/or existing landform alteration (earthen berms). No structures would be taller than

8 feet (2.4 meters). Because of the low vertical profile of proposed facilities and proposed screening measures and resultant weak visual contrast, viewers passing through the project area would notice a considerable change in visual character and would not consider the visual character substantially diminished. NBVC Port Hueneme is adjacent to an urban built-out area. Cumulative impacts to the visual environment from development of the PV systems, along with other past, present, or future development within the area, would not be significant.

5.0 NEPA and Other Considerations

This chapter addresses additional considerations required by NEPA, including:

- Possible conflicts between the alternatives and the objectives of federal, regional, state, and local plans, policies, and controls
- Energy requirements and the conservation potential of alternatives
- Irreversible and irretrievable commitment of natural or depletable resources
- Short-term versus long-term productivity
- Any probable significant environmental impacts that cannot be reduced and are not amenable to mitigation

5.1 POSSIBLE CONFLICTS BETWEEN THE ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

Implementation of the proposed project would comply with existing federal regulations and state, regional, and local policies and programs, while maintaining the Navy's mission. The project would be completed in accordance with the MBTA, the ESA, the Clean Air Act, and the NHPA. The RONA has been completed for the project in accordance with the Clean Air Act (Appendix D).

5.2 ENERGY REQUIREMENTS, CONSERVATION POTENTIAL OF ALTERNATIVES

Energy required to implement the project would include fuel and electricity to power vehicles and equipment during construction and periodic maintenance activities. Fuel for construction and maintenance vehicles and equipment is currently available in adequate supply from Navy-owned and other local sources. Required electricity demands during project construction would be supplied by existing electrical services at NBVC Port Hueneme. If selected, the No Action Alternative would not result in an increase of energy usage over existing usage.

Direct energy requirements under the proposed project would be limited to those necessary to operate vehicles and equipment. No unnecessary use of energy has been identified, and proposed energy uses would be minimized to the greatest extent possible without compromising the integrity of the proposed facilities to be constructed. Proposed new construction would comply with applicable local, state, and federal codes designed to promote energy efficiency and the use of renewable energy resources. Further, operation of the proposed project would produce a renewable energy source that could supply electricity to the surrounding community or NBVC Port Hueneme, thereby conserving fossil fuels and reducing the Navy's dependence on non-renewable energy sources.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. These include non-renewable resources, such as metal and fuel, and other natural or cultural resources. These resources are irretrievable in that they would be used for a project when they could have been used for other purposes or conserved. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

Implementation of the proposed project would involve an irreversible or irretrievable commitment of materials and environmental resources. Non-renewable resources, such as fuel, oil, and lubricants, would be consumed by construction and maintenance vehicles and equipment and would be irreversibly lost. A small amount of building materials, such as concrete, steel and wood, would be irretrievably committed to construct the alternatives. Human labor would be required for project construction and engineering purposes. When considered at the regional level, the quantities of these resources expended for construction and operation of the alternatives would be relatively inconsequential. Additionally, operation of the proposed project would produce a renewable energy source that would counterbalance the minimal demands on non-renewable energy resources (i.e., fossil fuels) required to construct the solar PV systems. Therefore, implementation of the proposed project would not result in a significant commitment of irreversible or irretrievable resources.

5.4 RELATIONSHIP BETWEEN SHORT-TERM ENVIRONMENTAL IMPACTS AND LONG-TERM PRODUCTIVITY

NEPA requires an EA to address the relationship between short-term uses of the environment and the impact that such uses may have on the maintenance and enhancement of the long-term productivity of the environment. Impacts that would narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option would lessen future flexibility in pursuing other options or that committing a parcel of land or other resource to a certain use would eliminate the possibility of other uses being implemented at that site.

The proposed project would include construction and operation of solar PV systems within areas at NBVC Port Hueneme already dedicated to exclusive Navy use. As part of the Proposed Action, land at NBVC Port Hueneme would be removed from other land uses for development of the proposed ground-mounted solar PV system. The short-term effects of the proposed improvements at the installations would include minor impacts to common vegetation. Therefore, the proposed project would not result in any impacts that would permanently narrow the range of beneficial uses of the environment. Further, the proposed project would not affect the long-term productivity of these resources at a regional level.

5.5 PROBABLE SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

This EA has determined that the proposed project would not result in any significant impacts; therefore, there are no probable significant environmental effects that cannot be reduced by mitigation.

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8.0 References Cited

- AECOM. 2015a. *Hydrologic Analysis for Port Hueneme Solar Development*. Prepared for Gene Beale, Naval Facilities Engineering Command. January.
- _____. 2015b. Reconnaissance Survey Report for Construction and Operation of Photovoltaic Systems at Naval Base Ventura County, Port Hueneme, California. January.
- Associated Transportation Engineers. 2012. *Traffic and Circulation Study for Victoria Mixed-Use Development, Port Hueneme, California*. ATE Project 11089. Prepared for Westwood Communities. 20 September.
- Barnard, Patrick and others. 2008. *Carpinteria Coastal Processes Study, 2005-2007, Final Report*. U.S. Geological Survey, Open-File Report 2007-1412. On-line address: <http://pubs.usgs.gov/of/2007/1412>.
- Barr, M. Brandon. 2014. NAVFAC SW Natural Resources Specialist. Email Communication with Michael Anguiano. 25 November.
- Barringer, Debra. 2013. *Final 2013 Breeding Season Monitoring Report: Western Snowy Plover and California Least Tern, Hollywood Beach, Oxnard, California*. Ventura Audubon Society.
- Beller, E. E., R. M. Grossinger, M. N. Salomon, S. J. Dark, E. D. Stein, B. K. Orr, P. W. Downs, T. R. Longcore, G. C. Coffman, A. A. Whipple, R. A. Askevold, B. Stanford, J. R. Beagle. 2011. *Historical Ecology of the Lower Santa Clara River, Ventura River, and Oxnard Plain: An Analysis of Terrestrial, Riverine, and Coastal Habitats*. Prepared for the State Coastal Conservancy. SFEI Publication #641, San Francisco Estuary Institute, Oakland, California.
- BERC (Berkeley Energy & Resources Collaborative). 2013. Big Solar and Avian Mortality. Available at: <http://berc.berkeley.edu/big-solar-and-avian-mortality/>
- California Audubon Society (website). 2015. Important Bird Areas. Available at <http://ca.audubon.org/california-iba-interactive-site-map>. Accessed on January 30, 2015.
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation (Dept. of Fish and Game, March 7, 2012). Available at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.
- _____. 2009. Final Statement of Reasons for Regulatory Action. Re: Animals of California Declared to Be Endangered or Threatened; California brown pelican (*Pelecanus occidentalis californicus*). February 24.
- California Department of Fish and Wildlife (CDFW). 2014. RareFind. California Department of Fish and Wildlife Natural Diversity Database (CNDDDB). Sacramento, California. Commercial Version.

California Department of Water Resources. 2013. Best Available Floodplain Maps (BAM) webviewer. Online at: <http://gis.bam.water.ca.gov/bam/>. Accessed January 23, 2015.

_____. 2004. California's Groundwater Bulletin 118. Last updated Feb 27, 2004.

California Environmental Protection Agency Air Resources Board (Cal/EPA ARB). 2013a. California Ambient Air Quality Standards. Available online: <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. Accessed on February 26, 2015.

_____. 2013b. 2012 State Area Designations. Available online: <http://www.arb.ca.gov/desig/adm/adm.htm>. Updated August 22, 2014. Accessed on February 26, 2015.

_____. 2011. Emission Factors Model, Handbook for Project-Level Analysis.

_____. 2002. Miscellaneous Processes Methodologies – Construction and Demolition, Section 7.7 Building Construction Dust. Available online: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocrconstdem.htm>. Accessed January 9, 2015.

California Native Plant Society (CNPS). 2015. Rare Plant Program. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, California. Website <http://www.rareplants.cnps.org> [accessed 25 February 2015].

City of Oxnard. 2015. The Code of the City of Oxnard, Noise Ordinance, Article IX Section 7-185. Accessed February 27, 2015. Available at: [http://www.amlegal.com/nxt/gateway.dll/California/oxnard/oxnardcaliforniacodifiedordinances?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:oxnard_ca](http://www.amlegal.com/nxt/gateway.dll/California/oxnard/oxnardcaliforniacodifiedordinances?f=templates$fn=default.htm$3.0$vid=amlegal:oxnard_ca)

Cities of Port Hueneme/Oxnard. 2008. *Cities of Port Hueneme/Oxnard Truck Traffic Study*. Prepared for Southern California Association of Governments. June 5.

City of Port Hueneme. 2015. The Code of the City of Port Hueneme, Noise Ordinance, Article III Section 5-3430. Accessed February 27, 2015. Available at: https://www.municode.com/library/ca/port_hueneme/codes/code_of_ordinances?nodeId=ARTIIIIPUHESA_CH5NOCO_DIV2DENOZO_3430NOZOXTNOLE

County of Ventura. 2011. *Ventura County Technical Guidance Manual for Stormwater Quality Control Measures*. Available at: http://www.swrcb.ca.gov/rwqcb4/water_issues/programs/stormwater/municipal/ventura_ms4/VenturaTGM/Ventura%20Stormwater%20TGM%20Final%202013-11.pdf

Department of Defense (DoD). 2010. *Unified Facilities Criteria: Low Impact Development* (UFC 3-210-10). 15 November.

_____. 2007. *Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds*. April 3.

- Dolan, C. 2005. *Final Report: Evaluation of National Register of Historic Places Eligibility for Portions of Naval Base Ventura County, Port Hueneme Site, Port Hueneme, California*. Prepared for Naval Facilities Engineering Command Southwest, San Diego. AECOM, San Diego.
- DRECP Independent Science Advisors 2010. *Desert Renewable Energy Conservation Plan (DRECP)*. Recommendations of Independent Science Advisors for The California Desert Renewable Energy Conservation Plan (DRECP). Available at: <http://www.energy.ca.gov/2010publications/DRECP-1000-2010-008/DRECP-1000-2010-008-F.PDF>
- Erlandson, J. M., T. G. Cooley, and R. Carrico. 1987. A Fluted Projectile Point Fragment from the Southern California Coast: Chronology and Context at California-SBA-1951. *Journal of California and Great Basin Anthropology* 9:120-128.
- ERTEC. 1991. Cited in Final Remedial Investigation Report Sites 9, 14, 17, and 21 NBVC Port Hueneme, California, prepared by PRC Environmental Management for the Department of the Navy, San Bruno, California.
- Federal Emergency Management Agency (FEMA). 2013. Stay Dry v. 3.0 Google Earth Application. Online at: <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload>. Accessed January 23, 2015.
- Garner, K. E. 1991. Historic Resources Inventory form for Ventura County Railway Co. On file at the South Central Coastal Information Center, California State University, Fullerton.
- Glassow, M. A., L. H. Gamble, J. E. Perry, and G. S. Russell. 2007. Prehistory of the Northern California Bight and the Adjacent Transverse Ranges In *California Prehistory: Colonization, Culture, and Complexity*, edited by T.L. Jones and K.A. Klar, pp. 191-214. Altamira Press, Lanham, Maryland.
- Harris, S. and S. Sanders. 1995. *Ventura County Historical Landmarks and Points of Interest*. County of Ventura General Services Agency: Recreation Services, Ventura, California.
- Harrington, B., and E. Perry. 1995. Important shorebird staging sites meeting Western Hemisphere Shorebird Reserve Network criteria. U.S. Fish and Wildlife Service.
- Holland, Robert F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. October.
- Horvath, G., Blaho, M., Egri, A., Kriska, G., Seres, I., and B. Robertson. 2010. Reducing the Maladaptive Attractiveness of Solar Panels to Polarotactic Insects. *Conservation Biology*. 24(6):1644-53.
- Intergovernmental Panel on Climate Change. 2007. Fourth Assessment Report. Climate Change 2007: Synthesis Report.

- International Energy Agency (IEA). 2014. Solar (PV and CSP) Website. Available at: <http://www.iea.org/topics/solarpvandcsp/>. Accessed on September 29, 2014.
- Ironwood Consulting, Inc. 2012. 2012 Annual Report for Biological Resources Monitoring. First Solar Desert Sunlight Solar Project, Riverside County. BLM Case File Number CACA-48649. Available at <http://www.firstsolar.com/en/about-us/projects/desert-sunlight-solar-farm/biological%20monitoring%20report%20-%20annual/biological%20monitoring%20report%20annual%20report%202012?dl=1> and accessed on October 10, 2014.
- _____. 2013. 2013 Annual Report for Biological Resources Monitoring. First Solar Desert Sunlight Solar Project, Riverside County. BLM Case File Number CACA-48649. Available at <http://www.firstsolar.com/en/about-us/projects/desert-sunlight-solar-farm/biological%20monitoring%20report%20-%20annual/biological%20monitoring%20report%20annual%20report%202013?dl=1> and accessed on October 10, 2014.
- KCET. 2013. Water Birds Turning Up Dead at Solar Projects in the Desert. Chris Clarke. July. Available at: <http://www.kcet.org/news/rewire/solar/water-birds-turning-up-dead-at-solar-projects-in-desert.html>
- Kern County. 2014. Kingbird Solar Photovoltaic Project Draft EIR, Volume III. Appendix B - Avian Collisions and Impacts Associated with Photovoltaic Facilities and an Examination of Risks Specific to the Kingbird Solar Project. Available at http://www.co.kern.ca.us/planning/pdfs/eirs/kingbird_solar/kingbird_solar_vol3_rtc.pdf. Accessed on September 29, 2014.
- Klem Jr., D.I. 1990. Collisions Between Birds and Windows: Mortality and Prevention. *Journal of Field Ornithology*, 1990, 61(I):120-128.
- _____. D.C. Keck, K.L. Marty, A.J. Miller Ball, E.E. Niciu, and C.T. Platt. 2004. Effects of window angling, feeder, placement, and scavengers on avian mortality at plate glass. *Wildon Bulletin*, 116(1):69-73.
- _____. 2006. Glass: A deadly conservation issue for birds. *Bird Observer* 34(2):73-81.
- Klute, D. S., L. W. Ayers, J. A. Shaffer, M. T. Green, W. H. Howe, S. L. Jones, S. R. Sheffield, and T. S. Zimmerman. 2003. *Status Assessment and Conservation Plan for the Western Burrowing owl in the United States*. U.S. Fish and Wildlife Service Biological Technical Publication, BTP-R6001-2003
- Loss, S.R., T. Will, S.S. Loss, and P.P. Marra. 2014. Bird-building collisions in the United States: Estimates of annual mortality and species vulnerability. *Condor* 116:8-23.
- Norris, R.M., and R.W. Webb. 1990. *Geology of California*, Second Edition. John Wiley & Sons, Inc. New York.

- Onuf, C. P. 1987. *The Ecology of Mugu Lagoon, California: an Estuarine Profile*. U.S. Fish and Wildlife Service Biological Report 85(7.15). 122 pp.
- Partners In Flight (website). 2015. Globally Important Bird Areas: Mugu Lagoon (NAWS Point Mugu), California. Available at http://www.dodpif.org/downloads/iba/MuguLagoon_ABC.pdf. Accessed on January 30, 2015.
- PRC. 1997. Final Remedial Investigation Report Sites 9, 14, 17, and 21 NBVC Port Hueneme, California. Prepared by PRC Environmental Management for the Department of the Navy, San Bruno, California.
- Regional Water Quality Control Board (RWQCB). 1994. *Water Quality Control Plan for the Los Angeles Basin (4)*.
- Rincon Consultants, Inc. 2008–2013. *Annual Monitoring Reports for Port Hueneme Naval Base, Site 14, Landfill Cover*.
- RJR Engineering Group. 2007. Geologic and Geotechnical Engineering Report, Proposed RFSF Test Tower, Geotechnical Foundation Design, Port Hueneme Naval Base, Port Hueneme, California. Allion Science and Technology.
- State Water Resources Control Board (SWRCB). 2012. Order 2012-0006-DWQ (amends 2009-0009-DWQ as amended by 2010-0014-DWQ), *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit). September.
- _____. 2010. Clean Water Act Section 303(d) List of Water Quality Limited Segments. Available at <http://www.waterboards.ca.gov>.
- Sterns, Conrad, and Schmidt (SCS) and Landau Associates. 1985. Cited in Final Remedial Investigation Report Sites 9, 14, 17, and 21 NBVC Port Hueneme, California, prepared by PRC Environmental Management for the Department of the Navy, San Bruno, California.
- Tetra Tech EM Inc. 2004. *Postclosure Maintenance Plan Site 14 Landfill Final Cover Naval Base Ventura County, Port Hueneme, California*. March 2004.
- _____. 1998. Design Basis Report (Revised) for the Site 14 Landfill Final Cover at NBVC Port Hueneme, California. December 18.
- The Earth Resources Corporation. 1987. Cited in *Final Remedial Investigation Report Sites 9, 14, 17, and 21 PHS, California*, prepared by PRC Environmental Management for the Department of the Navy, San Bruno, California.
- U.S. Army Corps of Engineers (USACE). 2008. *Summary Report: Delineation of Areas within Corps Jurisdiction at Naval Base Ventura County, Point Mugu, Port Hueneme and San Nicholas Island*. December

- U.S. Environmental Protection Agency (USEPA). 2014. eGRID 9th edition Version 1.0, Year 2010 Summary Tables. Available online: http://www.epa.gov/cleanenergy/documents/eGRID9thedition_V1-0_year_2010_Summary_Tables.pdf, February 2014.
- _____. 2013a. Green Book Nonattainment Areas for Criteria Pollutants. Available online: <http://www.epa.gov/oar/oaqps/greenbk/>. Updated January 30, 2015. Accessed February 26, 2015.
- _____. 2013b. 40 CFR Part 98, Mandatory Greenhouse Gas Reporting, Subpart A. Revised November 29, 2013.
- _____. 2012a. National Ambient Air Quality Standards. Available online: <http://www.epa.gov/air/criteria.html>. Updated December 14, 2012. Accessed May 5, 2015.
- _____. 2012b. Climate Change. Basic Information. Online at: <http://www.epa.gov/climatechange/basicinfo.html>. Updated June 14, 2012. Accessed May 5, 2015.
- _____. 2009. Technical Guidance on Implementing the Storm water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. EPA 841-B-09-001. December.
- _____. 1999. Estimating Particulate Matter Emissions from Construction Operations. September 1999.
- U.S. Fish and Wildlife Service (USFWS). 2015. Comments regarding preparation of an Environmental Assessment for proposed development of a photovoltaic system at Naval Weapons Station Seal Beach, Seal Beach, Orange County, California. January.
- _____. 2009. Endangered and Threatened Wildlife and Plants; Removal of the Brown Pelican (*Pelecanus occidentalis*) From the Federal List of Endangered and Threatened Wildlife. Final Rule. 50 CFR Part 17. FWS-R2-ES-2008-0025; 92220-1113-0000-C6.
- USFWS National Fish and Wildlife Forensics Laboratory. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. Prepared by Kagan, Rebecca, A., Viner, Tabitha C., Trail, Pepper W., and Edgard O. Espinoza. April. Available at <http://alternativeenergy.procon.org/sourcefiles/avian-mortality-solar-energy-ivanpah-apr-2014.pdf>.
- U.S. Navy (Navy). 2014. Preliminary Draft Environmental Assessment for Construction and Operation of Solar Photovoltaic Systems at Multiple Installations in California. March. 272 pp.

- _____. 2012. *Integrated Natural Resources Management Plan, Naval Base Ventura County, Port Hueneme, Port Hueneme, California*. U.S. Department of the Navy, Naval Base Ventura County, Port Hueneme, Naval Facilities (NAVFAC) Southwest Contract No. N62470-08-D-1008/FZN1.
- _____. 2010. *Integrated Cultural Resources Management Plan for Point Mugu and Port Hueneme, Naval Base Ventura County, California and Special Areas*. Prepared for Naval Facilities Engineering Command Southwest. October 2010. Updated April 2013.
- _____. 2007. *Low Impact Development Policy for Storm water Management*. Memorandum from BJ Penn for the Deputy Chief of Naval Operations (Fleet Readiness and Logistics) and the Deputy Commandant of the Marine Corps (Installations and Logistics). 16 November.
- _____. 2006. *Activity Overview Plan, Naval Base Ventura County, California*. Prepared for the Department of the Navy, Southwest Division, Naval Facilities Engineering Command, San Diego, California.
- Upton, John. 2014. *Solar Farms Threaten Birds*. Scientific American. Published online at: <http://www.scientificamerican.com/article/solar-farms-threaten-birds/>. August.
- Wills, C. D. and W. Self. 1995. *Cultural Resources Overview, Naval Construction Battalion Center, Port Hueneme, Ventura County, California*. Prepared for Uribe and Associates, Oakland. William Self Associates, Orinda, California.

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