Draft

Supplemental Environmental Assessment for Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities at Marine Corps Base Camp Pendleton, California

June 2020

Prepared for:
United States Department of the Navy and United States Marine Corps

Draft
Supplemental Environmental Assessment for the Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities at Marine Corps Base Camp Pendleton, California

Lead Agency: United States Marine Corps, Department of the Navy

Title of Proposed Action: Construction, Operation and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities

Affected Region: San Diego County, California

Designation: Supplemental Environmental Assessment

Abstract

The U.S. Marine Corps has prepared this Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); Department of the Navy procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program. This SEA analyzes the revised potential environmental impacts resulting from the Proposed Action and No-Action alternatives. This SEA augments the *Final Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton* dated 10 December 2015. The Proposed Action in this SEA incorporates battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in the 2015 Environmental Assessment but was not built yet and is incorporated by reference into the SEA. The construction of the solar PV system is still planned, and battery energy storage systems would be used to store the renewable power generated from the solar PV system. In addition to the battery energy storage systems, this SEA includes the construction, operation, and decommissioning of a natural gas power plant. All aspects of the Proposed Action would occur on Marine Corps Base (MCB) Camp Pendleton, California, and would include the necessary utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) would feed into the regional electrical grid and would also have the capability to feed into MCB Camp Pendleton's electrical grid. This SEA analyzes the potential environmental impacts of two action alternatives to implement the Proposed Action and the No-Action alternative. Potential impacts have been analyzed for air quality, airspace/air traffic, biological resources, cultural resources, geological resources, hazardous materials and waste, noise, public health and safety, utilities and infrastructure, and water resources.

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EXECUTIVE SUMMARY

The United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps (USMC) have prepared this Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order (MCO) 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program. This SEA analyzes the revised potential environmental impacts resulting from the Proposed Action and No-Action alternatives. This SEA augments the *Final Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton* dated 10 December 2015 (DoN 2015) (see Appendix A) and is hereby incorporated by reference.

The Proposed Action in this SEA incorporates battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in the 2015 Environmental Assessment (EA) but was not built yet (herein referred to as "Stuart Mesa Site"). The construction of the solar PV system is still planned, and battery energy storage systems would be used to store the renewable power generated from the solar PV system. In addition to the battery energy storage systems, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas on Marine Corps Base (MCB) Camp Pendleton, California, and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The DoN and private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV (as analyzed in the 2015 EA), battery energy storage systems, and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would be capability to feed the electricity into MCB Camp Pendleton's electrical grid.

This SEA will assist DoN and USMC officials in making a decision about whether or not to implement the Proposed Action or another alternative. This document will also help determine whether significant impacts would occur as a result of implementation of the Proposed Action and alternatives, and therefore, whether an Environmental Impact Statement is needed. The DoN and USMC have developed two action alternatives for this SEA: Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 megawatts (MW) Natural Gas Power Plant at the Haybarn Site; and Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site. *(Note: the modifications to the Stuart Mesa Site is the addition of the battery energy storage systems and new power line connecting the site to the San Diego Gas & Electric Stuart Mesa Substation.)* The No-Action Alternative is Alternative 1 (*Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B*) from the 2015 EA with the exception that it would not include Site B (see the 2015 EA in Appendix A for more details).

The purpose of the 2015 EA proposed action was to increase DoN installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at DoN installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The purpose of this SEA's Proposed Action is to provide resilient energy facilities to supplement renewable energy facilities analyzed in the 2015 EA to provide MCB Camp Pendleton greater energy security and ensure MCB Camp Pendleton has access to available, reliable, and quality power to continuously accomplish the Department of Defense (DoD) missions from military installations and facilities in accordance with Secretary of the Navy (SECNAV) Energy Goals, 1 gigawatt (GW) Initiative, and DoD Instruction 4170.11. The proposed project supports mission sustainability and helps to ensure that the MCB Camp Pendleton utility systems are compatible with regional utility networks, are flexible, and are capable of sustaining and enhancing MCB Camp Pendleton's operational capabilities.

The need for the 2015 EA proposed action was the requirement to meet the renewable energy standards put forth by the 1 GW Initiative and the SECNAV's Energy Goals. The current Proposed Action continues to meet this need and expands upon it as MCB Camp Pendleton currently lacks the resilient energy infrastructure for energy security in contingency situations or regional electrical grid failure. The Marine Corps needs the energy security, operational capability, and strategic flexibility to support ongoing daily training activities 365 days per year to comply with pre-deployment readiness directives of MCO 3502.6, *Marine Corps Force Generation Process*. The Proposed Action is needed to efficiently and effectively modernize MCB Camp Pendleton's emergency backup generation systems.

The policy requirements for energy resiliency and increased production of energy from alternative sources are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the DoN and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that MCB Camp Pendleton would have the option to use any energy produced on base in the event of a regional electrical grid failure.

The screening factors used to develop the reasonable range of alternatives include the following:

1. Must not interfere with installation mission activities and operations or create unsafe conditions.
2. Should contribute to the SECNAV's goal of ensuring energy resilience on military installations and align with the requirements to DoD Instructions 4170, by providing a resilient source of energy that could be diverted to MCB Camp Pendleton during grid outages, allowing the Base to achieve energy self-sufficiency during energy "islanding."
3. Should provide a location for a parcel (or parcels) of land to accommodate an up to 49.9 MW natural gas power plant design capable of providing electricity at or below the current cost of traditional power.
4. Should have access to adequate gas supply and pressure to support up to 49.9 MW of natural gas power plant energy generation facility.

Under Model 2, the DoN and a private partner would enter into a 37-year agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV (as analyzed in the 2015 EA), and the battery energy storage systems at the Stuart Mesa Site, and the natural gas power plant at a different location on Base. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would be capability to feed the electricity into MCB Camp Pendleton's electrical grid. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system, battery energy storage systems and natural gas power plant at the end of the lease.

The following resource areas were evaluated for potential environmental consequences: air quality, airspace/air traffic, biological resources, cultural resources, geological resources, hazardous materials and waste, noise, public health and safety, utilities and infrastructure, and water resources. Table ES-1 summarizes the potential environmental consequences, as well as avoidance/minimization measures associated with implementation of Alternative 1, Alternative 2, and the No-Action Alternative. As shown in Table ES-1, no significant impacts to any resource area would occur with implementation of Alternatives 1 or 2.

Table ES-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
Air Quality			
Impact Summary	No Significant Impact Alternative 1 would not exceed de minimis levels; thus, a Conformity Determination would not be required. Hazardous air pollutants (HAPs) emissions would be negligible. The private partner who owns the power plant would consult with the San Diego Air Pollution Control District (SDAPCD) to add it to MCB Camp Pendleton's existing air permit as a modification, and the plant would need to comply with SDAPCD rules for granting permits for new stationary sources. Emissions dispersion modeling for the power plant would also be required by the SDAPCD as a condition of issuing the stationary source permit.	No Significant Impact Alternative 2 would not exceed de minimis levels; thus, a Conformity Determination would not be required. HAP emissions would be negligible.	No Significant Impact Long-term beneficial impacts to air quality would occur with implementation of the solar photovoltaic (PV) system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing greenhouse gases. These potential long-term beneficial impacts would be expected to offset the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.
Avoidance/ Minimization Measures	• **AQ-1.** Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. • **AQ-2.** Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. • **AQ-3.** After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads as required. • **AQ-4.** The private partner would consult with the SDAPCD to add it to MCB Camp Pendleton's existing air permit as a modification, and the plant would need to comply with SDAPCD rules for granting permits for new stationary sources. Emissions dispersion modeling for the power plant would also be required by the SDAPCD as a condition of issuing the stationary source permit. • **AQ-5.** Best alternative control technologies would be employed in the design of the natural gas power plant.	Same as Alternative 1.	Same as current Alternative 1 except for the implementation of **AQ-4** and **AQ-5** would not occur.

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Airspace/Air Traffic			
Impact Summary	No Significant Impact Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stack(s) at the Haybarn Site location (Alternative 1) would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. Informal consultation with the Air Operations Department at MCAS Camp Pendleton indicated that there could be a potential concern with lighting on the stack(s) located at the Haybarn Site interfering with pilots on a right base turn to land on Runway 21 at night. Lights on the stacks would be in the "heads up display" field of view of these aircraft as they go through the approximate "90" position (halfway through the turn) and would exit that field of view as the turn progressed. Therefore, there is a probable requirement to make these lights compatible with night-vision devices as appropriate. Alternative 1 does not creates new construction in the clear zone and accident potential zones. The risk of exhaust gas from the power plant stack(s) to create smoke obscuring a pilot's view would be minimal because the exhaust gas humidity would be approximately 5 percent and the stacks would be the 'dry' type that would not add water to the exhaust gas for cooling purposes. There is the potential for the risk of upset and/or severe turbulence in the immediate vicinity of the exhaust stack(s) from the exhaust plume under certain weather condition (i.e., cold temperatures and no wind).	No Significant Impact Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stack(s) at the Parking Lot Site location (Alternative 2) would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. Alternative 2 does not creates new construction in the clear zone and accident potential zones. The potential impacts from the exhaust stack(s) would be similar to Alternative 1; however, the Parking Lot Site is located further from the MCAS Camp Pendleton's runways (approximately 9,000 feet [2,743.2 meters] away) so aircraft generally operate at greater altitudes in this area than the Haybarn Site. The closest common flight tracks would be approximately 1,500 feet (457.2 meters) northwest of the proposed Parking Lot Site and sufficiently far away to create a negligible risk to all aircraft.	No Significant Impact Under the No-Action Alternative, there would be no change to current airspace/air traffic conditions.
Avoidance/ Minimization Measures	• **AS-1.** The United States Marine Corps (USMC) would file the applicable paperwork with the Federal Aviation Administration (FAA) at least 45 days prior to the start of	Same as Alternative 1.	None identified.

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	construction and, should the FAA require it, mitigation such as high visibility painting or lighting would be added to the exhaust stack. If appropriate, the lighting would be compatible with night-vision devices. • **AS-2**. Decrease the risks of upset or severe turbulence by maintaining sufficient lateral separation of approximately 300 feet (91.4 meters) from the proposed stack(s) when operating at altitudes below 1,000 (304.8 meters) above ground level.		
Biological Resources			
Impact Summary	No Significant Impact ***Coastal California Gnatcatcher*** Construction of the proposed project would permanently impact to up to 0.49 acre (0.20 hectare [ha]) of suitable habitat and temporarily disturb up to 7.35 acres (2.97 ha) of suitable habitat. Potential disturbance from noise and night lighting associated with construction/decommissioning activities could occur. Historically, there are up to two pairs within 500 feet (152 meters) of the Haybarn Canyon footprint that could be affected by noise associated with construction and night lighting. There is an additional pair at the Stuart Mesa Substation site, and up to two more pairs that could be affected by the construction associated with the power line corridor road. Implementation of conservation measures (CMs), including habitat restoration/mitigation, is expected to lessen potential impacts. ***Least Bell's Vireo*** Construction of the proposed project would permanently impact to up to 0.06 acre (0.02 ha) of suitable habitat and temporarily disturb up to 1.03 acres (0.42 ha) of suitable habitat. No territories would experience significant habitat impacts. Historically, two pairs of least Bell's vireo (LBVI) have been documented in the vicinity of the Haybarn site and would be exposed to elevated noise levels during	No Significant Impact ***Coastal California Gnatcatcher*** Similar impacts to Alternative 1 except up to 0.49 acre (0.20 ha) of suitable habitat would be permanently impacted and 2.24 acres (0.91 ha) temporarily impacted. ***Least Bell's Vireo*** Similar impacts to Alternative 1 except up to 0.18 acre (0.07 ha) of suitable habitat would be permanently impacted and 0.20 acre (0.08 ha) temporarily impacted.	No Significant Impact Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and coastal scrub, which are suitable habitat for the LBVI and the coastal California gnatcatcher (CAGN), respectively, are adjacent to, but not located within, the construction footprint (Stuart Mesa Site). As such, implementation of No-Action Alternative (2015 EA Alternative 1) would not affect the LBVI or the CAGN. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.

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	operation. Implementation of CMs, including habitat restoration/mitigation, is expected to lessen potential impacts.		
Avoidance/ Minimization Measures	• **BR-1.** All construction and maintenance will take place within the construction footprints defined in this Biological Assessment (BA) and the Biological Opinion (BO). Construction site boundaries will be clearly delineated by flagging, stakes, survey lath, silt or snow fencing, as practical, and may be in conjunction with Stormwater Pollution Prevention Plan (SWPPP) fencing. • **BR-2.** Contractors will be provided with digital files and hardcopy maps showing the project limits that were used for the environmental analyses in this BA and will be informed that construction activity must be confined within those limits. Digital files and hardcopy maps will also include the locations of federally listed species and sensitive habitats. Any work that is proposed outside those construction footprints will be subject to review by MCB Camp Pendleton Environmental Security (ES) to determine if potential impacts will occur to environmental resources. If there are significant changes to the project, MCB Camp Pendleton ES will determine whether consultation with the U.S. Fish and Wildlife Service (USFWS) needs to be reinitiated. • **BR-3.** The contractor will designate a project biologist to ensure compliance with the CMs specified in the BO and this BA. The project biologist will have familiarity with the species addressed in the BO, with qualifications approved by MCB Camp Pendleton ES. The project biologist may also serve as the species-specific biologist referenced in the BO if they meet the minimum qualifications.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **BR-34.** Coastal scrub would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). Coastal scrub that cannot be avoided would be restored onsite or mitigated off-site.	The No-Action Alternative would have the following avoidance/minimization measures: **Construction** • **BR-1.** To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites. • **BR-2.** To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements. • The following avoidance/ minimization measures would be implemented to specifically avoid or minimize impacts to the CAGN and LBVI: ○ **BR-3.** A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be

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	• **BR-4.** Heavy equipment and staging areas will be restricted to existing roads and disturbed areas and will be delineated on the grading plans. Vehicle operation and laydown areas will be defined by staking and flagging between stakes to prevent operations outside these areas. • **BR-5.** Nighttime (dusk-dawn) construction and associated lighting adjacent to natural areas, especially riparian areas, will be avoided to the maximum extent practicable, thereby avoiding adverse effects of construction-related nighttime lighting and nighttime noise. If nighttime construction is required, lighting will be shielded so it does not illuminate adjacent habitat. In addition, a nighttime speed limit of 5 miles per hour on all roads shall be enforced. • **BR-6.** To control the spread of weeds that may degrade native plant communities on MCB Camp Pendleton, all construction equipment and vehicles will be thoroughly power-washed before entering MCB Camp Pendleton. The project biologist will identify weed species that become established at the various project sites and report all new weed species invasions to MCB Camp Pendleton ES. • **BR-7.** In conjunction with final design and as required, a SWPPP will be prepared for the project and submitted to the Regional Water Quality Control Board (RWQCB). The SWPPP will incorporate best management practices (BMPs) for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of storm water runoff. All construction activities with the potential to impact water quality due to the runoff from the site will be conducted in accordance with SWPPP requirements. The SWPPP will be designed to support arroyo toad (ARTO) exclusion measures to avoid potential impacts to ARTO. The intent is to allow the same fence for SWPPP and ARTO exclusion fencing.		appropriately timed based on potential occurrence and breeding seasons of the CAGN and LBVI, respectively. Surveys would be performed by a qualified ornithologist familiar with the CAGN and LBVI (i.e., at least one field season and 40 hours of experience with each species). Three pre-activity surveys for active CAGN and LBVI nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other ongoing surveys to minimize disturbance to nesting CAGNs and LBVIs and to avoid redundant survey effort. ○ **BR-4.** Construction activities during the nesting season within 500 feet (152 meters) of occupied CAGN or LBVI habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if CAGN and LBVI nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Office would be notified of the location of the nest. Additionally, a 250-feet (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest

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	• **BR-8.** Dust will be minimized by reducing vehicle speeds and traffic in newly cleared areas and covering or lightly spraying exposed soil piles with water when weather conditions warrant. • **BR-9.** Construction workers will be prohibited from bringing domestic pets to construction sites to ensure that domestic pets do not disturb or depredate wildlife in adjacent habitats. • **BR-10.** The project site will be kept as clean as possible to avoid attracting predators and protected species. All food-related trash will be placed in sealed bins or removed from the site regularly. • **BR-11.** All construction and maintenance-related debris will be disposed of properly and will not be discarded on-site. Temporary impacts will be restored to as near the original biological condition as possible or better once the project is completed. • **BR-12.** A contractor education program will be implemented to ensure that the contractor(s) and all construction personnel are fully informed of the biological resources associated with the project. This program will focus on: (a) the purpose for resource protection; (b) contractor identification of sensitive resource areas in the field (e.g., areas delineated on maps and by flags or fencing); (c) environmentally responsible construction practices; (d) protocol to resolve conflicts that may arise at any time during the construction process; and (e) ramifications of noncompliance. This program will be conducted by the project biologist and/or MCB Camp Pendleton ES staff and will be a requirement for all construction personnel. • **BR-13.** All fencing material (i.e. mesh, stakes) and temporary SWPPP BMPs will be removed following construction. • **BR-14.** Fueling and maintenance of equipment will take place within existing paved areas or the identified		monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. **Operation** • **BR-5.** To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. • **BR-6.** Maintenance personnel would be trained to identify CAGNs and LBVIs and would report any observations of dead or injured CAGNs and LBVIs to Environmental Security within 48 hours.

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	laydown area, but not closer than 100 feet from drainages. Cleaning of vehicles and equipment will take place off-site to the greatest extent possible. If it is necessary to clean vehicles on-site, vehicles may be rinsed with water within designated bermed and lined areas used to prevent rinse water contact with storm water, creeks, rivers, and other water bodies. Soaps or detergents will not be used. Rinsate will be allowed to evaporate, and the solid residue will be disposed of properly based on chemical characteristics. • **BR-15.** Construction equipment staging and access and disposal or temporary placement of excess fill within drainages or other wetland areas is prohibited. • **BR-16.** After final design of the project, the design contractor will provide geographic information system (GIS) shapefiles, including the project footprint and amount/type of vegetation impacted (including temporary and permanent), to MCB Camp Pendleton ES. The USMC will provide the USFWS summary tables showing the amount/type of vegetation impacted (including both temporary and permanent) based upon final project designs. • **BR-17.** After construction impacts to vegetation, the construction contractor will provide GIS shapefiles, including the project footprint and amount/type of vegetation impacted (including temporary and permanent), to MCB Camp Pendleton ES. The USMC will provide the USFWS summary tables showing the amount/type of vegetation impacted (including both temporary and permanent) based on actual project impacts. • **BR-18**. Grading during the rainy season (1 November to 1 May) will be minimized. Where it is impractical to avoid grading during the rainy season, erosion and sedimentation BMPs will be installed and maintained immediately downslope of work areas until work is		

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	completed and graded areas have been re-contoured, physically stabilized, and planted. • **BR-19.** Non-native vegetation and grassland within the ARTO buffer areas may be removed year-round with the implementation of ARTO CMs listed below. • **BR-20.** In portions of the project area where federally listed species may be affected and where security lights are needed, lighting that produces a green-colored beam with an automatic dusk-to-dawn sensor switch will be incorporated. Light activation will be regulated to the size of a person with the off timer set at 3 seconds. ***Arroyo Toad*** • **BR-21.** An ARTO biologist will be required to be on-site for all ARTO specific measures described below, and during installation and removal of SWPPP fencing. In addition, the ARTO biologist will be on call and available as needed (e.g., during and immediately after measurable rainfall) in the event that an ARTO is encountered during project activities and needs to be relocated. Qualifications of the ARTO biologist will be reviewed and approved by MCB Camp Pendleton ES prior to the beginning of project activities. • **BR-22.** The biological monitor will be on-site during vegetation removal, pre-project flagging, and other construction activities with the potential to impact ARTO. The biological monitor will be empowered to halt work activity to avoid impacts to ARTO, if necessary. Before commencement of the proposed project, the project proponent will submit the resume from the biologist to MCB Camp Pendleton ES for review and approval. • **BR-23.** In coordination with the SWPPP, temporary silt fencing will be installed and maintained on the perimeter of any laydown areas that occur along the Vandegrift Boulevard portion of the gas line corridor. The fencing will be installed prior to any construction activities (with the possible exception of vegetation removal), with		

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	oversight from the ARTO biologist. A) Fencing will consist of woven nylon netting approximately 3 feet in height attached to wooden stakes. Prior to installing the fencing, a narrow trench about 6 inches in depth will be excavated, and the fence will be buried to prevent ARTOs from burrowing beneath the fence. If trenching is not possible, sandbags will be placed over the bottom lip of the fence to hold it in place. B) The silt fencing will be installed at least 14 days prior to construction to allow time for ARTO surveys to be completed during optimal weather conditions. C) The fence will be fully enclosed at the end of each shift (closed, sealed gate) ensuring ARTOs are prevented from entering the worksite through the access portal and digging into site soil stockpiles, decomposed granite piles, etc. and/or accessing site trash receptacles or other project materials. Since this project may span multiple years, maintenance of this exclusion fence in pristine condition must be a priority for construction to proceed un-impeded. D) Maintenance of the exclusion fence will also be a requirement of the contractor, with instruction and training on proper fence maintenance and repair provided by the ARTO biologist. The exclusion fence will be checked (and documented) at the beginning and end of every shift, with periodic verification from various government staff or their delegates. If at any time the fence is determined to be breached or not intact in any form, the contractor shall notify MCB Camp Pendleton ES immediately for review and construction must cease until cleared to proceed by MCB Camp Pendleton ES. As necessary, the fence will be repaired and/or replaced under the direction and discretion of the ARTO biologist, with the potential to have additional nighttime surveys. If the contractor is determined to be negligent in the maintenance of the exclusion fence, the ARTO biologist		

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	may be required to oversee re-installation, surveys, and maintenance of fence at the cost to the contractor. Failure to maintain the fence or notify MCB Camp Pendleton ES immediately upon any breach of fence may lead to construction shutdown and construction delays, and additional biomonitoring at a cost to the contractor while a biologist becomes available to oversee. Any negligence in this requirement will be considered a violation by contractor and may result in a noncompliance notification. • **BR-24.** After exclusionary fencing has been installed, but prior to the initiation of construction, the ARTO biologist will conduct at least three nighttime surveys for ARTOs within the fenced area. • **BR-25.** If ARTOs are encountered within the project area at any time during the course of project activities, they will be captured and translocated by the ARTO biologist to the closest area of suitable habitat. The date, time of capture, specific location of capture (using GPS), approximate size, age, and health of the individual will be recorded. Immediately following removal and translocation, the biological monitor will notify MCB Camp Pendleton ES. Within 2 weeks of the translocation, ES will provide the USFWS with the above information. • **BR-26.** Dust control (i.e., water truck spraying) will be performed after ARTO exclusion fence has been erected, and overspray will be minimized to avoid attracting ARTOs to the project site. Watering shall not be conducted at night. • **BR-27.** Where movement of ARTOs into the construction area is possible, a toad flap or other approved device will be installed at access points to prevent movement of ARTOs into the enclosed area. • **BR-28.** In the Vandegrift Boulevard portion of the gas line corridor, project-related vehicle travel will be limited, to the extent practicable, to daylight hours, as ARTO movement across roadways occurs primarily during		

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	nighttime hours, and ingress and egress of construction equipment and personnel will be kept to a minimum. Additionally, all access by construction equipment and personnel in the Vandegrift Boulevard portion of the gas line corridor, will be confined to pavement and compacted road shoulders as the single construction access point. Heavy equipment will drive on the compacted road shoulder and previously disturbed areas to move equipment around construction operations. The project biologist for ARTO would be on-site as needed to monitor the use of the roads by contractor equipment and personnel and would notify the ES project manager if the contractor is not complying with this measure. • **BR-29.** Dirt/sand piles left overnight in the Vandegrift Boulevard potion of the gas line corridor will be covered with tarps or plastic sheeting with the edges sealed with sandbags, bricks, or boards to prevent ARTOs from burrowing into the dirt. Holes or trenches will be covered with material such as plywood or solid metal plates with the edges sealed with sandbags, bricks, or boards to prevent ARTOs from falling into holes or trenches. • **BR-30.** All trenches within the paved area of the Vandegrift Boulevard portion of the gas line corridor will be completely backfilled and paved each morning prior to reopening Vandegrift Boulevard to traffic. All trenches within the shoulder of Vandegrift Boulevard will be backfilled to the greatest extent possible at the termination of each construction day. Any portion of a trench left open will either be completely covered (e.g., steel-plate) or completely surrounded by ARTO exclusionary fencing at the termination of each construction day and inspected by a qualified biomonitor for presence of ARTO before reinitiating construction activities each day. The ARTO biologist will be present during any maintenance activities in ARTO habitat (riparian and upland areas) that require ground disturbing activities such as, but not limited to,		

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	removal of sediment, cleaning of culverts/piers, minor repairs of eroded, undermined, or scoured areas, and replacement of jute netting. • **BR-31.** An annual report will be submitted to the USFWS summarizing maintenance activities and documenting any ARTOs killed, encountered, or relocated during maintenance activities. • **BR-32.** Construction activities are planned for daylight hours only. If, however, nighttime construction is required, any proposed work at night will require nighttime-specific measures approved by MCB Camp Pendleton ES and USFWS. Under no circumstance would nighttime construction occur in riparian habitats. ***Coastal California Gnatcatcher*** • **BR-33.** A project biologist familiar with the CAGN will be responsible for overseeing construction to ensure compliance with the CMs and preventing unanticipated impacts to federally listed species. The CAGN biologist will be on-site during vegetation removal, pre-project flagging, and other construction activities with the potential to impact the CAGN. The CAGN biologist will be empowered to make real time recommendations to the construction contractor regarding any avoidance actions that can be taken to further minimize impacts to CAGN. • **BR-34**. To the maximum extent possible, all construction-related activities will take place outside the CAGN breeding season (the breeding season is 15 February through 31 August). • **BR-35.** All vegetation clearing in habitats potentially occupied by CAGN will occur outside the CAGN season (i.e., vegetation clearing will occur from 1 September through 14 February). • **BR-36.** If construction activity (not including vegetation clearing) with potential to impact CAGN must take place during the CAGN breeding season (15 February through		

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	31 August), then a CAGN biologist will be contracted by the project proponent to ensure ESA and Migratory Bird Treaty Act (MBTA) compliance. A) The CAGN biologist for this measure will be a trained biologist with at least 40 hours of documented experience observing CAGNs in the field and experience locating and monitoring CAGN nests. The CAGN biologist must be approved by MCB Camp Pendleton ES at least three weeks prior to construction start. Contact ES at least three weeks prior to initiation of the action for biologist qualification review. B) The CAGN biologist will conduct pre-construction surveys for active nests in and within 500 feet of the construction footprint (i.e., three surveys at least one week apart with the last survey conducted within 7 days of project initiation). C) The CAGN biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within one week of survey completion. D) If no signs of CAGN nest building or nesting are present, then work will continue. Surveys will continue on a weekly basis throughout the breeding season to monitor the status of any CAGN pairs that may be present until either: (a) the project is completed, (b) the breeding season has ended, or (c) signs of nest building are observed. E) If an active CAGN nest (including nest building) is found within the 500-foot survey buffer, the USMC will notify the USFWS immediately and provide the mapped location of the nest to the USFWS. If the nest is within 250 feet of ongoing project activities, project work will cease within 250 feet until the nest has failed or fledged, or until the USFWS and the USMC agree on appropriate avoidance measures to allow activities to continue.		

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	F) After initial identification of the nest, the project biologist will not approach within 25 feet of an active CAGN nest. Nest monitoring will occur with binoculars from outside of the 25-foot buffer and only to confirm that the nest remains active during construction and other project-related activities. G) If no nesting activity is observed, the nest may be approached to determine the status of the nest. Binoculars should be used to the greatest extent practical to confirm individuals are no longer exhibiting breeding behaviors or tending to the nest prior to approaching the nest directly to determine the nest's fate. H) Construction noise levels will be monitored by the project biologist, and if construction levels exceed pre-construction ambient noise levels within the nesting territories during the breeding season, noise attenuation measures will be implemented in consultation with the USFWS. • **BR-37.** The CAGN biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within 7 days of survey completion. The CAGN biologist will provide bi-weekly (every 2 weeks) biological monitoring reports (electronic versions only), and one final biological monitoring report, to MCB Camp Pendleton ES and the USFWS. All "take" of federally listed species will be reported electronically to MCB Camp Pendleton ES within 24 hours of the action. ***Least Bell's Vireo*** • **BR-38.** A project biologist familiar with the LBVI will be responsible for overseeing construction to ensure compliance with the CMs and preventing unanticipated impacts to federally listed species. The LBVI biologist will be on-site during vegetation removal, pre-project flagging, and other construction activities with the		

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	potential to impact the LBVI. The LBVI biologist will be empowered to make real time recommendations to the construction contractor regarding any avoidance actions that can be taken to further minimize impacts to LBVIs. • **BR-39.** All vegetation clearing in habitats potentially occupied by LBVI will occur outside the LBVI season, which is from 15 March through 31 August (i.e., vegetation clearing will occur from 1 September through 14 March). If vegetation removal of riparian vegetation is needed during the breeding season, then a qualified avian biologist is required to conduct surveys to verify that LBVI are not present. MCB Camp Pendleton ES will notify the USFWS to indicate when vegetation clearing is initiated and when it is completed. • **BR-40.** To the maximum extent practical, all construction-related activities that occur within 500 feet of occupied LBVI habitat will take place outside of the LBVI breeding season. • **BR-41.** If construction activity (not including vegetation clearing) with potential to impact LBVI must take place during the LBVI breeding season (15 March through 31 August), then a pre-approved, qualified wildlife biologist familiar with LBVI will be contracted by the project proponent to ensure ESA and MBTA compliance. A) The LBVI biologist must be approved by MCB Camp Pendleton ES at least three weeks prior to construction start. Contact MCB Camp Pendleton ES at least three weeks prior to initiation of the action for biologist qualification review. B) The LBVI biologist will conduct pre-construction surveys for active nests in and within 500 feet of the construction footprint (i.e., three surveys at least one week		

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	apart with the last survey conducted within 7 days of project initiation) C) The LBVI biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within one week of survey completion. D) If no signs of LBVI nest building or nesting are present, then work will continue. Surveys will continue on a weekly basis throughout the breeding season to monitor the status of any LBVI pairs that may be present until either: (a) the project is completed, (b) the breeding season has ended, or (c) signs of nest building are observed. E) If an active LBVI nest (including nest building) is found within the 500-foot survey buffer, the USMC will notify the USFWS immediately and provide the mapped location of the nest to the USFWS. If the nest is within 250 feet of ongoing project activities, project work will cease within 250 feet until the nest has failed or fledged, or until the USFWS and the USMC agree on appropriate avoidance measures to allow activities to continue. F) After initial identification of the nest, the project biologist will not approach within 25 feet of an active LBVI nest. Nest monitoring will occur with binoculars from outside of the 25-foot buffer and only to confirm that the nest remains active during construction and other project-related activities. G) If no nesting activity is observed, the nest may be approached to determine the status of the nest. Binoculars should be used to the greatest extent practical to confirm individuals are no longer exhibiting breeding behaviors or tending to the nest prior to approaching the nest directly to determine the nest's fate.		

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Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	H) Construction noise levels will be monitored by the project biologist, and if construction levels exceed pre-construction ambient noise levels within the nesting territories during the breeding season, noise attenuation measures will be implemented in consultation with the USFWS. • **BR-42.** The avian biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within 7 days of survey completion. The avian biologist will provide bi-weekly (every 2 weeks) biological monitoring reports (electronic versions only), and one final biological monitoring report, to MCB Camp Pendleton ES and the USFWS. All "take" of federally listed species will be reported electronically to MCB Camp Pendleton ES within 24 hours of the action.		
Cultural Resources			
Impact Summary	No Significant Impact Two archaeological sites are found within the Alternative 1 Area of Potential Effects (APE). Both sites, CA-SDI-17912 and CA-SDI-12572, are ineligible for inclusion in the National Register of Historic Places (NRHP). The State Historic Preservation Officer (SHPO) concurred on the ineligibility determinations for site CA-SDI-17912 (USMC090601B) and site CA-SDI-12572 (USMC081120A and USMC20150112004). Therefore, sites CA-SDI-17912 and CA-SDI-12572 are not considered historic properties; therefore, they do not require cultural resources monitoring as per Stipulation III.D (1) of the Programmatic Agreement (PA) (USMC 2014).	No Significant Impact Two archaeological sites are found within the APE of Alternative 2. The two sites (CA-SDI-17912, CA-SDI-12572, are ineligible for inclusion in the NRHP. The SHPO concurred on the ineligibility determinations for site CA-SDI-17912 (USMC090601B) and site CA-SDI-12572 (USMC081120A and USMC20150112004). Therefore, sites CA-SDI-17912 and CA-SDI-12572 are not considered historic properties; therefore, they do not require cultural resources monitoring as per Stipulation III.D (1) of the PA (USMC 2014).	No Significant Impact The area has been previously surveyed for cultural resources. Site A (139 acre area located on vacant land, formerly used for agricultural purposes, east of Interstate-5 and adjacent to the existing Stuart Mesa Housing complex) contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence (USMC090601B) that would not fall under the PA. See Appendix A for more detailed information.

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Avoidance/ Minimization Measures	None identified.	None identified.	None identified.
Geological Resources			
Impact Summary	No Significant Impact Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.	No Significant Impact Impacts associated with Alternative 2 would be similar to those presented for Alternative 1.	No Significant Impact Impacts associated with No-Action Alternative would be minimal when compared to impacts presented for Alternatives 1 in this SEA, as grading and construction activities would be done as described by Alternative 1 in the 2015 EA and only occur at the Stuart Mesa Site.
Avoidance/ Minimization Measures	• **GR-1.** Standard engineering measures and local seismic requirements would be implemented and in compliance with the Construction General Permit, including implementation of a project-specific SWPPP with associated BMPs to minimize erosion and stabilize soils. • **GR-2.** All mechanized clearing and grading, vehicle traffic, equipment staging, and the deposition of soil would be confined to the footprints analyzed in this SEA, or to other disturbed or developed land. • **GR-3.** Erosion and sedimentation controls would be monitored and maintained during construction and for 12 months thereafter to ensure stabilization of the site.	Same as Alternative 1.	Same as Alternative 1.
Hazardous Materials and Waste			
Impact Summary	Less than Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of petroleum, oils, and lubricants (POLs).	No Significant Impact Impacts associated with Alternative 2 would be similar to those presented for Alternative 1.	No Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. According to the 2015 EA,

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	There is also a potential for impacts resulting from previous soil contamination at the Haybarn Site. Avoidance and minimization measures would be implemented to reduce the potential for impacts to less than significant.		Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by RWQCB. According to the Base, as of 2019 this issue has been addressed and is no longer applicable.
Avoidance/ Minimization Measures	• **HW-1.** Construction SWPPP with BMPs and Solid Waste Management Plan would be required. • **HW-2.** Fueling of equipment would be allowed only in designated areas specified on the construction maps and would not occur within 100 feet (30 meters) of drainages or vernal pool watersheds. Emergency provisions would be in place at all crossings before the onset of construction to prevent accidental spills from contaminating downstream habitats. • **HW-3.** Prior to initiating construction, a site investigation would be performed to determine if contamination is present at the site, and if so, the location and extent of contamination. If present, contaminated areas would be evaluated to determine the potential for adverse impacts to public health and the environment.	Same as Alternative 1.	Same as Alternative 1.
Noise			
Impact Summary	<u>No Significant Impact</u> Construction noise generated by Alternative 1 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Haybarn power plant site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate.	<u>No Significant Impact</u> Construction noise generated by Alternative 2 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Parking Lot Site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate.	<u>No Significant Impact</u> Noise impacts would be similar to those presented for Alternative 1; however, there would be no construction of the natural gas power plant.

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Avoidance/ Minimization Measures	• **NO-1.** Although the specific type of fuel gas compressor has not been determined, it is expected to generate similar noise levels as the Siemens gas turbines and, if necessary, could be installed with an enclosure to reduce the noise levels to 85 A-weighted decibels or less.	Same as for Alternative 1.	None identified.
Public Health and Safety			
Impact Summary	No Significant Impact Health and safety concerns would exist during construction, operation and maintenance, and decommissioning of battery energy storage systems at the Stuart Mesa Site and a natural gas power plant at the Haybarn Site, and associated utility infrastructure improvements. However, the procedures, activities and materials would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base plans, and Marine Corps Orders.	No Significant Impact Same as for Alternative 1 except the natural gas power plan would be located at the Parking Lot Site.	No Significant Impact Same as for Alternative 1 except there would only be the construction, operation and maintenance, and decommissioning of the solar PV system at the Stuart Mesa Site.
Avoidance/ Minimization Measures	• **HS-1**. The construction contractor would be required to prepare a Health and Safety Plan. This plan would include designs for standard safety measures to be implemented during construction, including the installation fencing and signage, lighting and security. These plans would be prepared in accordance with applicable federal, state, and local laws and regulations.	Same as Alternative 1.	Same as Alternative 1.

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Utilities and Infrastructure			
Impact Summary	Less Than Significant Impact The Proposed Action would generate up to 49.9 megawatt (MW) of conventional power, while providing 200 MW of energy storage. This would be a significant capacity upgrade and would alleviate demand on the public utility. This would also allow for Base operations to continue in the advent of a grid failure, enhancing the resiliency and contributing to national defense. No new infrastructure or facilities and sources would be required beyond those existing or planned as part of the Proposed Action. Potable water and sanitary sewer use will not stretch the capacity of existing MCB Camp Pendleton systems.	Less Than Significant Impact Same as for Alternative 1 except the natural gas power plan would be located at the Parking Lot Site and there would be a new wastewater line connecting to the MCB Camp Pendleton sanitary sewer system and an additional 69 kilovolt overhead power line connecting the Parking Lot Site to a new switching/metering station at the Haybarn Site.	No Significant Impact Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Department of the Navy's renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.
Avoidance/ Minimization Measures	• **UT-1.** A utility investigation and survey would be conducted to determine presence and obtain the exact depth and location of the water and sewer lines on the proposed project areas for conflict avoidance.	Same as Alternative 1.	Same as Alternative 1.
Water Resources			
Impact Summary	No Significant Impact Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by the No-Action Alternative. All activities associated with the No-Action Alternative that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.

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	source. All maintenance of the battery energy systems area at the Stuart Mesa Site and natural gas power plant at the Haybarn Site would be done in accordance with appropriate BMPs.		
Avoidance/ Minimization Measures	• **WR-1.** Construction projects that have a total area of one acre or more of land disturbance, or are less than one acre but are part of a larger project ("Common Plan of Development") that is one acre or more must obtain coverage under the California Construction General Permit for Stormwater Discharges, State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ (NPDES No. CAS000002), as amended in 2010 and 2012. As part of the permit application process, the project proponent shall prepare and submit a SWPPP to the SWRCB. Land disturbance includes, but is not limited to: clearing, grading, grubbing, scarifying, excavation, demolition, stockpiling, trenching, laydown area and access road construction, and full pavement removal. • **WR-2.** In compliance with the Construction General Permit, a SWPPP would be prepared for the project and submitted to the San Diego RWQCB. The SWPPP would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities. • **WR-3.** Federal projects with a footprint of 5,000 sq. ft. or greater that includes construction or expansion of one or more buildings as part of the primary scope, must	Same as Alternative 1.	Same as Alternative 1.

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	implement LID in accordance with the Energy Independence and Security Act (2007) and Department of Defense LID policies (2007, 2008, 2010, and most recently 2015). A comprehensive set of stormwater planning, design and construction elements must be used to maintain or restore, to the maximum extent technically feasible, the pre-development hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This will be achieved with LID techniques using the 95th percentile, 24-hour storm, or via a site-specific hydrologic analysis using continuous simulation modeling or other tools. LID requirements are further described or referenced in the Camp Pendleton Requirements (CPR). • **WR-4.** If the proposed activity is likely to involve groundwater extraction (dewatering) at construction site, foundation dewatering, or groundwater extraction associated with a remediation/cleanup project, contact Environmental Security Stormwater Section for guidance at 760-725-9760. Disposal options for groundwater may include the following: (1) Low volume discharges of uncontaminated groundwater to land qualifies for the San Diego Basin Plan Conditional Waiver No. 3, “Miscellaneous Low Threat Discharges to Land” found in San Diego RWQCB Resolution No. R9-2014-0041. Land applied water may not run off into storm drains or surface waters, including seasonal or ephemeral streams. (2) Discharges to the sanitary sewer system must be requested through the Water Resources Division Lead Engineer at 760-763-8154. (3) If options (1) and (2) are not feasible, dischargers to waters of the U.S. must obtain coverage under the		

Table ES-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	California RWQCB's "General Waste Discharge Requirements for Groundwater Extraction Discharges to Surface Waters Within the San Diego Region" (Order R9-2015-0013, NPDES No. CAG919003). Sampling and/or treatment will be required and are the Contractor's responsibility. Application for permit coverage in the form of a Notice of Intent, including baseline sampling and work plan development prepared by a licensed engineer, must be submitted to the Facilities Engineering and Acquisition Division (FEAD) at least 60 days prior to the planned commencement of the discharge. FEAD will review and certify the application, and the Contractor will then submit the application and permit fee to the RWQCB. A Waste Discharge Identification number must be received from the RWQCB prior to initiation of dewatering. Permit termination is accomplished via a letter from the Contractor certifying all dewatering activities have been completed and the site has been restored, with a cover letter from FEAD. • **WR-5.** Site design must account for both water quality treatment and water quantity/flood control. Contractors must comply with specific stormwater design standards found in the CPR, latest edition (August 2016), which can be obtained from FEAD. LID strategies are described in detail in Unified Facilities Criteria (UFC) 3-210-10. The California Stormwater Quality Association Stormwater BMP Handbook for New Development and Redevelopment should be used as guidance for design of BMPs and pollutant source control. LID techniques may also be used to meet Leadership in Energy and Environmental Design requirements.		

Draft
Supplemental Environmental Assessment
Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities at Marine Corps Base Camp Pendleton, California

Table of Contents

APPENDICES

List of Photos

List of Figures

List of Tables

Table **Page**

Acronyms and Abbreviations

AC/S	Assistant Chief of Staff
AGL	above ground level
AICUZ	Air Installations Compatibility Use Zones
APE	area of potential effects
ARTO	arroyo toad
BACT	Best Available Control Technology
BMP	best management practices
BO	Biological Opinion
B.P.	Before Present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAGN	coastal California gnatcatcher
CAISO	California Independent System Operator
CARB	California Air Resources Board
CCND	Coastal Consistency Non-Determination
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
cm	centimeter(s)
CM	conservation measure(s)
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoN	U.S. Department of the Navy
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ESPO	Energy Security Program Office
ESQD	Explosive Safety Quantity Distance
F	Fahrenheit
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GA	general aviation
GHG	greenhouse gas
GIS	geographic information system
GW	gigawatt
GWP	global warming potential
ha	hectare
HAP	hazardous air pollutant
HAZMAT	hazardous materials
HAZWASTE	hazardous waste
HRSG	Heat Recovery Steam Generator
INRMP	Integrated Natural Resource Management Plan
IR	Installation Restoration
IRP	Installation Restoration Program
JO	Joint Order
km	kilometer
kV	kilovolt
LBVI	least Bell's vireo
L_{eq}	Equivalent Sound Level
LID	Low Impact Development
L_{max}	maximum level of a noise
LUST	Leaking Underground Storage Tank
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCO	Marine Corps Order
MRP	Munitions Response Plan
MS1	Metering Station 1
MSL	mean sea level
MW	megawatt
NAAQS	National Ambient Air Quality Standard
NAVFAC SW	Naval Facilities Engineering Command Southwest
NEC	National Electrical Code
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
O_3	ozone
PA	Programmatic Agreement
$PM_{2.5}$	suspended 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
POL	petroleum, oils, lubricants
ppm	parts per million

PPV	public-private venture
PV	photovoltaic
RA	Restricted Area
RFA	Resource Conservation and Recovery Act Facility Assessment
ROD	Record of Decision
ROI	region of influence
SCEDC	Southern California Earthquake Data Center
SCS	Soil Conservation Service
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas & Electric
SEA	Supplemental Environmental Assessment
SECNAV	Secretary of the Navy
SFC	surface (ground or water)
SGT	Siemens Gas Turbines
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SMR	Santa Margarita River
SO_2	sulfur dioxide
SOP	Standard Operating Procedures
SUA	special use airspace
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
$\mu g/m^3$	micrograms per cubic meter
UFC	Unified Facilities Criteria
UL	Underwriters Laboratories
U.S.	United States
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geographical Survey
USMC	U.S. Marine Corps
UST	underground storage tank
VOC	volatile organic compounds

CHAPTER 1
PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps (USMC) have prepared this SEA in accordance with National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code [USC] §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order (MCO) 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program. This SEA analyzes the revised potential environmental impacts resulting from the Proposed Action and No-Action alternatives. This SEA augments the *Final Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton* dated 10 December 2015 (DoN 2015) (see Appendix A) and is hereby incorporated by reference.

The Proposed Action in this SEA incorporates battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in the 2015 Environmental Assessment (EA) (herein referred to as "Stuart Mesa Site") but was not built yet. In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas[1] on Marine Corps Base (MCB) Camp Pendleton, California, and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. These two energy generating facilities (PV and natural gas), are both included in the Proposed Action. The DoN and private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would be capability to feed the electricity into MCB Camp Pendleton's electrical grid.

1.2 BACKGROUND

The 2015 EA evaluated potential environmental impacts that would result from the construction, operation, and decommissioning of a solar PV system at MCB Camp Pendleton to support Secretary of the Navy (SECNAV) renewable energy goals established in 2009. A Finding of No Significant Impact (FONSI) was signed on 10 December 2015. The project has not been implemented to date. In 2016, the DoN revised its policies used to meet the 2009 goals, and through its Energy Security Program Office (ESPO) (formerly the Resilient Energy Program Office or REPO as of July 2019) is now pursuing energy projects which consider renewable sources, but also enhance energy resilience to improve national energy security, operational capability, strategic flexibility, and resource availability (DoN 2019). The Proposed Action in this SEA would enable MCB Camp Pendleton to meet DoN's requirements by establishing energy resiliency in the event of a regional electrical grid failure. The energy produced and stored by these more resilient facilities would ensure MCB Camp Pendleton has access to available, reliable, and quality power to continuously accomplish the Department of Defense (DoD) missions from military installations and facilities.

[1] MCB Camp Pendleton is designated into different Land Management Area Boundaries called "Areas".

1.2.1 Secretary of the Navy Energy Goals and Strategies

1.2.1.1 Goals

In October 2009, the SECNAV established energy goals for the DoN's shore-based installations to meet by 2020. These goals include:

- The DoN will produce or procure at least 50 percent of the total quantity of electric energy consumed by shore-based facilities and activities each fiscal year from alternative energy sources.
- Fifty percent of DoN installations will be net zero (i.e., over the course of a fiscal year, an installation matches or exceeds the electrical energy it consumes ashore with electrical energy generated from alternative energy sources) (DoN 2019).

In support of this alternative energy goal, SECNAV chartered the 1 gigawatt (GW) Task Force to enable DoN to procure 1 GW of renewable energy generation capacity by 2020 (DoN 2012).

1.2.1.2 Strategies

The DoN's energy strategies are centered on energy efficiency, energy security, and sustainability while ensuring the DoN remains the pre-eminent maritime power. Although the DoN's goals were established in 2009, the strategies used to meet these goals are continually updated. The current strategies include the following:

- *Maintain Presence* – Energy efficient operations and diverse energy supplies strengthen our ability to provide the presence necessary to ensure stability, deter potential adversaries, and provide options in times of crisis.
- *Provide Strategic Flexibility* – Diversifying our energy sources helps shield the DoN from volatile energy prices and/or supplies and arms us with operational flexibility.
- *Boost Combat Capability* – Optimizing energy use is a force multiplier that can increase range, endurance, and payload, and is essential for the effective deployment of next-generation weapons including the directed energy weapons and the rail gun.
- *Protect Sailors and Marines* – Using energy efficiently takes fuel convoys off the road and reduces the amount of time our ships are tied to oilers at sea, saving lives, time, and money.
- *Ensure Mission Success* – Our shore installations play a critical role in promoting readiness and generating the force structure necessary for mission success. Improving energy efficiency and increasing the use of alternative energy promotes more secure and resilient installation operations.
- *Promote Sustainability* – Increasing the use of environmentally responsible technologies afloat and ashore reduces greenhouse gas emissions and lessens dependence on fossil fuels, creating a sustainable model for national defense (DoN 2019).

1.2.2 Department of Defense Instruction 4170.11

In December 2009, the DoD issued instructions to specifically include resiliency requirements on military installations. The Instruction has been updated twice since 2009. The 2018 Instruction includes the following:

- *Energy Resilience* – The DoD Components shall take necessary steps to ensure energy resilience on military installations. DoD Components shall plan and have the capability to ensure available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities (DoD 2018).

- *Energy Generation Systems, Infrastructure, Equipment, Fuel, and Testing* - DoD Components shall identify, design, and install primary power and emergency energy generation systems, infrastructure, and equipment to support their critical energy requirements.
  - Energy resilience solutions are not limited to traditional standby or emergency generators. They can include integrated, distributed, or renewable energy sources; diversified or alternative fuel supplies; and movements to alternative locations, as well as upgrading, replacing, and maintaining current energy generation systems, infrastructure, and equipment on military installations and at facilities. Alternative locations that require a continuous supply of energy in the event of an energy disruption or emergency shall also be subject to energy resilience requirements.
  - When selecting distributed or renewable energy systems and emergency generators for energy resilience, they shall be properly designed to have the ability to prepare for and recover from energy disruptions that impact mission assurance. Their design shall include automatic transfer switching, inverters, and black-start capabilities to minimize energy resilience risks. DoD Components shall also determine fueling or storage requirements for the selected energy generation systems (DoD 2018).

1.2.3 Energy Security Program Office

Through the ESPO, the DoN is pursuing energy projects which enhance its energy resilience to improve the nation's energy security, operational capability, strategic flexibility and resource availability. These projects support the warfighter abroad by reinforcing the DoN's foundation at home. The benefits of these projects to the DoN include:

1. Cost-effective, mission-compatible assets which leverage third-party financing
2. Long-term operational cost stability
3. Islanding capabilities using microgrid technology
4. Utility infrastructure upgrades

In support of the SECNAV 1 GW renewable energy generating initiative, the DoN has developed acquisition strategies based on the following three separate models (Figure 1-1) to procure or generate renewable energy (DoN 2019):

<u>Model 1: Off-base generation for on-base consumption:</u>

- DoN purchases new renewable energy generation for on-base load
- Renewable energy generation provides price stability and diversifies energy portfolio
- Acquisition: Power Purchase Agreement and utility services contract

<u>Model 2: On-base generation for off-base consumption:</u>

- Third-party produces on DoN property and exports energy to grid (allows for much higher capacity of product vs Model 3)
- DoN to receive energy security via lease terms
- Acquisition: Real estate outgrant

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

- DoN consumes all energy generated
- Potential opportunity to increase energy security through microgrid integration
- Acquisition: Power Purchase Agreement

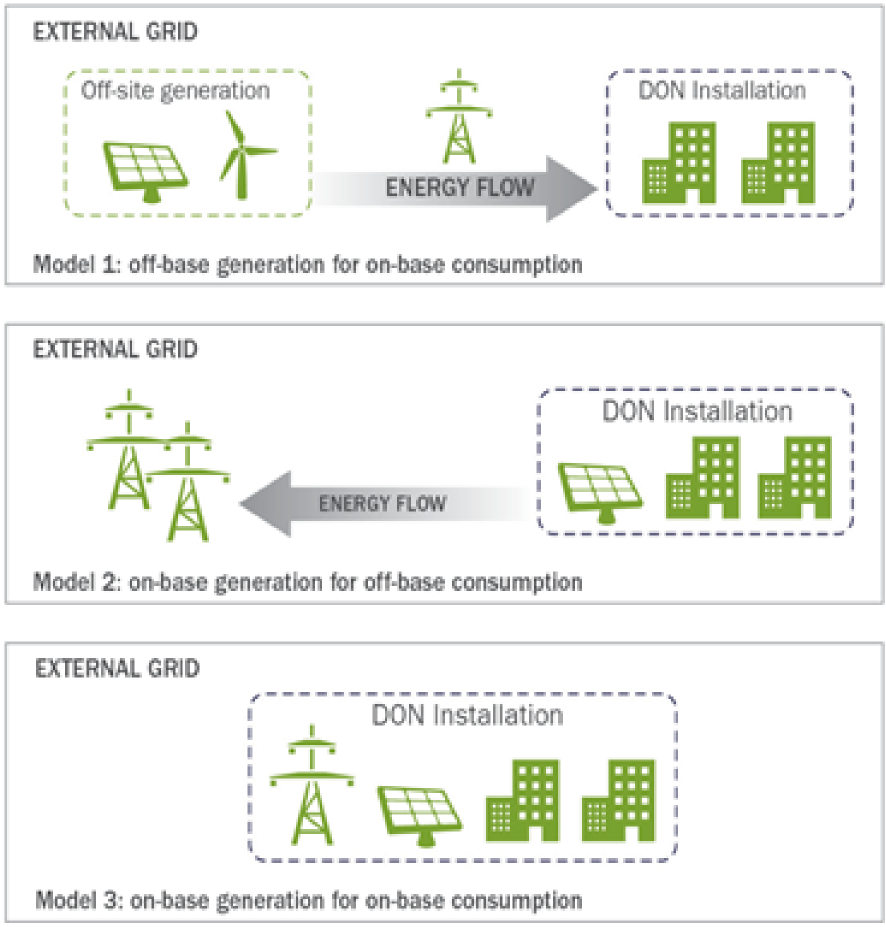

Figure 1-1 Renewable Energy Models

The DoN proposes to implement Model 2 at MCB Camp Pendleton to support achievement of the SECNAV's goals. Under Model 2, the DoN and a private partner would enter into a 37-year agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission battery energy storage systems at the Stuart Mesa Site (a solar PV system at the same site was analyzed in the 2015 EA), and a natural gas power plant at a different location on Base. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the battery energy storage systems and natural gas power plant at the end of the lease.

1.3 PROJECT LOCATION

Established in 1942, MCB Camp Pendleton remains the USMC's largest west coast expeditionary training facility. MCB Camp Pendleton's principal mission is to operate a training base that promotes the combat readiness of the Operating Forces and the mission of other tenant commands by providing training opportunities, facilities, services and support responsive to the needs of Marines, Sailors and their families.

MCB Camp Pendleton is a 200-square mile (518-square kilometer [km]) area located 40 miles (64 km) north of the city of San Diego, within the northern portion of San Diego County, California (Figure 1-2). The Orange County line is contiguous with the northwest boundary of MCB Camp Pendleton; Riverside County is north of, but does not abut, the boundary of MCB Camp Pendleton. The city of San Clemente and the Cleveland National Forest border MCB Camp Pendleton to the north and east, with the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook to the east, and the city of Oceanside to the south.

The SEA Proposed Action would occur in three locations on Base. These are generally described below:

- Stuart Mesa Solar PV System and Battery Energy Storage Systems Site: The Stuart Mesa Site is located on the west side of Stuart Mesa Road to the west-southwest of Stuart Mesa Housing complex and east of Interstate 5. This vacant land was formerly used for agricultural purposes. A proposed solar PV system at this site was evaluated in the 2015 EA. The Proposed Action in this SEA would include the addition of battery energy storage systems to the previously evaluated solar PV system at the Stuart Mesa Site. The Proposed Action in this SEA would also expand the existing San Diego Gas & Electric (SDG&E) Stuart Mesa Substation, located north of the Stuart Mesa Housing complex and potentially add a new power line[2] or tap into the SDG&E 69 kilovolt (kV) power line (also evaluated in the 2015 EA) to connect the Stuart Mesa Site to the SDG&E Stuart Mesa Substation (Figure 1-3).
- 24 Area or 26 Area Natural Gas Power Plant Sites: A natural gas power plant with a compressor station would be located at one of two alternative locations in either the 24 or 26 Areas. Both sites are located on the south side of Vandegrift Boulevard. One of the sites is located south of Rattlesnake Canyon Road (Haybarn Site), the other is located north of Rattlesnake Canyon Road (Parking Lot Site) (Figure 1-4).
- Rattlesnake Canyon Road and Vandegrift Boulevard Utility Upgrades: A natural gas line would be installed within portions of these roads, replacing a section of an existing line that runs through Rattlesnake Canyon Road. An electrical power line would be constructed along the southeastern shoulder of Vandegrift Boulevard to support one alternative (Parking Lot Site) but is not needed for the other (Haybarn Site) (Figure 1-4).

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[2] California Public Utilities Commission General Order 131-D provides the following definitions: a transmission line is a line designed to operate at or above 200 kV; a power line is a line designed to operate between 50 and 200 kV; and a distribution line is a line designed to operate under 50 kV.

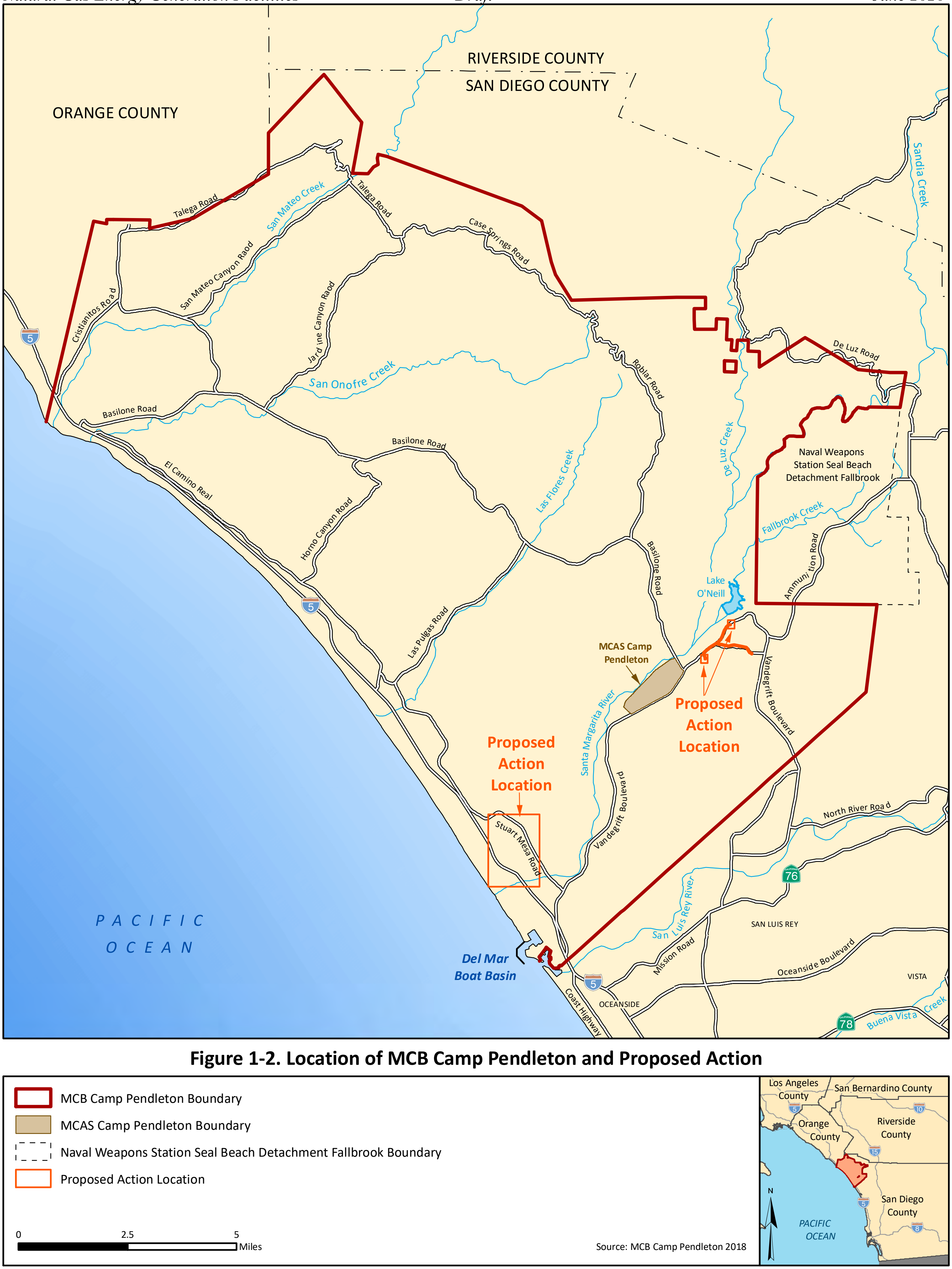


Figure 1-2. Location of MCB Camp Pendleton and Proposed Action

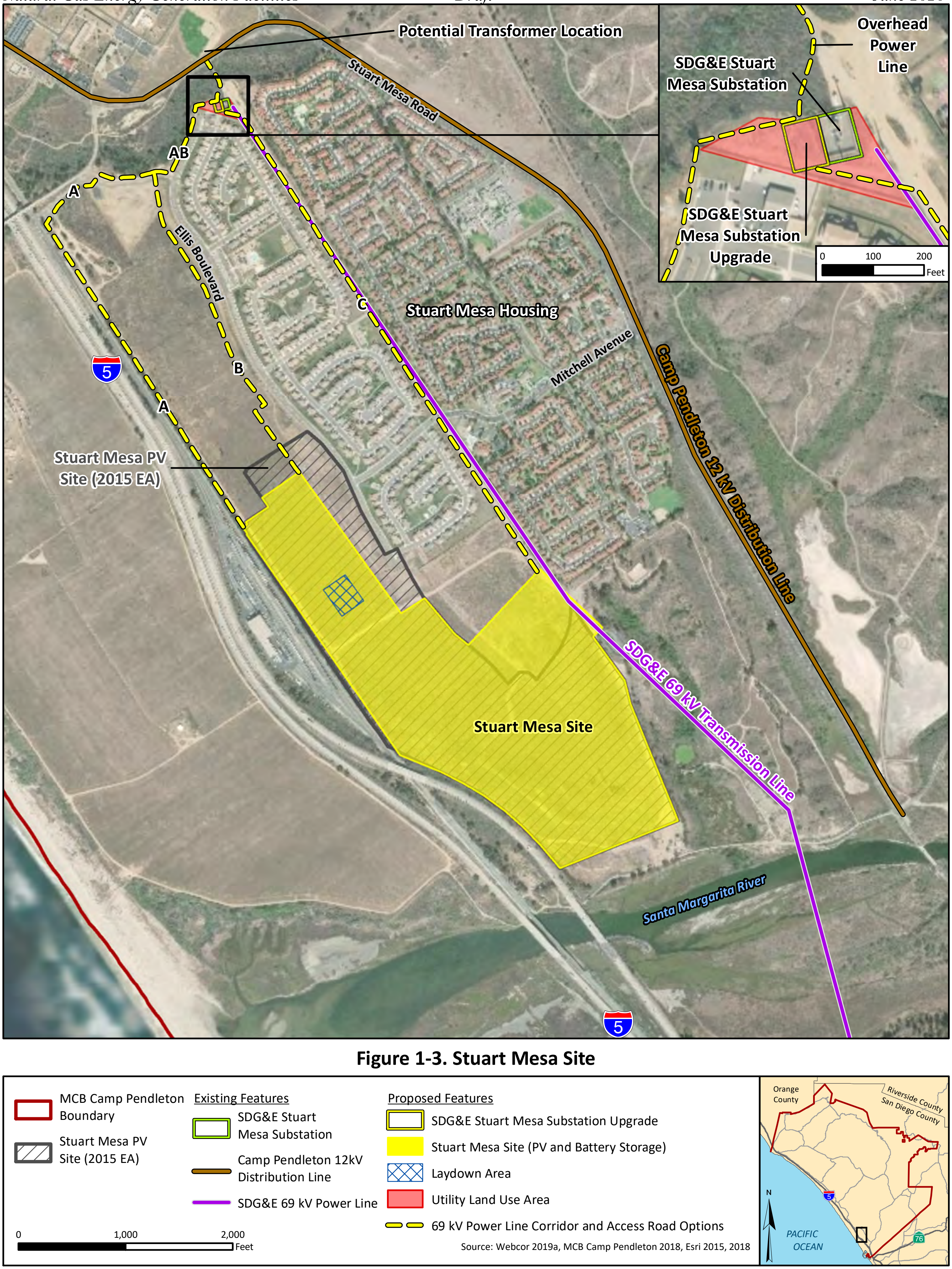


Figure 1-3. Stuart Mesa Site

1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the 2015 EA proposed action was to increase DoN installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at DoN installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The purpose of this SEA's Proposed Action is to provide resilient energy facilities to supplement renewable energy facilities analyzed in the 2015 EA to provide MCB Camp Pendleton greater energy security and ensure MCB Camp Pendleton has access to available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities in accordance with SECNAV Energy Goals, 1 GW Initiative, and DoD Instruction 4170.11. The proposed project supports mission sustainability and helps to ensure that the MCB Camp Pendleton utility systems are compatible with regional utility networks, are flexible, and are capable of sustaining and enhancing MCB Camp Pendleton's operational capabilities.

The need for the 2015 EA proposed action was the requirement to meet the renewable energy standards put forth by the 1 GW Initiative and the SECNAV's Energy Goals. The current Proposed Action continues to meet this need and expands upon it as MCB Camp Pendleton currently lacks the resilient energy infrastructure for energy security in contingency situations or regional electrical grid failure. The Marine Corps needs the energy security, operational capability, and strategic flexibility to support ongoing daily training activities 365 days per year to comply with pre-deployment readiness directives of MCO 3502.6, *Marine Corps Force Generation Process*. The Proposed Action is needed to efficiently and effectively modernize MCB Camp Pendleton's emergency backup generation systems.

The policy requirements for energy resiliency and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the DoN and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that MCB Camp Pendleton would have the option to use any energy produced on-base in the event of a regional electrical grid failure.

1.5 SCOPE OF ANALYSIS

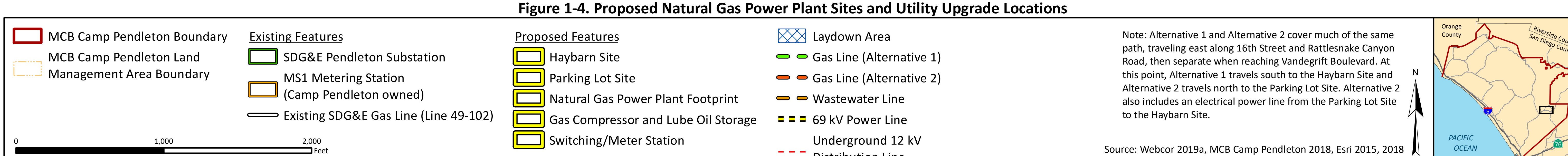
1.5.1 Resource Areas

1.5.1.1 Resources Analyzed in Detail

This SEA will analyze the following resource areas in detail:

- Air Quality
- Airspace/Air Traffic
- Biological Resources
- Cultural Resources
- Geological Resources
- Hazardous Materials and Waste
- Noise
- Public Health and Safety
- Utilities and Infrastructure
- Water Resources

Figure 1-4. Proposed Natural Gas Power Plant Sites and Utility Upgrade Locations



Note: Alternative 1 and Alternative 2 cover much of the same path, traveling east along 16th Street and Rattlesnake Canyon Road, then separate when reaching Vandegrift Boulevard. At this point, Alternative 1 travels south to the Haybarn Site and Alternative 2 travels north to the Parking Lot Site. Alternative 2 also includes an electrical power line from the Parking Lot Site to the Haybarn Site.

Source: Webcor 2019a, MCB Camp Pendleton 2018, Esri 2015, 2018

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1.5.1.2 Resources Not Analyzed in Detail

Several other resource areas typically assessed in environmental documents were considered but not carried forward for detailed analysis in this SEA. This is because potential impacts to these resource areas from the action alternatives would be either non-existent or considered negligible. The reasons for not analyzing the following resources in detail are presented below:

Environmental Justice. Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. MCB Camp Pendleton is not in or surrounded by a community populated by minority or low-income populations. A minority population is defined by the CEQ (1997) as being composed of more than 50 percent minority residents or a significantly higher proportion of minority residents than the general population. According to 15 USC § 689(3), the Department of Housing and Urban Development defines a low-income community as a census block or tract having greater than 20 percent of its population living below the federal poverty line and the CEQ (1997) recommends using statistics from U.S. Census reports on poverty in environmental justice reviews. On board MCB Camp Pendleton, the proposed Stuart Mesa Site is located west-southwest of the Stuart Mesa Housing complex which houses Enlisted, Warrant Officer and Officer personnel and their families, which does not constitute a minority or low-income population. The construction and operation of the Proposed Action would not result in a permanent change to population ethnicities or age distributions. In addition, the construction, operation and decommission of the energy generation facilities would be contained within MCB Camp Pendleton and would not impact the local community off-Base. There could be temporary disturbances to the Stuart Mesa Housing community due to dust and noise during construction and decommission of the solar PV system and battery energy storage systems; however, measures would be implemented to reduce the impacts (see Section 3.1, *Air Quality*; and Section 3.7, *Noise*, for additional details). In addition, applicable codes, standards and best practices would be incorporated in the installation and operation of the battery energy storage systems (e.g., Underwriters Laboratories [UL] 1973, UL 9540, National Electrical Code [NEC] 480, NEC 705, California Building Standards Code, National Fire Protection Association [NFPA] 1, NFPA 70) to ensure the public's safety (California Public Utilities Commission [CPUC] 2020). Therefore, there would be no human health or adverse environmental conditions placed upon minority and/or low-income populations from the implementation of the alternatives.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. The Proposed Action would be constructed on government property, where access is controlled. The solar PV system and battery energy storage systems area would be fenced and have warning signs surrounding the site to further minimize the possibility of unauthorized access from nearby residents. The natural gas power plant would likewise be fenced with warning signs surrounding the site. Standard job site safety measures would be implemented, which include securing equipment, materials, and vehicles, as well as neutralizing potential safety hazards, in case unauthorized persons visit the site during non-working hours. Therefore, there would be no disproportionate impact to the health and safety of children from the implementation of the alternatives.

Land Use and Military Operations. The Proposed Action would be located on land that has been previously developed with utility uses or previously identified for utility uses. The Proposed Action would not occur on land that is used or designated for military training. Therefore, it would not eliminate, or impact future training opportunities nor would it result in a change to general land use patterns. Therefore, impacts to land use and military operations from the implementation of the alternatives would be negligible.

Safety and Security. As the Proposed Action would be located on an active military installation, homeland security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism, natural disasters, and disease outbreaks. Unified Facilities Criteria (UFC) 4-020-01, *DoD Security Engineering Facilities Planning Manual*, would guide planning, design, and construction criteria related to antiterrorism and force protection for the Proposed Action, including setbacks from nearby easements. The battery energy storage systems would not represent critical infrastructure or utility equipment for performing MCB Camp Pendleton's mission should the battery energy storage systems go offline. The battery energy storage systems and natural gas power plant would be fenced and have warning signs surrounding the site to minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented. Therefore, impacts to safety and security from implementation of the alternatives would be negligible.

Transportation. Construction of the Proposed Action would involve a temporary and localized increase in traffic associated with construction worker commuting trips and the transport of construction equipment and materials. Depending on the volume and timing of construction traffic, the project could cause an incremental increase in queues and delays at gates and at intersections lying along the travel route(s). However, traffic associated with construction workers and material deliveries would be temporary, dispersed, and minimal. In addition, a Traffic Management Plan would be prepared by the private partner or their designated construction contractor to mitigate any potential congestion or safety "hot spots." Main roads would remain open during peak periods. Operations-related traffic at the Stuart Mesa Site is expected to be light and infrequent, and therefore would not result in a substantial or recurring increase in traffic. Operations-related traffic at the natural gas power plant is expected to be light as well. It would be manned 24 hours a day, 7 days a week by up to eight personnel during the day shift when operational, and therefore would not result in a substantial increase in long-term traffic. Therefore, impacts to transportation from implementation of the alternatives would be negligible.

Visual Resources. The Proposed Action would occur on an active military installation, and on land that has been previously developed with utility uses or previously identified for utility uses. There would be a visual change from the planned solar PV panels to now include both solar PV panels and battery energy storage systems, and potentially an overhead power line, but they are similarly visually industrial. The natural gas power plant would be surrounded on three sides by natural topography that would shield it from sensitive receptors, however there are no sensitive receptors in the vicinity of the natural gas power plant. The stack from the natural gas power plant might be minimally visible above the hilltop from along Vandegrift Boulevard and there would be minor steam emissions released but they would rapidly disperse into the atmosphere. Therefore, impacts to visual resources from implementation of the alternatives would be negligible.

1.6 INTERGOVERNMENTAL COORDINATION

1.6.1 Agency Consultation

Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed Action. Of note, while approval from the CPUC[3] and the California Independent System Operator[4] (CAISO) is not a requirement for this SEA, ultimately (i.e., after completion of the NEPA process), the private partner would obtain the approvals from these entities for implementation of Model 2.

A Biological Assessment is being developed for the Proposed Action and is intended to support formal consultation between the USMC and the U.S. Fish and Wildlife Service (USFWS) as required by 50 CFR 402.14(c) and section 7 of the Endangered Species Act (ESA) regarding the likelihood of an adverse effect ("take") of any listed species. It provides the best available scientific and commercial data for the federally listed threatened or endangered species in the action area. The consultation will conclude either informally with written concurrence from the USFWS or through formal consultation with a Biological Opinion (BO) provided to the USFWS.

The National Historic Preservation Act (NHPA) mandates guidelines for the protection of historic properties in Sections 106 and 110 of the law. Section 106 of the NHPA requires federal agencies to analyze the effect of an undertaking on cultural resources included in or eligible to the National Register of Historic Places (NRHP). Section 110 requires federal agencies to establish programs to locate, evaluate, and nominate all properties that qualify for inclusion in the NRHP. A Programmatic Agreement (PA) (*Programmatic Agreement among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton (PA))* signed in December 2014 was developed for MCB Camp Pendleton (USMC 2014). The process defined in the PA (Stipulations III.D (1) and IV.D), would be followed for the preferred alternative.

The Coastal Zone Management Act applies to the Stuart Mesa Site. A Coastal Consistency Non-Determination (CCND) was issued in 2009 for two public-private venture (PPV) housing proposals (PPV-6 and PPV-7). The CCND has been updated to address the change from housing to a solar PV system and received concurrence on 13 October 2015.

Compliance with 14 CFR Part 77.9, *Construction or Alteration Requiring Notice* includes the requirement to notify the Federal Aviation Administration (FAA) at least 45 days prior to the start of construction so that additional review by the FAA can be completed. The USMC will submit the notification to the FAA.

Permits are required for any operation or equipment capable of emitting air contaminants and therefore a Stationary Source Air Permit will need to be obtained from the San Diego Air Pollution Control District (SDAPCD) by the private partner for the natural gas power plant prior to construction of the plant.

Agency correspondence can be found in Appendix B.

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[3] The CPUC regulates investor-owned utilities in California, oversees the procurement of renewable energy in the state under the Renewable Portfolio Standard implementation program, and permits electrical transmission.
[4] The CAISO is an independent, non-profit organization that oversees the operation of California's electric power system, transmission lines, and electricity market. Proposed connections from private power producers to investor-owned utilities are subject to the review and approval of the CAISO.

Agency	Permit or Approval	Current Status
SHPO	Section 106 of the NHPA	USMC will comply with SHPO PA (on preferred alternative).
CPUC	Public Utilities Code Section 399.11	CPUC would approve the PPA, if a regulated investor-owned utility (e.g., SDG&E) buys the power from the private partner.
CAISO	Public Utilities Code Sections 2811-2816	The private partner will obtain an Interconnection Agreement from the CAISO.
CZMA	Coastal Consistency Non-Determination (CCND)	CCND was issued for Stuart Mesa Housing projects. Updated CCND for Solar PV EA received concurrence on 13 October 2015.
FAA	14 CFR Part 77.9, *Construction or alteration requiring notice*	USMC will notify the FAA at least 45 days prior to the start of construction so that additional review by the FAA can be completed.
SDAPCD	Stationary Source Air Permit for Gas Turbines	The private partner will obtain a Stationary Source Air Permit for the natural gas power plant from the SDAPCD.
SWRCB	California Construction General Permit for Stormwater, SWRCB Order No. 2009-0009-DWQ (NPDES No. CAS 000002), as amended in 2010 and 2012	The private partner will obtain a Construction General Permit and develop a SWPPP.

Legend: CZMA = Coastal Zone Management Act; EA = Environmental Assessment; ESA = Endangered Species Act; SDG&E = San Diego Gas and Electric; SHPO = State Historic Preservation Officer; NHPA = National Historic Preservation Act; PA = Programmatic Agreement; PPA = Power Purchase Agreement; PV = Photovoltaic; SDAPCD = San Diego Air Pollution Control District; SWPPP = Stormwater Pollution Prevention Plan; SWRCB = State Water Resources Control Board; USFWS = U.S. Fish and Wildlife Service; USMC = U.S. Marine Corps.

1.7 PUBLIC PARTICIPATION

As part of this SEA, the USMC solicited input from interested parties on the Proposed Action. Upon completion of the Description of the Proposed Action and Alternatives, the USMC initiated the public participation process with a Notice of Intent to Prepare an SEA/Notice of Availability that was published for three consecutive days in three local newspapers: the San Diego Union Tribune, the Fallbrook Village News and the Orange County Register. The Description of the Proposed Action and Alternatives was posted on the MCB Camp Pendleton website (https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/Document-Library/Environmental-Planning-Documents/) for public review and comment. Additional public notifications and stakeholder mailings may also occur. Details of the public involvement are provided in Appendix C.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

2.1 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action in this SEA includes the addition of energy storage facilities (battery energy storage systems) at the Stuart Mesa Site; the construction, operation, and decommissioning of a natural gas energy generation facility (natural gas power plant); and new and upgraded electric and natural gas utility connections to these facilities. These facilities would be primarily grid-facing, meaning they would be designed to provide power to the public power grid, but they would also be designed to provide power to MCB Camp Pendleton in contingency situations, such as during a regional electrical grid failure. The Proposed Action in this SEA would allow a private partner to construct, operate, and eventually decommission the battery energy storage systems and the natural gas power plant at the end of the lease term. The construction, operation, and decommissioning of the solar PV system is still part of the Proposed Action and it was studied in the 2015 EA; therefore, it is not reevaluated in this supplemental analysis and is hereby incorporated by reference.

2.1.1 Battery Energy Storage Systems at Stuart Mesa Site

This SEA evaluates the addition of battery energy storage systems at the Stuart Mesa Site. It does not invalidate the proposed action in the 2015 EA, but instead supplements the 2015 EA to add more features and conducts environmental impact analysis on those features. The general size of the solar PV system site studied in the 2015 EA would not change significantly with the addition of battery energy storage systems. For this SEA, the private partner could install the solar PV system and battery energy storage systems, on a footprint that would use a maximum of 135.9 acres (55 hectares [ha]) of 139 acres (56 ha) originally analyzed as Site A during the 2015 EA. *(Note: Since the completion of the 2015 EA, there has been a small change in the footprint of the project area; however, that area was included in the 2015 analysis as it was considered adjacent property and therefore relevant to the 2015 evaluation. The change related to easements that have been granted for some of the land that encompassed Site A and so the proposed footprint for the solar PV system and battery energy storage systems has been altered slightly to make up for the land no longer available due to the easements [see Figure 1-3]).* In addition, the proposed megawatt (MW) capacity of the solar PV system at Site A was 20 MW; however, due to technological improvements in PV technology since 2015, the solar PV site could now generate a maximum of up to 50 MW.

The total storage capacity of the battery energy storage systems at the Stuart Mesa Site would be up to 200 MW. This would be accomplished by installing up to 200 1 MW battery energy storage systems (up to 10 hours in duration [2 GW hours]) in approximately 53-foot (16-meter) long and 20-foot (6-meter) high containers[5] with inverters on skids and switchgear/step up megavolt transformers. The total area required for each battery energy storage system, inverter and transformer is approximately 69 feet by 30 feet (21 meters by 9 meters) or 2,070 square feet (192 square meters). The battery energy storage system would use lithium-ion or lithium metal anode cell and/or flow battery chemistries based on vanadium sulfate-chloride, zinc-bromine, zinc-chloride, or other electrolytes. Electrolytes used would be non-hazardous, non-toxic, non-corrosive, and non-flammable with no noxious fumes. Acid-based batteries would not be used. The step-up transformers would be FR3 oil insulated. FR3 is environment friendly vegetable oil which is used by most transformers on military projects and in the industry. The bases and tanks of the transformers will be stainless steel. In addition, applicable codes, standards and best practices would be incorporated in the

[5] Battery energy storage systems are modular systems that can be deployed in standard shipping containers.

installation and operation of the battery energy storage systems (e.g., UL 1973, UL 9540, NEC 480, NEC 705, California Building Standards Code, NFPA 1, NFPA 70, NFPA 850 [Chapter14]) to ensure the public's safety (CPUC 2020).

There would be a parking and staging area (approximately 20 feet by 50 feet [6 meters by 15 meters]) for the panel cleaning equipment which would include a gravel or concrete pad with a canopy or awning. Adjacent to the parking area would be two 5,000-gallon water tanks and a very small portable trailer for staff. Portable toilets and washing area would be provided next to the personnel trailer as there would be no connections to MCB Camp Pendleton's potable water or sanitary sewer systems at the Stuart Mesa Site. In addition, the 5,000-gallon water tanks would be refilled by water trucks coordinated by the private partner. A hydrology study would be performed that would identify existing water courses to ensure that the new development is not creating new points of stormwater discharge and, depending on the type of development, not altering flow rates. This would ultimately determine where the proposed stormwater connection to the existing outfall/drainage course (whether that be a canyon, storm drain facility, etc.) would occur with the approval of the Water Resource Division. All stormwater from the proposed development area for the project will be routed through the appropriate BMPs as dictated by California stormwater guidelines, the Camp Pendleton UFC stormwater criteria for Low Impact Development (LID) and other requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016).

The lighting system for the Stuart Mesa Site may consist of pole-mounted (no greater than 25 feet [7.6 meters] tall) downward facing exterior grade lights that would provide minimal illumination for main project roadways at night. The lighting system would be compliant with the requirements of the 2016 Camp Pendleton Requirements (CPR) (MCB Camp Pendleton 2016).

All electrical equipment related to battery energy storage systems, including inverters and transformers, would be constructed on concrete pads. The batteries would be mounted using secondary containment capable of containing the maximum storage volume of hazardous material/liquid contained within the electrical equipment and rated for fire, electrical, and chemical spill safety through international certification programs (e.g., International Electrotechnical Commission Standards, UL Standards, Institute of Electrical and Electronics Engineers Standards). The battery containers would be painted "earth-tone" colors to blend in with the surrounding environment. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the Stuart Mesa Site to minimize the potential for unauthorized individuals to enter the area.

A construction laydown area (approximately 75,000 square feet [6,968 square meters]) would be delineated within the Stuart Mesa Site and all work would be accomplished on site (see Figure 1-3 for an approximate location). Materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the foundations and place the battery containers would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. In compliance with the Construction General Permit, the contractor would prepare and implement a project-specific construction Stormwater Pollution Prevention Plan (SWPPP) and all applicable best management practices (BMPs) for each location, from initiation through completion of construction activities. Implementation of a project-specific construction SWPPP and these BMPs would minimize the potential for pollutants to enter receiving waters and reduce the potential for soil erosion throughout the duration of the project. The construction duration would be approximately 2 to 3 years.

Photo 1 shows an example of flow battery energy storage systems as part of an SDG&E pilot project located in Folsom, California and connected to the wholesale power market. The flow battery energy storage system would provide 2 MW and 8 MW hours of energy, enough to power the equivalent of about 1,000 homes for up to four hours. The pilot project is part of a demonstration by SDG&E, Sumitomo Electric, California Governor's Office of Business and Economic Development and Japan's New Energy and Industrial Technology Development Organization (SDG&E 2019).

Photo 1: SDG&E Battery Energy Storage System Pilot Project (SDG&E 2019)

2.1.2 69 Kilovolt Power Line from Stuart Mesa Site to Expanded Substation

The energy generated from the solar PV system and stored in the battery energy storage systems would potentially connect to a switchyard located within the Stuart Mesa Site that would aggregate all the inverter alternating current 12.4 kV output, step up to 69 kV, and would either connect to 'loop in, loop out' substation constructed by the private partner or feed through the existing SDG&E 69 kV overhead power line or through a new overhead or underground power line to a substation constructed by the private partner to the SDG&E Stuart Mesa Substation. The loop in, loop out substation would be located within the Stuart Mesa Site footprint and connect directly to the existing SDG&E 69 kV transmission lines overhead. The existing SDG&E 69 kV overhead power line that connects to the SDG&E Stuart Mesa Substation was analyzed in the 2015 EA and therefore will not be further analyzed in this SEA.

If the electrical connection would be to the existing SDG&E Substation, the new power line would run either along the western edge of the Stuart Mesa Site north to a paved access road that joins Ellis Boulevard from the west, along Ellis Boulevard, or parallel to the existing SDG&E transmission line to the SDG&E Stuart Mesa Substation located immediately north of the Stuart Mesa Housing (see power lines options A, B, and C, respectively in Figure 1-3). The power line would consist of approximately 55-foot (17-meter) tall (maximum) galvanized steel poles spaced between 100 to 200 feet (38.5 to 61 meters) apart with conductors running from the generation transformer/substation at the Stuart Mesa Site to the SDG&E Stuart Mesa Substation. The power line would be constructed in accordance with SDG&E Standards, SDG&E Section 1600 for Avian Protection (MCB Camp Pendleton 2016). The power line would be located within a 15-foot (4.6-meter) corridor that would include an unpaved access road. During construction, the corridor would extend an additional 15 feet (4.6 meters) to allow for space to place the poles and the hang of the power line. Any vegetation disturbed during construction in the extended corridor would be replaced in compliance with the 2016 CPR (MCB Camp Pendleton 2016). If the power line runs north along the unpaved road and along the northern portions of Ellis Boulevard (see Figure 1-3 power line options A and B), the corridor during construction would be extended to 100 feet (38.5 meters) to provide the flexibility to avoid impacts to sensitive natural resources.

2.1.3 Substation Upgrade North of Stuart Mesa Site

Photo 2: Stuart Mesa Substation Upgrade Area (looking east)

As one alternative, the existing SDG&E Stuart Mesa Substation located to the north of Stuart Mesa Housing may need to be upgraded to include a new bay to accommodate the additional load from the solar PV system and/or battery energy storage systems. The new bay would be approximately 70 feet by 90 feet (21 meters by 27 meters) or approximately 0.15 acres (0.06 ha) and located to the west of the existing substation (Photo 2). An additional approximately 0.73 acres (0.30 ha) surrounding both the existing substation and proposed upgrade, and encompassing additional land to the west, south, and east would be cleared and used as a laydown area for the project during the construction of the new bay and provide access to the upgraded substation during operations (see Figure 1-3). The new bay would include new transformers, conductors, connectors and equipment. All transformers will be FR3 oil insulated.

2.1.4 Natural Gas Power Plant

As part of the Proposed Action, a natural gas power plant would be constructed, operated, maintained, and decommissioned (Photo 3). A natural gas power plant could use both a gas (simple cycle) and a steam turbine together (combined cycle power plant) to produce up to 50 percent more electricity from the same fuel than a traditional simple cycle natural gas power plant (either option is viable for the site). The waste heat from the gas turbine would be routed via a heat recovery steam generator (HRSG) to the nearby steam turbine, which is used to generate additional power and increase the overall efficiency of the system.

The proposed natural gas-based energy generation facility requires a footprint of approximately 1.87 acres (0.76 ha), although the overall site development footprint would be larger (see description of alternatives in Section 2.3).

The following example provides an overview of how a natural gas power plant works to produce electricity and captures waste heat from the gas turbine to increase efficiency and electrical output (General Electric 2019).

- ***Gas turbine burns fuel.*** The gas turbine compresses air and mixes it with fuel that is heated to a very high temperature. The hot air-fuel mixture moves through the gas turbine blades, making them spin. The fast-spinning turbine drives a generator that converts a portion of the spinning energy into electricity.
- ***Heat recovery system captures exhaust (optional)***. A HRSG captures exhaust heat from the gas turbine that would otherwise escape through the exhaust stack. The HRSG creates steam from the gas turbine exhaust heat and delivers it to the steam turbine.
- ***Steam turbine delivers additional electricity (optional)***. The steam turbine sends its energy to the generator drive shaft, where it is converted into additional electricity.

Site features would include:

- up to two natural gas fired turbines with inlet evaporative cooling systems and auxiliary cooling air cooled heat exchangers
- HRSG(s) with duct firing, carbon monoxide (CO) oxidation catalyst, Selective Catalytic Reduction system with ammonia injection, up to two 150-foot (45.7-meter) tall exhaust stacks, and Continuous Emission Monitoring (one HRSG for a minimum of 24 MW of generation and an additional HRSG for a maximum of 49.9 MW) *(Note: Depending on the type of natural gas power plant selected, HRSGs might not be used.)*
- up to two steam turbines with air cooled condensers as needed for efficiency and flexibility *(Note: Depending on the type of natural gas power plant selected, steam turbines might not be used.)*

Photo 3: Conceptual Graphic of a Natural Gas Power Plant

- aqueous ammonia receiving, storage, and vaporization system for nitrogen oxides (NO_x) control
- up to three natural gas compressors
- deaerator
- pumps – boiler feedwater, condensate, raw water, demineralized water, etc.
- tanks – raw water, demineralized water
- water treatment systems
- fire protection and detection systems
- a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions
- electrical equipment located next to the existing metering station
- up to 50 MW (200 MW hour) battery energy storage systems with associated transformers and load interrupter switches
- underground and/or pole-mounted electrical infrastructure
- area lighting
- access road
- concrete foundations, and concrete masonry units for inverters, transformers, switch boards, combiner boxes, and electrical switchgear
- potable water line and sewer line connections
- exterior lighting system
- electrical wiring, and equipment to support the natural gas power plant

The natural gas power plant would be connected to the existing SDG&E Pendleton Substation and the MCB Camp Pendleton metering station (MS1) next to the existing SDG&E Pendleton Substation via a 12 kV switching/metering station. The switching/metering station would be located within the Haybarn Site. The switching/metering station would cover approximately 2,000 square feet (185 square meters) and would meter the power generated by the natural gas power plant. A graveled buffer area would be developed around the switching/metering station and a fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would be constructed to restrict access to the site. From the switching/metering station, an overhead 69 kV power line would connect to the SDG&E Pendleton Substation and a 12 kV underground distribution line would connect directly to the main distribution buss for the base located in the MS1 metering station. A switchgear would be installed within the switching/metering station in order to divert power via the 12 kV underground distribution line connecting to the MS1 metering station during grid outage.

The natural gas power plant would also be connected to up to 50 MW battery energy storage systems that would feed to the 12 kV switching/metering station via four step-up oil filled pad mounted transformers and four 15 kV load interrupter switches. Each system would be in self-contained exterior enclosure with inverters, batteries, HVAC equipment, control panel and output circuit breakers. The step-up transformers would be FR3 oil insulated. FR3 is environment friendly vegetable oil which is used by most transformers on military projects and in the industry. The load interrupter switches would be pad mounted in NEMA 3R enclosures. All electrical equipment, including inverters and transformers would be constructed on concrete pads. Wiring would be routed overhead or underground and in cable trays. The existing access road to the SDG&E Pendleton Substation would be improved and would border the site perimeter for maintenance access. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the natural gas power plant to minimize the potential for unauthorized individuals to enter the area.

A construction laydown area (approximately 25,000 square feet [2,323 square meters]) would either be delineated within the overall project area and all work would be done on site or, depending on which site is chosen for the location of the natural gas power plant, the alternate site potentially could be used as the construction staging area. Bulk materials would include but not be limited to underground and aboveground piping and cables, gravel, sand, concrete with rebar and embedments, structural steel for buildings and pipe racks, insulation, paint and other coatings. Majority of materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the natural gas power plant and gas connection would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. In compliance with the Construction General Permit, the contractor would prepare and implement a project-specific construction SWPPP and all applicable BMPs for each location, from initiation through completion of construction activities. Implementation of a project-specific construction SWPPP and these BMPs would minimize the potential for pollutants to enter receiving waters and reduce the potential for soil erosion throughout the duration of the project. The construction duration would be approximately 2 to 3 years.

Water for the facility would be provided through a MCB Camp Pendleton water supply already on the site and a portion would be demineralized[6] for use. The connection to the MCB Camp Pendleton potable water supply system would be in compliance with the requirements stipulated in the 2016 CPR (MCB Camp Pendleton 2016). Water consumption, for evaporative cooling of the turbine's inlet air would be a maximum of approximately 3,285,000 gallons per year. During peak summer temperatures usage would be a maximum of approximately 375 gallons per hour. This water consumption would be approximately 0.16 percent of total annual use in the southern portion of the Base. Any return water would be discharged into

[6] The process of removing mineral matter or salts (as from water).

the MCB Camp Pendleton wastewater system in compliance with the discharge requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016).

Wastewater from natural gas power plant processes would be routed to the MCB Camp Pendleton sanitary sewer system once approval has been obtained from the MCB Camp Pendleton Wastewater Source Control and Pretreatment Program that is administered by the Water Resource Division. This would consist primarily of boiler blowdown, demineralization waste, and residual water from the evaporative inlet cooling system. On-site drains from potentially oil-contaminated areas would be routed to an oil water separator. The oil collected from this process would be hauled off-site and properly disposed of at an appropriate facility. Water from the oil water separator and wash water from equipment washdown would be routed to the MCB Camp Pendleton sanitary sewer system. Disposal of any industrial wastewater that was not approved by the Water Resource Division and/or did not meet the requirements set forth in the 2016 CPR would be collected by tanker truck for off-site treatment. Restroom facilities would connect to the MCB Camp Pendleton sanitary sewer system. The facility would be manned 24 hours a day, 7 days a week with up to eight personnel on the day shift when operating. A hydrology study would be performed that would identify existing water courses to ensure that the new development is not creating new points of stormwater discharge and, depending on the type of development, not altering flow rates. This would ultimately determine where the proposed stormwater connection to the existing outfall/drainage course (whether that be a canyon, storm drain facility, etc.) would occur with the approval of the Water Resource Division. All stormwater from the proposed development area for the project will be routed through the appropriate BMPs as dictated by California stormwater guidelines, the Camp Pendleton UFC stormwater criteria for Low Impact Development (LID) and other requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016).

The exterior lighting system for the natural gas power plant would be compliant with the requirements of the 2016 CPR (MCB Camp Pendleton 2016), would be downward facing exterior grade lights that would focus the light on the general vicinity of the power plant, and would include any lighting specifications that may come as a result of the section 7 consultation. The existing lighting at the Haybarn Site for the SDG&E Pendleton Substation and MS1 is a wall mounted, full cutoff, 42 watt, compact fluorescent sconce fixture controlled with a photocell. The natural gas power plant lighting system would consist of a similar fixture using light-emitting diode technology and would be controlled by a photocell and occupancy sensor.

The natural gas power plant requires connection to the SDG&E Pendleton Substation and also requires a connection directly to the MCB Camp Pendleton MS1 metering station. Both existing stations are located adjacent to the Haybarn Site. The energy generation system would usually provide power to the SDG&E regional electrical grid, however, it would also be designed and built to provide MCB Camp Pendleton a reliable source of energy "behind the meter" during a regional grid outage. The natural gas power plant and the local MCB Camp Pendleton grid would be capable of autonomously "islanding" during this event supplying critical loads up to 49.9 MW at a 12.47 kV energy supply to a set of predetermined loads determined by MCB Camp Pendleton.

2.1.5 Natural Gas Line Improvements

Natural gas to power the natural gas power plant would be provided through the existing 6-inch diameter SDG&E Line 49-102 gas line by connecting a new (up to) 10-inch diameter steel high pressure gas tap line to the existing SDG&E gas line at the 16th Street Rattlesnake Metering Station. The 6-inch SDG&E Line 49-102 gas line enters the base from Fallbrook on Engineer Hill Road and runs west until the existing 16th Street Rattlesnake Metering Station. The new gas line would connect at the existing 16th Street Rattlesnake Metering Station, then extend west along Rattlesnake Canyon Road to Vandegrift Boulevard. The new gas line would then run along Vandegrift Boulevard to the natural gas power plant site (see Figure 1-4). The natural gas system construction shall conform to the most recent edition of the standards, and design and construction requirements listed in the 2016 CPR (MCB Camp Pendleton 2016).

2.1.6 Natural Gas Compressor Station

A natural gas compressor station is necessary to compress the existing natural gas supply provided by SDG&E to MCB Camp Pendleton to a volume and pressure adequate to run the natural gas power plant. A natural gas compressor station including custody transfer metering, pressure regulation and any necessary filtration, knockout drums (or vapor-liquid separators), etc. would be located at the natural gas power plant (see Figure 1-4).

2.2 REASONABLE ALTERNATIVE SCREENING FACTORS

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA establish a number of policies for federal agencies, including "using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2 [e]). This SEA only carries forward for detailed analysis those alternatives that could meet the purpose of and need for the project as defined in Section 1.3, *Purpose of and Need for the Proposed Action* and the below-listed reasonable alternative screening factors.

The screening factors used to develop the reasonable range of alternatives are as follows:

1. Must not interfere with installation mission activities and operations or create unsafe conditions.
2. Should contribute to the SECNAV's goal of ensuring energy resilience on military installations and align with the requirements to DoD Instructions 4170, by providing a resilient source of energy that could be diverted to MCB Camp Pendleton during grid outages, allowing the Base to achieve energy self-sufficiency during energy "islanding."
3. Should provide a location for a parcel (or parcels) of land to accommodate an up to 49.9 MW natural gas power plant design capable of providing electricity at or below the current cost of traditional power.
4. Should have access to adequate gas supply and pressure to support up to 49.9 MW of natural gas power plant energy generation facility.

2.3 ALTERNATIVES TO IMPLEMENT THE PROPOSED ACTION

The DoN has identified two action alternatives (Alternatives 1 and 2) as meeting the reasonable screening factors. The following sections provide descriptions of these two alternatives. In addition, Section 2.3.3 describes the No-Action Alternative, and Section 2.3.4 compares each of the action alternatives.

2.3.1 Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site

Under Alternative 1, battery energy storage systems, a power line, and new substation or substation upgrade would be constructed at the Stuart Mesa Site as described in Section 2.1. In addition, a natural gas power plant would be constructed at the Haybarn Site and related utility connections would be installed or upgraded to support the natural gas power plant as described in Section 2.1.4. Alternative 1 includes construction, operation, and decommissioning of these facilities at the end of the lease period by the private partner.

The natural gas power plant would be located at the Haybarn Site, south of Vandegrift Boulevard at the end of Haybarn Road, in the 24 Area, and immediately to the east of the SDG&E Pendleton Substation and MS1 (Figures 2-1, 2-2a and 2-2b, and Photo 4). Under Alternative 1, approximately 14.66 acres (5.93 ha) at the Haybarn Site would potentially be disturbed during construction due to the potential need to grade and construct retaining walls, move existing power lines crossing the property, improve the access road, etc. Approximately 1.87 acres (0.76 ha) of the disturbed area would be developed to support the creation of up to 49.9 MW of natural gas power generation (Figure 2-2b). The natural gas power plant, gas line improvements, and gas compressor station are described in Section 2.1

Photo 4: Haybarn Site (looking south towards Vandegrift Boulevard)

2.3.1.1 Acquisition Strategy

Under Alternative 1, modifications to the Stuart Mesa Site to include battery energy storage systems would be made, and a natural gas power plant would be developed to generate resilient energy at MCB Camp Pendleton under the Model 2 acquisition strategy (refer to Section 1.2.3). Under a Model 2 acquisition strategy, the DoN and private partner would enter into a lease agreement (or real estate outgrant) to allow the partner to use DoN land to construct, operate, and own the facilities at the Stuart Mesa Site and the natural gas power plant at the Haybarn Site. Some DoN infrastructure (power/distribution lines, substation, etc.) would be accessed by the partner to connect the facility to the Base electrical grid, Base electrical distribution and gas supply. The DoN would receive compensation for the lease but would not directly receive the power generated by the natural gas power plant, except in the case of a regional grid outage or other circumstance defined by the agreement. During a grid outage, the power generated by the natural gas power plant would be switched over to the MS1 metering station to be distributed to the Base network. During normal operation, the private partner would sell the generated power to regional customers outside the DoN. The private partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 37 years. The 37-year agreement would consist of 2 to 3 years for construction, followed by an initial 25-year operating term and two, 5-year operating extensions (10 years). This acquisition strategy maximizes the total capacity (size) of the system based on available land, and MCB Camp Pendleton's electrical demand.

2.3.1.2 Construction

The Haybarn Site topography is uneven and would require grading and the construction of retaining walls on the west and east sides of the site (see Figures 2-2a and 2-2b). Other site preparation activities would include relocation of overhead electrical power/distribution lines[7], trenching for underground electrical

[7] Future location of the overhead electrical power/distribution lines to be relocated is unknown but assumed to be within the Haybarn Site boundary.

lines and circuitry if required (at least 3 feet deep [1 meter] per UFC codes), and gas lines (at least 4.5 feet [1.4 meters] deep per UFC codes). Construction activities would include building the natural gas power plant and associated structures as detailed in Section 2.1.4. Power would be delivered via new power/distribution lines to the SDG&E Pendleton Substation (69 kV power line) and MS1 (12 kV distribution line) as described in Section 2.1.4.

The switchgear would be installed in order to divert power via the 12 kV underground distribution line connecting to MS1 during grid outage. Water and sewer laterals would be relocated as part of road improvements to Haybarn Road. Laydown area for equipment and materials needed during construction would be located within the Haybarn Site footprint (see Figure 2-1), and no laydown would occur outside of the project footprint.

All construction would be conducted in compliance with all applicable rules and regulations including the 2016 CPR. Construction would create a minimal amount of construction debris that would be removed and disposed of in accordance with applicable regulations at an appropriately accredited facility.

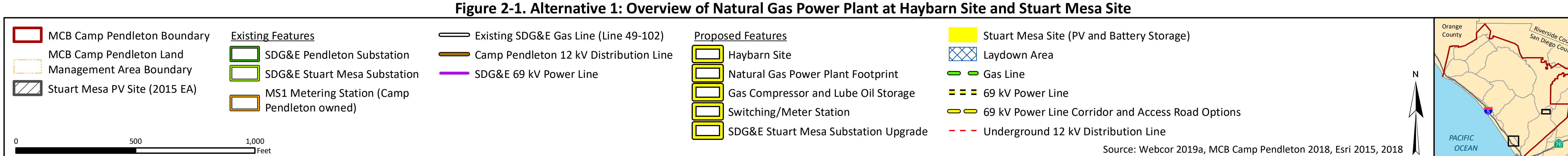
2.3.1.3 Operation and Maintenance

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair. Quarterly inspections of the battery energy storage systems area and all associated electrical systems would be conducted to ensure infrastructure is in good operating condition. The private partner or their designated contractor would ensure all required permits to operate the systems have been obtained including but not limited to the Stationary Source Air Permit, and operation and maintenance requirements have been implemented.

In addition, the private partner or their designated contractor would conduct any repairs or regular service. The natural gas power plant would be manned 24 hours a day, 7 days a week when operating, and maintenance and repair would occur as needed. Noise generated through operation of the natural gas power plant and compressor station at the Haybarn Site is anticipated to reach 85 decibels at 100 feet from the source, with protective shrouding in place to minimize noise. Protective shrouding would consist of a metal building with insulated walls or a skid enclosure with sound attenuating, “sandwich” paneling that is perforated on the inside and contains sound absorbing material. There are no noise sensitive receptors in the power plant area but impacts to wildlife are assessed in Section 3.3 of this SEA.

All maintenance of the battery energy storage systems area at the Stuart Mesa Site and the natural gas power plant and associated structures at the Haybarn Site would be done in accordance with BMPs. Although unmanned, water, if needed at the battery energy storage systems area would be trucked in from an off-base source and water procurement for this activity would be the responsibility of the private partner. Water needed for the operation of the natural gas power plant would be derived from the Base’s potable water system. In addition, industrial wastewater and restroom facilities required for the 24 hours a day, 7 days a week manned operation at the natural gas power plant would be connected to the Base’s sanitary sewer system. Access roads would be maintained as needed, and ground cover and other vegetation would be trimmed periodically. Vegetation near the battery energy storage systems area and the natural gas power plant and associated structures could also be controlled with herbicides to ensure that it does not obstruct the safety, function, or operation of the facility (State Water Resources Control Board [SWRCB] 2016). In addition, around the relocated and newly installed poles for the overhead electrical power/distribution lines, application of herbicides may follow the mechanical trimming of vegetation to prevent vegetation from recurring. The herbicides would be sprayed around the base of the pole structure within a radius of approximately 10 feet.

Figure 2-1. Alternative 1: Overview of Natural Gas Power Plant at Haybarn Site and Stuart Mesa Site



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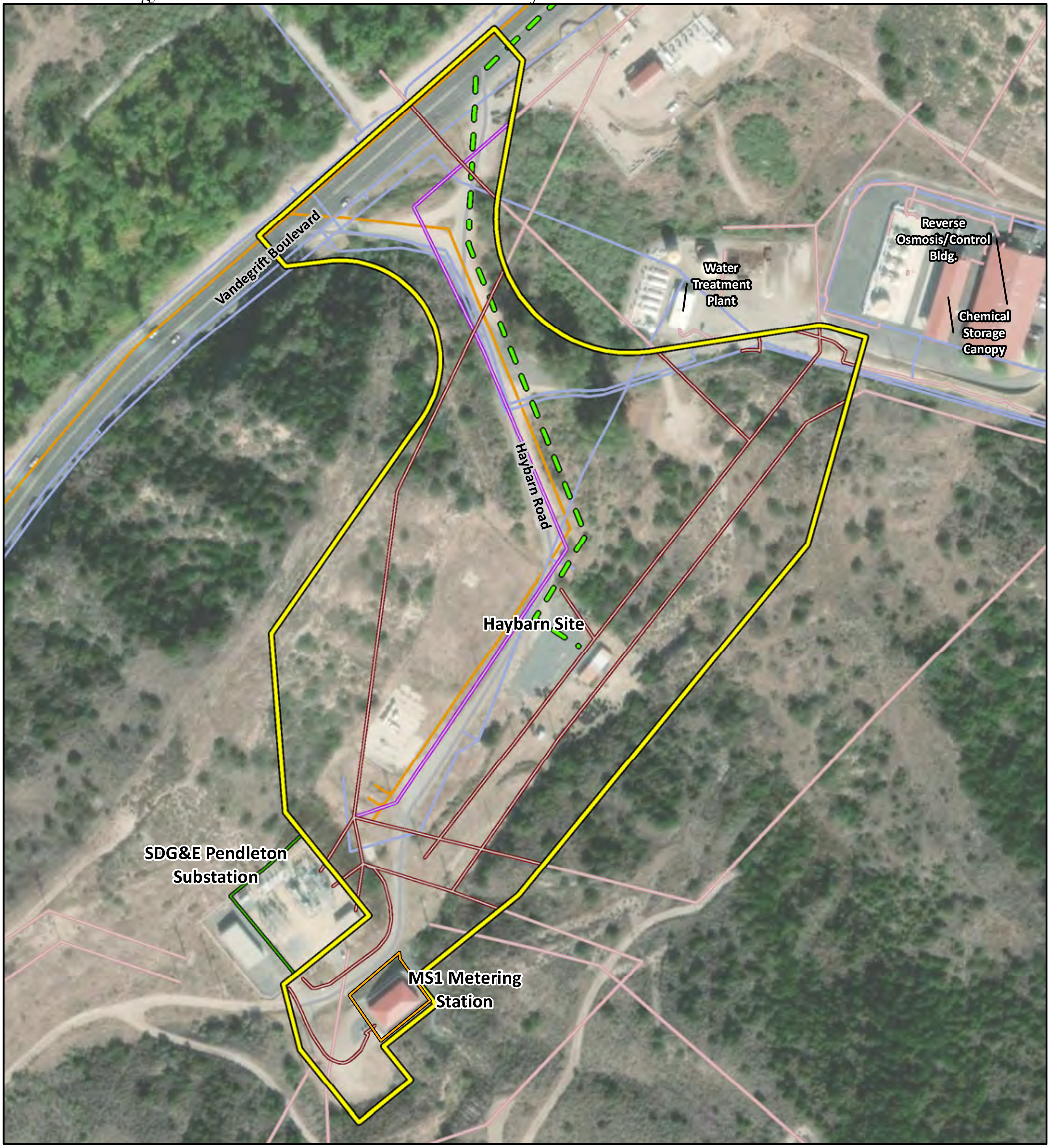


Figure 2-2a. Alternative 1: Detail of Existing Haybarn Site

MCB Camp Pendleton Boundary

Existing Features

SDG&E Pendleton Substation

MS1 Metering Station (Camp Pendleton Owned)

Water Line

Wastewater Line

Electrical Line

Proposed Features

Haybarn Site

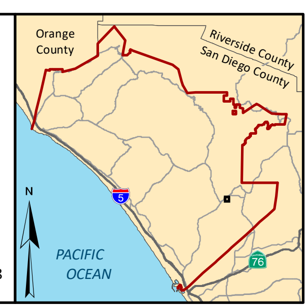
Gas Line

Electrical Line to be Re-located

Electrical Line to be Removed

0 125 250 Feet

Source: Webcor 2019a, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018



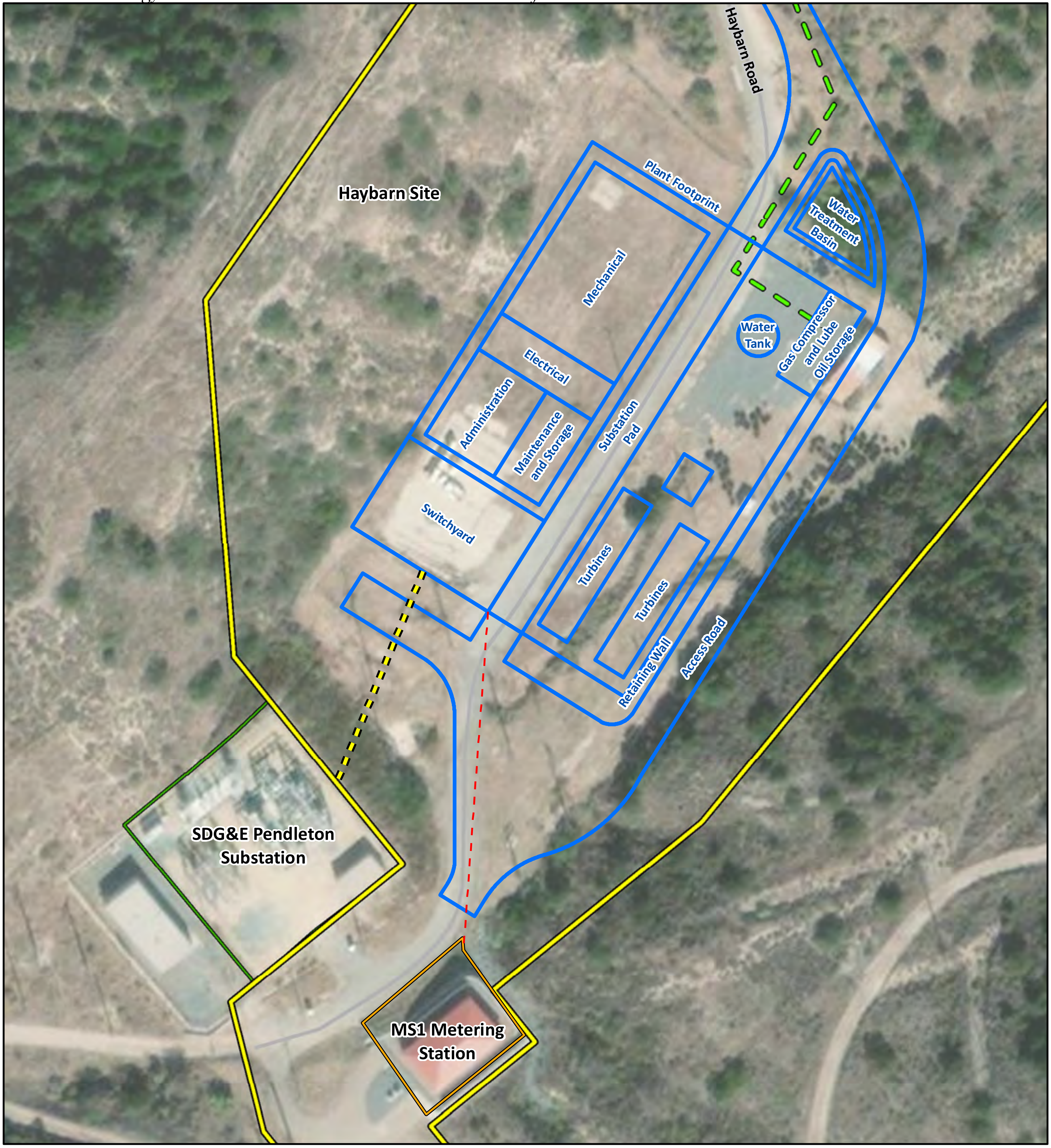


Figure 2-2b. Alternative 1: Notional Footprint of Natural Gas Power Plant at Haybarn Site

MCB Camp Pendleton Boundary

Existing Features

SDG&E Pendleton Substation

MS1 Metering Station (Camp Pendleton Owned)

Proposed Features

Haybarn Site

Notional Power Plant Footprint

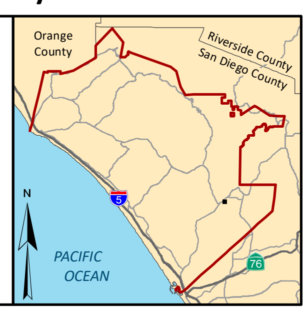
Gas Line

69 kV Power Line

Underground 12 kV Distribution Line

0 125 250 Feet

Source: Webcor 2019a, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018



All operations and maintenance would be conducted in compliance with all DoN and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

2.3.1.4 Decommissioning

One year prior to the conclusion of the agreement (37 years total), the batteries at the Stuart Mesa Site and natural gas power plant and associated systems would be decommissioned and the sites returned to their pre-project condition or as required by agreement between the DoN and the private partner. A decommissioning plan would be prepared in accordance with DoN's requirements. The plan would ensure that the project facilities would be decommissioned and removed, and the Stuart Mesa and Haybarn Sites would be restored to pre-construction conditions. Soils and impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning and restoration process would likely involve the removal of aboveground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be used during the decommissioning phase of the project.

Anticipated decommissioning activities would use a mix of equipment and vehicles, likely to include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. The decommissioning activities would likely occur over a period of approximately 6 months. Debris would be removed and disposed of in compliance with the DoN's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the DoN's 2009 statement in the future.

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the DoN would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all DoN regulations applicable to conducting work activities on MCB Camp Pendleton and the 2016 CPR, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

2.3.2 Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site

Under Alternative 2, battery energy storage systems, a power line, and new substation or substation upgrade would be constructed at the Stuart Mesa Site as described in Section 2.1. Also, a natural gas power plant would be constructed at the Parking Lot Site and related utility connections would be installed or upgraded to support the natural gas power plant as described in Section 2.1.4. Alternative 2 includes construction, operation, and decommissioning of these facilities at the end of the lease period by the private partner. The same natural gas power plant acquisition, and similar construction, operation, and decommissioning activities as described under Alternative 1 would also occur as described in Section 2.3.1. However, under Alternative 2, an up to 49.9 MW natural gas power plant would be constructed and operated at the Parking Lot Site instead of the Haybarn Site (Figure 2-3).

The Parking Lot Site is previously disturbed land located off a dirt driveway on the east side of Vandegrift Boulevard in the 26 Area across the street from the Marine Corps Exchange Property Maintenance Building, Plumber and Welding Shops, and General Storage Building (Figures 2-3 and 2-4a and Photo 5). Under Alternative 2, approximately 4.58 acres (1.85 ha) at the Parking Lot Site would be disturbed during construction and approximately 2.09 acres (0.85 ha) of that disturbed area would be developed to support the creation of up to 49.9 MW of natural gas power generation. The features would be similar to those described in Section 2.1 (Figure 2-4b).

Photo 5: Parking Lot Site
(looking north towards Vandegrift Boulevard)

2.3.2.1 Acquisition Strategy

Alternative 2 would rely upon the same Model 2 acquisition strategy described under Alternative 1. The land impact, function of the facility, conservation and construction measures would be nearly identical to Alternative 1. The notable differences would be the extent of construction, placement of the natural gas power plant at the Parking Lot Site, and routing of electrical distribution corridors (i.e., placement and point of connection of the natural gas power plant system). Alternatives 1 and 2 would serve the regional public grid during normal operations, or the MCB Camp Pendleton grid during a power outage. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. At the conclusion of the agreement, the private partner would decommission the battery energy storage systems area and the natural gas power plant and return the site to pre-project conditions.

2.3.2.2 Construction

The Parking Lot Site is relatively flat and would require minimal grading. The area where the natural gas power plant would be located is bound by hillsides to the northeast and east, the Vandegrift Boulevard to the northwest and west; and open, undeveloped land to the south. In order to accommodate the natural gas power plant footprint, the hillsides to the northeast and east would be partially graded and retaining walls installed.

Under Alternative 2, similar natural gas power plant construction activities as described under Alternative 1 and Section 2.1.4 would occur at the Parking Lot Site (Figure 2-4b). Other site preparation activities would be similar to Alternative 1 with the exception of the relocation of overhead electrical power/distribution lines at the Haybarn Site and construction of a 69 kV overhead or underground power line from the Parking Lot Site to the switching/metering station constructed at the Haybarn Site. The switching/metering station would be the same as described in Section 2.1.4 and for Alternative 1.

Figure 2-3. Alternative 2: Overview of Natural Gas Power Plant at Parking Lot Site and Stuart Mesa Site

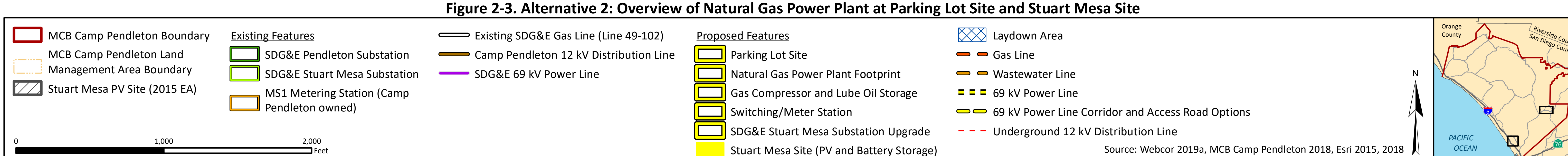


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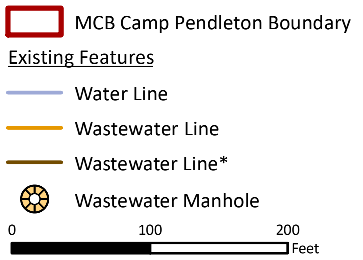
Figure 2-4a. Alternative 2: Detail of Existing Parking Lot Site



*The wastewater line shown in brown is abandoned. It is not a viable alternative to connect to MCB Camp Pendleton's wastewater system through an abandoned line.

Source: Webcor 2019a, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018

Figure 2-4b. Alternative 2: Notional Footprint of Natural Gas Power Plant at Parking Lot Site

MCB Camp Pendleton Boundary

Proposed Features

Parking Lot Site

Notional Power Plant Footprint

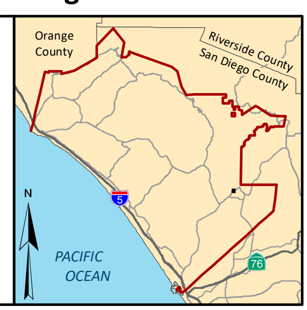
Gas Line

Wastewater Line

69 kV Power Line

0 60 120 Feet

Source: Webcor 2019a, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018



This alternative is similar to Alternative 1 but the gas line that would tap into the existing SDG&E Line 49-102 gas line at the 16th Street Rattlesnake Metering Station, would take a different route. The project would install an up to 10-inch steel gas line that would run south on Vandegrift Boulevard from the Parking Lot Site and the compressor station, then turn left down the north side of Rattlesnake Canyon Road to the metering station at 16th Street.

In addition, the natural gas power plant wastewater discharge would be connected to MCB Camp Pendleton's sanitary sewer system via new line constructed from the site to the existing line at manhole 03Y064 across Vandegrift Boulevard on the west side (Figures 2-3 and 2-4a).

A construction laydown area (approximately 25,000 square feet [2,323 square meters]) could be delineated at the Haybarn Site potentially next to the new switching/metering station as it is already disturbed land, or another area designated by the Base. Material staging and equipment used would be the same as Alternative 1. The construction duration would also be approximately 2 to 3 years.

New Electrical Power Lines from Parking Lot Site to Haybarn Site

Under Alternative 2, the natural gas power plant would connect to the existing SDG&E Pendleton Substation and MS1 metering station located adjacent to the northern boundary of the Haybarn Site. Energy generated at the Parking Lot Site natural gas power plant would be transmitted via a new 69 kV overhead or underground power line from the Parking Lot Site to a switching/metering station located at the Haybarn Site as described in Section 2.1.4. If overhead, it would be an approximately 55-foot (17-meter) tall (maximum) galvanized steel pole supported power line.

2.3.2.3 Operations and Maintenance

Operations and maintenance would be similar to Alternative 1, but the natural gas power plant would be located at the Parking Lot Site.

2.3.2.4 Decommissioning

Decommissioning would be similar to Alternative 1, but the natural gas power plant would be located at Parking Lot Site.

2.3.3 No-Action Alternative

Under the No-Action Alternative, the DoN would not enter into an agreement with a private partner to install batteries for energy storage or construct and operate a natural gas power plant at MCB Camp Pendleton. The No-Action Alternative in this case would be Alternative 1 (*Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B*) from the 2015 EA with the exception that it would not include Site B (see the 2015 EA in Appendix A for more details). The No-Action Alternative does not meet the purpose and need with regard to meeting DoN resilient energy goals as the energy generated from the solar PV system at the Stuart Mesa Site would only be sold to regional customers outside the DoN and not be made available to MCB Camp Pendleton.

However, the DoN has analyzed the No-Action Alternative in this SEA in accordance with statutory requirements and to provide a baseline against which to measure environmental consequences of the action alternatives. The affected environment section of Chapter 3 describes the No-Action Alternative (existing conditions) for each resource area. The analysis of the No-Action Alternative in Chapter 3 assumes that the DoN would only implement the 2015 EA Alternative 1, and there would be no installation of batteries for energy storage and no new natural gas power plant to ensure MCB Camp Pendleton's energy resilience.

2.3.4 Comparison of Alternatives

Table 2-1 summarizes and compares the features associated with the two action alternatives and the No-Action Alternative.

Acquisition Strategy	System Size	Site(s)	Power/Distribution Line Type	Power User
Alternative 1 *(see Figures 2-1 and 2-2a)*				
Model 2	Up to 200 MW battery energy storage systems / Up to a 49.9 MW natural gas power plant	Stuart Mesa / Haybarn	• New 69 kV power line between Stuart Mesa Site and SDG&E Stuart Mesa Substation. • New substation at the Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation. • New 12/69 kV switching/ metering station at Haybarn Site. • New 69 kV power line between switching/ metering station and SDG&E Pendleton Substation. • New underground 12 kV distribution line between switching/ metering station and MS1 Metering Station.	Regional grid and MCB Camp Pendleton
Alternative 2 *(see Figures 2-3 and 2-4a)*				
Model 2	Up to 200 MW battery energy storage systems / Up to a 49.9 MW natural gas power plant	Stuart Mesa / Parking Lot	• New 69 kV power line between Stuart Mesa Site and SDG&E Stuart Mesa Substation. • New substation at the Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation. • New 12/69 kV switching/ metering station at Haybarn Site. • New 69 kV power line between Parking Lot Site and the switching/ metering station along Vandegrift Boulevard and Haybarn Road. • New 69 kV power line between switching/ metering station and SDG&E Pendleton Substation. • New underground 12 kV distribution line between switching/ metering station and MS1 Metering Station.	Regional grid and MCB Camp Pendleton
No-Action Alternative				
Model 2	Up to a 28 MW[1] solar PV system	Stuart Mesa Sites A and B	No new power/distribution lines.	Regional grid

Notes: [1]The potential capacity of the solar PV system is the 28 MW analyzed in the 2015 EA.
Legend: kV = kilovolt; MCB = Marine Corps Base; MW = megawatts(s); SDG&E = San Diego Gas and Electric.

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

The DoN initially considered other resilient energy sources and other sites. Once natural gas was determined to best meet the project purpose and need, the DoN considered several sites as options for the placement of a natural gas power plant as well as several different pipeline alignments for gas supply to fuel the project. Each was evaluated for its potential implementation of the Proposed Action to fulfill the project purpose and need.

2.4.1 Other Resilient Energy Sources

Other resilient energy sources were considered, including diesel generated power, and solar PV generated power. However, given MCB Camp Pendleton's location and associated available resources, the DoN has determined that natural gas energy generation represents the best resilient energy option for MCB Camp Pendleton when compared with other resilient energy options. Metrics used for comparison were cost, land area required, and potential to satisfy the purpose and need of the project. The DoN has eliminated other resilient energy sources from detailed analysis in this SEA.

2.4.2 Mechanical Museum Lot

The Mechanical Museum Lot was considered for the natural gas power plant. It is located along the west side of Vandegrift Boulevard. This site is located within a flood zone, according to Federal Emergency Management Agency. The Mechanical Museum Lot is also directly in the flight path which could pose a problem with the height of the natural gas power plant HRSG stacks (100 feet [30.5 meters] high) and the utility poles. Construction and operation of a natural gas power plant at this location would potentially be unsafe and pose hazards to military missions. Therefore, the Mechanical Museum Lot was removed from consideration and detailed analysis of this site is not included in the SEA.

2.4.3 12 Area Site

The 12 Area Site was considered for the natural gas power plant. It is located along the east side of Vandegrift Boulevard. The 12 Area Site is located on a steep hillside that would require considerable earthwork and retaining walls to create a level area for construction. It was also found to be within the view shed of base housing. Therefore, the DoN has eliminated the 12 Area Site from further consideration and detailed analysis in this SEA.

2.4.4 New 6-inch Natural Gas Line Extending from the 10-inch SDG&E Line 1026 Transition Pipeline to the Power Plant

The DoN considered the possibility of constructing a new 6-inch gas line to connect the natural gas power plant to the 10-inch SDG&E Line 1026 transition pipeline that runs along the coast, in order to provide enough natural gas to generate a minimum of 25 MW. Coordination with SDG&E indicated that the line is old, and they would prefer in the future to be lowering the pressure of Line 1026. The SDG&E Line 1026 would require significant work and upgrades to support the proposed project. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.5 New 8-inch Natural Gas Line Extending from the 30-inch SDG&E Line 3010 Transition Pipeline along SDG&E Line 49-102 Route to the Power Plant

The DoN considered the possibility of constructing a new 8-inch gas line from the existing 30-inch SDG&E Line 3010 transition pipeline to replace the existing 6-inch SDG&E Line 49-102 gas line that enters MCB Camp Pendleton along Engineering Road, through Juliette Training Area, the 16th Street Rattlesnake

Canyon Metering Station, along Rattlesnake Canyon Road to Vandegrift Boulevard and the selected location of the natural gas power plant, in order to provide enough natural gas to generate a minimum of 25 MW. Coordination with SDG&E indicated that for safety purposes, a minimum of 42-inches of cover is required over any gas line that runs through in the Juliette Training Area. Currently, the cover is continuously being removed by grading and training activities occurring within the Juliette Training Area, potentially posing a safety hazard. For this reason, the Base and SDG&E would ideally like to remove all gas lines from the training course. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.6 New 10-inch Natural Gas Line Extending from the 30-inch SDG&E Line 3010 Transition Pipeline along SDG&E Line 49-103-B Route to the Power Plant

The DoN, in coordination with SDG&E, considered the possibility of constructing a new 10-inch gas line from the existing 30-inch SDG&E Line 3010 transition pipeline to replace the existing various sized SDG&E Line 49-103-B gas line that enters MCB Camp Pendleton through the San Luis Rey Gate, along Vandegrift Boulevard to the 16th Street Rattlesnake Canyon Metering Station, along Rattlesnake Canyon Road to another segment of Vandegrift Boulevard and the selected location of the natural gas power plant, in order to provide enough natural gas to generate 49.9 MW. SDG&E would be responsible for the construction of the gas line and because a portion of the new gas line extends outside the boundaries of the base, a California Environmental Quality Act document might need to be developed and the CPUC involved which would significantly impact the proposed project's timeline. In addition, MCB Camp Pendleton Command expressed concern with creating more ground disturbance along Vandegrift Boulevard where it runs from San Luis Rey Gate to 16th Street and did not endorse this alternative. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.7 Connect Three New 6-inch Gas Lines to Supply the Power Plant

The DoN considered drawing natural gas fuel supply from all three existing SDG&E gas lines (Lines 49-103, 49-102, and 1026) to supply the Proposed Action to 49.9 MW capacity. However, it has been determined that the 10-inch SDG&E Line 1026 transition pipeline on the coast cannot supply the project. In order to supply the Proposed Action, SDG&E Line 1026 would require significant work and upgrades. Additionally, the DoN and SDG&E would like to remove all pipelines from under the Juliette Training Area. In addition, connecting to all three gas lines represents significant difficulties (i.e., more cost and new gas lines and ground disturbance). For these reasons, the DoN removed from consideration the concept of connecting to all three gas supply lines to supply the Proposed Action.

2.4.8 Construct a Natural Gas-fueled Reciprocating Engine for Power Generation

The DoN considered constructing a Natural Gas-fueled Reciprocating Engine (rather than the Combined Cycle Gas Turbine Facility) but determined it to be costly and inefficient; therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

CHAPTER 3
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental conditions and potential environmental consequences for the following resource areas analyzed in detail: air quality, airspace/air traffic, biological resources, cultural resources, geological resources, hazardous materials and waste, noise, public health and safety, utilities and infrastructure, and water resources. Table 3-1 provides a summary of potential impacts and avoidance/minimization measures for each resource area from implementation of the alternatives.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
Air Quality			
Impact Summary	No Significant Impact Alternative 1 would not exceed de minimis levels; thus, a Conformity Determination would not be required. Hazardous air pollutants (HAPs) emissions would be negligible. The private partner who owns the power plant would consult with the San Diego Air Pollution Control District (SDAPCD) to add it to MCB Camp Pendleton's existing air permit as a modification, and the plant would need to comply with SDAPCD rules for granting permits for new stationary sources. Emissions dispersion modeling for the power plant would also be required by the SDAPCD as a condition of issuing the stationary source permit.	No Significant Impact Alternative 2 would not exceed de minimis levels; thus, a Conformity Determination would not be required. HAP emissions would be negligible.	No Significant Impact Long-term beneficial impacts to air quality would occur with implementation of the solar photovoltaic (PV) system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing greenhouse gases. These potential long-term beneficial impacts would be expected to offset the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.
Avoidance/ Minimization Measures	• **AQ-1.** Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. • **AQ-2.** Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. • **AQ-3.** After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads as required. • **AQ-4.** The private partner would consult with the SDAPCD to add it to MCB Camp Pendleton's existing air permit as a modification, and the plant would need to comply with SDAPCD rules for granting permits for new stationary sources. Emissions dispersion modeling for the power plant would also be required by the SDAPCD as a condition of issuing the stationary source permit. • **AQ-5.** Best alternative control technologies would be employed in the design of the natural gas power plant.	Same as Alternative 1.	Same as current Alternative 1 except for the implementation of **AQ-4** and **AQ-5** would not occur.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
Airspace/Air Traffic			
Impact Summary	No Significant Impact Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stack(s) at the Haybarn Site location (Alternative 1) would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. Informal consultation with the Air Operations Department at MCAS Camp Pendleton indicated that there could be a potential concern with lighting on the stack(s) located at the Haybarn Site interfering with pilots on a right base turn to land on Runway 21 at night. Lights on the stacks would be in the "heads up display" field of view of these aircraft as they go through the approximate "90" position (halfway through the turn) and would exit that field of view as the turn progressed. Therefore, there is a probable requirement to make these lights compatible with night-vision devices as appropriate. Alternative 1 does not create new construction in the clear zone and accident potential zones. The risk of exhaust gas from the power plant stack(s) to create smoke obscuring a pilot's view would be minimal because the exhaust gas humidity would be approximately 5 percent and the stacks would be the 'dry' type that would not add water to the exhaust gas for cooling purposes. There is the potential for the risk of upset and/or severe turbulence in the immediate vicinity of the exhaust stack(s) from the exhaust plume under certain weather condition (i.e., cold temperatures and no wind).	No Significant Impact Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stack(s) at the Parking Lot Site location (Alternative 2) would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. Alternative 2 does not create new construction in the clear zone and accident potential zones. The potential impacts from the exhaust stack(s) would be similar to Alternative 1; however, the Parking Lot Site is located further from the MCAS Camp Pendleton's runways (approximately 9,000 feet [2,743.2 meters] away) so aircraft generally operate at greater altitudes in this area than the Haybarn Site. The closest common flight tracks would be approximately 1,500 feet (457.2 meters) northwest of the proposed Parking Lot Site and sufficiently far away to create a negligible risk to all aircraft.	No Significant Impact Under the No-Action Alternative, there would be no change to current airspace/air traffic conditions.
Avoidance/ Minimization Measures	• **AS-1.** The United States Marine Corps (USMC) would file the applicable paperwork with the Federal Aviation Administration (FAA) at least 45 days prior to the start of	Same as Alternative 1.	None identified.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	construction and, should the FAA require it, mitigation such as high visibility painting or lighting would be added to the exhaust stack. If appropriate, the lighting would be compatible with night-vision devices. • **AS-2**. Decrease the risks of upset or severe turbulence by maintaining sufficient lateral separation of approximately 300 feet (91.4 meters) from the proposed stack(s) when operating at altitudes below 1,000 (304.8 meters) above ground level.		
Biological Resources			
Impact Summary	<u>No Significant Impact</u> ***Coastal California Gnatcatcher*** Construction of the proposed project would permanently impact to up to 0.49 acre (0.20 hectare [ha]) of suitable habitat and temporarily disturb up to 7.35 acres (2.97 ha) of suitable habitat. Potential disturbance from noise and night lighting associated with construction/decommissioning activities could occur. Historically, there are up to two pairs within 500 feet (152 meters) of the Haybarn Canyon footprint that could be affected by noise associated with construction and night lighting. There is an additional pair at the Stuart Mesa Substation site, and up to two more pairs that could be affected by the construction associated with the power line corridor road. Implementation of conservation measures (CMs), including habitat restoration/mitigation, is expected to lessen potential impacts. ***Least Bell's Vireo*** Construction of the proposed project would permanently impact to up to 0.06 acre (0.02 ha) of suitable habitat and temporarily disturb up to 1.03 acres (0.42 ha) of suitable habitat. No territories would experience significant habitat impacts. Historically, two pairs of least Bell's vireo (LBVI) have been documented in the vicinity of the Haybarn site and would be exposed to elevated noise levels during	<u>No Significant Impact</u> ***Coastal California Gnatcatcher*** Similar impacts to Alternative 1 except up to 0.49 acre (0.20 ha) of suitable habitat would be permanently impacted and 2.24 acres (0.91 ha) temporarily impacted. ***Least Bell's Vireo*** Similar impacts to Alternative 1 except up to 0.18 acre (0.07 ha) of suitable habitat would be permanently impacted and 0.20 acre (0.08 ha) temporarily impacted.	<u>No Significant Impact</u> Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and coastal scrub, which are suitable habitat for the LBVI and the coastal California gnatcatcher (CAGN), respectively, are adjacent to, but not located within, the construction footprint (Stuart Mesa Site). As such, implementation of No-Action Alternative (2015 EA Alternative 1) would not affect the LBVI or the CAGN. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	operation. Implementation of CMs, including habitat restoration/mitigation, is expected to lessen potential impacts.		
Avoidance/ Minimization Measures	• **BR-1.** All construction and maintenance will take place within the construction footprints defined in this Biological Assessment (BA) and the Biological Opinion (BO). Construction site boundaries will be clearly delineated by flagging, stakes, survey lath, silt or snow fencing, as practical, and may be in conjunction with Stormwater Pollution Prevention Plan (SWPPP) fencing. • **BR-2.** Contractors will be provided with digital files and hardcopy maps showing the project limits that were used for the environmental analyses in this BA and will be informed that construction activity must be confined within those limits. Digital files and hardcopy maps will also include the locations of federally listed species and sensitive habitats. Any work that is proposed outside those construction footprints will be subject to review by MCB Camp Pendleton Environmental Security (ES) to determine if potential impacts will occur to environmental resources. If there are significant changes to the project, MCB Camp Pendleton ES will determine whether consultation with the U.S. Fish and Wildlife Service (USFWS) needs to be reinitiated. • **BR-3.** The contractor will designate a project biologist to ensure compliance with the CMs specified in the BO and this BA. The project biologist will have familiarity with the species addressed in the BO, with qualifications approved by MCB Camp Pendleton ES. The project biologist may also serve as the species-specific biologist referenced in the BO if they meet the minimum qualifications.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **BR-34.** Coastal scrub would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). Coastal scrub that cannot be avoided would be restored onsite or mitigated off-site.	The No-Action Alternative would have the following avoidance/minimization measures: **Construction** • **BR-1.** To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites. • **BR-2.** To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements. • The following avoidance/ minimization measures would be implemented to specifically avoid or minimize impacts to the CAGN and LBVI: ○ **BR-3.** A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the CAGN and LBVI,

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	• **BR-4.** Heavy equipment and staging areas will be restricted to existing roads and disturbed areas and will be delineated on the grading plans. Vehicle operation and laydown areas will be defined by staking and flagging between stakes to prevent operations outside these areas. • **BR-5.** Nighttime (dusk-dawn) construction and associated lighting adjacent to natural areas, especially riparian areas, will be avoided to the maximum extent practicable, thereby avoiding adverse effects of construction-related nighttime lighting and nighttime noise. If nighttime construction is required, lighting will be shielded so it does not illuminate adjacent habitat. In addition, a nighttime speed limit of 5 miles per hour on all roads shall be enforced. • **BR-6.** To control the spread of weeds that may degrade native plant communities on MCB Camp Pendleton, all construction equipment and vehicles will be thoroughly power-washed before entering MCB Camp Pendleton. The project biologist will identify weed species that become established at the various project sites and report all new weed species invasions to MCB Camp Pendleton ES. • **BR-7.** In conjunction with final design and as required, a SWPPP will be prepared for the project and submitted to the Regional Water Quality Control Board (RWQCB). The SWPPP will incorporate best management practices (BMPs) for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of storm water runoff. All construction activities with the potential to impact water quality due to the runoff from the site will be conducted in accordance with SWPPP requirements. The SWPPP will be designed to support arroyo toad (ARTO) exclusion measures to avoid potential impacts to ARTO. The intent is to allow the same fence for SWPPP and ARTO exclusion fencing.		respectively. Surveys would be performed by a qualified ornithologist familiar with the CAGN and LBVI (i.e., at least one field season and 40 hours of experience with each species). Three pre-activity surveys for active CAGN and LBVI nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other ongoing surveys to minimize disturbance to nesting CAGNs and LBVIs and to avoid redundant survey effort. ○ **BR-4.** Construction activities during the nesting season within 500 feet (152 meters) of occupied CAGN or LBVI habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if CAGN and LBVI nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Office would be notified of the location of the nest. Additionally, a 250-feet (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation

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	• **BR-8.** Dust will be minimized by reducing vehicle speeds and traffic in newly cleared areas and covering or lightly spraying exposed soil piles with water when weather conditions warrant. • **BR-9.** Construction workers will be prohibited from bringing domestic pets to construction sites to ensure that domestic pets do not disturb or depredate wildlife in adjacent habitats. • **BR-10.** The project site will be kept as clean as possible to avoid attracting predators and protected species. All food-related trash will be placed in sealed bins or removed from the site regularly. • **BR-11.** All construction and maintenance-related debris will be disposed of properly and will not be discarded on-site. Temporary impacts will be restored to as near the original biological condition as possible or better once the project is completed. • **BR-12.** A contractor education program will be implemented to ensure that the contractor(s) and all construction personnel are fully informed of the biological resources associated with the project. This program will focus on: (a) the purpose for resource protection; (b) contractor identification of sensitive resource areas in the field (e.g., areas delineated on maps and by flags or fencing); (c) environmentally responsible construction practices; (d) protocol to resolve conflicts that may arise at any time during the construction process; and (e) ramifications of noncompliance. This program will be conducted by the project biologist and/or MCB Camp Pendleton ES staff and will be a requirement for all construction personnel. • **BR-13.** All fencing material (i.e. mesh, stakes) and temporary SWPPP BMPs will be removed following construction. • **BR-14.** Fueling and maintenance of equipment will take place within existing paved areas or the identified		measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. **Operation** • **BR-5.** To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. • **BR-6.** Maintenance personnel would be trained to identify CAGNs and LBVIs and would report any observations of dead or injured CAGNs and LBVIs to Environmental Security within 48 hours.

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	laydown area, but not closer than 100 feet from drainages. Cleaning of vehicles and equipment will take place off-site to the greatest extent possible. If it is necessary to clean vehicles on-site, vehicles may be rinsed with water within designated bermed and lined areas used to prevent rinse water contact with storm water, creeks, rivers, and other water bodies. Soaps or detergents will not be used. Rinsate will be allowed to evaporate, and the solid residue will be disposed of properly based on chemical characteristics. • **BR-15.** Construction equipment staging and access and disposal or temporary placement of excess fill within drainages or other wetland areas is prohibited. • **BR-16.** After final design of the project, the design contractor will provide geographic information system (GIS) shapefiles, including the project footprint and amount/type of vegetation impacted (including temporary and permanent), to MCB Camp Pendleton ES. The USMC will provide the USFWS summary tables showing the amount/type of vegetation impacted (including both temporary and permanent) based upon final project designs. • **BR-17.** After construction impacts to vegetation, the construction contractor will provide GIS shapefiles, including the project footprint and amount/type of vegetation impacted (including temporary and permanent), to MCB Camp Pendleton ES. The USMC will provide the USFWS summary tables showing the amount/type of vegetation impacted (including both temporary and permanent) based on actual project impacts. • **BR-18**. Grading during the rainy season (1 November to 1 May) will be minimized. Where it is impractical to avoid grading during the rainy season, erosion and sedimentation BMPs will be installed and maintained immediately downslope of work areas until work is		

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	completed and graded areas have been re-contoured, physically stabilized, and planted. • **BR-19.** Non-native vegetation and grassland within the ARTO buffer areas may be removed year-round with the implementation of ARTO CMs listed below. • **BR-20.** In portions of the project area where federally listed species may be affected and where security lights are needed, lighting that produces a green-colored beam with an automatic dusk-to-dawn sensor switch will be incorporated. Light activation will be regulated to the size of a person with the off timer set at 3 seconds. ***Arroyo Toad*** • **BR-21.** An ARTO biologist will be required to be on-site for all ARTO specific measures described below, and during installation and removal of SWPPP fencing. In addition, the ARTO biologist will be on call and available as needed (e.g., during and immediately after measurable rainfall) in the event that an ARTO is encountered during project activities and needs to be relocated. Qualifications of the ARTO biologist will be reviewed and approved by MCB Camp Pendleton ES prior to the beginning of project activities. • **BR-22.** The biological monitor will be on-site during vegetation removal, pre-project flagging, and other construction activities with the potential to impact ARTO. The biological monitor will be empowered to halt work activity to avoid impacts to ARTO, if necessary. Before commencement of the proposed project, the project proponent will submit the resume from the biologist to MCB Camp Pendleton ES for review and approval. • **BR-23.** In coordination with the SWPPP, temporary silt fencing will be installed and maintained on the perimeter of any laydown areas that occur along the Vandegrift Boulevard portion of the gas line corridor. The fencing will be installed prior to any construction activities (with the possible exception of vegetation removal), with		

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	oversight from the ARTO biologist. A) Fencing will consist of woven nylon netting approximately 3 feet in height attached to wooden stakes. Prior to installing the fencing, a narrow trench about 6 inches in depth will be excavated, and the fence will be buried to prevent ARTOs from burrowing beneath the fence. If trenching is not possible, sandbags will be placed over the bottom lip of the fence to hold it in place. B) The silt fencing will be installed at least 14 days prior to construction to allow time for ARTO surveys to be completed during optimal weather conditions. C) The fence will be fully enclosed at the end of each shift (closed, sealed gate) ensuring ARTOs are prevented from entering the worksite through the access portal and digging into site soil stockpiles, decomposed granite piles, etc. and/or accessing site trash receptacles or other project materials. Since this project may span multiple years, maintenance of this exclusion fence in pristine condition must be a priority for construction to proceed un-impeded. D) Maintenance of the exclusion fence will also be a requirement of the contractor, with instruction and training on proper fence maintenance and repair provided by the ARTO biologist. The exclusion fence will be checked (and documented) at the beginning and end of every shift, with periodic verification from various government staff or their delegates. If at any time the fence is determined to be breached or not intact in any form, the contractor shall notify MCB Camp Pendleton ES immediately for review and construction must cease until cleared to proceed by MCB Camp Pendleton ES. As necessary, the fence will be repaired and/or replaced under the direction and discretion of the ARTO biologist, with the potential to have additional nighttime surveys. If the contractor is determined to be negligent in the maintenance of the exclusion fence, the ARTO biologist		

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	may be required to oversee re-installation, surveys, and maintenance of fence at the cost to the contractor. Failure to maintain the fence or notify MCB Camp Pendleton ES immediately upon any breach of fence may lead to construction shutdown and construction delays, and additional biomonitoring at a cost to the contractor while a biologist becomes available to oversee. Any negligence in this requirement will be considered a violation by contractor and may result in a noncompliance notification. • **BR-24.** After exclusionary fencing has been installed, but prior to the initiation of construction, the ARTO biologist will determine if nighttime surveys will be required and, if required, will conduct at least three nighttime surveys for ARTOs within the fenced area. • **BR-25.** If ARTOs are encountered within the project area at any time during the course of project activities, they will be captured and translocated by the ARTO biologist to the closest area of suitable habitat. The date, time of capture, specific location of capture (using GPS), approximate size, age, and health of the individual will be recorded. Immediately following removal and translocation, the biological monitor will notify MCB Camp Pendleton ES. Within 2 weeks of the translocation, ES will provide the USFWS with the above information. • **BR-26.** Dust control (i.e., water truck spraying) will be performed after ARTO exclusion fence has been erected, and overspray will be minimized to avoid attracting ARTOs to the project site. Watering shall not be conducted at night. • **BR-27.** Where movement of ARTOs into the construction area is possible, a toad flap or other approved device will be installed at access points to prevent movement of ARTOs into the enclosed area. • **BR-28.** In the Vandegrift Boulevard portion of the gas line corridor, project-related vehicle travel will be limited, to the extent practicable, to daylight hours, as ARTO		

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	movement across roadways occurs primarily during nighttime hours, and ingress and egress of construction equipment and personnel will be kept to a minimum. Additionally, all access by construction equipment and personnel in the Vandegrift Boulevard portion of the gas line corridor, will be confined to pavement and compacted road shoulders as the single construction access point. Heavy equipment will drive on the compacted road shoulder and previously disturbed areas to move equipment around construction operations. The project biologist for ARTO would be on-site as needed to monitor the use of the roads by contractor equipment and personnel and would notify the ES project manager if the contractor is not complying with this measure. • **BR-29.** Dirt/sand piles left overnight in the Vandegrift Boulevard potion of the gas line corridor will be covered with tarps or plastic sheeting with the edges sealed with sandbags, bricks, or boards to prevent ARTOs from burrowing into the dirt. Holes or trenches will be covered with material such as plywood or solid metal plates with the edges sealed with sandbags, bricks, or boards to prevent ARTOs from falling into holes or trenches. • **BR-30.** All trenches within the paved area of the Vandegrift Boulevard portion of the gas line corridor will be completely backfilled and paved each morning prior to reopening Vandegrift Boulevard to traffic. All trenches within the shoulder of Vandegrift Boulevard will be backfilled to the greatest extent possible at the termination of each construction day. Any portion of a trench left open will either be completely covered (e.g., steel-plate) or completely surrounded by ARTO exclusionary fencing at the termination of each construction day and inspected by a qualified biomonitor for presence of ARTO before reinitiating construction activities each day. The ARTO biologist will be present during any maintenance activities in ARTO habitat (riparian and upland areas) that require		

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	ground disturbing activities such as, but not limited to, removal of sediment, cleaning of culverts/piers, minor repairs of eroded, undermined, or scoured areas, and replacement of jute netting. • **BR-31.** An annual report will be submitted to the USFWS summarizing maintenance activities and documenting any ARTOs killed, encountered, or relocated during maintenance activities. • **BR-32.** Construction activities are planned for daylight hours only. If, however, nighttime construction is required, any proposed work at night will require nighttime-specific measures approved by MCB Camp Pendleton ES and USFWS. Under no circumstance would nighttime construction occur in riparian habitats. ***Coastal California Gnatcatcher*** • **BR-33.** A project biologist familiar with the CAGN will be responsible for overseeing construction to ensure compliance with the CMs and preventing unanticipated impacts to federally listed species. The CAGN biologist will be on-site during vegetation removal, pre-project flagging, and other construction activities with the potential to impact the CAGN. The CAGN biologist will be empowered to make real time recommendations to the construction contractor regarding any avoidance actions that can be taken to further minimize impacts to CAGN. • **BR-34**. To the maximum extent possible, all construction-related activities will take place outside the CAGN breeding season (the breeding season is 15 February through 31 August). • **BR-35.** All vegetation clearing in habitats potentially occupied by CAGN will occur outside the CAGN season (i.e., vegetation clearing will occur from 1 September through 14 February). • **BR-36.** If construction activity (not including vegetation clearing) with potential to impact CAGN must take place		

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	during the CAGN breeding season (15 February through 31 August), then a CAGN biologist will be contracted by the project proponent to ensure ESA and Migratory Bird Treaty Act (MBTA) compliance. A) The CAGN biologist for this measure will be a trained biologist with at least 40 hours of documented experience observing CAGNs in the field and experience locating and monitoring CAGN nests. The CAGN biologist must be approved by MCB Camp Pendleton ES at least three weeks prior to construction start. Contact ES at least three weeks prior to initiation of the action for biologist qualification review. B) The CAGN biologist will conduct pre-construction surveys for active nests in and within 500 feet of the construction footprint (i.e., three surveys at least one week apart with the last survey conducted within 7 days of project initiation). C) The CAGN biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within one week of survey completion. D) If no signs of CAGN nest building or nesting are present, then work will continue. Surveys will continue on a weekly basis throughout the breeding season to monitor the status of any CAGN pairs that may be present until either: (a) the project is completed, (b) the breeding season has ended, or (c) signs of nest building are observed. E) If an active CAGN nest (including nest building) is found within the 500-foot survey buffer, the USMC will notify the USFWS immediately and provide the mapped location of the nest to the USFWS. If the nest is within 250 feet of ongoing project activities, project work will cease within 250 feet until the nest has failed or fledged, or until the USFWS and the USMC agree on appropriate avoidance measures to allow activities to continue.		

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	F) After initial identification of the nest, the project biologist will not approach within 25 feet of an active CAGN nest. Nest monitoring will occur with binoculars from outside of the 25-foot buffer and only to confirm that the nest remains active during construction and other project-related activities. G) If no nesting activity is observed, the nest may be approached to determine the status of the nest. Binoculars should be used to the greatest extent practical to confirm individuals are no longer exhibiting breeding behaviors or tending to the nest prior to approaching the nest directly to determine the nest's fate. H) Construction noise levels will be monitored by the project biologist, and if construction levels exceed pre-construction ambient noise levels within the nesting territories during the breeding season, noise attenuation measures will be implemented in consultation with the USFWS. • **BR-37.** The CAGN biologist will provide an electronic report of nest survey results to MCB Camp Pendleton Environmental Security within 7 days of survey completion. The CAGN biologist will provide bi-weekly (every 2 weeks) biological monitoring reports (electronic versions only), and one final biological monitoring report, to MCB Camp Pendleton ES and the USFWS. All "take" of federally listed species will be reported electronically to MCB Camp Pendleton ES within 24 hours of the action. ***Least Bell's Vireo*** • **BR-38.** A project biologist familiar with the LBVI will be responsible for overseeing construction to ensure compliance with the CMs and preventing unanticipated impacts to federally listed species. The LBVI biologist will be on-site during vegetation removal, pre-project		

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	flagging, and other construction activities with the potential to impact the LBVI. The LBVI biologist will be empowered to make real time recommendations to the construction contractor regarding any avoidance actions that can be taken to further minimize impacts to LBVIs. • **BR-39.** All vegetation clearing in habitats potentially occupied by LBVI will occur outside the LBVI season, which is from 15 March through 31 August (i.e., vegetation clearing will occur from 1 September through 14 March). If vegetation removal of riparian vegetation is needed during the breeding season, then a qualified avian biologist is required to conduct surveys to verify that LBVI are not present. MCB Camp Pendleton ES will notify the USFWS to indicate when vegetation clearing is initiated and when it is completed. • **BR-40.** To the maximum extent practical, all construction-related activities that occur within 500 feet of occupied LBVI habitat will take place outside of the LBVI breeding season. • **BR-41.** If construction activity (not including vegetation clearing) with potential to impact LBVI must take place during the LBVI breeding season (15 March through 31 August), then a pre-approved, qualified wildlife biologist familiar with LBVI will be contracted by the project proponent to ensure ESA and MBTA compliance. A) The LBVI biologist must be approved by MCB Camp Pendleton ES at least three weeks prior to construction start. Contact MCB Camp Pendleton ES at least three weeks prior to initiation of the action for biologist qualification review. B) The LBVI biologist will conduct pre-construction surveys for active nests in and within 500 feet of the		

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	construction footprint (i.e., three surveys at least one week apart with the last survey conducted within 7 days of project initiation) C) The LBVI biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within one week of survey completion. D) If no signs of LBVI nest building or nesting are present, then work will continue. Surveys will continue on a weekly basis throughout the breeding season to monitor the status of any LBVI pairs that may be present until either: (a) the project is completed, (b) the breeding season has ended, or (c) signs of nest building are observed. E) If an active LBVI nest (including nest building) is found within the 500-foot survey buffer, the USMC will notify the USFWS immediately and provide the mapped location of the nest to the USFWS. If the nest is within 250 feet of ongoing project activities, project work will cease within 250 feet until the nest has failed or fledged, or until the USFWS and the USMC agree on appropriate avoidance measures to allow activities to continue. F) After initial identification of the nest, the project biologist will not approach within 25 feet of an active LBVI nest. Nest monitoring will occur with binoculars from outside of the 25-foot buffer and only to confirm that the nest remains active during construction and other project-related activities. G) If no nesting activity is observed, the nest may be approached to determine the status of the nest. Binoculars should be used to the greatest extent practical to confirm individuals are no longer exhibiting breeding behaviors or		

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	tending to the nest prior to approaching the nest directly to determine the nest's fate. H) Construction noise levels will be monitored by the project biologist, and if construction levels exceed pre-construction ambient noise levels within the nesting territories during the breeding season, noise attenuation measures will be implemented in consultation with the USFWS. • **BR-42.** The avian biologist will provide an electronic report of nest survey results to MCB Camp Pendleton ES within 7 days of survey completion. The avian biologist will provide bi-weekly (every 2 weeks) biological monitoring reports (electronic versions only), and one final biological monitoring report, to MCB Camp Pendleton ES and the USFWS. All "take" of federally listed species will be reported electronically to MCB Camp Pendleton ES within 24 hours of the action.		
Cultural Resources			
Impact Summary	No Significant Impact Two archaeological sites are found within the Alternative 1 Area of Potential Effects (APE). Both sites, CA-SDI-17912 and CA-SDI-12572, are ineligible for inclusion in the National Register of Historic Places (NRHP). The State Historic Preservation Officer (SHPO) concurred on the ineligibility determinations for site CA-SDI-17912 (USMC090601B) and site CA-SDI-12572 (USMC081120A and USMC20150112004). Therefore, sites CA-SDI-17912 and CA-SDI-12572 are not considered historic properties; therefore, they do not require cultural resources monitoring as per Stipulation III.D (1) of the PA (USMC 2014).	No Significant Impact Two archaeological sites are found within the Alternative 1 APE. Both sites, CA-SDI-17912 and CA-SDI-12572, are ineligible for inclusion in the NRHP. The SHPO concurred on the ineligibility determinations for site CA-SDI-17912 (USMC090601B) and site CA-SDI-12572 (USMC081120A and USMC20150112004). Therefore, sites CA-SDI-17912 and CA-SDI-12572 are not considered historic properties; therefore, they do not require cultural resources monitoring as per Stipulation III.D (1) of the PA (USMC 2014).	No Significant Impact The area has been previously surveyed for cultural resources. Site A (139 acre area located on vacant land, formerly used for agricultural purposes, east of Interstate-5 and adjacent to the existing Stuart Mesa Housing complex) contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence (USMC090601B) that would not fall under the Programmatic Agreement (PA). See Appendix A for more detailed information.

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Avoidance/ Minimization Measures	None identified.	None identified.	None identified.
Geological Resources			
Impact Summary	No Significant Impact Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.	No Significant Impact Impacts associated with Alternative 2 would be similar to those presented for Alternative 1.	No Significant Impact Impacts associated with No-Action Alternative would be minimal when compared to impacts presented for Alternatives 1 in this SEA, as grading and construction activities would be done as described by Alternative 1 in the 2015 EA and only occur at the Stuart Mesa Site.
Avoidance/ Minimization Measures	• **GR-1.** Standard engineering measures and local seismic requirements would be implemented and in compliance with the Construction General Permit, including implementation of a project-specific SWPPP with associated BMPs to minimize erosion and stabilize soils. • **GR-2.** All mechanized clearing and grading, vehicle traffic, equipment staging, and the deposition of soil would be confined to the footprints analyzed in this SEA, or to other disturbed or developed land. • **GR-3.** Erosion and sedimentation controls would be monitored and maintained during construction and for 12 months thereafter to ensure stabilization of the site.	Same as Alternative 1.	Same as Alternative 1.
Hazardous Materials and Waste			
Impact Summary	Less Than Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of petroleum, oils, and lubricants (POLs). There is a potential for impacts resulting from previous soil contamination at the Haybarn Site. Avoidance and minimization measures would be implemented to reduce the potential for impacts to less than significant.	No Significant Impact Impacts associated with Alternative 2 would be similar to those presented for Alternative 1.	No Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. According to the 2015 EA,

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
			Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by Regional Water Quality Control Board. According to the Base, as of 2019 this issue has been addressed and is no longer applicable.
Avoidance/ Minimization Measures	• **HW-1.** Construction SWPPP with BMPs and Solid Waste Management Plan would be required. • **HW-2.** Fueling of equipment would be allowed only in designated areas specified on the construction maps and would not occur within 100 feet (30 meters) of drainages or vernal pool watersheds. Emergency provisions would be in place at all crossings before the onset of construction to prevent accidental spills from contaminating downstream habitats. • **HW-3.** Prior to initiating construction, a site investigation would be performed to determine if contamination is present at the site, and if so, the location and extent of contamination. If present, contaminated areas would be evaluated to determine the potential for adverse impacts to public health and the environment.	Same as Alternative 1.	Same as Alternative 1.
Noise			
Impact Summary	<u>No Significant Impact</u> Construction noise generated by Alternative 1 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Haybarn power plant site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate.	<u>No Significant Impact</u> Construction noise generated by Alternative 2 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Parking Lot Site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate.	<u>No Significant Impact</u> Noise impacts would be similar to those presented for Alternative 1; however, there would be no construction of the natural gas power plant.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
Avoidance/ Minimization Measures	• **NO-1.** Although the specific type of fuel gas compressor has not been determined, it is expected to generate similar noise levels as the Siemens gas turbines and, if necessary, could be installed with an enclosure to reduce the noise levels to 85 A-weighted decibels or less.	Same as for Alternative 1.	None identified.
Public Health and Safety			
Impact Summary	No Significant Impact Health and safety concerns would exist during construction, operation and maintenance, and decommissioning of battery energy storage systems at the Stuart Mesa Site and a natural gas power plant at the Haybarn Site, and associated utility infrastructure improvements. However, the procedures, activities and materials would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base plans, and Marine Corps Orders.	No Significant Impact Same as for Alternative 1 except the natural gas power plan would be located at the Parking Lot Site.	No Significant Impact Same as for Alternative 1 except there would only be the construction, operation and maintenance, and decommissioning of the solar PV system at the Stuart Mesa Site.
Avoidance/ Minimization Measures	• **HS-1**. The construction contractor would be required to prepare a Health and Safety Plan. This plan would include designs for standard safety measures to be implemented during construction, including the installation fencing and signage, lighting and security. These plans would be prepared in accordance with applicable federal, state, and local laws and regulations.	Same as Alternative 1.	Same as Alternative 1.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
Utilities and Infrastructure			
Impact Summary	Less Than Significant Impact The Proposed Action would generate up to 49.9 megawatt (MW) of conventional power, while providing 200 MW of energy storage. This would be a significant capacity upgrade and would alleviate demand on the public utility. This would also allow for Base operations to continue in the advent of a grid failure, enhancing the resiliency and contributing to national defense. No new infrastructure or facilities and sources would be required beyond those existing or planned as part of the Proposed Action. Potable water and sanitary sewer use will not stretch the capacity of existing MCB Camp Pendleton systems.	Less Than Significant Impact Same as for Alternative 1 except the natural gas power plan would be located at the Parking Lot Site and there would be a new wastewater line connecting to the MCB Camp Pendleton sanitary sewer system and an additional 69 kilovolt overhead power line connecting the Parking Lot Site to a new switching/metering station at the Haybarn Site.	No Significant Impact Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Department of the Navy's renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.
Avoidance/ Minimization Measures	• **UT-1.** A utility investigation and survey would be conducted to determine presence and obtain the exact depth and location of the water and sewer lines on the proposed project areas for conflict avoidance.	Same as Alternative 1.	Same as Alternative 1.
Water Resources			
Impact Summary	No Significant Impact Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by the No-Action Alternative. All activities associated with the No-Action Alternative that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	source. All maintenance of the battery energy systems area at the Stuart Mesa Site and natural gas power plant at the Haybarn Site would be done in accordance with appropriate BMPs.		
Avoidance/ Minimization Measures	• **WR-1.** Construction projects that have a total area of one acre or more of land disturbance, or are less than one acre but are part of a larger project ("Common Plan of Development") that is one acre or more must obtain coverage under the California Construction General Permit for Stormwater Discharges, State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ (NPDES No. CAS000002), as amended in 2010 and 2012. As part of the permit application process, the project proponent shall prepare and submit a SWPPP to the SWRCB. Land disturbance includes, but is not limited to: clearing, grading, grubbing, scarifying, excavation, demolition, stockpiling, trenching, laydown area and access road construction, and full pavement removal. • **WR-2.** In compliance with the Construction General Permit, a SWPPP would be prepared for the project and submitted to the San Diego RWQCB. The SWPPP would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities. • **WR-3.** Federal projects with a footprint of 5,000 sq. ft. or greater that includes construction or expansion of one or more buildings as part of the primary scope, must	Same as Alternative 1.	Same as Alternative 1.

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	implement LID in accordance with the Energy Independence and Security Act (2007) and Department of Defense LID policies (2007, 2008, 2010, and most recently 2015). A comprehensive set of stormwater planning, design and construction elements must be used to maintain or restore, to the maximum extent technically feasible, the pre-development hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This will be achieved with LID techniques using the 95th percentile, 24-hour storm, or via a site-specific hydrologic analysis using continuous simulation modeling or other tools. LID requirements are further described or referenced in the Camp Pendleton Requirements (CPR). • **WR-4.** If the proposed activity is likely to involve groundwater extraction (dewatering) at construction site, foundation dewatering, or groundwater extraction associated with a remediation/cleanup project, contact Environmental Security Stormwater Section for guidance at 760-725-9760. Disposal options for groundwater may include the following: (1) Low volume discharges of uncontaminated groundwater to land qualifies for the San Diego Basin Plan Conditional Waiver No. 3, "Miscellaneous Low Threat Discharges to Land" found in San Diego RWQCB Resolution No. R9-2014-0041. Land applied water may not run off into storm drains or surface waters, including seasonal or ephemeral streams. (2) Discharges to the sanitary sewer system must be requested through the Water Resources Division Lead Engineer at 760-763-8154. (3) If options (1) and (2) are not feasible, dischargers to waters of the U.S. must obtain coverage under the		

Table 3-1 Summary of Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site	Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site	No-Action Alternative (Alternative 1 from the 2015 EA)
	California RWQCB's "General Waste Discharge Requirements for Groundwater Extraction Discharges to Surface Waters Within the San Diego Region" (Order R9-2015-0013, NPDES No. CAG919003). Sampling and/or treatment will be required and are the Contractor's responsibility. Application for permit coverage in the form of a Notice of Intent, including baseline sampling and work plan development prepared by a licensed engineer, must be submitted to the Facilities Engineering and Acquisition Division (FEAD) at least 60 days prior to the planned commencement of the discharge. FEAD will review and certify the application, and the Contractor will then submit the application and permit fee to the RWQCB. A Waste Discharge Identification number must be received from the RWQCB prior to initiation of dewatering. Permit termination is accomplished via a letter from the Contractor certifying all dewatering activities have been completed and the site has been restored, with a cover letter from FEAD. • **WR-5.** Site design must account for both water quality treatment and water quantity/flood control. Contractors must comply with specific stormwater design standards found in the CPR, latest edition (August 2016), which can be obtained from FEAD. LID strategies are described in detail in Unified Facilities Criteria (UFC) 3-210-10. The California Stormwater Quality Association Stormwater BMP Handbook for New Development and Redevelopment should be used as guidance for design of BMPs and pollutant source control. LID techniques may also be used to meet Leadership in Energy and Environmental Design requirements.		

3.1 AIR QUALITY

3.1.1 Definition of Resource

Air quality is defined by ambient (outdoor) air concentrations of specific pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health, safety, and welfare of the public. Ambient air quality refers to the amount of pollutants in a specified volume of air (or the atmospheric concentration of a specific compound) that occurs at a particular geographic location. Pollutant concentration is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Chemical reactions in the atmosphere can transform pollutant emissions into other chemical substances. Ambient air quality measured at a particular location is determined by the interaction of emissions, meteorology, and chemistry. Emissions include the types, amounts, and locations of pollutants discharged into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions.

Pollutant emissions typically refer to the amount of pollutants (or pollutant precursors) introduced into the atmosphere by a pollutant source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, sulfur dioxide (SO_2), lead, and some particulates are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as ozone (O_3), nitrogen dioxide (NO_2), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere and their accumulation in earth's atmosphere regulates the temperature of the planet. GHGs can be emitted by natural processes and human activities, and climate change is attributed to anthropogenic sources of GHG emissions. In 2009, the USEPA signed GHG Endangerment Findings under Section 202(a) of the Clean Air Act (CAA), stating that six "key" GHGs are a threat to public health and welfare (carbon dioxide [CO_2], methane [CH_4], nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Since then, the USEPA has been creating standards and regulations for controlling GHG emissions from passenger vehicles.

The potential effects of GHG emissions are by nature global and cumulative as climate change results from the incremental addition of GHG emissions from millions of individual sources/actions, which collectively have a large impact on a global scale. Therefore, the potential impact of GHG emissions associated with this project is discussed in the context of cumulative impacts in Cumulative Impact Analysis Section 4.4.1, *Air Quality,* of this SEA.

3.1.2 Affected Environment

3.1.2.1 Federal Requirements

The USEPA established the National Ambient Air Quality Standards (NAAQS) and there are seven criteria pollutants of concern: CO, SO_2, NO_2, O_3, total suspended particulate matter less than or equal to 10 (PM_{10}) and 2.5 ($PM_{2.5}$) microns in diameter, and lead. The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded (USEPA 2019a).

The USEPA designates an area as in attainment when it complies with the NAAQS. Areas that violate these ambient air quality standards are designated as nonattainment areas. Areas that have improved air quality from nonattainment to attainment are designated as attainment/maintenance areas. Varying levels of nonattainment are established for O_3, CO, and PM_{10} to indicate the severity of the air quality problem (i.e., the classifications run from moderate to serious PM_{10} and from marginal to extreme for O_3). The San Diego Air Basin (SDAB) is in nonattainment (moderate) of the 8-hour O_3 NAAQS (which includes its precursor pollutants of volatile organic compounds [VOCs] and NO_x) and is classified as a maintenance area (moderate) for the CO NAAQS (USEPA 2019b). Although VOCs or NO_x other than NO_2 have no established ambient air quality standards, they are important as precursors to O_3 formation. All other criteria pollutants are in attainment of the NAAQS.

3.1.2.2 State and Local Requirements

Each state is required by the CAA to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce the federal air quality standards across the state, for areas in nonattainment of the NAAQS. At the state level, the more stringent California Ambient Air Quality Standards (CAAQS) represent maximum acceptable pollutant concentrations that are not to be equaled or exceeded (California Air Resources Board [CARB] 2019a). Within California, the CARB is responsible for enforcing both the federal and state air pollution standards. The CARB is charged with developing the SIPs on a pollutant-by-pollutant basis for air quality standards in violation of the NAAQS and CAAQS.

MCB Camp Pendleton is located within San Diego County and is under the jurisdiction of the SDAPCD with the exception of Talega located in the far north area of the Base (64 Area) is in Orange County and under jurisdiction of South Coast Air Quality Management District. The SDAPCD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies in the SDAB, which is contiguous with San Diego County.

With respect to the CAAQS, the SDAB is in nonattainment of the state standards for O_3, $PM_{2.5}$, and PM_{10} (CARB 2019b), and is in attainment of all other CAAQS criteria pollutants. Table 3.1-1 presents the NAAQS and CAAQS for the criteria pollutants. The 2008 *Eight-Hour Ozone Attainment Plan for San Diego County* is a comprehensive plan to bring the SDAB into compliance with the national standard for marginal O_3 nonattainment areas and was adopted last in December 2016 (SDAPCD 2016a). The 1996 *Carbon Monoxide Maintenance Plan* (later amended in 1998 and 2004) provides a road map for continued attainment of CO (CARB 1996, 1998, 2004).

Table 3.1-1 National and California Ambient Air Quality Standards

Pollutant	***Averaging Time***	***National[1,2]***		***California[5]***
		Primary[3]	***Secondary[4]***	***Concentration***
O_3	1-hour	—	—	0.09 ppm (180 μg/m^3)
	8-hour	0.07 ppm (137 μg/m^3)	Same as primary	0.07 ppm (137 μg/m^3)
CO	1-hour	35 ppm (40 mg/m^3)	—	20 ppm (23 mg/m^3)
	8-hour	9 ppm (10 mg/m^3)	—	9 ppm (10 mg/m^3)
NO_2	1-hour	0.10 ppm (188 μg/m^3)	—	0.18 ppm (339 μg/m^3)
	Annual	0.053 ppm (100 μg/m^3)	Same as primary	0.03 ppm (57 μg/m^3)
SO_2	1-hour	0.075 ppm (105 μg/m^3)	—	—

Table 3.1-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National[1,2]		California[5]
		Primary[3]	Secondary[4]	Concentration
SO_2	3-hour	—	0.5 ppm (1,300 μg/m^3)	—
	24-hour	—	—	0.04 ppm (105 μg/m^3)
PM_{10}	24-hour	150 μg/m^3	Same as primary	50 μg/m^3
	Annual	—	—	20 μg/m^3
$PM_{2.5}$	24-hour	35 μg/m^3	Same as primary	—
	Annual	12 μg/m^3	15 μg/m^3	12 μg/m^3
Lead	Rolling 3-month period	0.15 μg/m^3	Same as primary	—
	30-day average	—	—	1.5 μg/m^3

Notes: μg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; ppm = parts per million.

1 Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

2 National standards (other than O_3, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

3 Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

4 Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California CFR.

Source: USEPA 2019a; CARB 2019a.

The 2016 *Regional Air Quality Strategy Revision* is the most recent plan to bring SDAB into compliance with the CAAQS (SDAPCD 2016b). This plan includes all feasible control measures that can be implemented to reduce O_3 precursor emissions of VOCs and NO_x. To be consistent with the Regional Air Quality Strategy, a project must conform to the defined emission growth factors.

3.1.2.3 General Conformity

Under 40 CFR Part 93 and the provisions of Part 51, Subchapter C, Chapter I, Title 40, Appendix W of the CFR, of the CAA as amended, federal agencies are required to demonstrate that federal actions conform with the applicable SIP. To ensure that federal activities do not hamper local efforts to control air pollution, Section 176(c) of the CAA, 42 USC 7506(c) prohibits federal agencies from approving any action which does not conform to an approved SIP or federal implementation plan. SDAPCD's Rule 1501 contains rules and requirements to implement the General Conformity regulations within the District.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Table 3.1-2 identifies the federal nonattainment pollutants and the relevant *de minimis* emission thresholds.

Table 3.1-2 Applicable Criteria Pollutant *de minimis* Levels (tons/year)

$VOCs$[1]	NO_x[1]	CO[1]	SO_2	PM_{10}	$PM_{2.5}$
100	100	100	NA	NA	NA

Notes: [1] The SDAB is in nonattainment (moderate) of the 8-hour O_3 NAAQS (which includes its precursor pollutants of VOCs and NOx) and is in maintenance (moderate) of the CO NAAQS.
NA = not applicable because the SDAB is currently in attainment of the NAAQS for these criteria pollutants.
Source: USEPA 2019b.

To demonstrate conformity with the CAA, a project must clearly demonstrate that it does not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard, any required interim emission reductions, or other milestones in any area. A conformity applicability analysis is required for each of the nonattainment pollutants or its precursor emissions.

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If net emissions exceed the relevant *de minimis* level, a formal CAA Conformity Determination process must be followed.

3.1.2.4 Other Requirements

Greenhouse Gases

Scientific evidence shows that global temperatures have increased over the past century (NASA 2019). This warming is attributed to an increase in GHG emissions from human activities. Climate change is producing economic and social consequences across the globe.

To estimate global warming potential (GWP), which is the heat trapping capacity of a gas, the U.S. quantifies GHG emissions using the 100-year timeframe values established in the Intergovernmental Panel on Climate Change Fourth Assessment Report (Intergovernmental Panel on Climate Change 2007). This was done in accordance with United Nations Framework Convention on Climate Change (United Nations Framework Convention on Climate Change 2014) reporting procedures. All GWPs are expressed relative to a reference gas, CO_2, which is assigned a GWP equal to 1. Six other primary GHGs have GWPs: 25 for methane, 298 for nitrous oxide, 124 to 14,800 for hydrofluorocarbons, 7,390 to 12,200 for perfluorocarbons, 17,200 for nitrogen trifluoride, and up to 22,800 for sulfur hexafluoride. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion (81.6 percent) (USEPA 2019c). Weighted by its GWP, methane is the second largest component of emissions, followed by nitrous oxide. To estimate the CO_2 equivalency, or CO_2e, of a non-CO_2 GHG, the appropriate GWP of that gas is multiplied by the amount of the gas emitted. Emissions of a GHG are multiplied by the GWP to calculate the total equivalent emissions of CO_2. GWP-weighted emissions are presented in terms of CO_2e, using units of metric tons. The Proposed Action is anticipated to release GHGs to the atmosphere. These emissions are quantified primarily using methods elaborated in the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017 (USEPA 2019c).

Federal agencies are addressing emissions of GHGs by mandating GHG reductions in federal laws and EOs, most recently in EO 13834, *Efficient Federal Operations* (Federal Register 2018), which was signed in May 2018 and revokes EO 13693, *Planning for Federal Sustainability in the Next Decade* (Federal Register 2015). In 2009, the USEPA signed GHG Endangerment Findings under Section 202(a) of the CAA, stating that six "key" GHGs are a threat to public health and welfare (CO_2, CH_4, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).

Several states have passed GHG related laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 (Assembly Bill 32) directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. Governor's EO S-20-06 further directs state agencies to begin implementing Assembly Bill 32, including the recommendations made by the state's Climate Action Team. Activities taken thus far to implement Assembly Bill 32 include mandatory GHG reporting and a cap-and-trade system for major GHG-emitting sources (CARB 2014, 2019c).

The potential effects of proposed GHG emissions are by nature global and may result in cumulative impacts because most individual sources of GHG emissions are not large enough to have any noticeable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts in Section 4.4.1.

3.1.2.5 Hazardous Air Pollutants and Toxic Air Contaminants

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) that are regulated under Section 112(b) of the 1990 CAA and its amendments. The National Emission Standards for Hazardous Air Pollutants regulate 187 HAPs based on available control technologies (USEPA 2016).

Toxic compounds are toxic air contaminants that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources (CARB 2011).

Emissions of HAPs and toxic air contaminants fall under the Title V permitting process and not the NEPA process. Therefore, no further discussion of either is provided within this SEA.

3.1.2.6 Baseline Air Quality

The region of influence (ROI) for air quality includes SDAB, which encompasses all of San Diego County and is regulated by the SDAPCD.

Representative emissions data from SDAPCD monitoring stations for the period 2013 to 2017 (the most recent data available) are shown in Table 3.1-3. Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small stationary sources, and ongoing construction activities.

3.1.3 Environmental Consequences

The air quality analysis for this SEA focuses on the concentrations of VOCs, NO_x (both are precursors to the formation of O_3), CO, SO_2, PM_{10}, and $PM_{2.5}$. Air quality impacts from construction activities proposed under the Proposed Action would primarily occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust emissions (PM_{10} and $PM_{2.5}$) from the operation of equipment on exposed soil. Operational emissions would occur from operation of the natural gas power plant and routine maintenance activities for the power plant and battery energy storage system areas.

Table 3.1-3 Representative Air Quality Data for MCB Camp Pendleton (2014-2018)

Air Quality Indicator	*2014*	*2015*	*2016*	*2017*	*2018*
O_3 (1)					
Peak 8-hour value (ppm)	0.08	0.08	0.07	0.08	0.07
Days above 2015 federal standard (0.070 ppm)	5	2	4	4	0
Days above 2008 federal standard (0.075 ppm)	1	1	0	1	0
NO_2 (1)					
Peak 1-hour value (ppm)	0.06	0.06	0.07	0.06	0.05
Days above federal standard (0.10 ppm)	0	0	0	0	0
PM_{10} (2)					
Peak 24-hour value (μg/m^3)	43.0	30.0	36.0	46.0	38.0
Days above federal standard (150 μg/m^3)	0	0	0	0	0
$PM_{2.5}$ (1)					
Peak 24-hour value (μg/m^3)	28.0	41.2	28.8	26.0	30.5
Days above federal standard (35 μg/m^3)	0	ND	ND	ND	ND

Notes: (1) Data from the MCB Camp Pendleton Monitoring Station.
(2) No data were derived from the MCB Camp Pendleton Monitoring Station for $PM_{2.5}$. Data were available from the Escondido Monitoring Station for 2014 to 2015. Data for 2016 through 2018 are from the San Diego-Kearny Villa Road Monitoring Station.
CO and SO_2 data were not available for sites in the SDAB.
μg/m^3 = micrograms per cubic meter; ND = insufficient data to determine value; ppm = parts per million.
Source: CARB 2019d.

Construction emissions were estimated using a model, California Emissions Estimator Model, developed by the California Air Pollution Officers Association. California Emissions Estimator Model is the current comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model includes default data (e.g., emission factors, trip lengths, meteorology, source inventory) that have been provided by the various California air districts to account for local requirements and conditions (California Air Pollution Officers Association 2019). For this analysis, default data were overridden in the model by project-specific data (as provided in Chapter 2), when available.

Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used. Assumptions and model inputs are located within the modeling calculations in Appendix D. Operational emissions from the natural gas power plant were estimated using data based on the types of natural gas power plants being considered.

3.1.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

Construction and Decommissioning Activities

Table 3.1-4 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 1. The construction emissions calculated for the Alternative 1 selected as part of the 2015 EA have been included in the construction and decommissioning estimated emissions presented in the table. Emission calculations are provided in Appendix D. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.1-4, estimated emissions from construction and decommissioning activities would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

Table 3.1-4 Alternative 1 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity

Emission Source	*Emissions (tons/year)*					
	VOCs	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Alternative 1 - Construction						
Year – 2021	3.39	32.66	24.11	0.05	3.68	2.50
Year – 2022	2.85	25.70	20.55	0.05	1.81	1.37
Alternative 1 - Decommissioning						
Year – 2058	4.35	1.83	4.62	0.01	0.10	0.46
Conformity *de minimis* Limits	100	100	100	NA	NA	NA
Exceeds Conformity *de minimis* Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.

Operation

Operational air emissions refer to air emissions that may occur after the modifications have been made at the Stuart Mesa Site, and the natural gas power plant and its associated utilities have been installed.

In general, simple cycle plants have the potential to generate higher hourly emissions, though these would be discontinuous. As the type of plant has not be determined yet, the maximum potential operational emissions under Alternative 1 would be assumed to be the highest value under either plant type. Estimated maximum annual operational emissions based on performance data for the gas turbines proposed for a 49.9 MW natural gas power plant are presented below in Table 3.1-5. Operational emission calculations are provided in Appendix D.

Table 3.1-5 Alternative 1 – Estimated Operational Emissions for a 49.9 MW Natural Gas Power Plant at MCB Camp Pendleton

Natural Gas Power Plant Emissions	*Emissions (tons/year)*			
	VOCs	*NO_x*	*CO*	*PM_{10}*
Potential Pre-treatment Emissions	0.00	109.64	111.45	3.60
Potential Post-treatment Emissions (BACT)	0.00	14.62	22.29	3.60

Notes: Post-treatment emissions assume CO oxidation catalyst and Selective Catalytic Reduction systems would be applied to reduce emissions to levels consistent with Best Available Control Technology (BACT) requirements from SDAPCD Authority to Construct permits issued for similar sized natural gas power plants. BACT is assumed to be required to reduce NO_x and CO emissions.
F = Fahrenheit; NA = not applicable.
Source: Webcor 2019b, 2020.

The private partner who owns the power plant would consult with the SDAPCD to add it to MCB Camp Pendleton's existing air permit as a modification, and the plant would need to comply with SDAPCD rules for granting permits for new stationary sources. Based on the estimated presented in Table 3.1-5, the proposed power plant would need to comply with SDAPCD Rule 20.3 (New Source Review – Major Stationary Sources and Prevention of Significant Deterioration Stationary Sources). Under this rule, Best Available Control Technology (BACT) would be required for any source with a post-project potential to emit 10 pounds per day or more of PM_{10}, NO_x, VOC or SO_x shall be equipped with BACT for each such air contaminant. Emissions dispersion modeling for the power plant would also be required by the SDAPCD as a condition of issuing the stationary source permit.

Additional minimal operational air emissions would result from the use of employee vehicles traveling to the project site for operation of the natural gas power plant (up to eight workers), as well as maintenance and repair activities at the battery energy storage system site, and from travel on unpaved roads and surfaces. Maintenance vehicles would travel on unpaved surfaces at slow speeds, to minimize fugitive dust generation.

Summary

General Conformity Applicability Analysis

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.1-2). Emissions from the proposed power plant are excluded from the General Conformity determination, as the emissions are subject to a new source review through the permitting process. Emission calculations are provided in Appendix D. As shown in Table 3.1-4, the emission increases for NO_x, VOCs, and CO would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA general conformity has been prepared and is provide in Appendix D. A formal CAA Conformity Determination would not be required.

Hazardous Air Pollutants

The USEPA has listed 187 substances that are regulated under Section 112 of the CAA, and the State of California has identified additional substances that are regulated under state and local air toxics rule. Emissions of HAPs from the operation of the proposed natural gas power plant would be subject to the National Emission Standards for Hazardous Air Pollutants stationary source standards, which includes an initial performance test to demonstrate compliance and monitoring to demonstrate continued compliance under operations (USEPA 2018). Trace amounts of HAPs may be emitted from sources during the construction, operation, or decommissioning of the proposed battery energy storage systems, and the construction and decommissioning of the natural gas power plant. However, emission factors for most HAPs from combustion sources are roughly three or more orders of magnitude lower than emission factors for criteria pollutants. Thus, the amount of HAPs emitted would be small in comparison with the emissions of criteria pollutants presented in Table 3.1-4. The HAPs emitted would also be subject to dispersion due to wind mixing and other dissipation factors.

Summary

Alternative 1 would not exceed *de minimis* levels; thus, a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 1, there would be no significant impact to air quality.

3.1.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

Construction and Decommissioning Activities

Table 3.1-6 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 2. The construction emissions calculated for the

Alternative 1 selected as part of the 2015 EA have been included in the construction and decommissioning estimated emissions presented in the table. Emission calculations are provided in Appendix D. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.1-7, estimated emissions from construction and decommissioning activities would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

Table 3.1-6 Alternative 2 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity

Emission Source	*Emissions (tons/year)*					
	VOCs	*NO_x*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Alternative 2 - Construction						
Year – 2021	3.33	32.00	23.48	0.05	3.62	2.41
Year – 2022	2.81	25.32	20.06	0.05	1.79	1.35
Alternative 2 - Decommissioning						
Year – 2058	0.52	1.83	4.62	0.01	0.10	0.06
Conformity *de minimis* Limits	100	100	100	NA	NA	NA
Exceeds Conformity *de minimis* Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.

<u>Operation</u>

Operational air emissions would be the same as described under Alternative 1.

<u>Summary</u>

General Conformity Applicability Analysis

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.1-2). Emission calculations are provided in Appendix D. As shown in Table 3.1-7, the emissions increase for NO_x, VOCs, and CO would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA conformity has been prepared and is provide in Appendix D. A formal CAA Conformity Determination would not be required.

Hazardous Air Pollutants

Emission of HAPs would be the same as described under Alternative 1.

Summary

Alternative 2 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 2 there would be no significant impact to air quality.

3.1.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install batteries for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). Therefore, emissions from the implementation of the No-Action Alternative are the same as those presented for Alternative 1 of the 2015 EA and are incorporated by reference. Emissions from the implementation of the No-Action Alternative would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of the No-Action Alternative there would be no significant impact to air quality.

3.2 AIRSPACE/AIR TRAFFIC

3.2.1 Definition of Resource

Airspace is a three-dimensional resource defined by latitude, longitude, and altitude. The FAA has the responsibility for developing plans and policies for the use of all navigable airspace and for assigning (by regulation or order) the use of the airspace necessary to ensure both the safety and efficient use of all airspace (49 USC 40103[b]). FAA Joint Order (JO) 7400.2M, *Procedures for Handling Airspace Matters,* describes specific rules and regulations concerning airspace designation and management (FAA 2019). The DoD requests airspace from the FAA and schedules and uses airspace in accordance with processes and procedures detailed in DoD Directive 5030.19, *DoD Responsibilities of Federal Aviation,* and FAA regulations.

Airspace management is necessary to ensure that all users of the National Airspace System can operate in "navigable airspace" in a safe, secure, and efficient manner. Airspace management considers airspace designation, usage, and administration to best accommodate the individual and common needs of military, commercial, general aviation, and private citizens by controlling airspace allocation and utilization, obstruction evaluations and markings, and the control of air traffic and handling of flight operations. The FAA defines airspace management as the direction, control, and handling of flight operations in the "navigable airspace" that overlies the geopolitical borders of the U.S. and its territories. Navigable airspace means airspace at or above the minimum altitudes of flight defined by regulations and includes the airspace needed to ensure safety in the takeoff and landing of aircraft (49 USC 40102) and the airspace needed for military training and other special uses.

The FAA organizes airspace according to its class. Figure 3.2-1 depicts each class of airspace available to all users (civilian and military). Detailed information of each of these airspace classes and the requirements for their use (i.e., pilot qualifications, operating rules, and equipment requirements) can be found in 14 CFR Part 91, *General Operating and Flight Rules*.

The FAA identifies special use airspace (SUA) for military and other governmental activities charted and published by the National Aeronautical Charting Office in accordance with FAA JO 7400.2M, *Procedures for Handling Airspace Matters,* and other applicable regulations. The FAA administers "navigable airspace" in the public interest as necessary to ensure its efficient use and the safety of aircraft. The FAA considers multiple and sometimes competing demands for aviation airspace in relation to airport operations, Air Traffic Service Routes [Jet (J), Q, Victor (V) and Tango (T) routes], military flight training activities, and other special needs to determine how the National Airspace System can best be structured to address all user requirements. FAA JO 7400.10, *Special Use Airspace,* describes approved SUA compiled once a year with the exception of temporary and controlled firing areas (FAA 2018a). Similarly, descriptions of terminal and enroute airspace area designations and reporting points are published once a year in FAA JO 7400.11C, *Airspace Designations and Reporting Points* (FAA 2018b); the most current publication is FAA JO 7400.2M, *Procedures for Handling Airspace Matters* (FAA 2019).

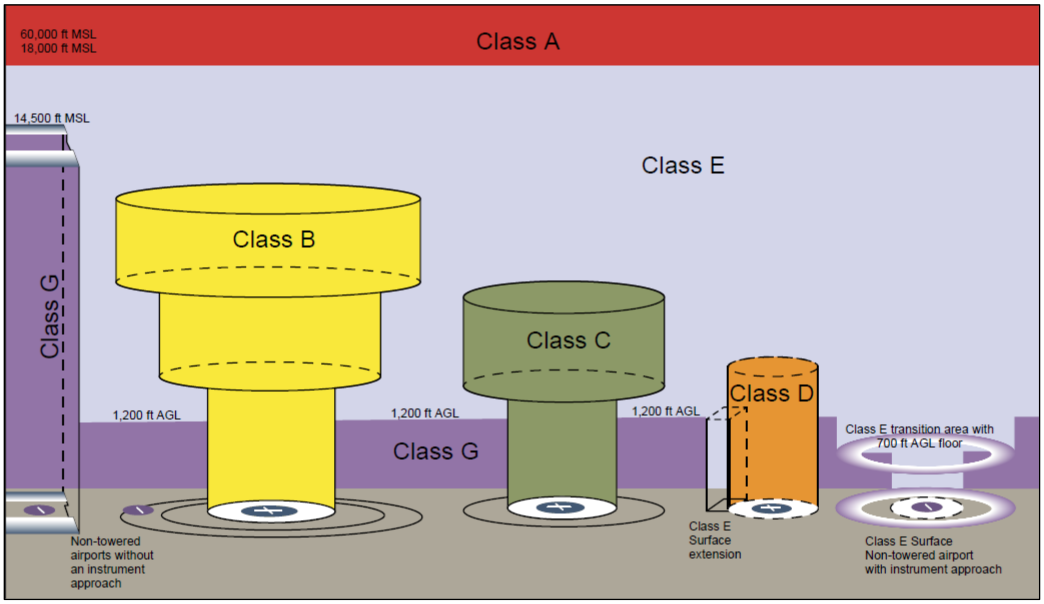


Figure 3.2-1 Cross Section of Airspace Classes and Relationships

Restricted Areas (RAs) are established under 14 CFR Part 73 provision, within which the flight of aircraft is subject to restriction but not wholly prohibited. RAs are established when determined necessary to confine or segregate activities considered hazardous to nonparticipating aircraft and are identified by the letter "R" prefix followed by a dash, a four-digit number, a location, and the two-letter state abbreviation (e.g., R-2503A, Pendleton, California). RAs may be established to the ground surface (SFC) when the using agency owns or leases the underlying surface, as is the case of R-2503A and B. RAs are established for joint use by assigning an air traffic control facility as the controlling agency, and by executing a joint use letter of procedure between the controlling and using agencies. The letter of procedure provides for the operation of nonparticipating instrument flight rules and/or visual flight rules aircraft within the area. Flight within the RA is controlled by the using agency except when the area has been released to the controlling agency. During such periods, the controlling agency may permit nonparticipating aircraft operations in the RA. These records shall be retained in accordance with FAA Order JO 7210.3, *Facility Operation and Administration*.

Procedures governing the use of training areas and airspace operated and controlled by the USMC are included in Office of the Chief of Naval Operations Instruction 3770.2L, *DoN Airspace Procedures and Planning* (DoN 2017).

3.2.2 Affected Environment

The ROI for this resource section includes the airspace within MCB Camp Pendleton, which is overlaid by RA R-2503A, B, C, and D with the following altitudes:

- R-2503A: SFC to 2,000 feet mean sea level (MSL)
- R-2503B: SFC to 15,000 feet MSL
- R-2503C: 15,000 to 27,000 feet MSL
- R-2503D: 2,000 to 11,000 feet MSL

In addition to the RAs, Class D airspace exists as a volume created by the combination of two separate concentric cylindrical areas of different radii (2 nautical miles to the northwest and 3.5 nautical miles to the southeast) centered at Marine Corps Air Station (MCAS) Camp Pendleton which extend from the ground surface to 2,500 feet (762 meters) above the ground.

The existing airspace located above MCB Camp Pendleton and its adjacent training areas are currently utilized by the USMC to conduct combined fixed-wing, tilt-rotor, and rotary-wing military aviation operations. The local terrain includes hills running west to east that extend into imaginary surfaces applied to the MCAS Camp Pendleton runways and defined by the UFC (UFC 2019).

3.2.3 Environmental Consequences

The potential impacts to airspace would be due to the creation of an obstruction (i.e., power plant's exhaust stack[s]) to aircraft navigation to and from MCAS Camp Pendleton. This impact analysis considers the existing airspace environment and the degree to which the proposed exhaust stack(s) would further affect aircraft operations and considers FAA Order 7110.65, *Air Traffic Control*, and compliance with Office of the Chief of Naval Operations Instruction 3770.2L, *DoN Airspace Procedures and Planning*.

3.2.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

Navigation to and from MCAS Camp Pendleton and the surrounding SUA is currently managed by the USMC. The proposed construction of the power plant would include up to two exhaust stacks of approximately 100 feet (30.5 meters) in height with a maximum possible height of 150 feet (45.7 meters) that would be located approximately 4,000 feet (1219.2 meters) east of MCAS Runway 21. The FAA provides a procedure for proponents to screen projects for the potential to impact airfield navigation as specified in 14 CFR Part 77.9 if any of the following is met:

Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

- *100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in 14 CFR 77.9(d) with its longest runway more than 3,200 ft. in actual length, excluding heliports*
- *50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in 14 CFR 77.9(d) with its longest runway no more than 3,200 ft. in actual length, excluding heliports*
- *25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in 14 CFR 77.9(d)*

OR any highway, railroad, waterway or other traverse way for mobile objects, of a height which, if adjusted upward as defined in 14 CFR 77.9(c) would exceed a standard of 14 CFR 77.9 (a) or (b);

OR your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy;

OR your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception;

OR any construction or alteration exceeding 200 feet above ground level, regardless of location;

OR any construction or alteration located on an airport described in 14 CFR 77.9(d);

OR filing has been requested by the FAA.

Existing terrain to the north, east, and southeast of the MCAS Camp Pendleton already conflicts with existing imaginary surfaces and rises approximately 500 feet (152.4 meters) above the Runway 21 elevation. The proposed exhaust stack(s) would extend upward and exceed the sloped imaginary surface to the east of MCAS Camp Pendleton to 150 feet (45.7 meters) or less and would be located approximately 2,000 feet (609.6 meters) south of the primary approach path to Runway 21. Meeting the criteria in 14 CFR Part 77.9 does not imply a significant impact, but rather the requirement to notify the FAA at least 45 days prior to the start of construction so that additional review by the FAA can be completed.

Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stacks at the Haybarn Site location would not create significant additional impacts to airspace or aircraft navigation (Figure 3.2-2). Because the flight tracks in the vicinity are flown at altitudes sufficient for safe clearance, the vertical development of the exhaust stack(s) is not anticipated to cause a hazard to flight. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. The USMC would file the applicable paperwork with the FAA and, should the FAA require it, mitigation such as high visibility painting or lighting would be added to the exhaust stack(s). Informal consultation with the Air Operations Department at MCAS Camp Pendleton indicated that there could be a potential concern with lighting on the stack(s) interfering with pilots on a right base turn (such as on the red flight track labeled “21A08” in Figure 3.2-2) to land on Runway 21 at night.

Figure 3.2-3 shows the three-dimensional perspective from two locations along that flight path, looking at the possible location of the exhaust stack(s) at the Haybarn Site (shown in yellow). This shows that the lower portion of the stack(s) (and some of the other proposed new infrastructure) would be masked by terrain on the west side of the site (the low hills behind where the power plant would be located). Lights on the stacks would be in the “heads up display” field of view of these aircraft as they go through the approximate “90” position (halfway through the turn) and would exit that field of view as the turn progressed. Therefore, there is a probable requirement to make these lights compatible with night-vision devices as appropriate. Note that the area immediately surrounding and behind the proposed site has a number of power line towers (on the sides of the hills and along the ridgeline) that currently have lighting that is in this same field of view. It follows that if the lighting on the proposed exhaust stack(s) is similar to those already present that there would be no additional impacts created. Figure 3.2-4 shows the site relative to the clear zone and accident potential zones from the most-recent 2017 Air Installations Compatibility Use Zones (AICUZ) study, and Alternative 1 does not creates new construction in these safety zones. Therefore, implementation of Alternative 1, would cause no significant impact to air space.

The risk of visible exhaust obscuring the view of pilots could be an issue for cooling towers that add water to the air to reduce temperature, referred to as ‘wet’ cooling towers. However, the proposed power plant cooling tower(s) associated with this action would be of the ‘dry’ type with exhaust humidity generally not exceeding 5 percent, which would not create any significant amount of visible smoke.

Exhaust gas has a second potential risk beyond visible smoke. The FAA has determined the overall risk associated with thermal exhaust plumes in causing a disruption of flight is low. However, the FAA has determined that thermal exhaust plumes in the vicinity of airports may pose a unique hazard to aircraft in critical phases of flight (particularly takeoff, landing and within the pattern) and therefore are incompatible with airport operations.

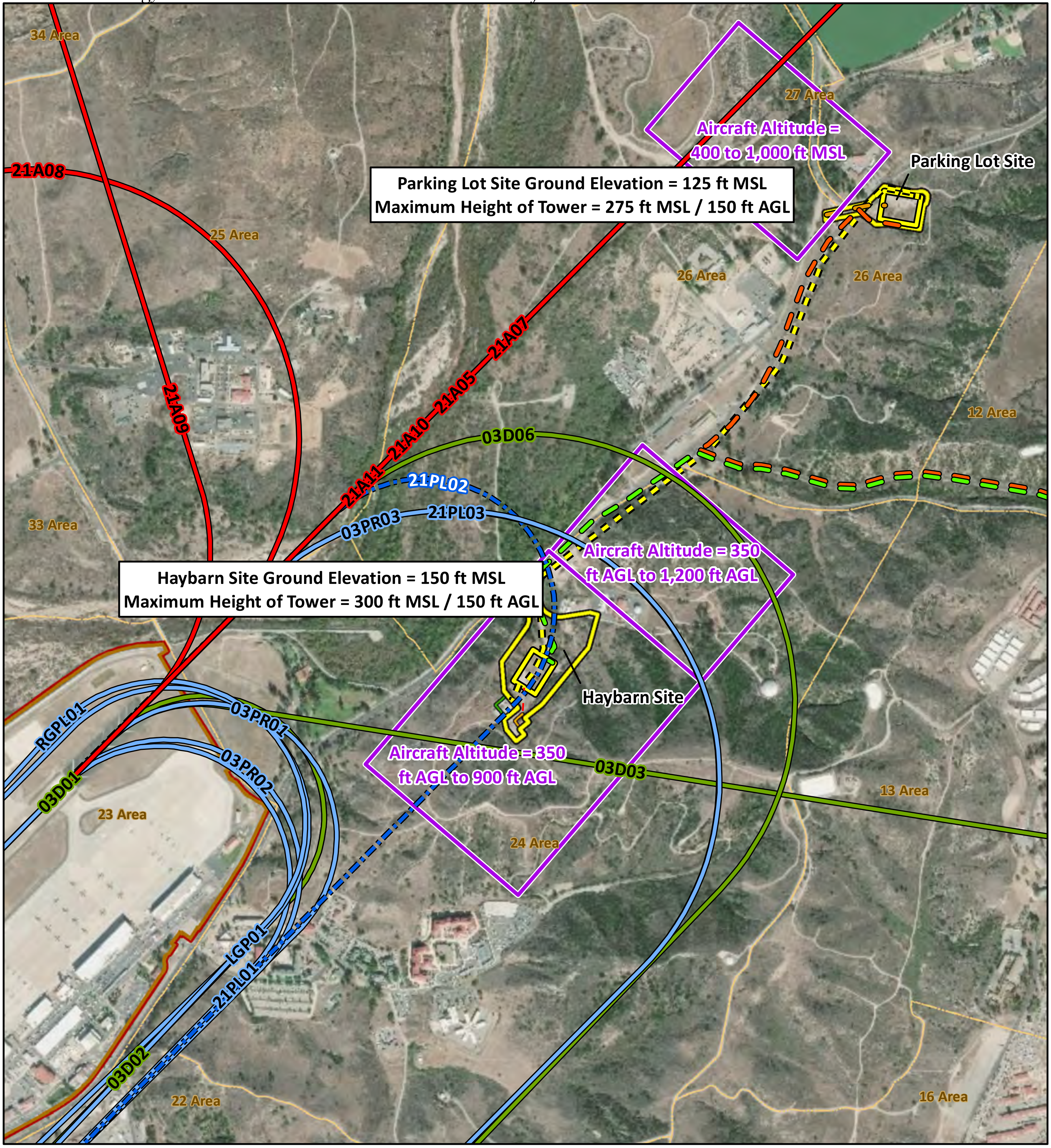
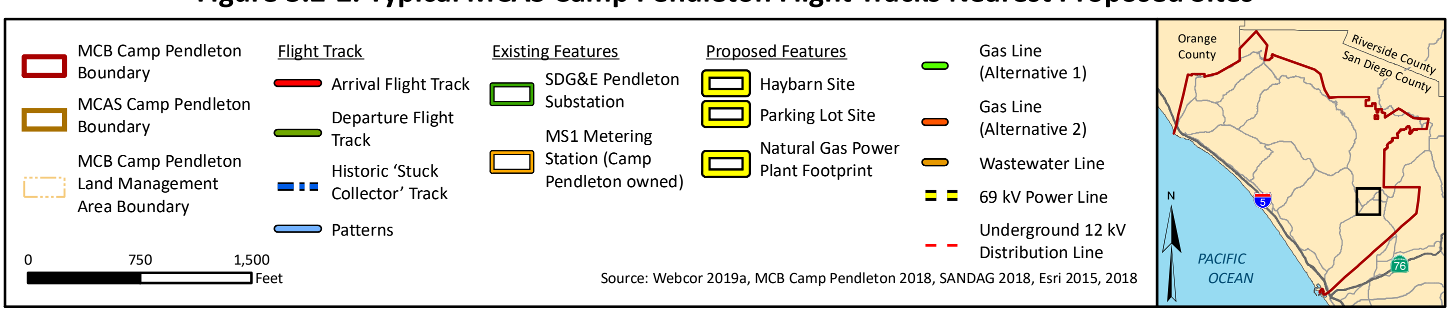


Figure 3.2-2. Typical MCAS Camp Pendleton Flight Tracks Nearest Proposed Sites



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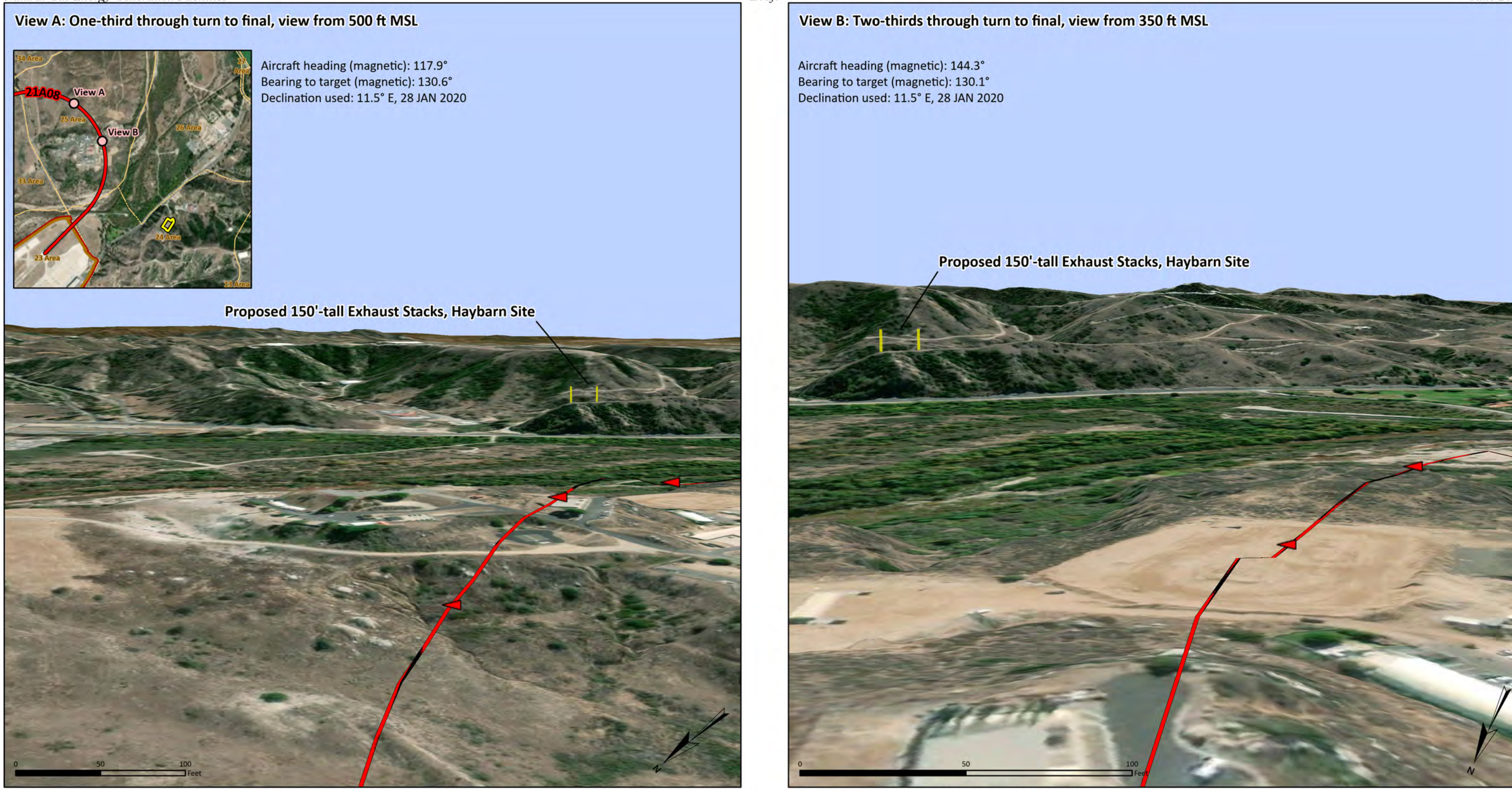
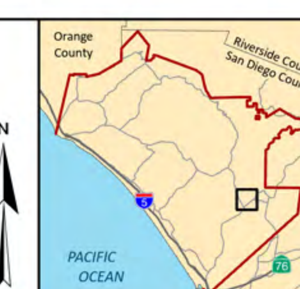


Figure 3.2-3. View of Exhaust Stacks During Approach to Runway 21 (Arrival Flight Track 21A08)

MCAS Camp Pendleton Boundary
Haybarn Site Exhaust Stacks
Ground Projection of Flight Track 21A08

N



Source: Webcor 2019a, MCB Camp Pendleton 2018, Esri 2015, 2018

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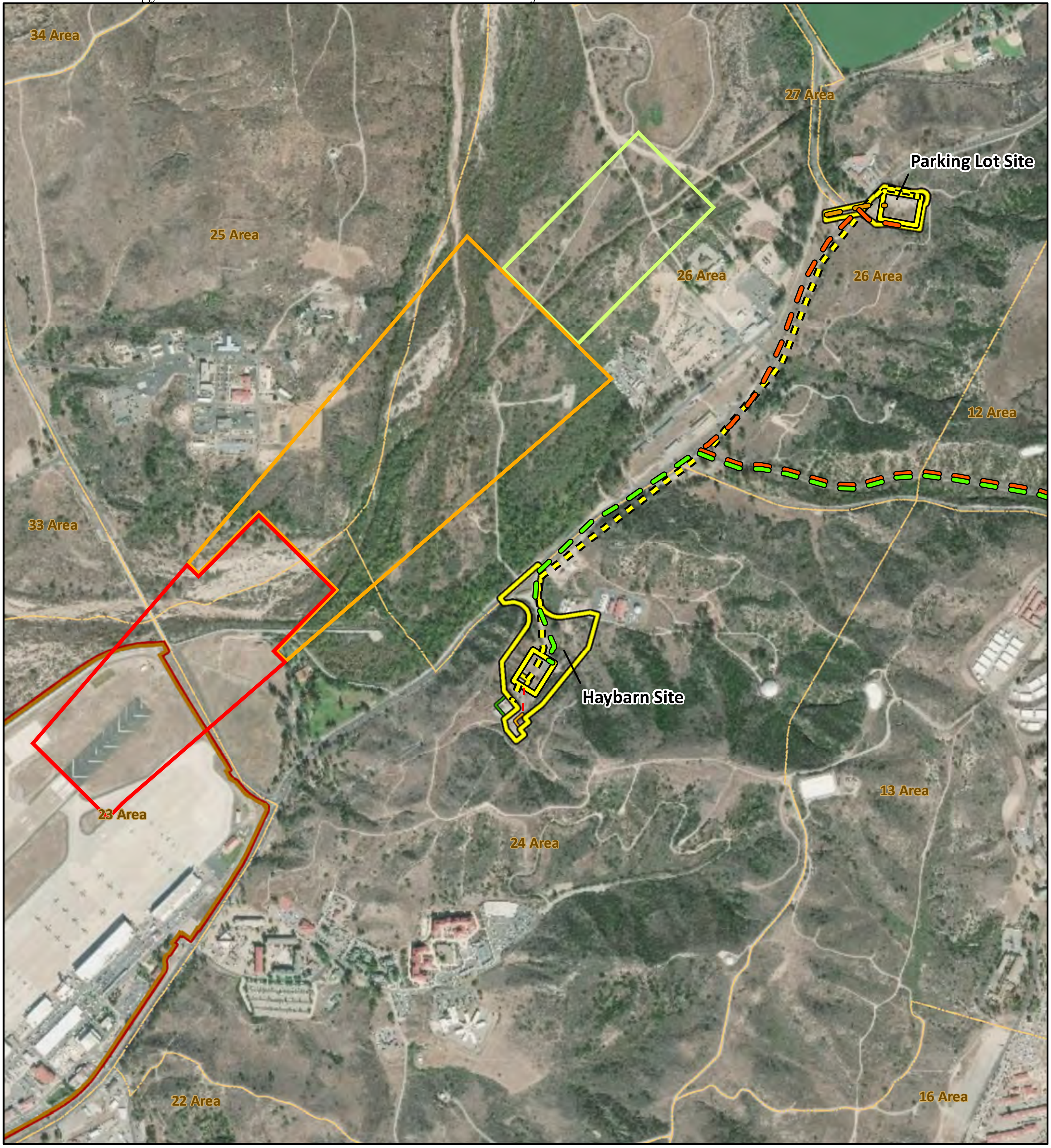
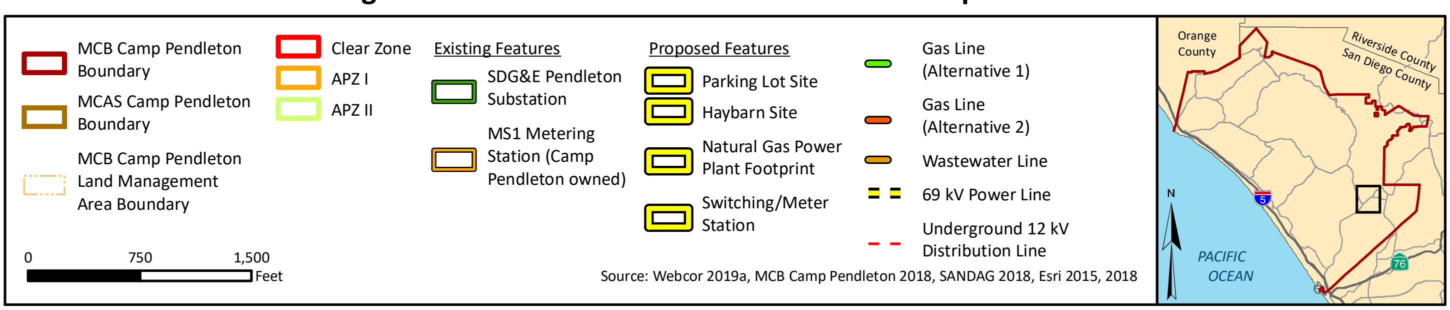


Figure 3.2-4. Accident Potential Zones Near Proposed Sites



Exhaust plumes created by power plant exhaust stacks can have adverse impacts on aircraft aviation during periods of calm winds, which is exacerbated when atmospheric temperatures are low. Low oxygen concentrations and elevated temperatures inside the plume can be detrimental to slow-flying or hovering helicopters while the turbulence generated from the upward motion of the plume is the main hazard to small fixed-wing aircraft operating at low altitudes. The FAA provides an exhaust plume analyzer to assess the risk that such conditions may have to nearby aircraft (FAA 2015).

The behavior of an exhaust plume greatly depends upon the local weather conditions because the plume will turn over in the direction of the wind during windy periods, resulting in a lower risk for experiencing severe turbulence. On the other hand, the risk increases during periods of calm winds as the plume rises uninhibited. To accurately portray the likelihood of a severe turbulence or aircraft upset event several years of historical weather data is required. The detailed historic weather data needed would include multiple measurements per day at various altitudes capturing air temperature, wind speed, and wind direction. Only ground conditions are available near the proposed site, which are summarized in Table 3.2-1. This analysis focuses on the ‘worst weather’ (i.e., highest risk for aircraft upset) so the computed probabilities only apply to those conditions, which would be lessened during periods of warmer weather or higher wind speeds.

Table 3.2-1 Average Monthly Weather at Camp Pendleton Over 70-year period

Month	*Temperature Average (F)*	*Temperature Minimum (F)*	*Temperature Maximum (F)*	*Wind Speed (kts)[(1)]*
January	41 - 68	19	93	29
February	42 - 68	24	91	29
March	48 - 68	27	95	29
April	51 - 70	32	104	24
May	56 - 72	37	102	24
June	59 - 76	43	109	19
July	62 - 79	46	111	24
August	63 - 81	46	108	19
September	60 - 81	43	110	24
October	54 - 78	34	108	24
November	44 - 73	27	98	24
December	42 - 68	25	92	24

Notes: [(1)] Primary wind direction at 210 degrees followed by 30 degrees for all months.
F = Fahrenheit, kts = knots.
Source: USMC 2019.

The FAA exhaust plume model requires specific input to characterize the exhaust gas that includes the exhaust velocity and temperatures, as well as the exhaust gas stack diameter and height. The manufacturer of the gas turbines, Siemens, provided the details for the exhaust gas conditions, which were estimated up to 110 feet per second and 277 degrees Fahrenheit at the top of the stack (Siemens 2020). The exact stack height was not determined at the time, but possible range is between 75 and 150 feet (22.9 and 45.7 meters). This analysis assumed a stack height of 100 feet (30.5 meters). The stack height has only a minimal effect on the risk to aircraft except to move the location of risk so if a 150-foot (30.5-meter) stack was built then the probability risks would shift up 50 feet in altitude relative to the results presented here. The calculated upset probability for the worst local weather conditions of minimum temperatures and no wind are depicted for light general aviation (GA) aircraft in Figure 3.2-5 and narrow-body jet categories provided in the plume analyzer model in Figure 3.2-6, helicopter is not available.

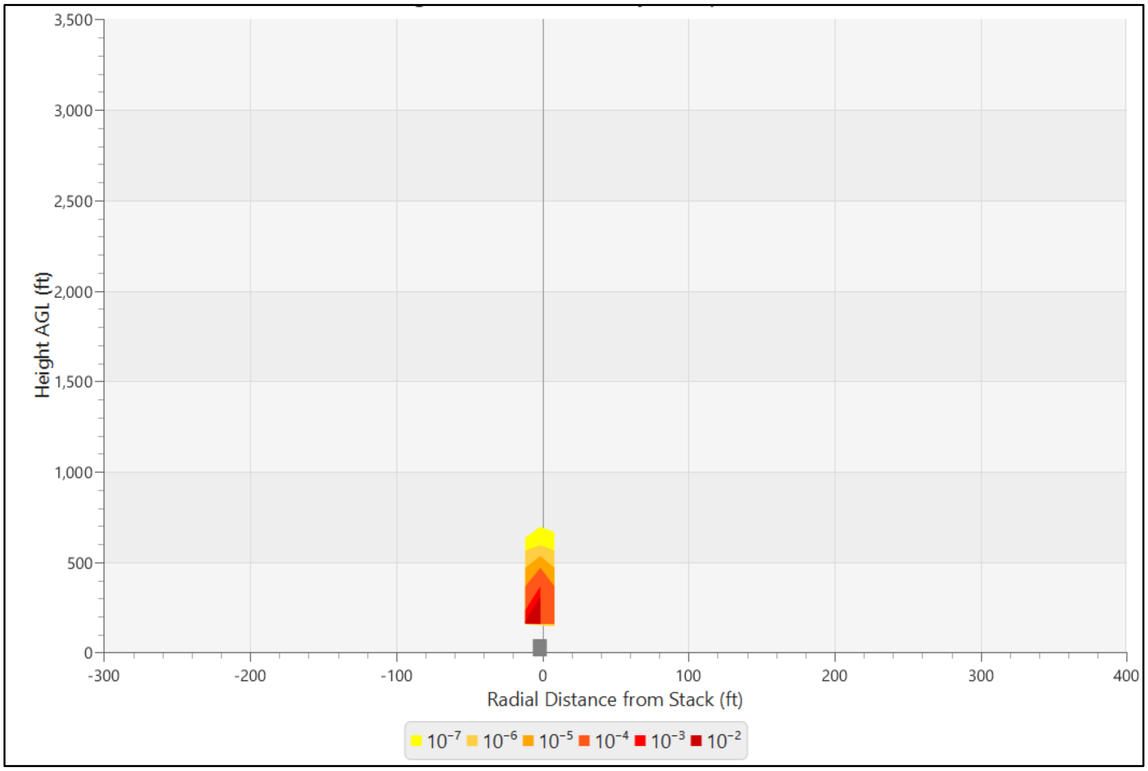


Figure 3.2-5 Light GA – Probability of Upset for Minimum Ambient Temperature with No Wind and One Exhaust Stack

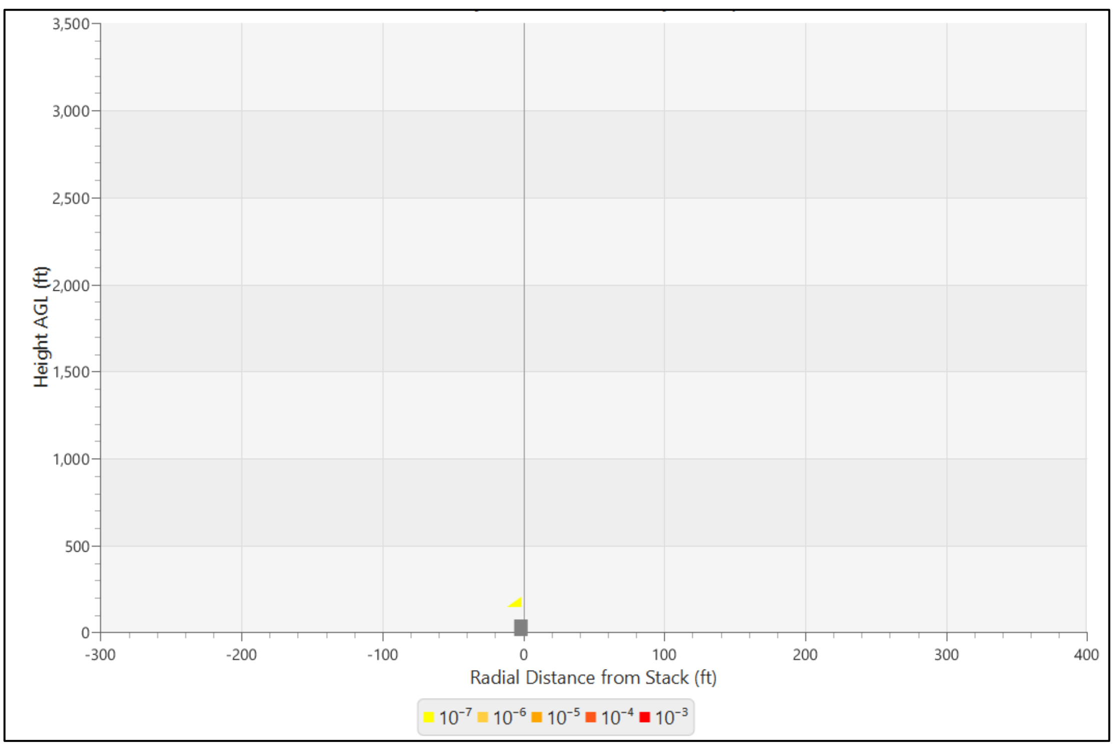


Figure 3.2-6 Narrow-Body Jet – Probability of Upset for Minimum Ambient Temperature with No Wind and One Exhaust Stack

During adverse weather conditions, the risk would be up to 1:100 for light GA aircraft while directly over the stack within 100 vertical feet of the top, which would be approximately 200 feet (61 meters) above ground level (AGL). This risk decreases to less than 1:10,000,000 by 500 feet (152.4 meters) of vertical separation, which would correspond to approximately 600 feet (182.9 meters) AGL. The upset risk to the narrow-body jet would be far less at 1:10,000,000 within 100 vertical feet of the stack top or 200 feet AGL. The risk for business jets was calculated as essentially negligible for all locations in the vicinity of the stack.

The plume analyzer also calculates the probability of severe turbulence for several aircraft categories. Severe turbulence would be greatest for light GA aircraft and reach a probability of 1:100 within approximately 25 lateral feet (7.6 lateral meters) from the stack and 700 feet (213.4 meters) AGL or lower, as shown in Figure 3.2-7. The risk would decrease at further lateral and vertical distances from the stack but would not become negligible until approximately 2,000 feet (609.6 meters) AGL. Figure 3.2-8 depicts the severe turbulence risk for business jets would follow a similar trend decrease to negligible above 1,000 feet (304.8 meters) AGL and 50 lateral feet (15.2 lateral meters). The severe turbulence risk for narrow-body jet would be much smaller and only exceed negligible within 20 lateral feet (6.1 lateral meters) and less than 300 feet (91.44 meters) AGL, as depicted in Figure 3.2-9. These three figures present the probability of risk only for the 'worst' weather conditions with the lowest average monthly temperatures and no wind.

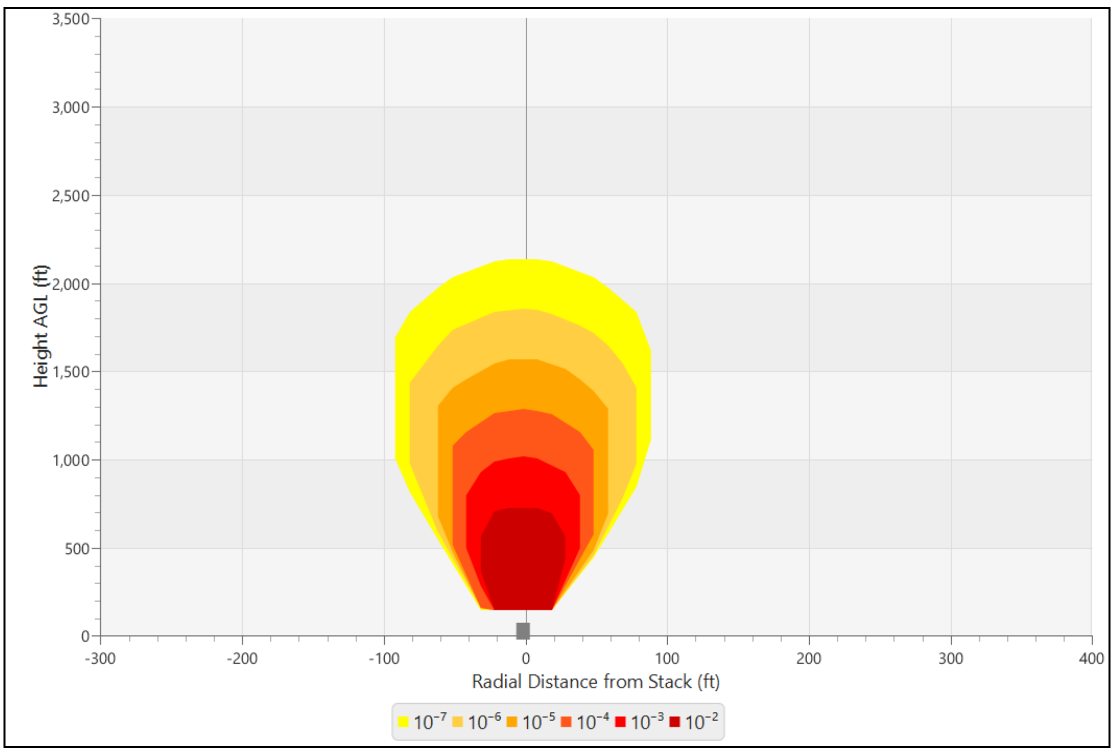


Figure 3.2-7 Light GA – Probability of Severe Turbulence for Minimum Ambient Temperature with No Wind and One Exhaust Stack

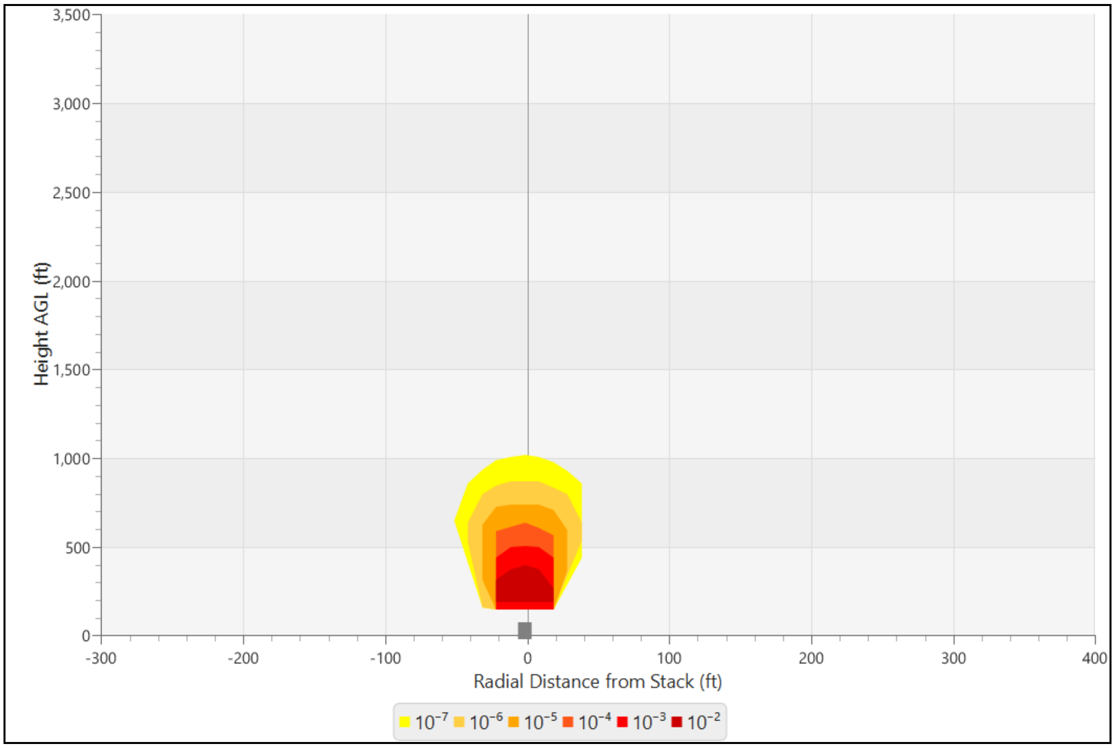


Figure 3.2-8 Business Jet – Probability of Severe Turbulence for Minimum Ambient Temperature with No Wind and One Exhaust Stack

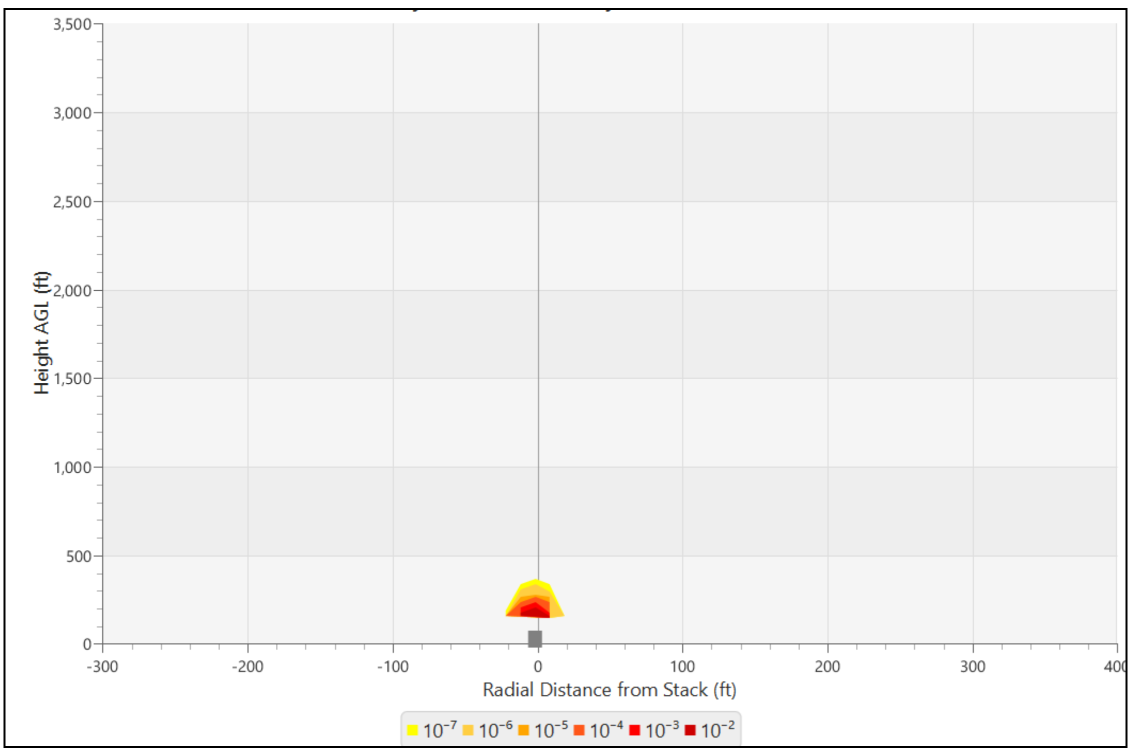


Figure 3.2-9 Narrow-Body Jet – Probability of Severe Turbulence for Minimum Ambient Temperature with No Wind and One Exhaust Stack

The possibility exists that the proposed power plant may require two exhaust stacks of 10 feet (3 meters) in diameter each. It is assumed that the total exhaust gas volume would be shared between the two stacks resulting in exhaust speeds one-half that of a single stack at approximately 55 feet per second in both. The exact arraignment of the two stack option is not currently known so a range of distances was analyzed and a separation of 20 feet (6.1 meters) between stacks generally produced the greatest risks. The upset risk for light GA would be reduced from the single stack arraignment but affect an increased lateral area, as shown in Figure 3.2-10. The upset risk to the narrow-body jet and business jet would both be considered negligible.

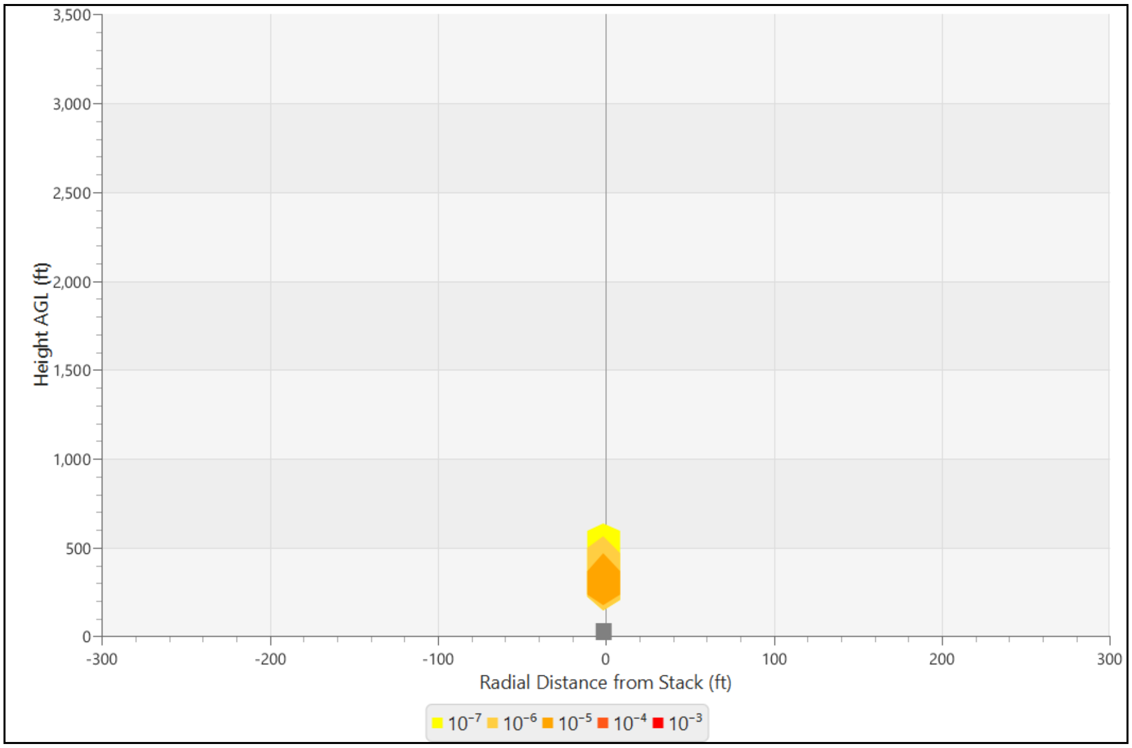


Figure 3.2-10 Light GA – Probability of Upset for Minimum Ambient Temperature with No Wind and Two Exhaust Stacks

The previous figures presented the risks to aircraft for the worst weather conditions corresponding to average monthly low temperatures and no wind. At warmer ambient temperatures and increase wind the risks would decrease significantly. Figure 3.2-11 depicts the probability of upset risk on light GA aircraft during average temperatures and a 5 knot wind speed. These results can be compared to Figure 3.2-5, which is similar input except reflecting the 'worst' weather conditions. Note that the scale of the axis is different. The average weather conditions effectively reduce both the magnitude of risk and the volume of airspace at risk, but the area of risk would shift to approximately 30 feet (9.1 meters) downwind of the stack.

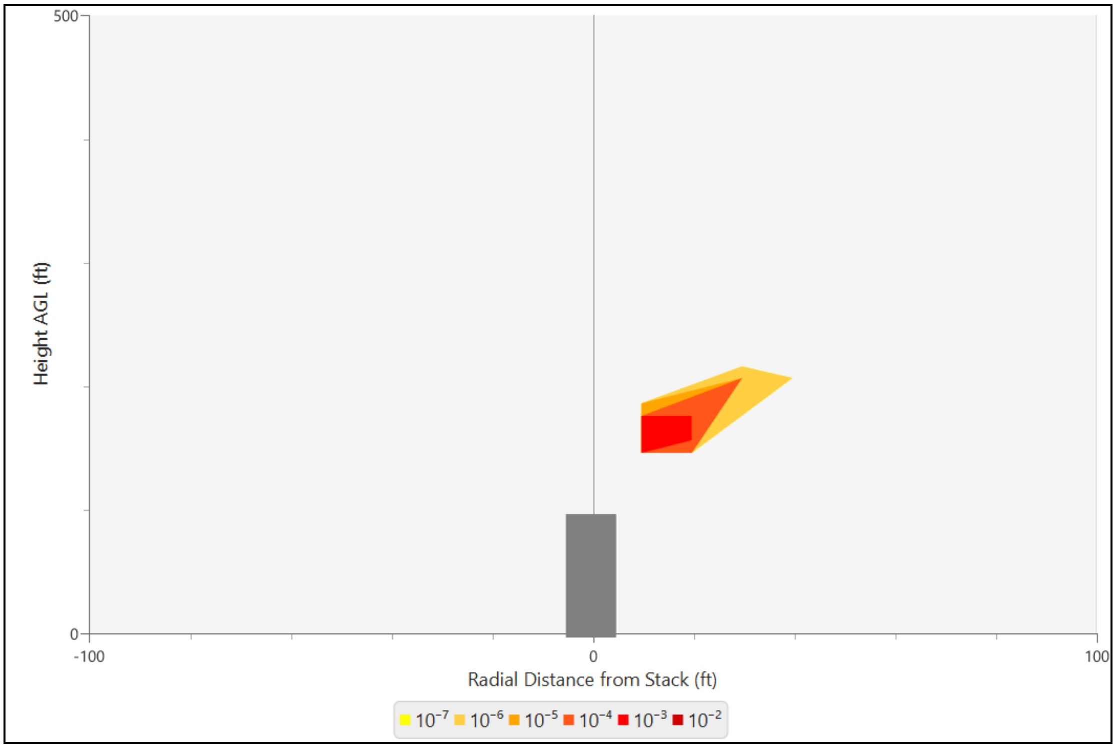


Figure 3.2-11 Light GA – Probability of Upset for Average Ambient Temperature with 5 knot Wind and One Exhaust Stack

The plume analyzer software does not include a helicopter category so it is not readily apparent how the risks of upset and severe turbulence on light GA aircraft would translate to military helicopters at the MCAS Camp Pendleton. When viewing the most sensitive aircraft category in the plume analyzer, light GA, the most practical way to decrease the risks of upset or severe turbulence would be to maintain sufficient lateral separation of approximately 300 feet (91.4 meters) from the proposed stack(s) when operating at altitudes below 1,000 (304.8 meters) AGL. Therefore, if aircraft operating at the MCAS Camp Pendleton can avoid the area in the immediate vicinity of the stack(s) then the risks to flight safety would not be significant.

3.2.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site. Figure 3.2-4 shows the site relative to the clear zone and accident potential zones from the most-recent 2017 AICUZ study (Marine Corps Installations Command 2017), and Alternative 2 does not creates new construction in these safety zones.

Figure 3.2-2 shows that the typical flight tracks do not put aircraft over the Parking Lot Site. The altitudes expected of aircraft in this vicinity would be such that the vertical development proposed at the Parking Lot Site would not cause a hazard to flight.

As is the case for Alternative 1, the proposed exhaust stack location under Alternative 2 would also conflict with existing imaginary surfaces at MCAS Camp Pendleton and require notification to the FAA under 14 CFR Part 77.9. However, because the Alternative 2 site is nearly 2 miles (3.2 km) northeast of the MCAS Runway 21, the potential risks of creating an obstacle for aircraft navigation or generating turbulent air affecting aircraft would be less when compared with Alternative 1 which is approximately 4,000 feet (1219.2 meters) east of the runway.

Due to the existing terrain and local airspace conditions, the construction of up to two exhaust stack(s) at the Parking Lot Site location would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would be located within military controlled and restricted airspace so operation by civil aircraft is very limited. The USMC would file the applicable paperwork with the FAA and, should the FAA require it, mitigation such as high visibility painting or lighting would be added to the exhaust stack(s). Therefore, implementation of Alternative 2, would cause no significant impact to air space.

The risk of exhaust gas from the power plant stack(s) to create smoke obscuring a pilot's view would be minimal because the exhaust gas humidity would be approximately 5 percent and the stacks would be the 'dry' type that would not add water to the exhaust gas for cooling purposes.

In terms of thermal effects of exhaust gas, the exhaust plumes created by power plant exhaust stacks at the Parking Lot Site would have the same risks to aircraft as presented in Section 3.2.3.1, *Alternative 1*. However, the Parking Lot Site is located further from the MCAS Camp Pendleton's runways (approximately 9,000 feet [2,743.2 meters] away) so aircraft generally operate at greater altitudes in this area than the Haybarn Site. The closest common flight tracks, as shown in Figure 3.2-2, would be approximately 1,500 feet (457.2 meters) northwest of the proposed Parking Lot Site and sufficiently far away to create a negligible risk to all aircraft.

3.2.3.3 No-Action

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). Thus, under the No-Action Alternative, there would be no change to current airspace/air traffic conditions. Therefore, implementation of the No-Action Alternative would not have an impact to airspace.

3.3 Biological Resources

3.3.1 Definition of Resource

Biological resources include plant and animal species, and the habitats within which they occur. This analysis focuses on species that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. These resources are commonly divided into the following categories: *Plant Communities*, *Wildlife*, and *Special Status Species*.

Biological resources are grouped and analyzed in this SEA as follows:

- *Plant Communities* include plant associations and dominant constituent species that occur in the project area. Special status plant species are discussed in more detail below.

- *Wildlife* includes the characteristic animal species that occur in the project area. Special consideration is given to bird species protected under the Migratory Bird Treaty Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.
- *Special Status Species* are those plant and animal species that are listed, have been proposed for listing, or are candidates for listing as threatened or endangered under the federal ESA, the California ESA, and other species of concern as recognized by state or federal agencies.

3.3.2 Affected Environment

3.3.2.1 Plant Communities

The Stuart Mesa Site is dominated by developed and disturbed habitats, with small portions of riparian and coastal scrub habitats in the outlying parts of the site (Figure 3.3-1). The dominant plant communities in the Haybarn Site and along the gas line corridor are coastal scrub, developed, and disturbed communities (Figure 3.3-2). The dominant plant communities in the Parking Lot Site and along the 69 kV power line/gas line corridor are coastal scrub, non-native woodland, developed, and disturbed communities (Figure 3.3-3).

Plant community boundaries are based on the most current MCB Camp Pendleton geographic information system (GIS) data layers (MCB Camp Pendleton 2019a) and slight modifications based on ground-truthing of the action area during site assessments conducted in support of this SEA (Cardno 2019).

Plant community names are consistent with the colloquial names provided in the most recent MCB Camp Pendleton GIS (MCB Camp Pendleton 2019a) and are based on the U.S. National Vegetation Classification (2019). Descriptions of plant communities and habitats that may be impacted by the Proposed Action are provided below.

<u>Grassland Communities</u>

Native grassland is dominated by perennial bunchgrasses. This community usually occurs on fine-textured (often clay) soils. Native and introduced annual grasses usually occur between the perennials, often exceeding the bunchgrasses in cover. Native and non-native herbs are typically present in native grasslands as well.

Non-native Forbland is dominated by annual, invasive broadleaf species. Usually occurs in areas that experience frequent disturbance and are nearby an exotic seed source. The dominant exotic species include black mustard (*Brassica nigra),* shortpod mustard (*Hirschfeldia incana)*, common fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), and tocalote (*Centaurea melitensis*). Non-native forbs in the survey area consisted of shortpod mustard, common fennel, and tocalote.

Non-native Grassland is dominated by non-native annual grasses and weedy herbaceous forbs. Dominant non-native species include ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), wild oats (*Avena* spp.), wild barley (*Hordeum* spp.), soft chess brome (*Bromus hordeaceus*), filaree (*Erodium* spp.*),* sweet fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), and non-native mustards (*Brassica nigra* and *Hirschfeldia incana*).

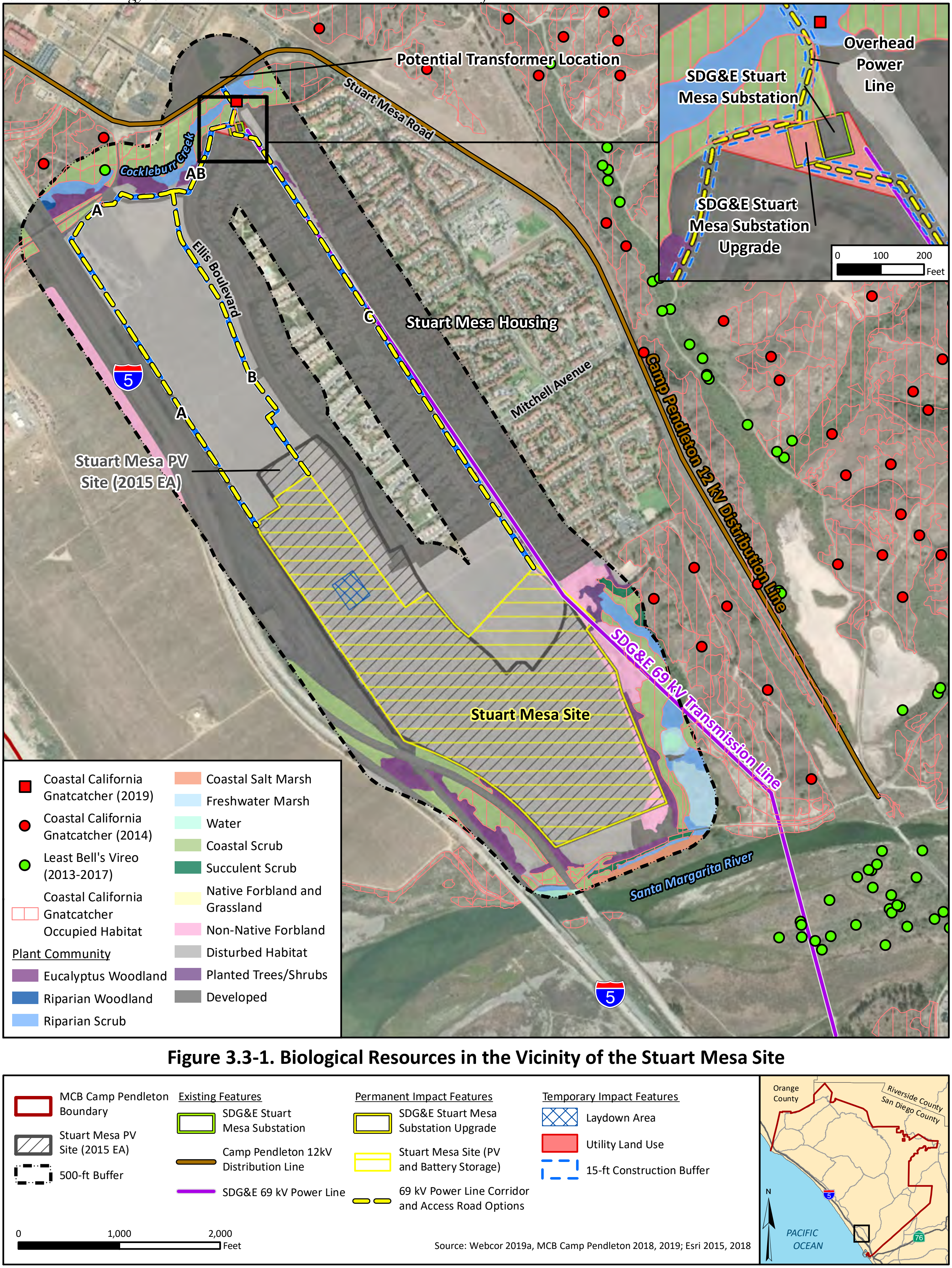


Figure 3.3-1. Biological Resources in the Vicinity of the Stuart Mesa Site

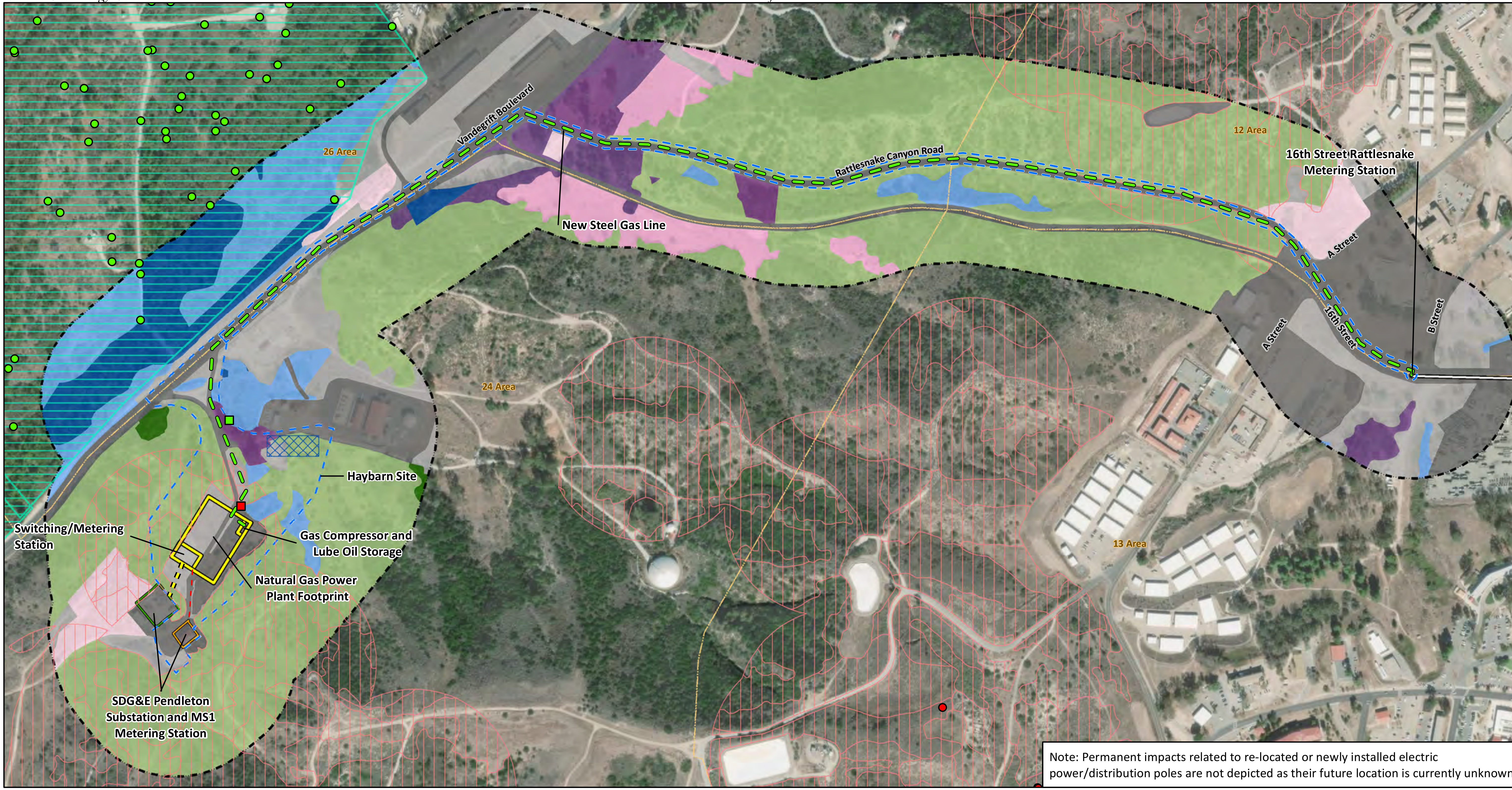
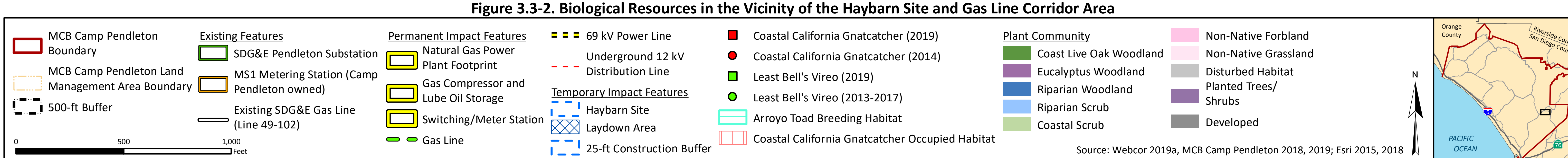


Figure 3.3-2. Biological Resources in the Vicinity of the Haybarn Site and Gas Line Corridor Area



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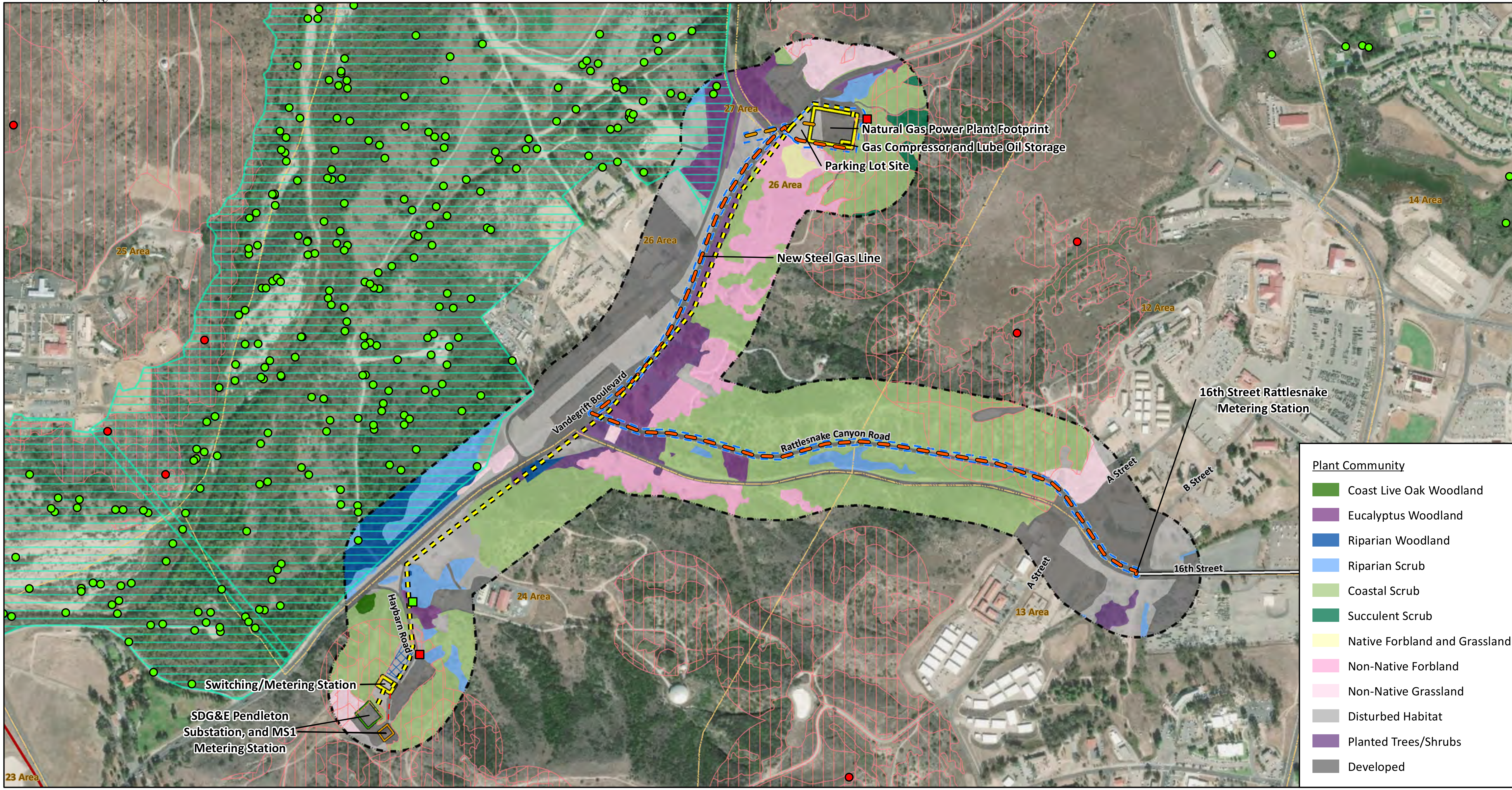
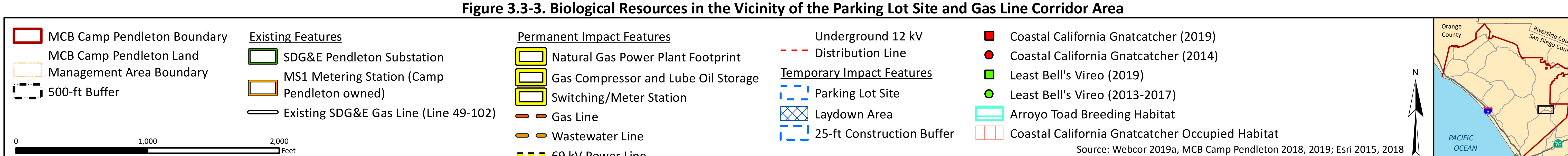


Figure 3.3-3. Biological Resources in the Vicinity of the Parking Lot Site and Gas Line Corridor Area



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Scrub Communities

Coastal Scrub is the dominant scrub community in coastal southern California. It occurs on dry slopes with clay-rich soils and is typically dominated by California sagebrush (*Artemesia californica*) and other drought-tolerant, woody shrubs including coyote brush (*Baccharis pilularis*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), Menzies' goldenbush (*Isocoma menziesii*), California sunflower (*Encelia californica*), and sages (*Salvia* spp.). This community typically intergrades with grassland communities at lower elevations and chaparral communities at higher elevations. It is protected and managed on MCB Camp Pendleton because it is habitat for the federally threatened coastal California gnatcatcher.

Riparian Communities

Riparian Scrub zones mostly occur in major river systems, are dominated by small trees or shrubs (willows [*Salix* spp.] and mulefat [*Baccharis salicifolia*]) and lack taller riparian trees. Riparian scrub often merges with other riparian or marsh habitats. In the action area, this community is dominated by willows and mulefat.

Riparian Woodland is a medium-density riparian woodland community dominated by small trees or shrubs, with scattered taller riparian tree species. This community is often found in conjunction with other wooded riparian communities along major river systems and smaller major tributaries. Characteristic species in the project survey area include California sycamore (*Platanus racemosa*), willows, mulefat, and blue elderberry (*Sambucus nigra* ssp. *caerulea*).

Upland Woodland Communities

Coast Live Oak Woodland is a dense woodland community dominated by coast live oak (*Quercus agrifolia*) with a closed, or nearly-closed, canopy. This community typically occurs on north facing slopes or shaded canyons and ravines. In the project survey area, the dominant understory species is poison oak (*Toxicodendron diversilobum*).

Eucalyptus Woodland is a non-native woodland dominated by large naturalized blue and/or red gum trees (*Eucalyptus* spp.).

Planted Trees/Shrubs generally refers to landscaped areas or areas that have been planted with ornamental trees or shrubs. Example species include pepper trees (*Schinus* spp.), a variety of palms (multiple genera), pines (*Pinus* spp.), and shrubs such as oleander (*Nerium oleander*).

Disturbed /Developed Areas

Developed areas do not support native vegetation and are characterized by permanent or semi-permanent structures. Examples include buildings, parking lots, pavement, concrete, freeways, maintained dirt roads, and railways.

Disturbed Habitat is where past or present physical disturbance is prevalent such that an area is no longer recognizable as a native or naturalized vegetation association. Typically, if vegetation is present, it is nearly exclusively composed of non-native plant species that take advantage of the disturbance. Examples of disturbed land include areas that have been disked or graded, and/or experienced repeated use that prevents natural revegetation; recently cleared firebreaks; construction staging areas; off-road vehicle trails; and old building sites.

3.3.2.2 Wildlife

The large undeveloped portions of MCB Camp Pendleton support a wide variety of wildlife species. In total, 559 wildlife species have been documented on both the MCB Camp Pendleton and MCAS Camp Pendleton (MCB Camp Pendleton and MCAS Camp Pendleton 2018).

Some wildlife species, especially those having special status designations, are limited in distribution and/or occurrence to a single habitat type. Most, however, are generalists and will use multiple habitats for shelter and foraging. All of the reptiles and amphibians, most of the mammals, and a small percentage of the birds that occur on MCB Camp Pendleton and/or MCAS Camp Pendleton are year-round residents. The rest are seasonal residents, wide-ranging migrants, or transient visitors. Nearly all bird species occurring on MCB Camp Pendleton, including those that occur at the MCAS Camp Pendleton, are protected under the Migratory Bird Treaty Act and are given special consideration under EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (MCB Camp Pendleton and MCAS Camp Pendleton 2018). In 2014, the DoD signed a Memorandum of Understanding with the USFWS to promote the conservation of migratory birds (DoD and USFWS 2014).

3.3.2.3 Special Status Species

Based on a review of MCB Camp Pendleton's Integrated Natural Resources Management Plan (INRMP) (MCB and MCAS Camp Pendleton 2018), current GIS information (MCB Camp Pendleton 2019a), site conditions, and site assessments conducted in the project area, the potential occurrence of federally listed threatened and endangered species in the project area is summarized in Table 3.3-1.

Table 3.3-1 Federally Listed Species Known to Occur on MCB Camp Pendleton

Common Name	*Scientific Name*	*Federal Status*	*Habitat*	*Occurrence in Project Area/Action Area*
Plants				
Encinitas baccharis[1]	*Baccharis vanessae*	Threatened	Chaparral	Not known or likely to occur in project area.
San Diego button-celery[1]	*Eryngium aristulatum* var. *parishii*	Endangered	Vernal pools	Not known or likely to occur in project area.
spreading navarretia[1]	*Navarretia fossalis*	Threatened	Vernal pools	Not known or likely to occur in project area.
thread-leaved brodiaea[1]	*Brodiaea filifolia*	Threatened	Grasslands	Not known or likely to occur in project area.
Invertebrates				
Riverside fairy shrimp[1]	*Streptocephalus wootoni*	Endangered	Vernal pools and ponded basins	Potential habitat occurs outside of the Stuart Mesa Site, north of Cockleburr creek. Habitat would not be impacted.
San Diego fairy shrimp[1]	*Branchinecta sandiegonensis*	Endangered	Vernal pools and ponded basins	Potential habitat occurs outside of the Stuart Mesa Site, north of Cockleburr creek. Habitat would not be impacted.
Fish				
southern steelhead trout[1]	*Oncorhynchus mykiss*	Endangered	Rivers and major streams	Not known or likely to occur due to lack of habitat.
Southern tidewater goby[1]	*Eucyclogobius newberryi*	Endangered	Estuaries/coastal brackish water	Not known or likely to occur due to lack of habitat.

Table 3.3-1 Federally Listed Species Known to Occur on MCB Camp Pendleton

Common Name	Scientific Name	Federal Status	Habitat	Occurrence in Project Area/Action Area
Amphibians				
arroyo toad	*Anaxyrus californicus*	Endangered	Rivers, major streams, surrounding uplands	Breeding habitat along the SMR (upstream of Stuart Mesa Bridge) and adjacent sandy terraces. Aestivation/movement habitat occurs in upland habitats.
Birds				
California least tern[1]	*Sterna antillarum browni*	Endangered	Sandy beaches and coastal dunes	Not known or likely to occur due to lack of habitat.
coastal California gnatcatcher	*Polioptila californica*	Threatened	Coastal scrub	Known to occur in coastal scrub habitat in and adjacent to the project area.
least Bell's vireo	*Vireo bellii pusillus*	Endangered	Willow dominated riparian	Known to occur/breed in riparian habitat in and adjacent to the project area.
light-footed Ridgway's rail[1]	*Rallus obsoletus levipes*	Endangered	Coastal fresh and salt water marshes	Not known or likely to occur due to lack of habitat.
southwestern willow flycatcher[1]	*Empidonax traillii extimus*	Endangered	Willow dominated riparian	Potential to occur as a migratory transient. Not known to breed in the project area.
western snowy plover[1]	*Charadrius nivosus*	Threatened	Sandy beaches	Not known or likely to occur due to lack of habitat.
yellow-billed cuckoo[1]	*Coccyzus americanus*	Threatened	Riparian areas (on MCB Camp Pendleton only rarely found along the SMR)	Low potential to occur as a rare/transient summer visitor along the SMR corridor.
Mammals				
Pacific pocket mouse[1]	*Perognathus longimembris pacificus*	Endangered	Coastal mesas, in sparse grassland with sandy soil	Not known or likely to occur in the project area.
Stephens' kangaroo rat[1]	*Dipodomys stephensi*	Endangered	Sparse coastal sage scrub & grassland	Not known or likely to occur in the project area.

Notes: [1]Species not known or likely to occur in the project area are not discussed further in this SEA; SMR = Santa Margarita River.

Sources: MCB and MCAS Camp Pendleton 2018; MCB Camp Pendleton 2019a.

The USMC is preparing a Biological Assessment to engage in formal section 7 consultation with the USFWS for this SEA. All conservation measures mandated by the resulting BO would be incorporated by reference into the Final SEA and would be implemented under the Proposed Action to reduce impacts to federally listed species. The California Department of Fish and Wildlife Biogeographic Information and Observation System database was reviewed, but state special status species will not be discussed in this document.

Species not known or likely to occur in the project area are not discussed further in this SEA. Although transient flycatchers occur sporadically and in low numbers in riparian habitat on MCB Camp Pendleton during the breeding season, the southwestern willow flycatcher is only known to breed in one location on-Base, immediately west of the MCAS Camp Pendleton levee. Although individual southwestern willow flycatchers may occur transiently in low numbers in the project area, the species does not reside or breed in the project area and is, therefore, not carried forward for detailed analysis. Species carried forward for analysis in this SEA include the arroyo toad (ARTO), coastal California gnatcatcher (CAGN), and least Bell's vireo (LBVI).

All lands owned or controlled by MCB Camp Pendleton and MCAS Camp Pendleton are excluded from critical habitat designation under Section 4(a)(3) of the ESA due to the effectiveness of the INRMP in providing for the conservation of listed species (MCB Camp Pendleton and MCAS Camp Pendleton 2018).

Arroyo Toad

The ARTO was federally listed as endangered on 16 December 1994 (USFWS 1994) and a recovery plan is available (USFWS 1999). The 1999 recovery plan identified the Santa Margarita River (SMR), San Onofre Creek, and San Mateo Creek and their tributaries as recovery units for the species (USFWS 2009) because toad breeding pools exist in these waterways on MCB Camp Pendleton.

The ARTO is a small toad that requires shallow, slow moving streams for breeding and early development and uses the surrounding riparian habitat, especially marginal zones above and between stream channels, for foraging, resting, and dispersal up- and downstream. Reproduction is dependent on availability of shallow, still, or low-flow pools in which breeding, egg laying, and larval development occur. Breeding and larval development typically occur between March and July, depending upon weather conditions (MCB and MCAS Camp Pendleton 2018). During the non-breeding season, generally late fall and winter (Sweet 1992), adults are essentially terrestrial and disperse more widely into adjacent habitat to find suitable soil for burrowing, which include but are not limited to riparian woodlands, coastal scrub, chaparral, and grassland (USFWS 2009; MCB and MCAS Camp Pendleton 2018). Metamorphs will disperse, primarily within and adjacent to breeding areas, until they migrate into burrows for the non-breeding season.

On MCB Camp Pendleton, ARTOs occur in the SMR and its tributaries, De Luz and Roblar creeks; in San Onofre Creek and its tributary, Jardine Canyon; and San Mateo Creek and its tributary, Talega Creek. ARTOs on MCB Camp Pendleton may represent some of the largest remaining populations and the only one occurring on an undammed major river system within southern California (MCB and MCAS Camp Pendleton 2018). Although ARTO occur in the SMR and its tributaries, the downstream limit of the species along the SMR is approximately at the Stuart Mesa Bridge (MCB and MCAS Camp Pendleton 2018), southeast of the Stuart Mesa Site, presumably because of tidal marine influence and increasing salinity downstream of that point. Therefore, the ARTO is not known or likely to occur in the Stuart Mesa Site or any portion of the SMR south of the Stuart Mesa Site.

The ARTO breeds and occurs along the SMR and adjacent sandy terraces that are adjacent to the Haybarn Site and gas line corridor portions of the project area (Figure 3.3-2) (Mitrovitch et. al 2011; Brehme et al. 2014; MCB and MCB Camp Pendleton 2018). Historically, no ARTO have been observed within the proposed project areas. Based on the biomonitoring results of the Advanced Water Treatment Facility and Utility Corridor Project (P-113) that was constructed in a very similar project area, no ARTO are anticipated to be encountered during construction activities for this project (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2014).

The distance ARTOs are found from breeding sites depends on the topography and the extent of suitable habitat. Upland habitats that ARTOs may disperse into include coastal scrub, chaparral, grassland, or oak woodland with substantial areas of fine sand, into which adult toads burrow during the day or other periods of inactivity (USFWS 2005, 2009). ARTOs may also seek temporary shelter under rocks or debris and have been found in mammal burrows on occasion (USFWS 2005).

Coastal California Gnatcatcher

The CAGN, a subspecies of the California gnatcatcher, was federally listed threatened on 30 March 1993 (USFWS 1993) The CAGN is an obligate, permanent resident of coastal scrub vegetation, but they will make limited use of adjacent habitats outside of the breeding season. The breeding season extends from 15 February through 31 August, with peak nesting activities occurring from mid-March through May (USFWS 2007).

Under MCB Camp Pendleton's INRMP (MCB and MCAS Camp Pendleton 2018) and Range and Training Regulations (Marine Corps Installations West-Marine Corps Base, Camp Pendleton 2013), the removal of or damage to coastal scrub is prohibited, and training activities in the vicinity of occupied habitat are required to remain on existing routes during the breeding season.

CAGNs are known to occur and breed in coastal scrub habitat in the project area. During a site assessment of the project area on 9 July 2019, three CAGN (likely a family unit) were observed by a USFWS-permitted CAGN biologist in coastal scrub habitat adjacent to the SDG&E Stuart Mesa Substation upgrade site (see Figure 3.3-1). An additional observation was made by a USFWS-permitted CAGN ES biologist on 10 September 2019, during a field review of the Haybarn Canyon, where a juvenile was heard vocalizing. All other historic observations and known CAGN-occupied habitats in and adjacent to the project area are presented on Figures 3.3-1, 3.3-2, and 3.3-3.

Least Bell's Vireo

The LBVI was federally listed endangered on 2 May 1986 (USFWS 1986). A draft recovery plan is available for this species (USFWS 1998). Management for the LBVI is currently addressed in the INRMP (MCB and MCAS Camp Pendleton 2018) and the Riparian BO (USFWS 1995).

The LBVI is a small, migratory songbird that arrives at MCB Camp Pendleton as early as mid-March and departs for its wintering grounds in Baja California by September. The breeding season is from 15 March through 31 August. The LBVI primarily inhabits dense willow dominated riparian habitats with lush understory vegetation. The subspecies forages and nests primarily in willows (Lynn and Kus 2010).

Currently, the LBVI is found only in riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside counties. Substantial LBVI populations are currently found on five rivers in San Diego County—the Tijuana, Sweetwater, San Diego, San Luis Rey, and Santa Margarita rivers—with smaller populations along other drainages (MCB and MCAS Camp Pendleton 2018). As a result of concerted programs focused on preserving, enhancing, and creating suitable nesting habitat, the LBVI population has steadily increased in size along several of its breeding drainages in southern California. In 2010, the statewide LBVI population was estimated at over 3,000 territories, over 1,000 of which occurred on MCAS and MCB Camp Pendleton (MCB and MCAS Camp Pendleton 2018; Lynn and Kus 2013).

During a site assessment of the project area on 9 July 2019, one LBVI was heard vocalizing by a USFWS-approved LBVI biologist in riparian habitat within the Haybarn Site (see Figure 3.3-2). All other historic LBVI observations in and adjacent to the project area, as identified using MCB Camp Pendleton GIS data (MCB Camp Pendleton 2019a), are presented on Figures 3.3-1, 3.3-2, and 3.3-3.

3.3.3 Environmental Consequences

This section presents an analysis of potential direct, indirect, temporary, and permanent impacts to biological resources that could result from implementation of the Proposed Action.

Direct impacts are the immediate result of project-related activities (e.g., direct mortality or disturbance of species, or removal of vegetation and habitat during construction). Direct impacts may be either temporary (reversible) or permanent (irreversible).

Indirect impacts are caused by or result from project-related activities but occur later in time or are spatially removed from the activities (e.g., shifts in vegetation composition or increased predation risk over time). Indirect impacts are diffuse, resource-specific, and less amenable to quantification or mapping than direct impacts, but still need to be considered. Indirect impacts typically extend beyond the immediate project footprint(s).

Potential project impacts are described as temporary or permanent based on their anticipated longevity. Project impacts are evaluated based upon an understanding of project configuration and components, and methods and equipment that would be used. All potential project effects are described as they would occur after the measures listed in Table 3-1 are implemented. Permanent impacts would occur where construction of project facilities would occur. Temporary impacts would occur where construction equipment laydown and staging occur, and where ground disturbance can later be restored. Following construction, all temporarily impacted habitats would be restored to original condition per the measures in Table 3-1, in accordance with a USFWS-approved Restoration Plan.

3.3.3.1 Alternative 1

Plant Communities

Tables 3.3-2 and 3.3-3 provide the potential permanent and temporary impacts to plant communities and other habitats from implementation of Alternative 1, respectively. Under Alternative 1, all plant communities within the direct footprint of the solar PV and battery energy storage systems site at the Stuart Mesa Site would be permanently impacted, as described in the 2015 EA. *(Note: Since the completion of the 2015 EA, there has been a small change in the footprint of the project area; however, that area was included in the 2015 analysis as it was considered adjacent property and therefore relevant to the 2015 evaluation.)* In addition, the footprints of the SDG&E Stuart Mesa Substation upgrade and Utility Land Use Area would be permanently impacted. Impacted acreages along the gas line corridor were calculated from a 50-foot (15.2-meter) wide temporary construction buffer (25 feet [7.6 meters] on both sides of the corridor). All temporary impacts to plant communities would be restored onsite.

Per the measures in Table 3-1, final construction designs would minimize the temporary disturbance of all temporary impacts to coastal scrub and riparian habitats, and any necessary impacts to such habitats would be restored on-site. Unavoidable effects to riparian/estuarine species and habitat would be compensated in accordance with the Riparian BO (USFWS 1995). In addition, impacts to upland species and habitat would be compensated in a manner and at a ratio as determined through section 7 consultation with the USFWS.

With the incorporation of measures (refer to Table 3-1) to stabilize exposed slopes during and after construction, and to minimize erosion and sedimentation downslope from the project footprint, indirect impacts outside of the project footprint are expected to be minimal and not significant.

Temporary impacts due to dust and runoff alteration during construction would be largely confined to the project footprint and would be minimized with the incorporation of BMPs and erosion control measures (in Table 3-1). Therefore, no significant impacts to plant communities would occur under Alternative 1.

Table 3.3-2 Permanent Impacts to Plant Communities and Habitats under Alternative 1

Plant Community	Project Area (acres)							Total[4]
	Stuart Mesa Site[1]	Stuart Mesa Substation Upgrade and Utility Land Use Area	Stuart Mesa Power Line Corridor and Access Road Options[2]			Haybarn Site		
			A	B	C	Power Plant	Relocated/ Installed Power Poles[3]	
Coastal Scrub	-	0.10	0.11	0.10	-	0.03	0.25	**0.38-0.49**
Eucalyptus Woodland	0.42	-	0.10	0.06	-	-		**0.42-0.52**
Non-native Forbland	3.29	-	-	-	0.12	-	-	**3.29-3.41**
Planted Trees/Shrubs	0.10	-	-	-	-	-	-	**0.10**
Riparian Scrub	-	-	0.06	0.06	-	-	-	**0-0.06**
Developed	0.37	-	0.86	0.19	1.63	0.85	-	**1.22-2.85**
Disturbed	131.76	0.63	0.92	1.17	0.05	0.99	-	**133.38-134.55**
TOTAL	**135.94**	**0.73**	**2.05**	**1.58**	**1.80**	**1.87**	**0.25**	**138.79-140.84**

Notes: [1]Impacts were previously analyzed in the 2015 EA.
[2]Under the Proposed Action, either the existing SDG&E 69 kV overhead power line would be utilized (no impact) or one of three options (A, B, or C) would be utilized (new impact).
[3]A maximum of 34 power poles would need to be relocated and/or installed. Each pole would require a 10-ft radius of clearance. As the location of each pole is not currently known, this analysis assumes that all impacts would occur in coastal scrub habitat (worst-case scenario). Impacts are projected to be less and will be provided to USFWS upon project completion.
[4]Some totals represent a range of impacts (minimum to maximum) because it is not yet known if the existing power line would be used, or if one of the new power line options would be used.
Source: MCB Camp Pendleton 2019a.

Table 3.3-3 Temporary Impacts to Plant Communities and Habitats under Alternative 1

Plant Community	Project Area (acres)							Total[3]
	Stuart Mesa Site[1]	Stuart Mesa Substation Upgrade and Utility Land Use Area	Power Line Corridor and Access Road Options[2]			Haybarn Site	Gas Line Corridor	
			A	B	C			
Coastal Scrub	-	-	0.13	0.10	-	5.63	1.59	**7.22-7.35**
Eucalyptus Woodland	-	-	0.10	0.06	0.01	0.69	-	**0.69-0.79**
Non-native Forbland	-	-	-	-	0.07		-	**0-0.07**
Planted Trees/Shrubs	-	-	-	-	-		0.20	**0.20**
Riparian Scrub	-	-	0.06	0.06	-	0.96	-	**0.96-1.02**
Riparian Woodland	-	-	-	-	-	0.01	-	**0.01**
Developed	-	-	0.73	0.21	1.63	3.25	5.45	**8.70-10.33**
Disturbed	-	-	1.03	1.16	0.05	2.00	0.29	**2.29-3.45**
TOTAL	**-**	**-**	**2.05**	**1.59**	**1.76**	**12.54**	**7.53**	**20.07-22.12**

Notes: [1]Impacts were previously analyzed in the 2015 EA.
[2]Under the Proposed Action, either the existing SDG&E 69 kV overhead power line would be utilized (no impact) or one of three options (A, B, or C) would be utilized (new impact).
[3]Some totals represent a range of impacts (minimum to maximum) because it is not yet known if the existing power line would be used, or if one of the new power line options would be used.
Source: MCB Camp Pendleton 2019a.

Wildlife

Construction would potentially eliminate or displace wildlife from the project area and immediate vicinities. Individuals of the smaller, less mobile and burrowing species would potentially be killed by construction, whereas mobile species would disperse to surrounding areas. Substantial areas of riparian, scrub, and grassland habitat would remain unaffected in the immediate vicinity of the project area, allowing temporary refuge for wildlife during construction. Per measures in Table 3-1, final construction designs would minimize the temporary disturbance of all temporary impacts to coastal scrub and riparian habitats, and any necessary impacts to such habitats would be restored on-site.

The exterior lighting system for the natural gas power plant would be compliant with the requirements of the 2016 CPR (MCB Camp Pendleton 2016), would be downward facing exterior grade lights that would provide very minor illumination at night, and would include any lighting specifications that may come as a result of section 7 consultation with the USFWS. In addition, exterior lighting associated with the natural gas power plant would be consistent with current exterior lighting at the Haybarn Site. Therefore, lighting associated with the natural gas power plant is not expected to have adverse effects on wildlife at the Haybarn Site.

Noise generated through operation of the natural gas power plant and compressor station at the Haybarn Site is anticipated to reach 85 decibels at 100 feet (30.05 meters) from the source, with protective shrouding in place to minimize noise. Animal species can be significantly impacted by significant increases in noise. Brattstrom and Bondello (1983) found that amphibians and reptiles experienced detrimental effects from noise when exposed to sounds of approximately 95 A-weighted decibels (dBA). In bird species, masking of mating vocalizations can impact breeding activities. However, sound production from several bird species has been measured to peaks of about 90-95 decibel (dB) (Brackenbury 1979). It is likely that wildlife species in the immediate vicinity of the power plant would experience impacts associated with an increase in noise levels, such as decreased ability to avoid predators and increased physiological stress. However, the noise envelope would be very small compared to the surrounding available habitat. Overall, no significant impacts to wildlife populations or habitat would occur under Alternative 1.

Special Status Species

Arroyo Toad

Based on the most recent MCB Camp Pendleton GIS data (MCB Camp Pendleton 2019a), potential ARTO habitat occurs north of Vandegrift Boulevard along a portion of the gas line corridor (Figure 3.3-2). However, no potential ARTO habitat occurs within the ground disturbance portions of Alternative 1. Based on the biomonitoring results of the Advanced Water Treatment Facility and Utility Corridor Project (P-113) that was constructed in a very similar project area, no ARTO are anticipated to be encountered during construction activities for this project (NAVFAC SW 2014).

To minimize risks to ARTO potentially occurring within the gas line corridor portion of the Alternative 1 project area, measures listed in Table 3-1 would be implemented. Measures include the installation of temporary silt fencing, covering soil piles and open trenches, conducting pre-activity ARTO surveys of the project area, and biological monitoring by a qualified biologist during construction activities in the Vandegrift Boulevard portion of the gas line corridor. If an ARTO is observed within the project area, all activities would stop until a qualified biologist can identify and relocate the ARTO.

Historically, no ARTO have been observed within the Haybarn Site or the gas line corridor, and no ARTO habitat occurs within the Alternative 1 project area. Therefore, ARTO are not expected to be affected by operation, maintenance, and decommissioning.

Alternative 1 may affect but is not likely to adversely affect the ARTO. There would be no impact to ARTO habitat, and the potential for incidental take within the project footprint is highly unlikely. Implementation of general and species-specific measures in Table 3-1 are expected to reduce potential impacts to a level that would not adversely affect the species. Therefore, no significant impacts would occur to ARTO under Alternative 1.

Coastal California Gnatcatcher

Construction associated with Alternative 1 could permanently impact up to 0.49 acre (0.20 ha) and temporarily impact up to 7.35 acres (3.08 ha) of coastal scrub (Tables 3.3-2 and 3.3-3). Impacts to vegetation presented in Tables 3.3-2 and 3.3-3 provide a maximum development scenario. Coastal scrub habitat would be avoided to the utmost extent. Any unavoidable removal or temporary disturbance of coastal scrub vegetation would be documented during construction. Clearing of coastal scrub vegetation would take place only outside of the CAGN breeding season (15 February to 31 August). Temporary habitat impacts would be restored on-site according to a USFWS-approved Restoration Plan. Mitigation for direct impacts to 0.49 acre (0.20 ha) of CAGN breeding habitat would occur in a manner and at a ratio as determined through section 7 consultation with the USFWS, either through purchase of off-Base credits at a USFWS-approved conservation bank or through restoration of habitat on MCB Camp Pendleton.

Temporary construction-related impacts to CAGN habitat could affect one pair at the Stuart Mesa Site, one juvenile at the Haybarn site, and up to two pairs along the 69 kV power line corridor. However, measures in Table 3-1 would require seasonal avoidance, biological monitoring, and/or buffering of construction activities to avoid potential nests. The temporary removal of 5.63 acres (2.28 ha) of coastal scrub from up to two CAGN territories at the Haybarn Site represents significant removal (greater than 20 percent of a territory) of vegetation used for foraging, nesting, and roosting. Temporary impacts to coastal scrub habitat within other portions of the project area do not result in removal of more than 20 percent of a CAGN territory. Following restoration of any temporary impacts to CAGN habitat, the species is expected to re-occupy such areas.

Temporary direct effects to CAGN outside of the construction footprint may occur as a result of construction activities from increased noise and lighting (if work is conducted at night). Increased noise levels may result in decreased productivity and delayed production (if construction occurs during the breeding season). However, construction activities would avoid the CAGN breeding season to the extent possible. Noise associated with construction would likely exceed the noise associated with normal traffic on Vandegrift Boulevard, and potentially have an effect on CAGN individuals outside of the construction footprint. There are up to two pairs of CAGN within 500 feet (152.4 meters) of the Haybarn Canyon footprint, one CAGN pair within 500 feet (152.4 meters) of the Stuart Mesa Substation site, and up to two more pairs within 500 feet (152.4 meters) of the 69 kV Power Line Corridor that could be affected by construction noise. Night lighting may lead to increased predation, disorientation, startling of individuals, and disruption of inter-specific interactions (Longcore and Rich 2004). However, as described in Table 3-1, a no-construction buffer would be established and/or noise attenuation measures implemented to minimize potential disturbance resulting from noise. Also, very little, if any, construction work would occur at night and the lighting associated with Alternative 1 would be shielded and directed away from adjacent habitats.

Noise generated through operation of the natural gas power plant and compressor station at the Haybarn Site is anticipated to reach 85 decibels at 100 feet (30.5 meters) from the source, with protective shrouding in place to minimize noise. Animal species can be impacted by significant increases in noise. In bird species, masking of mating vocalizations can impact breeding activities. Although CAGN have been shown to have no significant reproductive impacts in places where sound levels exceed 80 decibels for several hours every day (Awbrey and Hunsaker 1998), it is likely that a small but unquantifiable number of CAGN individuals in the immediate vicinity of the power plant would experience other impacts associated with an increase in noise levels, such as decreased ability to avoid predators and increased physiological stress. Based upon MCB Camp Pendleton GIS data (MCB Camp Pendleton 2019), historically there are up to two pairs of CAGN within 500 feet (152.4 meters) of the Haybarn Canyon footprint that could potentially be affected by operation related noise.

The exterior lighting system for the natural gas power plant would be compliant with the requirements of the 2016 CPR (MCB Camp Pendleton 2016), would be downward facing exterior grade lights that would provide very minor illumination at night, and would include any lighting specifications that may come as a result of section 7 consultation. In addition, lighting would be focused on the developed and disturbed areas of the site. Therefore, exterior lighting associated with the power plant would not adversely affect CAGN.

Decommissioning would not impact CAGN habitat, as only previously disturbed/developed habitat would be impacted. However, the same temporary construction-related noise and lighting impacts could occur during decommissioning activities. Measures in Table 3.-1 would require seasonal avoidance, biological monitoring, and/or buffering of decommissioning activities to avoid potential nests.

As discussed above, up to 0.49 acre (0.20 ha) of occupied CAGN habitat would be permanently impacted by Alternative 1. Permanent impacts to habitat would be mitigated for in a manner and at a ratio as determined through section 7 consultation with the USFWS. All temporary impacts to CAGN habitat would be restored in-place. However, temporary removal of up to 5.63 acres (2.28 ha) of coastal scrub from as many as two territories at the Haybarn site may interfere with survival and reproduction. Additionally, reduction of suitable habitat for the CAGN may temporarily increase intraspecific competition in neighboring areas. The minimal effects to CAGN as a result of construction-related noise and light have the potential to be adverse. There are up to two pairs of CAGN within 500 feet (152.4 meters) of the Haybarn Canyon footprint, one CAGN pair within 500 feet (152.4 meters) of the Stuart Mesa Substation site, and up to two more pairs within 500 feet (152.4 meters) of the 69 kV Power Line Corridor that could be affected by the construction noise. Thus, the Proposed Action may affect, and is likely to adversely affect the CAGN. However, any incidental take of CAGN under the Proposed Action would not result in impacts at the population level. Therefore, no significant impacts would occur to CAGN under Alternative 1.

Least Bell's Vireo

Construction associated with Alternative 1 could permanently impact up to 0.06 acre (0.02 ha) and temporarily impact up to 1.03 acres (0.42 ha) of riparian habitat that could provide habitat for LBVI (Tables 3.3-2 and 3.3-3). Impacts to vegetation presented in Tables 3.3-2 and 3.3-3 provide a maximum development scenario. Riparian habitats would be avoided to the utmost extent. Any unavoidable removal or temporary disturbance of riparian vegetation would be documented during construction. Clearing of riparian vegetation would take place only outside of the LBVI breeding season (15 March to 31 August). Temporary habitat impacts would be restored on-site according to a USFWS-approved Restoration Plan. Mitigation for direct impacts to 0.06 acre of LBVI breeding habitat would occur in a manner and at ratios consistent with the Riparian BO and as determined through section 7 consultation with the USFWS, either through purchase of off-Base credits at a USFWS-approved conservation bank or through restoration of habitat on MCB Camp Pendleton.

Temporary construction-related impacts to LBVI habitat could affect individuals. However, measures in Table 3-1 would require seasonal avoidance, biological monitoring, and/or buffering of construction activities to avoid potential nests. Based on MCB Camp Pendleton GIS data (MCB Camp Pendleton 2019), up to one pair of LBVI occur within the Stuart Mesa Substation footprint, and one pair historically occurred with the Haybarn Canyon footprint. The Proposed Action would not remove a significant portion of any territory (greater than 20 percent), so impacts from habitat removal would not rise to the level that may result in reduced survival or reproduction. Following restoration of any temporary impacts to LBVI habitat, the species is expected to re-occupy such areas.

If breeding season avoidance during the construction phase is not reasonable, then temporary direct effects to LBVI outside of the construction footprint may occur as a result of construction activities from increased noise and lighting (if work is conducted at night). Increased noise levels may result in decreased productivity and delayed production (if construction occurs during the breeding season). However, noise associated with construction would likely exceed the noise associated with normal traffic on Vandegrift Boulevard and training activities at MCAS Camp Pendleton, which is adjacent to the northern portion of the project area. Night lighting may lead to increased predation, disorientation, startling of individuals, and disruption of inter-specific interactions (Longcore and Rich 2004). However, as described in Table 3-1, a no-construction buffer would be established and/or noise attenuation measures implemented to minimize potential disturbance resulting from noise. Also, very little, if any, construction work would occur at night and the lighting associated with the Proposed Action would be shielded and directed away from adjacent habitats.

Noise generated through operation of the natural gas power plant and compressor station at the Haybarn Site is anticipated to reach 85 decibels at 100 feet (30.5 meters) from the source, with protective shrouding in place to minimize noise. The USFWS has used 60 A-weighted decibels hourly as a practical threshold above which significant impacts to LBVI may occur (USFWS 1995). Based on historic data (MCB Camp Pendleton 2019), there are as many as two LBVI pairs (1997) documented within 500 feet (152.4 meters) of the Haybarn Canyon footprint that could be affected by noise related to the operation of the natural gas power plant. However, LBVI surveys have not been conducted recently, and it is unlikely that LBVI presence in this area exceeds more than one or two pairs, due to the lack of suitable habitat in the area. Therefore, it is likely that one to two pairs of LBVI individuals in the immediate vicinity of the power plant would be impacted by noise during operation. Per the Riparian BO (USFWS 1995), operation of the natural gas power plant at the Haybarn Site is considered a Class II activity because it would result in permanent sustained noise levels above 80 A-weighted decibels hourly calculated over a 7-day period during the breeding season.

The exterior lighting system for the natural gas power plant would be compliant with the requirements of the 2016 CPR (MCB Camp Pendleton 2016), would be downward facing exterior grade lights that would provide very minor illumination at night, and would include any lighting specifications that may come as a result of section 7 consultation. In addition, lighting would be focused on the developed and disturbed areas of the site. Therefore, exterior lighting associated with the power plant would not adversely affect LBVI.

Decommissioning activities would not impact LBVI habitat, as only previously disturbed/developed habitat would be impacted. However, the same temporary construction-related noise and lighting impacts could occur during decommissioning activities. Measures in Table 3-1 would require seasonal avoidance, biological monitoring, and/or buffering of decommissioning activities to avoid potential nests.

As discussed above, up to 0.06 acre (0.02 ha) of occupied LBVI habitat would be permanently impacted by Alternative 1. Permanent impacts to habitat would be mitigated for in a manner and at ratios consistent with the Riparian BO and as determined through section 7 consultation with the USFWS. All temporary impacts to LBVI habitat would be restored in-place. The minimal effects to LBVI as a result of construction-related noise and light could potentially be adverse. Historically, two pairs of LBVI have been documented in the vicinity of the natural gas power plant and could be exposed to elevated noise levels during operation, which is considered a Class II activity under the Riparian BO. Thus, the Proposed Action may affect, and is likely to adversely affect the LBVI. However, any incidental take of LBVI under Alternative 1 would not result in impacts at the population level. Therefore, no significant impacts would occur to LBVI under Alternative 1.

3.3.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

Plant Communities

Tables 3.3-4 and 3.3-5 provide the expected permanent and temporary impacts to plant communities and other habitats from implementation of Alternative 2, respectively. Under Alternative 2, impacts to plant communities within the Stuart Mesa Site and associated substation upgrade and the Utility Land Use Area would be the same as Alternative 1. Under Alternative 2, impacts associated with the new 69 kV line were calculated from a 15-foot (4.6-meter) permanent corridor and an additional 15-foot (4.6-meter) temporary buffer to allow for space to maneuver equipment. Impacted acreages along the new gas line corridor and new wastewater line corridor were calculated from a 50-foot (15.2-meter) wide temporary construction buffer (25 feet [7.6 meters] on both sides of the corridors). All temporary impacts to plant communities would be restored on-site.

Table 3.3-4 Permanent Impacts to Plant Communities and Habitats under Alternative 2

Plant Community	*Project Area (acres)*						*Total[3]*
	Stuart Mesa Site[1]	*Stuart Mesa Substation Upgrade and Utility Land Use Area*	*Power Line Corridor and Access Road Options[2]*			*Parking Lot Site (Power Plant and New 69 kV Line)*	
			A	*B*	*C*		
Coast Live Oak Woodland	-	-	-	-	-	0.01	**0.01**
Coastal Scrub	-	0.10	0.11	0.10	-	0.25	**0.35-0.46**
Eucalyptus Woodland	0.42	-	0.10	0.06	-	0.01	**0.43-0.53**
Non-native Forbland	3.29	-	-	-	0.12	0.15	**3.44-3.56**
Planted Trees/Shrubs	0.10	-	-	-	-	0.63	**0.73**
Riparian Scrub	-	-	0.06	0.06	-	0.05	**0.05-0.11**
Riparian Woodland	-	-	-	-	-	0.07	**0.07**
Developed	0.37	-	0.86	0.19	1.63	1.90	**2.27-3.90**
Disturbed	131.76	0.63	0.92	1.17	0.05	0.89	**133.28-134.45**
TOTAL	**135.94**	**0.73**	**2.05**	**1.58**	**1.80**	**3.96**	**140.63-142.68**

Notes: [1]Impacts were previously analyzed in the 2015 EA.
[2]Under the Proposed Action, either the existing SDG&E 69 kV overhead power line would be utilized (no impact) or one of three options (A, B, or C) would be utilized (new impact).
[3]Some totals represent a range of impacts (minimum to maximum) because it is not yet known if the existing power line would be used, or if one of the new power line options would be used.
Source: MCB Camp Pendleton 2019a.

Table 3.3-5 Temporary Impacts to Plant Communities and Habitats under Alternative 2

Plant Community	*Project Area (acres)*							*Total[3]*
	Stuart Mesa Site[1]	*Stuart Mesa Substation Upgrade and Utility Land Use Area*	*Power Line Corridor and Access Road Options[2]*			*Parking Lot Site (Power Plant, New Wastewater Line, and New 69 kV Line)*	*Gas Line Corridor*	
			A	*B*	*C*			
Coast Live Oak Woodland	-	-	-	-	-	0.05	-	**0.05**
Coastal Scrub	-	-	0.13	0.10	-	0.48	1.59	**2.07-2.20**
Eucalyptus Woodland	-	-	0.10	0.06	0.01	0.01	-	**0.01-0.11**
Native Grassland	-	-	-	-	-	0.04	-	**0.04**
Non-native Forbland	-	-	-	-	0.07	0.23	0.01	**0.24-0.31**
Non-native Grassland	-	-	-	-	-	0.06	-	**0.06**
Planted Trees/Shrubs	-	-	-	-	-	0.59	0.25	**0.84**
Riparian Scrub	-	-	0.06	0.06	-	0.05	-	**0.05-0.11**
Riparian Woodland	-	-	-	-	-	0.08	-	**0.08**
Developed	-	-	0.73	0.21	1.63	1.01	5.32	**6.33-7.96**
Disturbed	-	-	1.03	1.16	0.05	1.39	1.02	**2.41-3.57**
TOTAL	**-**	**-**	**2.05**	**1.59**	**1.76**	**3.99**	**8.19**	**12.18-14.23**

Notes: [1]Impacts were previously analyzed in the 2015 EA.
[2]Under the Proposed Action, either the existing SDG&E 69 kV overhead power line would be utilized (no impact) or one of three options (A, B, or C) would be utilized (new impact).
[3]Some totals represent a range of impacts (minimum to maximum) because it is not yet known if the existing power line would be used, or if one of the new power line options would be used.
Source: MCB Camp Pendleton 2019a.

Wildlife

Impacts to wildlife under Alternative 2 would be nearly identical to those described for Alternative 1, except that the natural gas power plant would be constructed and operated at the Parking Lot Site instead of the Haybarn Site and there would be a new wastewater line connecting to the existing sanitary sewer system and 69 kV power line connecting the Parking Lot Site to the switching/metering station at the Haybarn Site.

Special Status Species

Arroyo Toad

Under Alternative 2, no portion of the project area occurs in ARTO habitat, and the species is not expected to occur in the project area. Therefore, there would be no impact to ARTO under Alternative 2.

Coastal California Gnatcatcher

Construction associated with Alternative 2 could permanently impact up to 0.46 acre (0.19 ha) and temporarily impact up to 2.20 acres (0.89 ha) of coastal scrub (Tables 3.3-4 and 3.3-5). Impacts to vegetation presented in Tables 3.3-4 and 3.3-5 provide a maximum development scenario. Coastal scrub habitat would be avoided to the utmost extent. Any unavoidable removal or temporary disturbance of coastal scrub vegetation would be documented during construction. Clearing of coastal scrub vegetation would take place only outside of the CAGN breeding season (15 February to 31 August). Temporary habitat impacts would be restored on-site according to a USFWS-approved Restoration Plan. Mitigation for direct impacts to 0.46 acre (0.19 ha) of CAGN breeding habitat would occur in a manner and at a ratio as determined through section 7 consultation with the USFWS, either through purchase of off-Base credits at a USFWS-approved conservation bank or through restoration of habitat on MCB Camp Pendleton.

All other impacts to CAGN under Alternative 2 would be identical to those for Alternative 1. The minimal effects to CAGN as a result of construction-related noise and light could potentially be adverse. One female CAGN individual was documented within 500 feet (152.4 meters) of the Parking lot site and would likely be exposed to increased noise levels in the immediate vicinity of the natural gas power plant at the Parking Lot Site. Thus, the Proposed Action may affect, and is likely to adversely affect the CAGN. However, any incidental take of CAGN under the Proposed Action would not result in impacts at the population level. Therefore, no significant impacts would occur to CAGN under Alternative 2.

Least Bell's Vireo

Construction associated with Alternative 2 could permanently impact up to 0.18 acre (0.07 ha) and temporarily impact up to 0.19 (0.08 ha) acre of riparian habitat that could provide habitat for LBVI (Tables 3.3-4 and 3.3-5). Impacts to vegetation presented in Tables 3.3-4 and 3.3-5 provide a maximum development scenario. Riparian habitats would be avoided to the utmost extent. Any unavoidable removal or temporary disturbance of riparian vegetation would be documented during construction. Clearing of riparian vegetation would take place only outside of the LBVI breeding season (15 March to 31 August). Temporary habitat impacts would be restored on-site according to a USFWS-approved Restoration Plan. Mitigation for direct impacts to 0.18 acre (0.07 ha) of LBVI breeding habitat would occur in a manner and at ratios consistent with the Riparian BO and as determined through section 7 consultation with the USFWS, either through purchase of off-Base credits at a USFWS-approved conservation bank or through restoration of habitat on MCB Camp Pendleton.

All other impacts to LBVI under Alternative 2 would be identical to those for Alternative 1. The minimal effects to LBVI as a result of construction-related noise and light can potentially be adverse. Historically, there have been no LBVI individuals documented within 500 feet (152.4 meters) of the Parking lot site. However, due to the presence of riparian scrub habitat within 500 feet (152.4 meters) of the Parking lot site, LBVI individuals would likely be exposed to increased noise levels in the immediate vicinity of the natural gas power plant at the Parking Lot Site, considered a Class II activity under the Riparian BO. Thus, the Proposed Action may affect, and is likely to adversely affect the LBVI. However, any incidental take of LBVI under Alternative 2 would not result in impacts at the population level. Therefore, no significant impacts would occur to LBVI under Alternative 2.

3.3.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). Biological resources impacts from the implementation of the No-Action Alternative (Alternative 1 of the 2015 EA) are incorporated by reference. Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and coastal scrub, which are suitable habitat for the LBVI and the coastal CAGN, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of the No-Action Alternative would not affect the LBVI or the coastal CAGN. Moreover, the avoidance/minimization measures listed in the 2015 EA would be implemented to lessen potential impacts to biological resources. Therefore, implementation of the No-Action Alternative would have no significant impact to biological resources.

3.4 CULTURAL RESOURCES

3.4.1 Definition of Resource

Cultural resources is an inclusive label used to encompass any historic properties or traditional cultural properties and sacred sites valued by traditional communities (often but not necessarily Native American groups). Cultural resources are finite, nonrenewable resources, whose salient characteristics are easily diminished by physical disturbance; certain types of cultural resources also may be negatively affected by visual, auditory, and atmospheric intrusions.

Historic properties are defined in the federal regulations outlining Section 106 of the NHPA, as amended (54 USC 300101 *et seq.*), 36 CFR Part 800, as prehistoric and historic sites, buildings, structures, districts, or objects listed or eligible for listing on the NRHP, as well as artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA, which directs federal agencies to take into account the effect of a federal undertaking on a historic property, is outlined in the Advisory Council on Historic Preservation's regulations, *Protection of Historic Properties* (36 CFR Part 800). A traditional cultural property can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Cultural resources are generally divided into three categories: archaeological resources, architectural resources, and traditional cultural resources:

> **Archaeological resources** –places where people changed the ground surface or left artifacts or other physical remains (e.g., arrowheads or bottles).
>
> **Architectural resources –**standing buildings, dams, canals, bridges, and other structures.
>
> **Traditional cultural resources** –These include traditional cultural properties, which are associated with the cultural practices and beliefs of a living community that link that community to its past and help maintain its cultural identity. Traditional cultural resources may also include archaeological resources, locations of historic events, sacred areas, sources of raw materials for making tools, sacred objects, or traditional hunting and gathering areas.

The NHPA mandates guidelines for the protection of historic properties in Sections 106 and 110 of the law. Section 106 of the NHPA requires federal agencies to analyze the effect of an undertaking on cultural resources included in or eligible to the NRHP. Section 110 requires federal agencies to establish programs to locate, evaluate, and nominate all properties that qualify for inclusion in the NRHP.

Through a combination of cultural resource studies carried out to comply with Sections 106 and 110 of the NHPA, the project area of potential effects (APE) for cultural resources has been inventoried for cultural resources (Cheever and Collett 2002, York and Glenny 2008).

3.4.2 Affected Environment

The affected environment for cultural resources is based on the establishment of the APE of an undertaking, through consultation with State Historic Preservation Office (SHPO). An APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). The APE for this project includes MCB Camp Pendleton Stuart Mesa Site, Parking Lot Site, and the Haybarn Site, as well as the area along Rattlesnake Canyon Road and Vandegrift Boulevard for utility upgrades as described in Section 1.3 of this SEA.

3.4.2.1 Prehistoric and Historic Setting

The following summary of the cultural context for the MCB Camp Pendleton Area is condensed from the *Integrated Cultural Resources Management Plan for Marine Corps Base Camp Pendleton* (MCB Camp Pendleton 2017).

3.4.2.2 Regional Prehistory

The regional prehistory is divided into the Paleo-Indian, Archaic, and Late Prehistoric periods. The Paleo-Indian period dates to the terminal Pleistocene and the early Holocene, from before 10,000 Before Present (B.P.) to 8500/7500 B.P. Earlier sites may be present in San Diego County; evidence of Pleistocene occupations may be preserved along the coastlines. However, no strong evidence of these occupations currently exists (MCB Camp Pendleton 2017).

The Archaic period (approximately 8500 B.P. to 1300 B.P.) is characterized by a focus on shellfish as a dietary staple and people clustered around resource rich bays and estuaries. However, major changes in human adaptations occurred around 4000 B.P. to 3000 B.P. when lagoon silting became extensive enough to cause a decline in associated shellfish populations. The decline of shellfish, as well as Torrey pine nuts and drinking water, resulted in a major depopulation of the coastal zone. Populations began to move inland to exploit terrestrial small game and plant resources. However, there is some evidence of continued occupation of the coastal area of Camp Pendleton throughout the Archaic period. The evidence for this is strong, given the presence of large settlements with moderate to thick middens that were occupied for multiple seasons (MCB Camp Pendleton 2017).

The Late Prehistoric period (1300 B.P. to 800 B.P.) is linked with the ethnohistoric record of local Native Americans. The application of direct historical analogy to this time period assumes an ample period of stability during the Late Prehistoric period for populations, linguistic groups, and their territorial extent. This information was documented by Europeans from Spanish contact through early twentieth century enthnohistoric accounts. In general, the Late Prehistoric period is characterized by the appearance of small, pressure flaked projectile points (indicative of bow and arrow technology), the appearance of ceramics, the replacement of flexed inhumations with cremations, and an emphasis on inland plant food collection and processing (MCB Camp Pendleton 2017).

3.4.2.3 History of the MCB Camp Pendleton Area

Europeans first entered the area that is now MCB Camp Pendleton in 1769, when the Portola expedition passed through on its journey north to Monterey. This expedition sought to expand the string of Franciscan missions that began in Baja California in 1767, northward into Alta, California. The land that was to become MCB Camp Pendleton was transferred into direct Spanish control after the establishment of Mission San Juan Capistrano in 1776 and Mission San Luis Rey in 1799. After Mexico gained its independence from Spain in 1821, much of the MCB Camp Pendleton Area became part of Rancho San Onofre and Rancho Santa Margarita. These ranchos were acquired in 1841 by Pio and Andres Pico. In 1844, the Pico brothers acquired Las Flores, one of the few Indian pueblos established by the Mexican government. The Pico brothers then created the Rancho Santa Margarita y Las Flores. Having acquired the rancho, the Picos established a thriving cattle ranch (MCB Camp Pendleton 2017).

By 1862, the Picos had begun to have financial difficulties. They sold part of the rancho to their brother-in-law Juan Forster as an attempt to avoid losing it to creditors. Forster died in 1882 after completing a number of improvements to the rancho. The rancho was eventually transferred to James C. Flood and Richard O'Neill. The rancho was managed by O'Neill with assistance from the Magee family who lived at the Las Flores Adobe from 1888 to 1968. O'Neill was awarded one-half of the rancho by Flood's heirs, holding the property until it was acquired by the USMC in 1942 (MCB Camp Pendleton 2017).

Since its establishment in 1942, major development at MCB Camp Pendleton has supported its mission as an amphibious training facility. Major development activities occurred during World War II (1942–1945), the Korean War (1950–1953), and the Vietnam era (1963–1975). Since the end of the Cold War (1976–1989) until just recently, development has largely focused on upgrades of World War II-era facilities (MCB Camp Pendleton 2017).

3.4.2.4 Cultural Resources within the Affected Environment

Archaeological Resources

Two archaeological sites have been identified within the boundaries of the APE. The two sites, Site CA-SDI-17912 and Site CA-SDI-12572, are located within the Stuart Mesa Site and were analyzed in 2015. Both have been tested and determined to be ineligible for inclusion in the NRHP. Two isolated finds, P-37-014130 and P-37-015824 are located within the Parking Lot Site in 26 Area. Isolated finds are considered ineligible for inclusion in the NRHP and will not be discussed further more in this EA.

Isolated occurrences are cultural remains or features that do not meet the definition of an archaeological site. Due to the limited number of artifacts found at isolated occurrences and the low potential for providing information on prehistory or history, the isolated occurrences recorded in this APE are not recommended as eligible for inclusion in the NRHP.

Architectural Resources

The APE does not contain any known architectural resources (MCB Camp Pendleton 2017).

Traditional Cultural Resources

The APE does not contain any known traditional cultural properties or other traditional cultural resources (MCB Camp Pendleton 2017).

3.4.3 Environmental Consequences

3.4.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

Construction

Under Alternative 1, installation of battery energy storage systems, a power line, and substation upgrade would be constructed at the Stuart Mesa Site (refer to Figure 1-3), disturbing up to 135.9 acres (55 ha) as described in Section 2.1. A natural gas power plant would be constructed at the Haybarn Site (refer to Figure 2-1) and related utility connections would be installed to support its operations. Approximately 14.66 acres (5.93 ha) of land would be disturbed by grading during construction of the natural gas power plant, and approximately 1.87 acres (0.76 ha) of the disturbed area would be developed to support the construction of the natural gas power plant. Other site preparation activities with ground disturbing potential include the trenching for underground electrical lines (at least 3 feet deep [1 meter] per UFC codes) and natural gas lines (at least 4.5 feet deep [1.4 meters] per UFC codes), and relocation of water and sewer laterals as part of the road improvements to Haybarn Road.

Two archaeological sites, (CA-SDI-17912 and CA-SDI-12572) are located within the APE for this alternative. Both sites have been determined ineligible for inclusion in the NRHP and have SHPO concurrence. Thus, disturbance of these sites would not result in an adverse effect to historic properties. Therefore, both CA-SDI-17912 and CA-SDI-12572 do not require cultural resources monitoring as per Stipulation III.D (1) of the *Programmatic Agreement among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton (PA)* signed in December 2014 (USMC 2014).

Operation

Under Alternative 1, post-construction site operations would include use of the existing access roads as well as maintenance and repair work. These activities would occur along existing roads and infrastructure, and no ground disturbance would occur. No adverse effect to historic properties or traditional resources would occur.

Decommissioning

The decommissioning of the area would require similar activities to construction; work crews, vehicles, and equipment would be required to dismantle and remove above ground structures. Because these activities would occur in previously disturbed areas, no historic properties or traditional resources would be adversely affected. As with construction activities, if any unexpected cultural resources are encountered during decommissioning, work would cease and the MCB Camp Pendleton Cultural Resources Branch Head would be contacted before work could continue.

Summary

Two archaeological sites are found within the Alternative 1 APE. Both sites, CA-SDI-17912 and CA-SDI-12572, are ineligible for inclusion in the NRHP and the SHPO concurred (USMC090601B; USMC081120A and USMC20150112004). Therefore, sites CA-SDI-17912 and CA-SDI-12572 are not considered historic properties; thus, they do not require cultural resources monitoring as per Stipulation III.D (1) of the PA (USMC 2014). Therefore, the implementation of Alternative 1 would have no significant impact to cultural resources.

3.4.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

Construction

Approximately 3.98 acres (1.61 ha) of land would be disturbed at the Parking Lot Site during construction and of this disturbed land approximately 2.09 acres (0.85 ha) would be developed to support the new power plant. Other site preparation activities with the potential to impact cultural resources are similar to those identified under Alternative 1, with the exception of the location of the natural gas line (at least 4.5 feet (1.4 meters) deep per UFC codes) and the construction of an overhead power line or trenching for underground electrical line (at least 3 feet [1 meter] deep per UFC codes) from the Parking Lot Site to the SDG&E Pendleton Substation.

Two archaeological sites are within the APE for this alternative. As with Alternative 1, CA-SDI-17912 and CA-SDI-12572 are within the APE and both are ineligible for inclusion in the NRHP. The SHPO concurred (USMC090601B; USMC081120A and USMC20150112004) with the ineligibility determination; therefore, they are not considered historic properties and do not require cultural resources monitoring.

Operation

Under Alternative 2, post-construction site operations would include use of the existing access roads as well as maintenance and repair work. These activities would occur along existing roads and infrastructure, and no ground disturbance would occur. No adverse effect to historic properties or traditional resources would occur.

Decommissioning

The decommissioning of the area would require similar activities to construction; work crews, vehicles, and equipment would be required to dismantle and remove above ground structures. Because these activities would occur in previously disturbed areas, no historic properties or traditional resources would be adversely affected. As with construction activities, if any unexpected cultural resources are encountered during decommissioning, work would cease and the MCB Camp Pendleton Cultural Resources Branch Head would be contacted before work could continue.

Summary

Two archaeological sites are found within the APE of Alternative 2. Two sites, CA-SDI-17912 and CA-SDI-12572 are ineligible for inclusion in the NRHP and both have SHPO concurrence (USMC090601B; USMC081120A and USMC20150112004) with the ineligibility determination; therefore, they are not considered historic properties and do not require cultural resources monitoring as per Stipulation III.D (1) of the PA (USMC 2014).

3.4.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). Cultural resources impacts from the implementation of the No-Action Alternative are the same as those presented for Alternative 1 of the 2015 EA and are incorporated by reference. One archaeological site at the Stuart Mesa Site is found within the APE of the 2015 EA Alternative 1 (Site A) and also the APE of this SEA and is discussed in Sections 3.4.3.1 and 3.4.3.2. This site, CA-SDI-17912, is ineligible for inclusion in the NRHP with SHPO concurrence (USMC090601B). Therefore, the implementation of the No-Action Alternative would have no significant impact to cultural resources.

3.5 GEOLOGICAL RESOURCES

3.5.1 Definition of Resource

Geological resources are generally defined as the topography, geology, geologic hazards, and soils of a given area. Topography is the elevation, slope, aspect, and surface features found within a given area. Long-term geological, seismic, erosional, and depositional processes influence the topographic relief of an area. The geology of an area includes surface and bedrock materials, its orientation and faulting, and may contain valuable geologic resources such as mineral deposits, petroleum reserves, and fossils. Geologic hazards include the seismicity (the relative frequency of earthquakes), and existence or potential for landslides, sinkholes, tsunamis, and liquefaction in a given area. Soil refers to unconsolidated earthen materials overlaying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, liquefaction potential, and erodibility can all determine the ability of the ground to support structures and facilities. The area considered for geologic resources includes the project area, as describe in Section 1.3, and vicinity. Existing geological conditions at MCB Camp Pendleton are described in the paragraphs below.

3.5.1.1 Topography

Located within the Peninsular Ranges Geomorphic Province, MCB Camp Pendleton can be divided into five distinguishable physiographical (coastal and inland) topographic regions: the coastal plain, the coastal hills (e.g., San Onofre Hills), the Santa Margarita Mountains, an intermontane area between the coastal hills and interior mountains, and a series of valleys/canyons cut by streams flowing through the Base and into the Pacific Ocean. Basilone Road, which bisects MCB Camp Pendleton in an approximately northwest-southeast trending direction, is considered the dividing line between the coastal and interior topographic regions.

Natural erosive processes acting on the steep topography of MCB Camp Pendleton have cut southwest-trending stream valleys through the hills and mountains. Each stream contains its own valley fill deposits, as well as an alluvial fan deposit at its mouth at the coastline. The SMR forms a broad alluvial plain as it nears its end point at the Pacific Ocean, forming a level area of land between the steep surrounding hills. In general, the topography of north and eastern MCB Camp Pendleton is steep and moderately to highly dissected with stream canyons. Aside from the relatively narrow coastal plain, much of the topography at MCB Camp Pendleton exceeds a 15 percent slope (MCB and MCAS Camp Pendleton 2018)

3.5.1.2 Geological Units

The Stuart Mesa Site is solely within the Quaternary Old Paralic Deposit geological unit, which consists of lithified former sand dunes. To the south, within the historical floodplain of the SMR, lies the Quaternary Young Alluvial geological unit, which consists of consolidated to lithified former river deposits (Figure 3.5-1). Portions of the Haybarn Site and the Parking Lot Site lie along the southern historic floodplain of the SMR and are within the Quaternary Young Alluvial geological unit (Figure 3.5-2). The remaining area of both sites predominantly lie within the Tertiary (Eocene) Santiago Formation. This geological unit is well-lithified, creating the cliff like features at MCB Camp Pendleton.

3.5.1.3 Geologic Hazards

There are no active faults within MCB Camp Pendleton (California Geological Survey [CGS] 2018; U.S. Geographical Survey [USGS] 2019a). Surface displacement associated with an earthquake is not expected within the project. An “active fault” is defined as one for which there is evidence of surface displacement within the last 11,000 years, and a “potentially active fault” as one for which there is evidence of surface displacement within the last 1.6 million to 11,000 years (CGS 2018). These definitions are used as the basis for establishing Earthquake Fault Zones as mandated by the Alquist-Priolo Act. The purpose of the Alquist-Priolo Act is to prevent unwise urban development and certain types of habitable structures from being placed across land showing evidence of active faults.

The largest significant credible seismic event likely to affect the project area would be an earthquake of 7.5 magnitude (Southern California Earthquake Data Center [SCEDC] 2019a). Known active faults in the area capable of producing a temblor of this magnitude are the Offshore Zone of Deformation (a component of the Newport-Inglewood-Rose Canyon Fault) located about 7.8 miles (12.5 km) to the southwest; the Whittier-Elsinore Fault, approximately 16 miles (28 km) to the northeast; and the San Jacinto fault approximately 42 miles (68 km) to the east (SCEDC 2019a, 2019b, USGS 2019a). Other nearby faults (Christianitos, San Mateo and unnamed faults) are not expected to produce earthquakes of this magnitude.

Liquefaction. Liquefaction occurs when the intense shaking motion generated by an earthquake causes soils to lose shear strength temporarily and behave like liquid rather than solid material. Liquefaction can cause differential soil settlement, and thus damage buildings and other structures located in areas where it occurs. For liquefaction to affect structures on the ground surface, underlying soils generally must be granular, loose to medium-density, and saturated with water relatively near the surface.

Landslides. Landslides occur on MCB Camp Pendleton as a result of steep slopes, soil type, and climate (e.g., heavy or prolonged rainfall; USGS 2019b). There is potential for landslides in the Santiago Formation (CGS 2018) if slopes are steepened or undercut during construction.

3.5.1.4 Soils

Over 50 soil types are found on MCB Camp Pendleton, including five of San Diego County’s eight major soil groups, as classified in the 1973 survey conducted by the Soil Conservation Service (SCS), U.S. Department of Agriculture (USDA), and other federal agencies (USDA SCS 1973, MCB and MCAS Camp Pendleton 2018). A complete list of these soils and many of their properties can be found in Appendix E of the MCB Camp Pendleton INRMP (MCB and MCAS Camp Pendleton 2018). In general, soils on MCB Camp Pendleton range from moderately to excessively well-drained, with particle sizes consistent with loamy sands, clays, and sandy or silty loams. Poorly consolidated marine sediments cover most of MCB Camp Pendleton’s coastal plain, while granitic soils, with lesser amounts of metasedimentary and metavolcanic soils, can be found in the foothills and farther inland (USDA SCS 1973, MCB and MCAS Camp Pendleton 2018).

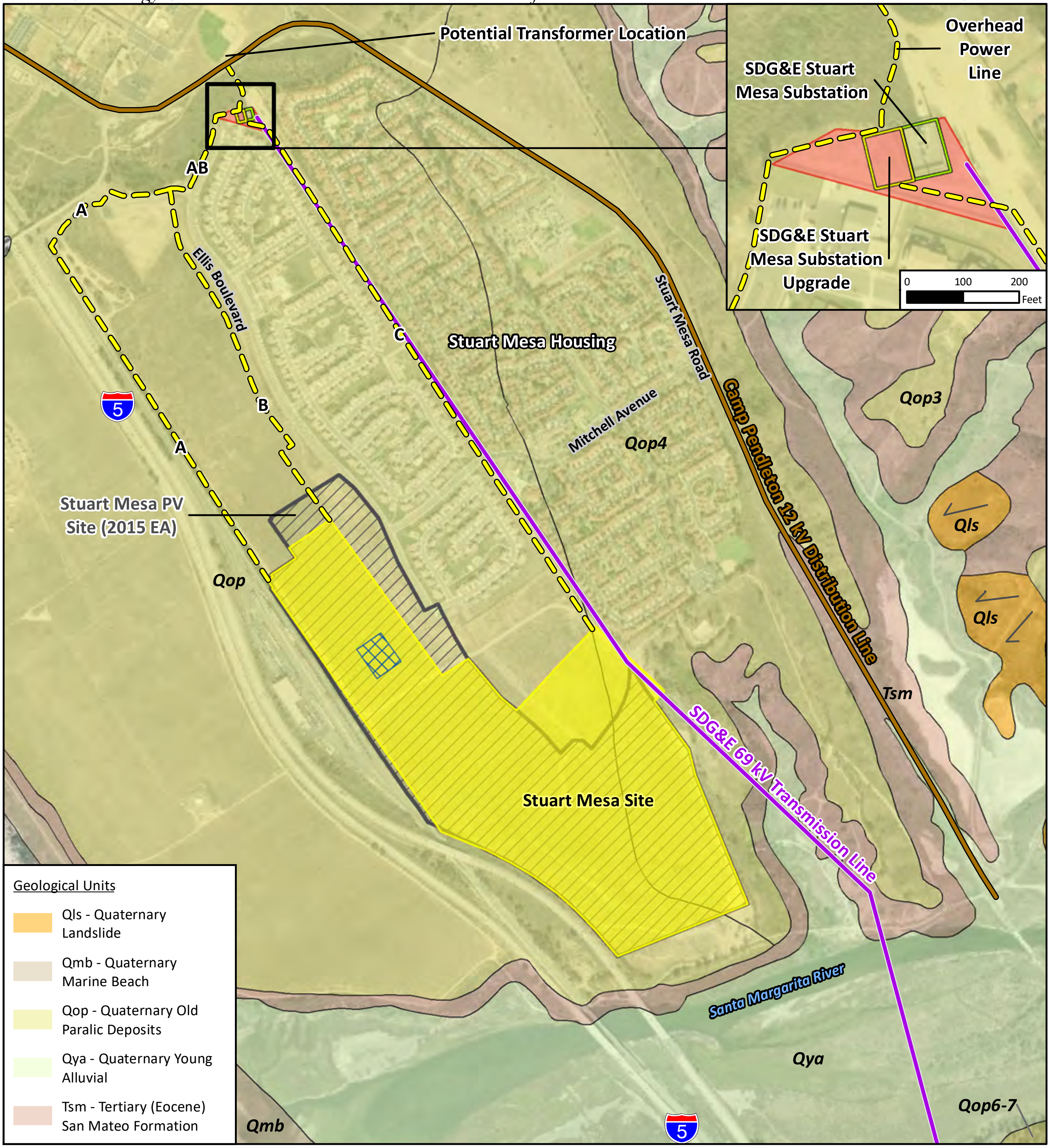
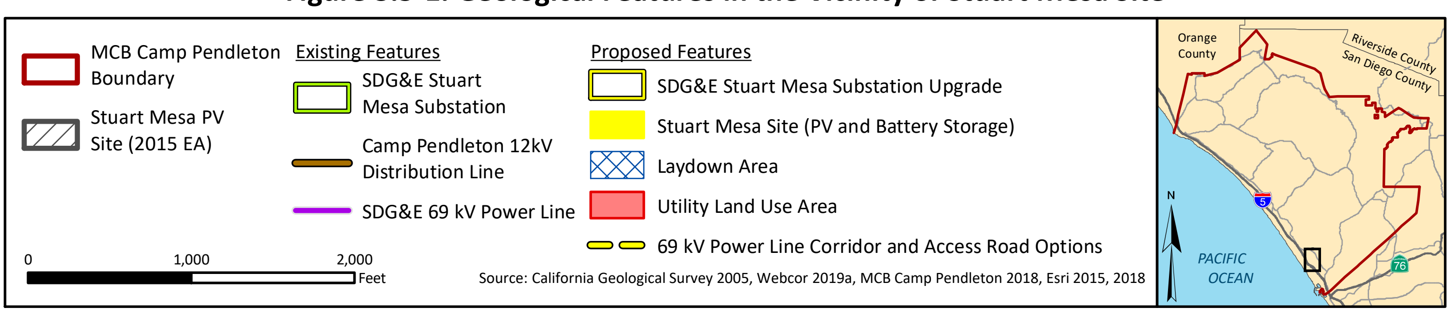


Figure 3.5-1. Geological Features in the Vicinity of Stuart Mesa Site



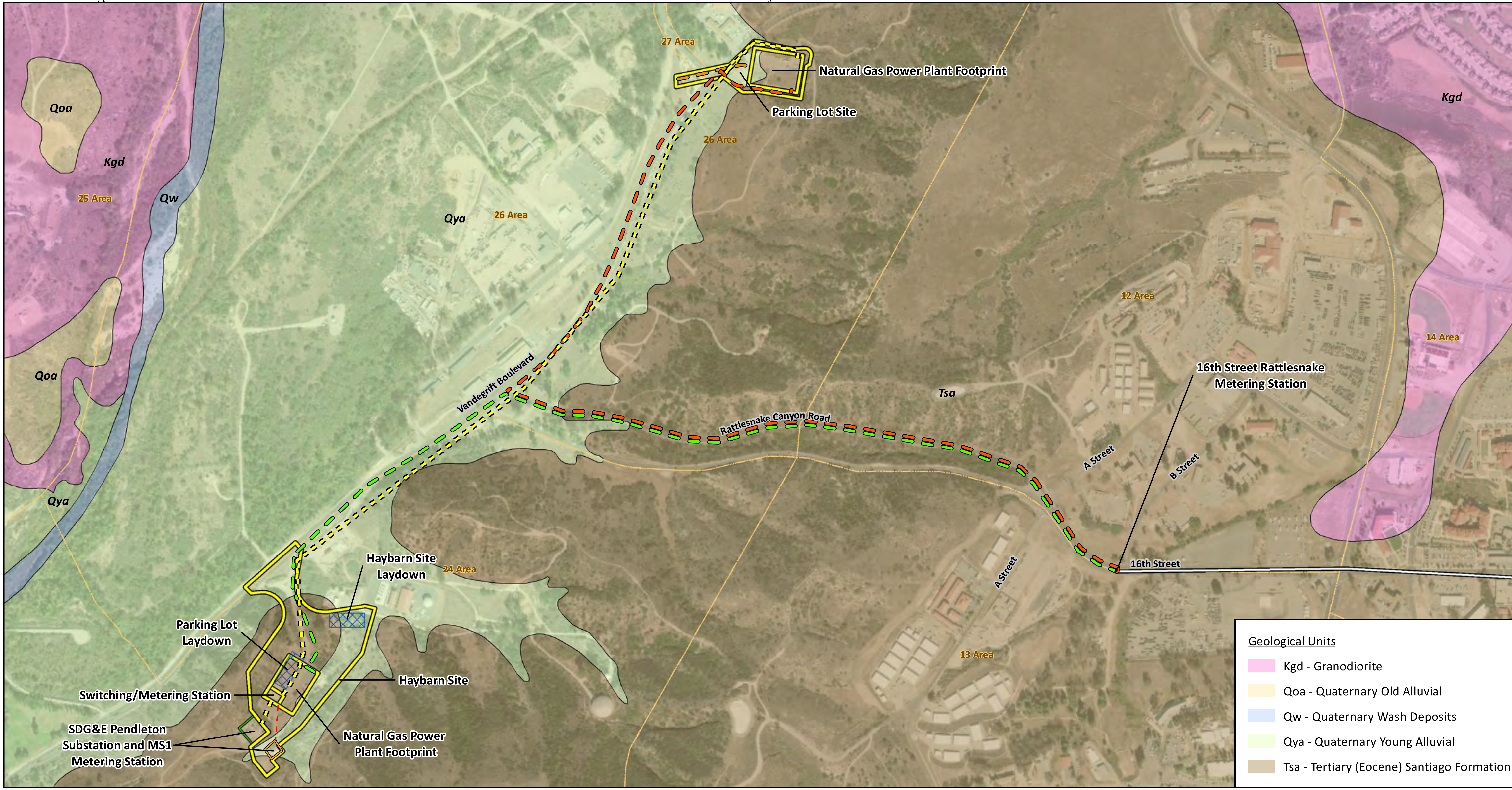
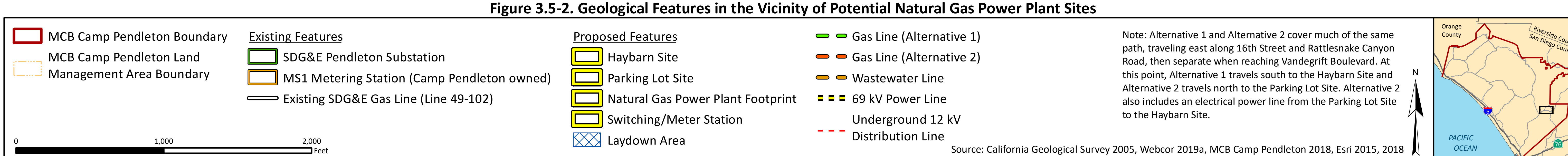


Figure 3.5-2. Geological Features in the Vicinity of Potential Natural Gas Power Plant Sites



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There are many factors to consider when determining soil suitability for development. Among the most important criteria affecting soil suitability for development are slope conditions, erodibility, shrink-swell potential, and liquefaction potential. In terms of their suitability for home-sized structures, slopes of over 30 percent are designated as having poor suitability, slopes of 9 percent to 30 percent as having medium suitability, and slopes of 0 percent to 9 percent as having good suitability for development (USDA SCS 1973).

Erodibility is determined by considering slope and soil texture. Shrink-swell potential predicts the level of shrinking a soil will experience as it dries out, and any swelling that will occur when it gets wet. A soil's shrink-swell potential is ultimately determined by the amount and type of clay it contains (USDA SCS 1973). Liquefaction potential is highest in soils that are not well-lithified, uncompacted, or have very low cohesion, and there is a high water table within, adjacent, or just below those soils. The potential is amplified in areas prone to seismic activity.

Almost all of MCB Camp Pendleton's soils are severely erodible due to steepness, shallow depth to rock, shallow depth to a hardpan, or excessive silt in soil texture composition. Exceptions are soils of clay-textured types (USDA SCS 1973, MCB and MCAS Camp Pendleton 2018). Where project areas are either paved or vegetated, the potential for soil erosion can be reduced. While the underlying soils in these areas may be subject to erosion in their natural state, landscaping, storm water conveyance infrastructure, and the shallow slopes minimize the erosion potential.

3.5.2 Affected Environment

The affected environment of this project includes the MCB Camp Pendleton Stuart Mesa Site, Parking Lot Site, and the Haybarn Site, as well as the area along Rattlesnake Canyon Road and Vandegrift Boulevard for utility upgrades as described in Section 1.3 of this SEA.

3.5.2.1 Stuart Mesa Site

Installation of battery energy storage systems, solar PV system (as described in the 2015 EA), a power line, and substation upgrade would be constructed at the Stuart Mesa Site, disturbing up to 135.9 acres (55 ha) as described in Section 2.1. A construction staging area would be delineated within the Stuart Mesa Site and all work would be constructed on-site. Site preparation activities would include trenching (up to 3-feet [1-meter] deep per UFC codes) for underground electrical lines and circuitry. Gravel roads would be graded between the rows of solar PV panels, battery energy storage systems and around the site perimeter for maintenance access. Foundations for the mounting structures would be built on engineered fill or native soil at a minimum of 24 inches (61 centimeters [cm]) below adjacent grade or finished grade. Each pole footing would consist of a 4 inch (10 cm) cross-sectional area and would require a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface. The excavated/trenched areas needed to place the underground electrical conduits, would then be filled with excavated soil (and if needed additional sand prior to excavated soil fill) and compacted to engineering standards and graded to approximate existing contours. Construction of the power line to connect the Stuart Mesa Site to the newly expanded substation could require trenching and installation of steel support poles, as described in Section 2.1.2. The upgrade of the substation north of the Stuart Mesa Site would disturb approximately 0.15 acres (0.06 ha) to the west of the existing substation. Additionally, approximately 0.73 acres (0.30 ha) surrounding new substation footprint would be cleared and used as a laydown area for the construction phase and to provide access to the substation during operations.

3.5.2.2 Haybarn Site

Under Alternative 1, a natural gas power plant would be constructed at the Haybarn Site (Figure 2-1) and related utility connections would be installed to support its operations. Approximately 14.66 acres (5.93 ha) of land would be disturbed for grading during construction, and approximately 1.87 acres (0.76 ha) of the disturbed area developed to support the construction of the natural gas power generation. Two retaining walls on the west and east sides of the site would be constructed to stabilize the slope and prevent further erosion of the hillside that was cleared/graded. Other site preparation activities impacting geological resources include the trenching for underground electrical lines (at least 3 feet [1 meter] deep per UFC codes) and natural gas lines (at least 4.5 feet [1.4 meters] deep per UFC codes), and relocation of water and sewer laterals as part of the road improvements to Haybarn Road.

3.5.2.3 Parking Lot Site

Approximately 3.98 acres (1.61 ha) of land would be disturbed at the Parking Lot Site during construction and of this disturbed land approximately 2.09 acres (0.85 ha) would be developed to support the new power plant. The location of the Parking Lot Site is bounded by hillsides to the northeast and east, Vandegrift Boulevard to the northwest and west, and open to the south, as described in Section 2.3.2.2. This would require partial grading on the hillsides to the northeast and east of the proposed power plant footprint and installation of retaining walls to stabilize the slope and prevent further erosion of the hillside.

Other site preparation activities impacting geological resources are similar to those identified under Alternative 1, with the exception of the location of the natural gas line (at least 4.5 feet [1.4 meters] deep per UFC codes) and the construction of an overhead power line or trenching for underground electrical line (at least 3 feet deep [1 meter] per UFC codes) from the Parking Lot Site to the SDG&E Pendleton Substation.

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

<u>Construction</u>

Construction activities within the proposed project site for Alternative 1 could be subject to known geologic hazards. There are no active faults or known landslide areas located within the project area (Figures 3.5-1 and 3.5-2). However, earthquakes up to a magnitude of 7.5, stemming from the nearby Newport-Inglewood-Rose Canyon Fault, could impact the project area. The Newport-Inglewood-Rose Canyon Fault has an infrequent history of movement. The most recent major seismic event along this fault was the 1933 Long Beach earthquake, magnitude 6.4. Since then, there has been no significant seismic activity on that fault (Sahakian et al 2017). Additionally, construction activities are temporary and would only occur during work hours so the potential impact from seismic hazards would be temporal. The Haybarn Site is not close enough to the water table to saturate soils such that liquefaction would occur.

All the soil types within the Alternative 1 project area are identified as having very slow infiltration rates and being severely erodible (USDA SCS 1973). The excavated/trenched areas needed to place the underground pipelines would be filled with excavated soil and compacted to engineering standards and graded to approximate existing contours, to minimize any further erosion.

Implementation of project-specific construction SWPPP and BMPs would minimize the potential for soil erosion throughout the duration of the project. Any vegetation disturbed during this phase of construction would be replaced in compliance with 2016 CPR to help stabilize the soil and reduce the impact of future erosion. Current soil erosion control programs at MCB Camp Pendleton include road maintenance, grading, culvert maintenance and installation, water runoff control, traffic control in erosion damaged areas, and mulching areas with a protective cover of organic material such as wood chips and vegetation.

Operation and Maintenance

Post-construction site operations would include use of the existing access roads, electrical and mechanical systems, and maintenance and repair. Current Base soil erosion programs would be used throughout the operation and maintenance of the project.

Decommissioning

Soils and impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning process would likely include the removal of above ground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sediment control BMPs would be implemented during this phase of the project.

Summary

Under Alternative 1, surface disturbance and grading would occur. Through implementation of current soil erosion programs, SWPPP, and applicable BOs to ensure that runoff and erosion goals are achieved, increased risk for landslides and erosion would be minimized. The MCB CPR for Erosion Control (MCB Camp Pendleton 2016) and the INRMP would be followed during activities within the project area. Additionally, the design of new structures will meet local seismic zone requirements.

The types of activities described in Chapter 1 as part of the proposed project would not be expected to appreciably change the existing impacts to or from topography, geology, geologic hazards, and soils of existing conditions in the areas where the proposed project would be located. Therefore, with the implementation of proper seismic design, soil erosion programs and a project-specific SWPPP with associated BMPs, implementation of Alternative 1 would result in no significant impact to geological resources.

3.5.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

Construction

Impacts to geological resources during the construction phase at the Stuart Mesa Site remain the same as under Alternative 1.

The surficial conditions in the Alternative 2 project area are similar to those in the Alternative 1 project area. The main difference is the Parking Lot Site is relatively flat, compared to the site described under Alternative 1, and would require minimal grading. Otherwise all construction impacts to geological resources for Alternative 2 are the same as Alternative 1.

Other site preparation activities impacting geological resources are similar to those identified under Alternative 1, with the exception of the location of the natural gas line (at least 4.5 feet [1.4 meters] deep per UFC codes) and the construction of an overhead power line or trenching for underground electrical line (at least 3 feet [1 meter] deep per UFC codes) from the Parking Lot Site to the SDG&E Pendleton Substation. As with Alternative 1, implementation of project-specific construction SWPPP and BMPs, as well as Base soil erosion control programs, would minimize the potential for soil erosion throughout the duration of the project. Additionally, the design of any new structures will meet local seismic zone requirements.

Operation and Maintenance

Post-construction site operations would be similar to those identified for Alternative 1.

Decommissioning

Impacts to geological resources from decommissioning activities would be similar to those identified under Alternative 1.

Summary

Under Alternative 2, surface disturbance and grading would occur. Through implementation of current soil erosion programs, SWPPP, and applicable BOs to ensure that runoff and erosion goals are achieved, increased risk for landslides and erosion would be minimized. The MCB CPR for Erosion Control (MCB Camp Pendleton 2016) and the INRMP would be followed during activities within the project area, and any new structures will be designed to meet local seismic zone requirements.

The types of activities described in Chapter 1 as part of the proposed project would not be expected to appreciably change the existing impacts to or from topography, geology, geologic hazards, and soils of existing conditions in the areas where the proposed project would be located. Therefore, with the implementation of soil erosion programs and a project-specific SWPPP with associated BMPs, implementation of Alternative 2 would result in no significant impact to geological resources.

3.5.3.3 No-Action Alternative

Under the No-Action Alternative (Alternative 1 from the 2015 EA), MCB Camp Pendleton would only construct the solar PV facility and substation at the Stuart Mesa Site. *(Note: An analysis of geological resources was not conducted for the Proposed Action in the 2015 EA; therefore, an analysis has been incorporated into this SEA).*

Construction

Construction activities within the proposed project site for the No-Action Alternative (Alternative 1 from the 2015 EA) could be subject to known geologic hazards. There are no active faults or known landslide areas within the project area (Figure 3.5-1) however, the project area could be impacted by earthquakes stemming from nearby faults, as described in Alternative 1 of this SEA.

All the soil types within the 2015 EA project area are similar to those identified for Alternatives 1 and 2 of this SEA, and any soils that are excavated or trenched would be compacted to engineering standards and graded to approximate existing contours, to minimize any further erosion.

Implementation of project-specific construction SWPPP and BMPs would minimize the potential for soil erosion throughout the duration of the project. Any vegetation disturbed during this phase of construction would be replaced in compliance with 2016 CPR to help stabilize the soil and reduce the impact of future erosion. Implementation of project-specific construction SWPPP, BMPs, and Base soil erosion control programs would minimize the potential for soil erosion throughout the duration of the project.

Operation and Maintenance

Post-construction site operations would impact geological resources less than those identified for Alternative 1 and 2 of this SEA.

Decommissioning

Impacts to geological resources from decommissioning activities would be significantly less than those identified under Alternative 1 and 2 of this SEA.

Summary

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only).

Under the No-Action Alternative, surface disturbance and grading would occur, and the necessary precautions to minimize impacts to geological resources would be the same as those identified for Alternative 1 and 2 of this SEA. The project would comply with the Construction General Permit and a project-specific SWPPP would be prepared and implemented along with associated BMPs. The BMPs would be implemented to minimize erosion resulting from construction activities and prevent transport of sediment downstream. Therefore, with the implementation of soil erosion programs and a project-specific SWPPP with associated BMPs, implementation of the No-Action Alternative would result in no significant impact to geological resources.

3.6 HAZARDOUS MATERIALS AND WASTE

3.6.1 Definition of Resource

Hazardous materials (HAZMAT) is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors (Institute of Hazardous Materials Management 2018).

Hazardous waste (HAZWASTE) is waste that is dangerous or potentially harmful to human health, animals, or the environment. Hazardous wastes take the form of liquids, solids, gases, or sludges, and are typically discarded commercial products or the byproducts of manufacturing or operating processes (USEPA 2019d).

All units, organizations and tenants of MCB Camp Pendleton must manage HAZMAT/HAZWASTE in accordance with the Basewide Hazardous Waste Management Plan (MCB Camp Pendleton 2011). The Hazardous Waste Management Plan incorporates federal, state, local (city and county) and military regulations prescribing responsibilities, policies, and procedures for generating, handling, storing, and managing HAZMAT/HAZWASTE at MCB Camp Pendleton.

The assessment of HAZMAT and HAZWASTE on MCB Camp Pendleton primarily focuses on the following:

Installation Restoration Program (IRP) Sites: The IRP is designed to identify, assess, characterize, and clean up or control, and thereby reduce contamination from past hazardous waste disposal operations and hazardous materials spills. The DoD's equivalent to the USEPA Superfund program, the IRP was established to meet federal requirements regarding the cleanup of hazardous waste sites, outlined in the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by Superfund Amendments and Reauthorization Act.

Munitions Response Plan (MRP) Sites: The MRP addresses munitions response sites; sites that are known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. The MRP complies with environmental cleanup laws, such as Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund.

Underground (or Leaking Underground) Storage Tanks (UST/LUST): The USEPA has a UST/LUST program, authorized under Resource Conservation and Recovery Act to prevent the release of petroleum and other products stored in USTs. Congress enacted laws to clean up leaking tanks, prevent tanks from leaking, and detect leaks quickly if they do occur since LUSTs have been a major cause of groundwater contamination in the U.S.

Ammunition Storage Areas: MCB Camp Pendleton has several ammunition storage areas which are storage facilities for live ammunition and explosives.

3.6.2 Affected Environment

The affected environment of this project includes the Stuart Mesa Site, Haybarn Site, and the Parking Lot Site, as well as the route of the potential 69 kV power line connecting the Stuart Mesa solar PV and battery energy storage systems to the SDG&E Stuart Mesa Substation, and the area along Rattlesnake Canyon Road and Vandegrift Boulevard for utility upgrades as described in Section 1.3 of this SEA.

3.6.2.1 Stuart Mesa Site

As previously noted, the Stuart Mesa Site is located adjacent to the Stuart Mesa Housing complex, on a former agricultural field that pre-dated the inception of MCB Camp Pendleton in the 1940s and remained active well into the 2000s. Upon termination of the agricultural operation, remediation activities were initiated in anticipation of development that would more directly support the mission of MCB Camp Pendleton.

The 2015 EA evaluated the HAZMAT/HAZWASTE resource area considerations associated with the placement of a solar PV system at the Stuart Mesa Site (and adjacent property). That evaluation included a search for IRP sites, MRP sites, UST/LUST, and ammunition storage areas. The 2015 EA analysis is incorporated by reference into this SEA and will not be repeated here. However, a search was conducted for updates to the affected environment conditions since the 2015 EA. There are no new open cleanup sites at the Stuart Mesa Site (SWRCB 2019, Department of Toxic Substances Control [DTSC] 2019, MCB Camp Pendleton 2019b). There has been only a small change in the footprint of the project area since the 2015 EA; however, that area was included in the 2015 analysis as it was considered adjacent property and therefore relevant to the 2015 evaluation.

<u>Construction</u>

Under Alternatives 1 and 2, battery energy storage systems, a power line, and substation upgrade would be constructed at the Stuart Mesa Site as described in Sections 2.1.1. through 2.1.3. Clearing, construction, and staging areas would occur on-site, also as described in Sections 2.1.1. through 2.1.3.

Primary elements of the Stuart Mesa Site construction (not including the solar PV panels evaluated in the 2015 EA) with the potential for HAZMAT or HAZWASTE are:

- underground, at-grade, and/or pole-mounted electrical infrastructure
- inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the battery energy storage systems
- trenching for underground electrical lines
- construction vehicles, equipment, fuels, and lubricants
- construction debris

Equipment used to construct the battery energy storage systems and supporting infrastructure would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. Small amounts of petroleum, oil, and lubricants (POLs) wastes may be generated by the operation of construction equipment.

Operation and Maintenance

Post-construction site operations would include use of the existing access roads, and maintenance and repair of electrical and mechanical systems. Onsite operations and maintenance facilities (i.e., parking and staging area for the panel cleaning equipment) would be as described in Section 2.1.1.

Primary elements of the Stuart Mesa Site operation and maintenance (not including the solar PV panels evaluated in the 2015 EA) with the potential for HAZMAT or HAZWASTE are:

- the battery energy storage system would use lithium-ion or lithium metal anode cell and/or flow battery chemistries based on vanadium sulfate-chloride, zinc-bromine, zinc-chloride, or other electrolytes
- facility operation components such as inverters, transformers, and switchyard

Decommissioning

Impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning process would likely include the removal of above ground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sediment control BMPs would be implemented during this phase of the project. Deconstruction activities would be similar to those of construction activities. Decommissioning activities would be as described in Section 2.3.1.4.

3.6.2.2 Haybarn Site

The Haybarn Site (Alternative 1) is located in a side canyon on the southeast side of Vandegrift Boulevard, nestled between a water treatment facility (to the northeast) and the SDG&E Pendleton Substation and MS1 metering station (to the southwest). This location has been used in one form or another since at least the early 1950s (Historic Aerials 2019a). The area surrounding the Haybarn Site is predominantly vegetated, undeveloped land.

No open IRP sites, MRP sites, UST/LUST, or ammunition storage areas have been identified at or immediately adjacent to the Haybarn Site; however, there is one closed site that may necessitate further evaluation (SWRCB 2019, DTSC 2019, MCB Camp Pendleton 2019b):

- SDG & E Substation [sic], Case #H35928-001

The SDG&E Substation case involved the leakage of transformer polychlorinated biphenyl (PCB) oil into concrete slabs and soil at the Haybarn Site. A report for the case by the County of San Diego Department of Environmental Health documents the disposal of 1,666 kilograms of soil/concrete mix and another 2,195 kilograms of soil (County of San Diego 1997). The case was listed as closed on 19 September 1997 in the same letter report. As part of the closure action, the closure report provides the following site management requirements:

> *At the time when land use is changed or when excavation is proposed in areas of known contamination, this office recommends that the proposed project be evaluated to determine if public health and the environment will be adversely affected.*

Prior to initiating construction, a site investigation would be performed to determine if contamination is present at the site, and if so, the location and extent of that contamination. If present, contaminated areas would be evaluated to determine the potential for adverse impacts to public health and the environment.

Construction

Under Alternative 1, a natural gas power plant would be constructed at the Haybarn Site (Figure 2-1) as described in Sections 2.1.4 and 2.3.1.2. Related utility connections would also be installed to support its operations as described in Sections 2.1.5 and 2.1.6. Site preparation activities include the trenching for underground electrical lines (at least 3 feet [1 meter] deep per UFC codes) and natural gas lines (at least 4.5 feet [1.4 meters] deep per UFC codes), and relocation of water and sewer laterals as part of the road improvements to Haybarn Road. The excavated/trenched areas needed to place the underground pipelines would then be filled and compacted and graded to approximate existing contours.

Primary elements of the Haybarn Site construction with the potential for HAZMAT or HAZWASTE are:

- underground, at-grade, and/or pole-mounted electrical or gas infrastructure
- inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the generation and transmission of electricity and gas
- trenching for underground electrical and natural gas transmission lines
- construction vehicles, equipment, fuels, and lubricants
- construction debris

Equipment used to construct the natural gas power plant and supporting infrastructure would be similar to those used for the Stuart Mesa Site construction. Small amounts of POL wastes may be generated by the operation of construction equipment.

Operation and Maintenance

Post-construction site operations would include use of the power plant's gas, electrical, water, and mechanical systems, occupation and use of a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions, and maintenance and repair. The facility would be manned 24 hours a day, 7 days a week with a maximum of eight personnel on the day shift when operating. Onsite operations and maintenance facilities would be as described in Section 2.1.4 and 2.3.1.3.

Primary elements of operation and maintenance for the natural gas power plant with the potential for HAZMAT or HAZWASTE are:

- a maximum of two gas turbines with a maximum of 100-foot (30.5 meters) tall HRSG stacks (one HRSG stack for a minimum of 24 MW of generation and an additional stack for a maximum of 49.9 MW)
- a maximum of two steam turbines as needed for efficiency and flexibility *(Note: Depending on the type of natural gas power plant selected, steam turbines might not be used.)*

- a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions
- electrical equipment located next to the existing metering station
- underground and/or pole-mounted electrical or gas infrastructure
- potable water line and sewer line connections
- stormwater basin
- electrical wiring, and equipment to support the natural gas power plant
- natural gas compressor station

Decommissioning

The decommissioning process would likely include the removal of above ground structures, restoration of topsoil, revegetation, and seeding, and the return of the site to its pre-project condition. All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for hazardous material(s). Deconstruction activities would be similar to those of construction activities. Decommissioning activities would be as described in Section 2.3.1.4.

3.6.2.3 Parking Lot Site

The Parking Lot Site is located alongside Vandegrift Boulevard, west of its intersection with Santa Margarita Road. This location is across the street from existing occupied facilities such as the Marine Corps Exchange Property Maintenance Building, and welding and plumbing shops. To the north, south, and east, the site is predominantly vegetated, undeveloped land. The Parking Lot Site was previously occupied by Buildings 2663, 2664, 2665, and 2666, which were used for storage, dry cleaning, laundry, and a boiler house, respectively (NAVFAC SW 1992). From the examination of historical aerial images, it appears that all four buildings were removed during the early-to-mid 1990s (Historic Aerials 2019b).

There is one cleanup site listed as "open" at the Parking Lot Site (SWRCB 2019, DTSC 2019, MCB Camp Pendleton 2018):

- MCB – 26 Area, Former Bldg. 2665, Resource Conservation and Recovery Act Facility Assessment (RFA) Site 135

The RFA 135 Site appears to be related to, and was absorbed by, the Installation Restoration (IR) Site 1118 case and is now called IR Site 1118 Subsite 2664. RFA 135 refers to former LUST Site 2666 beneath the former Bldg. 2666 boiler house. IR Site 118 Subsite 2664 consists of the former Bldg. 2664 dry cleaning solvent LUSTs, RFA Site 135, and former LUST Site 2666.

In a letter dated November 24, 2014, the San Diego Water Board determined a finding of No Further Action for IR Site 1118 Subsite 2664 with the understanding that subsurface contamination associated with UST Site 2666 be addressed in the near future (SWRCB 2014). According to Mr. Ledesma, the RFA Site 135 listed as "open" in Geotracker has been closed with No Further Action, and there are no other open cases at the Parking Lot Site location (MCB Camp Pendleton 2019b).

Construction

Under Alternative 2, a natural gas power plant would be constructed at the Parking Lot Site and related utility connections would be installed or upgraded to support the natural gas power plant. Construction activities would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site, and would include the installation of a switching/metering yard at Haybarn

Site connecting to the SDG&E Pendleton Substation and MS1 metering station. Small amounts of POL wastes may be generated by the operation of construction equipment.

Operation and Maintenance

Post-construction site operations would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site.

Decommissioning

The decommissioning process would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site.

3.6.2.4 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install batteries for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the PV facility and substation at the Stuart Mesa Site (Site A only).

3.6.3 Environmental Consequences

3.6.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

Construction

Construction activities within the proposed project sites for Alternative 1 will not be occurring in areas of known open or otherwise existing actionable contamination sites (Figures 3.6-1 and 3.6-2). In the unlikely event that soil contamination (discolored and/or odorous) is discovered during construction, the private partner, or their contractor will coordinate with the MCB Camp Pendleton IR/Remediation Branch to ensure all remedial requirements are met. Any contaminated soil encountered will be properly evaluated and managed accordingly.

Construction would create a minimal amount of construction debris that would be removed and disposed of in compliance with EO 13834, *Efficient Federal Operations* (dated 17 May 2018), which includes diverting at least 50 percent of municipal trash and at least 50 percent of construction and demolition waste (Office of Federal Sustainability 2019). All construction would be conducted in compliance with all applicable rules and regulations. The use of standard construction BMPs and a Solid Waste Management Plan will maximize the control of HAZMAT/HAZWASTE components (e.g., POLs from vehicles).

Implementation of project-specific construction SWPPP; Spill Prevention, Countermeasures, and Control Plan or equivalent; BMPs; and the maintaining of spill kits onsite would minimize the potential for HAZMAT/HAZWASTE throughout the duration of the project. Drip pans will be placed beneath construction equipment with the potential to discharge POLs (e.g., vehicles or motorized trailers). Therefore, substantial HAZMAT/HAZWASTE impacts from construction activities are unlikely.

Operation and Maintenance

Post-construction site operations would include use of the power plant's natural gas, electrical, water, and mechanical systems; occupation and use of a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions; and maintenance and repair. Natural gas will not be stored at the site but will be handled in significant quantities. However, the systems used to handle natural gas at the facility will comply with all applicable engineering design codes and fire protection codes. Other HAZMAT/HAZWASTE stored, used, and disposed of as part of facility operation and support activities will be managed in accordance with applicable federal, Marine Corps, and Base regulations.

Access roads would be maintained as needed, and ground cover and other vegetation within and near the facilities would be trimmed periodically. Vegetation and pests will also be controlled with herbicides or pesticides to ensure that they do not unduly infringe/compromise the safety of the developed area. Any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the Federal Insecticide, Fungicide, and Rodenticide Act labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's Integrated Pest Management Plan (NAVFAC SW 2017); and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by Assistant Chief of Staff (AC/S) Facilities. Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SWRCB 2016).

All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*. Therefore, substantial HAZMAT/HAZWASTE impacts from operation and maintenance activities are unlikely.

Decommissioning

Decommissioning activities of the Stuart Mesa and Haybarn Sites would be similar to construction, only removing structures and support facilities instead of erecting them. Deconstruction will generate waste material, some of which as a result of use during the life of the operation, will be characterized as HAZWASTE and will require appropriate handling and disposal. The private partner will be responsible for facility deconstruction and waste disposal.

Implementation of project-specific deconstruction SWPPP and BMPs would minimize the potential for deconstruction site dust, dirt, solid waste, POLs, and runoff throughout the duration of the project. Therefore, substantial HAZMAT/HAZWASTE impacts from decommissioning activities are unlikely.

Summary

Under Alternative 1, HAZMAT would be present and HAZWASTE would be generated by construction, operation and maintenance, and decommissioning of battery energy storage systems at the Stuart Mesa Site and a natural gas power plant at the Haybarn Site, and associated utility infrastructure improvements. However, the presence and generation of HAZMAT/HAZWASTE would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base Plans, and MCO.

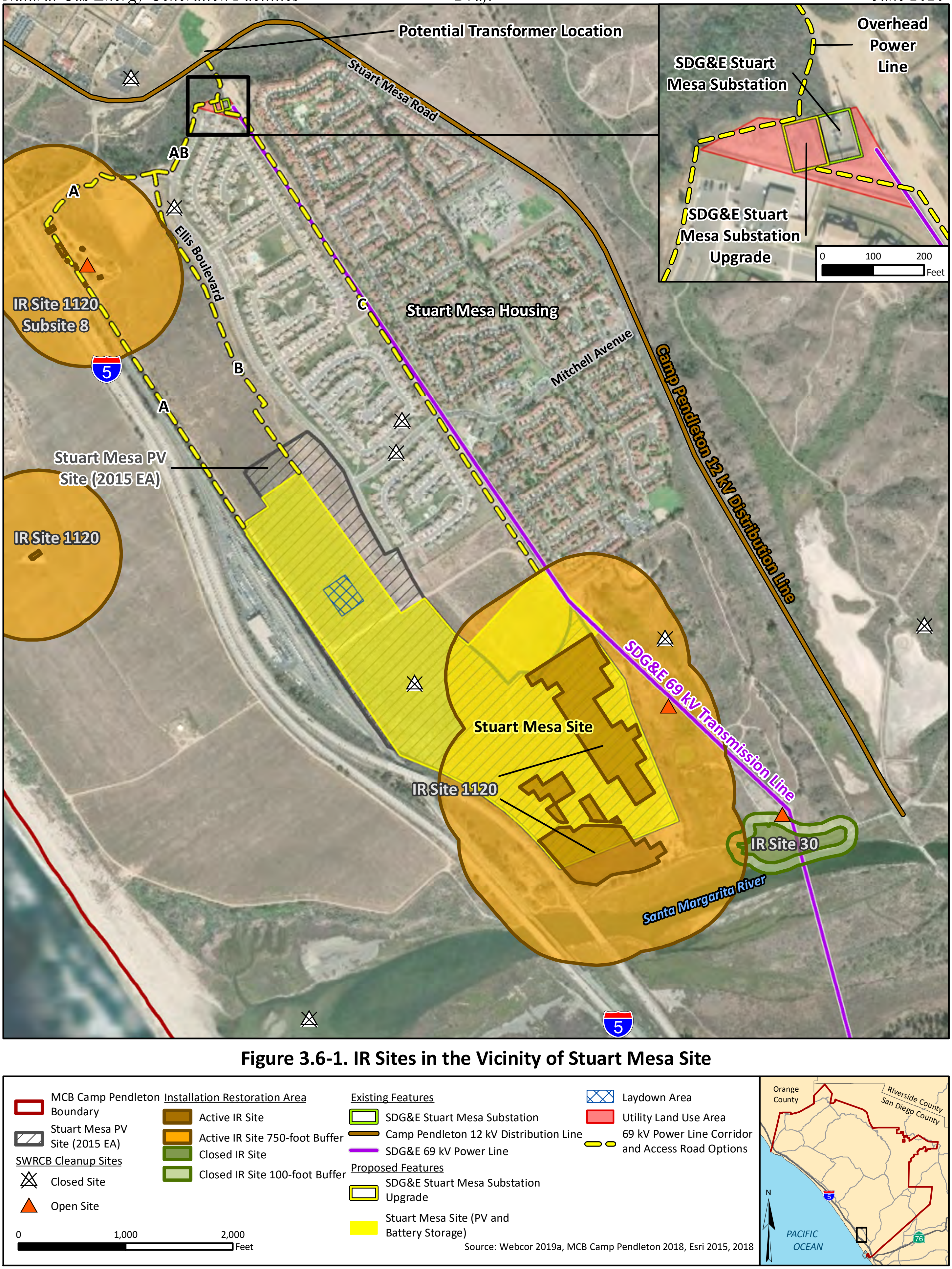

Figure 3.6-1. IR Sites in the Vicinity of Stuart Mesa Site

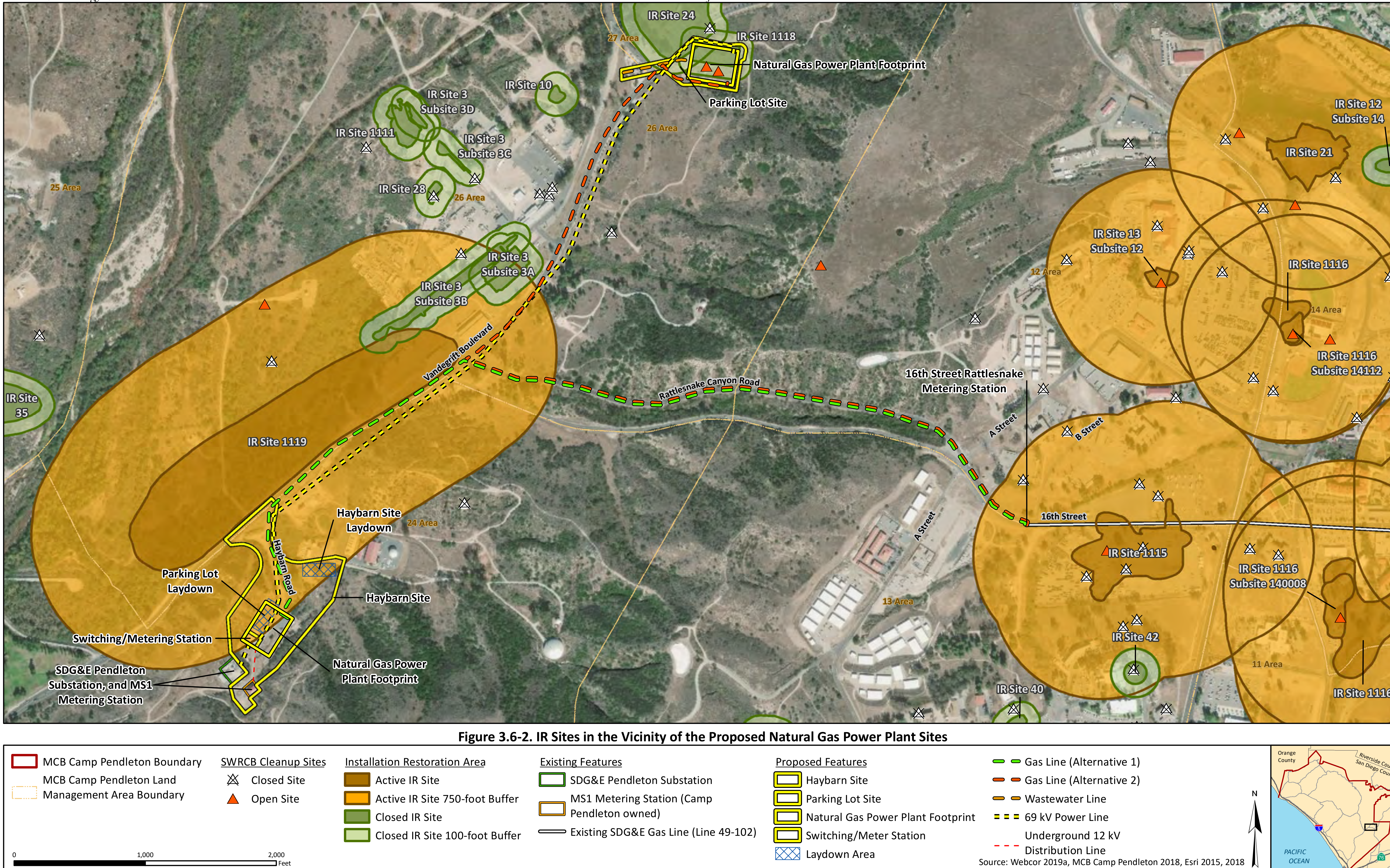

Figure 3.6-2. IR Sites in the Vicinity of the Proposed Natural Gas Power Plant Sites

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Additionally, there is a potential for impacts resulting from previous soil contamination at the Haybarn Site. Prior to initiating construction, a site investigation would be performed to determine if contamination is present at the site, and if so, the location and extent of that contamination. If present, contaminated areas would be evaluated to determine the potential for adverse impacts to public health and the environment. The project would comply with the Construction General Permit and a project-specific SWPPP would be prepared and implemented along with associated BMPs. The BMPs would be implemented to minimize unwanted runoff from construction activities and prevent transport of sediment, solid waste, or HAZWASTE downstream.

3.6.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site. Remaining uncertainty about the potential for legacy contaminants from the closed SDG&E Substation case at the Haybarn Site would also be resolved by moving the natural gas power plant to the Parking Lot Site.

Construction

Construction activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. Implementation of project-specific construction SWPPP, Spill Prevention, Countermeasures, and Control Plan or equivalent, BMPs, and the maintaining of spill kits onsite would minimize the potential for HAZMAT/HAZWASTE throughout the duration of the project. Drip pans will be placed beneath construction equipment with the potential to discharge POLs (e.g., vehicles or motorized trailers). Therefore, substantial HAZMAT/HAZWASTE impacts from construction activities are unlikely.

Operation and Maintenance

Operation and maintenance activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton. Therefore, substantial HAZMAT/HAZWASTE impacts from operation and maintenance activities are unlikely.

Decommissioning

Decommissioning activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. Implementation of project-specific deconstruction SWPPP and BMPs would minimize the potential for deconstruction site dust, dirt, solid waste, POLs, and runoff throughout the duration of the project. Therefore, substantial HAZMAT/HAZWASTE impacts from decommissioning activities are unlikely.

Summary

Under Alternative 2, HAZMAT would be present and HAZWASTE would be generated by construction, operation and maintenance, and decommissioning of battery storage systems at the Stuart Mesa Site and a natural gas power plant at the Parking Lot Site, and associated utility infrastructure improvements. However, the presence and generation of HAZMAT/HAZWASTE would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base Plans, and MCOs. The project would comply with the Construction General Permit and a project-specific SWPPP would be prepared and implemented along with associated BMPs. The BMPs would be implemented to minimize unwanted runoff from construction activities and prevent transport of sediment, solid waste, or HAZWASTE downstream. Alternative 2 activities would occur closer to Vandegrift Road and its users than Alternative 1. Alternative 2 activities would not occur in an area of known open cleanup cases. Therefore, no significant HAZMAT/HAZWASTE impacts are anticipated with the implementation of Alternative 2.

3.6.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install batteries for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). As per the 2015 EA, the No-Action Alternative would result in no significant HAZMAT/HAZWASTE impacts.

3.7 NOISE

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us. The perception and evaluation of sound involves three basic physical characteristics:

- Intensity – the acoustic energy, which is expressed in terms of sound pressure, in decibels (dB)
- Frequency – the number of cycles per second the air vibrates, in Hertz
- Duration – the length of time the sound can be detected

Noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although continuous and extended exposure to high noise levels (e.g., through occupational exposure) can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

3.7.1 Definition of Resource

3.7.1.1 Basics of Sound and A-weighted Sound Level

The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times greater than those of sounds that can barely be detected. This vast range renders a linear scale impractical to represent all sound intensities. The dB is a unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 microPascals (approximate threshold of human audibility). Table 3.8-1 provides a comparison of how the human ear perceives changes in sound level on the logarithmic scale. A difference of 3 dB is generally barely perceptible while a difference of 20 dB is typically experienced as a change in volume of fourfold.

Table 3.7-1 Subjective Responses to Differences in Sound Level measured in A-Weighted Decibels

Difference in Sound	*Change in Perceived Loudness*
3 dB	Barely perceptible
5 dB	Quite noticeable
10 dB	Dramatic – twice or half as loud
20 dB	Striking – fourfold change

Source: DoN 2008.

All sounds have a spectral component, which describes the magnitude or level across varying frequencies measured in cycles per second or Hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually presented on an "A-weighted" scale that de-emphasizes very low and very high frequencies in order to approximate human sensitivity. It is common to add the "A" to the measurement unit in order to identify that the measurement has been made with this filtering process (dBA). In this document, the dB unit refers to A-weighted sound levels.

Figure 3.7-1 provides a chart of A-weighted sound levels from typical noise sources. Some noise sources (e.g., air conditioner, vacuum cleaner) generate continuous sounds that maintain a constant sound level for some period of time. Some sources (e.g., automobile, heavy truck) listed in Figure 3.7-1 represent the maximum sound that occurs for events with sound levels that vary over time, such as a vehicle pass-by and other sounds (e.g., urban daytime, urban nighttime) represent averages taken over extended periods of time. A variety of noise metrics have been developed to describe noise over different time periods, as discussed in the following section.

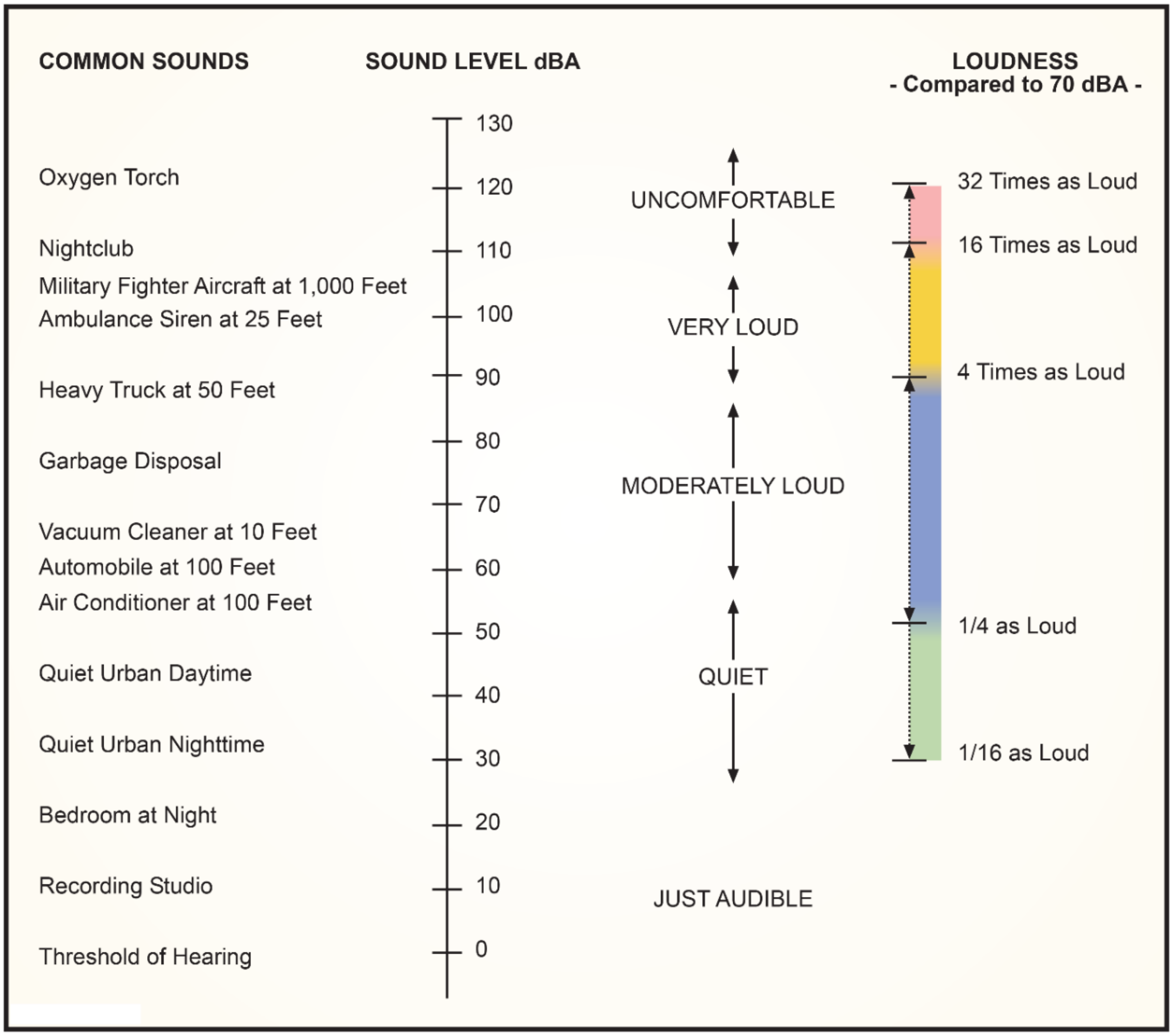
3.7.1.2 Noise Metrics

A metric is a system for measuring or quantifying a particular characteristic of a subject. Because noise is a complex physical phenomenon, different noise metrics help to quantify the noise environment. The noise metrics used in this EA are described in summary format below.

The primary effect of aircraft noise on exposed communities is long-term annoyance, defined by the USEPA as any negative subjective reaction on the part of an individual or group. The scientific community has adopted the use of long-term annoyance as a primary indicator of community response and there is a consistent relationship between Day-Night Average Sound Level (DNL) and the level of community annoyance (Federal Interagency Committee on Noise 1992). Additional metrics provide supplemental guidance on the potential for annoyance.

<u>Equivalent Sound Level</u>

A cumulative noise metric useful in describing noise is the Equivalent Sound Level (L_{eq}). L_{eq} is the continuous sound level that would be present if all of the variations in sound level occurring over a specified time period were averaged to contain the same total sound energy. The L_{eq} is often presented for time periods of 24 hours L_{eq}, abbreviated L_{eq}(24hr). Other common periods include 1-hour and 8-hour time periods written as L_{eq}(1hr) and L_{eq}(8hr), respectively. Noises from activities that do not vary significantly throughout the day may use L_{eq}(1hr) where noise in a 1-hour period is roughly the same as any other 1-hour period in the same day. In this case, L_{eq}(1hr) and L_{eq}(8hr) are exactly equal and is denoted as dBA L_{eq} in this analysis.



Sources: Derived from Harris (1979) and Federal Interagency Committee on Aviation Noise (1997).

Figure 3.7-1 A-Weighted Sound Levels from Typical Sources

Day-Night Average Sound Level

The DNL metric, based upon L_{eq} provides the energy-averaged sound level measured over a 24-hour period, mathematically representing the continuous sound level that would be present if all of the variations in sound level were averaged to have the same total sound energy. DNL applies a 10 dB penalty to events occurring during the nighttime period (10 p.m. to 7 a.m.) to account for the added intrusiveness while people are most likely to be relaxing at home or sleeping. Because the DNL metric represents a cumulative measure that quantifies the total sound energy received, it does not provide specific information on the number of noise events or the individual sound levels that occur during the 24-hour day.

DNL is the standard noise metric used by the U.S. Department of Housing and Urban Development, FAA, USEPA, and DoD and the State of Colorado, along with many more. Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments; there is a consistent relationship between DNL and the level of annoyance. Many people are exposed to sound levels of 50 to 55 DNL or higher on a daily basis and research has indicated that the majority of the population is not highly annoyed by outdoor sound levels below 65 dB DNL (Federal Interagency Committee on Urban Noise 1980).

Community Noise Equivalent Level

Similar to DNL, the Community Noise Equivalent Level (CNEL) provides the energy-averaged sound level measured over a 24-hour period. CNEL utilizes the same night period as DNL but adds an evening penalty of 5 dB to events that occur between 7:00 P.M. and 10:00 P.M to account for the increased intrusiveness and higher annoyance rates to people during those portions of the day. California law (California Code of Regulations Title 21, Public Works) prescribes use of the CNEL as the metric for measuring cumulative noise impacts.

Maximum Sound Level

The highest A-weighted sound level measured during a single event where the sound level changes value with time (e.g., an aircraft overflight) is called the maximum A-weighted sound level or root mean squared maximum level of a noise (L_{max}). During an aircraft overflight, the noise level starts at the ambient or background noise level, rises to the maximum level as the aircraft flies closest to the observer, and returns to the background level as the aircraft recedes into the distance. L_{max} defines the maximum sound level occurring for a fraction of a second. For aircraft noise, the "fraction of a second" over which the maximum level is defined is generally one-eighth of a second (American National Standards Institute 1988). For sound from aircraft overflights, the Sound Exposure Level is usually greater than the L_{max} because an individual overflight takes many seconds and the L_{max} occurs instantaneously.

3.7.2 Affected Environment

The Proposed Action in this SEA would occur within MCB Camp Pendleton and includes the addition of battery energy storage systems at the Stuart Mesa Site; the construction, operation, and decommissioning of a natural gas energy generation facility (natural gas power plant); and new and upgraded electric and natural gas utility connections to these facilities.

MCB Camp Pendleton is located north of the city of San Diego, within the northern portion of San Diego County. The city of San Clemente and the Cleveland National Forest border MCB Camp Pendleton to the north and east, with the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook to the east, and the city of Oceanside to the south. MCB Camp Pendleton offers a broad spectrum of training facilities for many active and reserve Marine, Army and Navy units, as well as national, state and local agencies. The coastal and mountain terrain supports a variety of military training which includes Landing Zones for rotary-wing aircraft.

Noise sensitive locations include residential areas, schools, places of worship, and hospitals because these are most likely to be adversely impacted by increased noise levels. The nearest noise sensitive locations are the Stuart Mesa Housing and Stuart Mesa Elementary School northeast of the proposed Stuart Mesa Site, as depicted in Figure 1-3. No noise sensitive receptors are located in the proximity of proposed natural gas power plant and utility upgrade locations, which are northeast of MCAS Camp Pendleton near the approach path to Runway 21, as shown in Figure 1-4. All sites under the Proposed Action are located over two miles from the MCB Camp Pendleton boundary. *(Note: Noise impacts to biological resources are discussed in Section 3.3, Biological Resources.)*

The primary source of existing noise within MCB Camp Pendleton is aircraft activity operating at MCAS Pendleton and at the various Landing Zones through the MCB.

3.7.3 Environmental Consequences

The Proposed Action in this SEA includes the addition of battery energy storage systems at the Stuart Mesa Site east of Interstate 5 on vacant land formerly used for agricultural purposes. The general size of the solar PV system site studied in the 2015 EA would not change significantly with the addition of battery energy storage systems. The battery energy storage system would include installation of electrolytic cells, inverter, transformer, and a new power line. The substation upgrade north of the Stuart Mesa Site would be upgraded to include a new bay to accommodate the additional load from the solar PV system and battery energy storage system. The installed electrical equipment would not create significant noise beyond that created by the existing substation.

This SEA includes a natural gas power plant with a compressor station that would be located at one of two alternative locations in either the 24 or 26 Areas. Both sites are located on the south side of Vandegrift Boulevard. One of the sites is located south of Rattlesnake Canyon Road (Haybarn Site), the other is located north of Rattlesnake Canyon Road (Parking Lot Site) (Figure 1-4).

3.7.3.1 Alternative 1

The proposed power plant site identified under Alternative 1 would be located at the Haybarn Site and include up to two gas turbines, up to two steam turbines, and supporting buildings and electrical equipment.

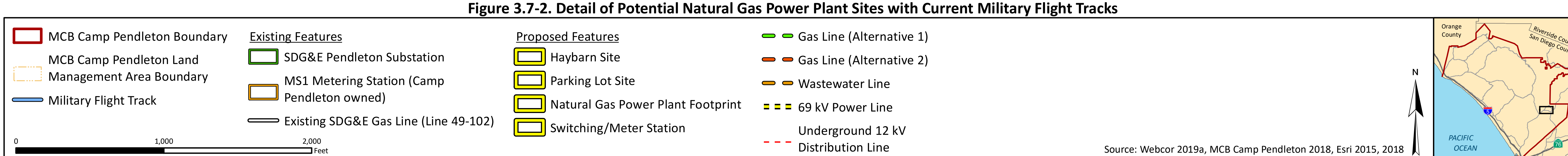
Determining sound levels for the entire proposed power plant site is a complex task but noise in the vicinity would be primary caused by the turbine(s). The site plan considers several equipment arrangement of Siemens Gas Turbines (SGT) including two SGT-400, a single SGT-700, and a single SGT-750. The manufacturer has performed noise measurements for each SGT, which ranges from less than 80 to less than 85 dBA when measured 1 meter from the SGT (Siemens 2010a, Siemens 2010b). Although the specific type of fuel gas compressor has not been determined, it is expected to generate similar noise levels as the SGTs and, if necessary, could be installed with an enclosure to reduce the noise levels to 85 dBA or less.

Noise sources can be classified as either point sources where the source remains in one place for extended periods of time or line sources generated by moving objects along a linear corridor such as highway traffic. The standard reduction in noise for point sources, such as an installed turbine, is 6 dB per doubling of distance from the source. Objects or terrain between the noise source and the receiver will affect the magnitude of noise reduction but this simple formula provides a useful estimate (Occupational Safety and Health Administration 2013). Within 105 feet (32 meters) from any single SGT considered under the Proposed Action noise levels would be 55 dBA or less. Two SGT installed would approximately double the sound energy (3 dB greater) of a single SGT resulting in noise levels of 58 dBA at 105 feet (32 meters).

Buildings within 100 feet (30 meters) of the Haybarn Site are industrial in nature and not sensitive to noise. Although not considered a noise sensitive receptor, the Marine Corps Mechanized Museum is located on Vandegrift Blvd over 2,500 feet (762 meters) from the Haybarn Site sufficiently far from the SGTs to avoid noise levels above ambient. Aircraft operating at the nearby MCAS Camp Pendleton runway overlay the area between the two proposed sites, as depicted in Figure 3.7-2, and would remain the dominate source of noise in this area. The flight tracks displayed in Figure 3.7-2 were developed for the MCAS Camp Pendleton Air Installations Compatible Use Zones study and represent average flight paths that aircraft may use but are not limited to (Marine Corps Installations Command 2017).

A natural gas line would be installed within portions of Rattlesnake Canyon Road and Vandegrift Boulevard, replacing a section of an existing line that runs through Rattlesnake Canyon Road. (Figure 2-1). No equipment associated with these natural gas lines would generate sufficient noise to impact adjacent areas.

Figure 3.7-2. Detail of Potential Natural Gas Power Plant Sites with Current Military Flight Tracks



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Construction noise generated by Alternative 1 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Haybarn power plant site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate. Therefore, with implementation of Alternative 2 there would be no significant impact to the noise environment.

3.7.3.2 Alternative 2

Similar to Alternative 1, the proposed power plant site under Alternative 2 would include up to two gas turbines, up to two steam turbines, and supporting buildings and electrical equipment. Alternative 2 designates the Parking Lot Site as the location for the power plant, as shown in Figure 2-3.

Consistent with Alternative 1, the noise levels generated 1 meter from the proposed SGT under Alternative 2 would be 85 dBA or less. No noise sensitive receptors exist within 100 feet (30 meters) of the Parking Lot Site and the nearest building that could be considered sensitive, the Marine Corps Mechanized Museum, is over 2,500 feet (762 meters) away. Natural gas lines would be installed within portions of Rattlesnake Canyon Road and Vandegrift Boulevard, as depicted in Figure 2-3.

Construction noise generated by Alternative 2 would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the Parking Lot Site would create an ongoing source of noise, no nearby noise sensitive receptors exist in the vicinity and regular aircraft activity would continue to dominate. Therefore, with implementation of Alternative 2 there would be no significant impact to the noise environment.

3.7.3.3 No-Action

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the solar PV facility and substation at the Stuart Mesa Site (Site A only). In this case, it was determined that impacts to the noise environment from implementation of any of the alternatives would be negligible and this resource area was not analyzed in detail in the 2015 EA. Construction noise generated by the Proposed Action would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Therefore, with implementation of the No-Action Alternative there would be no significant impact to the noise environment.

3.8 PUBLIC HEALTH AND SAFETY

3.8.1 Definition of Resource

Public Health and Safety refers to the level of risk involved to workers and the public in the process of carrying out the construction, operation, and maintenance of the proposed project, including the utilization of HAZMAT or in the production of HAZWASTE. Safety can also involve the safeguarding of project facilities, support systems, HAZMAT/HAZWASTE storage and other “do not approach” areas.

Safety and security on MCB Camp Pendleton are subject to the requirements applicable MCOs and the Base’s applicable Standard Operating Procedures (SOP). The primary MCO regulating Health and Safety is 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MARCOR OSH Program Manual [DoN 2006]). The primary SOP regulating safety and security on MCB Camp Pendleton is the Range and Training Area SOP 3500.1 Marine Corps Installations West – MCB Camp Pendleton Order (Marine Corps Installations West- MCB Camp Pendleton Order 2013]). As the proposed project would be located on an active military installation, Homeland Security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism, natural disasters, and disease outbreaks. MCB Camp Pendleton has guidance documents including Base Orders, SOPs, and multiple management plans (e.g., environmental response, range and training, waste handling) that govern activities carried out on the Base.

The assessment of safety and security on MCB Camp Pendleton primarily focuses on the MCB Camp Pendleton Base Boundary (perimeter fence) and the following:

Explosive Safety Quantity Distance (ESQD) Arcs: ESQD calculations measure the effects of an explosion at a particular location and is expressed either as a mathematical formula or as an arc map, where the center of the arc is the source of an explosion and the arc's periphery is the maximum area over which the force of the explosion would reach.

Intraline Arcs: The minimum distance permitted between any two buildings within an explosives operating line to protect buildings from propagation of explosions due to blast effect.

Live Fire Training or Munitions Impact Areas: An impact area contains designated boundaries used to contain non-explosive military munitions; and sensitive and non-sensitive, high explosive, military munitions.

Accessibility: areas with greater potential for health and safety applicability typically benefit from limiting accessibility to the area. This can be achieved by distance from heavily used areas, managing site ingress and egress, and erecting barriers.

In general, health and safety concerns with the construction, operation and maintenance, and decommissioning of the battery energy storage system and the natural gas power plant would focus on the potential for natural hazard (e.g., earthquake or flood), fire or explosion, air quality/dust, noise, chemical release, electric shock, and equipment and vehicle safety.

3.8.2 Affected Environment

The affected environment of this project includes the MCB Camp Pendleton Stuart Mesa Site, Haybarn Site, and the Parking Lot Site, as well as the area along Rattlesnake Canyon Road and Vandegrift Boulevard for utility upgrades as described in Section 1.3 of this SEA.

3.8.2.1 Stuart Mesa Site

As previously noted, the Stuart Mesa Site is located west-southwest of the Stuart Mesa Housing complex, on a former agricultural field that pre-dated the inception of MCB Camp Pendleton in the 1940s and remained active well into the 2000s. Upon termination of the agricultural operation, remediation activities were initiated in anticipation of development that would more directly support the mission of MCB Camp Pendleton.

There has been a small change in the footprint of the project area since the 2015 EA; however, that area was included in the 2015 analysis as it was considered adjacent property and therefore relevant to the 2015 evaluation (refer to Figure 1-3).

There are no known existing health and safety hazards within the Stuart Mesa Site, including ESQD Arcs, Intraline Arcs, Live Fire Training or Munitions Impact Areas, or other areas known to contain military munitions.

Construction

Under Alternatives 1 and 2, battery energy storage systems, a power line, and substation upgrade would be constructed at the Stuart Mesa Site as described in Sections 2.1.1. through 2.1.3. Clearing, construction, and staging areas would occur on-site, also as described in Sections 2.1.1. through 2.1.3.

Primary elements of the Stuart Mesa Site construction with health and safety applicability are:

- transport of personnel, equipment and materials to and from site
- construction activities and vehicle/equipment movement
- handling of HAZMAT or HAZMAT containing materials
- fugitive dust
- construction noise

Equipment used to construct the battery energy storage systems and supporting infrastructure would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes.

Operation and Maintenance

Post-construction site operations would include use of the existing access roads, and maintenance and repair of electrical and mechanical systems. Onsite operations and maintenance facilities (i.e., parking and staging area for the panel cleaning equipment) would be as described in Section 2.1.1.

Primary elements of the Stuart Mesa Site operation and maintenance with health and safety applicability are:

- transport of personnel, equipment and materials to and from site
- storage and use of dangerous goods on site
- equipment maintenance
- electrical hazard
- handling of HAZMAT/HAZWASTE or HAZMAT/HAZWASTE containing materials

Decommissioning

Impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning process would likely include the removal of above ground structures, restoration of topsoil, revegetation, and seeding. Deconstruction activities would be similar to those of construction activities. Decommissioning activities would be as described in Section 2.3.1.4.

Primary elements of the Stuart Mesa Site decommissioning with health and safety applicability are:

- transport of personnel, equipment and materials to and from site
- construction activities and vehicle/equipment movement
- handling of HAZMAT/HAZWASTE or HAZMAT/HAZWASTE containing materials
- fugitive dust
- construction noise
- trenching

3.8.2.2 Haybarn Site

The Haybarn Site (Alternative 1) is located in a side canyon on the southeast side of Vandegrift Boulevard, nestled between a water treatment facility (to the northeast) and the SDG&E Pendleton Substation and MS1 metering station (to the southwest). The area surrounding the Haybarn Site is predominantly vegetated, undeveloped land. There are no known existing health and safety hazards within the Haybarn Site, including ESQD Arcs, Intraline Arcs, Live Fire Training or Munitions Impact Areas, or other areas known to contain military munitions.

<u>Construction</u>

Under Alternative 1, a natural gas power plant would be constructed at the Haybarn Site as described in Sections 2.1.4 and 2.3.1.2. Related utility connections would also be installed to support its operations as described in Sections 2.1.5 and 2.1.6. Site preparation activities include the trenching for underground electrical lines (at least 3 feet [1 meter] deep per UFC codes) and natural gas lines (at least 4.5 feet [1.4 meters] deep per UFC codes), and relocation of water and sewer laterals as part of the road improvements to Haybarn Road. The excavated/trenched areas needed to place the underground electrical conduit and pipelines would then be filled and compacted and graded to approximate existing contours.

Primary elements of the Haybarn Site construction with health and safety applicability are similar to those for the Stuart Mesa Site, including the potential for excavations and trenching. Equipment used to construct the natural gas power plant and supporting infrastructure would be similar to those used for the Stuart Mesa Site construction.

<u>Operation and Maintenance</u>

Post-construction site operations would include use of the power plant's gas, electrical, water, and mechanical systems, occupation and use of a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions, and maintenance and repair. The facility would be manned 24 hours a day, 7 days a week with a maximum of eight personnel on the day shift when operating. Onsite operations and maintenance facilities would be as described in Section 2.1.4 and 2.3.1.3.

Primary elements of operation and maintenance with health and safety applicability to the natural gas power plant are similar to those for the Stuart Mesa Site, only on a larger scale. Additionally, operation and maintenance of the natural gas power plant will bring additional health and safety elements such as:

- high pressure natural gas
- equipment, water, and sanitary sewer line maintenance
- elevated fire or explosion potential
- handling of HAZMAT/HAZWASTE or HAZMAT/HAZWASTE containing materials
- storage and use of dangerous materials and goods on site
- operational noise
- electrical hazard
- transport of personnel, equipment and materials to and from site

<u>Decommissioning</u>

The decommissioning process would likely include the removal of above ground structures, restoration of topsoil, revegetation, and seeding, and the return of the site to its pre-project condition. Deconstruction activities would be similar to those of construction activities. Decommissioning activities would be as described in Section 2.3.1.4.

Primary elements of decommissioning with health and safety applicability to the natural gas power plant are similar to those for construction, but with some relic elements of operation and maintenance concerns listed above, at least temporarily until former conduits to natural gas, electricity, and water can be fully secured.

3.8.2.3 Parking Lot Site

The Parking Lot Site is located alongside Vandegrift Boulevard, west of its intersection with Santa Margarita Road. This location is across the street from existing occupied facilities such as the Marine Corps Exchange Property Maintenance Building, and welding and plumber shops. To the north, south, and east, the site is predominantly vegetated, undeveloped land. The Parking Lot Site was previously occupied by Buildings 2663, 2664, 2665, and 2666, which were used for storage, dry cleaning, laundry, and a boiler house, respectively (NAVFAC SW 1992). From the examination of historical aerial images, it appears that all four buildings were removed during the early-to-mid 1990s (Historic Aerials 2019b).

There are no known existing health and safety hazards within the Parking Lot Site, including ESQD Arcs, Intraline Arcs, Live Fire Training or Munitions Impact Areas, or other areas known to contain military munitions.

<u>Construction</u>

Under Alternative 2, a natural gas power plant would be constructed at the Parking Lot Site and related utility connections would be installed or upgraded to support the natural gas power plant. Construction activities would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site and would include the installation of a switching/metering yard at Haybarn Site connecting to the SDG&E Pendleton Substation and MS1 metering station.

Primary elements of the Parking Lot Site construction with health and safety applicability are similar to those for the Stuart Mesa Site.

<u>Operation and Maintenance</u>

Post-construction site operations would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site. Primary elements of the Parking Lot Site construction with health and safety applicability are similar to those for the Haybarn Site.

<u>Decommissioning</u>

The decommissioning process would be similar to those identified for Alternative 1, only they would occur at the Parking Lot Site instead of the Haybarn Site. Primary elements of decommissioning with health and safety applicability to the natural gas power plant are similar to those for the Haybarn Site.

3.8.2.4 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the PV facility and substation at the Stuart Mesa Site (Site A only).

3.8.3 Environmental Consequences

3.8.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1, include construction of battery energy storage systems at the Stuart Mesa Site with a potentially new power line to connect to the SDG&E Stuart Mesa Substation, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, a natural gas power plant at the Haybarn Site, and an underground natural gas line connecting from the SDG&E Line 49-102 to the natural gas power plant.

Construction

Construction activities within the proposed project sites for Alternative 1 will be conducted in compliance with all applicable rules and regulations (e.g., Occupational Safety and Health Administration health and safety standards). The construction contractor would be required to prepare a Health and Safety Plan as part of their construction plan. This plan would include designs for standard safety measures to be implemented during construction, including the installation fencing and signage, lighting and security. These plans would be prepared in accordance with applicable federal, state, and local laws and regulations.

Furthermore, implementation of project-specific Spill Prevention, Countermeasures, and Control Plan or equivalent; BMPs; and the maintaining of spill kits onsite would minimize the potential for HAZMAT/HAZWASTE exposure throughout the duration of construction.

Operation and Maintenance

Post-construction site operations would include use of the power plant's natural gas, electrical, water, and mechanical systems; occupation and use of a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions; and maintenance and repair. All facility operation and support activities, including health and safety training, will be managed in accordance with applicable federal, Marine Corps, and Base regulations.

The private partner will be responsible for lowering the potential health and safety risks associated with this alternative through the use of fire suppression systems, lock-out-tag-out procedures, emergency and spill response plans, proper employee training and personal protection equipment (e.g., hearing and electric shock protection), and other methods.

Access roads would be maintained as needed, and ground cover and other vegetation within and near the facilities would be trimmed periodically. Vegetation and pests will also be controlled with herbicides or pesticides to ensure that they do not unduly infringe/compromise the safety of the developed area. Additional information about herbicide and pesticide use on MCB Camp Pendleton is provided in Section 3.6.3.

Decommissioning

Decommissioning activities of the Stuart Mesa and Haybarn Sites would be similar to those of the construction phase, only removing structures and support facilities instead of erecting them. The private partner will be responsible for facility deconstruction and waste disposal. Implementation of a project-specific deconstruction plan and the use of BMPs would minimize the potential for deconstruction site dust, dirt, solid waste, and HAZWASTE exposure throughout the duration of the deconstruction.

Summary

Under Alternative 1, health and safety concerns would exist during construction, operation and maintenance, and decommissioning of battery energy storage systems at the Stuart Mesa Site and a natural gas power plant at the Haybarn Site, and associated utility infrastructure improvements. However, the procedures, activities and materials would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base plans, and MCO. The project would comply with the Construction General Permit and a project-specific plan would be prepared and implemented along with the use of standard BMPs. The BMPs would be implemented to minimize unwanted runoff from construction activities and prevent potential exposure to HAZWASTE. No unmitigable health and safety hazards will be created by the implementation of this project. Alternative 1 activities would not occur in an area of known existing health and safety hazards, so no significant health and safety impacts from Alternative 1 would be expected.

3.8.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

<u>Construction</u>

Construction activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. Implementation of project-specific construction SWPPP; Spill Prevention, Countermeasures, and Control Plan or equivalent; BMPs; and the maintaining of spill kits onsite would minimize the potential for health and safety issues throughout the duration of the project. Therefore, substantial health and safety impacts from construction activities are unlikely.

<u>Operation and Maintenance</u>

Operation and maintenance activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. All facility operation and support activities, including health and safety training, will be managed in accordance with applicable federal, Marine Corps, and Base regulations. Therefore, substantial health and safety impacts from operation and maintenance activities are unlikely.

<u>Decommissioning</u>

Decommissioning activities within the proposed project sites for Alternative 2 would be similar to those for Alternative 1. Implementation of project-specific deconstruction plan and BMPs would minimize the potential for deconstruction site dust, dirt, solid waste, and exposure to HAZWASTE throughout the duration of the deconstruction. Therefore, substantial health and safety impacts from decommissioning activities are unlikely.

<u>Summary</u>

Under Alternative 2, health and safety concerns would be present during construction, operation and maintenance, and decommissioning of battery storage systems at the Stuart Mesa Site and a natural gas power plant at the Parking Lot Site, and associated utility infrastructure improvements. However, the procedures, activities and materials would be handled safely, appropriately, and in accordance with all applicable resource regulations, Base plans, and MCOs. The project would comply with the Construction General Permit and a project-specific plan would be prepared and implemented along with associated BMPs. The BMPs would be implemented to minimize unwanted runoff from construction activities and prevent transport of sediment, solid waste, or HAZWASTE exposure. Alternative 2 activities would not occur in an area of known open cleanup cases. Alternative 2 activities would occur closer to Vandegrift Road and its users than Alternative 1, bringing its security and incident exposure potential closer to the public, and the public closer to the facility itself than Alternative 1. Even so, no significant health and safety impacts are anticipated. No unmitigable health and safety hazards will be created by the implementation of this project. Alternative 2 activities would not occur in an area of known existing health and safety hazards and no significant health and safety impacts are expected with the implementation of Alternative 2.

3.8.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the PV facility and substation at the Stuart Mesa Site (Site A only). Under the No-Action Alternative, construction, operation and maintenance, and decommissioning activities would occur in support of the 2015 EA proposal. The No-Action Alternative would result in no significant health and safety impacts from construction, operation and maintenance, and decommission of the solar PV system.

3.9 UTILITIES AND INFRASTRUCTURE

3.9.1 Definition of Resource

This section focuses on utilities within the vicinity of the proposed project sites including; electric, natural gas, potable water, wastewater, and stormwater systems. As the Proposed Action involves the addition of battery energy storage systems at the Stuart Mesa Site; the construction, operation, and decommissioning of a natural gas power plant; and new and upgraded electric and natural gas utility connections to these facilities, this section primarily focuses on the electricity and natural gas utilities and infrastructure related to energy generation and transmission but also considers potable water and wastewater (i.e., sanitary sewer). Solid waste disposal is addressed in Section 3.8, Hazardous Materials, and stormwater infrastructure is addressed separately in Section 3.10, Water Resources.

SDG&E provides most of the electricity and all of the natural gas to MCB Camp Pendleton. SDG&E owns and maintains most of the electric transmission, power and distribution lines and related infrastructure within the installation boundaries, but MCB Camp Pendleton also has many of their own electric transmission, power and distribution lines. SDG&E currently provides power to MCB Camp Pendleton through a 69 kV substation (SDG&E Pendleton Substation) located Haybarn Road near the junction of Basilone Road and Vandegrift Boulevard, and through other 69 kV substations such as the Stuart Mesa Substation, with radial feeds to different areas of the Base. In addition, SDG&E holds more than 1,300 acres (526 ha) of leases/right-of-way agreements within the Base for transmission lines and various associated facilities.

MCB Camp Pendleton's municipal and industrial water is pumped from on-Base wells. The potable water facilities within MCB Camp Pendleton are owned and operated by the Facilities Maintenance Department. The Base's potable water is locally produced from underground water aquifers located on Base and permitted by the State of California (MCB Camp Pendleton 2010). The San Diego County Water Authority provides water to the regional area.

3.9.2 Affected Environment

The affected environment of this project includes the Stuart Mesa Site, either the Haybarn Site or the Parking Lot Site, as well as the route of the potential 69 kV power line connecting the Stuart Mesa solar

PV and battery energy storage systems to the SDG&E Stuart Mesa Substation, and the area along Rattlesnake Canyon Road and Vandegrift Boulevard for utility upgrades, as described in Section 1.3 of this SEA. The following discussions provide a description of the existing conditions for each of the categories under infrastructure at MCB Camp Pendleton: electricity, natural gas, potable water, and wastewater.

3.9.2.1 Electricity

The Proposed Action includes the addition of new electricity supply and battery energy storage systems that would require tie in to existing electrical transmission and distribution networks directly through the SDG&E Stuart Mesa (potentially) and Pendleton Substations. MCB Camp Pendleton's electrical transmission network would be upgraded and new power lines added potentially to the SDG&E Stuart Mesa Substation and to the SDG&E Pendleton Substation. Specifically, a new 69 kV overhead or underground power line from the Stuart Mesa Site would be connected to the SDG&E Stuart Mesa Substation and the substation expanded to accommodate the increased load if a new substation is not constructed at the Stuart Mesa Site. A new overhead 69 kV power line would be constructed to connect the natural gas power plant to the SDG&E Pendleton Substation, while connection to the MCB Camp Pendleton MS1 metering station would be via a 12 kV switching/metering station and an underground power line.

3.9.2.2 Natural Gas

The Proposed Action includes the addition of a natural gas power plant that will be connected to the existing SDG&E gas line at the 16th Street Rattlesnake Metering Station. A new up to 10-inch underground steel high pressure gas pipeline will be constructed and placed in the right of ways of Vandegrift Boulevard and Rattlesnake Canyon Road to facilitate SDG&E supply to the power plant. The gas pipeline will be placed in a trench at least 4.5 feet (1.4 meters) deep per UFC codes.

3.9.2.3 Potable Water

The Proposed Action involves the installation of battery energy storage systems at the Stuart Mesa Site and construction and operation of a natural gas power plant at either the Haybarn or Parking Lot Site. The water use for the Stuart Mesa Site is related to the two 5,000-gallon water tanks used to supply the solar PV panel cleaning activities and washing area for personnel. There would be no connections to MCB Camp Pendleton's potable water system at the Stuart Mesa Site. At the natural gas power plant site, there would be use of MCB Camp Pendleton's potable water system for evaporative cooling of the turbines and the power plant personnel. The annual water consumption for operating an up to 49.9 MW natural gas power plant would be approximately 3,285,000 gallons per year, or approximately 10 acre-feet annually. This water consumption is less than 0.2 percent of MCB Camp Pendleton's average annual water use (6,398 acre-feet per year [MCB and MCAS Camp Pendleton 2018]). Water laterals would be relocated as part of road improvements to Haybarn Road.

3.9.2.4 Wastewater

There would be no connections to MCB Camp Pendleton's sanitary sewer system at the Stuart Mesa Site. The private partner would handle wastewater at the Stuart Mesa Site, by locating portable toilets and washing area onsite. At the natural gas power plant site, wastewater from the natural gas power plant processes and the restrooms would be routed to the MCB Camp Pendleton sanitary sewer system. Disposal of any industrial wastewater that was not approved by the Water Resource Division and/or did not meet the requirements set forth in the 2016 CPR would be transported for offsite treatment. Sewer laterals would be relocated as part of road improvements to Haybarn Road. Stormwater would be collected onsite in compliance with LID and other requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016) (see Section 3.10, Water Resources for more details).

3.9.3 Environmental Consequences

This section analyzes the magnitude of anticipated increases or decreases in public works infrastructure demands considering historic levels, existing management practices and storage capacity, and evaluates potential impacts to public works infrastructure associated with implementation of the alternatives. Impacts are evaluated by whether they would result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned.

The utilities that will be most affected by the Proposed Action are electricity, natural gas, potable water and wastewater related to the construction, operation and maintenance of the battery energy storage systems and the natural gas power plant. The Proposed Action affects utilities and infrastructure through the addition of electrical load to the system and the construction of new power lines. New power lines would be constructed connecting the battery energy storage systems to the SDG&E Stuart Mesa Substation (potentially) and the natural gas power plant to SDG&E Pendleton Substation and MS1 metering station. Additionally, the Proposed Action will affect natural gas utilities by directing an increased supply of natural gas to the Base, and infrastructure through the addition of a natural gas pipeline and compressor station.

3.9.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

<u>Construction</u>

Electricity

For Alternative 1, the construction activities at the Stuart Mesa Site would include either constructing a new loop in, loop out substation at the Stuart Mesa Site or expanding the existing SDG&E Stuart Mesa Substation to include a new bay to accommodate the additional load from the solar PV system and/or battery energy storage systems. The energy generated from the solar PV system and stored in the battery energy storage systems would potentially connect to a switchyard located within the Stuart Mesa Site that would aggregate all the inverter alternating current 12.4 kV output, step up to 69 kV, and would either connect to a 'loop in, loop out' substation constructed by the private partner or feed through the existing SDG&E 69 kV overhead power line or through a new overhead or underground power line to a substation constructed by the private partner to the SDG&E Stuart Mesa Substation (see Figure 1-3). The loop in, loop out substation would be located within the project footprint and connect directly to the existing SDG&E 69 kV transmission lines overhead. All electrical cables along overhead and underground alignments would be located within existing Base right of ways. All underground cables would be placed in cable trays, in trenches at least 3 feet (1 meter) deep.

Preparation activities at the Haybarn Site would include relocating overhead electrical power/distribution lines, trenching for underground electrical lines and circuitry if required (at least 3 feet [1 meter] deep per UFC codes), and gas lines (at least 4.5 feet [1.4 meters] deep per UFC codes) that run through the site and proposed natural gas power plant footprint (see Figure 2-2a). An overhead power line would be constructed to connect the natural gas power plant to the SDG&E Pendleton Substation, and trenching (at least 3 feet [1 meter] deep per UFC codes) for underground electrical lines and circuitry to also connect the power plant to the main distribution buss for the base located in the MCB Camp Pendleton MS1 metering station. This would be accomplished by connecting a 12 kV switching/metering station, to be located within the natural gas power plant site.

These activities represent an upgrade and addition to electricity sources, transmission and distribution systems and would not result in the use or loss of a substantial proportion of remaining electrical system capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Natural Gas

The natural gas supply for the power plant would be provided by the existing 6-inch diameter SDG&E Line 49-102 located at the SDG&E metering station near the 16th Street and Rattlesnake Canyon Road intersection. A new up to 10-inch diameter steel high pressure gas tap line will be placed in a trench at least 4.5 feet (1.4 meter) deep in existing right of ways owned by MCB Camp Pendleton. The new gas pipeline will connect to a natural gas compressor station including custody transfer metering, pressure regulation and any necessary filtration, knockout drums (or vapor-liquid separators), etc. located at the natural gas power plant site. Under Alternative 1, the natural gas power plant would be located at the Haybarn Site, so the new gas pipeline would travel north up Rattlesnake Canyon Road to the intersection with Vandegrift Boulevard and then west down Vandegrift Boulevard to Haybarn Road where it would enter the site and terminate at the natural gas compressor station (refer to Figures 2-1 and 2-2b).

These activities represent an upgrade and addition to natural gas transmission and distribution systems on Base and would not result in the need for additional facilities and sources beyond those existing or currently planned. The natural gas power plant would be designed to adjust to the supply capacity of the current SDG&E system, while having the option to scale up as upgrades are made by SDG&E as would normally occur due to standard operations. Thus, the Proposed Action will not affect the ability of SDG&E to meet local or regional demand by using a significant portion of remaining capacity.

Potable Water

Potable water supply during construction for personnel use and wash water will be provided by the private partner. Water for dust abatement will be trucked in by the private partner. There will be no connection to MCB Camp Pendleton potable water system at the Stuart Mesa Site. Construction of Alternative 1 at the Haybarn Site will include the tie in to MCB Camp Pendleton water laterals at Vandegrift and Haybarn Road. Distribution to the natural gas power plant site will require relocation of water pipes on site according to the natural gas power plant design. This action will add to existing infrastructure but will not affect water supply and use at MCB Camp Pendleton. Water use during construction will not result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned (see Section 3.10, Water Resources for more detail).

Wastewater

Portable toilets will be provided for construction personnel by the private partner at both Stuart Mesa and Haybarn Sites. Construction of Alternative 1 at the Haybarn Site will include the tie in to MCB Camp Pendleton sewer laterals at Vandegrift and Haybarn Road. Distribution to the natural gas power plant site will require relocation of sanitary sewer pipes on site according to the natural gas power plant design. Runoff and wastewater will be collected and disposed of pursuant to the California Construction General Permit and the preparation and implementation of the SWPPP, which would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs (see Section 3.10, *Water*

Resources). Runoff and wastewater will not result in the use of a substantial proportion of the remaining sewer system capacity, reach or exceed the current capacity of the stormwater system, nor require development of facilities and sources beyond those existing or currently planned (see Section 3.10, *Water Resources* for more detail regarding stormwater).

<u>Operation</u>

Electricity

The Proposed Action would support the DoN goals to achieve energy islanding on MCB Camp Pendleton in the case of public grid failure, while directing energy to the public grid for sale most of the time. This increases resiliency by reducing uncertainty and risks associated with potential power outages on MCB Camp Pendleton. As a result of the Proposed Action the private partner would provide highly efficient power to the public grid. Alternative 1 would also include the addition of up to 200 MW of energy storage capacity. Assembly Bill 2514 set CPUC energy storage procurement targets at 1,325 MW for facilities to be constructed and brought into service by 2024, and renewable energy generators are now required to consider energy storage components in their planning. Meeting energy demand with renewable energy generation presents a technical challenge as well as a development challenge. Renewable energy generation such as the solar PV system at the Stuart Mesa Site, is inherently intermittent, and not able to ramp up or down to meet demand profiles. Because of this limitation, energy storage will play a key role in providing peak leveling services to renewable electricity producers (California Energy Commission 2018). In addition to providing new efficient power sources and energy storage, the Proposed Action would include upgrades and additions to the existing SDG&E and MCB Camp Pendleton transmission and distribution systems. The Proposed Action would thereby increase the capacity of SDG&E and MCB Camp Pendleton, and upgrade and expand the transmission and distribution networks. This will result in the expansion of system capacity and would not require development of facilities and sources beyond those existing or currently planned.

Natural Gas

These activities represent an upgrade and addition to natural gas transmission and distribution networks on MCB Camp Pendleton. However, the Proposed Action would utilize the existing SDG&E natural gas pipeline Line 49-102 near to its current capacity without requiring the development of facilities and sources beyond those existing or currently planned. This project may result in a higher draw on remaining system capacity, however SDG&E has confirmed that the Proposed Action would not limit their ability to carry out distribution activities in the area until such time that they routinely upgrade their distribution network (SDG&E 2019). These activities represent an upgrade and addition to natural gas distribution systems and would not result in the use or loss of a substantial proportion of remaining gas supply capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Potable Water

MCB Camp Pendleton does not currently rely on imported water to meet the Base's water requirements, and on average uses 6,398 acre-feet of water annually (MCB and MCAS Camp Pendleton 2018). There would be no connection to MCB Camp Pendleton potable water system at the Stuart Mesa Site. Two 5,000-gallon water tanks would be provided by the private partner to clean the solar PV panels and provide water for the washing area that would serve personnel needs on-site. The natural gas power plant maximum calculated annual water consumption for operating the natural gas power plant would be approximately 3,285,000 gallons per year, or approximately 10 acre-feet annually. This water consumption is less than 0.2

percent of MCB Camp Pendleton's average annual water use. These activities include some additional connections to the Base potable water system but would not result in the use or loss of a substantial proportion of remaining water supply, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Wastewater

The private partner would handle wastewater at the Stuart Mesa Site, by locating onsite portable toilets and washing area near a small portable trailer for staff. Disposal of wastewater would be carried out by the private sanitation services contractor as permitted. There would be no connections to MCB Camp Pendleton's sanitary sewer systems at the Stuart Mesa Site. Discharge from the industrial processes and restrooms at the natural gas power plant would be routed to the Base's sanitary sewer system by relocating laterals in Haybarn Road. Onsite drains from areas potentially contaminated with oil would be routed to an oil water separator. Water from the oil water separator and wash water from equipment washdown would be routed to the MCB Camp Pendleton sanitary sewer system. Disposal of any industrial wastewater that did not meet the requirements set forth in the 2016 CPR would be collected by tanker truck for offsite treatment. Stormwater would be collected onsite in compliance with LID and other requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016). These activities include some additional connections to the base industrial sewer system but would not result in the use or loss of a substantial proportion of remaining capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Decommissioning

One year prior to the conclusion of the agreement (37 years total), the private partner will be responsible for returning the site to its pre-project condition. During decommissioning, the private partner would most likely remove the above ground structures, restore topsoil, revegetate and seed the project site with a mix approved by Environmental Security. It is conceivable that some project components such as power lines and natural gas pipeline could be utilized by other future projects. Deconstruction activities would be similar to those of construction activities. Decommissioning activities would be as described in Section 2.3.1.4. Decommissioning activities would not result in the use or loss of a substantial proportion of remaining capacity of any of the utilities discussed herein, reach or exceed the current capacity of such systems, nor require development of facilities and sources beyond those existing or currently planned.

Summary

The Proposed Action would generate up to 49.9 MW of conventional power while providing 200 MW of energy storage. This would be a significant capacity upgrade and would alleviate demand on the public utility. This would also allow for Base operations to continue in the advent of a grid failure, enhancing the resiliency and contributing to the national defense. No new infrastructure or facilities and sources would be required beyond those existing or planned as part of the Proposed Action. Potable water and sanitary sewer use will not stretch the capacity of existing MCB Camp Pendleton systems (MCB and MCAS Camp Pendleton 2018). Overall, environmental consequences related to utilities and infrastructure resulting from implementation of Alternative 1 are expected to remain less than significant.

3.9.3.2 Alternative 2

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2, are similar as under Alternative 1. Under Alternative 2, a natural gas power plant would be constructed at the Parking Lot Site and related utility connections would be installed or upgraded to support the natural gas power plant at that location (see Figures 2-3 and 2-4b). The overall impact to utility systems capacity and infrastructure is likely to be very similar.

Construction

Electricity

Preparation activities at the Stuart Mesa Site would not change from the activities analyzed under Alternative 1.

Construction activities for Alternative 2 related to electricity, transmission and distribution would be similar to those identified for Alternative 1, only some would occur at the Parking Lot Site instead of at the Haybarn Site. This option would involve the construction of an overhead or underground power line that would run along Vandegrift Boulevard and Haybarn Road from the Parking Lot Site to the SDG&E Pendleton Substation. Therefore, Alternative 2 involves slightly more electrical transmission infrastructure changes and additions compared to Alternative 1, which collocates the natural gas power plant with the SDG&E Pendleton Substation and MS1 metering station.

In addition to the new 69 kV line that would be needed to connect the Parking Lot Site to SDG&E Pendleton Substation, Alternative 2, would involve some of the same upgrades discussed under Alternative 1 such as, constructing a 12 kV switching/metering station at the Haybarn Site to connect to the SDG&E Pendleton Substation and adding circuitry to connect to the main distribution buss for the base located in the MCB Camp Pendleton MS1 metering station via an underground power line.

These activities represent an upgrade and addition to electricity sources, transmission and distribution and would not result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Natural Gas

Construction activities would be similar to those identified for Alternative 1, except that they would support the Parking Lot Site instead of the Haybarn Site. The construction of the up to 10-inch diameter steel natural gas pipeline would proceed north along Vandegrift Boulevard from the intersection with Rattlesnake Canyon Road, to the Parking Lot Site, instead of south towards the Haybarn Site. Alternative 2, would involve the same upgrades, with regards to natural gas and transmission, as discussed under Alternative 1 such as a compressor station at the project site. All pipelines would be placed in trenches that were at least 4.5 feet (1.4 meters) deep and located within the existing right of ways of MCB Camp Pendleton.

These activities represent an upgrade and addition to natural gas transmission and distribution systems on Base and would not result in the need for additional facilities and sources beyond those existing or currently planned. The natural gas power plant would be designed to adjust to the supply capacity of the current SDG&E system, while having the option to scale up as upgrades are made by SDG&E as would normally occur due to standard operations. Thus, the Proposed Action will not affect the ability of SDG&E to meet local or regional demand by using a significant portion of remaining capacity.

Potable Water

Potable water supply and use would be similar to that analyzed under Alternative 1. Alternative 2 would tap lateral connections to the Base potable water near the Parking Lot Site. Use levels would remain the same as those analyzed under Alternative 1, and water sources for the Stuart Mesa Site would remain the same. Distribution to the Parking Lot Site would require relocation of water pipes on site according to the natural gas power plant design. This action would add to existing infrastructure but would not affect potable water supply and use at MCB Camp Pendleton.

Water use during construction will not result in the use of a substantial proportion of the remaining system capacity, reach or exceed the current capacity of the system, or require development of facilities and sources beyond those existing or currently planned (see Section 3.10, Water Resources for more detail). This action will add to existing infrastructure but will not affect water supply and use at MCB Camp Pendleton.

Wastewater

Wastewater generation and discharge would be similar to that analyzed under Alternative 1. Alternative 2 would tap lateral connections to the Base sewer line near the Parking Lot Site. Distribution to the Parking Lot Site would require relocation of sewer pipes on site according to the natural gas power plant design. This action would add to existing infrastructure but would not affect wastewater system at MCB Camp Pendleton. Portable toilets will be provided for construction personnel by the private partner. Runoff and wastewater will be disposed of according to the SWPPP as discussed with Alternative 1. Runoff and wastewater will not result in the use of a substantial proportion of the remaining sewer system capacity, reach or exceed the current capacity of the stormwater system, nor require development of facilities and sources beyond those existing or currently planned (see Section 3.10, Water Resources for more detail).

<u>Operation</u>

Electricity

The potential impact of Alternative 2 during operations is the same as analyzed for Alternative 1. Both alternatives would support increased resiliency and provide highly efficient power to the public grid, while including up to 200 MW of energy storage capacity. In addition to providing new efficient power sources, the project would include upgrades and additions to the existing transmission and distribution systems. The Proposed Action thereby would increase system capacity of SDG&E, and upgrade and expand transmission and distribution networks. This will not require development of facilities and sources beyond those existing or currently planned.

Natural Gas

Activities associated with Alternative 2 represent an upgrade and addition to natural gas transmission and distribution networks on base. The Proposed Action would utilize the existing SDG&E natural gas pipeline Line 49-102 near to its current capacity without requiring the development of facilities and sources beyond those existing or currently planned. This project may result in a higher draw on remaining system capacity, however SDG&E has confirmed that the Proposed Action would not limit their ability to carry out distribution activities in the area until such time that they routinely upgrade their distribution network (SDG&E 2019). These activities represent an upgrade and addition to natural gas distribution systems and would not result in the use or loss of a substantial proportion of remaining gas supply capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Potable Water

Environmental consequences associated with potable water supply and use would be exactly the same as analyzed under Alternative 1.

These activities include some additional connections to the base water system but would not result in the use or loss of a substantial proportion of remaining water supply, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Wastewater

Environmental consequences of Alternative 2 related to wastewater would be the same as analyzed in Alternative 1.

These activities include some additional connections to the base industrial sewer system but would not result in the use or loss of a substantial proportion of remaining capacity, reach or exceed the current capacity of the system, nor require development of facilities and sources beyond those existing or currently planned.

Decommissioning

Environmental consequences for Alternative 2 related to decommissioning are similar to those analyzed under Alternative 1, except that they would occur at the Parking Lot instead of Haybarn Site. One year prior to the conclusion of the agreement (37 years total), the private partner will be responsible for returning the site to its pre-project condition. Deconstruction activities would be similar to those of construction activities. Decommissioning activities are described in Section 2.3.1.4. Decommissioning activities would not result in the use or loss of a substantial proportion of remaining capacity of any of the utilities discussed herein, reach or exceed the current capacity of such systems, nor require development of facilities and sources beyond those existing or currently planned.

Summary

The Proposed Action would generate up to 49.9 MW of conventional power, while providing 200 MW of energy storage. This would be a significant capacity upgrade and would alleviate demand on the public utility. This would also allow for Base operations to continue in the advent of a grid failure, enhancing the resiliency and contributing to the national defense. No new infrastructure or facilities and sources would be required beyond those existing or planned as part of the Proposed Action. Water and sewer use will not stretch the capacity of existing MCB Camp Pendleton systems (MCB and MCAS Camp Pendleton 2018). Therefore, environmental consequences related to the utilities and infrastructure resulting from the implementation of Alternative 2 are expected to remain less than significant.

3.9.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the PV facility and substation at the Stuart Mesa Site (Site A only).

No utilities and infrastructure would be directly affected by the No-Action Alternative. All activities associated with the No-Action Alternative have been previously analyzed in the 2015 EA. However, while the No-Action Alternative results in no additional use of utilities and infrastructures, it would also not lead to a decreased reliance and use of off-base electricity sources. Therefore, the implementation of the No-Action Alternative would have no significant impact to utilities and infrastructure.

3.10 WATER RESOURCES

3.10.1 Definition of Resource

Water resources include surface water hydrology, groundwater, and water quality. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Surface water also includes floodplains, which are relatively flat areas adjacent to rivers, streams, watercourses, bays, or other bodies of water subject to inundations during flood events. A 100-year floodplain is an area that is subject to a 1 percent chance of flooding in any particular year, or, on average, once every 100 years. Groundwater refers to water that is located below the ground surface in the soil or in pores and crevices in rock. Groundwater resides in aquifers, areas of mostly high porosity rock substrate where water can be stored within pore spaces. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. For the purposes of this analysis, freshwater quality is evaluated with respect to possible releases of hazardous material and erosion-induced sedimentation resulting from the action alternatives.

The Clean Water Act (CWA) of 1972 is the primary federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. Waters of the U.S. are regulated resources and are subject to federal authority under Section 404 of the CWA. Waters of the U.S. include navigable waters, tributary streams, wetlands, and various other water bodies that are deemed to have a significant nexus to a navigable water. Areas meeting the waters of the U.S. definition are under the jurisdiction of the U.S. Army Corps of Engineers.

Section 401 of the CWA requires any applicant for a federal license or permit that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification from the state in which the discharge originates or would originate. In California, the SWRCB and Regional Water Quality Control Boards are responsible for establishing the water quality standards (objectives) required by the CWA and regulating discharges to ensure dischargers meet water quality objectives. Projects that have a total area of 1 acre or more of soil disturbance, or are less than 1 acre but are part of a larger project (common plan of development) that is 1 acre or more must obtain coverage under the California Construction General Permit for stormwater, SWRCB Order No. 2009-0009-DWQ (NPDES No. CAS 000002), as amended in 2010 and 2012. As part of the permit application process, the project proponent shall prepare and submit a SWPPP to the SWRCB. Land disturbance includes, but is not limited to clearing, grading, grubbing, scarifying, excavation, demolition, stockpiling, trenching, laydown area and access road construction, and full pavement removal.

Stemming from the CWA, in October 2004, the DoD issued a UFC on LID (UFC 3-210-10). The DoD issued guidance on LID was later updated on 15 November 2010 and 01 July 2015 (DoD 2015). This is a stormwater management strategy designed to maintain the hydrologic functions of a site and mitigate the adverse impacts of stormwater runoff from DoD construction projects. All DoD construction projects are required to be compliant with these LID criteria. Following UFC 3-210-10, Section 438 of the Energy Independence and Security Act of 2007 (42 USC § 17094) has also been implemented by the DoD. This goes further with stricter stormwater runoff requirements for federal development projects. Section 438 requires federal agencies to develop facilities having a footprint that exceeds 5,000 square feet (465 square meters) in a manner that maintains or restores the pre-development site hydrology to the maximum extent technically feasible. Agencies can accomplish pre-development hydrology in two ways: (1) managing on-site the total volume of rainfall from the 95th percentile storm, or (2) managing on-site the total volume of rainfall based on a site-specific hydrologic analysis through various engineering techniques (e.g., detention basin or retention pond).

As required by EO 11988, *Floodplain Management*, federal agencies must take action to reduce the risk of flood loss and restore and preserve the values of floodplains. To minimize the risk of damage associated with these areas, EO 11988 was issued 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 wherever there is a practical alternative. EO 11988 outlines different requirements for federal projects located in 100-year and 500-year floodplains (i.e., that area which has a 1 percent or greater chance or 0.2 percent or greater chance, respectively, of flooding in any given year).

3.10.2 Affected Environment

3.10.2.1 Surface Water Hydrology

MCB Camp Pendleton is located within the maritime sub-climate of the prevailing California Mediterranean-type: characterized by mild winters, cool summers, infrequent rainfall, moderate daytime onshore winds, and frequent early-morning clouds that give way to afternoon sunshine.

Precipitation records dating back to 1876 at Lake O'Neill (less than 1 mile [1.6 km] from the proposed project area at the Parking Lot Site) reveal a long-term average of approximately 14 inches (36 cm) of precipitation per year, ranging between 4.51 to 38.23 inches (11.46 to 97.10 cm) (estimated) (MCB and MCAS Camp Pendleton 2018). January is usually the wettest month with an average of 2.78 inches (7.06 cm) of precipitation, while July is usually the driest month with an average of 0.03 inches (0.08 cm) of precipitation.

Natural mountain and watershed relief divides MCB Camp Pendleton into seven distinct watersheds; four are large enough to provide potable and irrigation water supplies to MCB Camp Pendleton: Santa Margarita, Las Flores, San Onofre, and San Mateo. The proposed project area of the Stuart Mesa Site overlays two watersheds, the Aliso and Santa Margarita, while the Haybarn Site and Parking Lot Site are located within the Santa Margarita watershed.

The Stuart Mesa Site is situated in between the floodplains of the SMR to the south and Cockleburr Creek to the North (Figure 3.10-1). Both the Haybarn Site and the Parking Lost Site are situated to the south of the SMR floodplain (Figure 3.10-2).

3.10.2.2 Groundwater

The principal source of drinking water for MCB Camp Pendleton is groundwater. MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four major surface drainage basins (Santa Margarita, San Onofre, Las Flores and San Mateo). The regional flow of groundwater is towards the southwest, from the slopes of the mountains towards the ocean. The groundwater basins are recharged by percolation from overlying rivers and streams. In addition, surface water from the SMR is diverted into percolation basins for recharge to the Santa Margarita aquifers and into Lake O'Neill for storage, release, and recharge. Overall, localized water tables can be expected at similar elevations to those of observed nearby flowing streams, or below the elevations of dry stream channels. MCB Camp Pendleton does not currently rely on imported water to meet the Base's water requirements, and on average uses 6,398 acre-feet of water annually (MCB and MCAS Camp Pendleton 2018).

3.10.2.3 Water Quality

Water quality has always been a high priority at MCB Camp Pendleton as nearly all of the drinking water consumed by the Base is drawn from existing groundwater resources within its boundaries through a system of wells, water mains, booster pumps, and storage reservoirs located in the Santa Margarita, Las Flores, San Onofre, and San Mateo watersheds. The quality of MCB Camp Pendleton's drinking water generally meets or exceeds State of California and federal health-related drinking water standards.

Upstream users greatly affect the water quality of surface waters on Base as MCB Camp Pendleton is the last water user on the extensive SMR system and San Mateo Creek. SMR nutrient levels, particularly nitrogen, have increased in recent years due to intensive agricultural use of fertilizers in the upper watersheds. In addition, dramatic expansion of residential, commercial, and industrial development during the past decade in the upper part of this drainage has produced more urban runoff and wastewater discharge (MCB and MCAS Camp Pendleton 2018).

The upper and lower portions of the SMR are CWA § 303(d) impaired water bodies for enterococcus, fecal coliform, phosphorus, toxicity, and total nitrogen due to urban/agricultural runoff, natural sources, and point source and nonpoint source pollution. The SMR flows into the Santa Margarita Estuary, which is 303(d) listed as impaired for eutrophic conditions likely caused by nonpoint source pollution, such as runoff from land that has higher nitrogen and phosphorous levels (SWRCB 2017).

In the lower SMR, turbidity and bacteria (fecal coliforms) are persistently above their respective benchmarks during wet weather conditions, and total suspended solids/total dissolved solids are persistently above their benchmark levels during dry weather conditions. The high turbidity within the SMR receiving waters, caused by high levels of total suspended solids/total dissolved solids, indicates that urban/agricultural runoff may be contributing to the receiving waters exceedances of water quality objectives (Weston 2009). Based on monitoring data from the lower portion of the SMR Watershed Management Area (Santa Margarita Hydrologic Unit), the primary land uses (military and open space/parks and recreation) have not been shown to contribute pollutants to receiving waters.

3.10.3 Environmental Consequences

Significant impacts to water resources would occur if the Proposed Action resulted in changes to water quality or supply, damage to unique hydrologic characteristics, increased public health hazards, or violations of established laws, regulations, or permit requirements.

3.10.3.1 Alternative 1

As discussed in Chapter 2, proposed actions to enhance the energy resiliency at MCB Camp Pendleton, under Alternative 1 include construction of battery energy storage systems at the Stuart Mesa Site, new substation at Stuart Mesa Site or upgrades to the SDG&E Stuart Mesa Substation, overhead power lines, underground natural gas and electrical lines, and a natural gas power plant at the Haybarn Site.

<u>Construction</u>

Surface Water

There are no jurisdictional wetlands or other waters of the U.S. within the proposed project area of Alternative 1 that would be subject to federal authority under Section 404 of the CWA (Figures 3.10-1 and 3.10-2). The Stuart Mesa Site and the Haybarn Site were surveyed by a biological survey team. The biological site survey team found no evidence of wetland hydrology and wetland vegetation that would necessitate a hydric soil analysis. Therefore, it was determined that no wetlands or jurisdictional waters occur within the project footprints and that there would be no direct impacts to such resources.

No portion of the Stuart Mesa Site occurs within the 100-year floodplain of any waterway. However, a small portion of the Haybarn Site and associated utility lines would be within the inundation area of the 100-year floodplain. Nevertheless, there are no structures planned within the floodplain area and existing surface topography would be restored following installation of the utility lines. Therefore, there would be no impact to floodplains and the project would be in compliance with EO 11988.

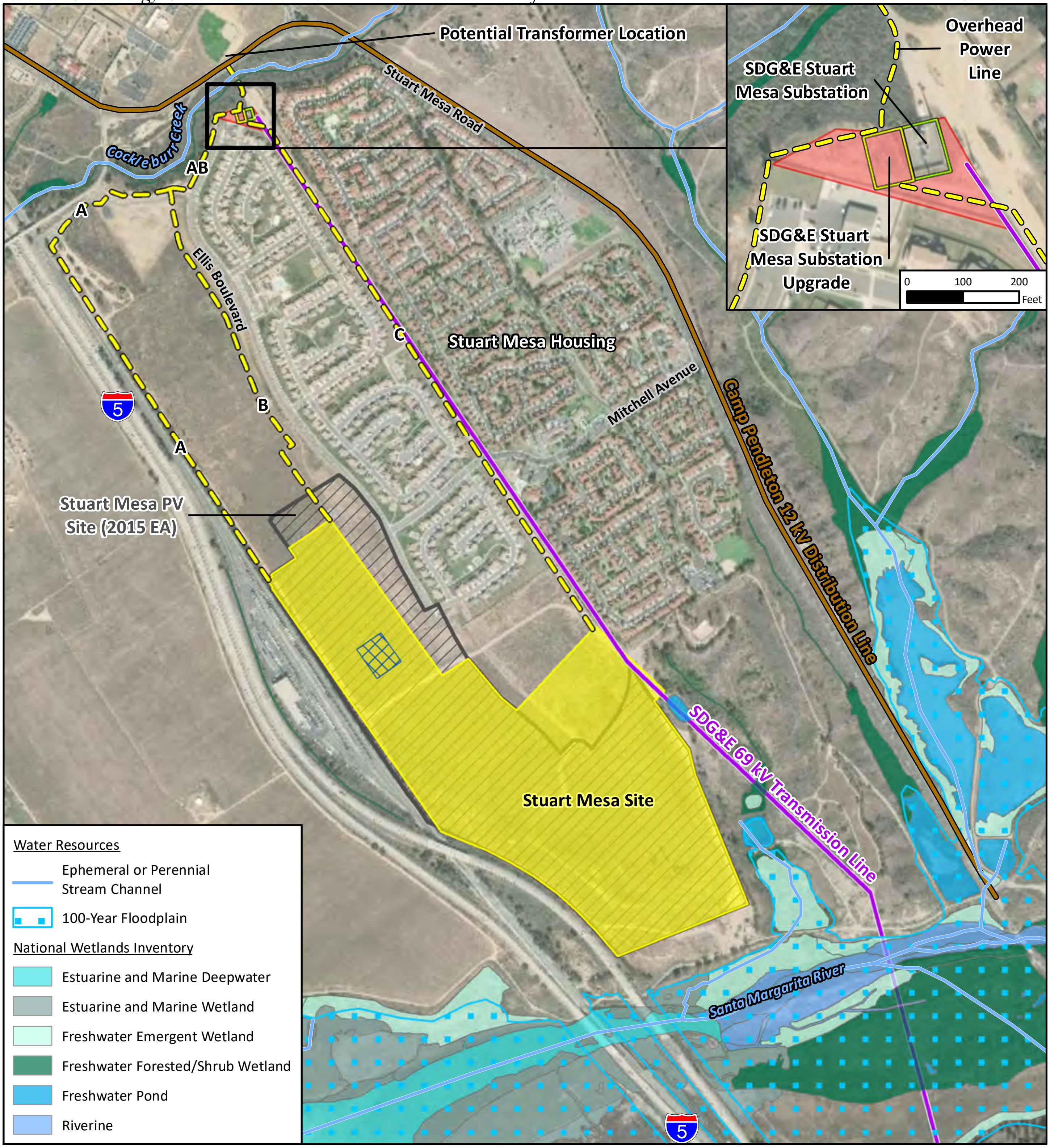
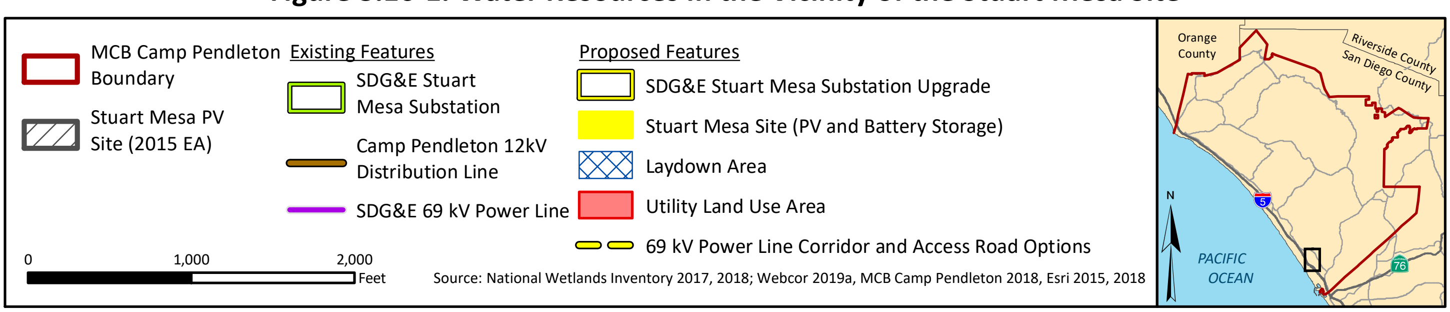


Figure 3.10-1. Water Resources in the Vicinity of the Stuart Mesa Site



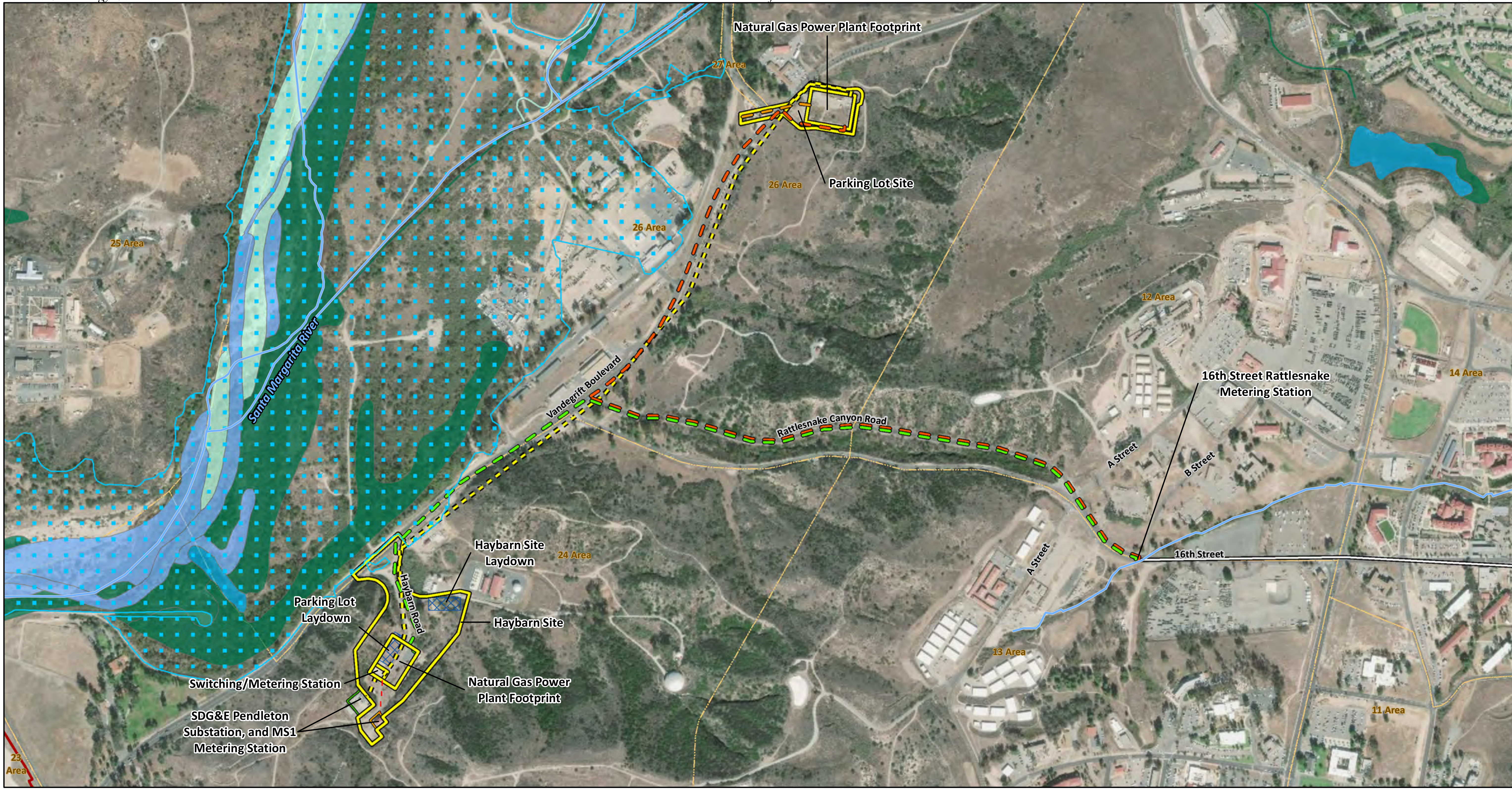
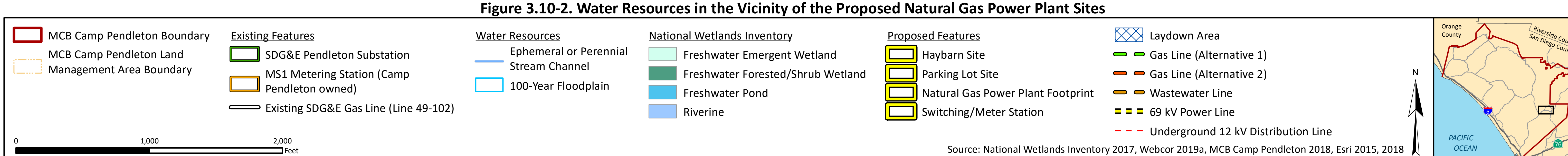


Figure 3.10-2. Water Resources in the Vicinity of the Proposed Natural Gas Power Plant Sites



Source: National Wetlands Inventory 2017, Webcor 2019a, MCB Camp Pendleton 2018, Esri 2015, 2018

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Groundwater

The battery energy storage systems at the Stuart Mesa Site would be placed on the ground; however, there is the potential for the 69 kV power line connecting the Stuart Mesa Site to the SDG&E Stuart Mesa Substation to be underground to a depth of at least 3 feet (1 meter) if the existing SDG&E Substation is utilized. Electrical lines and gas lines associated with the construction of the natural gas power plant at the Haybarn Site and along the utility corridor, would be placed at a depth of at least 3 feet (1 meter) and at least 4.5 feet (1.4 meters) per UFC codes, respectively. Construction activities associated with trenching and excavation for facility foundations (if required) would typically remain above the groundwater table. However, if groundwater is encountered, dewatering wells or sumps may be used to lower the water table a few feet below the impacted construction area. This lowering of the water table would be temporary and water levels affected by construction dewatering would return to normal levels when construction is completed. All dewatering discharges of groundwater would comply with avoidance and minimization measures provided Table 3-1. Therefore, no significant impacts to groundwater levels would occur during general construction activities for Alternative 1.

There are no proposed connections to MCB Camp Pendleton's potable water supply or sanitary sewer systems at the Stuart Mesa Site. Pumping of potable groundwater supplies for construction at the Stuart Mesa Site, Haybarn Site, and utility lines would not be required under the Proposed Action because water used during construction for dust control would be trucked in from an off-base source.

The natural gas power plant at the Haybarn Site requires connections to MCB Camp Pendleton's potable water supply and sanitary sewer systems for operational use. The potable water connection would be constructed in compliance with 2016 CPR (MCB Camp Pendleton 2016).

Water Quality

Grading activities and trenching for installation of electrical and gas lines, as described in Section 2.3.1.2, associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. If trenching associated with pipeline construction encounters groundwater in portions of the pipeline alignment, dewatering would be required. Dewatering activities would be temporary and localized, and the measures indicated in Table 3-1, would be followed, including the compliance with General Waste Discharge Requirements for Discharges from Groundwater Extraction, if necessary. Because the project would result in a total area of more than 1 acre or more of soil disturbance, the project must obtain coverage under the California Construction General Permit. Coverage under the California Construction General Permit would include the preparation and implementation of SWPPP. The SWPPP would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs. The standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.

Operation

Surface Water

New facilities that result in the increase in stormwater runoff have the potential to affect surface water quality. Construction of the solar PV system at the Stuart Mesa Site would minimally increase the amount of impervious surfaces. Although the PV solar panels would be impermeable, precipitation would flow off the PV solar panels onto permeable terrain surrounding the PV solar panels and concrete pad base. The runoff from panels would infiltrate and not create a channelized flow and therefore, contribute little additional runoff or impact to water quality. Other facilities constructed under Alternative 1, including new battery energy storage systems, a substation upgrade, and a natural gas power plant increase the amount of impervious surfaces in the project site and would therefore, contribute additional stormwater runoff and/or pollutants to surface waters. The additional stormwater generated from the natural gas power plant would be collected on-site, in the stormwater basin, in compliance with LID. In addition, all other new facilities associated with the Proposed Action on MCB Camp Pendleton would incorporate the concept of LID as described in Table 3-1. Therefore, increased stormwater runoff and associated water quality impacts would be minimized resulting in no significant impacts to surface water resources.

Groundwater

Water used for typical maintenance required at the Stuart Mesa Site, for PV solar panels and the battery energy storage systems would be trucked in from an off-base source and would have no impacts to groundwater resources. Although the PV solar panels would be impermeable, precipitation would flow off the panels onto permeable terrain surrounding the panels. The PV solar panels would only divert precipitation to adjacent ground surface and not prevent its infiltration and therefore, would have no significant impacts to groundwater resources.

The natural gas power plant at the Haybarn Site requires connections to MCB Camp Pendleton's potable water supply and sanitary sewer systems. Water for the facility would be provided through the existing MCB Camp Pendleton water supply on site, with a portion of the water demineralized for use. Typical maintenance would occur as needed. As described in Section 2.1.4, the annual water consumption for operating the natural gas power plant is 3,285,000 gallons per year, or approximately 10 acre-feet annually. This water consumption is less than 0.2 percent of MCB Camp Pendleton's average annual water use and would have negligible impact to the Base's potable water supply. Therefore, operation activities of the natural gas power plant would have no significant impact to groundwater resources.

Water Quality

Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up. All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. All maintenance of the battery energy storage systems would be done in accordance with BMPs.

Ground cover and other vegetation beneath and near the panels and battery energy storage systems at the Stuart Mesa Site would potentially be controlled with herbicides to ensure that vegetation does not obscure or shadow the panels. Ground cover and vegetation near the Haybarn Site would be trimmed periodically and would be potentially controlled with herbicides.

To prevent runoff into nearby watercourses, any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the Federal Insecticide, Fungicide, and Rodenticide Act labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's Integrated Pest Management Plan (NAVFAC SW 2017); and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by AC/S Facilities (phone: 760-763-5941). Additionally, no pesticides/herbicides will be applied directly to waters of the U.S.

Any return water from the evaporate cooling processes at the natural gas power plant, as described in Section 2.1.4, would be discharged into the wastewater system in compliance with discharge requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016). In addition, industrial wastewater discharges from the power plant operational process and restroom facilities required for manned operation would be connected to the Base's sanitary sewer system.

Onsite drains from potentially oil-contaminated areas would be routed to the oil water separator. The oil collected from the site would be transported offsite and properly disposed of. Water from the oil water separator would be routed to the Base's sanitary sewer system. Disposal of any industrial wastewater that does not meet the requirements set forth in the 2016 CPR would be collected for treatment offsite.

Therefore, operation activities under Alternative 1 would have no significant impact to water quality.

Decommissioning

Decommissioning activities would have similar impacts to water resources as construction activities. All decommissioning activities would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Therefore, decommissioning activities under Alternative 1 would have no significant impact to water resources.

Summary

As noted above, no surface waters or groundwater would be directly affected with implementation of Alternative 1. All activities associated with Alternative 1 that have the potential to impact offsite waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 1 would have no significant impact to water resources.

3.10.3.2 Alternative 2

As discussed in Chapter 2, the proposed actions to enhance the energy resiliency at MCB Camp Pendleton under Alternative 2 are the same as under Alternative 1, with the exception of the location of the natural gas power plant which would be constructed at the Parking Lot Site, the construction of the natural gas pipeline north to the site along Vandegrift Boulevard, vice south, and the construction of an overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation via a switching/metering yard at the Haybarn Site.

Construction

Impacts to water resources from construction activities under Alternative 2 would similar to those under Alternative 1, with the exception of the lesser amount of grading necessary at the Parking Lot Site as compared to the Haybarn Site. Construction at the Stuart Mesa Site would be the same as described under Alternative 1.

The Parking Lot Site has no surface water features. The Parking Lost Site was surveyed by a biological survey team. The biological site survey team found no evidence of wetland hydrology and wetland vegetation that would necessitate a hydric soil analysis. Therefore, it was determined that no wetlands or jurisdictional waters occur within the project footprints and that there would be no direct impacts to such resources. Additionally, the Parking Lot Site is not within a 100-year floodplain and as such, there would be no impact to floodplains and the project would be in compliance with EO 11988. As with Alternative 1, grading activities associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. However, through compliance with the California Construction General Permit, a SWPPP that would include standard erosion control measures and BMPs to reduce potential impacts resulting for erosion and stormwater runoff would be prepared and implemented under Alternative 2.

Operation

Impacts to water resources from operation activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, operation activities under Alternative 2 would have no significant impact to water resources.

Decommissioning

Impacts to water resources from decommissioning activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, decommissioning activities under Alternative 2 would have no significant impact to water resources.

Summary

No surface waters or groundwater would be directly affected with implementation of Alternative 2. All activities associated with Alternative 2 that have the potential to impact offsite waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 2 would have no significant impact to water resources.

3.10.3.3 No-Action Alternative

Under the No-Action Alternative, MCB Camp Pendleton would not enter into an agreement to install battery systems for energy storage or construct and operate a natural gas power plant. This No-Action Alternative is Alternative 1 from the 2015 EA and includes the construction of the PV facility and substation at the Stuart Mesa Site (Site A only).

No surface waters or groundwater would be directly affected by the No-Action Alternative. All activities associated with the No-Action Alternative that have the potential to impact offsite waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, the No-Action Alternative would have no significant impact to water resources.

CHAPTER 4
CUMULATIVE IMPACT ANALYSIS

4.1 INTRODUCTION

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)*

Cumulative effects are most likely to arise when a relationship exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

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 of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur. The scope must consider other projects that coincide with the location and timing of the Proposed Action and other actions, and the duration of potential effects on the environment. Section 4.2 identifies the projects considered in the cumulative analysis. Section 4.4 provides an analysis of potential cumulative impacts for each of the environmental resources discussed in this EA.

4.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

This section identifies past, present, and reasonably foreseeable future actions not related to the Proposed Action that have the potential to cumulatively impact the resources in the affected environment for MCB Camp Pendleton and the associated regionally affected area (Table 4-1). The geographic distribution, intensity, duration, and historical effects of similar activities were considered when determining whether a particular activity may contribute cumulatively to the impacts of the Proposed Action on the resources identified in this EA.

Table 4-1 Past, Present, and Foreseeable Actions

Project Title	***Project Description***	***Project Status***
Past Actions		
Santa Margarita River Flood Control Project (P-030)	Flood control project to protect MCAS/MCB Camp Pendleton assets located within the 100-year floodplain of the SMR. Construction included a levee and floodwall, stormwater management system, sediment control structures, and stormwater pump stations. The project Environmental Impact Statement (EIS) identified potentially significant impacts to biological resources.	The EIS was completed and the Record of Decision (ROD) was signed 8 February 1998. This project was constructed from 1998 to 2000.
Grow the Force	Marine Corps 202k Plus Up, also known as "Grow the Force" initiative of 2007 includes an increase of approximately 3,000 personnel at MCB Camp Pendleton and construction of temporary and permanent facilities. At present, the Grow the Force project includes approximately 60 construction projects at MCB Camp Pendleton.	An EA evaluating the potential impacts of 39 projects has been completed and the FONSI signed.
Box Canyon Solar Photovoltaic System	Box Canyon solar PV system was constructed on top of the Box Canyon landfill at MCB Camp Pendleton. It generates 3 MW of solar energy on a daily basis. The solar panels were attached to frames anchored by massive concrete blocks which are set in beds of gravel on the ground.	The PV system went into service in February 2011.
Basewide Utilities Infrastructure Improvements	Basewide upgrades and improvements to water, wastewater, electrical, communication, and natural gas systems at MCB Camp Pendleton to improve efficiency, reliability, compliance, and systems redundancy to support military training and operations and quality of life services. Improvements include a new tertiary wastewater treatment plant and associated facilities serving the northern portion of MCB Camp Pendleton; upgrades to the Base 69 kV electrical distribution systems, including replacement of existing 4.16 kV and 12 kV electrical distribution systems, new water and wastewater facilities, and road improvements to Range 130. The Basewide Utilities Infrastructure EIS prepared for the action identified no significant environmental impacts.	The EIS was completed and the ROD was signed on 23 September 2010.
Actions at MCAS Camp Pendleton	MCAS Camp Pendleton recently constructed a large maintenance hangar (P-111) with space for offices, engineering shops, operations, locker rooms, tool room, and a hangar bay. MV-22 Osprey tilt-rotor aircraft basing program, implemented at MCB Camp Pendleton to modernize the medium lift fleet, support I Marine Expeditionary Force, and improve operational capabilities for the Third and Fourth Marine Air Craft Wing squadrons.	The P-111 construction was completed in April of 2014. An EIS was completed for the MV-22 West Coast Program and a ROD was signed November 2009.
New Naval Hospital	A new Naval Hospital was constructed in the 20 Area, just north of the MCB Camp Pendleton Main Gate. The hospital is a four-story facility that provides emergency services, in-patient services, out-patient clinics, ancillary services, surgical services, logistics, and meets other medical needs.	An EA for this project was completed, and a FONSI was signed in January 2010. The new hospital was completed in January of 2014.
New Main Exchange and Service Mall	A new Main Exchange and Service Mall was constructed in the 20 Area, just north of the MCB Camp Pendleton Main Gate (north of the new Naval Hospital). The Exchange and Service Mall includes a large one story "big box" retail building and smaller buildings to support a variety of potential retail services and surface parking for approximately 580 vehicles.	An EA for this project was completed and a FONSI was signed in January 2010. The Main Exchange and Service Mall was completed in 2013.
Advanced Water Treatment Facility/Utility Corridor Project (P-113)	The goal of the P-113 project was to maximize wastewater reuse options on base and ensure compliance with Federal drinking water and wastewater standards. Upgrades were made to the existing Haybarn Canyon Drinking Water facility which also had positive impacts on the treated water stream.	Construction of the P-113 project began in 2011 and was completed in 2013.

Table 4-1 Past, Present, and Foreseeable Actions

Project Title	*Project Description*	*Project Status*
Las Pulgas Landfill Permit Update Request for Environmental Impact Review/Categorical Exclusion	A state-standard 5-year landfill permits update to review changes to landfill operations and determine if further environmental review of the site for continued use is required. Project review of ongoing construction of landfill gas collection and control systems; addition of contaminated soils and dead animals to the lined sections of the landfill; change of waste-to-soil ratios from 2:1 to 3:1; decrease in average daily tonnage accepted from 270 tons in 2010 to 135 tons in 2015; and the increase of site capacity used from 2.2 million cubic yards in 2010 to 5 million cubic yards in 2015. No changes were made to the landfill footprint.	A Categorical Exclusion was issued in June 2015.
MCB Camp Pendleton Military Family Housing Public-Private Venture (PPV-7)	A PPV Military Family Housing (PPV-7) development was completed on 132 acres to the west of the existing Stuart Mesa Housing complex. The project included 250 military family housing units, paving and site improvements, landscaping and irrigation, and access to the new housing area via a new two-lane road that extends from Cockleburr Canyon Road to Mitchel Boulevard.	The project was completed in 2017.
Marine Corps Tactical Systems Support Activity Cantonment Area Expansion (Ground/Air Task Oriented Radar [G/ATOR] P-541)	An EA was prepared for the expansion of the existing Marine Corps Tactical Systems Support Activity Cantonment Area by 31 acres and includes new radar antennae (temporary and permanent), a vehicle testing area, support facilities, and site improvements. The action area is located west of I-5 and south of the Marine Corps Tactical Systems Support Activity Center.	A FONSI was signed 12 September 2014.
MCB Camp Pendleton Military Family Housing Public-Private Venture	A PPV Military Family Housing (PPV-6) development was constructed on 77 acres to the west of the existing Stuart Mesa Housing complex. The project included 138 military family housing units, parking, and recreation.	NAVFAC SW completed an EA for the development and a FONSI was published in September 2009.
Present Actions		
Basewide Water Infrastructure Project	The project allows MCB Camp Pendleton to provide improved and compliant drinking water treatment capabilities, capacity, and redundancy, via more efficient water delivery in the northern region of the Base and throughout the Base during periods of scheduled, unscheduled, and emergency system interruption. The project accomplishes this purpose through two separate projects: 1) the northern Advanced Water Treatment plant and an effluent discharge system, and 2) connection of the MCB Camp Pendleton northern and southern water systems. A Basewide Water Infrastructure EIS identified significant impacts to biological resources and cultural resources; however, MCB Camp Pendleton was able avoid or minimize impacts on these resources to the maximum extent practicable during project design and construction.	An EIS was completed and the ROD was signed on 25 September 2012. While most of the construction and implementation has already been completed, some minor management, project support, and earth-moving elements of this project may still be ongoing.
Interstate 5 North Coast Corridor Project	I-5 North Coast Corridor Project improvements include one to two lanes in each direction. The main purpose of the project is to improve existing and future traffic on the I-5 north coast corridor so as to improve the regional movement of people and goods.	An Environment Impact Report (EIR)/ EIS was prepared and this project is under construction.
Marine Corps Forces Special Operations Command Expansion Project	Expansion of the existing Marine Corps Forces Special Operations Command complex in the Camp Las Flores 41 Area to meet basic operational, logistical, support, and academic requirements. The project includes several new facilities and the expansion of three existing facilities within the Marine Corps Forces Special Operations Command complex and adjacent to the 41 Area. The project would also	A FONSI was published in March of 2018 and construction is expected over a 10-year period.

Table 4-1 Past, Present, and Foreseeable Actions

Project Title	***Project Description***	***Project Status***
	include upgraded utilities, fencing, roads, sidewalks, and parking.	
Santa Margarita River Conjunctive Use Project	This project addresses conjunctive use of surface and groundwater in the Lower SMR Basin, address water rights permits issues, provide a physical solution to long-standing litigation, reduce dependence on imported water (primarily for the Fallbrook Public Utility District), maintain watershed resources, and improve water supply reliability by managing the yield of the Lower SMR Basin.	An EIR/EIS for this was completed in September of 2016. Project work, in particular by the Fallbrook Public Utility District, is ongoing.
Ammunition Supply Point Upgrade, Phase 2	Construction of nine low-rise, earth covered, above ground high explosive magazines with reinforced concrete walls, reinforced concrete and earth covered roof, and reinforced concrete foundation and floor slab to replace existing magazines and meet current needs. The project requires archaeological/cultural mitigation and monitoring, avian monitoring, and hazardous material abatement (lead paint in existing magazines). These projects would coordinate to reduce impacts and conflicts (i.e., scheduled use of common staging areas).	A Categorical Exclusion was issued in January 2016. Construction is estimated to end in 2020.
Connection of North and South Water Systems (P-1045)	P-1045 constructed approx. 90,000 linear feet of 36-inch potable waterlines to connect the north and south water systems of MCB Camp Pendleton. The water line began at the northern Advanced Water Treatment Facility (P-1044), extended past the San Onofre Nuclear Generating Station Mesa facility, and continued along the east side of I-5 before passing under San Onofre Creek. The line traveled south along Stuart Mesa Road, continued under the SMR, and connected to the southern water system at the intersection of Stuart Mesa Road and Vandegrift Boulevard. The project included approx. 7,000 linear feet of horizontal directional drilling beneath San Onofre Creek and the SMR. The project also included three pump stations at the north, central, and south portions of MCB Camp Pendleton to connect the Las Pulgas, Las Flores, and Stuart Mesa areas to the South Water System. This project was analyzed in the Basewide Water Infrastructure EIS.	An EIS was completed and a ROD was issued in 2012.
Reasonably Foreseeable Actions		
Basilone Road Realignment	This project would include the construction of up to 1.67 miles of roadway on a new alignment of Basilone Road between Horno Canyon Road and the 43 Area. The existing road segment would be abandoned-in-place. Two paved access roads totaling approximately 660 feet would be constructed to provide access to the Las Pulgas Landfill and Ammunition Supply Point.	The final Supplemental EA was submitted in January of 2019.
Levee Repair and Maintenance	This project would repair and maintain the flood control structure (i.e., levee, floodwall, and stormwater management system) that provides protection for MCAS Camp Pendleton, the Chappo Area, Sewage Treatment Plant 3, and the Santa Margarita Ranch House, all of which lay entirely within the 100-year floodplain of the SMR. The project includes physical repairs to the existing system, and long-term inspections and maintenance.	A preliminary final EA was submitted in July of 2019.
Marine Corps Air Station Clear Zone Maintenance	This project involves maintenance and management of vegetation southwest of the runway at MCAS Camp Pendleton to conform to the Primary Surface, Clear Zone, and Transition Zone safety requirements.	A Draft EA was submitted in November of 2019.

4.3 METHODOLOGY

4.3.1 Geographic Scope of the Cumulative Effects

For this analysis, a geographic scope (or 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 Action (either Alternative 1 or 2). However, if the Proposed Action is determined to have no direct or indirect effects on a resource, no future cumulative effects analysis is necessary.

4.3.2 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 IMPACT 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.

4.4.1 Air Quality

Implementation of the either Alternatives 1 or 2 or the No-Action Alternative would have no significant impact on criteria pollutant emissions. Emissions associated with the projects described in Section 4.2 cannot be evaluated quantitatively, as too little information is available about the project details and timeframes for that level of analysis. Based on the available information on these projects, it is unlikely that significant impacts to air quality, such as impedance of progress to achieve attainment for criteria pollutants, such as O_3 and PM_{10}, would result. It is more likely that the overall level of criteria pollutant emissions would increase, but at a level that would generate few impacts. Therefore, the Proposed Action is not anticipated to contribute to a cumulative impact to air quality in the SDAPCD.

Greenhouse Gases and Climate Change

In addition to the potential impacts of criteria pollutants, the analysis for air quality look at the potential GHG emissions associated with the Proposed Action. The most recent California Climate Change Scenarios Assessment predicts that temperatures in California could increase by approximately 2-4 degrees Celsius (medium emissions scenario) to 4-7 degrees Celsius (high emissions scenario) by 2100 (California Energy Commission 2018). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snowpack. In California, these effects include exacerbation of air quality problems, a reduction in municipal water supply, increased impacts from coastal flooding, an increase in the number and intensity of wildfires, and damage to marine and terrestrial ecosystems (California Energy Commission 2018).

For both alternatives, there are two possible types of natural gas plant designs that could be used. Of the two, combined cycle plants are the most efficient, producing 46 percent more energy per energy content of fuel consumed than a simple combustion turbine (Hajny et al 2019). As a result, simple cycle turbines generate significantly higher GHG emissions than combined cycle turbines.

Table 4.4-1 presents the estimated GHG emissions from the operation of a 49.9 MW natural gas power plant.

Table 4.4-1 GHG Emission Estimates for a 49.9 MW Natural Gas Power Plant at MCB Camp Pendleton (Tons/Year)

Emission Source	*CO_2e*
Natural Gas Power Plant	240,333

Note: F = Fahrenheit.
Source: Webcor 2019b, 2020.

Greenhouse gas emissions would increase by approximately 240,333 tons annually as a result of operating a natural gas power plant under either alternative. While Alternative 1 and 2 are generally similar, the primary difference, which could occur under either alternative, is the choice of power plant design.

While the GHG emissions generated by the Proposed Action alone would not cause global warming, in combination with past and future emissions from all other sources they would contribute incrementally to the global warming that produces the adverse effects of climate change.

4.4.2 Airspace/Air Traffic

The potential impacts to airspace from the Proposed Action would be due to the creation of an obstruction, power plant's exhaust stack(s), to aircraft navigation to and from MCAS Camp Pendleton. Existing terrain to the north, east, and southeast of the MCAS already conflict with existing imaginary surfaces and rise approximately 500 feet (152.4 meters) above the Runway 21 elevation. The proposed exhaust stack(s) would extend upward and exceed the sloped imaginary surface to the east of MCAS Camp Pendleton to 150 feet (45.7 meters) or less and could be located approximately 2,000 feet (609.6 meters) south of the primary approach path to Runway 21 if Alternative 1 is selected. The incursion of the exhaust stack(s) into approach path does not imply a significant impact, but rather the requirement to notify the FAA at least 45 days prior to the start of construction so that additional review by the FAA can be completed. Due to the existing terrain and local airspace conditions, the construction of an exhaust stack(s) at either proposed power plant location would not create significant additional impacts to airspace or aircraft navigation. Additionally, the exhaust stack(s) would exist within military controlled and restricted airspace so operation by civil aircraft is very limited. The USMC will file the applicable paperwork with the FAA and, should the FAA require it, mitigation such as high visibility painting or lighting will be added to the exhaust stack(s). If appropriate, the lighting would be compatible with night-vision devices.

In addition to the physical obstruction risk that the stack(s) would pose, the risk of exhaust plume to obscure a pilot's vision would be minimal because the exhaust gas humidity would not exceed 5 percent and the cooling tower(s) associated with the power plants would be the 'dry' type with no addition water added for cooling purposes.

The exhaust stack(s) plume poses a separate risk of creation of turbulent air that increases the risk of aircraft upset in the vicinity under certain weather conditions (cold temperature and no wind). As long as aircraft maintain lateral separation of a few hundred feet from the power plant stack(s), the risk to lower altitude aircraft would remain minimal.

Cumulatively, there are no known significant incursions to the MCAS Camp Pendleton airspace from other projects identified in the project list above. And the exhaust stack(s) from this project would not represent a significant incursion. There are no projects identified that would adversely impact the risk of exhaust gas to create a decrease in visibility for pilots or increase the risk of aircraft upset due to warm exhaust air mixing with ambient. Therefore, there would be no significant impact to airspace from implementation of Alternatives 1 or 2.

4.4.3 Biological Resources

Cumulative impacts to biological resources are not likely to occur with the implementation of the Proposed Action. All actions undertaken by MCB Camp Pendleton are required to adhere to the ESA, the Migratory Bird Treaty Act, as well as CWA Section 404/401 permit requirements where applicable. Section 7 ESA consultation is being or has been performed where required for each project, and cumulative impacts to federally listed species are addressed as part of that process and documented in appropriate BOs issued by the USFWS. Where appropriate, habitat that is suitable for federally listed species is mitigated for to minimize the likelihood of cumulative habitat loss for listed species. Under CWA Section 404/401, permitted impacts to wetland acreage and functions and water quality must be mitigated to avoid the situation where small incremental losses or degradation become significant. The impacts of the Proposed Action and those of other projects would be avoided, minimized, and/or compensated to the point that significant cumulative impacts to biological resources would not occur. Therefore, when added to the impacts from other potentially cumulative actions, implementation of the Proposed Action (Alternatives 1 and 2) would result in no significant cumulative impacts to biological resources.

4.4.4 Cultural Resources

Two archaeological sites, (CA-SDI-17912 and CA-SDI-12572) are located within the APE for Alternative 1. Both sites have been determined ineligible for inclusion in the NRHP. Therefore, disturbance of these sites would not result in an adverse effect to historic properties. As with Alternative 1, the same two archaeological sites are also within the APE for Alternative 2 (CA-SDI-17912 and CA-SDI-12572). All future projects listed above involving sites CA-SDI-17912 and CA-SDI-12572 will follow the PA (USMC 2014); therefore, there would be no cumulative impacts to these sites.

4.4.5 Geologic Resources

The proposed project construction, operation and maintenance, and decommission activities would not appreciably change the existing impacts to or from topography, geology, geologic hazards, and soils of existing conditions in the areas where the proposed project would be located. Therefore, and with the implementation of soil erosion programs and a project-specific SWPPP with associated BMPs, implementation of Alternative 1 or Alternative 2 would result in no significant impact to geological resources. The gas power plant and its conveyance lines have the potential to be affected by ground movement during an earthquake; however, the primary partner and permitting regulators will be responsible for ensuring that appropriate building codes and hazard prevention measures are incorporated into the design of the facility. Therefore, geologic hazards should not have a significant impact upon the proposed project. Since there are no significant impacts to or from geologic resources, the proposed project would not contribute to the cumulative impacts of the projects listed above.

4.4.6 Hazardous Materials and Waste

The Proposed Action would require HAZMAT presence and create HAZWASTE streams, in the form of natural gas, batteries and battery components, and oils and lubricants for operation and maintenance of the drive shafts and motors. Additional HAZMAT associated with operation would be the application of herbicides treatments, as necessary. There would also be temporary debris created at the site during construction and decommissioning activities that would be removed and disposed of upon completion. Additionally, there is a potential for impacts resulting from previous soil contamination at the Haybarn Site. Prior to initiating construction, a site investigation would be performed to determine if contamination is present at the site, and if so, the location and extent of that contamination. If present, contaminated areas would be evaluated to determine the potential for adverse impacts to public health and the environment. Identified cumulative projects would not impact or add to HAZMAT/HAZWASTE at the Proposed Action, nor would the Proposed Action impact HAZMAT/HAZWASTE at the identified cumulative projects. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1 and 2 would not result in significant cumulative HAZMAT/HAZWASTE impacts.

4.4.7 Noise

Construction noise generated by the Proposed Action in each of the locations discussed above would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Although the power plant site would create an ongoing source of noise, there are no nearby noise sensitive receptors (i.e., schools) existing in the vicinity and regular aircraft activity would continue to dominate. *(Note: Noise impacts to biological resources are discussed in Section 3.3, Biological Resources.)* Therefore, impacts to the noise environment from implementation of the alternatives would be negligible. None of the projects listed in the cumulative section project list above would have an additive affect to/upon the Proposed Action that would elevate the combined noise to a level of consequence. The dominant sound environments of MCB Camp Pendleton will still be aircraft, live fire, I-5 and Base-interior transportation corridors, machining, and other sounds of an active military complex. Therefore, the cumulative impacts to the noise environment are negligible.

4.4.8 Public Health and Safety

As described in Section 3.5.3, *Environmental Consequences*, construction of the Proposed Action would not result in significant impacts to the health and safety of military and civilian personnel on MCAS Camp Pendleton and MCB Camp Pendleton. All the other cumulative projects listed above would be required to comply with the same regulatory requirements to protect construction workers and the public and would employ similar BMPs to minimize risks to workers during construction. Once construction is complete, the Proposed Action would result in improved safety through energy self-reliance and would reduce the susceptibility of military and civilian personnel and assets on MCB Camp Pendleton to negative impacts from outside the Base. Therefore, when considered cumulatively with the other projects, implementation of the Proposed Action would result in no significant cumulative impact to public health and safety.

4.4.9 Utilities and Infrastructure

The Proposed Action would generate up to 49.9 MW of conventional power, while providing 200 MW of energy storage. This would be a significant capacity upgrade and would alleviate demand on the public utility. This would also allow for base operations to continue in the advent of a grid failure, enhancing the resiliency and contributing to the national defense. No new infrastructure or facilities and sources would be required beyond those existing or planned as part of the Proposed Action. Water and sewer use will not stretch the capacity of existing MCB Camp Pendleton systems. Therefore, environmental consequences related to the utilities and infrastructure resulting from the implementation of Alternatives 1 and 2 are expected to remain less than significant. Other projects would benefit from the energy source and resiliency that the proposed project will provide. Therefore, there would be a positive cumulative impact from the Proposed Action.

4.4.10 Water Resources

No surface waters or groundwater would be directly affected with implementation of Alternative 1 or Alternative 2. All activities associated with Alternatives 1 and 2 that have the potential to impact offsite waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. The annual water consumption for operating the natural gas power plant is 3,285,000 gallons per year, or approximately 10 acre-feet annually. This water consumption is less than 0.2 percent of MCB Camp Pendleton’s average annual water use and would have negligible impact to the Base’s potable water supply. Therefore, Alternatives 1 and 2 would have no significant impact to water resources. Cumulatively, the projects listed above would not combine to make a significant impact upon the Base’s water supply or wastewater infrastructure. Therefore, no significant cumulative impacts to water resources are expected.

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CHAPTER 5
OTHER NEPA CONSIDERATIONS

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

An assessment of the Proposed Action indicates that the two action alternatives (Alternative 1 and 2) would not conflict with the objectives of other regulations. A summary of regulatory compliance status is presented in Table 5-1.

Table 5-1 Summary of Applicable Environmental Regulations and Regulatory Compliance

Plans, Policies, and Controls	*Responsible Agency*	*Compliance Status*	*EA Section*
NEPA	DoN and USMC	This SEA has been prepared in accordance with NEPA, CEQ regulations implementing NEPA, DoN and USMC NEPA procedures.	Entire SEA
CAA, CAAQS, SDAPCD Rules and Regulations for Title V and non-Title V sources	USEPA and CARB	The air quality analysis in this SEA concludes that proposed emissions under Alternatives 1 and 2: (1) would not exceed *de minimis* levels, (2) would not create a major regional source of air pollutants or affect the current attainment status at MCB Camp Pendleton (to be determined), and (3) would comply with all applicable state and regional air agency rules, regulations and permitting requirements.	3.1, 4.4.1
EO 12898, Environmental Justice	DoN and USMC	Based on the analysis in this SEA, DoN and USMC conclude that Alternatives 1 or 2 would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	1.5.1.2
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	DoN and USMC	Based on the analysis in this SEA, DoN and USMC conclude that Alternatives 1 or 2 would not result in environmental health risks and safety risks that may disproportionately affect children.	1.5.1.2
NHPA	SHPO	None of the archaeological sites within the Project Area are eligible for listing under the NRHP.	3.4, 4.4.4
CWA	USEPA, USACE, and California SWRCB	The Proposed Action would be implemented in compliance with California's General Construction Permit. Proposed construction and decommissioning activities would require preparation of a SWPPP and use of BMPs to limit potential erosion and runoff.	3.10, 4.4.10
ESA	USFWS	Alternatives 1 and 2 would not significantly impact ESA-listed species or suitable habitat for ESA-listed species at MCB Camp Pendleton.	3.3, 4.4.3
Migratory Bird Treaty Act	USFWS	The Proposed Action would not increase impacts to migratory birds.	3.3

Legend: CAA = Clean Air Act; CAAQS = California Ambient Air Quality Standards; CARB = California Air Resources Board; CWA = Clean Water Act; DoN = Department of the Navy; EO = Executive Order; ESA = Endangered Species Act; NEPA = National Environmental Policy Act; SDAPCD = San Diego County Air Pollution Control District; SHPO = State Historic Preservation Office; SWRCB = State Water Resources Control Board; USACE = U.S. Army Corps of Engineers; USMC = U.S. Marine Corps; USEPA = U.S. Environmental Protection Agency; USFWS = U.S. Fish and Wildlife Service.

5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED

Energy demands would primarily occur during the construction/decommissioning phases of the project. The energy demands for the implementation of Alternative 1 and Alternative 2, would be relatively the same.

Construction/decommissioning activities would consume large volumes of nonrenewable fossil fuel, in the form of diesel or gasoline, for the operation of construction equipment. One of the primary opportunities for conservation of fuel is the regular maintenance of vehicles and equipment to maximize their fuel efficiency. All equipment would be in proper working order. Equipment would not be allowed to idle when not in service, as is required for minimizing air quality impacts. In addition, all equipment would be shut down when not in operation for any extended periods of time.

Maintenance activities would require a small number of vehicles. In addition to the conservation options described above, fuel consumption could be further reduced by using a fuel efficient vehicle fleet and limiting the use of less efficient vehicles and equipment to when they are required by the situation.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "…any irreversible or irretrievable commitments of resources that would be involved if the proposed action is implemented." The term "resources" (both renewable and nonrenewable) means the natural and cultural resources committed to, or lost by, the action, as well as labor, funds, and materials committed to the action.

The permanent use and subsequent loss of nonrenewable resources, such as oil, natural gas, and iron ore, are considered irreversible because nonrenewable resources cannot be replenished by natural means. An action that causes a loss in the value of an affected resource, which cannot be restored (e.g., disturbance of a cultural site), is considered an irretrievable commitment of resources. Similarly, the consumption of a renewable resource that would be lost for a period of time is also considered an irretrievable commitment of resources. Renewable natural resources include water, lumber, and soil, all of which can be replenished by natural means within a reasonable timeframe. Alternatives 1 and 2 would require the irretrievable commitments of both nonrenewable and renewable resources in the use of fuel, construction materials, and labor. The operation and maintenance of the solar PV system would require fuel and certain types of materials.

The Proposed Action would comply with EO 13834, *Efficient Federal Operations*. EO 13834 superseded EO 13693, *Planning for Federal Sustainability in the Next Decade*, EO 13423*, Strengthening Federal Environmental, Energy, and Transportation Management*, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. The goal of EO 13834 is to meet statutory requirements related to energy and environmental performance of executive departments and agencies (agencies), including with respect to facilities, vehicles, and overall operations in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment (Federal Register 2018).

Alternative 1 would require the least amount of construction materials and energy, as it has the smallest footprint. Alternative 2 would require slightly more construction materials and energy relative to its individual footprint. The total amount of construction materials (e.g., concrete, insulation, wiring) required for the Proposed Action is relatively small when compared to the resources available in the region. The construction materials and energy required for facility development and operations are not in short supply.

Moreover, the use of construction materials and energy would not have an adverse impact on the continued availability of these resources. The commitment of energy resources to implement the Proposed Action is not anticipated to be excessive in terms of region-wide usage.

5.4 Relationship Between Short-Term Environmental Impacts and Long-Term Productivity

Short-term uses of the environment associated with the Proposed Action would include the elimination of vegetative ground cover at the project sites. Project-related construction activities would temporarily increase air pollution emissions in the immediate vicinity of the affected area(s). Sustainability principles would be incorporated into building design and practices in accordance with NAVFAC Instruction 9830.1, Sustainable Development Policy (DoN 2003).

As discussed in Chapter 3, the action alternatives would result in both short- and long-term environmental effects. Incorporation of the battery energy storage systems and construction, operation, and decommissioning of the natural gas power plant is unlikely to result in the types of impacts that would reduce environmental productivity, have long-term impacts on sustainability, affect biodiversity, or narrow the range of long-term beneficial uses of the environment.

The Proposed Action has a defined lifecycle in which long-term, (i.e., more than 30 years post-implementation), the project area would be returned to existing conditions and functioning with minimal net change from the pre-project environment. In the interim, however, biotic productivity within the affected sites would be eliminated, while renewable energy benefits would be realized.

5.5 Any Probable Adverse Environmental Effects That Cannot Be Avoided and Are Not Amenable To Mitigation

No resource area would be subject to significant adverse impacts that would require mitigation. Table 3-1 presents the identified resource area avoidance/minimization measures for the alternatives. No adverse environmental effects would occur.

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CHAPTER 6
LIST OF AGENCIES AND PERSONS CONTACTED

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CHAPTER 8
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APPENDIX A
FINAL ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS BASE CAMP PENDLETON

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Final

Environmental Assessment for Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California

November 2015

Prepared for:
United States Department of the Navy and United States Marine Corps

MARINE CORPS BASE
CAMP PENDLETON

Final
Environmental Assessment
Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California

Lead Agency for the Environmental Assessment:	Marine Corps Installations Command
Title of Proposed Action:	Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California
Affected Region:	San Diego County, California
Designation:	Environmental Assessment

Abstract

The United States Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 and other applicable laws. This EA analyzes the potential environmental impacts resulting from the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base Camp Pendleton, California.

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. The EA analyzes three action alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative. This EA includes a detailed analysis of the Proposed Action's potential environmental consequences on the following resources: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities.

Prepared By: United States Department of the Navy

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San Diego, California 92132-5190

November 2015

DEPARTMENT OF DEFENSE
UNITED STATES MARINE CORPS

FINDING OF NO SIGNIFICANT IMPACT

FOR CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS BASE, CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA

Pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. §§ 4321-4370h); the Council on Environmental Quality Regulations implementing procedural provisions of NEPA (40 C.F.R. Parts 1500-1508); and the Marine Corps Environmental Compliance and Protection Manual (Marine Corps Order P5090.2A), the United States Marine Corps (USMC) gives notice that an Environmental Assessment (EA) was prepared and an Environmental Impact Statement (EIS) will not be prepared for the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base, Camp Pendleton (MCB CamPen) California. I find that the Selected Alternative, including adherence to the impact avoidance/minimization measures set forth in detail in the EA, will not have an adverse impact on the human environment. Therefore, an EIS is not required.

Proposed Action: The Navy and a private partner will enter into an agreement to allow the private partner to use Navy-owned land at MCB CamPen to construct, operate, and own a solar PV system. The partner will sell the generated power to regional customers including the Navy/USMC. The private partner will be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. At the end of the agreement, the solar PV system will be decommissioned and the site returned to its pre-project condition.

Purpose and Need: The purpose of the Proposed Action is to increase Navy and USMC installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at Navy/USMC installations by the construction and operation of a solar PV system at MCB CamPen. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt Initiative and Secretary of the Navy Energy Goals.

Alternatives Analyzed: The EA analyzes the potential effects of three action alternatives and the No Action relative to the Proposed Action:

- Alternative 1 (Preferred Alternative) up to 28 megawatts (MW) at Sites A and B, for 37 years (Model 2) on 194 acres (79 hectares [ha]);
- Alternative 2 up to 31 MW at Sites A, B, C, and D (either 37 years [Model 2] or 27 years [Model 3]) on 214 acres (87 ha);
- Alternative 3 up to 39 MW at Sites A, B, C, D, and E (either 37 years [Model 2] or 27 years [Model 3]) on 271 acres (110 ha); or
- No Action.

Other alternatives considered but not carried forward for full analysis for reasons set forth in the above referenced EA, include different renewable energy options (e.g., wind, biomass, tidal, geothermal) or a potential solar PV system site at Naval Weapons Station Seal Beach Detachment Fallbrook, which is adjacent to MCB CamPen.

Each of the three action alternatives would be implemented on a relatively flat, vacant land in the southwestern portion of MCB CamPen, between the Stuart Mesa Military Family Housing area and Interstate 5. One of the action alternatives (Alternative 3) also includes Site E, a vacant 57-acre site located immediately south of Vandegrift Boulevard and north of Rattlesnake Canyon Road. The No Action Alternative would have no effect on environmental resources, but would not fulfill the purpose of and need for the Proposed Action.

Selected Alternative: Based upon the analysis in the EA, I have selected Alternative 1 for implementation.

Summary of Environmental Effects: The EA analyzes the potential environmental impacts resulting from each of the action alternatives. The resources most likely to be affected by this action are biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Conversely, impacts to the following resources were considered to be negligible or non-existent and were not further analyzed in the EA: geological resources, noise, transportation, environmental justice, and safety and security.

The Selected Alternative will have negligible direct, indirect, or cumulative impacts on the quality of the local environment and will comply with all regulatory requirements. With incorporation of the impact avoidance/minimization measures, impacts to all resources will be less than significant with the Selected Alternative. Air quality impacts from the Selected Alternative will not exceed any conformity de minimis threshold for the San Diego Air Basin. A Record of Non-Applicability for Clean Air Act General Conformity requirements has been prepared and approved for this project. There are no significant cumulative effects associated with this project.

Findings: There will not be any disproportionately high and adverse human health or environmental effects from the Selected Alternative on minority or low-income populations. Nor will there be any impacts associated with the protection of children from environmental health and safety risks.

The EA and the Finding of No Significant Impact addressing this action are on file and may be reviewed at the place of origin: Commanding General, Attn: Director, Environmental Security, MCIWEST-MCB CAMPEN, Box 555008, Camp Pendleton, California 92055-5008, telephone (760) 725-4512.

EDBanta

10 DEC 2015
Date

Edward D. Banta
Brigadier General, U.S. Marine Corps
Commanding General
Marine Corps Installations West-Marine Corps Base, Camp Pendleton

EXECUTIVE SUMMARY

The United States Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 and other applicable laws. This EA presents an analysis of the potential environmental consequences of a Proposed Action pertaining to the construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, California.

This EA will assist Navy officials in making a decision about whether or not to implement the Proposed Action or another alternative. This document will also help determine whether significant impacts would occur as a result of implementation of the Proposed Action and alternatives, and therefore, whether an Environmental Impact Statement is needed. The Navy has developed three action alternatives: Alternative 1: Construction, Operation, and Decommissioning of an up to 28 megawatt (MW) Solar PV System at Sites A and B; Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D; and Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E.

The purpose of the Proposed Action 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 by the construction and operation of a solar PV system at MCB Camp Pendleton. The Proposed Action is required to meet the renewable energy standards put forth by the 1 Gigawatt (GW) Initiative and Secretary of the Navy's (SECNAV) Energy Goals.

The screening factors used to develop the reasonable range of alternatives include the following: (1) must not interfere with installation mission activities and operations or create unsafe conditions; (2) should contribute to the SECNAV's goal of obtaining 1 GW of renewable energy by the end of 2020 by providing a sufficiently sized parcel (or parcels) of land for solar PV system placement; and, (3) should provide a location and/or design capable of providing electricity at or below the current cost of traditional power.

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. At the end of the agreement, the solar PV system would be decommissioned and the site returned to its pre-project condition.

The following resource areas were evaluated for potential environmental consequences: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Table ES-1 summarizes the potential environmental consequences, as well as avoidance/minimization measures associated with implementation of Alternative 1, Alternative 2, Alternative 3, and the No-Action Alternative. As shown in Table ES-1, no significant impacts to any resource area would occur with implementation of Alternatives 1 and 2. A potentially significant impact could occur to hazardous materials and waste for Alternative 3 without prior closure of an inactive pistol range at Site E.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Biological				
Impact Summary	No Significant Impact Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell's vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell's vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.	No Significant Impact Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell's vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	No Significant Impact Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell's vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket	No Impact There would be no change in existing conditions; therefore, no impacts would occur.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
			mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	
Avoidance/ Minimization Measures	**Construction** • **BR-1.** To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites. • **BR-2.** To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements. • The following avoidance/minimization measures would be implemented to specifically avoid or minimize impacts to the coastal California gnatcatcher and the least Bell's vireo: ○ **BR-3.** A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell's vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell's vireo (i.e., at least one field season and 40	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **BR-7.** DCSS would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site. • **BR-8.** A live-trapping survey of both transmission line corridors for the Pacific pocket mouse would be performed in the portions of each corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following: • **BR-9.** It is expected that additional avoidance and minimization measures would be identified during formal consultation with the USFWS if Alternative 3 were to be selected.	No measures identified.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	hours of experience with each species). Three pre-activity surveys for active coastal California gnatcatcher and least Bell's vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell's vireos and to avoid redundant survey effort. ○ **BR-4.** Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell's vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell's vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-feet (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. **Operation** • **BR-5.** To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species			

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. • **BR-6.** Maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell's vireos and would report any observations of dead or injured California gnatcatchers and least Bell's vireos to Environmental Security within 48 hours.			
Hazardous Materials and Waste				
Impact Summary	No Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by RWQCB.	No Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance.	Potential Significant Impact Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance. Inactive Range 404 (at Site E) requires remediation and closure. Without remediation and closure, potential significant impact could occur. Supplemental NEPA would be needed to incorporate the closure.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **HW-1.** Construction BMPs and SWMP would be required. • **HW-2.** The SWPPP at Site A is currently undergoing a closure action and confirmation of closure should be requested prior to any ground disturbance.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **HW-3.** Wait for closure of IR Site 1120 at Site D.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following: • **HW-4.** Remediate and close inactive Range 404 at Site E.	No measures identified.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Water				
Impact Summary	<u>No Significant Impact</u> Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.	<u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	<u>No Significant Impact</u> Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	<u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **WR-1.** The project would obtain coverage under the California Construction General Permit. • **WR-2.** A SWPPP that would include standard erosion control measures to reduce potential impacts resulting from erosion would be prepared. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities. • **WR-3**. Projects on MCB Camp Pendleton with a footprint of 5,000 square feet or greater would implement Low Impact Development (LID) features in accordance with the *Department of Defense Unified Facilities Criteria Low Impact*	Same as Alternative 1.	Same as Alternative 1.	No measures identified.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	Development (Unified Facilities Criteria [UFC] 3-210-10) (2010) and Section 438 of the Energy Independence and Security Act (2007). A comprehensive set of stormwater planning, design, and construction elements would be used to maintain or restore predevelopment hydrology of the site with regard to volume, rate, and duration of flow, pollutant loading, and temperature for the 95th percentile, 24-hour storm. LID strategies are described in detail in UFC 3-210-10, Chapter 2. These strategies address the long-term post construction (operational) phase where ensuring water quality benefits are provided by low impact design, source controls, and treatment controls.			
Air Quality				
Impact Summary	<u>No Significant Impact</u> Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.	<u>No Significant Impact</u> Same as Alternative 1.	<u>No Significant Impact</u> Same as Alternative 1.	<u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **AQ-1.** Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. • **AQ-2.** Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.	Same as Alternative 1.	Same as Alternative 1.	No measures identified.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	• **AQ-3.** After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).			
Land Use and Military Operations				
Impact Summary	No Significant Impact Temporary change in land use from agricultural to renewable energy. The construction, operation, and decommissioning of the solar PV system on Sites A and B would be inconsistent with the Master Plan. Also, portions of Site A encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee. MCB Camp Pendleton is exempt from the Farmland Protection Policy Act, as the land would be used for national defense purposes.	No Significant Impact Potential impacts would be similar to those described for Alternative 1. Portions of Site A and the entirety of Site C encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee.	No significant impact Potential impacts would be similar to those described for Alternative 1. Alternative 3 would be inconsistent with planned future land uses. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **LU-1.** The MCB Camp Pendleton Master Plan would need to be amended during the next amendment cycle to alter the land use within the project area.	Same as Alternative 1.	Same as Alternative 1.	No measures identified.
Cultural				
Impact Summary	No Significant Impact The area has been previously surveyed for cultural resources. Site B would fall under the Programmatic Agreement (PA) signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence that would not fall under the PA.	No Significant Impact The area has been previously surveyed for cultural resources. Sites B and D would fall under the PA signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one ineligible archaeological site (CA-SDI-17912) and Site C has an archaeological site that is ineligible for NRHP listing (CA-SDI-12572). Sites A and C would not fall under the PA.	No Significant Impact Same as Alternative 2. Site E has been previously surveyed for cultural resources, none were found, and therefore Site E would fall under the PA. For Sites B, D, and E, Camp Pendleton Streamlined Section 106 Programmatic Agreement could be used to complete the Section 106 process.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Avoidance/ Minimization Measures	• **CR-1.** All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site (CA-SDI-17912) within the APE in Site A would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner. • **CR-2.** A monitoring and discovery plan would be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations. • **CR-3.** A report detailing the monitoring results would be provided to SHPO at the conclusion of excavations.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **CR-4.** All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site CA-SDI-1572) within the APE in Site C would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which would be funded by the private partner.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2.	No measures identified.
Visual				
Impact Summary	<u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.	<u>No Significant Impact</u> Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.	<u>No Significant Impact</u> Construction and operational visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E.	<u>No Impact</u> The existing visual environment would not change from current conditions.
Avoidance/ Minimization Measures	No measures identified.	No measures identified.	No measures identified.	No measures identified.

Table ES-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Utilities				
Impact Summary	No Significant Impact Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.	No Significant Impact Potential impacts would be similar to those described for Alternative 1. Under the Model 2 and combination Models 2 and 3 strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton.	No Significant Impact Potential impacts would be the same as those described for Alternative 2. A 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **UT-1.** A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A for conflict avoidance.	Same as Alternative 1.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **UT-2.** A utility investigation and survey would be conducted to obtain the exact depth and location of the natural gas line on Site E for conflict avoidance.	No measures identified.

Notes: APE = area of potential effects; AQ = Air Quality; BMPs = Best Management Practices; BR = Biological Resources; CR = Cultural Resources; DCSS = Diegan coastal sage scrub; GHG = Greenhouse Gas; I = Interstate; IR = Installation Restoration; LU = Land Use and Military Operations; NEPA = National Environmental Policy Act; PA= Programmatic Agreement; POLs = petroleum, oils, lubricants; SHPO = State Historic Preservation Office; SWPPP = Stormwater Pollution Prevention Plan; SWMP = Solid Waste Management Plan; RWQCB = Regional Water Quality Control Board; U.S. = United States; USFWS = U.S. Fish and Wildlife Service; UT = Utilities; WR = Water Resources.

Final
Environmental Assessment
Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton, California

Table of Contents

APPENDICES

List of Photos

List of Figures

List of Tables

Acronyms and Abbreviations

AAV Assault Amphibious Vehicle
AC alternating current
AC/S Assistant Chief of Staff
AGR Agriculture
APE area of potential effects

BMP best management practices
B.P. Before Present

CA California
CAA Clean Air Act
CAAQS California Ambient Air Quality Standards
CAISO California Independent System Operator
CARB California Air Resources Board
CCND Coastal Consistency Non-Determination
CDFW California Department of Fish and Wildlife
CEQ Council on Environmental Quality
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CFR Code of Federal Regulations
CH_4 methane
cm centimeter(s)
CO carbon monoxide
CO_2 carbon dioxide
CO_2e carbon dioxide equivalent
CPUC California Public Utilities Commission
CSS Combat Services Support
CWA Clean Water Act
CWRCB California Water Resources Control Board

DC direct current
DCSS Diegan coastal sage scrub
DERP Defense Environmental Restoration Program
DEV Urban/developed
DIST Disturbed
DoD Department of Defense
DTSC Department of Toxic Substances Control

EA Environmental Assessment
ECMS Communications/Electrical Maintenance Shop
EIS Environmental Impact Statement
EO Executive Order
ESA Endangered Species Act
ESQD Explosive Safety Quantity Distance
EUC Eucalyptus woodland

°F degrees Fahrenheit
FAA Federal Aviation Administration
FFA Federal Facilities Agreement
FIFRA Federal Insecticide, Fungicide, and Rodenticide Act
FONSI Finding of No Significant Impact
FPPA Farmland Protection Policy Act
FPUD Fallbrook Public Utility District
FUDS Formerly Used Defense Site(s)
FY fiscal year

G/ATOR Ground/Air Task Oriented Radar
GHG greenhouse gas
GIS geographic information system
GW gigawatt
GWP global warming potential

ha hectare
HAP hazardous air pollutant
HAZMAT Hazardous Materials
HAZWASTE Hazardous Waste
HWMP Hazardous Waste Management Plan

I Interstate
INPR Inventory Project Report
IR Installation Restoration
IRP Installation Restoration Program

km kilometer
kV kilovolt

LID Low Impact Development
LUST Leaking Underground Storage Tank

MARSOC Marine Corps Special Operations Command
MCAS Marine Corps Air Station
MCB Marine Corps Base
MCIWEST-MCB CAMPENO Marine Corps Installations West- MCB Camp Pendleton Order
MCTSSA Marine Corps Tactical Systems Support Activity
MRP Munitions Response Plan
MW megawatt

N_2O nitrous oxide
NAAQS National Ambient Air Quality Standard
NAVFAC SW Naval Facilities Engineering Command Southwest
Navy U.S. Department of the Navy
NCTD North County Transit District
NEPA National Environmental Policy Act
NHPA National Historic Preservation Act
NNG Non-native grassland
NO_2 nitrogen dioxide
NO_x nitrogen oxides
NREL National Renewable Energy Laboratory
NRHP National Register of Historic Places

O_3	ozone
PA	Programmatic Agreement
$PM_{2.5}$	suspended 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
POLs	petroleum, oils, lubricants
ppm	parts per million
PPV	public private venture
PV	photovoltaic
ROD	Record of Decision
ROI	region of influence
RWQCB	Regional Water Quality Control Board
SDAB	San Diego Air Basin
SDCAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric
SECNAV	Secretary of the Navy
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMEAF	Stuart Mesa East Agricultural Fields
SMR	Santa Margarita River
SO_2	sulfur dioxide
SOP	Standard Operating Procedures
SWMP	Solid Waste Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TSS	total suspended solids
$\mu g/m^3$	micrograms per cubic meter
UFC	Unified Facilities Criteria
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USMC	U.S. Marine Corps
UST	underground storage tank
VNG	Valley needlegrass grassland
VOC	volatile organic compounds
VORTAC	Very High Frequency Omni-directional Range Tactical Aircraft Control

CHAPTER 1
PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION/BACKGROUND

The United States (U.S.) Department of the Navy (Navy) and the U.S. Marine Corps (USMC) have prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 and other applicable laws. This EA analyzes the potential environmental impacts resulting from the construction, operation, and decommissioning of a proposed solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, California (CA). This project is one of several renewable energy projects the Navy is currently evaluating within the Renewable Energy Program Office's southwest area of responsibility. Marine Corps Installations Command is the action proponent for this project.

1.1.1 Secretary of the Navy Renewable Energy Goals and Strategies

1.1.1.1 Goals

In October 2009, the Secretary of the Navy (SECNAV) established renewable energy goals for the Navy's shore based installations to meet by 2020. These goals include:

- The Navy will produce or procure at least 50 percent of the total quantity of electric energy consumed by shore-based facilities and activities each fiscal year (FY) from alternative energy sources;
- Fifty percent of Navy installations will be net zero (i.e., over the course of a FY, an installation matches or exceeds the electrical energy it consumes ashore with electrical energy generated from alternative energy sources) (Navy 2012).

1.1.1.2 Strategies

The Navy's energy strategy is centered on energy efficiency, energy security, and sustainability while remaining the pre-eminent maritime power:

<u>Energy efficiency</u> increases mission effectiveness. Efficiency improvements minimize operational risks while saving time, money, and lives.

<u>Energy security</u> is critical to mission success. Energy security safeguards our energy infrastructure and shields the Navy from a volatile energy supply.

<u>Sustainable energy</u> efforts protect mission capabilities. Investment in environmentally responsible technologies reduces greenhouse gas (GHG) emissions and lessens dependence on fossil fuels (Navy 2014).

The SECNAV has established a goal for the Navy to develop one gigawatt (GW) of renewable energy generating capacity by the year 2020 (Navy 2012). The Navy has developed acquisition strategies based on the following three separate models (Figure 1-1) to procure or generate renewable energy to meet SECNAV's goals:

<u>Model 1: Off-base generation for on-base consumption:</u>

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

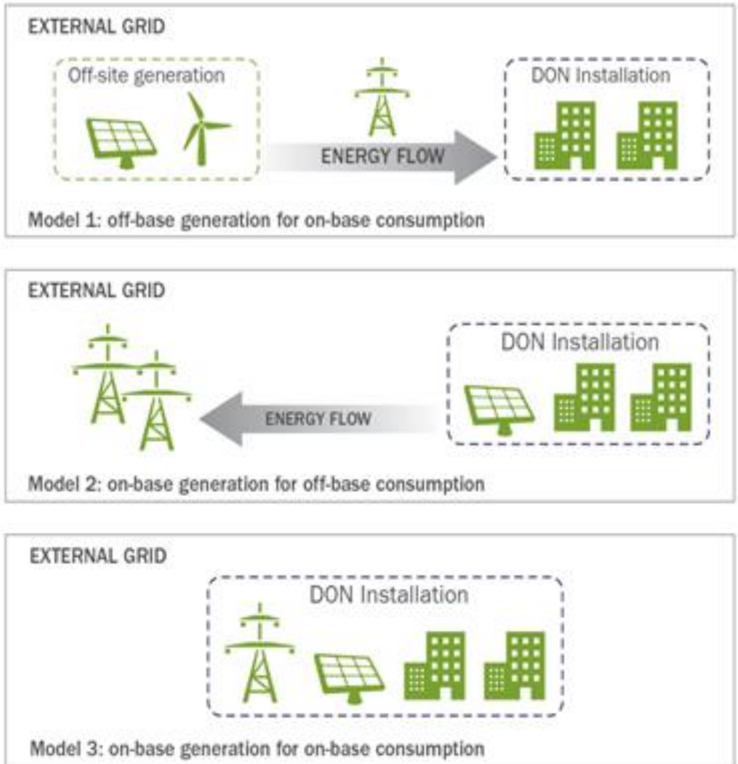

Figure 1-1 Renewable Energy Models

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

- Third party produces on Navy property and exports energy to grid (allows for much higher capacity of product vs 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
- Price stability and diversifies energy portfolio
- Acquisition: Power Purchase Agreement

The Navy proposes to implement either Model 2 or Model 3, or a combination of Models 2 and 3 at MCB Camp Pendleton to support achievement of the SECNAV's goals. Under Model 2, the Navy and a private partner would enter into a 37-year agreement to allow the private partner to use Navy land to construct, operate, and own the PV system. Once the system is operational, the private partner would sell the power to regional customers. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. Under Model 3, the Navy and a private partner would enter into a 27-year agreement to allow the private partner to use Navy land to generate power for the Navy's use at MCB Camp Pendleton. Under a combination of Models 2 and 3, the private partner would sell the power to regional customers and MCB Camp Pendleton.

1.1.2 Solar PV System

Solar PV technology uses solar cells to convert energy from direct and diffuse solar radiation into electricity. The basic unit in a PV system is a solar cell made up of semiconductor material that absorbs solar radiation and converts it to an electrical current. Solar cells are contained within solar modules that are assembled into solar panels. A series of panels comprises a solar array. Solar PV systems generate direct current (DC) electricity, which is converted to alternating current (AC) for transmission on the electrical grid and ultimate end-use in AC form. The conversion from DC to AC occurs at a power conditioning station that contains inverters. The power is transferred via a transmission line and substation to the nearest point of connection to the utility grid.

Solar PV systems are comprised of hundreds and sometimes thousands of individual solar PV panels. The vast majority of the solar PV market uses Flat Plate PV technology. In this design, the manufacturer arranges the cells on a flat panel, inserts the cells between a transparent encapsulant and a thin backing sheet of polymer, and then tops the cells with a layer of tempered glass that allows light to reach the PV cells. An anti-reflective coating covers this top layer so more light can be absorbed by each cell (Department of Energy 2011). Each panel can be stationary, or track the sun with either single-axis or multi-axis tracking equipment.

Photo 1 presents an existing solar PV system at MCB Camp Pendleton. This solar PV system covers approximately 6 acres (2.4 hectares [ha]) in Box Canyon and provides approximately 1.5 megawatts (MW) of power (MCB Camp Pendleton 2011a). Solar PV energy projects generally require about 8 to 10 acres (3.2 to 4 ha) of total land use to produce 1 MW of power, but can vary depending on the type of PV system, configuration, and solar radiation at individual sites (National Renewable Energy Laboratory [NREL] 2013). Given the relatively high solar radiation values and climate conditions at MCB Camp Pendleton, and the performance of the nearby Box Canyon solar PV system, it is assumed that it would take approximately 7 acres (2.8 ha) to generate 1 MW[1] of power at MCB Camp Pendleton.

Photo 1. Existing Solar PV System at MCB Camp Pendleton.

[1] The MW unit is not a quantity, but a rate. The electricity is produced at a rate measured in MWs, but the quantity of power produced is measured as a rate multiplied by a time period, usually in hour increments. For example, a 25 MW system could generate power at a rate of 25 MW for 8 hours and thus produce 200 MW hours of power. In our homes, we use/buy power in kilowatt hours (noted as kwh on our power bills) and power companies produce and transmit electricity in terms of MW hours.

1.2 PROJECT LOCATION

1.2.1 History and Mission of MCB Camp Pendleton

Established in 1942, MCB Camp Pendleton remains the USMC's largest west coast expeditionary training facility. MCB Camp Pendleton's principal mission is to operate a training base that promotes the combat readiness of the Operating Forces and the mission of other tenant commands by providing training opportunities, facilities, services and support responsive to the needs of Marines, Sailors and their families.

MCB Camp Pendleton is a 200-square mile (518-square kilometer [km]) area located 40 miles (64 km) north of the city of San Diego, within the northern portion of San Diego County (Figure 1-2). The Orange County line is contiguous with the northwest boundary of MCB Camp Pendleton; Riverside County is north of, but does not abut, the boundary of MCB Camp Pendleton. The city of San Clemente and the Cleveland National Forest border MCB Camp Pendleton to the north and east, with the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook to the east, and the city of Oceanside to the south.

1.2.2 Potential Solar PV Sites

The Navy and USMC have determined that up to 272 acres (110 ha) at MCB Camp Pendleton can potentially serve as areas for solar PV systems. The project area consists of the five potential solar PV sites. Four of the sites (Sites A, B, C, and D) and their supporting transmission infrastructure are referred to herein as the Stuart Mesa Sites because they are located on vacant land, formerly used for agricultural purposes, east of Interstate (I)-5 and adjacent to the existing Stuart Mesa Housing complex (Figure 1-3).

The fifth site (Site E), referred to as the 12 Area Site herein, is located in the eastern portion of MCB Camp Pendleton, immediately south of Vandegrift Boulevard and north of Rattlesnake Canyon Road. The site is vacant, with one building in the southeastern portion of the site (Figure 1-3).

Based on the potential power generated by acre as presented in Section 1.1.2, *Solar PV Systems*, Table 1-1 presents the approximate maximum MW power production capability for each site.

Table 1-1. Potential Solar PV Development Sites and Generating Potential

Site	Potential Solar PV Site *acres (hectares)*	Generating Potential[1] (MW)
Stuart Mesa Site A	139 (56)	20
Stuart Mesa Site B	55 (22)	8
Stuart Mesa Site C	6 (2.4)	1
Stuart Mesa Site D	14 (5.6)	2
12 Area Site E	57 (23)	8

Note: [1]Assumes approximately 7 acres (2.8 ha) are needed to generate one MW of power.

1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action 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 by the construction and operation of a solar PV system at MCB Camp Pendleton. The Proposed Action is required to meet the renewable energy standards put forth by the 1 GW Initiative and the SECNAV's Energy Goals.

Kilometer
0 6

0 4
Miles

Figure 1-2
Regional Location of MCB Camp Pendleton

Source: MCB Camp Pendleton 2015

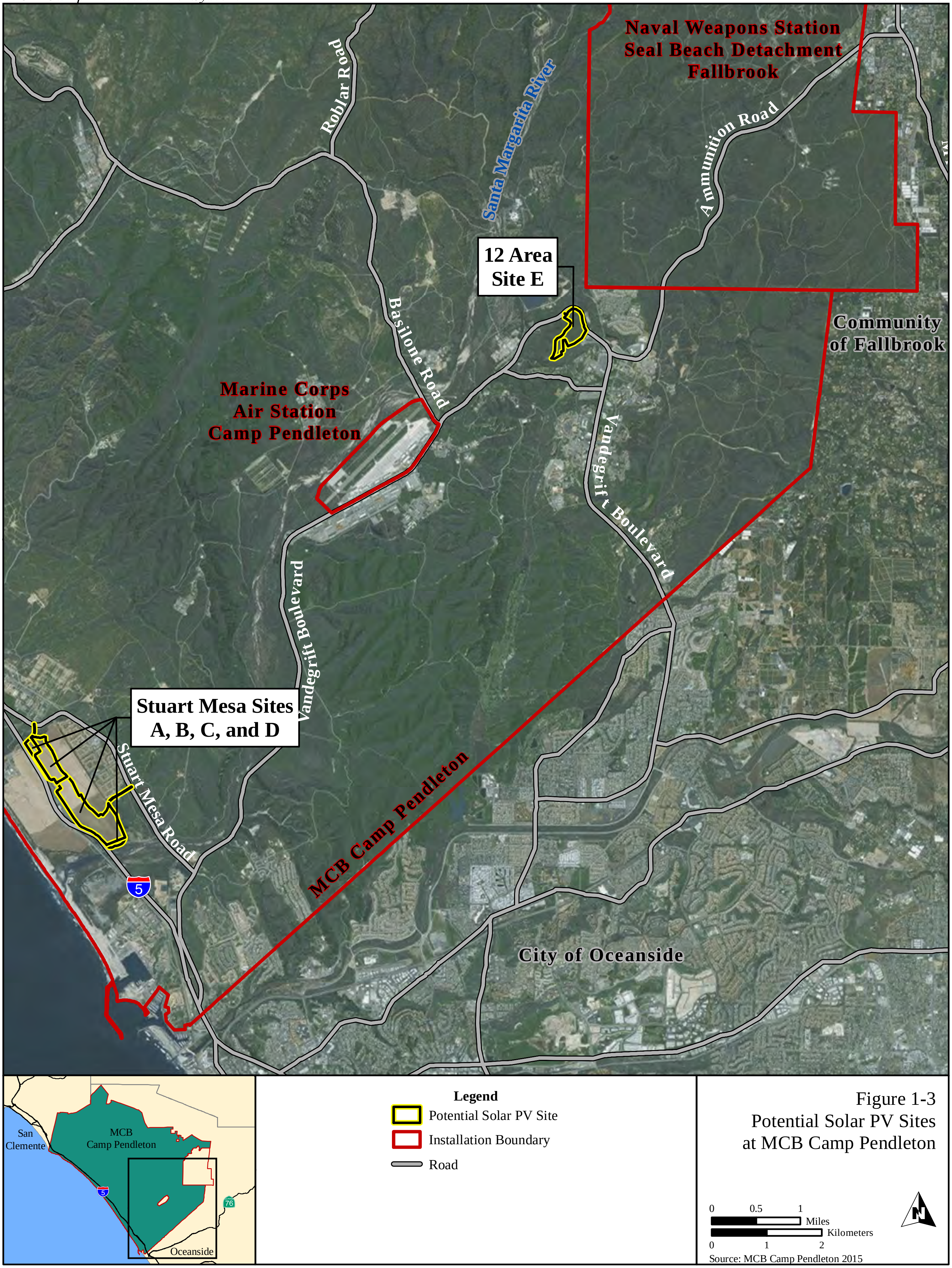

Figure 1-3
Potential Solar PV Sites
at MCB Camp Pendleton

The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning 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.

1.4 DECISION TO BE MADE

The decision to be made is where to locate the PV system at MCB Camp Pendleton. This EA evaluates the environmental consequences of implementing the alternatives to determine if an Environmental Impact Statement (EIS) needs to be prepared. An EIS will need to be prepared if it is determined that the Proposed Action 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 effects analysis of the alternative selected for implementation, this selection would be documented in a Finding of No Significant Impact.

1.5 SCOPE OF ANALYSIS

1.5.1 Previous Studies

An Environmental Feasibility Study was prepared (Naval Facilities Engineering Command Southwest [NAVFAC SW] 2014) to determine the environmental viability of siting the PV system at the potential sites. The study evaluated the environmental costs, benefits, and potential environmental risks associated with the construction, operation, and maintenance of a large-scale PV system at two sites on MCB Camp Pendleton and one site at the adjacent Naval Weapons Station Seal Beach Detachment Fallbrook (Fallbrook Site). Potential risks include costs for complying with environmental regulations, including mitigation. This EA has integrated the results of the Environmental Feasibility Study; notably that the Fallbrook Site alternative was eliminated from consideration for renewable energy generation projects.

The NREL prepared a separate study *Solar Opportunity: MCB Camp Pendleton, NWS Fallbrook* (NREL 2014). The NREL study includes an evaluation of the existing utility transmission system and its current capacity to establish the probable points of interconnection.

1.5.2 Resource Areas

1.5.2.1 Resources Analyzed in Detail

As described and evaluated in Chapter 3, this EA analyzes the following resource areas in detail:

- Biological Resources
- Hazardous Materials and Waste
- Water Resources
- Air Quality
- Land Use and Military Operations
- Cultural Resources
- Visual Resources
- Utilities

1.5.2.2 Resources Not Analyzed in Detail

Several other resource areas typically assessed in environmental documents were considered but not carried forward for detailed analysis in this EA. This is because any potential impacts to these resource areas from the action alternatives would be either non-existent or considered negligible at most. The reasons for not analyzing the following resources in detail are presented below:

Geological Resources. The topography of the potential solar PV system sites do not pose a constraint or risk to the proposed construction and operations of the solar PV system. No unique geologic features exist on the proposed sites. As the Proposed Action does not include the construction of regularly occupied structures, there would be no potential seismic-related safety concerns. Implementation of the Proposed Action would temporarily disturb soils within the project area, resulting in an increased potential for dust generation and erosion. However, these potential effects would be temporary, minor, and would be reduced through the implementation of the avoidance/minimization measures presented in Table 3-1, *Summary of Potential Impacts and Avoidance/Minimization Measures*. Therefore, impacts to geological resources from the implementation of the alternatives would be negligible.

Noise. The Stuart Mesa Sites (A, B, C and D) are located within a currently noisy area due to the proximity of military training, the North County Transit District (NCTD) maintenance yard, railroad tracks, and the I-5 freeway. Sensitive noise receptors in the project vicinity include the Stuart Mesa Housing complex and Stuart Mesa Elementary School. No sensitive noise receptors are located near the 12 Area Site (Site E). Construction noise generated by the Proposed Action would be temporary and limited to regular working hours. Recurring operational/maintenance activities would generate negligible amounts of noise. Therefore, impacts to the noise environment from implementation of the alternatives would be negligible.

Transportation. Construction of the Proposed Action would involve a temporary and localized increase in traffic associated with construction worker commuting trips and the transport of construction equipment and materials. Depending on the volume and timing of construction traffic, the project could cause an incremental increase in queues and delays at gates and at intersections lying along the travel route(s). However, traffic associated with construction workers and material deliveries would be temporary, dispersed, and minimal. Operations-related traffic is expected to be light and infrequent, and therefore would not result in a substantial or recurring increase in traffic. Therefore, impacts to transportation from implementation of the alternatives would be negligible.

Environmental Justice. Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. MCB Camp Pendleton is not in or surrounded by a community populated by census-defined minority and low-income populations. The construction and operation of the Proposed Action would not result in a permanent change to population ethnicities or age distributions. There would be no human health or adverse environmental conditions placed upon minority and/or low-income populations from the implementation of the alternatives.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. The Proposed Action would be constructed on government property, where access is controlled. The solar PV system would be fenced and have warning signs surrounding the site to further minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented, which include securing equipment, materials, and vehicles, as well as neutralizing potential safety hazards, should unauthorized persons visit the site during non-working hours. Therefore, there would be no disproportionate impact to the health and safety of children from the implementation of the alternatives.

Safety and Security. As the Proposed Action would be located on an active military installation, homeland security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism; natural disasters, and disease outbreaks. Unified Facilities Criteria (UFC) 4-020-01, *DoD Security Engineering Facilities Planning Manual*, would guide planning, design, and construction criteria related to antiterrorism and force protection for the Proposed Action, including setbacks from nearby easements. The solar PV system would not represent critical infrastructure or utility equipment for performing MCB Camp Pendleton's mission should the solar PV system withdraw power distribution. The solar PV system would be fenced and have warning signs surrounding the site to minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented. Therefore, impacts to safety and security from implementation of the alternatives would be negligible.

1.6 INTERGOVERNMENTAL COORDINATION

1.6.1 Agency Consultation

Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed Action. As shown in the table, approval from the California Public Utilities Commission[2] (CPUC) and the California Independent System Operator[3] (CAISO) would be required only if Model 2 were to be implemented. Of note, while approval from the CPUC and CAISO is not a requirement for this EA, ultimately (i.e., after completion of the NEPA process), the private partner would obtain the approvals from these entities for implementation of Model 2.

The Coastal Zone Management Act applies to the Stuart Mesa Sites (Sites A, B, C, and D). A Coastal Consistency Non-Determination (CCND) was issued in 2009 for two public-private venture (PPV) housing proposals (PPV-6 and PPV-7). The CCND would require an update to address the change from housing to a solar PV system. Agency correspondence can be found in Appendix A.

Table 1-2. Anticipated Permits and Consultation for the Proposed Action

Agency	Permit or Approval	Current Status
USFWS	Section 7 of the ESA	It is anticipated that the Navy will consult with the USFWS.
California SHPO	Section 106 of the NHPA	It is anticipated that the Navy will consult with the SHPO.
CPUC[1]	Public Utilities Code Section 399.11	The private partner will obtain a power purchase agreement from the CPUC.
CAISO[1]	Public Utilities Code Sections 2811-2816	The private partner will obtain an Interconnection Agreement from the CAISO.
CZMA	Update CCND for consistency with determination issued for PPV-6 and PPV-7	CCND was issued for Stuart Mesa Housing projects. Update to CCND is needed for solar PV system in same location.

Notes: [1]Approval would be required from CPUC and CAISO only if Model 2 were to be implemented.
CZMA = Coastal Zone Management Act; ESA = Endangered Species Act; SHPO = State Historic Preservation Officer; NHPA = National Historic Preservation Act; USFWS = U.S. Fish and Wildlife Service.

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[2] The CPUC regulates investor-owned utilities in California, oversees the procurement of renewable energy in the state under the Renewable Portfolio Standard implementation program, and permits electrical transmission.

[3] The CAISO is an independent, non-profit organization that oversees the operation of California's electric power system, transmission lines, and electricity market. Proposed connections from private power producers to investor-owned utilities are subject to the review and approval of the CAISO.

1.6.2 Summary of Relevant Federal Requirements

The following provides a summary of federal requirements relevant to the Proposed Action.

EO 13693, *Planning for Federal Sustainability in the Next Decade*

EO 13693 (dated 19 March 2015) superseded EO 13423 (*Strengthening Federal Environment, Energy, and Transportation Management*) and EO 13514 (*Energy Efficient Standby Power Devices*). The goal of EO 13693 is to maintain federal leadership in sustainability and GHG emission reductions. EO 13693 establishes policies to maintain federal leadership in sustainability and GHG emission reductions. As relevant to this EA, EO 13693 identifies requirements relating to energy conservation, efficiency, and management; minimum percentages of total building energy obtained from clean energy sources; and, improvements in water use efficiency and management, including stormwater management.

1.6.2.1 Secretary of the Navy Energy Goals

On 14 October 2009, the SECNAV 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 that pertains the most to this document is: The Navy will produce at least 50 percent of shore-based energy requirements from alternative sources.

1.6.2.2 1 GW Initiative

In support of the SECNAV energy goals, on 1 October 2012 Secretary Mabus chartered the 1 GW Task Force to enable the Navy to procure 1 GW of renewable energy generation capacity by 2020. One GW of renewable energy generation directly addresses several of the mandates and goals for which the Navy is accountable: EO 13693 (this EO superseded EOs 13423 and 13514), the 10 U.S. Code (USC) 2911 "25 by 25" mandate (25 percent by 2025), Energy Policy Act 2005 graduated renewable energy targets, and the SECNAV’s departmental goals.

To reach the 50 percent renewable energy generation goal (which the 1 GW 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. The overall the Navy energy strategy therefore includes both lines of effort: deploy renewable energy in support of the 1 GW goal and simultaneously bring the 50 percent renewable energy generation goal closer by reducing overall energy consumption.

1.7 PUBLIC AGENCY PARTICIPATION

To be provided in Appendix B.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA establish a number of policies for federal agencies, including "using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 Code of Federal Regulations [CFR] 1500.2 [e]). This EA only carries forward for detailed analysis those alternatives that could meet the purpose of and need for the project as defined in Section 1.3, *Purpose of and Need for the Proposed Action* and the below-listed reasonable alternative screening factors.

2.1 REASONABLE ALTERNATIVE SCREENING FACTORS

The screening factors used to develop the reasonable range of alternatives are as follows:

1. Must not interfere with installation mission activities and operations or create unsafe conditions;
2. Should contribute to the SECNAV's goal of obtaining 1 GW of renewable energy generating capacity by the end of 2020 by providing a sufficiently sized parcel (or parcels) of land for solar PV system placement; and
3. Should provide a 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).

2.2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.2.1 Proposed Action

Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar PV system. The partner would sell the generated power to regional customers and/or the Navy. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. The construction and use of energy storage batteries at MCB Camp Pendleton is not part of the Proposed Action.

The Navy has identified three action alternatives (Alternatives 1, 2, and 3) as meeting the reasonable screening factors. The following sections provide descriptions of these three alternatives. In addition, Section 2.2.5 describes the No-Action Alternative, and Section 2.3 compares each of the action alternatives.

2.2.2 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B (Preferred Alternative)

Under Alternative 1, an up to 28 MW solar PV system would be constructed and operated at Sites A and B. At the conclusion of the agreement (37 years [Model 2]), the solar PV system would be decommissioned and the site returned to its pre-project condition.

2.2.2.1 Acquisition Strategies

Under Alternative 1, a PV system would be developed to generate renewable energy at MCB Camp Pendleton under Model 2 acquisition strategy (refer to Section 1.1.1.2).

Under a Model 2 acquisition strategy, the Navy and private partner would enter into a lease agreement (or real estate outgrant) to allow the partner to use Navy land to construct, operate, and own the solar PV system. While Navy land would be used, no existing Navy infrastructure (transmission lines, substation, etc.) would be used by the partner under the Model 2 acquisition strategy. The Navy would receive compensation for the lease, but would not directly receive the power generated by the solar PV system. The partner would sell the generated power to regional customers outside the Navy. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 37 years. The 37-year agreement would consist of 2 years for construction, followed by an initial 25-year operating term and two, 5-year operating extensions (10 years). This acquisition strategy maximizes the total capacity (size) of the system based on available land, and not MCB Camp Pendleton's electrical demand.

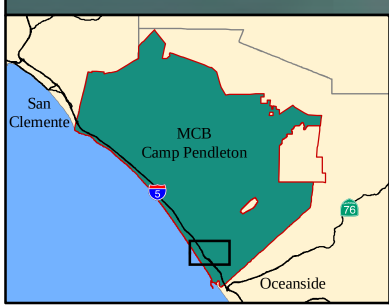
2.2.2.2 Construction

Following execution of the agreement with the private partner, an up to 28 MW ground-mounted solar PV system would be constructed at MCB Camp Pendleton on Sites A and B (Figure 2-1). Sites A and B are relatively flat and devoid of vegetation. Site preparation activities would include trenching (up to 3-feet [1-meter] deep per UFC codes) for underground electrical lines and circuitry.

The 28 MW solar PV system would consist of solar PV panels, underground and/or pole-mounted electrical infrastructure, area lighting, concrete foundations, and concrete masonry units for inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the solar PV system.

All electrical equipment, including inverters and transformers would be constructed on concrete pads. All solar PV panel wiring would be routed underground. Gravel roads would be graded between the rows of solar PV panels and around the site perimeter for maintenance access. No access improvements would be required as part of Alternative 1 because the existing road network adjacent to the project area is sufficient. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the solar PV field to minimize the potential for unauthorized individuals to enter the area (Figure 2-1).

The solar PV panels would either be fixed-, single-, or multi-axis type solar PV panels. Fixed panels do not track the sun; they are fixed in an optimal position to collect solar radiation. Fixed panels would be constructed in east to west oriented rows to maximize solar radiation absorption. If selected, the single-axis and/or multi-axis panels would also be constructed in east to west oriented rows, but would include a drive shaft and motor that rotates the panels to follow the maximum solar irradiance throughout the day (i.e., the panels would track the movement of the sun).



Legend

Potential Solar PV Sites

Road

Alternative 1: Site A and Site B (194 Acres)

Figure 2-1
Alternative 1:
Up to 28 Megawatts at
Sites A and B

0 1,000 2,000 Feet
0 250 500 Meters

Source: MCB Camp Pendleton 2015

The solar PV panels would be affixed atop constructed mounting structures, mounted on posts bored into the ground, or be placed on concrete blocks above ground. Foundations for the mounting structures would be built on engineered fill or native soil at a minimum of 24 inches (61 centimeters [cm]) below adjacent grade or finished grade. Each pole footing would consist of a 4 inch (10 cm) cross-sectional area and would require a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface. Upon completion, the highest point of the solar PV field would be no higher than approximately 15 feet (5 meters) above the ground surface. The solar PV panels would have an anti-reflective coating that would improve light absorption and reduce or eliminate the potential for glint and glare[4] impacts.

The solar PV panels would be constructed elsewhere (in a factory). Solar PV panel assembly could occur either on- or off-site, or a combination thereof. A construction staging area would be delineated within the overall project area and all work would be done on-site. Materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the solar PV system would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. A spray-on erosion control fiber matrix (soil stabilizer) would be applied to the soil following construction, thus reducing the potential for soil erosion. The construction duration would be approximately 2 years.

Within Site A or B, a substation would also be constructed. The substation would cover an area approximately 1 acre (0.4 ha) in size. The substation would serve as the interface connection of the solar PV system to the existing San Diego Gas & Electric (SDG&E) 12/69-kilovolt (kV) transmission line located west of the Stuart Mesa Housing complex (for Model 2). A 69-kV switching/metering station would also be constructed. The switching/metering station would cover approximately 2,000 square feet (185 square meters) and would meter the solar PV power generated at Sites A and B. Both the substation and the meter/switching station would be located within Sites A or B. A graveled buffer area would be developed around the substation and switching/metering station and a fence would be constructed to restrict access to the site.

Construction would create a minimal amount of construction debris that would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste). All construction would be conducted in compliance with all applicable rules and regulations.

2.2.2.3 Operation and Maintenance

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair. Quarterly inspections of the solar PV system would be conducted to ensure infrastructure is in good operating condition. The partner or their designated contractor would conduct any repairs or regular service. Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up. One or two persons using a single water truck would perform this cleaning. All washing and use of water during maintenance of the solar PV panels would be done in accordance with best management practices (BMPs) and standard erosion control measures as identified in the Stormwater Pollution Prevention Plan (SWPPP). Water would be trucked in from an off-base source and water procurement would be the responsibility of the private partner.

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[4] Glint is the momentary flash of bright light. Glare is a continuous source of bright light.

Access roads would be maintained as needed, and ground cover and other vegetation beneath and near the panels would be trimmed periodically. Vegetation beneath and near the panels could also be controlled with herbicides to ensure that it does not obscure or shadow the panels (State Water Resources Control Board [SWRCB] 2014).

All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

2.2.2.4 Decommissioning

At the conclusion of the agreement, the private partner would be required to decommission the solar PV system and all associated features and return the project area to its pre-project condition. A decommissioning plan would be prepared in accordance with Navy requirements. The plan would ensure that the project facilities would be decommissioned and removed and that Sites A and B would be restored to pre-construction conditions. Soils and impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning and restoration process would likely involve the removal of aboveground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be used during the decommissioning phase of the project.

Anticipated decommissioning activities would use a mix of equipment and vehicles, likely to include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. The decommissioning activities would likely occur over a period of approximately 2 months. Debris would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the Navy's 2009 statement in the future.

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the Navy would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all Navy regulations applicable to conducting work activities on MCB Camp Pendleton, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

2.2.2.5 Transmission Line Routes

Under Alternative 1, Model 2, the solar PV system would connect to the existing SDG&E 12/69-kV transmission line/power distribution system located adjacent to the eastern boundaries of Sites A and B. No additional transmission lines are needed for Model 2. Alternative 1 does not include a Model 3 connection to the MCB Camp Pendleton grid.

2.2.3 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D

Under Alternative 2, an up to 31 MW solar PV system would be constructed and operated at Sites A, B, C, and D. At the conclusion of the agreement (either 37 years [Model 2] or 27 years [Model 3]), the solar PV system would be decommissioned and the site returned to its pre-project condition. Under Alternative

2, up to approximately 215 acres (87 ha) at Sites A, B, C, and D would be developed to support the generation of up to 31 MW of solar PV power with the same features as were described in Section 2.2.2. The main difference between Alternative 1 and 2 is that Alternative 2 includes Sites C and D, and includes the two new transmission corridors between the PV site and Stuart Mesa Road (Figure 2-2).

Site C consists of approximately 6 acres (2 ha) of undeveloped land on the south end of Site A. Site D consists of approximately 14 acres (6 ha) to the northwest of Site B.

Under Alternative 2, the same solar PV system acquisition, construction, operation, and decommissioning activities as described under Alternative 1 would also occur.

Alternative 2 would rely upon either a Model 2 or a Model 3 acquisition strategy. Model 2 is described in Alternative 1. With Model 3, the Navy would enter into a lease agreement (or real estate outgrant) plus a Power Purchase Agreement, for a private partner to construct, operate, and own a solar PV system on MCB Camp Pendleton. Once the solar PV system is operational, the Navy would purchase and use all of the electricity generated from the solar PV system. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 27 years. The 27-year agreement would consist of 2 years for construction, followed by an initial 20-year operating term and one, 5-year operating extension. This acquisition strategy limits the total capacity (size) of the system based on MCB Camp Pendleton's electrical demand, and not the total amount of land available. Existing Navy infrastructure would be used (transmission lines and substations).

Under both the Model 2 and Model 3 strategies, the land impact, function of the facility, conservation and construction measures would be nearly identical. The only notable difference would be the extent of construction and routing of electrical transmission corridors (i.e., point of connection of the solar PV system) to either serve the public grid or the MCB Camp Pendleton grid. Under the combination of Models 2 and 3 strategy, some power generated would be used by the Navy and some by outside regional customers. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. At the conclusion of the agreement, the private partner would decommission the solar PV system and return the site to pre-project conditions.

2.2.3.1 Transmission Line Routes

Under Alternatives 2 and 3, Model 2, the solar PV system would connect to the existing SDG&E transmission line/power distribution system located adjacent to the eastern boundaries of Sites A and B and no new transmission lines are needed for Model 2.

Under Alternatives 2 and 3, Model 3, the solar PV system would connect to the existing MCB Camp Pendleton J circuit transmission line/power distribution system located east of Stuart Mesa Road. Power would be delivered via the existing transmission lines to existing on-base substations owned and operated by MCB Camp Pendleton.

Model 3 would require construction of two new transmission lines. One new transmission line would be located to the east of Site A between Site A and the J circuit, south of Stuart Mesa Housing complex. It would be a 1,720-foot (524-meter) long, 55-foot (17-meter) tall, steel pole supported transmission line. Approximately 28 poles would be required. The other new transmission line would be located to the north of Site B between Site B and the J circuit, northwest of Stuart Mesa Housing complex. It would be an 887-foot (270-meter) long, 55-foot (17-meter) tall, steel pole supported transmission line. Approximately 15 poles would be required (see Figure 2-1).

Figure 2-2
Alternative 2:
Up to 31 megawatts at
Sites A, B, C, and D

2.2.4 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW PV System at Sites A, B, C, D, and E

Under Alternative 3, an up to 39 MW solar PV system would be constructed and operated at Sites A, B, C, D, and E. At the conclusion of the agreement (either 37 years [Model 2] or 27 years [Model 3]), the solar PV system would be decommissioned and the site returned to its pre-project condition. Under Alternative 3, up to approximately 272 acres (110 ha) at Sites A, B, C, D, and E would be developed to support the generation of up to 39 MW of solar PV power with the same features as were described in Section 2.2.3. The main difference between Alternative 2 and 3 is that Alternative 3 includes Site E (Figure 2-3).

Site E consists of approximately 57 acres (23 ha) of undeveloped land south of Vandegrift Boulevard in the 12 Area.

2.2.4.1 Transmission Line Routes

Under Alternative 3, the same solar PV system acquisition, construction, operation, and decommissioning activities as described under Alternative 1 would also occur. Under Alternative 3, Model 2, the solar PV system would connect to the existing SDG&E 12/69-kV transmission line/power distribution system located along Vandegrift Boulevard to the north of Site E. The connection would include construction of a 138-foot (42-meter) long, 20-foot (17-meter) tall steel-pole supported transmission line. Approximately four poles would be required.

Although no new transmission lines are needed at Site E under Model 3 because the solar PV system would connect to the existing MCB Camp Pendleton transmission lines along Vandegrift Boulevard near Site E, transmission lines are needed with Model 3 to access the MCB Camp Pendleton grid at Sites A and B with Alternative 3.

2.2.5 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV system at MCB Camp Pendleton. The No-Action Alternative represents the status quo. The No-Action Alternative does not meet the purpose and need with regard to meeting Navy renewable energy goals; however, the Navy has analyzed the No-Action Alternative in this EA in accordance with statutory requirements and to provide a baseline against which to measure environmental consequences of the action alternatives. The affected environment section of Chapter 3 describes the No-Action Alternative (existing conditions) for each resource area. The analysis of the No-Action Alternative in Chapter 3 assumes that the Navy would maintain operations at the status quo (no new solar PV acquisition, construction, operations/maintenance, or decommissioning would occur).

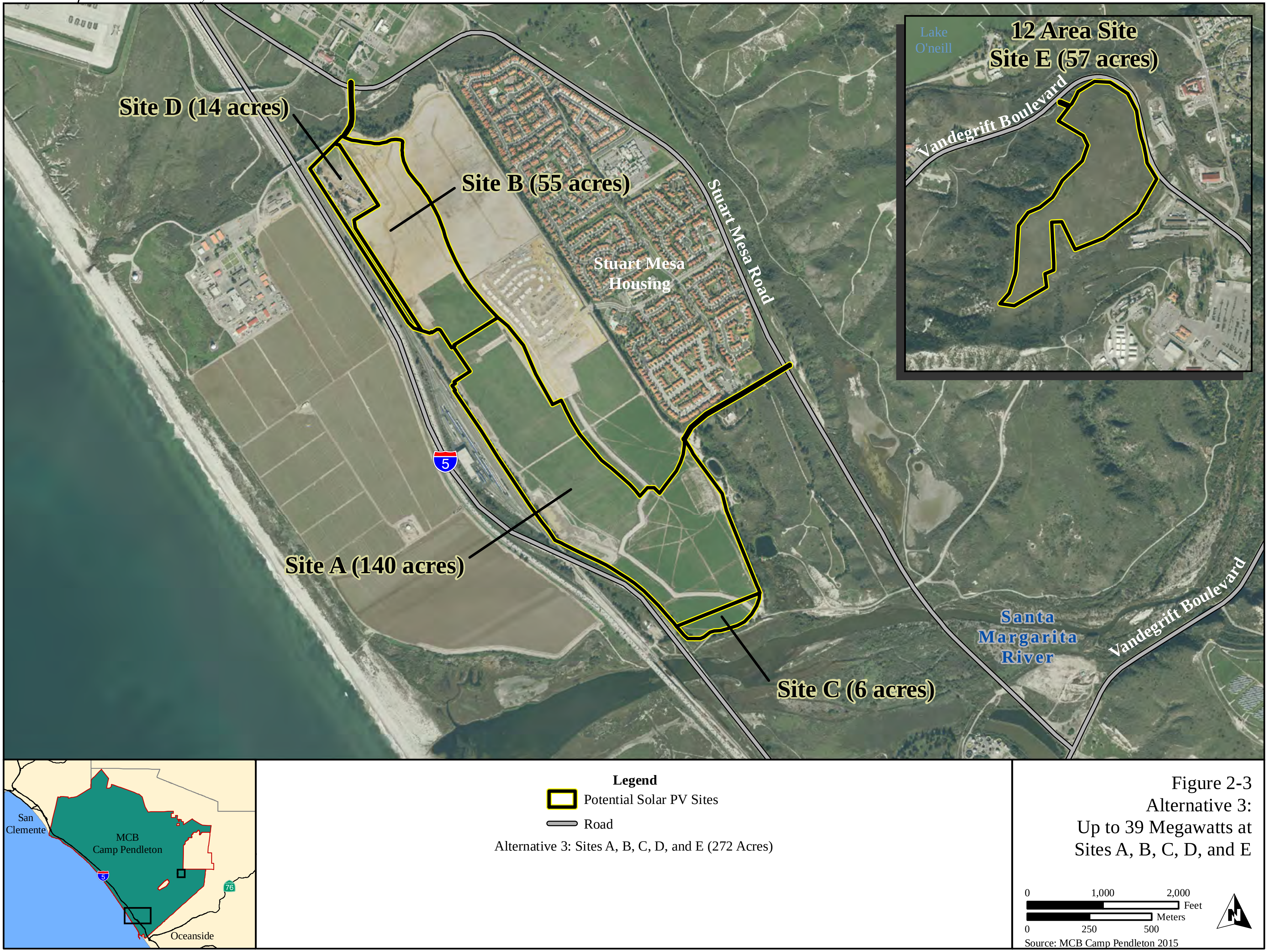

Figure 2-3
Alternative 3:
Up to 39 Megawatts at
Sites A, B, C, D, and E

2.3 COMPARISON OF ACTION ALTERNATIVES

Table 2-1 summarizes and compares the features associated with the alternatives.

Table 2-1. Summary and Comparison of Alternatives

Alternative	System Size	Site(s)	Transmission Line Type	Power User
Alternative 1 *(see Figure 2-1)*				
Model 2	Up to a 28 MW solar PV system	A and B	No New Transmission Lines	Regional
Alternative 2 *(see Figure 2-2)*				
Model 2	Up to a 31 MW solar PV system	A, B, C, and D	No New Transmission Lines	Regional
Models 2 and 3			New 69-kV	Regional and MCB Camp Pendleton
Model 3			Two new 69-kV	MCB Camp Pendleton
Alternative 3 *(see Figure 2-3)*				
Model 2	Up to 39 MW solar PV system	A, B, C, D and E	New 69-kV	Regional
Models 2 and 3			New 69-kV	Regional and MCB Camp Pendleton
Model 3			Two New 69-kV	MCB Camp Pendleton
No-Action Alternative	None	None	None	None

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

2.4.1 Other Renewable Energy Sources

Given MCB Camp Pendleton's location and associated available resources, the Navy has determined that solar PV represents the best renewable energy option for MCB Camp Pendleton when compared with other renewable energy options (e.g., wind, biomass, tidal, geothermal). Therefore, the Navy has eliminated *Other Renewable Energy Sources* from detailed analysis in this EA.

2.4.2 Fallbrook Site

As described in Section 1.5.1, the Navy initially considered a site at Naval Weapons Station Seal Beach Detachment Fallbrook (referred to as the Fallbrook Site) as a potential solar PV site for implementation of the Proposed Action. The Fallbrook Site was evaluated, along with MCB Camp Pendleton's Sites A and E, within the Environmental Feasibility Study that was conducted before this EA. The Fallbrook Site was determined to be environmentally and economically inferior for this solar PV project to the other sites because it had two federally-listed species, coastal California gnatcatcher and Stephens' kangaroo rat requiring avoidance, permitting, and/or mitigation. In addition, the Fallbrook Site had eight archaeological sites that have not been evaluated for listing in the National Register of Historic Places (NRHP). The site contained wetlands and a riverine feature that would likely be considered waters of the U.S., possibly requiring avoidance, permitting, and/or mitigation. Therefore, the Navy has eliminated the Fallbrook Site from detailed analysis in this EA.

CHAPTER 3
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental conditions and potential environmental consequences for the following resource areas analyzed in detail: biological resources, hazardous materials and waste, water resources, air quality, land use and military operations, cultural resources, visual resources, and utilities. Table 3-1 provides a summary of potential impacts and avoidance/minimization measures for each resource area from implementation of the alternatives.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Biological				
Impact Summary	No Significant Impact Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell's vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell's vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures would be implemented to lessen potential impacts to biological resources.	No Significant Impact Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell's vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	No Significant Impact Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell's vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/ minimization measures specific to the Pacific pocket	No Impact There would be no change in existing conditions; therefore, no impacts would occur.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
			mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse.	
Avoidance/ Minimization Measures	**Construction** • **BR-1.** To further minimize potential impacts, no trees, including eucalyptus, would be removed for construction of the solar PV sites. • **BR-2.** To avoid impacts to all nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements. • The following avoidance/minimization measures would be implemented to specifically avoid or minimize impacts to the coastal California gnatcatcher and the least Bell's vireo: ○ **BR-3.** A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell's vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell's vireo (i.e., at least one field season and 40	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **BR-7.** DCSS would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site. • **BR-8.** A live-trapping survey of both transmission line corridors for the Pacific pocket mouse would be performed in the portions of each corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following: • **BR-9.** It is expected that additional avoidance and minimization measures would be identified during formal consultation with the USFWS if Alternative 3 were to be selected.	No measures identified.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	hours of experience with each species). Three pre-activity surveys for active coastal California gnatcatcher and least Bell's vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell's vireos and to avoid redundant survey effort. ○ **BR-4.** Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell's vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell's vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-feet (76-meters) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season. **Operation** • **BR-5.** To assess any potential impacts the solar PV system might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species			

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. • **BR-6.** Maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell's vireos and would report any observations of dead or injured California gnatcatchers and least Bell's vireos to Environmental Security within 48 hours.			
Hazardous Materials and Waste				
Impact Summary	<u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. Site A hosts no open remediation sites; however, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by RWQCB.	<u>No Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance.	<u>Potential Significant Impact</u> Temporary impacts from debris and waste streams associated with construction and decommissioning activities. Potential small amounts of POLs. IR Site 1120 (at Site D) is undergoing a closure action, but confirmation of closure should be requested prior to any ground disturbance. Inactive Range 404 (at Site E) requires remediation and closure. Without remediation and closure, potential significant impact could occur. Supplemental NEPA would be needed to incorporate the closure.	<u>No Impact</u> There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **HW-1.** Construction BMPs and SWMP would be required. • **HW-2.** The SWPPP at Site A is currently undergoing a closure action and confirmation of closure should be requested prior to any ground disturbance.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **HW-3.** Wait for closure of IR Site 1120 at Site D.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2 and adds the following: • **HW-4.** Remediate and close inactive Range 404 at Site E.	No measures identified.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Water				
Impact Summary	No Significant Impact Grading activities associated with construction would temporarily increase the potential for localized erosion. However, the standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities. There would be no direct impacts to waters of the U.S., floodplains, or groundwater resources. New facilities on MCB Camp Pendleton would incorporate the concept of Low Impact Development (LID). All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	No Significant Impact Same as Alternative 1. No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **WR-1.** The project would obtain coverage under the California Construction General Permit. • **WR-2.** A SWPPP that would include standard erosion control measures to reduce potential impacts resulting from erosion would be prepared. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. The standard erosion control measures as identified in the SWPPP would be utilized to reduce erosion during grading and construction activities. • **WR-3**. Projects on MCB Camp Pendleton with a footprint of 5,000 square feet or greater would implement Low Impact Development (LID) features in accordance with the *Department of Defense Unified Facilities Criteria Low Impact*	Same as Alternative 1.	Same as Alternative 1.	No measures identified.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	Development (Unified Facilities Criteria [UFC] 3-210-10) (2010) and Section 438 of the Energy Independence and Security Act (2007). A comprehensive set of stormwater planning, design, and construction elements would be used to maintain or restore predevelopment hydrology of the site with regard to volume, rate, and duration of flow, pollutant loading, and temperature for the 95th percentile, 24-hour storm. LID strategies are described in detail in UFC 3-210-10, Chapter 2. These strategies address the long-term post construction (operational) phase where ensuring water quality benefits are provided by low impact design, source controls, and treatment controls.			
Air Quality				
Impact Summary	No Significant Impact Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor, short-term emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.	No Significant Impact Same as Alternative 1.	No Significant Impact Same as Alternative 1.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **AQ-1.** Proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. • **AQ-2.** Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions.	Same as Alternative 1.	Same as Alternative 1.	No measures identified.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
	• **AQ-3.** After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).			
Land Use and Military Operations				
Impact Summary	No Significant Impact Temporary change in land use from agricultural to renewable energy. The construction, operation, and decommissioning of the solar PV system on Sites A and B would be inconsistent with the Master Plan. Also, portions of Site A encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee. MCB Camp Pendleton is exempt from the Farmland Protection Policy Act, as the land would be used for national defense purposes.	No Significant Impact Potential impacts would be similar to those described for Alternative 1. Portions of Site A and the entirety of Site C encroach into the Oscar One Training Area. A revised Master Plan would need to be approved by the Commanding Officer or designee.	No significant impact Potential impacts would be similar to those described for Alternative 1. Alternative 3 would be inconsistent with planned future land uses. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **LU-1.** The MCB Camp Pendleton Master Plan would need to be amended during the next amendment cycle to alter the land use within the project area.	Same as Alternative 1.	Same as Alternative 1.	No measures identified.
Cultural				
Impact Summary	No Significant Impact The area has been previously surveyed for cultural resources. Site B would fall under the Programmatic Agreement (PA) signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one archaeological site (CA-SDI-17912) previously determined ineligible with SHPO concurrence that would not fall under the PA.	No Significant Impact The area has been previously surveyed for cultural resources. Sites B and D would fall under the PA signed in December 2014 (Stipulations III.D (1) and IV.D). Site A contains a portion of one ineligible archaeological site (CA-SDI-17912) and Site C has an archaeological site that is ineligible for NRHP listing (CA-SDI-12572). Sites A and C would not fall under the PA.	No Significant Impact Same as Alternative 2. Site E has been previously surveyed for cultural resources, none were found, and therefore Site E would fall under the PA. For Sites B, D, and E, Camp Pendleton Streamlined Section 106 Programmatic Agreement could be used to complete the Section 106 process.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Avoidance/ Minimization Measures	• **CR-1.** All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site (CA-SDI-17912) within the APE in Site A would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner. • **CR-2.** A monitoring and discovery plan would be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations. • **CR-3.** A report detailing the monitoring results would be provided to SHPO at the conclusion of excavations.	Alternative 2 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **CR-4.** All ground disturbing activities within the site boundary and a 5-meter buffer for archaeological site CA-SDI-1572) within the APE in Site C would be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which would be funded by the private partner.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 2.	No measures identified.
Visual				
Impact Summary	No Significant Impact Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.	No Significant Impact Construction and operation impacts to visual resources would be temporary and limited to receptors traveling along I-5, the railroad, and along Stuart Mesa Road.	No Significant Impact Construction and operational visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E.	No Impact The existing visual environment would not change from current conditions.
Avoidance/ Minimization Measures	No measures identified.	No measures identified.	No measures identified.	No measures identified.

Table 3-1. Summary and Potential Impacts and Avoidance/Minimization Measures

Resource Area	Alternative 1: 28 MW (Sites A and B)	Alternative 2: 31 MW (Sites A, B, C, and D)	Alternative 3: 39 MW (Sites A, B, C, D, and E)	No-Action Alternative
Utilities				
Impact Summary	No Significant Impact Potential for temporary and localized power disruption when solar PV system comes on-line. Would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 acquisition strategy, there would be an increase in regional power supply. Existing infrastructure would be sufficient to support the solar PV system. A sewer line may be present at Site A.	No Significant Impact Potential impacts would be similar to those described for Alternative 1. Under the Model 2 and combination Models 2 and 3 strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton.	No Significant Impact Potential impacts would be the same as those described for Alternative 2. A 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E.	No Impact There would be no change in existing conditions; therefore, no impacts would occur.
Avoidance/ Minimization Measures	• **UT-1.** A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A for conflict avoidance.	Same as Alternative 1.	Alternative 3 includes all avoidance/minimization measures identified for Alternative 1 and adds the following: • **UT-2.** A utility investigation and survey would be conducted to obtain the exact depth and location of the natural gas line on Site E for conflict avoidance.	No measures identified.

Notes: APE = area of potential effects; AQ = Air Quality; BMPs = Best Management Practices; BR = Biological Resources; CR = Cultural Resources; DCSS = Diegan coastal sage scrub; GHG = Greenhouse Gas; I = Interstate; IR = Installation Restoration; LU = Land Use and Military Operations; NEPA = National Environmental Policy Act; PA= Programmatic Agreement; POLs = petroleum, oils, lubricants; SHPO = State Historic Preservation Office; SWPPP = Stormwater Pollution Prevention Plan; SWMP = Solid Waste Management Plan; RWQCB = Regional Water Quality Control Board; U.S. = United States; USFWS = U.S. Fish and Wildlife Service; UT = Utilities; WR = Water Resources.

3.1 BIOLOGICAL RESOURCES

3.1.1 Definition of Resource

Biological resources include plant and animal species, and the habitats within which they occur. This analysis focuses on species that are important to the function of ecosystems, are of special societal importance, or are protected under federal or state law. These resources are commonly divided into the following categories: *Plant Communities*, *Fish and Wildlife*, and *Special Status Species*.

Biological resources are grouped and analyzed in this EA as follows:

- *Plant Communities* include plant associations and dominant constituent species that occur in the project area. Special status plant species are discussed in more detail below.
- *Fish and Wildlife* includes the characteristic animal species that occur in the project area. Special consideration is given to bird species protected under the Migratory Bird Treaty Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Special status wildlife species are discussed in more detail below.
- *Special Status Species* are those plant and animal species that are listed, have been proposed for listing, or are candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA), the California ESA, and other species of concern as recognized by state or federal agencies.

3.1.2 Affected Environment

3.1.2.1 Plant Communities

Plant communities are classified according to the classification system developed by R.F. Holland (1986). Holland's system includes lists of dominant and characteristic species found in each community. Oberbauer et al. (2008) developed a slightly expanded version of Holland's system for use in San Diego County; this version has been incorporated herein. Plant nomenclature follows Baldwin et al. (2012). Vegetation mapping for Sites A, B, C, and D is based on data in the current MCB Camp Pendleton geographic information system (GIS) dataset (MCB Camp Pendleton 2015a). A plant community survey of Site E was conducted in the spring of 2015 (MCB Camp Pendleton 2015b), the results of which are incorporated in this EA. Table 3.1-1 and Figures 3.1-1, 3.1-2, and 3.1-3 present the plant communities within the proposed project areas.

Table 3.1-1. Plant Communities in the Project Area

Plant Community	Area acres (ha)					
	Site A	*Site B*	*Site C*	*Site D*	*Site E*	*TOTAL*
Agriculture	131.4 (53.2)	54.2 (21.9)	5.9 (2.4)	7.3 (3.0)	-	**198.8 (80.5)**
Urban/Developed	5.0 (2.0)	0.9 (0.4)	0.3 (0.1)	4.9 (2.0)	-	**11.1 (4.5)**
Disturbed	-	0.1 (<0.1)	-	-	-	**0.1 (<0.1)**
Diegan Coastal Sage Scrub	0.7 (0.3)*	0.3 (0.1)*	<0.1 (<0.1)	-	10.5 (4.2)	**11.5 (4.7)**
Eucalyptus Woodland	2.8 (1.1)	-	0.1 (<0.1)	1.8 (0.7)	-	**4.7 (1.9)**
Non-Native Grassland	-	<0.1 (<0.1)	-	-	32.9 (13.3)	**32.9 (13.3)**
Valley Needlegrass Grassland	-	-	-	-	13.1 (5.3)	**13.1 (5.3)**
TOTAL	**139.9 (56.6)**	**55.5 (22.5)**	**6.3 (2.5)**	**14.0 (5.7)**	**56.5 (22.0)**	**272.2 (110.2)**

Note: * Values represent utility corridors. Utility corridors are not included in Alternative 1, but are included in Alternatives 2 and 3.

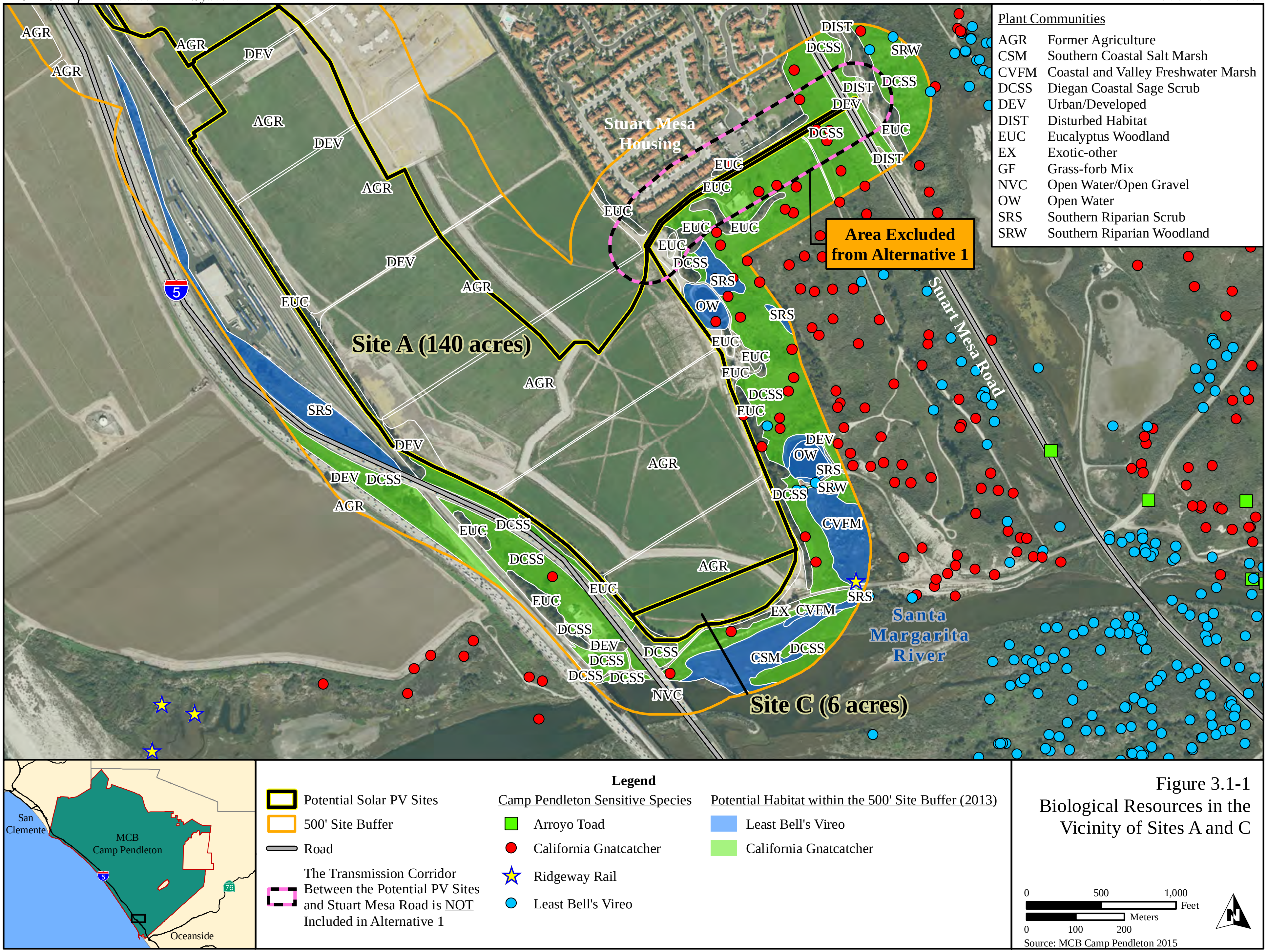

Figure 3.1-1
Biological Resources in the Vicinity of Sites A and C

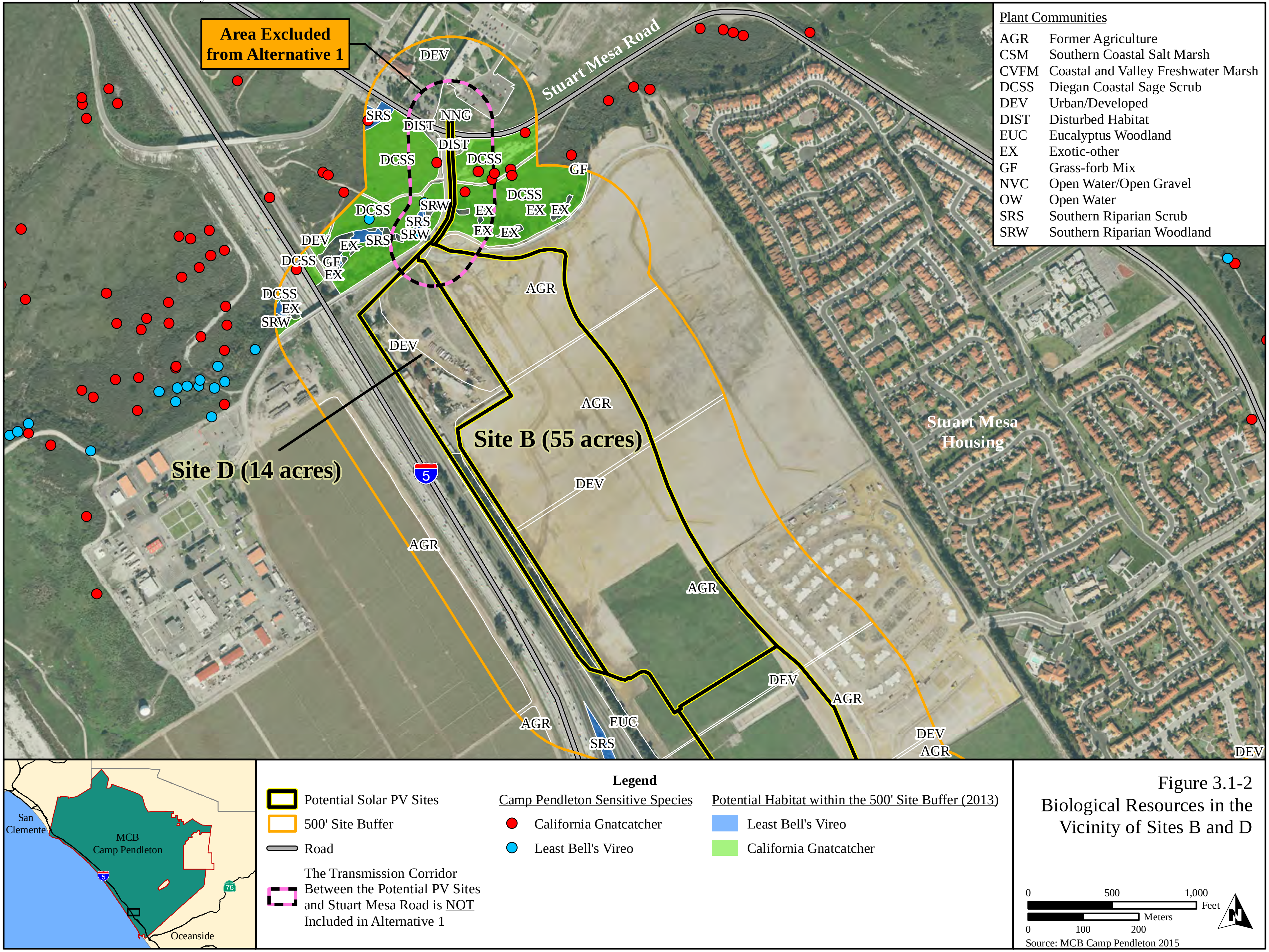

Figure 3.1-2
Biological Resources in the Vicinity of Sites B and D

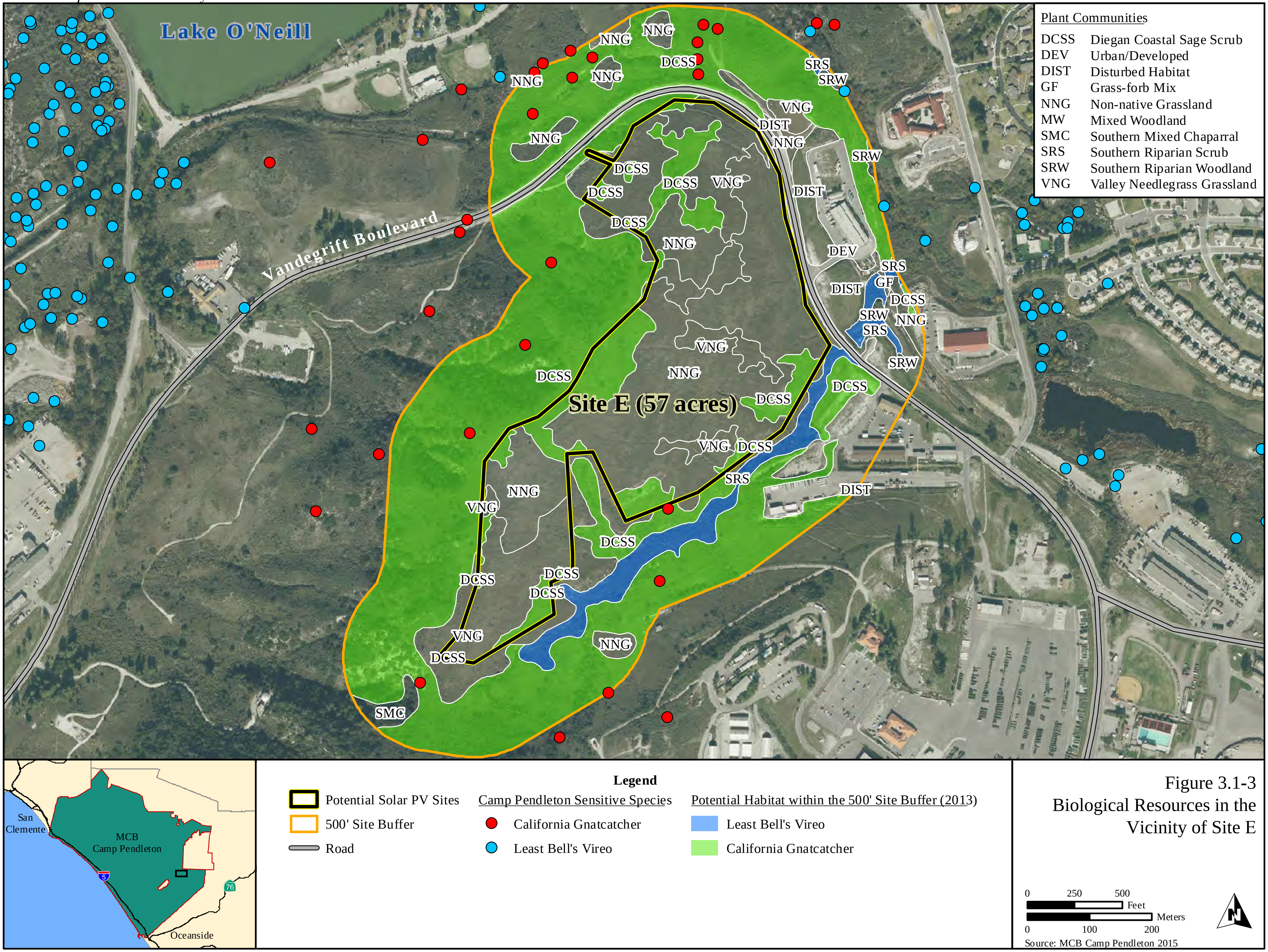

Figure 3.1-3
Biological Resources in the Vicinity of Site E

Agriculture (AGR) includes land that is set aside for orchards, vineyards, row crops, grazing fields and pastures, and open spaces used for livestock. (The majority of Sites A, B, C, and D are mapped in MCB Camp Pendleton's GIS system as AGR, although these lands are currently vacant.)

Urban/developed (DEV) areas do not support native vegetation and are characterized by permanent or semi-permanent structures (e.g., routes, buildings, paving).

Disturbed (DIST) occur where past or present physical disturbance is prevalent such that an area is no longer recognizable as a native or naturalized vegetation association. Vegetation in disturbed areas is typically composed of non-native plant species that take advantage of disturbances.

Diegan coastal sage scrub (DCSS) is the dominant scrub community in coastal southern California. It is typically characterized by sparsely to densely spaced, low-growing, drought-deciduous shrubs, but comprises a variety of plant associations and can include larger, evergreen shrubs, as well as cacti. Plant species characteristic of DCSS include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), Menzies' goldenbush (*Isocoma menziesii*), California sunflower (*Encelia californica*), and sage (*Salvia* spp.). Coyote brush (*Baccharis pilularis*) is a common element of DCSS on disturbed sites and slopes, such as along the I-5 embankments. DCSS typically intergrades with grassland communities at lower elevations and chaparral communities at higher elevations. DCSS is protected and managed on MCB Camp Pendleton because it is habitat for the federally threatened coastal California gnatcatcher.

Eucalyptus Woodland (EUC) is a type of non-native woodland dominated by large gum trees (*Eucalyptus* spp.). The majority of EUC occurs along I-5 and was originally planted as a windbreak for the former agriculture fields. Eucalyptus woodlands within MCB Camp Pendleton have been used as wintering grounds for the monarch butterfly (*Danaus plexippus*) (Marriott 2009).

Non-native grassland (NNG) is dominated by non-native annual grasses and weedy herbaceous forbs. Dominant nonnative species include ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), wild oats (*Avena* spp.), wild barley (*Hordeum* spp.), soft chess brome (*Bromus hordeaceus*), filaree (*Erodium* spp.), sweet fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), and non-native mustards (*Brassica nigra* and *Hirschfeldia incana*). Areas consisting of NNG typically have experienced past disturbance or are subject to regular disturbance.

Valley needlegrass grassland (VNG) is dominated by the perennial, bunch-forming purple needlegrass (*Stipa pulchra*). This community usually occurs on fine-textured (often clay) soils. Native and introduced annual grasses usually occur between the perennials, often exceeding the bunchgrasses in cover. The percentage cover of native species at any one time may be quite low, but is considered native grassland if 20 percent aerial cover of native species is present (Oberbauer et al. 2008). Native and non-native herbs are typically present in VNG as well.

3.1.2.2 Fish and Wildlife

A diverse assemblage of mammals, birds, reptiles, amphibians, fish, and invertebrates occur within MCB Camp Pendleton. In addition to hundreds of invertebrates, MCB Camp Pendleton has documented the presence of more than 50 mammalian, 30 reptilian, 10 amphibian, 300 bird, and 60 fish species (MCB Camp Pendleton 2012).

Some species, especially those having special-status designations, are limited in distribution and/or occurrence to a single habitat type. Most, however, are generalists and use multiple habitats for breeding, shelter, and foraging. All of the reptiles and amphibians, most of the mammals, and a small percentage of the birds that occur on MCB Camp Pendleton are year-round residents. The rest are seasonal residents, wide-ranging migrants, or transient visitors. Nearly all bird species occurring on MCB Camp Pendleton are protected under the Migratory Bird Treaty Act and are given special consideration under EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

The majority of Sites A, B, C, and D consist of former agricultural land that supports limited wildlife species. The eucalyptus windbreaks on the edges of these sites support nesting birds including songbirds and raptors and may support wintering monarch butterflies.

Wildlife observed in the vicinity of Sites A, B, C, and D during surveys for the adjacent housing complex EA (referred to as CP VII) included California quail (*Callipepla californica*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), bobcat (*Lynx rufus*) (dead), mountain lion (*Puma concolor*) (tracks), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Anna's hummingbird (*Calypte anna*), and California towhee (*Pipilo crissalis*) (NAVFAC SW 2011).

Although Site E was formerly used for training purposes and has been previously disturbed, it contains more natural habitat than Sites A-D and likely supports a greater assemblage of wildlife species, including bird, mammal, and reptile species that are common to grassland and DCSS habitats.

3.1.2.3 Special Status Species

Based on review of the MCB Camp Pendleton GIS dataset (MCB Camp Pendleton 2015a) and current site conditions, eight federally-listed species (or suitable habitat for these species) are likely to occur at or in the vicinity of the project area and are listed in Table 3.1-2. No federally-listed species are likely to occur within the Stuart Mesa Sites because of lack of suitable habitat, although coastal California gnatcatchers are expected to occur within the transmission line routes for Site A and Site B. The occurrence of federally-listed species adjacent to these sites, as well as within and adjacent to Site E, is discussed below.

Although the arroyo toad (*Anaxyrus canorus*) occurs in the Santa Margarita River (SMR) and its tributaries, the downstream limit of the species along the SMR is approximately at the Stuart Mesa bridge (MCB Camp Pendleton 2012), presumably because of tidal marine influence and increasing salinity below that point. Therefore, the arroyo toad is not known or likely to occur in the portion of the SMR south of the Stuart Mesa Sites and is not discussed further in this EA.

<u>Pacific Pocket Mouse</u>

The Pacific pocket mouse is one of 19 subspecies of the little pocket mouse (*Perognathus longimembris pacificus*) in the heteromyid rodent family. This subspecies was historically rare and patchily distributed along coastal southern California. They were thought to be extinct until rediscovered in 1993 on Dana Point. Pacific pocket mouse were federally-listed as endangered on 29 September 1994 and were subsequently found in three locations within MCB Camp Pendleton in 1995 (North San Mateo, South San Mateo, and North Santa Margarita or "Oscar One"). These four locations comprise the only currently known extant populations of this subspecies (Brehme et. al 2012).

Table 3.1-2. ESA Listed Species With the Potential to Occur in or in the Vicinity of the Project Area

Common Name	Scientific Name	Federal Status	Habitat	Occurrence in Project Area
Mammals				
Pacific Pocket Mouse	*Perognathus longimembris pacificus*	Endangered	Open patches of sandy soils within coastal sage scrub	Occupied habitat exists near the project area.
Stephen's kangaroo rat	*Dipodomys stephensi*	Endangered	Sparse DCSS & grassland	Suitable habitat does not occur in the project area.
Birds				
Coastal California gnatcatcher	*Polioptila californica californica*	Threatened	Coastal sage scrub	Suitable habitat occurs within 500 feet (152 meters) of the Stuart Mesa Sites. Occupied habitat occurs within Site E.
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	Riparian	Occupied habitat occurs within 100 feet (30 meters) of the Stuart Mesa Sites and Site E.
Light-footed Ridgeway's rail	*Rallus longirostris levipes*	Endangered	Coastal fresh and salt water marshes	Occurs in the SMR Estuary southwest of the Stuart Mesa Sites.
Fish				
Southern California steelhead	*Oncorhynchus mykiss*	Endangered	Rivers and major streams	Suitable habitat occurs in the SMR south of the Stuart Mesa Sites.
Tidewater goby	*Eucyclogobius newberryi*	Endangered	Estuaries/coastal brackish lagoons	Suitable habitat occurs in the SMR and Estuary south/southwest of the Stuart Mesa Sites.
Plants				
Thread-leaved brodiaea	*Brodiaea filifolia*	Threatened	Grasslands and sparse scrub communities	Potential habitat occurs in Site E.

Sources: MCB Camp Pendleton 2012, 2015a-d; SJM Biological Consultants 2015a, 2015b.

Pacific pocket mouse has been historically found on southern California marine terraces and alluvial plains within 2.5 miles (4 km) of the coast. They are typically associated with open patches of sandy soils within coastal sage scrub communities, although vegetation characteristics, such as shrub and grass cover, vary considerably (Brehme et. al 2012). Potential habitat does not occur at Stuart Mesa Sites (A, B, C, and D) or at Site E, but does occur in the utility corridors. Occupied habitat exists near the project area (SJM Biological Consultants 2015a).

Stephen's Kangaroo Rat

Stephen's kangaroo rats are endemic to the Perris and San Jacinto Valleys in western Riverside County and the San Luis Rey and Temecula Valleys in northern San Diego County. Stephen's kangaroo rats reach their highest densities in intermediate successional stage grassland communities characterized by moderate to high amounts of bare-ground, high forb cover, moderate slopes, and well-drained soils (MCB Camp Pendleton 2012).

Large fluctuations in both distribution and density over time have been documented for this species. Ten-fold changes in abundance within and among years are common. Densities also vary over space due to changes in habitat conditions and natural successional dynamics. At MCB Camp Pendleton, Stephen's kangaroo rats occur at scattered localities; the easternmost population occurs in the Juliett Training area, south of the southern border of the Naval Weapons Station Detachment Fallbrook (MCB Camp Pendleton 2012). Potential habitat does not occur at Stuart Mesa Sites (A, B, C, and D) or at Site E (SJM Biological Consultants 2015b).

Coastal California Gnatcatcher

Coastal California gnatcatchers are obligate permanent residents of coastal sage scrub vegetation that will also make limited use of adjacent habitats outside of the breeding season. The breeding season is from 15 February through 31 August, with peak nesting activities occurring from mid-March through May (U.S. Fish and Wildlife Service [USFWS] 2007).

Most coastal California gnatcatchers at Camp Pendleton are found at elevations below 490 feet (150 meters), on less than 15 percent slopes, in areas that have not burned in ten or more years. Coastal California gnatcatchers are found in the same general areas as in years past (MCB Camp Pendleton 2012). Base-wide surveys conducted in 2010 detected 268 nesting pairs. A decrease from the 668 observed in 2006 to 268 in 2010 represents the largest decrease recorded for MCB Camp Pendleton. This, combined with a similar decline in gnatcatcher numbers between the 1998 and 2003 survey efforts, is evidence that this population is subject to dramatic fluctuations (NAVFAC Atlantic 2011).

As provided by Table 3.1-3, and shown on Figures 3.1-1 through 3.1-3, 1.0 acre (0.4 ha) of suitable habitat occur within the utility corridors of Sites A and B, and 11.5 acres (4.7 ha) of suitable habitat occur within Site E. The agricultural and disturbed land that comprises most of the Stuart Mesa Sites does not afford cover and is unlikely to be used as foraging or dispersal habitat by gnatcatchers that inhabit adjacent DCSS. In contrast, grassland vegetation at Site E is nearly surrounded by occupied DCSS (refer to Figure 3.1-3) and is likely to be used for foraging and dispersal by gnatcatchers. Additionally, 75.3 acres (30.5 ha) and 77.1 acres (31.2 ha) of suitable habitat occur within 500 feet (152 meters) of the Stuart Mesa Sites and Site E, respectively. With the possible exception of some of the potential habitat west of Site A, along I-5 (refer to Figure 3.1-1), all potential habitat is considered to be occupied, although the DCSS at Stuart Mesa appears to be of poorer quality (based on the prevalence of coyote brush) and supports lesser numbers of gnatcatchers.

A USFWS-permitted biologist conducted coastal California gnatcatcher protocol surveys in suitable DCSS habitats within and surrounding Site E in the spring of 2015. Survey results indicated that coastal California gnatcatchers were using three areas of DCSS in and within 500 feet (152 meters) of Site E (MCB Camp Pendleton 2015c). All three of the coastal California gnatcatcher territories had patches of high quality DCSS, which were dominated by California sagebrush shrubs, and were relatively undisturbed. The DCSS in the project area mostly occurs in the 500-foot (152-meter) buffer surrounding Site E. Site E contains very little suitable DCSS habitat. The primary disturbance potentially affecting the California gnatcatcher within Site E and the 500-foot (152-meter) buffer appears to be Vandegrift Boulevard, which bisects the survey area, and associated visual and aural traffic disturbance (MCB Camp Pendleton 2015c).

Table 3.1-3. Suitable Habitat within or Adjacent to the Project Area

Area	Coastal California Gnatcatcher *acres (ha)*	Least Bell's Vireo *acres (ha)*
Site A	0.7 (0.3)*	-
Site B	0.3 (0.1)*	-
Site C	0.03 (0.01)	-
Site D	-	-
Site E	11.5 (4.7)	-
Sites A-D 500-foot (152-meter) buffer	75.3 (30.5)	20.3 (8.2)
Site E 500-foot (152-meter) buffer	77.1 (31.2)	6.9 (2.8)
Total	**164.9 (66.8)**	**26.9 (11.0)**

Note: * Values represent utility corridors. Utility corridors are not included in Alternative 1, but are included in Alternatives 2 and 3.

Least Bell's Vireo

Least Bell's vireos are small, migratory songbirds that arrive at MCB Camp Pendleton from wintering grounds in Baja, CA as early as mid-March and depart by September. The breeding season is from 15 March through 31 August. The least Bell's vireo primarily inhabits dense willow-dominated riparian habitats with lush understory vegetation. The subspecies forages and nests primarily in willows (Lynn and Kus 2010).

As provided by Table 3.1-3, and shown on Figures 3.1-1 through 3.1-3, no suitable least Bell's vireo riparian habitat is located within any of the proposed project sites. However, 20.3 acres (8.2 ha) and 6.9 acres (2.8 ha) of suitable habitat respectively occur within 500 feet (152 meters) of the Stuart Mesa Sites and Site E. The habitat east of Site A and northwest of Site B is occupied. The potential habitat within Site E's 500-foot (152-meter) buffer is not known to be occupied. However, since least Bell's vireos are known to occupy other nearby habitat (refer to Figure 3.1-3), this habitat has the potential to be occupied in the future.

Light-footed Ridgeway's Rail

Light-footed Ridgeway's rails are non-migratory marsh birds that live and breed in coastal and freshwater marshes. The SMR Estuary has been surveyed for light-footed Ridgeway's rails every year since 1980, and other potential locations on MCB Camp Pendleton, including San Mateo Creek, Las Flores Creek, and Cocklebur Lagoon, have also been surveyed in most years (Zembal et al. 2009). However, with the exception of one reported sighting at Green Beach (MCB Camp Pendleton 2015e), since the 1980s, the species has been detected on MCB Camp Pendleton only at the SMR Estuary (MCB Camp Pendleton 2012) (refer to Figure 3.1-1). Annual surveys show at least one pair of birds present in the estuary near the mouth of the SMR during most years since 2002. A second pair of birds has been occasionally documented in brackish or freshwater marsh areas further upstream between the railroad tracks and Stuart Mesa Road (Zembal et al. 2009).

Southern California Steelhead

Southern California steelhead are an anadromous form of rainbow trout that use freshwater habitats during the first years of their lifecycle, then move to marine water for two to three years before returning to freshwater to spawn (USFWS 1998). Spawning season for this species occurs January through May (Boughton et al. 2006). Steelhead historically occurred within three drainages on MCB Camp Pendleton: San Mateo, San Onofre, and Santa Margarita.

Southern California steelhead have not been sighted in the SMR since the 1940s, and those sightings were anecdotal. It has been theorized that flow conditions in the SMR have been sufficient to support populations since at least the 1980s, with the exception of several individual dry years, but this species has not repopulated the river (USFWS 1998). However, a tissue sample obtained from a trout captured in the SMR during the spring of 2009 was identified through genetic testing to be of wild steelhead ancestry with no indication of hatchery origin (National Marine Fisheries Service 2010). Although genetic testing of the tissue sample positively identified the captured trout to be of wild steelhead ancestry, an otolith sample was not taken which would have confirmed whether the fish was an offspring of wild native resident trout or wild steelhead which had migrated upstream (Kalish 1990, Volk et al. 2000).

The mouth of the SMR, southwest of the Site C, may provide habitat for steelhead migratory passage.

Tidewater Goby

Tidewater gobies are small fish that live and reproduce in coastal lagoons. This goby inhabits shallow waters (less than 3 feet [0.9 meter] deep) that are slow moving to still but not stagnant. In southern California, San Mateo, San Onofre, and Las Flores creeks are considered by the USFWS to have the largest and most persistent populations of tidewater goby in the region (Lafferty 2012). Tidewater gobies occur in seven lagoons on MCB Camp Pendleton: San Mateo Creek Lagoon, San Onofre Creek Lagoon, Las Flores Creek Lagoon, Hidden Creek Lagoon, Aliso Creek Lagoon, French Creek Lagoon, and Cockleburr Creek Lagoon. Biannual presence/absence surveys for tidewater gobies are conducted at all above mentioned lagoons as well as the SMR Estuary. Since beginning presence/absence surveys in 2002, the SMR Estuary is the only sampling location on MCB Camp Pendleton that has not produced positive presence data for tidewater gobies (Lafferty 2012).

Thread-leaved Brodiaea

The thread-leaved brodiaea is a perennial herbaceous plant that produces leaves and flowers from an underground corm. It occurs at elevations between 10 feet (3 meters) and 2,500 feet (765 meters) (USFWS 2009, MCB Camp Pendleton 2012). In San Diego County, thread-leaved brodiaea typically occurs in clay soils associated with open native or non-native grassland, open DCSS, or open coastal sage scrub-chaparral communities (USFWS 2009, 2011). Potential habitat for thread-leaved brodiaea occurs in Site E. Surveys for thread-leaved brodiaea in Site E were conducted in Spring 2015. The surveys found no thread-leaved brodiaea in the Site E project area in 2015. However, during coastal California gnatcatcher surveys that were being conducted by Cardno biologists at Site E (including within a 500-foot [152-meter] buffer surrounding the project area) on 22 April 2015, two large thread-leaved brodiaea populations were discovered outside of the project area, north of Vandegrift Boulevard (MCB Camp Pendleton 2015d). These two populations were mapped and data sheets were completed for them, however, they were not revisited because they were not found during the protocol surveys and did not occur in the project area.

Other Special Status Species

There are a number of non-listed special status species that occur on MCB Camp Pendleton (MCB Camp Pendleton 2012) and that have the potential to occur in or transit through the potential solar PV sites. California Department of Fish and Wildlife (CDFW) special status wildlife and plant species have the potential to occur in the project area (CDFW 2015a, 2015b; MCB Camp Pendleton 2015a). The Stuart Mesa Sites provide little to no native habitat for such species, but the following special status wildlife species could potentially forage in or traverse through these sites as well as Site E: sharp-shinned hawk

(*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), and white-tailed kite (*Elanus leucurus*).

No federally-listed fairy shrimp (Riverside fairy shrimp [*Streptocephalus woottoni]* or San Diego fairy shrimp [*Branchinecta sandiegonensis]*), were detected or observed within or adjacent to Site E/Alternative 3 during protocol-level surveys conducted during 2014/2015. Surveys are planned in 2016 adjacent to Site E and would not affect the preferred alternative.

The only rare plant that was observed in the project area was Palmer's grappling hook (*Harpagonella palmeri*). Palmer's grappling hook is of limited distribution in California. It is not federally protected. In the two populations that occur in the project area at Site E, thousands of individuals were observed. Palmer's grappling hook blooms from February to May and occurs on dry slopes and mesas up to 1,500 feet (457 meters) in chaparral, coastal sage scrub, and grassland communities (MCB Camp Pendleton 2015d).

3.1.3 Environmental Consequences

3.1.3.1 Alternative 1: Sites A and B

<u>Construction</u>

Under Alternative 1, construction activities at Sites A and B would have little impact on native and/or natural plant communities, as these sites are located in former agricultural land (and a small portion of eucalyptus woodland; see Table 3.1-1) that is largely devoid of native vegetation. To further minimize potential impacts, proposed measures described in Table 3-1 would prevent any tree outside of the agricultural fields, including eucalyptus, from being removed for construction of the solar PV sites. Therefore, there would be little to no impacts to plant communities, including eucalyptus woodland.

Construction activities at Sites A and B would likely have minimal impacts on wildlife populations. The former agricultural lands in Sites A and B provide little suitable habitat for most wildlife. Use of construction equipment and vehicles could potentially crush and/or injure wildlife, but because of the lack of suitable wildlife habitat within the potential PV sites, the likelihood of such impact is relatively low. Wildlife in the vicinity of construction activities would also be exposed to auditory and visual disturbance from human presence and construction equipment. However, the potential solar PV sites are immediately east of I-5 and active railroad tracks that produce near-constant visual and aural disturbance. Mobile species, such as birds and mammals, would leave the sites during construction and migrate to other more suitable locations.

Construction of the solar PV system would not result in a substantial loss of foraging, nesting, or roosting habitat for wildlife, including special status species, as all of the potential solar PV sites have been intensively used for agricultural purposes in the past and do not currently provide such habitat.

To avoid impacts to nesting birds, including ground- and/or shrub-nesting birds, a survey for active nests or nesting activity would be conducted before construction if clearing and grubbing were to occur during the nesting season (typically 15 February to 31 August). If the survey finds active nests, then construction personnel would either avoid nests until fledglings have left or permitted personnel would relocate eggs and chicks following all federal and state regulations and permitting requirements.

Temporary direct effects associated with construction during the nesting season may include construction-related vibration, dust, and noise. These impacts may affect the suitability of localized habitat over the anticipated 2-year construction period. For example, if construction activities occur during the nesting season, noise may mask calls, change nesting or foraging patterns, or temporarily displace individuals from the immediate vicinity of the project site. These temporary impacts, however, would be minimized by the proposed avoidance/minimization measures for coastal California gnatcatchers and least Bell's vireos described below.

Within the project area, potential habitat for thread-leaved brodiaea only occurs at Site E. As such, the implementation of Alternative 1 at Site A and Site B would not affect thread-leaved brodiaea.

The proposed project would not occur within light-footed Ridgeway's rail habitat, the light-footed Ridgeway's rail is not expected to occur in the vicinity of the proposed project site, and the implementation of a SWPPP (as described in Section 3.3.3.1, *Construction*) would prevent stormwater runoff from impacting downstream light-footed Ridgeway's rail habitat. As such, there would be no impact to the light-footed Ridgeway's rail or any fish species. Therefore, implementation of Alternative 1 would not affect the light-footed Ridgeway's rail, the southern California steelhead, or the tidewater goby.

Special status wildlife species within or adjacent to Site A or Site B would be subject to the same impacts described above. It is highly unlikely that any special status species would be present in the potential solar PV sites during construction activities. Although coastal California gnatcatchers and least Bell's vireos in the vicinity of the project area have likely become habituated to noise from I-5, the railway, Stuart Mesa Road, and the nearby housing development, there would likely be additional disturbance from proposed construction activities.

The following avoidance/minimization measures would be implemented to avoid or minimize impacts to the coastal California gnatcatcher and the least Bell's vireo:

- A pre-construction survey would be conducted if construction activities occur between February and August. Surveys would be appropriately timed based on potential occurrence and breeding seasons of the coastal California gnatcatcher and the least Bell's vireo, respectively. Surveys would be performed by a qualified ornithologist familiar with the coastal California gnatcatcher and the least Bell's vireo (i.e., at least one field season and 40 hours of experience with each species). Three pre-activity surveys for active coastal California gnatcatcher and least Bell's vireo nests in all suitable habitat within 500 feet (152 meters) of the project area would be conducted. These surveys would be coordinated with any other on-going surveys to minimize disturbance to nesting coastal California gnatcatchers and least Bell's vireos and to avoid redundant survey effort.
- Construction activities during the nesting season within 500 feet (152 meters) of occupied coastal California gnatcatcher or least Bell's vireo habitat would be avoided to the maximum extent practicable. If seasonal avoidance is not practicable, and if coastal California gnatcatcher and least Bell's vireo nests are detected during pre-activity surveys adjacent to the project, the USFWS Carlsbad Fish and Wildlife Office would be notified of the location of the nest. Additionally, a 250-foot (76-meter) buffer around the nest would be clearly demarcated, and the area would be avoided until the young have fledged and/or the nest becomes inactive. The qualified biologist would implement nest monitoring during repair, maintenance, or access route establishment activity, noise monitoring, and noise attenuation measures if activity noise levels exceed pre-activity ambient noise levels within nesting territories during the breeding season.

Due to the limited potential impacts (mainly temporary noise and visual stimuli) to the coastal California gnatcatcher and its habitat, and with implementation of the proposed avoidance/minimization measures, construction activities associated with Alternative 1 may affect, but are not likely to adversely affect, the coastal California gnatcatcher and there would be no significant impact.

Due to the limited potential impacts (mainly temporary noise and visual stimuli) to the least Bell's vireo and its habitat, and with implementation of the proposed avoidance/minimization measures, construction activities associated with Alternative 1 would not affect the least Bell's vireo and there would be no significant impact.

Operation

Following construction and during operation, ground cover and other vegetation beneath and near the panels would be trimmed periodically and likely controlled with herbicides to ensure that vegetation does not obscure or shadow the panels. Because of the historical agricultural use of the potential solar PV sites, the vegetation requiring mechanical and/or chemical control would primarily be non-native species. Therefore, there would be no impacts to plant communities.

Any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by Assistant Chief of Staff (AC/S) Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SWRCB 2014).

Chain link fencing around the potential solar PV sites would present barriers to overland movement by wildlife, especially to larger species. However, larger animals would likely be able to move around the fences without expending energy to the point of affecting major life functions, and it is expected that smaller species, such as invertebrates, reptiles, and small rodents, would be able to fit through the chain link fencing. Still, the solar panels themselves and the fencing surrounding the solar PV fields would alter the local environment to the point that hiding spots, preying strategies, and food availability would be changed. Conversion of the former agricultural fields to a PV array under Alternative 1 is likely to reduce bird abundance and diversity, although highly insectivorous species (e.g., swallows and flycatchers) may be less affected (DeVault et al. 2014); see below. In the case of Sites A and B, however, the existing condition is highly degraded, such that relatively small changes are expected.

Impact trauma was the leading cause of bird death documented at a single PV site in southern California in 2014 (Kagan et al. 2014). A large proportion of the birds died from striking project components, either because panels were oriented vertically and birds flew into them, or as a result of apparently mistaking the solar PV fields for water (Kagan et al. 2014). "Lake effect" is commonly used to describe the phenomenon whereby birds and their insect prey can mistake a reflective solar facility for a water body because they share several characteristics, namely large, smooth, dark surfaces that reflect horizontally polarized sunlight and skylight (Upton 2014).

Many insects rely on polarized light as a cue to indicate the presence of lakes and rivers (Horvath et al. 2010). As a result, flying insects could be attracted to PV panels, in which case they would likely attract insect-eating birds and/or bats, potentially increasing the likelihood of bird/bat collisions with PV panels

(Kagan et al. 2014). In contrast, DeVault et al. (2014) reported that (1) they found little evidence that birds using PV arrays responded to polarized light reflected by the PV panels or by increased abundance or availability of insects attracted to the panels, (2) they rarely observed birds foraging on or near PV arrays, and (3) several strongly insectivorous species (e.g., swallows and flycatchers) were, in general, at least as abundant at PV arrays as at (typically monoculture) airfield grasslands. Although PV panels are inherently absorptive (i.e., non-reflective), they do reflect horizontally polarized light similar to the way a lake's smooth, dark surface horizontally polarizes reflected sunlight and skylight. This feature may confuse birds that use polarized light for orientation or behavioral cues (Desert Renewable Energy Conservation Plan Independent Science Advisors 2010). Lake effect seems to be most influential when panels or heliostats are oriented horizontally, collectively forming a smooth, continuous surface (Kagan et al. 2014).

Estimating the number of birds that may be injured or killed due to lake effect as a result of the Proposed Action is impossible at this time because of the lack of studies on this phenomenon as it relates to solar projects. Under Section 1502.22 of CEQ Regulations for Implementing NEPA, "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). 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. However, based on the available data, utility-scale solar power projects have the potential to cause some mortality to birds and bats. Efforts to minimize potential lake effect impacts to birds and bats from the implementation of the Proposed Action can still be achieved through the use of best available science and appropriate design specifications to be implemented during construction.

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 field location(s) would not rise to the level of a significant impact for purposes of NEPA analysis. Therefore, Alternative 1 is not expected to substantially adversely affect bird and bat populations as a result of mortalities related to lake effect.

To assess any potential impacts the solar PV field might be having on wildlife and special status species, monthly monitoring of the solar PV sites, including visual reconnaissance of dead and/or injured species would be conducted for the first 12 months. After this time, monitoring would be conducted quarterly. The results of the monitoring surveys, as well as any incidental observations made by operational personnel, would be reported to the USFWS for comments and recommendations to minimize impacts from continuing operations. Additionally, maintenance personnel would be trained to identify coastal California gnatcatchers and least Bell's vireos and would report any observations of dead or injured California gnatcatchers and least Bell's vireos to Environmental Security within 48 hours.

Under Alternative 1, the likelihood of impacts to federally-listed species would be extremely low because suitable habitat does not occur at the proposed PV site and monitoring of the solar PV fields would be conducted to assess the potential use of the project area by wildlife, including federally-listed species. Results of the surveys would be provided to USFWS for comments and recommendations to minimize impacts from continuing operations.

Decommissioning

Decommissioning of the solar PV sites would have similar impacts to construction activities. Work crews, vehicles, and equipment would require access to the sites for removal of all solar PV materials. No native or natural plant communities would be impacted by decommissioning activities, as bare ground and/or non-native herbaceous plants would be the dominant groundcover.

During operation of the solar PV sites, certain species may have become established in the habitats in and/or adjacent to the project area, including certain special status species. Therefore, a biological monitor would survey the solar PV sites for animal dens and nesting birds before commencing decommissioning activities. If nesting or denning animals are found to occur in the solar PV sites, they would be allowed to leave the sites on their own accord or would be passively relocated during the avian non-nesting season (September – February) before the start of decommissioning activities. If federally-listed species are found to occur in the solar PV sites before the start of decommissioning activities, then the USFWS would be notified and no actions would be taken until necessary measures are agreed upon by the Navy, the private partner, and the USFWS.

Summary

Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat and DCSS, which are suitable habitat for the least Bell's vireo and the coastal California gnatcatcher, respectively, are adjacent to, but not located within, the construction footprint. As such, implementation of Alternative 1 would not affect the least Bell's vireo or the coastal California gnatcatcher. Moreover, the avoidance/minimization measures listed in Table 3-1 would be implemented to lessen potential impacts to biological resources. Therefore, implementation of Alternative 1 would have no significant impact to biological resources.

3.1.3.2 Alternative 2: Sites A, B, C and D

Construction

Sites A and B

With the exception of the addition of the transmission line corridors, construction impacts at Sites A and B under Alternative 2 would be similar to those described for Alternative 1. Construction of the associated transmission lines could temporarily or permanently remove 1.0 acre (0.4 ha) of habitat (i.e., DCSS) occupied by coastal California gnatcatchers. Impacts to DCSS in the transmission line corridors would be avoided to the maximum extent practical (e.g., by spanning transmission lines over habitat). DCSS that cannot be avoided would be restored onsite or mitigated off-site.

The additional transmission lines from Site A and Site B to existing overhead lines may be used for perching by predatory birds, and would also represent a collision hazard for birds, especially during periods of low visibility. However, overhead transmission lines are already abundant in the vicinity of the project area, are part of the local environment, and would have a relatively small impact given the existing trees, snags, and structures (e.g., homes, fences, and baseball field lights) already located along the Site A transmission line route and the existing transmission lines located along and across the Site B transmission line route. In addition, all transmission towers, poles, and lines would be designed and constructed in accordance with the guidelines in Avian Power Line Interaction Committee (2006 and 2012), or the most current version of the guidelines available at the time of construction, to minimize collision and electrocution hazards of migratory birds from transmission lines.

Due to the limited potential impacts (mainly temporary noise and visual stimuli with limited direct habitat loss of 1.0 acre [0.4 ha] that would be restored or mitigated) to the coastal California gnatcatcher and its habitat, and with implementation of the proposed avoidance/minimization measures, construction activities associated with Alternative 2 may affect, but are not likely to adversely affect, the coastal California gnatcatcher and there would be no significant impact.

If Alternative 2 were to be selected, due to the general suitability of habitat for the Pacific pocket mouse at the two utility corridors and the proximity of both corridors to historically-occupied Pacific pocket mouse habitat, a live-trapping survey would be performed in the portions of each utility corridor exhibiting the most suitable Pacific pocket mouse habitat. Survey results would confirm the presence or absence of the Pacific pocket mouse and would be shared with the USFWS during subsequent consultation. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact.

Sites C and D

Construction impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

Operation

Sites A and B

Operation impacts at Sites A and B under Alternative 2 would be identical to those described for Alternative 1.

Sites C and D

Operation impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

Decommissioning

Sites A and B

Decommissioning impacts at Sites A and B under Alternative 2 would be identical to those described for Alternative 1.

Sites C and D

Decommissioning impacts at Sites C and D, being similar to Sites A and B and almost entirely composed of AGR and DEV, with a small amount of EUC, generally would be as described for Sites A and B under Alternative 1.

Summary

Construction of the proposed project would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint. A small area (1.0 acre [0.4 ha]) of DCSS, which is suitable habitat for the coastal California gnatcatcher, is located within the transmission corridors. As such, implementation of Alternative 2 would not affect the least Bell's vireo and may affect, but is not likely to adversely affect, the coastal California gnatcatcher. The avoidance/minimization measures listed in Table 3-1 would be implemented to lessen potential impacts to biological resources. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse. Therefore, implementation of Alternative 2 would have no significant impact to biological resources.

3.1.3.3 Alternative 3: Sites A, B, C, D, and E

Construction

Sites A, B, C, and D

Construction impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

Site E

Construction impacts at Site E would be similar to those described for Sites A-D, with the exception that Site E contains a greater amount of biological resources, particularly with respect to the vegetation communities and the greater diversity and abundance of wildlife that use these vegetation communities than Sites A-D. Depending on the final plan of development, construction at Site E could result in the loss of up to 11.5 acres (4.7 ha) of DCSS, 32.9 acres (13.3 ha) of NNG, and/or 13.1 acres (5.3 ha) of VNG. The DCSS at Site E is considered occupied habitat for the coastal California gnatcatcher, and all of the grassland is potential foraging and dispersal habitat for the coastal California gnatcatcher. Additionally, as shown on Figure 3.1-3, occupied coastal California gnatcatcher habitat also surrounds Site E. As such, the implementation of Alternative 3 would result in fragmentation of the coastal California gnatcatcher's habitat. However, given the relatively small size of Site E and the habitat connectivity in the vicinity that would remain, this impact would be minor.

To minimize potential impacts, all avoidance/minimization measures identified for construction activities under Alternative 2 would also be implemented during construction activities at Site E under Alternative 3. Site E under the Proposed Action would require formal consultation with the USFWS and would require mitigation for the loss of occupied coastal California gnatcatcher habitat and/or special conservation measures to avoid or minimize impacts to coastal California gnatcatchers. Federally listed fairy shrimp were not detected during protocol surveys in 2014/2015 and if they are detected in planned 2016 surveys, they would be avoided.

Therefore, for the reasons described above, the implementation of Alternative 3 would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact.

Operation

Sites A, B, C, and D

Operation impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

Site E

Upon completion of construction, Site E would be similar to Sites A and B under Alternative 2. Therefore, operational impacts at Site E generally would be as described for Sites A and B under Alternative 2.

Decommissioning

Sites A, B, C, and D

Decommissioning impacts at Sites A, B, C, and D under Alternative 3 would be identical to those described for Alternative 2.

Site E

Decommissioning impacts at Site E under Alternative 3 would be identical to those described for Alternative 2.

Summary

Construction of the proposed project at Sites A-D would primarily impact non-native habitat that has little value and does not support sensitive plants or animals. Site E provides greater value than the Stuart Mesa sites, particularly for DCSS and the coastal California gnatcatcher. Riparian habitat, which is suitable habitat for the least Bell's vireo, is adjacent to, but not located within, the construction footprint of Sites A-D. Depending on the final plan of development, the implementation of Alternative 3 could result in the loss of up to 11.5 acres (4.7 ha) of DCSS that is suitable habitat for the coastal California gnatcatcher at Site E. As such, construction of the proposed project would not affect the least Bell's vireo but would result in adverse impacts to the coastal California gnatcatcher. If this alternative were to be selected, the implementation of the proposed avoidance/minimization measures, and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS, would minimize impacts to coastal California gnatcatchers to no significant impact. A live-trapping survey would be performed to determine the presence or absence of the Pacific pocket mouse in the transmission corridors of Sites A and B. Based on the results of the surveys and subsequent consultation with the USFWS, additional avoidance/minimization measures specific to the Pacific pocket mouse may be warranted. Pending successful completion of the consultation and identification of those measures, there would be no significant impact to the Pacific pocket mouse. Therefore, implementation of Alternative 3 would have no significant impact to biological resources.

3.1.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. Therefore, the No-Action Alternative would have no impact on biological resources.

3.2 HAZARDOUS MATERIALS AND WASTE (HAZMAT/HAZWASTE)

3.2.1 Definition of Resource

HAZMAT is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors (Institute of Hazardous Materials Management 2010).

HAZWASTE is waste that is dangerous or potentially harmful to human health, animals, or the environment. Hazardous wastes take the form of liquids, solids, gases, or sludges, and are typically discarded commercial products or the by-products of manufacturing or operating processes (U.S. Environmental Protection Agency [USEPA] 2014a).

Safety refers to the level of risk involved with the utilization of HAZMAT or in the production of HAZWASTE in the process of carrying out the construction, operation, and maintenance of the proposed project. Security refers to the safeguarding of HAZMAT/HAZWASTE storage and other “do not approach” areas.

All units, organizations and tenants of MCB Camp Pendleton must manage HAZMAT/HAZWASTE in accordance with the Basewide Hazardous Waste Management Plan (HWMP) (MCB Camp Pendleton 2011b). The HWMP incorporates federal, state, local (city and county) and military regulations prescribing responsibilities, policies, and procedures for generating, handling, storing, and managing HAZMAT/HAZWASTE at MCB Camp Pendleton.

The assessment of HAZMAT and HAZWASTE on MCB Camp Pendleton primarily focuses on the following:

Installation Restoration Program (IRP) Sites: The IRP is designed to identify, assess, characterize, and clean up or control, and thereby reduce contamination from past hazardous waste disposal operations and hazardous materials spills. The Department of Defense’s (DoD) equivalent to the USEPA Superfund program, the IRP was established to meet federal requirements regarding the cleanup of hazardous waste sites, outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by Superfund Amendments and Reauthorization Act.

Munitions Response Plan (MRP) Sites: The MRP addresses munitions response sites; sites that are known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents. The MRP complies with environmental clean-up laws, such as CERCLA, also known as Superfund.

Underground (or Leaking Underground) Storage Tanks (UST/LUST): The USEPA has a UST/LUST program, authorized under Resource Conservation and Recovery Act to prevent the release of petroleum and other products stored in USTs. Congress enacted laws to clean up leaking tanks, prevent tanks from leaking, and detect leaks quickly if they do occur since leaking underground storage tanks have been a major cause of groundwater contamination in the U.S.

Ammunition Storage Areas: MCB Camp Pendleton has several ammunition storage areas which are storage facilities for live ammunition and explosives.

Safety and security on MCB Camp Pendleton are subject to the requirements of the Base’s applicable Standard Operating Procedures (SOP). The primary SOP regulating safety and security is the Range and Training Area SOP (Marine Corps Installations West – MCB Camp Pendleton Order [MCIWEST-MCB CAMPENO] 3500.1). As the proposed project would be located on an active military installation, Homeland Security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism, natural disasters, and disease outbreaks (USEPA 2014b). MCB Camp Pendleton has guidance documents including Base Orders, SOPs, and multiple management plans (e.g., environmental response, range and training, waste handling) that govern activities carried out on the Base.

The assessment of safety and security on MCB Camp Pendleton primarily focuses on the MCB Camp Pendleton Base Boundary (perimeter fence) and the following:

Explosive Safety Quantity Distance (ESQD) Arcs: ESQD calculations measure the effects of an explosion at a particular location and is expressed either as a mathematical formula or as an arc map, where the center of the arc is the source of an explosion and the arc's periphery is the maximum area over which the force of the explosion would reach.

Intraline Arcs: The minimum distance permitted between any two buildings within an explosives operating line to protect buildings from propagation of explosions due to blast effect.

Live Fire Training or Munitions Impact Areas: An impact area contains designated boundaries used to contain non-explosive military munitions; and sensitive and non-sensitive, high explosive, military munitions.

3.2.2 Affected Environment

3.2.2.1 Sites A, B, C, and D

Sites A, B, C, and D are located adjacent to the Stuart Mesa Housing complex in the Stuart Mesa Housing area on a former agricultural field that pre-dates the inception of MCB Camp Pendleton in the 1940s, was active well into the 2000s. The lease on the agricultural fields was terminated in January of 2011 and the land is currently unutilized for agriculture purposes (Parsons 2015). The former agricultural land that comprises Sites A, B, C, and D is and has been historically known as the Stuart Mesa East Agricultural Fields (SMEAF). Prior to termination of the lease, the land which includes Sites A, B, and C (also known as the SMEAF Remediation Area) initiated remediation activities for the purpose of making land use acceptable and available for housing and related development. The SMEAF Remediation Area involved two concurrent cleanup areas/cases pertinent to Sites A, B, and C. These were designated by the California Water Resources Control Board (CWRCB) as:

1) "Stuart Mesa East Ag. Fields, Phases VIIA and VIIB", GeoTracker Case #T10000001528, in September of 2009; and
2) "Stuart Mesa East Ag. Fields, Future Development", GeoTracker Case # T10000002569, in September of 2010.

Both of these cases were remediated and closed by CWRCB in March of 2011 and April of 2012, respectively (CWRCB 2015a, 2015b). Another CWRCB remains open in Site D however, which is the Maintenance Facility Compound (also known as the Stuart Mesa Pesticide Maintenance Area) northwest of the SMEAF Remediation Area (CWRCB 2015c). Site assessments conducted in 2011 identified 15 subsites within the Maintenance Facility Compound that required remedial investigation. These subsites were added to the MCB Camp Pendleton IRP as Installation Restoration (IR) Site 1120 (Parsons 2015).

During the comment period of the review of Version 1 of this Draft EA, it was noted by the MCB Camp Pendleton IR/Remediation Branch that although Site A does not host any open remediation sites, Site A is not available for development until the soil is stabilized and a SWPPP on the site is closed by Regional Water Quality Control Board (RWQCB) (MCB Camp Pendleton 2015f). The SWPPP is currently undergoing a closure action, and confirmation of closure should be requested prior to any ground disturbance at the site (MCB Camp Pendleton 2015g). Additionally, in the unlikely event that soil contamination (discolored and/or odorous) is discovered during construction, the action proponent, or their contractor will coordinate with the MCB Camp Pendleton IR/Remediation Branch to ensure all remedial requirements are met. Any contaminated encountered soil will be properly evaluated and managed (MCB Camp Pendleton 2015f).

The IRP, MRP, UST/LUST, or ammunition storage sites mapped by CWRCB within Sites A, B, C, and D are shown in Figure 3.2-1 and listed below (CWRCB 2015d):

Site A

There are two former, closed cleanup sites that occur partially or completely within Site A:

- Stuart Mesa East Agricultural Fields, Future Development (T10000002569)
- Stuart Mesa East Agricultural Fields, Phases VIIA and VIIB (T10000001528)

There is one cleanup site not listed as "closed" within Site A:

- Oceanside CP Site (80000338)

Site B

The two former, closed cleanup sites within Site B are the same as Site A. There are no open cleanup sites within Site B.

Site C

There are no open, nor former, or closed cleanup sites within Site C.

Site D

There is one cleanup site not listed as "closed" within Site D:

- IR Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)

Adjacent to Site A

There are four former, closed cleanup sites adjacent to Site A (CWRCB 2015d):

- Stuart Mesa Agricultural Lands Phase VI Housing Project - 31 Area (T10000000991)
- Stuart Mesa Agricultural Lands Sewer Line and Four SMAP Parcels - 31 Area (T10000001660)
- Stuart Mesa East Agricultural Fields, Final Phase (T10000003524)
- 31 Area - Building 31921-1 (T0608114719)

Adjacent to Site B

There is one former, closed cleanup site adjacent to Site B (CWRCB 2015d):

- 31 Area - Building. 31511 (T0607301857)

There is one cleanup site not listed as "closed" adjacent to Site B

- IR Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)

Adjacent to Site C

There is one cleanup site not listed as "closed" outside of the Stuart Mesa Housing Area, but adjacent to Site C (CWRCB 2015d):

- 31 Area - OU 4 - Site 30 - Firing Range Soil Fill (DOD100035300)
- Stuart Mesa East Agricultural Fields, Future Development (T10000002569)

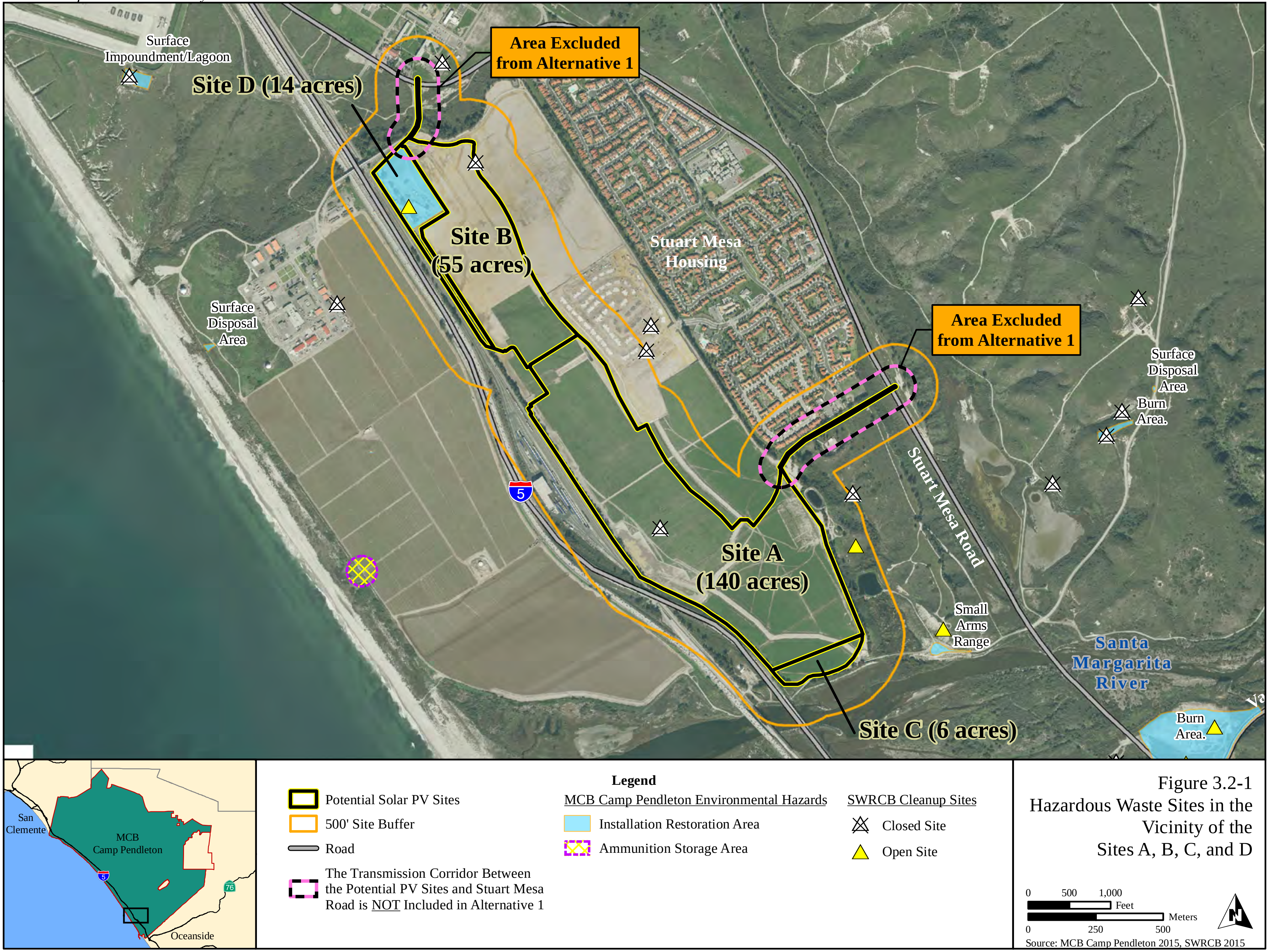

Figure 3.2-1
Hazardous Waste Sites in the Vicinity of the Sites A, B, C, and D

Source: MCB Camp Pendleton 2015, SWRCB 2015

Adjacent to Site D

There is one former, closed cleanup site adjacent to Site D (CWRCB 2015d):

- Stuart Mesa East Agricultural Fields, Phases VIIA and VIIB (T10000001528)

The status of these sites are discussed in Section 3.2.3, *Hazardous Materials and Waste (Environmental Consequences)*. There are no other active IRP, MRP, UST/LUST, or ammunition storage sites within or adjacent to Sites A, B, C, and D.

Site characteristics at Sites A, B, C, and D with the potential to affect, or be affected by, safety and security include proximities to military training activities, the SMR, aviation operations, the perimeter fence of MCB Camp Pendleton, and any identified munitions or waste cleanup sites.

There are no active ESQD arcs, intraline arcs, Live Fire Training or Munitions Impact areas, sites, or arcs within Sites A, B, C, and D (MCB Camp Pendleton 2015a). The perimeter fence of MCB Camp Pendleton borders the west side of each site along the I-5 and railroad easements.

3.2.2.2 Site E

Site E in the 12 Area is situated in a developed area near Marine Corps Air Station (MCAS) Camp Pendleton in the south-central portion of MCB Camp Pendleton. Site E is located on a parcel of undeveloped hilly terrain positioned between Vandegrift Road and Rattlesnake Canyon Road, south of Lake O'Neill and east of MCAS Camp Pendleton.

The IRP, MRP, UST/LUST, or ammunition storage sites mapped by CWRCB within Site E are shown in Figure 3.2-2 and listed below (CWRCB 2015d):

There are no former, closed cleanup sites within Site E; however, there is one clean-up site not listed as "closed" within the vicinity of Site E (CWRCB 2015d):

- IR Site 1122 - 61 Area Shotfall Zone (T10000005481)

There are multiple open, former, and closed cleanup sites in the vicinity of Site E, but none immediately adjacent to Site E (CWRCB 2015d).

There is an inactive pistol range located within Site E that is not listed as "closed" (Figure 3.2-2; MCB Camp Pendleton 2015a; U.S. Army Corps of Engineers [USACE] 2001):

- Range 404

There are no active ESQD arcs, intraline arcs, or Live Fire Training or Munitions Impact areas within Site E (MCB Camp Pendleton 2015a).

The status of these sites are discussed in Section 3.2.3, *Hazardous Materials and Waste (Environmental Consequences)*. There are no other active IRP, MRP, UST/LUST, or ammunition storage sites within Site E.

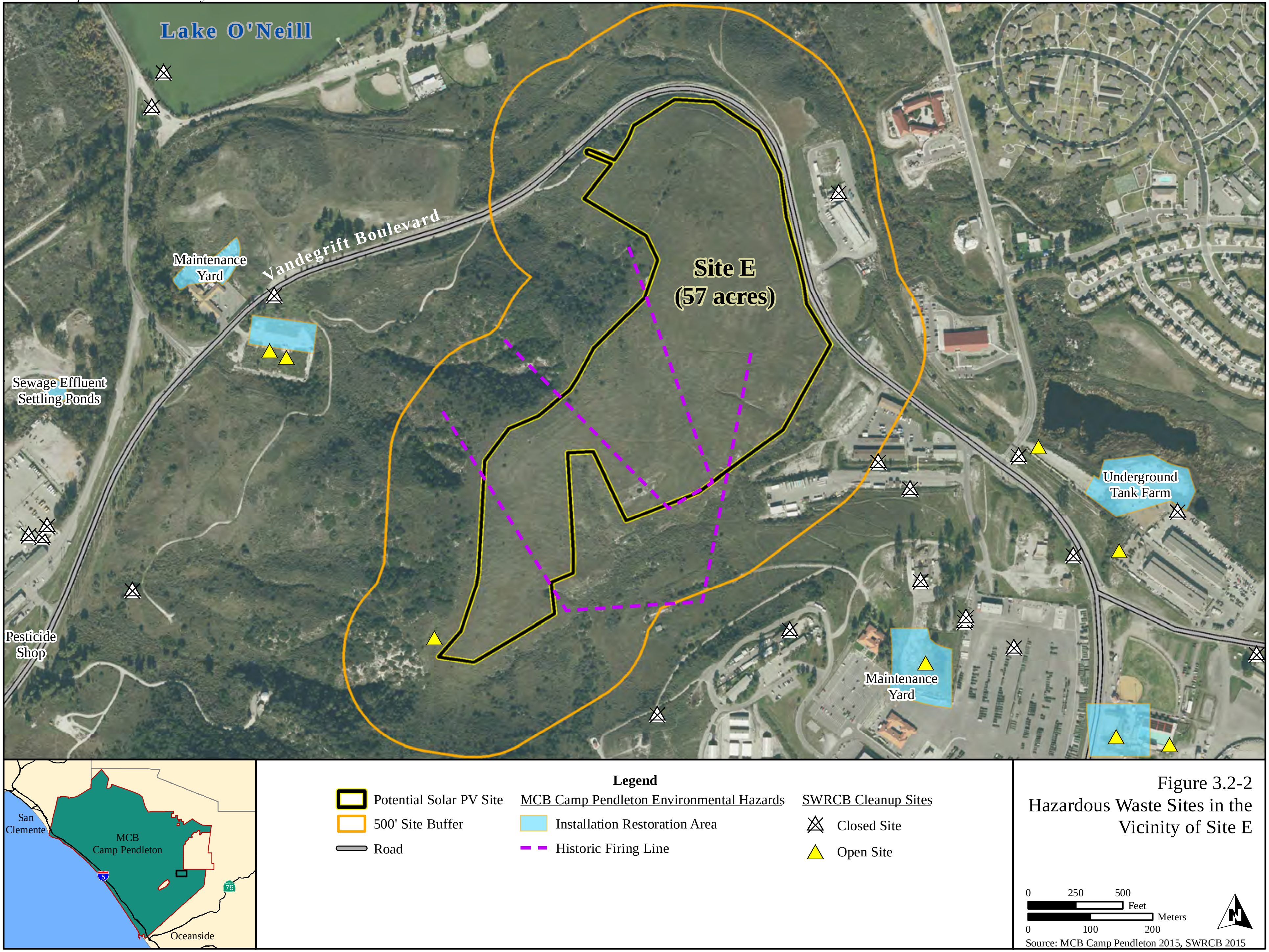

Figure 3.2-2
Hazardous Waste Sites in the Vicinity of Site E

3.2.3 Environmental Consequences

3.2.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

The "Oceanside CP Site (80000338)" is the only cleanup site not listed as "closed" within Alternative 1 (Sites A and B). According to MCB Camp Pendleton, this record is unfamiliar and the validity is suspect; MCB Camp Pendleton is investigating the validity of this record (2014a). The site is listed as inactive according to California Department of Toxic Substances Control (DTSC) and may be a relic database record (DTSC 2015). The information provided by DTSC on its Envirostor website is that this site (referred to as the "Oceanside Camp Site" in an Inventory Project Report [INPR]) was evaluated for inclusion into the Defense Environmental Restoration Program (DERP) in 1989; however, it was excluded from the DERP on the basis that it was part of an active DoD site (ostensibly a reference to MCB Camp Pendleton) (USACE 1989). These type of DERP INPRs are typically associated with Formerly Used Defense Sites (FUDS) evaluations, and sites determined to be "active" DoD sites do not qualify for classification as "formerly" used. During the DERP evaluation, the site was assigned a project number of "J09CA051900" which is consistent with the alpha-numeric codes assigned to FUDS. The DTSC database also lists the site type as "FUDS". Although FUDS are managed by the USACE, no record of a FUDS with this site name or project number could be found in the available USACE online data (USACE 2013) or GIS (USACE 2012). Personal communication with the USACE Los Angeles District FUDS Program Manager revealed that this site was a "building area for radar" (USACE 2015). The USACE is currently looking in to the record to see if there is any more information available (USACE 2015).The developed nature of the southwest region of the Base, and the location of Sites A and B within an agricultural field that has been there for at least 70 years, suggest that the project site was not subject to the type of military activity that has occurred on other parts of the Base. Nevertheless, excavations on any military facility should be approached with caution.

<u>Construction</u>

Alternative 1 site construction is described in Section 2.2.2.2. Primary elements of the construction with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- (up to) 28 MW ground-mounted solar PV panels
- underground and/or pole-mounted electrical infrastructure
- inverters, transformers, switch boards, combiner boxes, electrical switchgear, and associated electrical wiring, connections, and other items required for the solar PV system
- area lighting
- trenching for underground routing of PV panel wiring
- potential boring to support panel foundation mounting posts
- site grading
- construction vehicles, equipment, fuels, and lubricants
- installation of barbed wire fencing around site
- construction debris

The solar PV panels would either be fixed-, single-, or multi-axis type solar PV panels. If selected, the single-axis and/or multi-axis panels would include a drive shaft and motor that rotates the panels to follow the movement of the sun. Equipment used to construct the solar PV system would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. Within Site A or B, a substation would also be constructed. The substation would cover an approximately 1-acre (0.4 ha) area. The substation would serve as the interface connection of the solar PV system to the existing SDG&E 12/69-kV transmission line located west of the Stuart Mesa Housing complex (for Model 2) or to the interface connection to the solar PV system to the existing MCB Camp Pendleton J circuit that runs parallel to the east side of Stuart Mesa Road from MACS Road to the 41 Area (for Model 3). A 69-kV switching/metering station would also be constructed.

Construction would create a minimal amount of construction debris that would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste). All construction would be conducted in compliance with all applicable rules and regulations. The use of standard construction BMPs and a Solid Waste Management Plan (SWMP) will maximize the control of HAZMAT/HAZWASTE components (e.g., fugitive petroleum, oils, and lubricants [POLs] from vehicles).

<u>Operation</u>

Alternative 1 operation and maintenance is described in Section 2.2.2.3. Primary elements of the operation with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- use and maintenance of existing access roads
- operation of electrical and mechanical systems
- solar PV system service, maintenance, and repair
- vegetation trimming
- herbicide treatments

Quarterly inspections of the solar PV system would be conducted to ensure infrastructure is in good operating condition. Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up.

Access roads would be maintained as needed, and ground cover and other vegetation beneath and near the panels would be trimmed periodically. Vegetation beneath and near the panels could also be controlled with herbicides to ensure that it does not obscure or shadow the panels. Any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer’s guidelines, including the FIFRA labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton’s approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by AC/S Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SWRCB 2014).

All operations and maintenance would be conducted in compliance with all Navy and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

Decommissioning

Alternative 1 decommissioning is described in Section 2.2.2.4. Primary elements of the decommissioning with the potential for HAZMAT, HAZWASTE, or safety concerns are:

- removal of aboveground structures
- site grading
- use of construction equipment, vehicles, fuel, and lubricants
- construction (decommissioning) debris

Equipment and vehicles used in the decommissioning of the solar PV system would likely include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. Debris would be removed and disposed of in compliance with the Navy's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the Navy's 2009 statement in the future. The use of standard construction BMPs and SWMP will maximize the control of HAZMAT/HAZWASTE components (e.g. fugitive POLs from vehicles).

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for the hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the Navy would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all Navy regulations applicable to conducting work activities on MCB Camp Pendleton, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

Summary

As discussed above, the "Oceanside CP Site (80000338)" is a potentially insignificant or invalid record, and if so then implementation of Alternative 1 would have no significant impact to HAZMAT/HAZWASTE. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A and B would have CWRCB approval for immediate development.

3.2.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C, and D

In addition to the "Oceanside CP Site (80000338)" addressed in Section 3.2.3.1 above, "Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)" is a cleanup site not listed as "closed" within Site D of Alternative 2. Site 1120 is also listed as a MCB Camp Pendleton IR Site and consists of 15 sub-sites in close proximity. According to CWRCB, the area was used as a maintenance facility compound for farming process functions for growing tomatoes and strawberries and other agricultural uses for at least 70 years. The property has been vacant since the lease to the farmer expired in January 2011. Areas of concern within the maintenance facility compound include two concrete wash pads and current and/or former aboveground storage tank locations (CWRCB 2015b).

According to CWRCB, MCB Camp Pendleton submitted a Draft Closure Report for Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286) to CWRCB on 27 March 2014, and requested a determination of "no further action" (CWRCB 2015e). In a letter dated 11 August 2014, CWRCB confirmed receipt of the Draft Closure Report; however, CWRCB requested that the report be expanded to include “a more comprehensive complete presentation” of the initial site conditions (CWRCB 2015e). According to NAVFAC SW, activities leading to the completion of Phase II of the Remedial Investigation are underway for the IR Site 1120. A pre-draft report is targeted for August 2015 that would detail the extent and level of contamination. The awarding of the contract to perform the remediation for IR Site 1120 is expected this year, with the goal of completing the remediation in 2016 (NAVFAC SW 2015).

Proposed land use changes within IR Site 1120 would require the concurrence of the Federal Facilities Agreement (FFA) Stakeholders team. The FFA team includes the USEPA, DTSC, the RWQCB, NAVFAC SW, and the Marine Corps. Clean-up has been completed on IR Site 1120 in Site A, but that area of the property is not available until the soil is stabilized and the SWPPP is closed by RWQCB (MCB Camp Pendleton 2015f). As noted in Alternative 1, it is unclear if the area in need of a SWPPP closure is related to Site 1120 and/or Site A. This issue and additional information is being investigated and will be included in the next iteration of this EA.

Similar to Alternative 1, the developed nature of the southwest region of the Base and the location of Sites A, B, C, and D within an agricultural field that has been there for at least 70 years suggest that these sites were not subject to the type of military activity that has occurred on other parts of the Base. Nevertheless, excavations on any military facility should be approached with caution.

<u>Construction</u>

Under Alternative 2 an up to 31 MW solar PV system would be constructed and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

<u>Operation</u>

Under Alternative 2 an up to 31 MW solar PV system would be operated and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

<u>Decommissioning</u>

Under Alternative 2, impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 2 would not have a significant impact to HAZMAT/HAZWASTE.

<u>Summary</u>

As discussed above, the “Oceanside CP Site (80000338)” is a potentially insignificant or invalid record. A Draft Closure Report has been submitted for “Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)” and a full remediation of the site is expected in 2016. Therefore, implementation of Alternative 2 is unlikely to have a significant impact to HAZMAT/HAZWASTE. However, a determination of “no further action” by CWRCB would be needed to certify that no contamination nor hazardous substances remain at Site D prior to development of a solar PV system with implementation of Alternative 2, in order to achieve a finding of no significant impact. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A, B, and C would have CWRCB approval for immediate development Site D has been identified for further regulatory action, and upon completion could be available for development.

3.2.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW solar PV System at Sites A, B, C, D, and E

In addition to the “Oceanside CP Site (80000338)” and “Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286)” addressed in Sections 3.2.3.1 and 3.2.3.2 above, the “IR Site 1122 - 61 Area Shotfall Zone (T10000005481)” is mapped by CWRCB within the vicinity of Alternative 3 (Site E) and is not listed as “closed”. However, the “IR Site 1122 - 61 Area Shotfall Zone (T10000005481)” is located in the 61 Area, along the northwestern portion of MCB Camp Pendleton, near Avenida Acapulco and Cristianitos Road, and not in the 12 Area. Also according to MCB Camp Pendleton (2014a; 2015a), this record is mapped by CRWCB in the wrong location.

There is an inactive pistol range, Range 404, within Site E that is not listed as “closed” (refer to Figure 3.2-2) (MCB Camp Pendleton 2015a, USACE 2001). Range 404 is an inactive dual pistol range and its utilization ceased at one of the two ranges by the late 1960s and the other followed in the early 1970s (MCB Camp Pendleton 2015a). The inactive Range 404 has not been assessed for the presence or absence of munitions waste, nor officially closed as a range. Because the presence of munitions waste is unknown, presence is assumed until a site assessment has been conducted. If small arms munitions waste (e.g., shell casings or unspent rounds) remain in the ground, then a lead leachate hazard may exist to soil and groundwater and potentially even an explosive hazard may exist to personnel (such as by disturbing cartridges in a deteriorated state).

The CERCLA process for closing the inactive Range 404 would likely include some or all of the following steps. A remedial investigation (sample collection) would need to be conducted to determine the presence and amount of constituents of concern, and submitted in a report to USEPA, DTSC, and RWQCB. These agencies provide comments and typically additional requests for information and data, a process that can take at least six months to complete. If the site is found to be contaminated at levels that exceed a human health (residential) or ecological risk threshold, the site would need to be remediated to a level that supports future use. If the site is not cleaned up to a residential risk level, there would be land use restrictions and routine reporting (every five years) to regulatory agencies for the entire life of the site. Installation of solar panels on the site could potentially allow for cleanup levels to be reduced to an industrial risk level, which is less stringent than the residential level. However, all parties to the FFA (USEPA, DTSC, RWQCB, Navy and Marine Corps) would have to agree, and the Commanding General of MCB Camp Pendleton would need to approve land use restrictions on the Base. MCB Camp Pendleton does not typically recommend long-term land use restrictions unless there is absolutely no other alternative.

Construction

Under Alternative 3 an up to 39 MW solar PV system would be constructed and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

Operation

Under Alternative 3 an up to 39 MW solar PV system would be operated and impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

Decommissioning

Under Alternative 3, impacts to HAZMAT/HAZWASTE would be the same as described for Alternative 1. Therefore, implementation of Alternative 3 would not have a significant impact to HAZMAT/HAZWASTE.

Summary

As discussed above, the "Oceanside CP Site (80000338)" and "IRP Site 1122 - 61 Area Shotfall Zone (T10000005481)" records are potentially insignificant or invalid. A Draft Closure Report has been submitted for "Site 1120 - Stuart Mesa Pesticide Maintenance Area (T10000004286);" however, a determination of "no further action" by CWRCB would be needed to ensure that no contamination nor hazardous substances remain at the site. The inactive Range 404 has not been assessed for the presence or absence of munitions waste, nor officially closed as a range. If small arms munitions waste remain in the ground, then an explosive and/or a lead leachate hazard may exist. Without environmental remediation, abatement, and range closure, there would be a potential significant impact. Pending closure of the existing SWPPP on Site A, or alternately, the acquisition of additional information that nullifies the issue raised during the comment period (MCB Camp Pendleton 2015f), Sites A, B, and C presently have CWRCB approval for immediate development. Sites D and E have been identified for further regulatory actions, and upon completion could be available for development.

3.2.3.4 No-Action Alternative

Under the No-Action Alternative, there would be no change to current conditions. Therefore, implementation of the No-Action Alternative would have no impact on HAZMAT, HAZWASTE or safety.

3.3 WATER RESOURCES

3.3.1 Definition of Resource

Water resources include surface water hydrology, groundwater, and water quality. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Surface water also includes floodplains, which are relatively flat areas adjacent to rivers, streams, watercourses, bays, or other bodies of water subject to inundations during flood events. A 100-year floodplain is an area that is subject to a 1 percent chance of flooding in any particular year, or, on average, once every 100 years. Groundwater refers to water held underground in the soil or in pores and crevices in rock. Groundwater resides in aquifers, areas of mostly high porosity rock substrate where water can be stored within pore spaces. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. For the purposes of this analysis, freshwater quality is evaluated with respect to possible releases of hazardous material and erosion-induced sedimentation resulting from the action alternatives.

The Clean Water Act (CWA) of 1972 is the primary federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. Waters of the U.S. are regulated resources and are subject to federal authority under Section 404 of the CWA. Waters of the U.S. include navigable waters, tributary streams, wetlands, and various other water bodies that are deemed to have a significant nexus to a navigable water. Areas meeting the waters of the U.S. definition are under the jurisdiction of the USACE.

Section 401 of the CWA requires any applicant for a federal license or permit that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification from the state in which the discharge originates or would originate. In California, the SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives) required by the CWA, and regulating discharges to ensure dischargers meet water quality objectives. Projects that have a total area of 1 acre or more of soil disturbance, or are less than one acre but are part of a larger project (common plan of development) that is one acre or more must obtain coverage under the California Construction General Permit for stormwater, SWRCB Order No. 2009-0009-DWQ (NPDES No. CAS 000002), as amended in 2010 and 2012.

Stemming from the CWA, in October 2004, the DoD issued UFC on Low Impact Development (LID) (UFC 3-210-10). The DoD-issued guidance on LID was later updated on 15 November 2010. This is a stormwater management strategy designed to maintain the hydrologic functions of a site and mitigate the adverse impacts of stormwater runoff from DoD construction projects. All DoD construction projects are required to be compliant with these LID criteria. Following UFC 3-210-10, Section 438 of the Energy Independence and Security Act of 2007 (42 USC § 17094) has also been implemented by the DoD. This goes further with stricter stormwater runoff requirements for federal development projects. Section 438 requires federal agencies to develop facilities having a footprint that exceeds 5,000 square feet (465 square meters) in a manner that maintains or restores the pre-development site hydrology to the maximum extent technically feasible. Agencies can accomplish pre-development hydrology in two ways: (1) managing on-site the total volume of rainfall from the 95th percentile storm, or (2) managing on-site the total volume of rainfall based on a site-specific hydrologic analysis through various engineering techniques (e.g., detention basin or retention pond).

As required by EO 11988, *Floodplain Management*, federal agencies must take action to reduce the risk of flood loss and restore and preserve the values of floodplains. To minimize the risk of damage associated with these areas, EO 11988 was issued 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 wherever there is a practical alternative. EO 11988 outlines different requirements for federal projects located in 100-year and 500-year floodplains (i.e., that area which has a 1 percent or greater chance or 0.2 percent or greater chance, respectively, of flooding in any given year). None of the potential solar PV sites occur within floodplains, therefore compliance with EO 11988 for construction in a 500-year floodplain will not be required.

3.3.2 Affected Environment

3.3.2.1 Surface Water Hydrology

Hydrologic resources within MCB Camp Pendleton are broken down by hydrologic units, hydrologic areas, and watersheds. These terms are used to show the hierarchy of the overall flow of water on MCB Camp Pendleton. A hydrologic unit is the overall larger water basin that may accept water from other points outside its unit boundaries. A hydrologic area is the smaller area that only receives water from sources within its boundaries. The final category is a watershed, which is the area that captures precipitation and drains or seeps into groundwater or a marsh, stream, river, lake, or ocean.

Natural mountain and watershed relief divides MCB Camp Pendleton into seven distinct watersheds; four are large enough to provide potable and irrigation water supplies to MCB Camp Pendleton: Santa Margarita, Las Flores, San Onofre, and San Mateo (Figure 3.3-1). Sites B and D are completely contained in the Aliso watershed, Sites C and E are completely contained in the Santa Margarita watershed, and Site A occurs in both the Aliso and Santa Margarita watersheds.

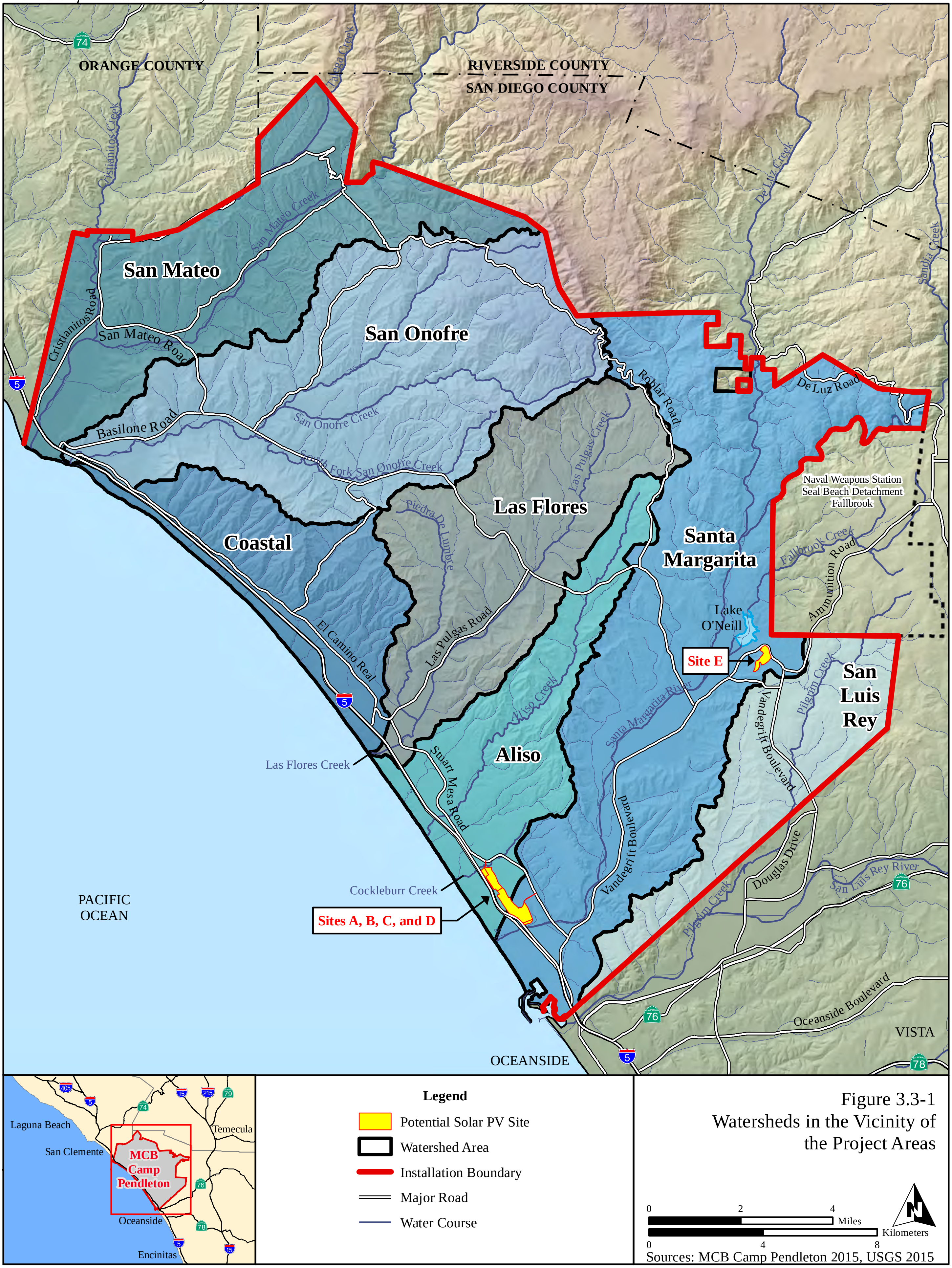

Figure 3.3-1
Watersheds in the Vicinity of the Project Areas

Sources: MCB Camp Pendleton 2015, USGS 2015

MCB Camp Pendleton's watersheds consist of coastal plains, coastal valleys, and mountainous areas. Several of the watersheds on the installation form broad alluvial plains as they approach the Pacific Ocean. The three largest estuaries on MCB Camp Pendleton are situated at the mouths of the SMR, Las Flores Creek, and San Mateo Creek. Most of the streams on Base are ephemeral and only flow following successive, major rain events. Due to the extreme variability of precipitation and runoff, the potential for large floods at MCB Camp Pendleton is high.

There are no jurisdictional wetlands or other waters of the U.S. in any of the proposed solar PV sites that would be subject to federal authority under Section 404 of the CWA. Sites A, B, C, and D are situated in between the floodplains of the SMR to the south and Cockleburr Creek to the North (Figure 3.3-2).

However, none of the proposed solar PV sites occur within the 100-year floodplains of either of these waterways. For Site E, MCB Camp Pendleton conducted a jurisdictional delineation of potential waters in February 2015 (MCB Camp Pendleton 2015h) and determined that no jurisdictional wetlands or other waters of the U.S. occur in Site E (Figure 3.3-2).

3.3.2.2 Groundwater

MCB Camp Pendleton has four groundwater basins that correspond to, and are connected with, the four major surface drainage basins (Santa Margarita, San Onofre, Las Flores and San Mateo). The regional flow of groundwater is suspected to be toward the southwest, from the slopes of the mountains toward the ocean. Overall, localized water tables can be expected at similar elevations to those of observed nearby flowing streams, or below the elevations of dry stream channels. The alluvial valleys formed by the downstream portion of all four major creeks contain the principal source of water for MCB Camp Pendleton (MCB Camp Pendleton 2012).

3.3.2.3 Water Quality

Water quality has always been a high priority at MCB Camp Pendleton as nearly all of the drinking water consumed by the Base is drawn from existing groundwater resources within its boundaries through a system of wells, water mains, booster pumps, and storage reservoirs located in the Santa Margarita, Las Flores, San Onofre, and San Mateo watersheds. The quality of MCB Camp Pendleton's drinking water generally meets or exceeds State of California and federal health-related drinking water standards.

Upstream users greatly affect the water quality of surface waters on Base as MCB Camp Pendleton is the last water user on the extensive SMR system and San Mateo Creek. SMR nutrient levels, particularly nitrogen, have increased in recent years due to intensive agricultural use of fertilizers in the upper watersheds. In addition, dramatic expansion of residential, commercial, and industrial development during the past decade in the upper part of this drainage has produced more urban runoff and wastewater discharge (MCB Camp Pendleton 2012).

The upper and lower portions of the SMR are CWA § 303(d) impaired water bodies for enterococcus, fecal coliform, phosphorus, toxicity, and total nitrogen due to urban/agricultural runoff, natural sources, and point source and nonpoint source pollution. The SMR flows into the Santa Margarita Estuary, which is 303(d) listed as impaired for eutrophic conditions likely caused by non-point source pollution, such as runoff from land that has higher nitrogen and phosphorous levels (SWRCB 2010).

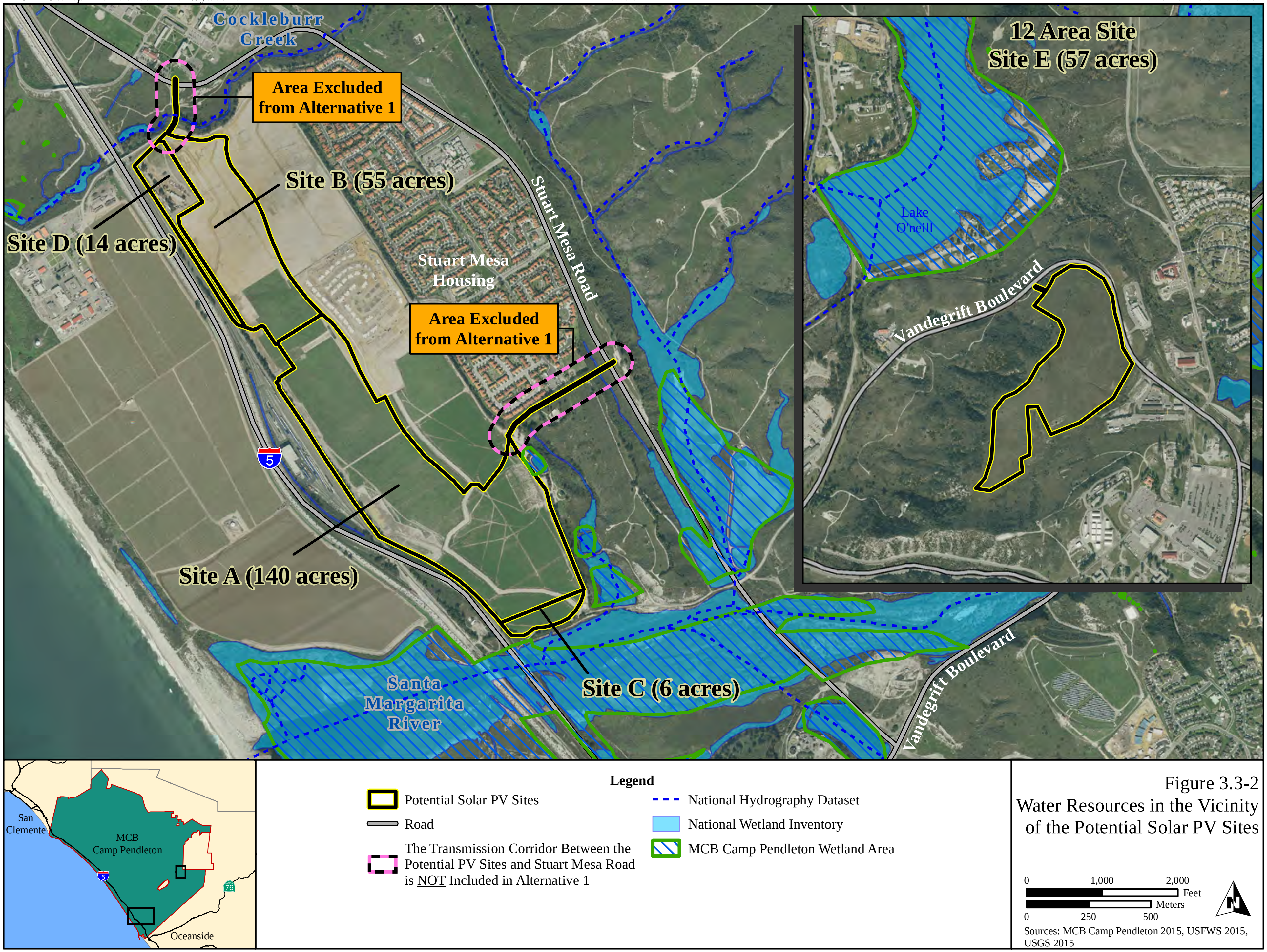

Figure 3.3-2
Water Resources in the Vicinity of the Potential Solar PV Sites

In the lower SMR, turbidity and bacteria (fecal coliforms) are persistently above their respective benchmarks during wet weather conditions, and total suspended solids/total dissolved solids (TSS/TDS) are persistently above their benchmark levels during dry weather conditions. The high turbidity within the SMR receiving waters, caused by high levels of TSS/TDS, indicates that urban/agricultural runoff may be contributing to the receiving waters exceedances of water quality objectives (Weston 2009). Based on monitoring data from the lower portion of the SMR Watershed Management Area (Santa Margarita Hydrologic Unit), the primary land uses (military and open space/parks and recreation) have not been shown to contribute pollutants to receiving waters.

3.3.3 Environmental Consequences

Significant impacts to water resources would occur if the proposed action resulted in changes to water quality or supply, damage to unique hydrologic characteristics, increased public health hazards, or violations of established laws, regulations, or permit requirements.

3.3.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction

Grading activities associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. Because the project would result in a total area of more than one acre or more of soil disturbance, the project must obtain coverage under the California Construction General Permit. Coverage under the California Construction General Permit would include the preparation and implementation of SWPPP. The SWPPP would include standard erosion control measures to reduce potential impacts resulting from erosion. The SWPPP would incorporate the use of BMPs to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs. The standard erosion control measures as identified in the SWPPP would reduce potential impacts resulting from erosion during grading and construction activities.

There are no jurisdictional waters of the U.S. or other surface water features in Sites A and B. Therefore, there would be no direct impacts to such resources.

No portion of the Proposed Action occurs within the 100-year floodplain of any waterway. Therefore, there would be no impact to floodplains protected under EO 11988.

Pole footings for the solar PV panels would be placed at a depth of 4 to 6.5 feet (1.2 to 2 meters) below ground surface. Therefore, construction activities associated with the Proposed Action would not reach depths that could affect groundwater resources.

Pumping of potable groundwater supplies in the project area would not be required under the Proposed Action because water used during construction for dust control would be trucked in from an off-base source.

Therefore, with implementation of the proposed avoidance/minimization measures in Table 3-1, and standard erosion control measures and BMPs that would be identified in the SWPPP, construction activities associated with the Proposed Action would have no significant impact to water resources.

Operation

New facilities that result in the increase in stormwater runoff have the potential to affect surface water quality. Facilities associated with Alternative 1 do not involve the construction of large buildings or other large impervious areas such as parking lots and would therefore, contribute little additional stormwater runoff and/or pollutants to surface waters. However, all new facilities on MCB Camp Pendleton would incorporate the concept of LID as described in Table 3-1. Therefore, increased stormwater runoff and associated water quality impacts would be minimized.

Typical maintenance of the solar PV panels would consist of washing down the panels approximately twice a year to eliminate dust and dirt build-up. All washing and use of water during maintenance of the solar PV panels would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Water used during maintenance for dust control and panel washing would be trucked in from an off-base source.

Ground cover and other vegetation beneath and near the panels would potentially be controlled with herbicides to ensure that vegetation does not obscure or shadow the panels. To prevent runoff into nearby watercourses, any pesticide/herbicide application would (1) be in accordance with applicable federal, state, and local regulations, the manufacturer's guidelines, including the FIFRA labels; (2) be limited to using MCB Camp Pendleton-approved pesticides/herbicides; (3) avoid excessive use and spraying prior to storm events; (4) comply with MCB Camp Pendleton's approved Pesticide Application Plan as well as the Pesticide Management Plan; and (5) be applied by properly trained and certified applicators. Records of pesticide/herbicide use would be submitted to and/or maintained by AC/S Facilities (phone: 760-763-5941). Additionally, MCB Camp Pendleton is enrolled in the Vector Control General Permit, Order No. 2012-003-DWQ (CAS NO. CAG 990004), and the Aquatic Weed Control General Permit, Order No. 2013-0002-DWQ. Pesticide application monitoring and reporting must comply with the *Vector Control General Permit Monitoring and Reporting Program (Attachment C)* (SRWB 2014).

Therefore, operation activities under Alternative 1 would have no significant impact to water resources.

Decommissioning

Decommissioning activities would have similar impacts to water resources as construction activities. All decommissioning activities would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. Therefore, decommissioning activities under Alternative 1 would have no significant impact to water resources.

Summary

As noted above, no surface waters or groundwater would be directly affected with implementation of Alternative 1. All activities associated with Alternative 1 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 1 would have no significant impact to water resources.

3.3.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Construction

Impacts to water resources from construction activities under Alternative 2 would be nearly identical to those under Alternative 1. Sites C and D are immediately adjacent to Sites A and B and are in the same topographic setting, with no surface water features. As with Alternative 1, grading activities associated with construction would temporarily (until construction is completed and the site is stabilized) increase the potential for localized erosion. However, through compliance with the California Construction General Permit, a SWPPP that would include standard erosion control measures and BMPs to reduce potential impacts resulting from erosion and stormwater runoff would be prepared under Alternative 2.

Therefore, construction activities associated with Alternative 2 would have no significant impact to water resources.

Operation

Impacts to water resources from operation activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, operation activities under Alternative 2 would have no significant impact to water resources.

Decommissioning

Impacts to water resources from decommissioning activities under Alternative 2 would be similar to those described under Alternative 1. Therefore, decommissioning activities under Alternative 2 would have no significant impact to water resources.

Summary

No surface waters or groundwater would be directly affected by Alternative 2. All activities associated with Alternative 2 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 2 would have no significant impact to water resources.

3.3.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction

Impacts to water resources from construction activities under Alternative 3 would be similar to those under Alternative 2. Impacts at Sites A, B, C, and D would be identical to those under Alternative 2. Site E has more topographic relief than the other sites and would likely increase the potential for erosion and stormwater runoff. However, through compliance with the California Construction General Permit, a SWPPP would be prepared under Alternative 3 that would include standard erosion control measures and BMPs specific to Site E to reduce potential impacts resulting from erosion and stormwater runoff.

Site E is not within the 100-year floodplain of any waterway, nor would construction activities associated with Alternative 3 reach depths that could affect groundwater resources.

Therefore, construction activities associated with Alternative 3 would have no significant impact to water resources.

Operation

Impacts to water resources from operation activities under Alternative 3 would be similar to those described under Alternative 1. Therefore, operation activities under Alternative 3 would have no significant impact to water resources.

Decommissioning

Impacts to water resources from decommissioning activities under Alternative 3 would be similar to those described under Alternative 1. Therefore, decommissioning activities under Alternative 3 would have no significant impact to water resources.

Summary

No surface waters or groundwater would be directly affected by Alternative 3. All activities associated with Alternative 3 that have the potential to impact off-site waterways would be done in accordance with BMPs and standard erosion control measures as identified in the SWPPP. New facilities on MCB Camp Pendleton would incorporate the concept of LID. Therefore, Alternative 3 would have no significant impact to water resources.

3.3.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. Therefore, the No-Action Alternative would have no impact on water resources.

3.4 AIR QUALITY

3.4.1 Definition of Resource

Air quality is defined by ambient (outdoor) air concentrations of specific pollutants determined by the USEPA to be of concern with respect to the health, safety, and welfare of the public. Ambient air quality refers to the amount of pollutants in a specified volume of air (or the atmospheric concentration of a specific compound) that occurs at a particular geographic location. Pollutant concentration is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Chemical reactions in the atmosphere can transform pollutant emissions into other chemical substances. Ambient air quality measured at a particular location is determined by the interaction of emissions, meteorology, and chemistry. Emissions include the types, amounts, and locations of pollutants discharged into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions.

Pollutant emissions typically refer to the amount of pollutants (or pollutant precursors) introduced into the atmosphere by a pollutant source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as carbon monoxide (CO), sulfur dioxide (SO_2), lead, and some particulates are emitted directly into the atmosphere from emission sources. Secondary pollutants, such as ozone (O_3), nitrogen dioxide (NO_2), and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes.

3.4.2 Affected Environment

3.4.2.1 Federal Requirements

The USEPA established the National Ambient Air Quality Standards (NAAQS) and there are seven criteria pollutants of concern. The seven are CO, SO_2, NO_2, O_3, total suspended particulate matter less than or equal to 10 (PM_{10}) and 2.5 ($PM_{2.5}$) microns in diameter, and lead. The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded (USEPA 2015a).

The USEPA designates an area as in attainment when it complies with the NAAQS. Areas that violate these ambient air quality standards are designated as nonattainment areas. Areas that have improved air quality from nonattainment to attainment are designated as attainment/maintenance areas. Varying levels of nonattainment are established for O_3, CO, and PM_{10} to indicate the severity of the air quality problem (i.e., the classifications run from moderate to serious PM_{10} and from marginal to extreme for O_3). The San Diego Air Basin (SDAB) is in nonattainment (marginal) of the 8-hour O_3 NAAQS (which includes its precursor pollutants of volatile organic compounds [VOCs] and nitrogen oxides [NO_x]) and is classified as a maintenance area for the CO NAAQS (USEPA 2015b). All other criteria pollutants are in attainment of the NAAQS. Although VOCs or NO_x other than NO_2 have no established ambient air quality standards, they are important as precursors to O_3 formation.

3.4.2.2 State and Local Requirements

Each state is required by the Clean Air Act (CAA) to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce the federal air quality standards across the state, for areas in nonattainment of the NAAQS. At the state level, the more stringent California Ambient Air Quality Standards (CAAQS) represent maximum acceptable pollutant concentrations that are not to be equaled or exceeded (California Air Resources Board [CARB] 2015a). Within California, the CARB is responsible for enforcing both the federal and state air pollution standards. The CARB is charged with developing the SIPs on a pollutant-by-pollutant basis for air quality standards in violation of the NAAQS and CAAQS.

With respect to the CAAQS, the SDAB is in nonattainment of the state standards for O_3, $PM_{2.5}$, and PM_{10} (CARB 2015b), and is in attainment of all other CAAQS criteria pollutants. Table 3.4-1 presents the NAAQS and CAAQS for the criteria pollutants.

MCB Camp Pendleton is located within San Diego County and is under the jurisdiction of the San Diego County Air Pollution Control District (SDCAPCD). The SDCAPCD is the agency responsible for the administration of federal and state air quality laws, regulations, and policies in the SDAB, which is contiguous with San Diego County.

In terms of the CAAQS, SDAB is in nonattainment for particulate matter (both $PM_{2.5}$ and PM_{10}) as well as O_3. The 2007 *Eight-Hour Ozone Attainment Plan for San Diego County* is a comprehensive plan to bring the SDAB into compliance with the national standard for marginal O_3 nonattainment areas (SDCAPCD 2007). A *Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard* was adopted by the SDCAPCD in 2012 but has not yet been approved by the USEPA (SDCAPCD 2012). The 1996 *Carbon Monoxide Maintenance Plan* (later amended in 1998 and 2004) provides a road map for continued attainment of CO (CARB 1996, 1998, 2004).

The 2009 *Regional Air Quality Strategy Revision* is the most recent plan to bring SDAB into compliance with the CAAQS (SDCAPCD 2009). This plan includes all feasible control measures that can be implemented to reduce O_3 precursor emissions of VOCs and NO_x. To be consistent with the Regional Air Quality Strategy, a project must conform to the defined emission growth factors.

Table 3.4-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National[1,2]		California[5]
		Primary[3]	Secondary[4]	Concentration
O_3	1-hour	—	—	0.09 ppm (180 µg/m^3)
	8-hour	0.075 ppm (147 µg/m^3)	Same as primary	0.07 ppm (137 µg/m^3)
CO	1-hour	35 ppm (40 mg/m^3)	—	20 ppm (23 mg/m^3)
	8-hour	9 ppm (10 mg/m^3)	—	9 ppm (10 mg/m^3)
NO_2	1-hour	0.10 ppm (188 µg/m^3)	—	0.18 ppm (339 µg/m^3)
	Annual	0.053 ppm (100 µg/m^3)	Same as primary	0.03 ppm (57 µg/m^3)
SO_2	1-hour	0.075 ppm (105 µg/m^3)	—	—
	3-hour	—	0.5 ppm (1,300 µg/m^3)	—
	24-hour	—	—	0.04 ppm (105 µg/m^3)
PM_{10}	24-hour	150 µg/m^3	Same as primary	50 µg/m^3
	Annual	—	—	20 µg/m^3
$PM_{2.5}$	24-hour	35 µg/m^3	Same as primary	—
	Annual	12 µg/m^3	15 µg/m^3	12 µg/m^3
Lead	Rolling 3-month period	0.15 µg/m^3	Same as primary	—
	30-day average	—	—	1.5 µg/m^3

Source: USEPA 2015a; CARB 2015a.

Notes: µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter.

1 Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

2 National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

3 Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

4 Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

3.4.2.3 General Conformity

Under 40 CFR Part 93 and the provisions of Part 51, Subchapter C, Chapter I, Title 40, Appendix W of the CFR, of the CAA as amended, federal agencies are required to demonstrate that federal actions conform with the applicable SIP. To ensure that federal activities do not hamper local efforts to control air pollution, Section 176(c) of the CAA, 42 USC 7506(c) prohibits federal agencies from approving any action which does not conform to an approved SIP or federal implementation plan. SDCAPCD's Rule 1501 contains rules and requirements to implement the General Conformity regulations within the District.

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Table 3.4-2 identifies the federal nonattainment pollutants and the relevant *de minimis* emission thresholds.

Table 3.4-2. Applicable Criteria Pollutant *de minimis* Levels (tons/year)

VOCs[1]	NO_x[1]	CO	SO_2	PM_{10}[1]	$PM_{2.5}$
100	100	100	NA	NA	NA

Notes: [1] The SDAB is in nonattainment (marginal) of the 8-hour O_3 NAAQS (which includes its precursor pollutants of VOCs and NOx) and is in maintenance of the CO NAAQS.
NA = not applicable because the SDAB is currently in attainment of the NAAQS for these criteria pollutants.
Source: USEPA 2015b.

To demonstrate conformity with the CAA, a project must clearly demonstrate that it does not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard, any required interim emission reductions, or other milestones in any area. A conformity applicability analysis is required for each of the nonattainment pollutants or its precursor emissions.

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant *de minimis* level. If net emissions exceed the relevant *de minimis* level, a formal CAA Conformity Determination process must be followed.

3.4.2.4 Other Requirements

Greenhouse Gases

GHGs trap heat in the atmosphere. These emissions occur from natural processes as well as from human activities. The accumulation of GHGs in the atmosphere regulates, in part, the earth's temperature. Scientific evidence suggests a trend of increasing global temperature over the past century (U.S. Global Climate Change Program 2014). This warming is attributed to an increase in GHG emissions from human activities. Potential climate change associated with GHGs may produce economic and social consequences across the globe.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

Federal agencies are addressing emissions of GHGs by mandating GHG reductions in federal laws and EOs, most recently in EO 13693 (*Planning for Federal Sustainability in the Next Decade*) (EO 13693 superseded EO 13423 [*Strengthening Federal Environment, Energy, and Transportation Management*] and EO 13514 [E*nergy Efficient Standby Power Devices*]). In 2009 the USEPA signed GHG

Endangerment Findings under Section 202(a) of the CAA, stating that six “key” GHGs are a threat to public health and welfare (CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Since then, the USEPA has been creating standards and regulations for controlling GHG emissions from passenger vehicles. Additionally, since 2012 the USEPA has issued proposals and updated regulations to reduce carbon emissions from new and existing power plants, landfills, and oil and natural gas facilities. Despite these efforts, there are no promulgated federal regulations to date limiting GHG emissions.

Several states have passed GHG related laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 (Assembly Bill 32) directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. EO S-20-06 further directs state agencies to begin implementing Assembly Bill 32, including the recommendations made by the state’s Climate Action Team. Activities taken thus far to implement Assembly Bill 32 include mandatory GHG reporting and a cap-and-trade system for major GHG-emitting sources (CARB 2015c).

In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with goals set by EO 13693 and the Energy Policy Act of 2005, the Navy has implemented a number of renewable energy projects. The types of projects currently in operation within military installations include thermal and solar PV systems, geothermal power plants, and wind energy generators.

The potential effects of GHG emissions are by nature global and cumulative, and it is impractical to attribute climate change to individual projects (CEQ 2014). Therefore, the impact of GHG emissions associated with this project is discussed in the context of cumulative impacts in Section 4.4.4 of this EA.

3.4.2.5 Hazardous Air Pollutants

In addition to the ambient air quality standards for criteria pollutants, national standards exist for hazardous air pollutants (HAPs) that are regulated under Section 112(b) of the 1990 CAA and its amendments. The National Emission Standards for Hazardous Air Pollutants regulate 187 HAPs based on available control technologies (USEPA 2015c).

3.4.2.6 Toxic Air Contaminants

Toxic compounds are toxic air contaminants that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources (CARB 2015c).

Emissions of hazardous air pollutants and toxic air contaminants fall under the Title V permitting process and not the NEPA process. Therefore, no further discussion of either is provided within this EA.

3.4.2.7 Baseline Air Quality

Representative emissions data from SDCAPCD monitoring stations for the period 2009 to 2013 (the most recent data available) are shown in Table 3.4-3. Emission sources associated with the existing use of MCB Camp Pendleton include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, small stationary sources, and ongoing construction activities.

Table 3.4-3. Representative Air Quality Data for MCB Camp Pendleton (2009-2013)

Air Quality Indicator	2009	2010	2011	2012	2013
O_3 (a)					
Peak 8-hour value (ppm)	0.08	0.08	0.07	0.08	0.07
Days above federal standard (0.075 ppm)	1	1	0	1	0
Days above state standard (0.070 ppm)	5	1	2	1	0
NO_2 (a)					
Peak 1-hour value (ppm)	0.068	0.081	0.066	0.061	0.081
Days above federal standard (0.10 ppm)	0	0	0	0	0
Days above state standard (0.18 ppm)	0	0	0	0	0
CO (b)					
Peak 8-hour value (ppm)	3.24	2.46	2.20	3.61	NA
Days above federal and state standard (9.0 ppm)	0	0	0	0	NA
PM_{10} (b)					
Peak 24-hour value ($\mu g/m^3$)	74.0	43.0	40.0	33.0	82.0
Days above federal standard (150 $\mu g/m^3$)	0	0	0	0	0
Days above state standard (50 $\mu g/m^3$)	1	0	0	0	1
$PM_{2.5}$ (a)					
Peak 24-hour value ($\mu g/m^3$)	29.5	27.3	27.42	28.0	42.3
Days above federal standard (35 $\mu g/m^3$)	0	0	0	0	1
SO_2 (c)					
Peak 24-hour value (ppm)	0.006	0.002	0.003	NA	NA
Days above federal standard (0.14 ppm)	NA	NA	NA	NA	NA
Days above state standard (0.04 ppm)	NA	0	0	NA	NA

Source: CARB 2015d.

Notes: (a) Data from the MCB Camp Pendleton Monitoring Station.

(b) Data from the Escondido Monitoring Station, no data were derived from the MCB Camp Pendleton Monitoring Station.

(c) Data from the San Diego-1110 Beardsley Street Monitoring Station.

NA = not available.

3.4.3 Environmental Consequences

This resource section focuses on groups of activities that have the potential to result in an impact to the ambient air quality. The analysis was separated by the three project phases as discussed in Chapter 2: construction, operation, and decommissioning. Types of activities that could affect air quality include operation of construction equipment, worker trips, and earth moving activities.

3.4.3.1 Approach to Analysis

The air quality analysis estimated the magnitude of emissions that would occur from proposed construction and decommissioning activities. Construction related activities would include clearing vegetation, grading to prepare the site, trenching for utilities, pole mounting and/or concrete footing for the PV system installation, and construction/installation of the substation, switching/metering stations, transmission poles (if required), and solar PV panels. Although manufacturing of solar PV cells or panels is not part of this proposed action and would occur off-installation, the manufacturing of solar PV cells requires potentially toxic heavy metals such as lead, mercury, and cadmium. The manufacturing process can also produce greenhouse gases, such as CO_2, that contribute to global climate change. However, existing research suggest that the operation of solar PV systems, compared with conventional fossil fuel-burning power plants, significantly reduces air pollution (Intergovernmental Panel on Climate Change 2012).

Operational emissions from maintenance and repair activities would be minor and infrequent, and are therefore evaluated qualitatively herein. Emissions would be generated from operational activities such as the use of vehicles and equipment with combustive engines, and generation of fugitive dust when driving vehicles on unpaved surfaces within and around the solar PV system.

3.4.3.2 Emissions Evaluation Methodology

Air quality impacts from construction activities proposed under each action alternative would primarily occur from combustive emissions due to the use of fossil fuel-powered equipment and fugitive dust emissions (PM_{10} and $PM_{2.5}$) from the operation of equipment on exposed soil. Construction emissions were estimated using the California Emissions Estimator Model, which is the current comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model was developed in collaboration with the air districts of California and includes default data (e.g., emission factors, trip lengths, meteorology, source inventory) that have been provided by the various California air districts to account for local requirements and conditions (California Air Pollution Control Officers Association 2015). For this analysis, default data were overridden in the model by project-specific data (as provided in Chapter 2), when available. Assumptions were made regarding the total number of days each piece of equipment would be used and the number of hours per day each type of equipment would be used. Assumptions and model inputs are located within the modeling calculations in Appendix C.

3.4.3.3 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction and Decommissioning Activities

Table 3.4-4 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 1. Emission calculations are provided in Appendix C. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.4-4, estimated emissions from construction and decommissioning activities would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

Table 3.4-4. Alternative 1 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity

Emission Source	Emissions (tons/year)					
	VOCs	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Alternative 1 - Construction						
Year - 2016	1.65	16.89	11.03	0.02	1.98	1.36
Year - 2017	1.65	15.73	10.04	0.02	1.00	0.86
Alternative 1 - Decommissioning						
Year – 2053 (under Model 2; Model 3 would be 2043)	0.09	0.38	0.81	0.002	0.03	0.01
Conformity *de minimis* Limits	100	100	100	NA	NA	NA
Exceeds Conformity *de minimis* Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).

Operation

Operational air emissions refer to air emissions that may occur after the solar panels have been installed. Air emissions would primarily result from the use of employee vehicles traveling to the project site for maintenance and repair activities, and from travel on unpaved roads and surfaces. Routine maintenance and inspections would occur less than one time per month and would typically require one to two vehicles per event. Maintenance vehicles would travel on unpaved surfaces at slow speeds, to minimize fugitive dust generation. In addition, the gravel and soil stabilizers would be reapplied as needed.

On a region-wide scale, the use of solar PV panels would have beneficial air quality impacts because fossil fuels would not be used for the necessary electricity generation, resulting in fewer GHG and particulate matter emissions. Providing solar energy to MCB Camp Pendleton or the region would have long-term direct and indirect benefits to air quality in the SDAB.

Summary

General Conformity Applicability Analysis

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.4-2). Emission calculations are provided in Appendix C. As shown in Table 3.4-4, the emissions increases for NO_x, VOCs, SO_x, PM_{10}, and $PM_{2.5}$ would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA conformity has been prepared and is provide in Appendix C. A formal CAA Conformity Determination would not be required.

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.

Hazardous Air Pollutants

The USEPA has listed 188 substances that are regulated under Section 112 of the CAA, and the state of California has identified additional substances that are regulated under state and local air toxics rule. Emission factors for most HAPs from combustion sources are roughly three or more orders of magnitude lower than emission factors for criteria pollutants. Trace amounts of HAPs may be emitted from sources during the construction, operation, or decommissioning of the proposed solar PV project; however, the amounts that would be emitted would be small in comparison with the emissions of criteria pollutants. Emissions of HAPs would also be subject to dispersion due to wind mixing and other dissipation factors.

Summary

Alternative 1 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 1 there would be no significant impact to air quality.

3.4.3.4 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Construction and Decommissioning

Alternative 2 consists of all of the actions proposed under Alternative 1. With a site 20 acres larger than under Alternative 1, Alternative 2 is approximately ten percent larger than Alternative 1. Therefore, implementation of Alternative 2 would be expected to result in similar, albeit slightly larger, air quality emissions as described under Alternative 1. Given that the air emissions under Alternative 1 are well below *de minimis* thresholds, and given that Alternative 2 is smaller than Alternative 3 (which not exceed *de minimis* thresholds), implementation of Alternative 2 would still produce emissions below the *de minimis* thresholds.

Operation

The operational air emissions from Alternative 2 would be as described for Alternative 1.

Summary

Alternative 2 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 2 there would be no significant impact to air quality.

3.4.3.5 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction and Decommissioning Activities

Table 3.4-5 presents a summary of the annual emissions associated with construction and decommissioning activities at MCB Camp Pendleton under Alternative 3. Emission calculations are provided in Appendix C. Because the potential emissions from construction and decommissioning activities would be in different years, they are not additive. As shown in Table 3.4-5, construction and decommissioning emissions would be below *de minimis* thresholds and would not trigger a formal Conformity Determination under the CAA General Conformity Rule.

Table 3.4-5. Alternative 3 – Construction and Decommissioning Emissions at MCB Camp Pendleton with Evaluation of Conformity

Emission Source	Emissions (tons/year)					
	VOCs	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Alternative 3 - Construction						
Year - 2016	2.18	22.31	15.42	0.02	2.52	1.75
Year - 2017	2.48	23.91	17.57	0.02	1.52	1.31
Alternative 3 - Decommissioning						
Year – 2053 (under Model 2; Model 3 would be 2043)	0.13	0.51	1.14	0.003	0.04	0.02
Conformity *de minimis* Limits	100	100	100	NA	NA	NA
Exceeds Conformity *de minimis* Limits?	No	No	No	No	No	No

Note: NA = not applicable.

During the proposed construction and decommissioning activities, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the design standards of all construction equipment. Dust suppression methods (such as using water trucks to wet the construction/decommissioning area) would be implemented to minimize fugitive dust emissions. After construction activities have occurred, a soil stabilizer would be applied to unvegetated soil, and gravel would be placed on access roads between the rows of solar PV panels and around the site perimeter (outside of the fence line).

Operation

The operational air emissions from Alternative 3 would be as described for Alternative 1.

Summary

General Conformity Applicability Analysis

To address the requirements of the General Conformity Rule, the estimated emissions from proposed construction and decommissioning activities were compared to the *de minimis* levels applicable to the region (refer to Table 3.4-2). Emission calculations are provided in Appendix C. As shown in Table 3.4-5, the emissions increases for NO_x, VOCs, SO_2, PM_{10}, and $PM_{2.5}$ would be below the *de minimis* thresholds. A Record of Non-Applicability for CAA conformity has been prepared and is provide in Appendix C. A formal CAA Conformity Determination would not be required.

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. These potential long-term beneficial impacts would be expected to off-set the minor emissions generated as a result of construction, operational maintenance, and decommissioning of the solar PV system.

Summary

Alternative 3 would not exceed *de minimis* levels; a Conformity Determination would not be required. HAP emissions would be negligible. Therefore, with implementation of Alternative 3 there would be no significant impact to air quality.

3.4.3.6 No-Action Alternative

Under the No-Action Alternative, the proposed project would not be implemented and there would be no change in activities at Sites A, B, C, D, and E. The emissions levels would remain constant for those emission sources that are not affected by other federal, state, or local requirements to reduce air emissions. As a result, no net emission increases would result from implementation of the No-Action Alternative. With no net emission increases expected, the No-Action Alternative is exempt from the General Conformity Rule. Therefore, the No-Action Alternative would have no impact to air quality.

3.5 LAND USE AND MILITARY OPERATIONS

3.5.1 Definition of Resource

Land use refers to the various ways in which land might be used or developed (i.e., military training, parks and preserves, agriculture, commercial); the kinds of activities allowed (i.e., factories, mines, rights-of-way); and the type and size of structures permitted (i.e., towers, single family homes, multi-story office buildings). 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.

Land use and development in MCB Camp Pendleton is guided by the MCB Camp Pendleton 2030 Base Master Plan (Master Plan) (MCB Camp Pendleton 2010). Undeveloped areas at the installation are primarily designated for training ranges and maneuvering areas that directly support the Base's training mission. Developed areas (referred to as cantonments or camps) are scattered throughout the installation. For each cantonment area, the Master Plan identifies existing land uses, development constraints, and areas considered suitable to accommodate projected future development. For some cantonment areas, the Master Plan presents 5-year and 20-year future development concepts.

MCB Camp Pendleton's principal mission is to operate a training base that promotes the combat readiness of the Operating Forces. As such, a majority of MCB Camp Pendleton's land use is designated for military operations and training. The MCB Camp Pendleton Range Complex Management Plan provides an inventory and condition assessment of existing training ranges. As indicated in the Master Plan, any proposed cantonment area expansion must be approved by the Commanding Officer or designee (MCB Camp Pendleton 2014b).

This resource section includes a discussion of prime farmland. The Farmland Protection Policy Act (FPPA), 7 USC 4201, was enacted to minimize the loss of prime farmland and unique farmlands as a result of federal actions, through conversion of these lands to nonagricultural uses. This includes converting areas that have high quality soil for crop production.

3.5.2 Affected Environment

3.5.2.1 Sites A, B, C, and D

Land Use

The majority of Sites A, B, C, and D are located primarily on vacant land that had been previously used for agriculture in the Stuart Mesa Housing area. There are no residences or other above ground structures on Sites A, B, and C. Site D contains abandoned farm buildings.

The entirety of Sites A, B, and C were designated for military family housing within the Master Plan (Figure 3.5-1). The Master Plan indicates that Site D was not included within the planned future housing development.

The Stuart Mesa Housing complex, to the east of Sites A, B, C, and D is one of eight military family housing areas on MCB Camp Pendleton. At the time the Master Plan was prepared, the Stuart Mesa Housing complex included 1,498 enlisted single- and multi-family residential housing units. Additional Stuart Mesa Housing units have been constructed since the completion of the Master Plan. A portion of Site A is shown as future site for an elementary school (MCB Camp Pendleton 2010).

A railroad right-of-way is located to the west of Sites A, B, C, and D. The NCTD operates the 24-hour commuter rail maintenance facility and the Burlington-Northern Santa Fe railroad switching yard to the west of Site A. At present, the line is used by Metrolink commuter rail trains, Amtrak, and Burlington-Northern Santa Fe freight trains. About 54 trains per day use the right-of-way. In addition, the California Department of Transportation also has an easement for the I-5 freeway to the west of Sites A, B, C, and D (MCB Camp Pendleton 2014b). SDG&E has two electrical easements that bisect both Site A and Site B running from east to west.

Military Training

A portion of Site A and the entirety of Site C is located within the Oscar One Training Area. Oscar One Training Area is characterized by areas of mesa and rugged mountainous terrain. A majority of the Oscar One Training Area is relatively isolated and primarily supports weapons and the field training battalion (MCB Camp Pendleton 2014b).

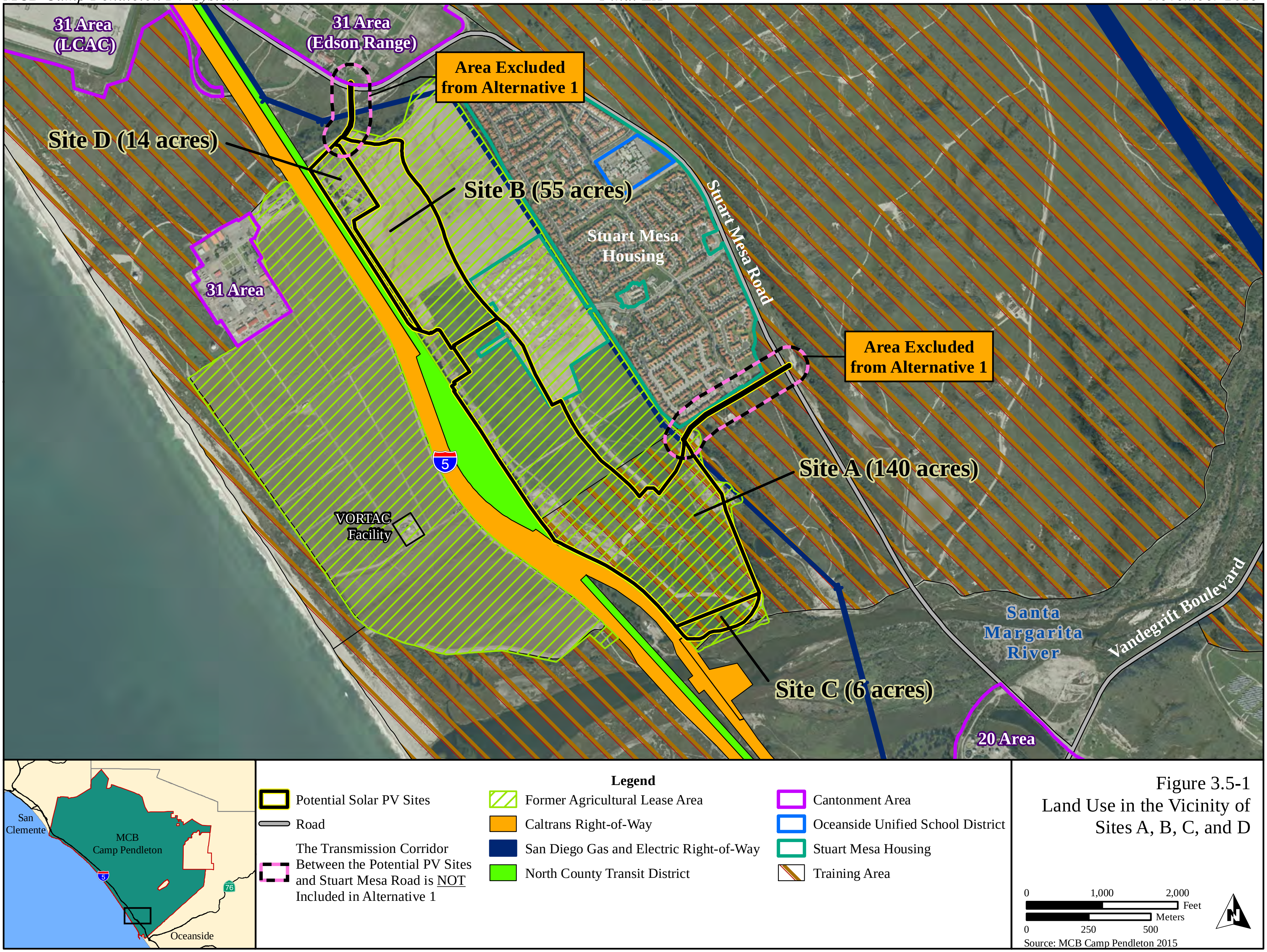

Figure 3.5-1
Land Use in the Vicinity of Sites A, B, C, and D

Flight Safety

A substantial amount of research has recently been conducted on energy technologies and their impacts on aviation safety. The placement of solar projects near an airfield must assess three factors: airspace penetration, reflectivity, and interference with communications systems. For airspace penetration, objects or facilities cannot extend into the “imaginary surfaces” that define the navigable airspace. Such surfaces are closest to the ground nearest the runway and become higher with distance. Sites A, B, C, and D are located within imaginary surfaces in relation to MCAS Camp Pendleton, which is located approximately 4.5 miles (7.2 km) to the east. Sites A, B, and D are located within an approach clearance surface and Site C is located within an outer horizontal surface for MCAS Camp Pendleton flights.

Reflectivity problems preclude the use of several other solar energy technologies at the proposed sites. These technologies include the use of mirrors to focus sunlight onto a specified surface and produce substantial reflectivity, thereby, posing a glare hazard that may blind or distract pilots on approach to the runway (Federal Aviation Administration [FAA] 2010). The FAA recommends, therefore, against placing reflective technology within close a close proximity to airports. In contrast, the FAA study (2010) notes that PV employs glass panels designed for efficiency to maximize absorption and minimize reflection. PV panels consist of dark materials that absorb light, and the protective glass cover is coated with an anti-reflective film (FAA 2010). Such panels reflect as little as two percent of the incoming sunlight depending on the angle of the sun and as such pose no hazard to aviation. Flat-plate PV panels are manufactured to absorb rather than reflect sunlight, and can be placed low to the ground so as not to encroach on airfield flight operations. As a result of the FAA evaluation, flat-plate PV comprises the only viable and reasonable technology option for a solar PV system near MCAS Camp Pendleton. As Sites A, B, C, and D areas within close proximity to MCAS Camp Pendleton, several helicopter landing zones, and Class D airspace, the DoD Memorandum on Glint/Glare Issues on or near Aviation Operations will be followed during project planning (DoD 2014).

Communications interference can result from solar energy technologies. Potential impacts increase with larger structure size (and cross section) and shorter distance to radar facilities. The FAA operates a Very High Frequency Omni-directional Range Tactical Aircraft Control (VORTAC) facility in the Stuart Mesa West agricultural field. FAA policy states that no reflecting structures or heavy vegetation should be sited within 1,000 feet (305 meters) of a VORTAC facility.

Prime Farmland

Sites A, B, C, and D contain Marina loamy coarse sand, a soil designated as prime farmland, if irrigated. Site A contains 137.6 acres (55.7 ha); Site B contains 55 acres (22.3 ha); Site C contains 6.1 acres (2.5 ha); and Site D contains 14 acres (5.7 ha) of Marina loamy coarse sand. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Generally, it has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management (U.S. Department of Agriculture 2015).

3.5.2.2 Site E

Land Use

Site E is located along the western side of Vandegrift Boulevard, to the north of De Luz Road. The site is vacant and generally undeveloped. Site E is located to the east of the existing 12 Area boundary, but the majority of the site is within 12 Area potential cantonment growth areas presented in the Master Plan. Although the land use to be provided in the expansion areas is not specified, the description of the 20-year plan concept indicates Site E is assumed to be used primarily for maintenance and storage. The 20-year plan assumes that the undeveloped area of the 12 Area (Site E) would be isolated due to existing constraints relating to terrain and drainage (MCB Camp Pendleton 2010).

Military Training

Site E is partially located on land that is designated as a maneuver area in the Master Plan (Figure 3.5-2). A maneuver area is a location where movement of military personnel, equipment and vehicles are facilitated, or at least relatively unrestricted by either terrain, vegetation, man-made constraints (e.g., buildings and developed areas) and/or environmental regulations (MCB Camp Pendleton 2012).

Flight Safety

Site E is located within the conical surface of MCAS Camp Pendleton. The surface extends from the periphery of the inner horizontal surface outward and upward at a slope of 20:1 for a horizontal distance of 7,000 feet (2,133.6 meters) to a height of 500 feet above the established airfield elevation. As Site E is within close proximity to MCAS Camp Pendleton, several helicopter landing zones, and Class D airspace, the DoD Memorandum on Glint/Glare Issues on or near Aviation Operations will be followed during project planning (DoD 2014).

Prime Farmland

Site E contains 2.8 acres (1.1 ha) of Greenfield sandy loam, a soil designated as prime farmland, if irrigated.

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction

Under Alternative 1, the construction of a solar PV system would initiate a temporary change in land use on Sites A and B from vacant land to renewable energy. The Proposed Action would have a defined lifecycle (e.g., 30 years) and would be returned to existing conditions (i.e., vacant) by the private partner.

A portion of Site A is located within the Oscar One Training Area. As the proposed solar PV system would encroach into the training area, the expansion would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. Site A is not regularly used for operations and training purposes due to its proximity to military housing. Therefore, the decrease in the size of Oscar One Training Area would not reduce active training space or impact MCB Camp Pendleton’s mission.

In addition to the change in land use, construction of the solar PV system on Sites A and B may impact 192.6 acres (77.9 ha) soils designated as prime farmland. However, lands on MCB Camp Pendleton are exempt as identified in the FPPA Section 1547(b), as noted in 7 CFR 658(b) (citing USC 4208[b]).

Acquisition or use of farmland by a federal agency for national defense purposes is exempted (7 CFR 658.3(b) [citing USC 4208(b)]). In addition, soils at Sites A and B have been vacant since the expiration of the agricultural leases of the area. Soils below the solar PV system would largely remain unchanged. At the conclusion of the solar PV agreement, the private partner would be required to decommission the solar PV field and all associated features and return the project area to its pre-project condition. Agricultural activities and/or residential development could occur, as determined by MCB Camp Pendleton.

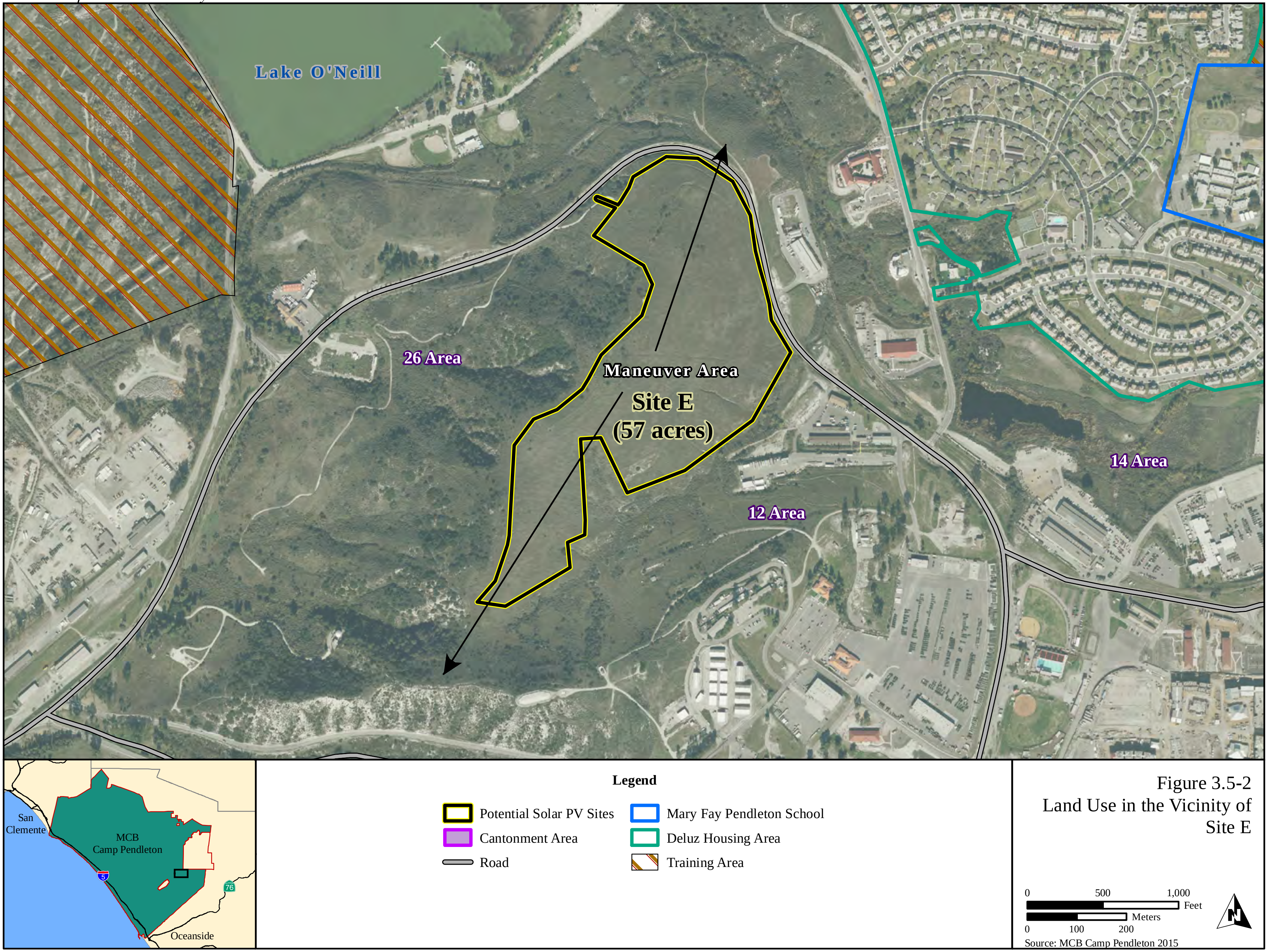

Figure 3.5-2
Land Use in the Vicinity of Site E

Operation

Implementation of Alternative 1 would construct the solar PV system on Sites A and B, areas that are designated for future residential development. Therefore, Alternative 1 would be inconsistent with the Master Plan. The site is near an Oceanside School District lease area, and California Department of Transportation and NCTD easements; however, the construction of the solar PV system would not impact these respective leases and easements. An NCTD rail station is planned to the west of Sites A and B, with an arterial connection that would transect Site A. If Alternative 1 is chosen, either an easement through the solar PV system would be necessary, or a separate entry/exit location to the planned rail station would be needed. The solar PV system operation would be passive and not impact adjacent land uses.

Alternative 1 would result in the placement of solar PV panels at Sites A and B, which are located within an approach clearance surface for MCAS Camp Pendleton. As previously mentioned, the FAA requires assessment of three factors for solar projects near airports: airspace penetration, reflectivity, and interference with communications systems. Considering these factors and the proximity of the MCAS Camp Pendleton, the flat-plate PV solar array technology is compatible for use at Alternative 1. Because the proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground, the project would not penetrate within the imaginary surface and thus be consistent with flight safety protocol. In addition, there would be no impacts or interference to the VORTAC facility, as Sites A and B are located outside of the FAA's 1,000 foot (305 meter) reflectivity buffer.

Decommissioning

The decommissioning of the solar PV system would return the project area to its pre-project condition. Land use would return to vacant land. Soils designated as prime farmland and impacted areas would be returned to a level that would support use of the land consistent with pre-construction activities. If determined necessary by MCB Camp Pendleton, the land within a portion of Site A could be reintegrated into Oscar One Training Area.

Summary

The construction, operation, and decommissioning of the solar PV system on Sites A and B would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Similarly, a portion of the proposed solar PV system on Site A would encroach into the Oscar One Training Area; the expansion would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, if the Master Plan amendment is implemented and the Commanding Officer approves the expansion, implementation of Alternative 1 would have no significant impact to land use, consistent with criteria the Master Plan and Commanding Officer identify as necessary.

3.5.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Construction

Under Alternative 1, the construction of a solar PV system would temporarily change the existing land use on Sites A, B, C, and D from vacant land to renewable energy. The Proposed Action would have a defined lifecycle (e.g., 30 years) and would be returned to existing conditions (i.e., vacant land) by the private partner.

Similar to Alternative 1, Alternative 2 would slightly encroach into the Oscar One Training Area. Portions of Site A and the entirety of Site C is located within the training area. The encroachment would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.

Given the larger land area proposed for solar PV development on vacant, Alternative 2 may impact 212.7 acres (86.1 ha) soils designated as prime farmland. However, similar to Alternative 1, lands used for national defense purposes by a federal agency are exempt from the FPPA.

Operation

Implementation of Alternative 2 would construct the solar PV system on Sites A, B, and C, areas that are designated for future residential development within the Master Plan. Therefore, Alternative 2 would be inconsistent with the Master Plan. Site D was not identified for future residential development.

Stuart Mesa Sites A, B, and D are located within an approach clearance surface and Site C is located within an outer horizontal surface for MCAS Camp Pendleton flights. Because the proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground and the transmission lines would not exceed 55 feet (17 meters) above the ground, the project would not penetrate within the imaginary surface and thus be consistent with flight safety protocol. In addition, there would be no impacts or interference to the VORTAC facility, as Stuart Mesa Sites A, B, C, and D are located outside of the FAA's 1,000 foot (305 meter) reflectivity buffer.

Decommissioning

Decommissioning impacts would the same as those discussed under Alternative 1.

Summary

The construction, operation, and decommissioning of the solar PV system on Sites A, B, C, and D would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Similarly, a portion of the proposed solar PV system on Site A and the entirety of Site C would encroach into the Oscar One Training Area; the expansion must be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, if the Master Plan amendment is implemented and the Commanding Officer approves the expansion, implementation of Alternative 2 would have no significant impact to land use, consistent with criteria the Master Plan and Commanding Officer identify as necessary.

3.5.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction

Construction impacts associated with Alternative 3 would be the same as those discussed under Alternatives 1 and 2, with the addition of Site E. The land use at Site E would temporarily change from undeveloped to renewable energy.

Implementation of Alternative 3 would partially encroach into land that is designated as a maneuver area in the Master Plan. The encroachment into the Oscar One Training Area within Sites A and C, and the maneuver area associated with Site E would need to be approved by the MCB Camp Pendleton Commanding Officer or designee.

Site E contains 2.8 acres (1.1 ha) of prime farmland that have not been used for agricultural purposes. Alternative 3 may impact 215.5 acres (87.2 ha) soils designated as prime farmland on Sites A, B, C, D, and E. However, similar to Alternatives 1 and 2, MCB Camp Pendleton is exempt from the FPPA. At the conclusion of the solar PV agreement, the soils would be returned to their pre-project condition.

Operation

Site E was planned as a potential growth area for the 12 Area, as presented in the Master Plan. Although the land use to be provided in the expansion area is not specified, the description of the 20-year plan concept indicates Site E is assumed to be used primarily for maintenance and storage. Therefore, implementation of Alternative 3 would be inconsistent with the Master Plan. The proposed solar PV project would extend no higher than 15 feet (5 meters) above the ground and the transmission line would extend no higher than 55 feet (17 meters), thus the project would not penetrate within the conical imaginary surface at Site E and would be consistent with flight safety protocol. Other operational impacts would be identical to those discussed under Alternatives 1 and 2.

Decommissioning

Decommissioning impacts would be the same as those discussed under Alternatives 1 and 2.

Summary

The construction, operation, and decommissioning of the solar PV system on Sites A, B, C, D, and E would require a Master Plan amendment, as it would be inconsistent with planned future land uses. Site E was planned for the maintenance and storage growth of the 12 Area. The proposed solar PV system would encroach into the Oscar One Training Area (Sites A and C) and maneuver area (Site E); the expansions would need to be approved by the MCB Camp Pendleton Commanding Officer or designee. MCB Camp Pendleton is exempt from the FPPA, as the land would be utilized for national defense purposes. Therefore, implementation of Alternative 3 would have no significant impact to land use.

3.5.3.4 No-Action Alternative

Under the No-Action Alternative, the solar PV system would not be built. Sites A, B, and C may be utilized for future housing as outlined in the Master Plan. Land planned for storage and maintenance development associated with 12 Area growth would be available at Site E. Imaginary surfaces surrounding MCAS Camp Pendleton would continue to be unobstructed. Prime farmland would remain vacant. The Oscar One Training Area and maneuver area would remain unchanged. Therefore, implementation of the No-Action Alternative would have no impact to land use.

3.6 CULTURAL RESOURCES

3.6.1 Definition of Resource

Cultural resources is an inclusive label used to encompass any historic properties or traditional cultural properties and sacred sites valued by traditional communities (often but not necessarily Native American groups). Cultural resources are finite, nonrenewable resources, whose salient characteristics are easily diminished by physical disturbance; certain types of cultural resources also may be negatively affected by visual, auditory, and atmospheric intrusions.

Historic properties are defined in the federal regulations outlining Section 106 of the National Historic Preservation Act (NHPA), as amended (54 USC 300101 *et seq.*), 36 CFR Part 800, as prehistoric and historic sites, buildings, structures, districts, or objects listed or eligible for listing on the NRHP, as well as artifacts, records, and remains related to such properties. Compliance with Section 106 of the NHPA, which directs federal agencies to take into account the effect of a federal undertaking on a historic property, is outlined in the Advisory Council on Historic Preservation's regulations, *Protection of Historic Properties* (36 CFR Part 800). A traditional cultural property can be defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Cultural resources are generally divided into three categories: archaeological resources, architectural resources, and traditional cultural resources:

Archaeological resources –places where people changed the ground surface or left artifacts or other physical remains (e.g., arrowheads or bottles).

Architectural resources –standing buildings, dams, canals, bridges, and other structures.

Traditional cultural resources –These include traditional cultural properties, which are associated with the cultural practices and beliefs of a living community that link that community to its past and help maintain its cultural identity. Traditional cultural resources may also include archaeological resources, locations of historic events, sacred areas, sources of raw materials for making tools, sacred objects, or traditional hunting and gathering areas.

The NHPA mandates guidelines for the protection of historic properties in Sections 106 and 110 of the law. Section 106 of the NHPA requires federal agencies to analyze the effect of an undertaking on cultural resources included in or eligible to the NRHP. Section 110 requires federal agencies to establish programs to locate, evaluate, and nominate all properties that qualify for inclusion in the NRHP.

Through a combination of cultural resource studies carried out to comply with Sections 106 and 110 of the NHPA, Sites A, B, C, D, E and the potential solar PV system support areas have been inventoried for cultural resources (Cheever and Collett 2002, York and Glenny 2008).

3.6.2 Affected Environment

The affected environment for cultural resources is based on the establishment of the area of potential effects (APE) of an undertaking, through consultation with State Historic Preservation Office (SHPO). An APE is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d). The APE for this project includes Sites A, B, C, D, and E.

3.6.2.1 Prehistoric and Historic Setting

The following summary of the cultural context for the MCB Camp Pendleton Area is condensed from the *Integrated Cultural Resources Management Plan for Marine Corps Base Camp Pendleton* (MCB Camp Pendleton 2008).

3.6.2.2 Regional Prehistory

The regional prehistory is divided into the Paleo-Indian, Archaic, and Late Prehistoric periods. The Paleo-Indian period dates to the terminal Pleistocene and the early Holocene, from before 10,000 Before Present (B.P.) to 8500/7500 B.P. Earlier sites may be present in San Diego County; evidence of Pleistocene occupations may be preserved along the coastlines. However, no strong evidence of these occupations currently exists (MCB Camp Pendleton 2008).

The Archaic period (approximately 8500 B.P. to 1300 B.P.) is characterized by a focus on shellfish as a dietary staple and people clustered around resource rich bays and estuaries. However, major changes in human adaptations occurred around 4000 B.P. to 3000 B.P. when lagoon silting became extensive enough to cause a decline in associated shellfish populations. The decline of shellfish, as well as Torrey pine nuts and drinking water, resulted in a major depopulation of the coastal zone. Populations began to move inland to exploit terrestrial small game and plant resources. However, there is some evidence of continued occupation of the coastal area of Camp Pendleton throughout the Archaic Period. The evidence for this is strong, given the presence of large settlements with moderate to thick middens that were occupied for multiple seasons (MCB Camp Pendleton 2008).

The Late Prehistoric period (1300 B.P. to 800 B.P.) is linked with the ethnohistoric record of local Native Americans. The application of direct historical analogy to this time period assumes an ample period of stability during the Late Prehistoric period for populations, linguistic groups, and their territorial extent. This information was documented by Europeans from Spanish contact through early twentieth century enthnohistoric accounts. In general, the Late Prehistoric period is characterized by the appearance of small, pressure flaked projectile points (indicative of bow and arrow technology), the appearance of ceramics, the replacement of flexed inhumations with cremations, and an emphasis on inland plant food collection and processing (MCB Camp Pendleton 2008).

3.6.2.3 History of the MCB Camp Pendleton Area

Europeans first entered the area that is now MCB Camp Pendleton in 1769, when the Portola expedition passed through on its journey north to Monterey. This expedition sought to expand the string of Franciscan missions that began in Baja California in 1767, northward into Alta, California. The land that was to become MCB Camp Pendleton was transferred into direct Spanish control after the establishment of Mission San Juan Capistrano in 1776 and Mission San Luis Rey in 1799. After Mexico gained its independence from Spain in 1821, much of the MCB Camp Pendleton area became part of Rancho San Onofre and Rancho Santa Margarita. These ranchos were acquired in 1841 by Pio and Andres Pico. In 1844, the Pico brothers acquired Las Flores, one of the few Indian pueblos established by the Mexican government. The Pico brothers then created the Rancho Santa Margarita y Las Flores. Having acquired the rancho, the Picos established a thriving cattle ranch (MCB Camp Pendleton 2008).

By 1862, the Picos had begun to have financial difficulties. They sold part of the rancho to their brother-in-law Juan Forster as an attempt to avoid losing it to creditors. Forster died in 1882 after completing a number of improvements to the rancho. The rancho was eventually transferred to James C. Flood and Richard O'Neill. The rancho was managed by O'Neill with assistance from the Magee family who lived at the Las Flores Adobe from 1888 to 1968. O'Neill was awarded one-half of the ranch by Flood's heirs, holding the property until it was acquired by the USMC in 1942 (MCB Camp Pendleton 2008).

Since its establishment in 1942, major development at MCB Camp Pendleton has supported its mission as an amphibious training facility. Major development activities occurred during World War II (1942–1945), the Korean War (1950–1953), and the Vietnam era (1963–1975). Since the end of the Cold War (1976–1989) until just recently, development has largely focused on upgrades of World War II-era facilities (MCB Camp Pendleton 2008).

3.6.2.4 Cultural Resources within the Affected Environment

<u>Archaeological Resources</u>

Two archaeological sites have been identified within the boundaries of the APE. Site CA-SDI-17912 is an extensive scatter of shell and prehistoric artifacts. AECOM conducted excavations at Site CA-SDI-17912 in 2010 and determined that the site was ineligible for inclusion on the NRHP (Wahoff at el. 2010). Site CA-SDI-12572 is an extensive but dispersed scatter of lithic artifacts and marine shell situated along the top of the bluff overlooking the SMR. ASM Affiliates (Reddy and O'Neil 2004) conducted subsurface testing and concluded that the site was ineligible for inclusion on the NRHP.

Isolated occurrences are cultural remains or features that do not meet the definition of an archaeological site. Due to the limited number of artifacts found at isolated occurrences and the low potential for providing information on prehistory or history, the isolated occurrences recorded in this APE are not recommended as eligible for inclusion in the NRHP.

All three of the alternatives fall under the *Programmatic Agreement among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton (PA)* signed in December 2014 (USMC 2014). The process defined in the Programmatic Agreement (PA) (Stipulations III.D (1) and IV.D) and outlined below, would be followed for all of the alternatives.

<u>Architectural Resources</u>

The APE does not contain any known architectural resources.

<u>Traditional Cultural Resources</u>

The APE does not contain any known traditional cultural properties or other traditional cultural resources.

3.6.3 Environmental Consequences

3.6.3.1 Alternative 1: Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

<u>Construction</u>

Under Alternative 1, up to 195 acres (79 ha) of land in Sites A and B would be converted to a solar PV system. Ground disturbing activities under Alternative 1 include trenching up to 3 feet (1 meter) for underground electrical lines and circuitry. Additionally, the solar PV panel mounting structures require foundations that reach at least 4 to 6.5 feet (1.2 to 2 meters) below ground surface.

One archaeological site is located within the APE for Alternative 1. Site CA-SDI-17912, located in Site A, is an extensive scatter of shell and prehistoric artifacts. The site is not considered eligible for inclusion in the NRHP. Therefore, disturbance of this site would not result in an adverse effect to a historic property. Despite a determination of ineligibility to the NRHP, site CA-SDI-17912 would still require cultural resources monitoring, as per the PA (USMC 2014).

This alternative falls under the Programmatic Agreement signed in December 2014 (Stipulation III.D (1) and IV.D); archaeological site (CA-SDI-17912) is within the APE and will require cultural resources monitoring. The following avoidance/minimization measures apply to Alternative 1:

(1) All ground disturbing activities within the site boundary and a 5 meter buffer for archaeological site CA-SDI-17912 in Site A within the APE will be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner;

(2) A monitoring and discovery plan must be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations;

(3) A report detailing the monitoring results will be provided to SHPO at the conclusion of excavations.

The monitoring and discovery plans are not available until the construction contract is awarded so that the actual design is available and the precise limits of disturbance are known. This project undertaking will be included in the PA's Annual Report to SHPO. In the event that archaeological materials (e.g. shell, wood, bone, or stone artifacts) are found or suspected during project operations or the project footprint is altered, work must be halted in the area of discovery and the Assistant Chief of Staff, Environmental Security, Cultural Resources Management Section notified at 760-725-9738, as soon as practicable, but no longer than 24 hours after the discovery. Project work at the discovery site shall not proceed until the Base Archaeologist has the opportunity to evaluate the find and gives permission to resume construction activities.

Operation

Under Alternative 1, post-construction site operations would include use of the existing access roads as well as maintenance and repair work. These activities would occur along existing roads and infrastructure, and no ground disturbance would occur. No adverse effect to historic properties or traditional resources would occur.

Decommissioning

The decommissioning of the solar PV panels would require similar activities to construction; work crews, vehicles, and equipment would be required to dismantle and remove the solar PV panels. Because these activities would occur in previously disturbed areas, no historic properties or traditional resources would be adversely affected. As with construction activities, if any unexpected cultural resources are encountered during decommissioning, work would cease and the MCB Camp Pendleton Cultural Resources Branch Head would be contacted before work could continue.

Summary

One archaeological site is found within the APE of Alternative 1. This site, CA-SDI-17912, is ineligible for inclusion in the NRHP. However, in accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundary and within a 5 meter buffer of the site boundary would occur. Through this process, the implementation of Alternative 1 would have no significant impact to cultural resources.

3.6.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Construction

Under Alternative 2, up to 215 acres (87 ha) of land in Sites A, B, C, and D would be developed for a solar PV system. Construction impacts at Sites A and B under Alternative 2 would be similar to those described for Alternative 1. Two archaeological sites, CA-SDI-17912 in Site A and CA-SDI-12572 in Site C are within the APE for this alternative.

Despite a determination of ineligibility to the NRHP, both CA-SDI-17912 and CA-SDI-12572 would still require cultural resources monitoring as described in Alternative 1.

This alternative falls under the Programmatic Agreement signed in December 2014 (Stipulation III.D (1) and IV.D); archaeological sites (CA-SDI-17912 and CA-SDI-12572) are within the APE and will require cultural resources monitoring. The following avoidance/minimization measures apply to Alternative 2:

(1) All ground disturbing activities within the site boundary and a 5 m buffer for archaeological site CA-SDI-17912 in Site A and archaeological site CA-SDI-12572 in Site C within the APE will be monitored by a qualified archaeologist and a Native American monitor (approved by Cultural Resources Section), both of which will be funded by the private partner;

(2) A monitoring and discovery plan must be developed (reviewed and approved by Cultural Resources Section) outlining specific procedures to be followed in the event of an archaeological discovery during excavations;

(3) A report detailing the monitoring results will be provided to SHPO at the conclusion of excavations.

The monitoring plans are not available until the construction contract is awarded so that the actual design is available and the precise limits of disturbance are known. This project undertaking will be included in the PA's Annual Report to SHPO. In the event that archaeological materials (e.g. shell, wood, bone, or stone artifacts) are found or suspected during project operations or the project footprint is altered, work must be halted in the area of discovery and the AC/S, Environmental Security, Cultural Resources Management Section notified at 760-725-9738, as soon as practicable, but no longer than 24 hours after the discovery. Project work at the discovery site shall not proceed until the Base Archaeologist has the opportunity to evaluate the find and gives permission to resume construction activities.

Site D has historic structures determined to be ineligible and has received SHPO concurrence.

By following the process defined in the PA (USMC 2014), under all construction components of Alternative 2, there would be no adverse effects to historic properties or impacts to known traditional resources.

Operation

Operation impacts at Sites A, B, C, and D under Alternative 2 would be similar to those described for Alternative 1, but would also occur within Sites C and D. As discussed under Alternative 1, these would occur along existing roads and infrastructure, and no ground disturbance would take place. Therefore, there would be no adverse effects to historic properties or impacts to known traditional resources.

Decommissioning

Decommissioning impacts at Sites A, B, C and D under Alternative 2 would be similar to those described for Alternative 1, but would also occur within Sites C and D. As discussed under Alternative 1, these would occur in previously disturbed areas. There would be no adverse effects to historic properties or impacts to known traditional resources.

Summary

Two archaeological sites are found within the APE of Alternative 2. In accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundaries and within a 5 meter buffer of the site boundaries would occur. Through this process, implementation of Alternative 2 would have no significant impact to cultural resources.

3.6.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction

Under Alternative 3, up to 272 acres (110 ha) of land in Sites A, B, C, D, and E would be converted to a solar PV system.

Construction impacts at Sites A, B, C, and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. No recorded cultural resources are present within Site E. By following the process outlined in Alternative 2, under all construction components of Alternative 3, there would be no adverse effects to historic properties or impacts to known traditional resources.

Operation

Operation impacts at Sites A, B, C, and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. As discussed under Alternative 1, these would occur along existing roads and infrastructure, and no ground disturbance would take place. There would be no adverse effects to historic properties or impacts to known traditional resources.

Decommissioning

Decommissioning impacts at Sites A, B, C and D under Alternative 3 would be similar to those described for Alternative 2, but would also occur within Site E. As discussed under Alternative 1, these would occur in previously disturbed areas. There would be no adverse effects to historic properties or impacts to known traditional resources.

Summary

Two archaeological sites are found within the APE of Alternative 3. Both of these sites are ineligible for inclusion in the NRHP. However, in accordance with the PA (USMC 2014), monitoring of all ground disturbing activities within the site boundaries and within a 5 meter buffer of the site boundaries would occur. Through this process, the implementation of Alternative 3 would have no significant impact to cultural resources.

3.6.3.4 No-Action Alternative

Under the No-Action Alternative, there would be no change to current conditions. Therefore, implementation of the No-Action Alternative would not have a significant impact to cultural resources.

3.7 VISUAL RESOURCES

3.7.1 Definition of Resource

Visual resources are the natural and man-made features that comprise the visual qualities 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 view available are examples of visual characteristics of an area.

3.7.2 Affected Environment

3.7.2.1 Sites A, B, C, and D

The majority of Sites A, B, C, and D consist of flat, vacant lands. The viewshed is composed primarily of non-native grasses, dirt access roads, small shrubs, and eucalyptus trees (Photo 3.7-1, Photo 3.7-2, and Photo 3.7-3). There are no unique visual features on these sites.

Photo 3.7-1. South side of Site A, looking north.

Photo 3.7-2. North side of Site B, looking west.

Photo 3.7-3. East side of Site C, looking west.

Visual features surrounding the sites include the I-5 freeway, eucalyptus trees, SMR, the railroad line, and associated railroad maintenance facility located immediately west of Site A. Additional vacant land occurs directly west of I-5. To the north are areas of open space, Stuart Mesa Road, and sparse development associated with the Edson Range area. The existing Stuart Mesa Housing complex is located adjacent to the site to the north and east of Site A. A 6 foot (1.8 meter) high wall separates the existing housing area from the proposed site. The existing housing area is composed of residential units, a community center, parks, an elementary school, and other community amenities. A canyon and open space are located directly to the east of Site A.

Sites A, B, C, and D are visible from many locations on and off MCB Camp Pendleton. The area is visible to motorists traveling northbound on I-5 and to passengers on Amtrak and Metrolink trains that pass immediately west of the site. Views of the site are also available from the existing housing area, though there is a slight topographical difference and a 6 foot (1.8 meter) brick wall separating the housing area from Sites A, B, C, and D (Photo 3.7-4, below). The sites can also be viewed from various locations along Stuart Mesa Road, specifically at the northern and southern ends of the Stuart Mesa Housing complex, however slight changes in topography mask most lines of sight to Sites A, B, C, and D. PV panels consist of dark materials that absorb light, and the protective glass cover is coated with an anti-reflective film (FAA 2010). Such panels reflect as little as two percent of the incoming sunlight depending on the angle of the sun and are manufactured to absorb rather than reflect sunlight.

3.7.2.2 Site E

The viewshed at the 12 Area Site E consists of undeveloped non-native grasses with patches of coastal sage scrub and cactus (Photo 3.7-5, below). Vandegrift Boulevard and a wood pole 12-kV electrical distribution line run along the northern portion of the site (Photo 3.7-6, below). There are no unique visual features at the site. An existing 12-kV distribution line transects the northeast portion of Site E, which connects to MCB Camp Pendleton's existing energy grid (not visible).

Photo 3.7-4. Looking northwest toward Site A.

Photo 3.7-5. Site E, looking north.

Photo 3.7-6. South side of Site E, looking northeast.

From the site looking northwest, Lake O'Neill and the distant Santa Margarita Mountains are visible. To the southeast is the developed 12 Area, including the Child Development Center. The view to the west is obstructed by a hill. To the northeast of the site is a housing development.

Site E sits atop a mesa along Vandegrift Boulevard and is viewable from many residential, commercial, and industrial establishments in the vicinity.

3.7.3 Environmental Consequences

3.7.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction

Construction of the 28 MW solar PV system on Sites A and B would occur over approximately two years. During this period, short-term visual impacts from construction would include, but would not be limited to, the staging of construction equipment, vehicles, materials, and workers, and the generation of dust during site grading. Visual effects from the construction of the solar PV system would be limited to adjacent roadways and parcels, due to the relatively flat topography of the sites. Impacts to the visual environment from construction would be temporary and depend on the viewer's proximity and line-of-sight to Sites A and B.

Operation

The operation of the 28 MW solar PV system would transform the visual landscape from vacant land, generally devoid of vegetation, to a utility-scale solar PV system. An aerial perspective of an existing solar PV system in Denver, Colorado within a developed landscape is shown in Photo 3.7-7. Upon completion, the highest point of the solar PV system would be no higher than approximately 15 feet (5 meters) above the ground.

Photo 3.7-7. A representative image of a solar PV system in a developed area.
Source: Blue Oak Energy 2015.

Because the topography of the area is relatively flat, the visual sensitivity of the solar PV system, substation, and switching/metering station would be minimal as the system would only be viewable from I-5, nearby rail tracks, and from certain points along Stuart Mesa Road.

There may be some visual sensitivity from the Stuart Mesa Housing complex to the east, although lines of sight to Sites A and B are partially masked by the topography and a wall that surrounds the development.

The solar PV panels would have an anti-reflective coating that would improve light absorption and reduce or eliminate the potential for glint and glare impacts to nearby viewers. Vegetation and groundcover near the panels would be maintained beneath and surrounding the solar panels, which would not conflict with the visual character of the area.

Minimal visual impacts from the operation of the 28 MW solar PV system would result from the operation of Alternative 1.

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair – generally activities that would be consistent with on-going activities at MCB Camp Pendleton. Thus, visual impacts from post-construction operational maintenance would be negligible.

Decommissioning

The decommissioning of the solar PV system would return the project area to its pre-project condition. Decommissioning would include limited temporary visual impacts comparable to construction activities. Decommissioning of the solar PV system and associated support areas would include the deconstruction of the substation and switching/metering station. The visual landscape would return to vacant land.

Summary

Construction and operation impacts to visual resources would be temporary and limited to those traveling along I-5, the rail tracks, and along the section of Stuart Mesa Road, specifically at the northern and southern ends of the Stuart Mesa Housing complex. Visual sensitivity would be minimal for the new substation and switching/metering station that would be built to support the solar PV system. These structures would not change the context of the visual environment. Therefore, implementation of Alternative 1 would have no significant impact to visual resources.

3.7.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Construction

Under Alternative 2, the construction of an up to 31 MW solar PV system would temporarily alter a portion of the existing visual landscape on all or a combination of the Stuart Mesa Sites A, B, C, and D. Sites C and D are located adjacent to Site A and Site B, respectively, and are currently vacant land. The substation and metering/switching station that will be constructed under Alternative 1 will also be constructed under this alternative. Visual impacts from construction would be temporary and be the same as those described under Alternative 1.

Operation

Under Alternative 2, operation of a solar PV system would transform the visual landscape from vacant land to a utility-scale solar PV system, with a footprint that is 20 acres (8 ha) larger than Alternative 1. As such, visual impacts would largely be the same as those described under Alternative 1. The visual landscape of Sites A, B, C, and D are very similar, as Site C is located on the south end of Site A, and Site D is located on the north end of Site B. Visual sensitivity would also be the same due to the proximity of Sites C and D to Sites A and B. All sites are only viewable from I-5, nearby rail tracks, and from certain points along Stuart Mesa Road. There may be some visual sensitivity from the Stuart Mesa Housing complex to the east, however, visual impacts would not have a significant impact for the following reasons: the solar PV project would extend no higher than 15 feet (5 meters) above the ground with two transmission lines supported by 55-foot (17-meter) tall steel poles; line of sight to Sites A, B, C, and D are partially masked by the topography; and a 6-foot (1.8-meter) wall surrounds the housing complex. As such, visual impacts during operations would be negligible.

Decommissioning

Visual impacts from the decommissioning of the solar PV system would be the same under Alternative 2 as described under Alternative 1.

Summary

Construction and operation visual impacts would largely be the same as those described under Alternative 1, as the scale of the solar PV system is similar. The same visual landscape is present across Sites A, B, C, and D. Therefore, implementation of Alternative 2 would have no significant impact to visual resources.

3.7.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

Construction

Under Alternative 3, construction of the solar PV on Sites A, B, C, D, and Site E of an up to 39 MW solar PV system would temporarily alter a portion of the existing visual landscape on all or a combination of the A, B, C, and D, and Site E (in the 12 Area). Visual impacts to Sites A, B, C, and D would remain the same as described under Alternative 2. Site E is located south of Vandegrift Boulevard, and sits atop a mesa along Vandegrift Boulevard. Site E is viewable from many residential, commercial, and industrial establishments in the vicinity of the proposed site. While there are potential lines-of-sight to Site E from the surrounding development, the impacts of construction would be temporary, lasting up to 2 years.

Operation

With the exception of Site E, the operation of the solar PV system would have the same negligible impacts described under Alternative 2. The visual landscape of Site E currently consists of undeveloped non-native grasses with patches of coastal sage scrub and cactus. Site E would be transformed to a solar PV system, similar to Alternative 2, but at a smaller scale. The visual character would be consistent with the developed area surrounding the site, and the existing 12-kV distribution line that is visible in the northeast portion of the site. There would be some visual sensitivity from the surrounding residential, commercial, and industrial uses nearby, but the impacts will be negligible.

Decommissioning

Visual impacts from the decommissioning of the solar PV system would be the same under Alternative 2 as described under Alternative 1 for all sites.

Summary

Construction and operation visual impacts would largely be the same as those described under Alternative 2, including the addition of Site E. The negligible impacts experienced at Site E do not significantly alter the visual character of the area. Therefore, implementation of Alternative 3 would have no significant impact to visual resources.

3.7.3.4 No-Action Alternative

Under the No-Action Alternative, the existing visual environment would not change. Existing visual conditions at Sites A, B, C, D, and E would remain. Therefore, implementation of the No-Action Alternative would have no impact to visual resources.

3.8 UTILITIES

3.8.1 Definition of Resource

This section focuses on utilities within the vicinity of the proposed project sites including electric, natural gas, sewer, water, and stormwater systems. As the Proposed Action involves the construction and operation of a solar PV system, this section primarily discusses electricity but also considers water supply and use.

3.8.1.1 Electric, Natural Gas, Sewer, Water, and Stormwater Systems

SDG&E provides most of the electricity and all of the natural gas to MCB Camp Pendleton. SDG&E owns and maintains most of the electric transmission and distribution lines and related infrastructure within the installation boundaries, but MCB Camp Pendleton also has many of their own electric transmission and distribution lines.

SDG&E currently provides power to MCB Camp Pendleton through a 69-kV substation located in Haybarn Canyon near the junction of Basilone Road and Vandegrift Boulevard, and through other 69-kV substations with radial feeds to different areas of the Base. In addition, the SDG&E holds more than 1,300 acres (526 ha) of leases/right-of-way agreements with the Base for transmission lines and various associated facilities.

The existing electrical distribution system, nearly 40 years old, was designed to supply the Base at that time in a reliable, redundant, and energy-efficient manner. The age of the system has made it difficult to maintain and the circuits are no longer reliable. New electrical loads have exceeded the capacity of the original system and the line losses have increased. As such, the electrical system has recently undergone upgrades, expansions, and improvements, including replacing the existing 4.16-kV and 12-kV electrical distribution systems to adequately address capacity requirements.

3.8.1.2 Water Supply and Use

MCB Camp Pendleton's municipal and industrial water is pumped from on–Base wells. The potable water facilities within MCB Camp Pendleton are owned and operated by the Facilities Maintenance Department. The Base's potable water is locally produced from underground water aquifers located on Base and permitted by the State of California (MCB Camp Pendleton 2010). The San Diego County Water Authority provides water to the regional area.

3.8.2 Affected Environment

3.8.2.1 Sites A, B, C, and D

There is an existing SDG&E overhead 69-kV transmission line that runs along the eastern boundary of Site B, to the west of the Stuart Mesa Housing complex. The 69-kV transmission line connects to the Cockleburr Substation, which is located to the northwest of the Stuart Mesa Housing complex.

A 12-kV electrical distribution line, "J" circuit, is located to the east of Stuart Mesa Road, southeast of Stuart Mesa Housing complex. The distribution line is available for "underbuild," and is owned and maintained by MCB Camp Pendleton. The line follows Stuart Mesa Road to the Stuart Mesa Substation (NREL 2014).

A 6-inch (15.2-cm) diameter polyvinyl chloride sewer main begins at Parker Road in the Stuart Mesa Housing complex, the main increases to an 8-inch (20.3-cm) diameter polyvinyl chloride along Joyner Street and then a 15-inch (38.1-cm) diameter line along Hamilton Street. The 15-inch (38.1-cm) diameter sewer line continues along the eastern edge of Site B to an existing sewer pump station. An existing 12-inch (30.5-cm) force main then runs east to Stuart Mesa Road and on to the Southern Region Tertiary Treatment Plant. An additional sewer line may be present in the center of Site A.

Eight-inch (20.3-cm) potable water lines are located north of Site B throughout the existing Stuart Mesa Housing complex. There are currently no stormwater facilities at Sites A, B, C, or D.

The existing SDG&E natural gas system consists of a 12-inch (30.5-cm) diameter, high-pressure natural gas pipe running east of I-5 along the western perimeter of the Stuart Mesa Sites. The existing Stuart Mesa Housing complex is served by a 4-inch (10.2-cm) diameter natural gas line that serves individual housing units.

3.8.2.2 Site E

A MCB Camp Pendleton 12-kV electrical transmission line runs along Vandegrift Boulevard and slightly encroaches into the northeastern section of the site. A perpendicular SDG&E 69-kV electrical transmission line runs to the northwest portion of Site E. Additionally, a 4-kV overhead electrical transmission line runs to the south of the site. An SDG&E 12-inch (30.5-cm) diameter polyvinyl chloride natural gas main transects the southwestern corner of Site E. There is no stormwater infrastructure at Site E.

3.8.3 Environmental Consequences

3.8.3.1 Alternative 1: Construction, Operation, and Decommissioning of an up to 28 MW Solar PV System at Sites A and B

Construction

Construction activities would be mindful of the 12-kV overhead transmission lines that cross sites Site A and Site B. If necessary, appropriately low construction equipment would be utilized. Power used by construction equipment and vehicles would primarily be generated from the consumption of diesel and gasoline from mobile or portable sources (i.e., generators). Temporary and localized power disruption could potentially occur when the solar PV system is brought on-line.

The Proposed Action would require installation of the PV panels, construction of a substation, construction of a metering/switching station, and a connection between the solar PV system and the grid. The substation and switching/metering station would occur on Site A or Site B.

The Model 2 acquisition strategy would not require construction of a new transmission line. Under the Model 2 acquisition strategy, the solar PV system would connect to the existing overhead SDG&E 12/69-kV transmission line to the east of Sites A and B (Figure 3.8-1). Power generated would be used by regional customers. The power would be delivered via existing SDG&E infrastructure to customers located outside of MCB Camp Pendleton. Under Model 2, integration of solar PV power within the region would improve power supply, reliability, and availability.

Proposed construction activities related to all features of the solar PV system would require water, primarily for dust suppression during initial grading and site preparation activities. For development of up to a 28 MW solar PV system, as much as approximately 0.3 acre-feet of water per acre would be used; this equates to approximately 58.2 acre-feet of water for construction use over the course of two years. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for construction activities. If available and feasible, reclaimed water (tertiary treated) would be used during construction and water use would be minimized to the extent practicable.

A sewer line may be located in the center of Site A. A utility investigation and survey would be conducted to determine presence, and obtain the exact depth and location of the sewer line on Site A.

Operation

Implementation of Alternative 1 would support achievement of the Navy's renewable energy goals and strategies and contribute towards meeting California's renewable portfolio standard (California Public Utilities Commission 2015).

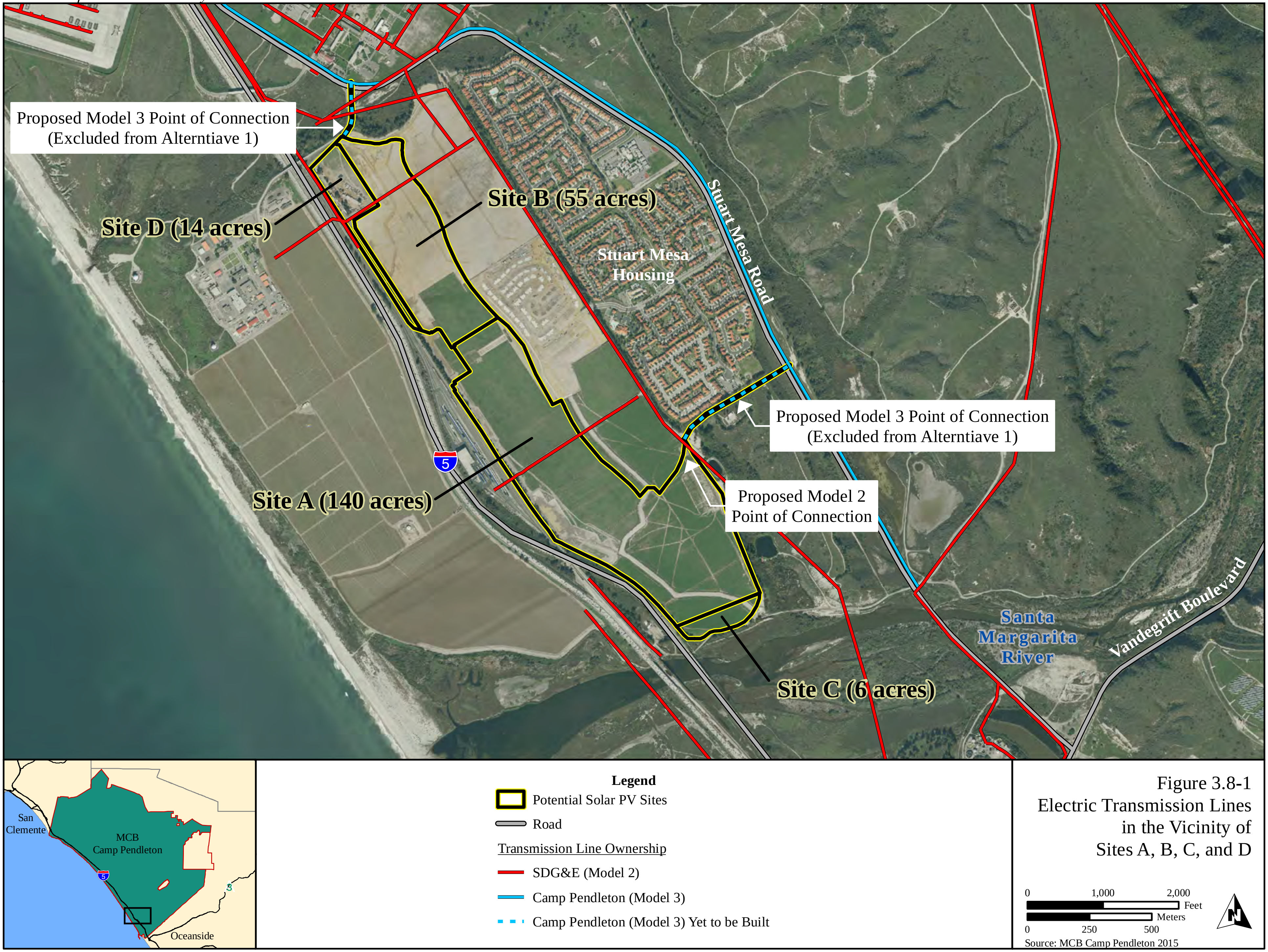

Figure 3.8-1
Electric Transmission Lines in the Vicinity of Sites A, B, C, and D

Periodic cleaning of the solar PV panels would occur. The cleaning would require deionized water. Using a factor of 0.16 acre-foot of water per MW to periodically clean up to 28 MW of solar PV panels, an annual volume of approximately 4.6 acre-feet of deionized water would be required annually. The private partner would use deionized water provided by an off-site source. The water would be trucked in and then applied to the solar PV panels for cleaning. The periodic cleaning process is anticipated to produce little to no over-spray or accumulation of water below the solar PV panels. In addition, other cleaning techniques that use less water may be implemented to reduce the amount of water needed for cleaning.

Decommissioning

At the conclusion of the agreement, the private partner would be required to decommission the solar PV system and all associated features and return the project area to its pre-project condition. Although the decommissioning of the solar PV system would eliminate the electricity generated from the proposed PV system, conditions would return to those described in Section 3.8.2. Temporary and localized power disruptions may occur when the system is decommissioned. Power used for construction equipment and vehicles would primarily be generated from the consumption of diesel and gasoline from mobile and portable sources.

Up to approximately 4.9 acre-feet of water over a 2-month period would be used during decommissioning activities, primarily for dust suppression. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for decommissioning activities. If available and feasible, reclaimed water (tertiary treated) would be used during decommissioning activities.

Summary

Under Alternative 1, there would be the potential for temporary and localized power disruption when the solar PV system comes on-line. Alternative 1 would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 there would be an increase in regional power supply. Model 2 would require the use of existing SDG&E electrical infrastructure. New transmission lines would connect the solar PV system to the existing electrical infrastructure owned by MCB Camp Pendleton. The private partner would use off-site sources to meet all project water needs; MCB Camp Pendleton would not supply water. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, implementation of Alternative 1 would have no significant impact to utilities.

3.8.3.2 Alternative 2: Construction, Operation, and Decommissioning of an up to 31 MW Solar PV System at Sites A, B, C and D

Under Alternative 2, impacts to utilities would largely be the same as described for Alternative 1. Alternative 2 would be implemented as a Model 2 (described in Section 3.8.3.1) or as a Model 3 acquisition strategy. Model 3 acquisition strategy would require construction of two new transmission lines. Under the Model 3 acquisition strategy, the solar PV system would connect to the existing overhead MCB Camp Pendleton J circuit via two new transmission lines. One of the new transmission lines would accommodate 16 MW of solar PV power and be located between Site A and Stuart Mesa Road, south of the Stuart Mesa Housing complex (refer to Figure 3.8-1). The other new transmission line would accommodate 16 MW of solar PV power and would be located between Site B and Stuart Mesa Road, north of Site B. Both the new transmission lines would connect to MCB Camp Pendleton's J Circuit that is located parallel to the east side of Stuart Mesa Road and runs from MACS Road to the 41 Area. The existing transmission line has capacity to serve the load generated by the proposed solar PV system. The circuit has or could have switching installed that would permit interconnection with the Haybarn Substation to transmit energy throughout MCB Camp Pendleton. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton and it would operate independent of the civilian (SDG&E) grid. It is anticipated that the power generated by the solar PV system could come close to meeting MCB Camp Pendleton's minimum weekend loads during March and April (timeframe studied during the NREL Feasibility Study [NREL 2014]). The integration of solar PV power within MCB Camp Pendleton would improve power supply, reliability, redundancy, and availability.

Regardless of the acquisition model, Alternative 2 provides up to 3 MW more generation power than Alternative 1. This is due to the inclusion of Sites C and D. Similar to Alternative 1, Alternative 2 would have no significant impact to utilities.

3.8.3.3 Alternative 3: Construction, Operation, and Decommissioning of an up to 39 MW Solar PV System at Sites A, B, C, D, and E

<u>Construction</u>

Construction impacts to Sites A, B, C, and D would be the same as those described under Alternative 2.

Site E contains a 12-inch (30.5-cm) diameter natural gas line and SDG&E 69-kV overhead electrical distribution line that transect the site. Appropriate safety measures should be enacted during construction activities to mitigate the overhead transmission line safety hazard. Temporary and localized power disruption could potentially occur when the solar PV system is brought on-line.

Alternative 3 would require the same level of utility construction as described in Alternative 2, with the addition of the installation of the PV panels, construction of a substation, construction of a metering/switching station, and a connection between the solar PV system and the grid at Site E. The connection to the grid would depend on the model.

Under the Model 2 acquisition strategy, the solar PV system would require construction of a short new power line to connect the solar PV system to the existing overhead SDG&E 69-kV transmission line to the northwest of Site E (Figure 3.8-2). From there, power would be delivered via existing SDG&E infrastructure to customers located outside of MCB Camp Pendleton. Power generated would be used by regional customers. The integration of solar PV power within the region would improve power supply, reliability, redundancy, and availability.

Under Model 3 acquisition strategy, the solar PV system would connect to the MCB Camp Pendleton grid at the northeast corner of Site E where there is an existing MCB Camp Pendleton 12-kV distribution line referred to as "The G Circuit." The G Circuit is located in Vandegrift Boulevard to the north and east of Site E. The G Circuit has capacity to serve the load generated by the proposed solar PV system. The circuit has or could have installed switching that would permit interconnection with the Haybarn Substation to transmit energy throughout MCB Camp Pendleton. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton. It is anticipated that the power generated by the solar PV system could come close to meeting MCB Camp Pendleton's minimum weekend loads during March and April (timeframe studied during the NREL Feasibility Study [NREL 2014]). The integration of solar PV power within MCB Camp Pendleton would improve power supply, reliability, redundancy, and availability.

Proposed construction activities for Sites A-E would require water, primarily for dust suppression during initial grading and site preparation activities. For development of up to a 39 MW solar PV system, as much as approximately 0.3 acre-foot of water per acre would be used; this equates to approximately 81 acre-feet of water for construction use.

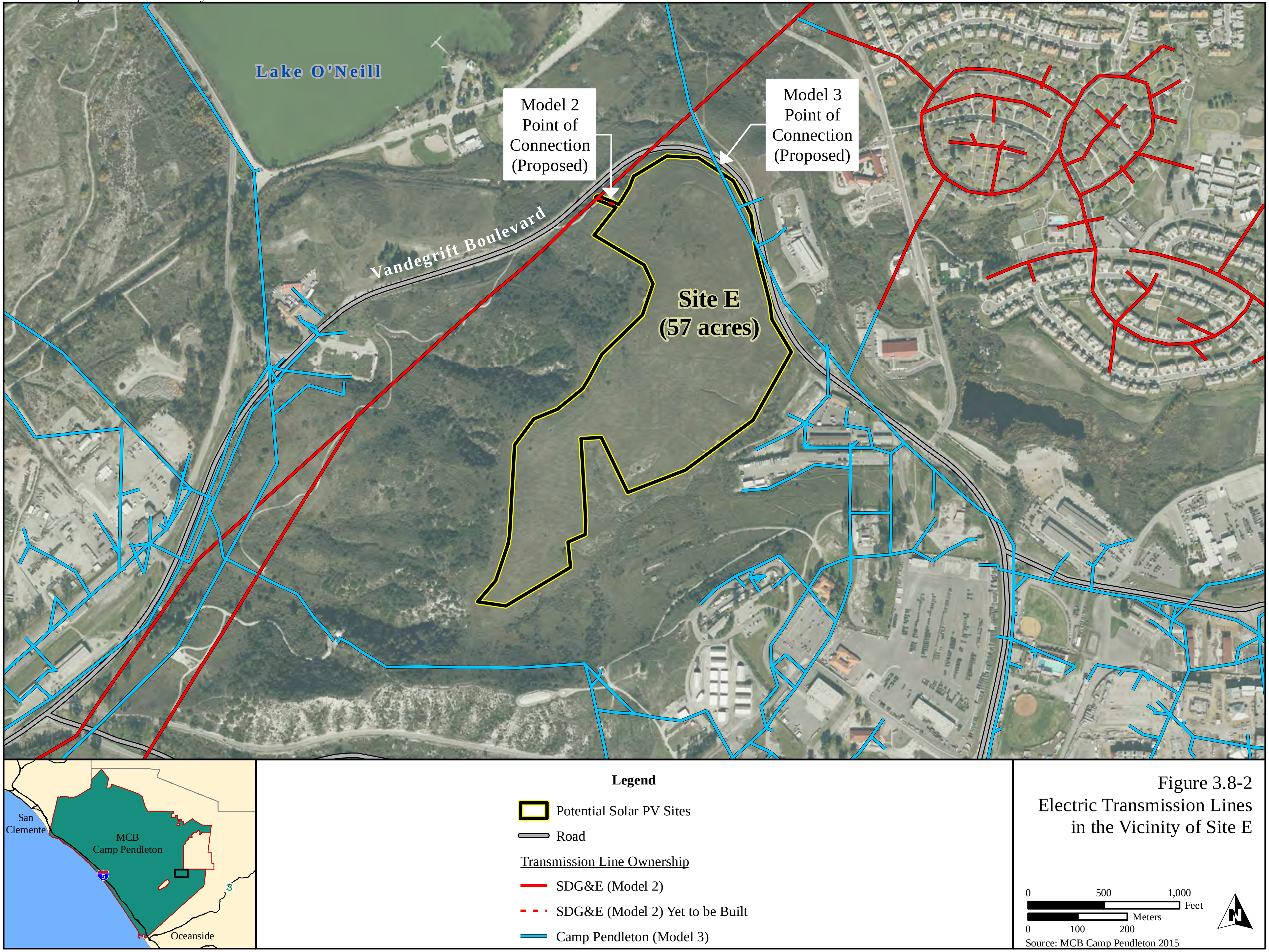

Figure 3.8-2
Electric Transmission Lines in the Vicinity of Site E

The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for construction activities. If available and feasible, reclaimed water (tertiary treated) would be used during construction and water use would be minimized to the extent practicable.

Operation

Operational impacts at Sites A, B, C, and D would be the same as those described under Alternative 2 and additional impacts would occur for Site E.

Periodic cleaning of the solar PV panels would occur. The cleaning would require deionized water. Using a factor of 0.16 acre-foot of water per MW to periodically clean up to 39 MW of solar PV panels, an annual volume of approximately 6.4 acre-feet of deionized water would be required annually. The private partner would use deionized water provided by an off-site source. The water would be trucked in and then applied to the solar PV panels for cleaning. The periodic cleaning process is anticipated to produce little to no over-spray or accumulation of water below the solar PV panels. In addition, other cleaning techniques that use less water may be implemented to reduce the amount of water needed for cleaning.

Alternative 3 would provide 11 MW of energy more than Alternative 1, and 8 more MW of energy than Alternative 2.

Decommissioning

Decommissioning impacts would be the same as those described under Alternative 2.

Up to approximately 6.8 acre-feet of water over a 2-month period would be used during decommissioning activities, primarily for dust suppression. The water would be brought to the project area by the private partner; MCB Camp Pendleton would not supply water for decommissioning activities. If available and feasible, reclaimed water (tertiary treated) would be used during decommissioning activities.

Summary

Under Alternative 3, there would be the potential for temporary and localized power disruption when solar PV system comes on-line. Alternative 3 would support achievement of Navy's renewable energy goals and strategies. Under the Model 2 and combination Models 2 and 3 acquisition strategies, there would be an increase in regional power supply. Under Model 3, a local renewable energy source would be created for MCB Camp Pendleton. Alternative 3 would supply the greatest amount of renewable energy when compared to Alternatives 1 and 2. Model 2 would require a new transmission line to connect to the existing SDG&E electrical infrastructure. Existing electrical infrastructure owned by MCB Camp Pendleton would be sufficient to support the solar PV system under Model 3. The private partner would use off-site sources to meet all project water needs; MCB Camp Pendleton would not supply water. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, implementation of Alternative 3 would have no significant impact to utilities.

3.8.3.4 No-Action Alternative

Under the No-Action Alternative, the Navy would not enter into an agreement with a private partner to construct and operate a solar PV project at MCB Camp Pendleton. The No-Action Alternative would not support the Navy's renewable energy goals and strategies. The existing electrical substations and transmission/distribution systems would continue to have adequate capacity to serve MCB Camp Pendleton's demand. There would be no impact to MCB Camp Pendleton water supply or use. Therefore, the No-Action Alternative would have no significant impact to utilities.

CHAPTER 4
CUMULATIVE IMPACT ANALYSIS

4.1 INTRODUCTION

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)*

Cumulative effects are most likely to arise when a relationship exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

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 of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur. The scope must consider other projects that coincide with the location and timing of the Proposed Action and other actions, and the duration of potential effects on the environment. Section 4.2 identifies the projects considered in the cumulative analysis. Section 4.4 provides an analysis of potential cumulative impacts for each of the environmental resources discussed in this EA.

4.2 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

This section identifies past, present, and reasonably foreseeable future actions not related to the Proposed Action that have the potential to cumulatively impact the resources in the affected environment for MCB Camp Pendleton and the associated regionally affected area. The geographic distribution, intensity, duration, and historical effects of similar activities were considered when determining whether a particular activity may contribute cumulatively to the impacts of the Proposed Action on the resources identified in this EA. Figure 4-1 depicts the locations of these projects.

4.2.1 Past Actions

Past actions relevant to the analysis of cumulative impacts at MCB Camp Pendleton have been identified and are described below.

PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Past Actions

1 Grow the Force

2 Basewide Utilities Infrastructure Improvements (P-1094, P-1048)

3 Box Canyon Solar Photovoltaic System

4 Actions at Marine Corps Air Station (MCAS) Camp Pendleton

5 Actions at Oscar One/Edson Range Impact Area

6 North County Transit District SMR Bridge Replacement and Second Track Project

7 New Naval Hospital

8 New Main Exchange and Service Mall

Present Actions

9 MCB Camp Pendleton Military Family Housing Public-Private Venture (PPV-6)

10 Interstate 5 North Coast Corridor Project

11 Connection of North and South Water Systems (P-1045)

Future Actions

12 MCB Camp Pendleton Military Family Housing Public-Private Venture (PPV-7)

13 Stuart Mesa Bridge

14 Santa Margarita River Conjunctive Use Project

15 MCTSSA Cantonment Area Expansion (G/ATOR P-541)

16 Stuart Mesa West (AAV Course P-1508)

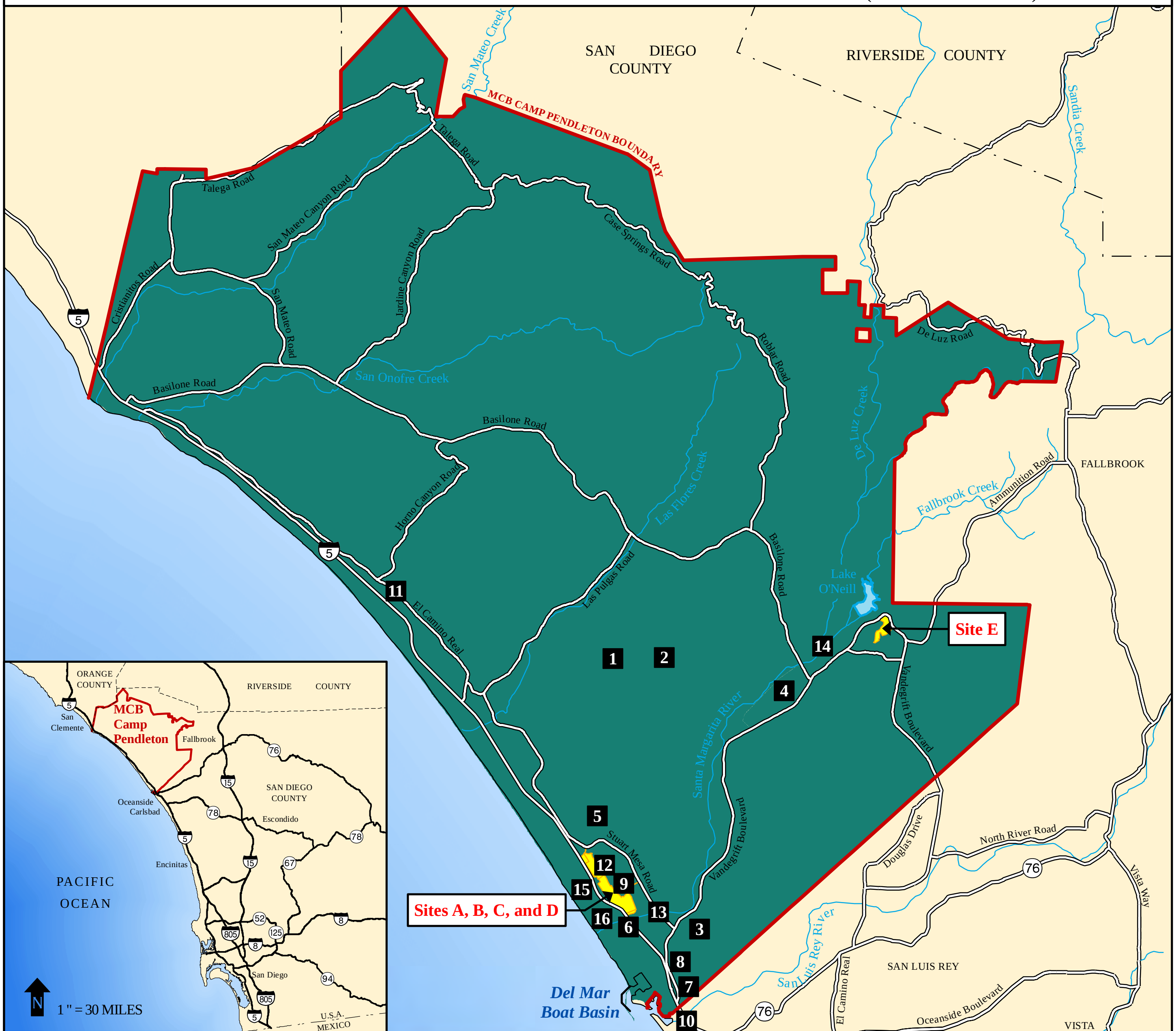

Figure 4-1
Cumulative Project Locations

Source: MCB Camp Pendleton 2015

4.2.1.1 Grow the Force

The Marine Corps 202k Plus Up, also known as “Grow the Force” would include an increase of approximately 3,000 personnel at MCB Camp Pendleton and the placement and use of temporary and permanent facilities. At present, the Grow the Force project includes approximately 60 construction projects at MCB Camp Pendleton. An EA evaluating the potential impacts of 39 projects has been completed and the Finding of No Significant Impact (FONSI) signed.

4.2.1.2 Basewide Utilities Infrastructure Improvements

MCB Camp Pendleton has prepared an EIS for the proposed installation and operation of six utility infrastructure improvements throughout MCB Camp Pendleton. The proposed improvements would facilitate the mission of MCB Camp Pendleton by improving water, wastewater, natural gas, electrical and communication systems where they are deteriorating, insufficient or non-existent. Two of the infrastructure improvements are proposed, in part, within the vicinity of the Proposed Action and are discussed below:

- **P-1093 Communication Systems Upgrade.** P-1093 would provide both intercamp and intracamp fiber-optic cable and telephone cable connections. This project would provide a redundant communications network to resist single point failures by providing a minimum of two separate communication line paths to each area on MCB Camp Pendleton.
- **P-1094 Upgrade and Expand 12 kV Electrical Distribution Systems.** P-1094 would replace the existing 12-kV electrical distribution systems currently fed from the Haybarn substation, and the 4.16 kV subsystems fed from the 12-kV distribution system. The project would construct a total of eight new 12 kV circuits, which would be fed from the new 69-kV substation (P-1048), to provide approximately 60 percent of the electrical power for MCB Camp Pendleton.

The EIS discusses alternative alignments, alternatives involving various technologies, as well as the No-Action Alternative. The Record of Decision (ROD) for this project has been signed.

4.2.1.3 Box Canyon Solar Photovoltaic System

Box Canyon solar PV system was constructed on top of the Box Canyon land fill at MCB Camp Pendleton. It generates 3 MW of solar energy on a daily basis. It went into service in February 2011. To avoid disturbing the earth, the solar panels were attached to frames anchored by massive concrete blocks which are set in beds of gravel on the ground.

4.2.1.4 Actions at MCAS Camp Pendleton

One project associated with MCAS Camp Pendleton is a warehouse replacement (P-1037). Specific plans for this warehouse replacement have not been finalized. Actions that could affect aircraft operations at MCAS Camp Pendleton include proposed upgrades to the existing helicopter fleet. Upgrades would include newer, more powerful engines and increased number of blades (i.e., from two to four). Potential noise and air quality impacts were anticipated from Cobra and Huey engines. Noise testing occurred in late July 2006, and the EA was submitted in late November 2006. A FONSI was signed June 2007.

Another program associated with MCAS Camp Pendleton is the basing of the MV-22 Osprey tilt-rotor aircraft. This program would modernize the medium lift fleet, support I Marine Expeditionary Force, and improve operational capabilities for the Third and Fourth Marine Air Craft Wing squadrons. An EIS was prepared for the MV-22 West Coast Program and a ROD was signed November 2009.

4.2.1.5 Actions at Oscar One/Edson Range Impact Area

MCB Camp Pendleton is implementing a project to repair existing dirt roads at the Edson Range Impact Area. Pacific pocket mouse, vernal pool, and archaeological resources surveys are required for the project. Other planned actions in the area (associated with Grow the Force) include recruit field barracks, an ammunition magazine, a marksmanship trainer facility, and Weapons & Field Training Battalion support facilities (P-1086). NEPA evaluation is on-going.

4.2.1.6 North County Transit District SMR Bridge Replacement and Second Track Project

The Proposed Action for this project includes the replacement of the existing single-track SMR Railroad Bridge with a new two-track bridge, construction of a 0.8-mile (1.3-km) second rail track, and an upgrade and realignment of the existing Fallbrook Junction Passing Track (1.7 miles [2.7 km]) for higher speed. Completion of the new double-track segment portion of the project would connect the Stuart Mesa Passing Track with the Fallbrook Junction Passing Track to provide a 4.5-mile (7.2-km) segment of continuous double-track with maximum speeds between 75 and 90 miles per hour (121 and 145 km per hour). An EA was prepared to analyze potential environmental impacts of the project.

4.2.1.7 New Naval Hospital

A new Naval Hospital to replace the existing facility in the 27 Area is has been constructed in the 20 Area, just north of the MCB Camp Pendleton Main Gate. The hospital is planned as a four-story facility with up to three parking structures that are each not to exceed five-stories. The hospital provides emergency services, in-patient services, out-patient clinics, ancillary services, surgical services, logistics, and meet other medical needs. An EA for this project was completed, and a FONSI was signed in January 2010.

4.2.1.8 New Main Exchange and Service Mall

A new Main Exchange and Service Mall was completed in 2013 in the 20 Area, just north of the MCB Camp Pendleton Main Gate (north of the new Naval Hospital). The Exchange and Service Mall includes a large one story "big box" retail building and smaller buildings to support the following potential services: a military clothing store; service vendors; a restaurant; a credit union; a warehouse, administration and support; an outdoor lawn and garden shop; and surface parking for approximately 580 vehicles. An EA for this project was completed and a FONSI was signed in January 2010.

4.2.2 Present Actions

The following present actions are relevant to the analysis of cumulative impacts at MCB Camp Pendleton.

4.2.2.1 MCB Camp Pendleton Military Family Housing Public-Private Venture

A new Public-Private Venture Military Family Housing (PPV-6) development is planned on 77 acres (31 ha) to the west of the existing Stuart Mesa Housing complex. The development includes the construction of up to 138 Military Family Housing units, off-street parking spaces for each dwelling unit, one full-size basketball court, one half-size basketball court, three tot lots, one play lot, and a chain-link fence surrounding the site on all sides except on the eastern boundary. NAVFAC SW prepared an EA for the development and alternatives. A FONSI was published in September 2009.

4.2.2.2 I-5 North Coast Corridor Project

I-5 North Coast Corridor Project proposed improvements include one or two High Occupancy Vehicle Managed Lanes in each direction, auxiliary lanes where needed, and possibly one general purpose lane in each direction. The main purpose of the project is to maintain or improve the existing and future traffic operations in the I-5 north coast corridor so as to improve the safe and efficient regional movement of people and goods for the design year of 2030. An Environment Impact Report/EIS was prepared and this project is currently under construction.

4.2.2.3 Connection of North and South Water Systems (P-1045)

P-1045 would construct approximately 90,000 linear feet (27,000 meters) of potable waterlines sized approximately 36 inches (91 cm) in diameter to connect the northern and southern water systems of MCB Camp Pendleton. A water line would begin at the proposed northern Advanced Water Treatment Facility (P-1044), extend past the San Onofre Nuclear Generating Station Mesa facility, and then continue along the east side of I-5 before passing under San Onofre Creek. The line would travel south along Stuart Mesa Road, continue under the SMR, and then would connect to the southern water system at the intersection of Stuart Mesa Road and Vandegrift Blvd. The project would include approximately 7,000 linear feet (2,100 meters) of horizontal directional drilling beneath San Onofre Creek and the SMR. The project also would include three pump stations at the north, central, and south portions of MCB Camp Pendleton to connect Las Pulgas, Las Flores, and the Stuart Mesa areas to the South Water System. This project was analyzed in the Basewide Water Infrastructure EIS. A ROD was issued in 2012.

4.2.3 Future Actions

The following future actions are relevant to the analysis of cumulative impacts at MCB Camp Pendleton.

4.2.3.1 MCB Camp Pendleton Military Family Housing Public-Private Venture

A new Public-Private Venture Military Family Housing (PPV-7) development is planned on 132 acres (53.48 ha) to the west of the existing Stuart Mesa Housing complex and to the east of Sites B as identified in the Solar PV EA. The Proposed Action would construct, operate, and maintain up to a maximum of 351 military family housing units and supporting infrastructure. The site design for the proposed residential housing would consist of multi-family residential three- and four-bedroom units. Utility connections for potable water, sewer, and electrical services are all part of the Proposed Action. In addition, the Proposed Action includes a stormwater retention area that is located in a portion of Sites A and B of the Solar PV EA, a temporary construction office location, and a temporary construction laydown area. Paving and site improvements would include paved roads and parking; curbs and gutters; sidewalks; landscaping and irrigation; and, pedestrian and bicycling features. Access to the new housing area would be provided via a new two-lane road that would extend from existing Cockleburr Canyon Road, west of the site, through the project site, to join existing Mitchel Boulevard, southeast of the site. A FONSI was published in June 2011.

4.2.3.2 Stuart Mesa Bridge

Widening Stuart Mesa Bridge segment of Stuart Mesa Road is being considered by Camp Pendleton, which would include reconstruction of the existing bridge crossing over the SMR. Reconstruction of the existing bridge crossing over the SMR is needed because of susceptibility to floods. The new bridge would be four lanes, instead of the existing two lanes along Stuart Mesa Road. There are concerns that construction could result in potential environmental impacts to the riparian habitat below.

4.2.3.3 Santa Margarita River Conjunctive Use Project

This project addresses the proposed conjunctive use of surface and groundwater in the lower SMR basin. The project would perfect the water rights permits that were assigned to the Bureau of Reclamation in 1974 (Permits 15000, 8511, and 11357), provide a physical solution to long-standing litigation, reduce dependence on imported water (primarily for the Fallbrook Public Utility District [FPUD]), maintain watershed resources, and improve water supply reliability by managing the yield of the lower SMR basin. The Department of the Interior, Bureau of Reclamation, the Navy, MCB Camp Pendleton, and FPUD are preparing an Environmental Impact Report/EIS for this proposed project.

4.2.3.4 MCTSSA Cantonment Area Expansion

An EA has been prepared to evaluate the expansion of the existing MCTSSA Cantonment Area by 31 acres (13 ha) and include the construction and operation of radar antennae (temporary and permanent); a vehicle testing area; support facilities; and site improvements. The Proposed Action is located west of I-5 and south of the MCTSSA Center. A FONSI was signed 12 September 2014.

4.2.3.5 G/ATOR Maintenance and Test Support Facilities

This project constructs a G/ATOR Maintenance and Test Support Facilities at MCTSSA that includes a G/ATOR building, an attached / co-located training resources and visitor’s center building, and an Operating Forces Tactical Systems Support Center and Technical Infrastructure and Services Group building. Construction is expected in 2018.

4.2.3.6 Stuart Mesa West Training and Conversion EA

An EA is being prepared to develop a new training area on MCB Camp Pendleton on approximately 233 acres (94 ha) of land between I-5 and the Pacific Ocean, north of SMR, for combined air, land, and sea training operations. The EA is in process.

4.2.3.7 Assault Amphibious Vehicle (AAV) Drivers Course (P-1508)

This project constructs a new AAV driver and test course in the Stewart Mesa West area to fully support entry-level AAV driver license requirements.

4.3 METHODOLOGY

4.3.1 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 action and alternatives. However, if the proposed action and alternatives are determined to have no direct or indirect effects on a resource, no future cumulative effects analysis is necessary.

4.3.2 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 IMPACT 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.

4.4.1 Biological Resources

The Proposed Action entails construction, operation, and decommissioning of a solar PV system on lands that were formerly used for agricultural or training purposes and are vacant. If implemented, Alternative 1 and Alternative 2 may affect, but are unlikely to adversely affect, the coastal California gnatcatcher. If implemented, Alternative 3 would result in adverse impacts to the coastal California gnatcatcher, but the implementation of the proposed avoidance/minimization measures and additional measures developed in an associated Biological Assessment and subsequent consultation with the USFWS would minimize impacts to less than significant. The Proposed Action would not be likely to adversely affect any other federally-listed threatened or endangered species or species of concern. Past, present, and future projects, including other solar PV system projects and the MCAS Camp Pendleton Clear and Transition Zone maintenance, have been, and would similarly be, required to avoid or minimize direct and indirect effects to biological resources. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to biological resources.

4.4.2 Hazardous Materials and Waste

Implementation of the Proposed Action at Sites A, B, C, D, and E would generate small amounts of HAZWASTE, but far less than would be generated through implementation of the MCB Camp Pendleton Master Plan, which called for future housing, storage, and maintenance at the sites. Implementation of the Proposed Action at Site E would likely significantly improve HAZMAT/HAZWASTE conditions as it would require remediation actions as a precursor to closing the inactive Range 404. The Proposed Action would require small HAZMAT presence and HAZWASTE streams, in the form of oils and lubricants for operation and maintenance of the drive shafts and motors that rotate the panels, if the single- or multi-axis type solar PV panels are selected for use. Additional HAZMAT associated with operation would be the application of herbicides treatments as necessary. There would be temporary debris created at the site during construction and decommissioning activities that would be removed and disposed of upon completion. Identified cumulative projects would not impact HAZMAT/HAZWASTE at the Proposed Action, nor would the Proposed Action impact HAZMAT/HAZWASTE at the identified cumulative projects. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, and 3 would not result in significant cumulative HAZMAT/HAZWASTE impacts.

4.4.3 Water Resources

Implementation of any of the proposed alternatives would result in less than significant impacts to water resources. Water supplies for construction and solar PV panel cleaning would be trucked in from an off-base source and water procurement would be the responsibility of the private partner. The amount of water used would be dependent on the level of dust control and panel maintenance needed, but would not affect the MCB Camp Pendleton potable water supply. The Proposed Action would not affect local, regional, or statewide water sources, including groundwater and surface water. Cumulatively, the construction projects described in Section 4.1 would not have any appreciable cumulative impact to water resources in terms of quality and availability. No significant cumulative impacts on water resources would occur.

4.4.4 Air Quality

In addition to the potential cumulative impacts of additional criteria pollutants, the cumulative effects analysis for air quality would determine if the Proposed Action would contribute to global climate change (in combination with the other identified past, present, and future projects). The most recent California Climate Change Scenarios Assessment predicts that temperatures in California could increase by approximately 2.7 degrees Fahrenheit (°F) by 2050, and up to 8.6°F by 2100 (California Energy Commission 2012). Predictions of long-term negative environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of droughts, changes to local and regional ecosystems including the potential loss of species, and a substantial reduction in winter snow pack. In California, predictions of these effects include exacerbation of air quality problems, a reduction in municipal water supply, increased impacts from coastal flooding, an increase in the number and intensity of wild fires, and damage to marine and terrestrial ecosystems (California Energy Commission 2012). Similar effects would be anticipated within San Diego County (County of San Diego 2012).

In December of 2014 the CEQ issued revised draft guidance for federal agencies, to guide them on when and how to consider the effects of GHG emissions and climate change in their projects (CEQ 2014). In the analysis of the direct effects of a Proposed Action, the CEQ proposes that it would be appropriate to (1) quantify cumulative emissions over the life of the project; (2) discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and (3) qualitatively discuss the link between such GHG emissions and climate change. Therefore, formulating significance criteria for GHG emissions is problematic, as it is difficult to determine what level of proposed emissions would substantially contribute to global climate change. The CEQ recommends that 25,000 metric tons of CO_2e or more being produce by a Proposed Action be considered the threshold warranting a more substantial evaluation of—but not necessarily a determination of—significance of climate change impact (CEQ 2014).

The ROI in this air quality cumulative effects analysis includes the SDAB. The minor impacts to air quality from Alternatives 1, 2, or 3 that could contribute to potential cumulative impacts would be from the short-term air emissions from trucks and vehicles used during the construction of the project. Operational air emissions from the action alternatives would be negligible compared to the existing condition, and would not result in significant long-term increases in air emissions.

The combined air emissions of Alternatives 1, 2, or 3 and potentially cumulative projects would not contribute to an exceedance of an ambient air quality standard. As a result, proposed construction and operational activities would produce less than cumulatively considerable air quality impacts. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to air quality.

4.4.4.1 Greenhouse Gasses Cumulative Effects Analysis

The potential effects of GHG emissions are by nature global and cumulative and it is impractical to attribute climate change to individual activities. Therefore, an appreciable impact on global climate change would only occur when GHG emissions associated with the Proposed Action or other alternatives are combined cumulatively with GHG emissions from other human-made activities on a global scale.

<u>Alternative 1: Sites A and B</u>

Table 4.4-1 summarizes the annual GHG emissions that would occur with implementation of Alternative 1.

Table 4.4-1. Estimated Annual GHG Emissions – Alternative 1

Scenario/Activity	Metric tons per year			
	CO_2	CH_4	N_2O	CO_2e[1]
Construction				
Year 1 - 2016	1,432.73	0.39	0.00	1,440.98
Year 2 - 2017	1,619.23	0.41	0.00	1,627.94
Decommissioning				
Year 2053 (Model 2)	181.42	0.007	0.00	181.57

Note: [1]$CO_2e = CO_2 + (21 * CH_4) + (310 * N_2O)$.

As an indication of the nominal relative magnitude of these emissions, total annual CO_2e emissions in the U.S. were approximately 5.5 billion metric tons (USEPA 2015d). Total CO_2e emissions in California in 2012 were approximately 474 million metric tons (CARB 2014).

Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. Alternative 1 in conjunction with the other past, present, and future solar energy projects would have a beneficial impact to the SDAB as a whole due to the potential reduction in GHG as compared to burning fossil fuels for electricity generation. Therefore, when GHG impacts from Alternative 1 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 1. There would also be no significant cumulative impact from the emission of criteria pollutants in conjunction with the other past, present, and reasonably foreseeable actions.

<u>Alternative 2: Sites A, B, C, and D</u>

The GHG effects from the implementation of Alternative 2 would be slightly greater to those effects from Alterative 1. However, the potential GHG emissions would still be nominal as compared to the total annual CO_2e emissions in the U.S. Therefore, when GHG impacts from Alternative 2 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 2.

Alternative 3: Sites A, B, C, D, and E

Table 4.4-2 summarizes the annual GHG emissions that would occur with implementation of Alternative 1.

Table 4.4-2. Estimated Annual GHG Emissions – Alternative 3

Scenario/Activity	Metric tons per year			
	CO_2	CH_4	N_2O	CO_2e^1
Construction				
Year 1 - 2016	1,787.23	0.49	0.00	1,797.60
Year 2 - 2017	2,111.39	0.56	0.00	2,123.05
Decommissioning				
Year 2053 (Model 2)	298.38	0.01	0.00	298.60

Note: [1]$CO_2e = CO_2 + (21 * CH_4) + (310 * N_2O)$.

As an indication of the nominal relative magnitude of these emissions, total annual CO_2e emissions in the U.S. were approximately 5.5 billion metric tons (USEPA 2015d). Long-term beneficial impacts to air quality would occur with implementation of the solar PV system due to the benefits of contributing to the energy/power grid through alternative energy development and reducing GHG. Alternative 3 in conjunction with the other past, present, and future solar energy projects would have a beneficial impact to the SDAB as a whole due to the potential reduction in GHG as compared to burning fossil fuels for electricity generation. Therefore, when GHG impacts from Alternative 3 are added to the GHG impacts from the cumulative projects, there would not be significant GHG cumulative impacts to global climate change from implementation of Alternative 3. There would also be no significant cumulative impact from the emission of criteria pollutants in conjunction with the other past, present, and reasonably foreseeable actions.

4.4.4.2 No-Action Alternative

Under the No-Action Alternative, no project activities would occur; therefore, there would be no GHG impacts to global climate change and no significant cumulative impact from the emission of criteria pollutants.

4.4.5 Land Use and Military Operations

Implementation of the Proposed Action at Sites A and B would be in areas that are designated for future housing as identified in the Master Plan would need to be revised and approved by the Commanding Officer or designee to confirm the appropriate current land use as housing market conditions and Navy priorities may have changed since the housing was approved in 2011.

Implementation of the Proposed Action at Sites A and B would be in areas that are designated for a future detention basin associated with the residential development as documented in the MCB Camp Pendleton Military Family Housing PPV-7 EA. The Commanding Officer or designee would confirm the appropriate land use depending on which project is implemented.

The solar PV system would also encroach into designated training and maneuver areas at Sites A and E, however, the sites are rarely, if ever, used for military training and would not impact the larger mission of MCB Camp Pendleton. Identified cumulative projects would not impact training and maneuver area land. Prime farmland at the proposed sites would be available for future agricultural use at MCB Camp Pendleton's discretion. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, and 3 would not result in significant cumulative impacts to land use.

4.4.6 Cultural Resources

The Proposed Action entails construction, operation, and decommissioning of a solar PV system on currently vacant lands, formerly used for agricultural purposes, and that are highly disturbed. The Proposed Action would not be likely to adversely affect any cultural resources. Past, present, and future projects, including other solar PV system projects, have been, and would similarly be required to avoid or minimize direct and indirect impacts to cultural resources. The region surrounding the project area is largely composed of agricultural land that has been disturbed, with a low likelihood of containing intact cultural resources. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to cultural resources.

4.4.7 Visual Resources

Implementation of the Proposed Action would alter the existing visual environment from unoccupied agricultural to a solar PV system. The past, present, and reasonably foreseeable cumulative projects described would add development to MCB Camp Pendleton including potential residential development and electrical transmission infrastructure. While additional military housing could add visual sensitivity factors near the Stuart Mesa Sites A, B, C, and D additional features (such as fences or walls around the housing) could be added to obscure direct lines of sight to the solar PV system. The solar PV system is relatively low to the ground; the highest point of the solar PV field would be no higher than approximately 15 feet (5 meters) above the ground surface under the Proposed Action. Additionally, ground cover under and/or around the solar PV system could be designed to improve the visual character of the site. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to visual resources.

4.4.8 Utilities

Implementation of the Proposed Action would generate additional electricity for regional customers (Model 2) or for MCB Camp Pendleton (Model 3). Similarly, other cumulative renewable energy projects in the region and on Base would generate additional electricity for customers. For example, the recently constructed cumulative project, the Box Canyon Solar PV System, generates 3 MW of renewable energy on a daily basis for MCB Camp Pendleton. Identified and proposed upgrades to systems that require additional load requirements, and short- and long-term infrastructure needs throughout MCB Camp Pendleton would continue to be upgraded under the Basewide Utilities Infrastructure Improvements project. Transmission planning off-Base would continue to be identified and improved by the CAISO. Therefore, when added to the impacts from other potentially cumulative actions, Alternatives 1, 2, or 3 would not result in significant cumulative impacts to utilities.

CHAPTER 5
OTHER NEPA CONSIDERATIONS

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

An assessment of the Proposed Action indicates that the three action alternatives (Alternative 1, 2, and 3) would not conflict with the objectives of other regulations. A summary of regulatory compliance status is presented in Table 5-1.

Table 5-1. Summary of Applicable Environmental Regulations and Regulatory Compliance

Plans, Policies, and Controls	Responsible Agency	Compliance status	EA Section
NEPA	Navy and USMC	This EA has been prepared in accordance with NEPA, CEQ regulations implementing NEPA, and Navy NEPA procedures.	Entire EA
CAA, CAAQS, SDAPCD Rules and Regulations for Title V and non-Title V sources	USEPA and CARB	The air quality analysis in this EA concludes that proposed emissions under Alternatives 1, 2, and 3: (1) would not exceed *de minimis* levels, (2) would not create a major regional source of air pollutants or affect the current attainment status at MCB Camp Pendleton, and (3) would comply with all applicable state and regional air agency rules and regulations.	3.4, 4.4.4
EO 12898, Environmental Justice	Navy and USMC	Based on the analysis in this EA, Navy and USMC conclude that Alternatives 1, 2, or 3 would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	1.4.2
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	Navy and USMC	Based on the analysis in this EA, Navy and USMC conclude that Alternatives 1, 2, or 3 would not result in environmental health risks and safety risks that may disproportionately affect children.	1.4.2
NHPA	SHPO	None of the archaeological sites within the Project Area are eligible for listing under the NRHP.	3.6, 4.4.6
CWA	USEPA, USACE, and California SWRCB	The Proposed Action would be implemented in compliance with California's General Construction Permit. Proposed construction and decommissioning activities would require preparation of a SWPPP and use of BMPs to limit potential erosion and runoff.	3.3, 4.4.3
ESA	USFWS	Alternative 1, 2, and 3 would not affect ESA-listed species or suitable habitat for ESA-listed species at MCB Camp Pendleton.	3.1, 4.4.1
Migratory Bird Treaty Act	USFWS	The Proposed Action would not increase impacts to migratory birds.	3.1

5.2 ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL OF VARIOUS ALTERNATIVES AND MITIGATION MEASURES CONSIDERED

Energy demands would primarily occur during the construction/decommissioning phases of the project. The energy demands for the implementation of Alternative 1, which has the smallest footprint, would have lower energy demands. Alternative 2 would have a slightly greater energy demand compared to Alternative 1. Alternative 3 would have the highest energy demand, as it has the largest footprint.

Construction/decommissioning activities would consume large volumes of nonrenewable fossil fuel, in the form of diesel gasoline, for the operation of construction equipment. One of the primary opportunities for conservation of fuel is the regular maintenance of vehicles and equipment to maximize their fuel efficiency. All equipment would be in proper working order. Equipment would not be allowed to idle when not in service, as is required for minimizing air quality impacts. In addition, all equipment would be shut down when not in operation for any extended periods of time.

Maintenance activities would require a small number of vehicles. In addition to the conservation options described above, fuel consumption could be further reduced by using a fuel efficient vehicle fleet, and limiting the use of less efficient vehicles and equipment to when they are required by the situation. Once operational, the Proposed Action would be net renewable energy producer for the region.

5.3 Irreversible and Irretrievable Commitment of Resources

NEPA requires that environmental analysis include identification of "…any irreversible or irretrievable commitments of resources that would be involved if the proposed action is implemented." The term "resources" (both renewable and nonrenewable) means the natural and cultural resources committed to, or lost by, the action, as well as labor, funds, and materials committed to the action.

The permanent use and subsequent loss of non-renewable resources, such as oil, natural gas, and iron ore, are considered irreversible because non-renewable resources cannot be replenished by natural means. An action that causes a loss in the value of an affected resource, which cannot be restored (e.g., disturbance of a cultural site), is considered an irretrievable commitment of resources. Similarly, the consumption of a renewable resource that would be lost for a period of time is also considered an irretrievable commitment of resources. Renewable natural resources include water, lumber, and soil, all of which can be replenished by natural means within a reasonable timeframe. Alternatives 1, 2, and 3 would require the irretrievable commitments of both non-renewable and renewable resources in the use of fuel, construction materials, and labor. The operation and maintenance of the solar PV system would require fuel and certain types of materials.

The Proposed Action would comply with EO 13693, *Planning for Federal Sustainability in the Next Decade*. EO 13693 superseded EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. The goal of EO 13693 is to maintain federal leadership in sustainability and greenhouse gas emission reductions.

Alternative 1 would require the least amount of construction materials and energy, as it has the smallest footprint. Alternative 2 and Alternative 3 would require slightly more construction materials and energy relative to their individual footprints. The total amount of construction materials (e.g., concrete, insulation, wiring) required for the Proposed Action is relatively small when compared to the resources available in the region. The construction materials and energy required for facility development and operations are not in short supply. Moreover, the use of construction materials and energy would not have an adverse impact on the continued availability of these resources. The commitment of energy resources to implement the Proposed Action is not anticipated to be excessive in terms of region-wide usage. Furthermore, compliance with EO 13693 would minimize irreversible or irretrievable effects to multiple non-renewable and renewable resources, while implementation of the Proposed Action would further the goals and intentions of EO 13693 by increasing the amount of energy generated and/or used at MCB Camp Pendleton that is derived from renewable sources.

5.4 Relationship Between Short-Term Environmental Impacts and Long-Term Productivity

Short-term uses of the environment associated with the Proposed Action would include the elimination of vegetative ground cover at the project sites. Project-related construction activities would temporarily increase air pollution emissions in the immediate vicinity of the affected area(s). Sustainability principles would be incorporated into building design and practices in accordance with NAVFAC Instruction 9830.1, Sustainable Development Policy (Navy 2003).

As discussed in Chapter 3, the action alternatives would result in both short- and long-term environmental effects. Construction, operation, and decommissioning of the solar PV system is unlikely to result in the types of impacts that would reduce environmental productivity, have long-term impacts on sustainability, affect biodiversity, or narrow the range of long-term beneficial uses of the environment.

The Proposed Action has a defined lifecycle in which long term, i.e., more than 30 years post-implementation, the project area would be returned to existing conditions and functioning with minimal net change from the pre-project environment. In the interim, however, biotic productivity within the affected sites would be eliminated, while renewable energy benefits would be realized.

5.5 Any Probable Adverse Environmental Effects That Cannot Be Avoided and Are Not Amenable To Mitigation

No resource area would be subject to significant adverse impacts that would require mitigation. Table 3-1 presents the identified resource area avoidance/minimization measures for the alternatives. No adverse environmental effects would occur.

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CHAPTER 8
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APPENDIX A
AGENCY CORRESPONDENCE

UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555008
CAMP PENDLETON, CALIFORNIA 92055-5008

IN REPLY REFER TO:
5090
ENVSEC
14 Sept 2015

Mark Delaplaine
State of California
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

SUBJECT: NEGATIVE DETERMINATION FOR CONSTRUCTION OF SOLAR PHOTOVOLTAIC SYSTEM, MARINE CORPS BASE CAMP PENDLETON

Dear Mr. Delaplaine:

In accordance with the Federal Coastal Zone Management Act of 1972 as amended, Section 307c(1), the United States Marine Corps (USMC) has determined that the proposed construction, operation, and decommissioning of a solar photovoltaic (PV) system at Marine Corps Base (MCB) Camp Pendleton, San Diego will not affect the coastal zone, does not require a consistency determination, and is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. This correspondence updates the USMC Negative Determination for this site dated November 14, 2008 by changing the proposed land use from military family housing to a solar PVsystem.

The purpose of the proposed action 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 by the construction and operation of a solar PV system at MCB Camp Pendleton. The proposed action is required to meet the renewable energy standards put forth by the 1 GW Initiative and the Secretary of the Navy Energy Goals. The policy requirements for energy security and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the Navy and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning 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.

APPENDIX B
PUBLIC PARTICIPATION

OUTLINE OF THE PUBLIC INVOLVEMENT PROCESS

Introduction

The United States Department of the Navy has conducted a public participation process to provide the public the opportunity to participate in this project. The purpose of the public involvement process is to notify and inform interested and potentially affected stakeholders and the general public about the Proposed Action and solicit their input on the environmental analysis. The National Environmental Policy Act (NEPA), and regulations for implementing NEPA as set forth by the Council on Environmental Quality (CEQ), requires federal agencies to make diligent efforts to involve stakeholders and tribes in the development of environmental documents and stipulates public involvement during various stages of the environmental review process (42 U.S. Code § 4321, as amended; CEQ Regulations for Implementing NEPA, 40 Code of Federal Regulations Part 1500, as amended).

Public Involvement Overview

The public participation process commenced with publication of a Notice of Intent To Prepare (NTP) the EA in a local newspaper (the San Diego Union Tribune, formerly known as the North County Times and the Union Tribune North County). The NTP was published for a total of three days over a weekend on 29, 30, and 31 May 2015. No public meeting was held. Written comments were to be sent via mail or email to:

NAVFAC Southwest
Attention: PV EA at MCB Camp Pendleton
Project Manage Code RAD20.RM
1220 Pacific Highway
San Diego, California 92132
Email: ryan.maynard01@navy.mil

Conclusion

No comments were received on the NTP for the EA.

The public participation process will conclude with publication of a Notice of Availability (NOA) of the Final EA and Decision Document. The NOA will be published for a total of three days over a weekend in the Union Tribune. Pending the results of this analysis, the decision document could be a Finding of No Significant Impact (FONSI). The Final EA and potential FONSI (if appropriate) will be made available to the public for review in the Oceanside Public Library and online on a MCB Camp Pendleton website that is publicly accessible.

PROOF OF PUBLICATION
(2010 & 2011 C.C.P.)

This space is for the County Clerk's Filing Stamp

STATE OF CALIFORNIA
County of San Diego

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of

The San Diego Union Tribune

Formerly known as the North County Times and UT North County and which newspaper has been adjudicated as a newspaper of general circulation by the Superior Court of the County of San Diego, State of California, for the City of Oceanside and the City of Escondido, Court Decree numbers 171349 & 172171, for the County of San Diego, that the notice of which the annexed is a printed copy (set in type not smaller than nonpariel), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

Proof of Publication of

NOTICE OF INTENT TO PREPARE
Environmental Assessment for the Construction and Operation of a Solar Photovoltaic System
Marine Corps Base Camp Pendleton,
San Diego County, California

Marine Corps Installation Command gives notice that an Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) for the Construction and Operation of a Solar Photovoltaic System at Marine Corps Base (MCB) Camp Pendleton.

Under the Proposed Action, the U.S. Navy and a private partner would enter into an agreement to allow the private partner to use U.S. Marine Corps land to construct, operate, and own the solar photovoltaic (PV) system. The partner would sell the generated power to regional customers and/or the Navy. The project is part of the Secretary of the Navy's plan to obtain one gigawatt of renewable energy for the Department of the Navy Installations. The EA analyzes three siting alternatives (Alternatives 1, 2, and 3) and the No-Action Alternative.

Please contact Naval Facilities Engineering Command Southwest (NAVFAC SW) with questions, comments, or for further information about either the proposed action or the NEPA process at:

Point-of-Contact: NAVFAC SW
ATTN: PV EA at MCB Camp Pendleton
Project Manager Code RAE20.RM
1220 Pacific Highway San Diego, CA 92132
Email: ryan.maynard1@navy.mil

May 29th, 30th & 31st, 2015

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at **Oceanside,** California
On This **01st,** day June, 2015

Jane Allshouse
The San Diego Union Tribune
Legal Advertising

APPENDIX C
RECORD OF NON-APPLICABILITY AND AIR QUALITY CALCULATIONS

UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555010
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENV/PLN
10 DEC 2015

MEMORANDUM FOR THE RECORD

Subj: RECORD OF NON-APPLICABILITY FOR CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS BASE, CAMP PENDLETON

Ref: (a) U.S. Environmental Protection Agency, Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule, published in the Federal Register on 30 November 1993 (40 CFR Parts 6, 51, and 93)
(b) U.S. Environmental Protection Agency, Revisions to the General Conformity Regulations; Final Rule, published in the Federal Register on 5 April 2010 (40 CFR Parts 51 and 93)
(c) OPNAVINST 5090.1C.
(d) Environmental Assessment (EA) for Construction and Operation of a Solar Photovoltaic System at Marine Corps Base, Camp Pendleton, April 2015.

1. References (a), (b), and (c) provide implementing guidance for documenting Clean Air Act (CAA) Conformity Determination requirements. The General Conformity Rule applies to federal actions proposed within areas which are designated as either non-attainment or maintenance areas for a National Ambient Air Quality Standard (NAAQS) for any of the criteria pollutants.

2. The Proposed Action would occur within the San Diego Air Basin (SDAB) portion of Marine Corps Base, Camp Pendleton (MCB CamPen). This portion of the SDAB is currently in non-attainment of the 8-hour ozone (O_3) NAAQS and is a maintenance area for carbon monoxide (CO) NAAQS. The SDAB is in attainment of the NAAQS for all other criteria pollutants. Therefore, only project emissions of CO and O_3 (or its precursors, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x)) were analyzed in reference (d) for conformity rule applicability. The annual de minimis threshold levels for this region are 100 tons of VOC, NO_x, and CO. Federal actions may be exempt from conformity determinations if they do not exceed designated de minimis threshold levels.

3. Under the Proposed Action, the Navy and a private partner would enter into an agreement to allow the private partner to use Navy land to construct, operate, and own the proposed solar photovoltaic (PV) system. The partner would sell the generated power to regional customers. The private partner would be responsible for maintenance, operation, and the eventual decommissioning of the solar PV system. It has been estimated that all construction activities would be completed over the course of 2 years and would begin in Fiscal Year (FY) 2016 and end in FY 2017. Decommissioning activities are expected to occur over the course of two months and were assumed to occur in 2053.

4. Estimated emissions due to implementation of the Proposed Action are shown in Table 1. The data presented in Table 1 represent the estimated emissions with implementation of Alternative 1, the Preferred Alternative. Based on the air quality analysis, the maximum estimated emissions would be below conformity de minimis threshold levels for the SDAB. Although there would be an increase in emissions during the construction and decommissioning phases, operations would continue to be consistent with existing levels and would not represent a significant change in mobile sources of air pollutants or fugitive dust at MCB CamPen. No additional operational emissions from new traffic trips would be anticipated and no significant impact to air quality would occur.

Table 1. Proposed Action Annual Construction and Decommissioning Emissions at MCB CamPen with Evaluation of Conformity.

	Emissions (tons/year)					
Emission Source	**VOCs**	**NO_x**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Alternative 1 - Construction						
Year - 2016	1.65	16.89	11.03	0.02	1.98	1.36
Year - 2017	1.65	15.73	10.04	0.02	1.00	0.86
Alternative 1 - Decommissioning						
Year - 2053	0.09	0.31	0.81	0.00	0.03	0.01
Conformity de minimis Limits	100	100	100	NA	NA	NA
Exceeds Conformity de minimis Limits?	No	No	No	No	No	No

Note: NA = Not applicable.

Subj: RECORD OF NON-APPLICABILITY FOR CONSTRUCTION AND OPERATION OF A SOLAR PHOTOVOLTAIC SYSTEM AT MARINE CORPS BASE, CAMP PENDLETON

5. The United States Marine Corps concludes that de minimis thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting that conclusion are shown in Table 1, which is a summary of the calculations, methodology, and data attached to this Record of Non-Applicability. Therefore, the Marine Corps determined that additional emissions analyses are not warranted for the Proposed Action. A formal Conformity Determination was not considered necessary.

6. To the best of my knowledge, the information presented in this Record of Non-Applicability is correct and accurate, and I concur in the finding that implementation of the Proposed Action does not require a formal CAA Conformity Determination.

EDWARD D. BANTA

Copy to:
File

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization Rural **Wind Speed (m/s)** 2.6 **Precipitation Freq (Days)** 40

Climate Zone 13 **Operational Year** 2016

Utility Company San Diego Gas & Electric

CO2 Intensity (lb/MWhr) 720.49 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - CalEEMod does not have a “Utility” land use type as a default option; therefore, “General Light Industry” was chosen as the closest appropriate option.
Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years. Assumed 4 months site prep, 4 months grading, 16 months construction/installation.
Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks and "Other construction equipment" = pile drivers.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (194 ac for PV footprint), but all cut/fill would remain onsite.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.6494	16.8859	11.0393	0.0155	2.2542	0.9110	3.1652	1.1213	0.8419	1.9632	0.0000	1,432.7304	1,432.7304	0.3931	0.0000	1,440.9858
2017	1.6515	15.7261	10.0409	0.0180	0.1132	0.8901	1.0034	0.0304	0.8289	0.8594	0.0000	1,619.2283	1,619.2283	0.4149	0.0000	1,627.9406
Total	**3.3009**	**32.6119**	**21.0801**	**0.0335**	**2.3674**	**1.8011**	**4.1685**	**1.1518**	**1.6708**	**2.8226**	**0.0000**	**3,051.9587**	**3,051.9587**	**0.8080**	**0.0000**	**3,068.9264**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.6494	16.8858	11.0393	0.0155	1.0667	0.9110	1.9776	0.5186	0.8419	1.3604	0.0000	1,432.7288	1,432.7288	0.3931	0.0000	1,440.9842
2017	1.6515	15.7260	10.0408	0.0180	0.1132	0.8901	1.0034	0.0304	0.8289	0.8594	0.0000	1,619.2265	1,619.2265	0.4149	0.0000	1,627.9388
Total	**3.3009**	**32.6119**	**21.0801**	**0.0335**	**1.1799**	**1.8011**	**2.9810**	**0.5490**	**1.6708**	**2.2198**	**0.0000**	**3,051.9553**	**3,051.9553**	**0.8080**	**0.0000**	**3,068.9230**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.16**	**0.00**	**28.49**	**52.33**	**0.00**	**21.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	4/30/2016	5	86	
2	Grading	Grading	5/1/2016	8/30/2016	5	87	
3	Building Construction	Building Construction	9/1/2016	12/31/2017	5	347	

Acres of Grading (Site Preparation Phase): 194

Acres of Grading (Grading Phase): 194

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Scrapers	2	6.00	361	0.48
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Grading	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Generator Sets	3	6.00	84	0.74
Building Construction	Cranes	2	6.00	226	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Site Preparation	Graders	2	6.00	174	0.41
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Trenchers	2	6.00	80	0.50
Grading	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	15	6.00	97	0.37
Building Construction	Rubber Tired Loaders	5	6.00	199	0.36
Grading	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Grading	Graders	4	6.00	174	0.41
Site Preparation	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Welders	3	6.00	46	0.45

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	37	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

MCB Solar PV System - Alternative 1 - Decommissioning

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Construction Phase - Estimated two months for decommissioning.

Off-road Equipment - Equipment mix per DOPAA.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.

MCB Solar PV System - Alternative 1 - Decommissioning

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.0871	0.3808	0.8136	1.9200e-003	0.0357	8.0800e-003	0.0438	6.6400e-003	8.0800e-003	0.0147	0.0000	181.4251	181.4251	6.9200e-003	0.0000	181.5705
Total	**0.0871**	**0.3808**	**0.8136**	**1.9200e-003**	**0.0357**	**8.0800e-003**	**0.0438**	**6.6400e-003**	**8.0800e-003**	**0.0147**	**0.0000**	**181.4251**	**181.4251**	**6.9200e-003**	**0.0000**	**181.5705**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.0871	0.3808	0.8136	1.9200e-003	0.0232	8.0800e-003	0.0313	4.7400e-003	8.0800e-003	0.0128	0.0000	181.4249	181.4249	6.9200e-003	0.0000	181.5702
Total	**0.0871**	**0.3808**	**0.8136**	**1.9200e-003**	**0.0232**	**8.0800e-003**	**0.0313**	**4.7400e-003**	**8.0800e-003**	**0.0128**	**0.0000**	**181.4249**	**181.4249**	**6.9200e-003**	**0.0000**	**181.5702**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**34.96**	**0.00**	**28.51**	**28.61**	**0.00**	**12.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

MCB Solar PV System - Alternative 1 - Decommissioning

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2053	2/28/2053	5	43	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Scrapers	1		361	0.48
Demolition	Off-Highway Trucks	2		400	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	5	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	10	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	19	48.00	6.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

MCB Camp Pendleton - Alternative 3 Construction

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization Rural **Wind Speed (m/s)** 2.6 **Precipitation Freq (Days)** 40

Climate Zone 13 **Operational Year** 2016

Utility Company San Diego Gas & Electric

CO2 Intensity (lb/MWhr) 720.49 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years.

Off-road Equipment - Construction mix per DOPAA.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (270 ac for PV footprint).

Trips and VMT - "Vendor" trips includes water truck trips to and from the site to deliver water.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	2.1766	22.3161	15.4157	0.0193	2.7492	1.2163	3.9655	1.3511	1.1228	2.4739	0.0000	1,787.2312	1,787.2312	0.4938	0.0000	1,797.6010
2017	2.4774	23.9087	17.5738	0.0234	0.1487	1.3727	1.5214	0.0399	1.2729	1.3128	0.0000	2,111.3928	2,111.3928	0.5553	0.0000	2,123.0539
Total	**4.6540**	**46.2248**	**32.9896**	**0.0427**	**2.8979**	**2.5890**	**5.4869**	**1.3911**	**2.3957**	**3.7867**	**0.0000**	**3,898.62**	**3,898.62**	**1.0491**	**0.0000**	**3,920.65**

MCB Camp Pendleton - Alternative 3 Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	2.1766	22.3160	15.4157	0.0193	1.3025	1.2163	2.5188	0.6254	1.1228	1.7482	0.0000	1,787.2292	1,787.2292	0.4938	0.0000	1,797.5991
2017	2.4774	23.9087	17.5738	0.0234	0.1487	1.3727	1.5214	0.0399	1.2729	1.3128	0.0000	2,111.3905	2,111.3905	0.5553	0.0000	2,123.0515
Total	**4.6540**	**46.2247**	**32.9895**	**0.0427**	**1.4512**	**2.5890**	**4.0402**	**0.6654**	**2.3957**	**3.0610**	**0.0000**	**3,898.6197**	**3,898.6197**	**1.0491**	**0.0000**	**3,920.6506**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.92**	**0.00**	**26.37**	**52.17**	**0.00**	**19.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	4/30/2016	5	86	
2	Grading	Grading	5/1/2016	8/30/2016	5	87	
3	Building Construction	Building Construction	9/1/2016	12/30/2017	5	347	

Acres of Grading (Site Preparation Phase): 270

Acres of Grading (Grading Phase): 270

MCB Camp Pendleton - Alternative 3 Construction

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Scrapers	3	6.00	361	0.48
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Grading	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Generator Sets	3	6.00	84	0.74
Building Construction	Cranes	2	6.00	226	0.29
Building Construction	Forklifts	5	6.00	89	0.20
Site Preparation	Graders	3	6.00	174	0.41
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Trenchers	4	6.00	80	0.50
Grading	Rubber Tired Dozers	6	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	18	6.00	97	0.37
Building Construction	Rubber Tired Dozers	7	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	12	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	12	6.00	97	0.37
Grading	Graders	5	6.00	174	0.41
Site Preparation	Rubber Tired Dozers	6	6.00	255	0.40
Building Construction	Welders	3	6.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	26	65.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	25	63.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	46	79.00	27.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

MCB Camp Pendleton - Alternative 3 Construction

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

MCB Solar PV System - Alternative 3 - Decommissioning

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - Estimated two months for decommissioning.

Off-road Equipment - Equipment mix per DOPAA.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.1332	0.5058	1.1357	3.0800e-003	0.0406	0.0115	0.0520	7.8200e-003	0.0115	0.0193	0.0000	298.3759	298.3759	0.0106	0.0000	298.5979
Total	**0.1332**	**0.5058**	**1.1357**	**3.0800e-003**	**0.0406**	**0.0115**	**0.0520**	**7.8200e-003**	**0.0115**	**0.0193**	**0.0000**	**298.3759**	**298.3759**	**0.0106**	**0.0000**	**298.5979**

MCB Solar PV System - Alternative 3 - Decommissioning

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.1332	0.5058	1.1357	3.0800e-003	0.0281	0.0115	0.0395	5.9300e-003	0.0115	0.0174	0.0000	298.3756	298.3756	0.0106	0.0000	298.5975
Total	**0.1332**	**0.5058**	**1.1357**	**3.0800e-003**	**0.0281**	**0.0115**	**0.0395**	**5.9300e-003**	**0.0115**	**0.0174**	**0.0000**	**298.3756**	**298.3756**	**0.0106**	**0.0000**	**298.5975**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	30.79	0.00	24.01	24.17	0.00	9.81	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2053	2/28/2053	5	43	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	4	6.00	81	0.73
Demolition	Off-Highway Trucks	2	6.00	400	0.38
Demolition	Rubber Tired Dozers	7	6.00	255	0.40
Demolition	Scrapers	2	6.00	361	0.48
Demolition	Tractors/Loaders/Backhoes	12	6.00	97	0.37

MCB Solar PV System - Alternative 3 - Decommissioning

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	27	68.00	8.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

"I'm directing my administration to allow the development of clean energy on enough public land to power 3 million homes. And I'm proud to announce that the Department of Defense, working with us, the world's largest consumer of energy, will make one of the largest commitments to clean energy in history, with the Navy purchasing enough capacity to power a quarter of a million homes a year."

— President Barack Obama

"Changing the way we get and use energy is a priority for the Navy because energy security is critical to our national security. One gigawatt of renewable energy produced from sources like solar, wind, and geothermal could power a city the size of Orlando, Florida, while increasing the security and flexibility of the energy grid."

— Secretary of the Navy Ray Mabus

APPENDIX B
AGENCY CORRESPONDENCE

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UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS WEST-MARINE CORPS BASE
BOX 555008
CAMP PENDLETON, CALIFORNIA 92055-5010

5090
ENV/PLN
April 7, 2020

Mr. Scott Sobiech
Field Supervisor
U.S. Fish and Wildlife Office
2177 Salk Ave, Suite 250
Carlsbad, CA 92008

Attention: J. Snyder

SUBJECT: FORMAL SECTION 7 CONSULTATION REQUEST FOR THE CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF PHOTOVOLTAIC AND NATURAL GAS ENERGY GENERATION FACILITIES AT MARINE CORPS BASE CAMP PENDLETON, CALIFORNIA

Marine Corps Base, Camp Pendleton (MCB CamPen) requests consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act regarding the implementation of the enclosed proposal to construct, operate, maintain, and decommission photovoltaic (PV) and natural gas energy generation facilities. The attached Biological Assessment (BA) will describe the potential effects on federally listed species resulting from the proposed action. The proposed action may affect, and is likely to adversely affect coastal California gnatcatcher (*Polioptila californica californica*. Therefore, MCB CamPen requests initiation of formal consultation for impacts to this species. The proposed action may affect, and is likely to adversely affect least Bell’s vireo (*Vireo bellii pusillus*). For this species, MCB CamPen has determined that the action qualifies as a Class II activity under the Riparian Biological Opinion 1-6-95-F-02 (USFWS 1995). The proposed action may affect, but is not likely to adversely affect arroyo toad (*Anaxyrus* californicus). Therefore, MCB CamPen requests initiation of informal consultation for impacts to this species.

The United States Marine Corps proposes to incorporate battery energy storage systems at the Stuart Mesa solar PV system site that was previously analyzed in a 2015 Environmental Assessment and is incorporated by reference into this BA. In addition, the Proposed Action includes the construction, operation, maintenance, and decommissioning of a natural gas power plant. All aspects of the Proposed Action would occur on

MCB CamPen, and would include the necessary utility infrastructure improvements to support MCB CamPen's energy resiliency requirements. The two energy generating facilities (PV and natural gas) would feed into the regional electrical grid and would also have the capability to feed into the MCB CamPen electrical grid in case of regional grid failure.

MCB CamPen requests consultation/concurrence on the above determinations. If you have any further questions or concerns regarding this project, please contact Matthew Lorne at 760-763-4143 (matthew.lorne@usmc.mil) or Kristin Thomas at 760-725-4540 (kristin.thomas@usmc.mil).

Sincerely,

kristin thomas

K. H. THOMAS
Head, Environmental
Planning Branch
Environmental Security
By direction of the
Commanding General

Enclosure: Biological Assessment

APPENDIX C
PUBLIC PARTICIPATION

There were no public comments received on the DOPAA. This appendix includes the proof of publications for the Notice to Prepare a Supplemental Environmental Assessment and a Notice of Availability from the San Diego Union Tribune, the Fallbrook Village News and the Orange County Register. The Description of the Proposed Action and Alternatives was posted on the MCB Camp Pendleton website as well.

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PROOF OF PUBLICATION
(2010 & 2011 C.C.P.)

STATE OF CALIFORNIA
County of San Diego

I am a citizen of the United States and a resident of the County aforesaid: I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of

The San Diego Union Tribune

Formerly known as the North County Times and UT North County and which newspaper has been adjudicated as a newspaper of general circulation by the Superior Court of the County of San Diego, State of California, for the City of Oceanside and the City of Escondido, Court Decree numbers 171349 & 172171, for the County of San Diego, that the notice of which the annexed is a printed copy (set in type not smaller than nonpariel), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

November 8th, 9th & 10th, 2019

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at **TEMECULA, California this 11th, day November, 2019**

Jane Allshouse
The San Diego Union Tribune

NOTICE OF INTENT TO PREPARE A SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT (SEA) AND NOTICE OF AVAILABILITY CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF PHOTOVOLTAIC AND NATURAL GAS ENERGY GENERATION FACILITIES AT MARINE CORPS BASE (MCB) CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA

The United States Marine Corps (USMC) is preparing an SEA to analyze the potential environmental impacts of a proposal to add battery energy storage systems to the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in a 2015 Environmental Assessment (but not yet constructed). In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas on MCB Camp Pendleton and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) are both included in the Proposed Action. The Department of the Navy (DoN) and a private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The SEA is expected to be completed in 2020.
The environmental analysis under NEPA has not been completed, however the first two chapters of the SEA, the Description of the Proposed Action and Alternatives (DOPAA), can be downloaded at **https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/**.
The USMC is requesting public input on the scope of analysis and environmental resources to be considered in the SEA for the proposed action. The SEA will be used to determine whether a Finding of No Significant Impact will be prepared, or if an Environmental Impact Statement is required. Electronic or written comments concerning the proposed action will be accepted through **December 9, 2019.**

MCIWEST-MCB Camp Pendleton
Environmental Security Office
Box 555200, Bldg. 22165
Camp Pendleton, CA 92055
PNDL_ENV-NEPA@usmc.mil

AFFIDAVIT OF PUBLICATION FALLBROOK, CALIFORNIA 92028
COUNTY OF SAN DIEGO, STATE OF CALIFORNIA

I am a citizen of the United States, over twenty-one years of age, and the Associate Editor of said newspaper The Village News, Inc., 111 W. Alvarado St., Fallbrook, CA 92028 a newspaper adjudicated by the Superior Court, County of San Diego GIN013243 is a newspaper of general circulation, published and is circulated at least once a week in Fallbrook, County of San Diego, State of California.

The Notice of ______________________
PUBLIC NOTICE
NOTICE OF INTENT TO PREPARE A SEA and NOA
CARDNO

____

Legal Number: NA
Which the attached is a true printed copy, and Published in said newspaper for _3_ week, and on the following days:
11/14/19, 11/21/19, 11/28/19

____

in the regular issue of said newspaper,
THE VILLAGE NEWS, INC.,
111 W. Alvarado St., Fallbrook, CA 92028
and not in any other supplement.
I certify and declare under penalty that this statement is true and correct to the best of my knowledge.

Dated: November 28, 2019
Fallbrook, California 92028

Lucette Moramarco
Signature
LUCETTE MORAMARCO
ASSOCIATE EDITOR

NOTICE OF INTENT TO PREPARE A SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT (SEA) AND NOTICE OF AVAILABILITY

CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF PHOTOVOLTAIC AND NATURAL GAS ENERGY GENERATION FACILITIES AT MARINE CORPS BASE (MCB) CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA

The United States Marine Corps (USMC) is preparing an SEA to analyze the potential environmental impacts of a proposal to add battery energy storage systems to the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in a 2015 Environmental Assessment (but not yet constructed). In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas on MCB Camp Pendleton and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) are both included in the Proposed Action. The Department of the Navy (DoN) and a private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The SEA is expected to be completed in 2020.

The environmental analysis under NEPA has not been completed, however the first two chapters of the SEA, the Description of the Proposed Action and Alternatives (DOPAA), can be downloaded at **https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/.**

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MCIWEST-MCB Camp Pendleton
Environmental Security Office
Box 555200, Bldg. 22165
Camp Pendleton, CA 92055
PNDL_ENV-NEPA@usmc.mil

Published: November 14, 21, 28 2019

The Orange County Register
2190 S. Towne Centre Place Suite 100
Anaheim, CA 92806
714-796-2209

5159554

CARDNO
514 VIA DE LA VALLE, SUITE 308
SOLANA BEACH, CA 92075

AFFIDAVIT OF PUBLICATION

STATE OF CALIFORNIA,
County of Orange } **ss.**

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of The Orange County Register, a newspaper of general circulation, published in the city of Santa Ana, County of Orange, and which newspaper has been adjudged to be a newspaper of general circulation by the Superior Court of the County of Orange, State of California, under the date of November 19, 1905, Case No. A-21046, that the notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

11/08/2019, 11/09/2019, 11/10/2019

I certify (or declare) under the penalty of perjury under the laws of the State of California that the foregoing is true and correct:

Executed at Anaheim, Orange County, California, on
Date: November 10, 2019.

David Ward

Signature

PROOF OF PUBLICATION

Legal No. **0011332872**

NOTICE OF INTENT TO PREPARE A
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT (SEA) AND
NOTICE OF AVAILABILITY

CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF PHOTOVOLTAIC AND NATURAL GAS ENERGY GENERATION FACILITIES AT MARINE CORPS BASE (MCB) CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA

The United States Marine Corps (USMC) is preparing an SEA to analyze the potential environmental impacts of a proposal to add battery energy storage systems to the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in a 2015 Environmental Assessment (but not yet constructed). In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas on MCB Camp Pendleton and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) are both included in the Proposed Action. The Department of the Navy (DoN) and a private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The SEA is expected to be completed in 2020.

The environmental analysis under NEPA has not been completed, however the first two chapters of the SEA, the Description of the Proposed Action and Alternatives (DOPAA), can be downloaded at **https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/.**

The USMC is requesting public input on the scope of analysis and environmental resources to be considered in the SEA for the proposed action. The SEA will be used to determine whether a Finding of No Significant Impact will be prepared, or if an Environmental Impact Statement is required. Electronic or written comments concerning the proposed action will be accepted through **December 9, 2019.**

MCIWEST-MCB Camp Pendleton
Environmental Security Office
Box 555200, Bldg. 22165
Camp Pendleton, CA 92055
PNDL_ENV-NEPA@usmc.mil

Marine Corps Base Camp Pendlet

pendleton.marines.mil/Staff-Agencies/Environmental-Security/

Apps | Cardno Intranet | Solana Beach, CA (9... | MS Project | Cardnoftp - Login | Web Mail | google translate -...

HOT TOPICS & NOTIFICATIONS

• Public Notice of Availability - Finding of No Significant Impact for 62 Area Dining Facility & Consolidated Warehouse - (Posted 11 Dec 19)

• Public Notice of Availability - Finding of No Significant Impact for Stuart Mesa West Training and Conversion at Marine Corps Base Camp Pendleton, California - (Posted 14 Nov 19)

• Environmental Assessment - Finding of No Significant Impact for Stuart Mesa West Training and Conversion at Marine Corps Base Camp Pendleton, California - (Posted 14 Nov 19)

• Notice of Intent to Prepare a Supplemental Environmental Assessment for Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities. - Posted (13 Nov 19)

• Final Description of Proposed Action and Alternatives Supplemental Environmental Assessment for Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities. - Posted (7 Nov 19)

• Public Notice - Notice of intent to prepare an environmental assessment in support of Exercise Steel Knight 20 (SK-20) (Revised) - Posted (5 Nov 19)

NOTICE OF INTENT TO PREPARE A SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT (SEA) AND NOTICE OF AVAILABILITY

CONSTRUCTION, OPERATION, AND DECOMMISSIONING OF PHOTOVOLTAIC AND NATURAL GAS ENERGY GENERATION FACILITIES AT MARINE CORPS BASE (MCB) CAMP PENDLETON, SAN DIEGO COUNTY, CALIFORNIA

The United States Marine Corps (USMC) is preparing an SEA to analyze the potential environmental impacts of a proposal to add battery energy storage systems to the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in a 2015 Environmental Assessment (but not yet constructed). In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas on MCB Camp Pendleton and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) are both included in the Proposed Action. The Department of the Navy (DoN) and a private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The SEA is expected to be completed in 2020.

The environmental analysis under NEPA has not been completed, however the first two chapters of the SEA, the Description of the Proposed Action and Alternatives (DOPAA), can be downloaded at **https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/.**

The USMC is requesting public input on the scope of analysis and environmental resources to be considered in the SEA for the proposed action. The SEA will be used to determine whether a Finding of No Significant Impact will be prepared, or if an Environmental Impact Statement is required. Electronic or written comments concerning the proposed action will be accepted through **December 9, 2019**.

MCIWEST-MCB Camp Pendleton
Environmental Security Office
Box 555200, Bldg. 22165
Camp Pendleton, CA 92055
PNDL_ENV-NEPA@usmc.mil

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APPENDIX D
RECORD OF NON-APPLICABILITY AND AIR QUALITY CALCULATIONS

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UNITED STATES MARINE CORPS
RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY
AND AIR QUALITY EMISSIONS ESTIMATES

Introduction

This Proposed Action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable State Implementation Plan (SIP). It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable SIP before the action is taken (40 CFR Part 1 51.850[a]).

Federal actions are exempt from conformity determinations if their emissions do not exceed designated *de minimis* levels for criteria pollutants (40 CFR Part 93.153c). The general conformity rule also exempts certain federal actions from the requirements of the rule, as these actions are assumed to conform to a SIP. Conformity *de minimis* levels (in tons/year) for the San Diego Air Basin (SDAB), the region potentially affected by the Proposed Action, are listed in Table 1.

Table 1. Conformity De Minimis Levels for Criteria Pollutants in the San Diego Air Basin

Criteria Pollutant	***De Minimis Level (tons/year)***
Carbon Monoxide (CO)	100
Volatile Organic Compounds (VOC)	100
Oxides of Nitrogen (NO_x)	100

Proposed Action

Activity: Construction of battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site and construction, operation, and decommissioning of a natural gas power plant within either the 24 or 26 Areas of Marine Corps Base Camp Pendleton (MCB CamPen). Utility infrastructure improvements associated with the Stuart Mesa site include the installation of a new power line and upgrades to the existing Stuart Mesa Substation, and the extension of an existing natural gas line, installation of underground and/or pole-mounted electrical infrastructure, and potable water line and sewer line connections within the 24 or 26 Areas of MCB CamPen.

Location: MCB CamPen, California – the United States Marine Corps' major amphibious training center for the west coast. MCB CamPen is a 200-square mile area located primarily within the norther portion of San Diego County, 40 miles north of downtown San Diego. Proposed activities would occur adjacent to the Stuart Mesa Housing area, and within the 24 or 26 Areas.

Proposed Action Name: Supplemental Environmental Assessment for Construction, Operation and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities.

Proposed Action Summary: The U.S. Marine Corps proposes to incorporate battery energy storage systems at the Stuart Mesa solar PV system site that was analyzed in the 2015 Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps

Base Camp Pendleton (MCB CamPen). In addition, this proposed action includes the construction, operation, and decommissioning of a natural gas power plant. All aspects of the proposed action would occur on MCB CamPen and would include the necessary utility infrastructure improvements to support the base's energy resiliency requirements. The two energy generating facilities (PV and natural gas) would feed into the regional electrical grid and would also have the capability to feed into MCB Camp Pendleton's electrical grid.

Air Emissions Summary: Based on the air quality analysis, the emissions for installation of the battery energy storage systems and the natural gas power plant, and decommissioning activities would be well below conformity *de minimis* levels. Attachment (1) of this RONA presents the air emission calculations for the proposed action.

Affected Air Basin: SDAB

Date RONA Prepared: 9 February 2020

RONA Prepared By: MCB CamPen with direct support from Cardno

Proposed Action Exemptions

The proposed action is exempt because the calculated total emissions are below *de minimis* levels set forth in the Clean Air Act General Conformity Regulation.

Attainment Status and Emissions Evaluation and Conclusion

The General Conformity Rule requires conformity evaluations for proposed emissions that would occur within areas that are in nonattainment or maintenance of a national ambient air quality standard. The project site is within San Diego County and is under the jurisdiction of the San Diego County Air Pollution Control District. Therefore, the focus of this conformity applicability analysis is to compare project emissions to *de minimis* levels applicable to San Diego County.

The SDAB presently is classified as in nonattainment (moderate) for the 8-hour federal ozone (O_3) standard. Ozone is a secondary pollutant formed when O_3 precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOCs) combine in the atmosphere in the presence of sunlight. Therefore, the United States Environmental Protection Agency general conformity regulations set *de minimis* levels for O_3 precursors instead of O_3. The western portion of the SDAB (the portion of the county generally west of the interior desert region) also is in maintenance for carbon monoxide (CO). Based upon these designations, the applicable annual conformity *de minimis* thresholds for these areas are 100 tons of VOCs, NO_x, and CO.

Tables 2 and 3 summarize the conformity-related emissions that would occur from implementation of Alternative 1 or 2, respectively, within the San Diego County project region. The main sources of conformity-related emissions associated with the project construction would include combustive emissions due to the use of fossil fuel-powered equipment. The data show that conformity-related emissions for the proposed action would be well below the applicable *de minimis* levels. Therefore, emissions from the proposed action would show conformity under the Clean Air Act, as amended.

Table 2. Annual Conformity-Related Emissions from Alternative 1 at MCB CamPen

Activity	*Air Pollutant Emissions (tons/year)*		
	VOCs	**NO_x**	**CO**
Construction Emissions – 2021	3.39	32.66	24.11
Construction Emissions – 2022	2.85	25.70	20.55
Decommissioning Emissions – 2058	4.35	1.83	4.62
Conformity *de minimis* Levels (tons/year)	100	100	100
Exceeds Conformity *de minimis* Levels?	**No**	**No**	**No**

Table 3. Annual Conformity-Related Emissions from Alternative 2 at MCB CamPen

Activity	*Air Pollutant Emissions (tons/year)*		
	VOCs	**NO_x**	**CO**
Construction Emissions – 2021	3.33	32.00	23.48
Construction Emissions – 2022	2.81	25.32	20.06
Decommissioning Emissions – 2058	0.52	1.83	4.62
Conformity *de minimis* Levels (tons/year)	100	100	100
Exceeds Conformity *de minimis* Levels?	**No**	**No**	**No**

RONA Approval

I concur in the finding that air emissions associated with the proposed action are below *de minimis* levels and therefore do not require further conformity evaluation.

Signature   Date

D.B. CONLEY
Brigadier General, U.S. Marine Corps
Commanding Officer
Marine Corps Installations West-Marine Corps Base, Camp Pendleton

Annual Peak Construction Estimated Emissions from the Proposed Project within the San Diego County Air Pollution Control District (SDAPCD) - Alternative 1

Emission Source	VOCs	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/yr			
Construction Emissions - 2021										
Original Emissions from 2015 EA	1.65	16.89	11.03	0.02	1.98	1.36	467	0	0	470
Modified Substation Site	0.83	7.84	5.87	0.01	1.00	0.65	1,147	0	0	1,155
Haybarn Site	0.91	7.93	7.21	0.02	0.70	0.44	1,518	0	0	1,526
Total Construction Emissions - 2021	**3.39**	**32.66**	**24.11**	**0.05**	**3.68**	**2.50**	**3,132**	**0**	**0**	**3,151**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Construction Emissions - 2022										
Original Emissions from 2015 EA	1.65	15.73	10.04	0.02	1.00	0.86	323	0	0	325
Modified Substation Site	0.44	4.00	3.90	0.01	0.27	0.19	811	0	0	816
Haybarn Site	0.76	5.97	6.61	0.02	0.54	0.32	1,427	0	0	1,435
Total Construction Emissions - 2022	**2.85**	**25.70**	**20.55**	**0.05**	**1.81**	**1.37**	**2,561**	**0**	**0**	**2,576**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Decommissioning										
Original Emissions from 2015 EA	0.09	0.38	0.81	0.00	0.03	0.01	181	0	0	182
Decommissioning - 2058	4.26	1.45	3.81	0.01	0.07	0.45	963	0	0	963
Total Decommissioning Emissions	**4.35**	**1.83**	**4.62**	**0.01**	**0.10**	**0.46**	**1,144**	**0**	**0**	**1,145**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Legend: CH_4 = methane; CO = carbon monoxide; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter; SO_2 = sulfur dioxide; VOCs = volatile organic compounds.

$CO_2e = CO_2 + (CH_4 * 25) + (N_2O * 310)$

Notes: The SDAB is a moderate nonattainment area for the 8-hour O3 NAAQS (VOCs and NOx are precursors to the formation of O3) and is a moderate maintenance area for CO (USEPA 2019).

Annual Peak Construction Estimated Emissions from the Proposed Project within the SDAPCD - Alternative 2

Emission Source	VOCs	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/yr			
Construction Emissions - 2021										
Original Emissions from 2015 EA	1.65	16.89	11.03	0.02	1.98	1.36	467	0	0	470
Modified Substation Site	0.83	7.84	5.87	0.01	1.00	0.65	1,147	0	0	1,155
Parking Lot Site	0.85	7.27	6.58	0.02	0.64	0.40	1,417	0	0	1,426
Total Construction Emissions - 2021	**3.33**	**32.00**	**23.48**	**0.05**	**3.62**	**2.41**	**3,031**	**1**	**0**	**3,051**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Construction Emissions - 2022										
Original Emissions from 2015 EA	1.65	15.73	10.04	0.02	1.00	0.86	323	0	0	325
Modified Substation Site	0.44	4.00	3.90	0.01	0.27	0.19	811	0	0	816
Parking Lot Site	0.72	5.59	6.12	0.02	0.52	0.30	1,345	0	0	1,353
Total Construction Emissions - 2022	**2.81**	**25.32**	**20.06**	**0.05**	**1.79**	**1.35**	**2,479**	**1**	**0**	**2,494**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Decommissioning										
Original Emissions from 2015 EA	0.09	0.38	0.81	0.00	0.03	0.01	181	0	0	182
Decommissioning - 2058	0.43	1.45	3.81	0.01	0.07	0.05	963	0	0	963
Total Decommissioning Emissions	**0.52**	**1.83**	**4.62**	**0.01**	**0.10**	**0.06**	**1,144**	**0**	**0**	**1,145**
Significance Thresholds (tons/year)	**100**	**100**	**100**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Exceeds Air Quality Significance Threshold Standards?	**No**	**No**	**No**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Legend: CH_4 = methane; CO = carbon monoxide; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; PM_{10} = particulate matter less than 10 microns in diameter but greater than 2.5 microns in diameter; SO_2 = sulfur dioxide; VOCs = volatile organic compounds.

$CO_2e = CO_2 + (CH_4 * 25) + (N_2O * 310)$

Notes: The SDAB is a moderate nonattainment area for the 8-hour O3 NAAQS (VOCs and NOx are precursors to the formation of O3) and is a moderate maintenance area for CO (USEPA 2019).

Modifications at the Stuart Mesa Site

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	24.52	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Per project description

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water truck; Other construction equipment = pile drivers

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Grading - Conservatively assume entire site needs to be graded

Trips and VMT - Assumed same number of worker and vendor trips as used in original EA

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	370.00	130.00
tblConstructionPhase	NumDays	35.00	66.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	370.00	130.00
tblConstructionPhase	NumDays	370.00	131.00
tblConstructionPhase	PhaseEndDate	9/1/2022	11/29/2021
tblConstructionPhase	PhaseEndDate	4/1/2021	5/31/2021
tblConstructionPhase	PhaseEndDate	2/11/2021	2/28/2021
tblConstructionPhase	PhaseStartDate	4/2/2021	6/1/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	3/1/2021
tblGrading	AcresOfGrading	132.00	24.52
tblGrading	AcresOfGrading	63.00	24.52
tblLandUse	LotAcreage	0.00	24.52
tblOffRoadEquipment	LoadFactor	0.38	0.38

tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	WorkerTripNumber	25.00	53.00
tblTripsAndVMT	WorkerTripNumber	28.00	53.00
tblTripsAndVMT	WorkerTripNumber	0.00	59.00
tblTripsAndVMT	WorkerTripNumber	0.00	59.00

tblTripsAndVMT	WorkerTripNumber	0.00	59.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8260	7.8434	5.8734	0.0131	0.6455	0.3585	1.0040	0.3164	0.3340	0.6504	0.0000	1,147.0844	1,147.0844	0.2978	0.0000	1,154.5303
2022	0.4443	4.0009	3.9050	9.2600e-003	0.1040	0.1708	0.2748	0.0280	0.1595	0.1875	0.0000	811.2696	811.2696	0.1986	0.0000	816.2334
Maximum	**0.8260**	**7.8434**	**5.8734**	**0.0131**	**0.6455**	**0.3585**	**1.0040**	**0.3164**	**0.3340**	**0.6504**	**0.0000**	**1,147.0844**	**1,147.0844**	**0.2978**	**0.0000**	**1,154.5303**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8260	7.8434	5.8734	0.0131	0.3101	0.3585	0.6685	0.1391	0.3340	0.4730	0.0000	1,147.0832	1,147.0832	0.2978	0.0000	1,154.5291
2022	0.4443	4.0009	3.9050	9.2600e-003	0.1040	0.1708	0.2748	0.0280	0.1595	0.1875	0.0000	811.2688	811.2688	0.1986	0.0000	816.2326
Maximum	**0.8260**	**7.8434**	**5.8734**	**0.0131**	**0.3101**	**0.3585**	**0.6685**	**0.1391**	**0.3340**	**0.4730**	**0.0000**	**1,147.0832**	**1,147.0832**	**0.2978**	**0.0000**	**1,154.5291**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.76**	**0.00**	**26.23**	**51.50**	**0.00**	**21.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	1.6182	1.6182
2	**4-1-2021**	**6-30-2021**	2.3728	2.3728
3	**7-1-2021**	**9-30-2021**	2.6279	2.6279
4	**10-1-2021**	**12-31-2021**	2.0695	2.0695
5	**1-1-2022**	**3-31-2022**	0.9237	0.9237
6	**4-1-2022**	**6-30-2022**	1.1002	1.1002
7	**7-1-2022**	**9-30-2022**	1.4578	1.4578
		Highest	2.6279	2.6279

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Modifications at the Stuart Mesa Site - San Diego Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2021	2/28/2021	5	21	
2	Grading	Grading	3/1/2021	5/31/2021	5	66	
3	Battery Storage Installation	Building Construction	6/1/2021	11/29/2021	5	130	
4	Substation Expansion	Building Construction	12/1/2021	5/31/2022	5	130	
5	Power Line Installation	Building Construction	6/1/2022	11/30/2022	5	131	

Acres of Grading (Site Preparation Phase): 24.52

Acres of Grading (Grading Phase): 24.52

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Substation Expansion	Cranes	1	8.00	231	0.29
Power Line Installation	Cranes	1	8.00	231	0.29
Substation Expansion	Forklifts	1	8.00	89	0.20
Battery Storage Installation	Other Construction Equipment	2	8.00	172	0.42
Battery Storage Installation	Cranes	2	8.00	231	0.29
Battery Storage Installation	Forklifts	3	8.00	89	0.20
Battery Storage Installation	Generator Sets	3	8.00	84	0.74
Power Line Installation	Forklifts	3	8.00	89	0.20
Substation Expansion	Generator Sets	1	8.00	84	0.74
Power Line Installation	Generator Sets	1	8.00	84	0.74
Grading	Rubber Tired Dozers	2	8.00	247	0.40

Battery Storage Installation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	2	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Substation Expansion	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Battery Storage Installation	Welders	3	8.00	46	0.45
Power Line Installation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Substation Expansion	Welders	1	8.00	46	0.45
Power Line Installation	Welders	1	8.00	46	0.45
Site Preparation	Scrapers	2	8.00	367	0.48
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Off-Highway Trucks	2	8.00	402	0.38
Grading	Off-Highway Trucks	2	8.00	402	0.38
Battery Storage Installation	Off-Highway Trucks	2	8.00	402	0.38
Battery Storage Installation	Trenchers	2	8.00	78	0.50
Battery Storage Installation	Rubber Tired Loaders	2	8.00	203	0.36
Substation Expansion	Excavators	1	8.00	158	0.38
Substation Expansion	Graders	1	8.00	187	0.41
Substation Expansion	Plate Compactors	1	8.00	8	0.43
Substation Expansion	Skid Steer Loaders	1	8.00	65	0.37
Substation Expansion	Off-Highway Trucks	0		402	0.38
Power Line Installation	Bore/Drill Rigs	1	8.00	221	0.50
Substation Expansion	Cement and Mortar Mixers	2	8.00	9	0.56
Battery Storage Installation	Cement and Mortar Mixers	2	8.00	9	0.56
Power Line Installation	Cement and Mortar Mixers	2	8.00	9	0.56

Power Line Installation	Aerial Lifts	1	8.00	63	0.31
Power Line Installation	Off-Highway Trucks	2	8.00	402	0.38
Power Line Installation	Trenchers	1	8.00	78	0.50
Power Line Installation	Excavators	1	8.00	158	0.38
Power Line Installation	Skid Steer Loaders	1	8.00	65	0.37
Power Line Installation	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Excavators	2	8.00	158	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Substation Expansion	13	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	10	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Battery Storage Installation	25	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Power Line Installation	19	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Construction of Natural Gas Power Plant at Haybarn Site

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	19.86	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Construction of Natural Gas Power Plant at Haybarn Site - San Diego Air Basin, Annual

Project Characteristics -

Land Use - Per project description

Construction Phase - Per projedt description

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Grading - Conservatively assume entire site needs to be graded

Trips and VMT - Peak construction workers for natural gas plant per Webcor, other phases same as original EA

Stationary Sources - User Defined -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	394.00
tblConstructionPhase	NumDays	300.00	87.00
tblConstructionPhase	PhaseEndDate	5/19/2022	8/31/2022
tblConstructionPhase	PhaseEndDate	3/25/2021	2/25/2021
tblConstructionPhase	PhaseEndDate	2/11/2021	1/14/2021
tblConstructionPhase	PhaseStartDate	3/26/2021	2/26/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	1/15/2021
tblConstructionPhase	PhaseStartDate	1/29/2021	1/1/2021
tblGrading	AcresOfGrading	90.00	19.86
tblGrading	AcresOfGrading	30.00	19.86
tblLandUse	LotAcreage	0.00	19.86
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48

Construction of Natural Gas Power Plant at Haybarn Site - San Diego Air Basin, Annual

tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	WorkerTripNumber	0.00	250.00
tblTripsAndVMT	WorkerTripNumber	25.00	53.00
tblTripsAndVMT	WorkerTripNumber	30.00	53.00
tblTripsAndVMT	WorkerTripNumber	0.00	250.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.9051	7.9278	7.2077	0.0174	0.5088	0.3436	0.8525	0.2007	0.3224	0.5230	0.0000	1,517.6335	1,517.6335	0.3522	0.0000	1,526.4392
2022	0.7570	5.9713	6.6113	0.0163	0.2805	0.2578	0.5382	0.0750	0.2425	0.3175	0.0000	1,427.4922	1,427.4922	0.3163	0.0000	1,435.3990
Maximum	**0.9051**	**7.9278**	**7.2077**	**0.0174**	**0.5088**	**0.3436**	**0.8525**	**0.2007**	**0.3224**	**0.5230**	**0.0000**	**1,517.6335**	**1,517.6335**	**0.3522**	**0.0000**	**1,526.4392**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.9051	7.9278	7.2077	0.0174	0.3491	0.3436	0.6927	0.1185	0.3223	0.4409	0.0000	1,517.6320	1,517.6320	0.3522	0.0000	1,526.4377
2022	0.7570	5.9713	6.6113	0.0163	0.2805	0.2578	0.5382	0.0750	0.2425	0.3175	0.0000	1,427.4908	1,427.4908	0.3163	0.0000	1,435.3976
Maximum	**0.9051**	**7.9278**	**7.2077**	**0.0174**	**0.3491**	**0.3436**	**0.6927**	**0.1185**	**0.3223**	**0.4409**	**0.0000**	**1,517.6320**	**1,517.6320**	**0.3522**	**0.0000**	**1,526.4377**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**20.24**	**0.00**	**11.49**	**29.80**	**0.00**	**9.77**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2021	3-31-2021	2.3944	2.3944
2	4-1-2021	6-30-2021	2.1252	2.1252
3	7-1-2021	9-30-2021	2.1486	2.1486
4	10-1-2021	12-31-2021	2.1546	2.1546
5	1-1-2022	3-31-2022	1.8203	1.8203
6	4-1-2022	6-30-2022	1.8350	1.8350
7	7-1-2022	9-30-2022	1.7020	1.7020
		Highest	2.3944	2.3944

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
2	Grading	Grading	1/15/2021	2/25/2021	5	30	
3	Construction of Natural Gas Power Plant	Building Construction	2/26/2021	8/31/2022	5	394	
4	Natural Gas Line Improvements	Building Construction	9/1/2022	12/31/2022	5	87	

Acres of Grading (Site Preparation Phase): 19.86

Acres of Grading (Grading Phase): 19.86

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Natural Gas Line Improvements	Cranes	1	8.00	231	0.29
Natural Gas Line Improvements	Forklifts	3	8.00	89	0.20
Natural Gas Line Improvements	Generator Sets	1	8.00	84	0.74
Construction of Natural Gas Power Plant	Cement and Mortar Mixers	2	8.00	9	0.56
Construction of Natural Gas Power Plant	Cranes	2	8.00	231	0.29
Construction of Natural Gas Power Plant	Forklifts	3	8.00	89	0.20
Construction of Natural Gas Power Plant	Generator Sets	3	8.00	84	0.74
Natural Gas Line Improvements	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Natural Gas Line Improvements	Welders	2	8.00	46	0.45
Site Preparation	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40

Construction of Natural Gas Power Plant	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	2	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Off-Highway Trucks	2	8.00	402	0.38
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Construction of Natural Gas Power Plant	Welders	2	8.00	46	0.45
Site Preparation	Scrapers	2	8.00	367	0.48
Grading	Off-Highway Trucks	2	8.00	402	0.38
Construction of Natural Gas Power Plant	Excavators	2	8.00	158	0.38
Construction of Natural Gas Power Plant	Off-Highway Trucks	2	8.00	402	0.38
Construction of Natural Gas Power Plant	Plate Compactors	2	8.00	8	0.43
Construction of Natural Gas Power Plant	Skid Steer Loaders	2	8.00	65	0.37
Construction of Natural Gas Power Plant	Bore/Drill Rigs	2	8.00	221	0.50
Natural Gas Line Improvements	Cement and Mortar Mixers	2	8.00	9	0.56
Natural Gas Line Improvements	Bore/Drill Rigs	1	8.00	221	0.50
Natural Gas Line Improvements	Off-Highway Trucks	2	8.00	402	0.38
Natural Gas Line Improvements	Trenchers	1	8.00	78	0.50
Natural Gas Line Improvements	Excavators	1	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Natural Gas Line Improvements	17	250.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	10	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	12	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Construction of Natural Gas Power Pl	25	250.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0708	0.0000	0.0708	0.0342	0.0000	0.0342	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0323	0.3482	0.1872	4.7000e-004		0.0144	0.0144		0.0133	0.0133	0.0000	41.0780	41.0780	0.0133	0.0000	41.4101
Total	**0.0323**	**0.3482**	**0.1872**	**4.7000e-004**	**0.0708**	**0.0144**	**0.0852**	**0.0342**	**0.0133**	**0.0475**	**0.0000**	**41.0780**	**41.0780**	**0.0133**	**0.0000**	**41.4101**

Natural Gas Power Plant at Haybarn Site - Decommissioning

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	19.86	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2050
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Includes entire Haybarn Site acreage and natural gas pipeline

Construction Phase - Per project description

Off-road Equipment - Off-highway trucks = water trucks

Grading - Conservatively assume entire site needs to be graded

Trips and VMT - Assumed same number of worker, vendor, and hauling trips as used in original EA

Construction Off-road Equipment Mitigation -

Off-road Equipment - Off highway trucks = water trucks

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	129.00
tblConstructionPhase	PhaseEndDate	1/28/2058	6/30/2058
tblLandUse	LotAcreage	0.00	19.86
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.29	0.29
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	207.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	58.00	48.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2058	0.4262	1.4475	3.8112	0.0107	0.0364	0.0361	0.0725	8.9400e-003	0.0361	0.0450	0.0000	962.6174	962.6174	0.0337	0.0000	963.4596
Maximum	**0.4262**	**1.4475**	**3.8112**	**0.0107**	**0.0364**	**0.0361**	**0.0725**	**8.9400e-003**	**0.0361**	**0.0450**	**0.0000**	**962.6174**	**962.6174**	**0.0337**	**0.0000**	**963.4596**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2058	0.4262	1.4475	3.8112	0.0107	0.0364	0.0361	0.0725	8.9400e-003	0.0361	0.0450	0.0000	962.6162	962.6162	0.0337	0.0000	963.4584
Maximum	**0.4262**	**1.4475**	**3.8112**	**0.0107**	**0.0364**	**0.0361**	**0.0725**	**8.9400e-003**	**0.0361**	**0.0450**	**0.0000**	**962.6162**	**962.6162**	**0.0337**	**0.0000**	**963.4584**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2058	3-31-2058	0.9337	0.9337
2	4-1-2058	6-30-2058	0.9441	0.9441
		Highest	0.9441	0.9441

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Decommissioning	Demolition	1/1/2058	6/30/2058	5	129	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Decommissioning	Concrete/Industrial Saws	1	8.00	81	0.73
Decommissioning	Excavators	3	8.00	158	0.38
Decommissioning	Rubber Tired Dozers	5	8.00	247	0.40
Decommissioning	Scrapers	1	8.00	367	0.48
Decommissioning	Off-Highway Trucks	2	8.00	402	0.38
Decommissioning	Tractors/Loaders/Backhoes	10	8.00	97	0.37
Decommissioning	Cranes	1	8.00	231	0.29

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Decommissioning	23	48.00	6.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Construction of Natural Gas Power Plant at Parking Lot Site

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	9.58	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per project description, includes entire Parking Lot Site and natural gas pipelines

Construction Phase - Per project description

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Off-road Equipment - Off-highway trucks = water trucks

Trips and VMT - Peak construction workers for natural gas plant per Webcor, other phases same as original EA

Grading - Conservatively assume entire site needs to be graded

Construction Off-road Equipment Mitigation -

Stationary Sources - User Defined -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	404.00
tblConstructionPhase	NumDays	230.00	87.00
tblGrading	AcresOfGrading	60.00	9.58
tblGrading	AcresOfGrading	30.00	9.58
tblLandUse	LotAcreage	0.00	9.58
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	VendorTripNumber	0.00	23.00
tblTripsAndVMT	WorkerTripNumber	25.00	53.00
tblTripsAndVMT	WorkerTripNumber	28.00	53.00
tblTripsAndVMT	WorkerTripNumber	0.00	250.00
tblTripsAndVMT	WorkerTripNumber	0.00	250.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8544	7.2715	6.5824	0.0162	0.4464	0.3097	0.7561	0.1687	0.2890	0.4577	0.0000	1,417.0991	1,417.0991	0.3455	0.0000	1,425.7354
2022	0.7234	5.5879	6.1189	0.0154	0.2805	0.2377	0.5182	0.0750	0.2225	0.2974	0.0000	1,345.1442	1,345.1442	0.3133	0.0000	1,352.9767
Maximum	**0.8544**	**7.2715**	**6.5824**	**0.0162**	**0.4464**	**0.3097**	**0.7561**	**0.1687**	**0.2890**	**0.4577**	**0.0000**	**1,417.0991**	**1,417.0991**	**0.3455**	**0.0000**	**1,425.7354**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8544	7.2715	6.5824	0.0162	0.3300	0.3097	0.6397	0.1075	0.2890	0.3965	0.0000	1,417.0978	1,417.0978	0.3455	0.0000	1,425.7341
2022	0.7234	5.5879	6.1189	0.0154	0.2805	0.2377	0.5182	0.0750	0.2225	0.2974	0.0000	1,345.1430	1,345.1430	0.3133	0.0000	1,352.9755
Maximum	**0.8544**	**7.2715**	**6.5824**	**0.0162**	**0.3300**	**0.3097**	**0.6397**	**0.1075**	**0.2890**	**0.3965**	**0.0000**	**1,417.0978**	**1,417.0978**	**0.3455**	**0.0000**	**1,425.7341**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**16.01**	**0.00**	**9.13**	**25.13**	**0.00**	**8.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2021	3-31-2021	2.2027	2.2027
2	4-1-2021	6-30-2021	1.9551	1.9551
3	7-1-2021	9-30-2021	1.9765	1.9765
4	10-1-2021	12-31-2021	1.9825	1.9825
5	1-1-2022	3-31-2022	1.6667	1.6667
6	4-1-2022	6-30-2022	1.6797	1.6797
7	7-1-2022	9-30-2022	1.5953	1.5953
		Highest	2.2027	2.2027

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
2	Grading	Grading	1/15/2021	2/11/2021	5	20	
3	Construction of Natural Gas Power Plant	Building Construction	2/12/2021	8/31/2022	5	404	
4	Natural Gas Line Improvements	Building Construction	9/1/2022	12/31/2022	5	87	

Acres of Grading (Site Preparation Phase): 9.58

Acres of Grading (Grading Phase): 9.58

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Off-Highway Trucks	2	8.00	402	0.38
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Scrapers	2	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Graders	2	8.00	187	0.41
Grading	Off-Highway Trucks	2	8.00	402	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Construction of Natural Gas Power Plant	Bore/Drill Rigs	2	8.00	221	0.50
Construction of Natural Gas Power Plant	Cement and Mortar Mixers	2	8.00	9	0.56

Construction of Natural Gas Power Plant	Cranes		2	8.00	231	0.29
Construction of Natural Gas Power Plant	Excavators		2	8.00	158	0.38
Construction of Natural Gas Power Plant	Forklifts		3	8.00	89	0.20
Construction of Natural Gas Power Plant	Generator Sets		1	8.00	84	0.74
Construction of Natural Gas Power Plant	Off-Highway Trucks		2	8.00	402	0.38
Construction of Natural Gas Power Plant	Plate Compactors		2	8.00	8	0.43
Construction of Natural Gas Power Plant	Skid Steer Loaders		2	8.00	65	0.37
Construction of Natural Gas Power Plant	Tractors/Loaders/Backhoes		3	8.00	97	0.37
Construction of Natural Gas Power Plant	Welders		3	8.00	46	0.45
Natural Gas Line Improvements	Bore/Drill Rigs		1	8.00	221	0.50
Natural Gas Line Improvements	Cement and Mortar Mixers		2	8.00	9	0.56
Natural Gas Line Improvements	Cranes		1	8.00	231	0.29
Natural Gas Line Improvements	Excavators		1	8.00	158	0.38
Natural Gas Line Improvements	Forklifts		3	8.00	89	0.20
Natural Gas Line Improvements	Generator Sets		1	8.00	84	0.74
Natural Gas Line Improvements	Off-Highway Trucks		2	8.00	402	0.38
Natural Gas Line Improvements	Tractors/Loaders/Backhoes		3	8.00	97	0.37
Natural Gas Line Improvements	Trenchers		1	8.00	78	0.50
Natural Gas Line Improvements	Welders		2	8.00	46	0.45
Grading	Excavators		1	8.00	158	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	10	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Construction of Natural Gas Power Pl	24	250.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Natural Gas Line Improvements	17	250.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0653	0.0000	0.0653	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0322	0.3476	0.1867	4.7000e-004		0.0144	0.0144		0.0133	0.0133	0.0000	40.9718	40.9718	0.0133	0.0000	41.3031
Total	**0.0322**	**0.3476**	**0.1867**	**4.7000e-004**	**0.0653**	**0.0144**	**0.0797**	**0.0337**	**0.0133**	**0.0469**	**0.0000**	**40.9718**	**40.9718**	**0.0133**	**0.0000**	**41.3031**

Natural Gas Power Plant at Parking Lot Site - Decommissioning

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	0.00	1000sqft	9.58	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Includes entire Parking Lot Site acreage and natural gas pipeline

Construction Phase - Per project description

Off-road Equipment - Off-highway trucks = water trucks

Grading - Conservatively assume entire site needs to be graded

Trips and VMT - Assumed same number of worker, vendor, and hauling trips as used in original EA

Construction Off-road Equipment Mitigation -

Off-road Equipment - Off highway trucks = water trucks

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	129.00
tblLandUse	LotAcreage	0.00	9.58
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.29	0.29
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	5.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripNumber	0.00	207.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	58.00	48.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2058	0.4262	1.4475	3.8112	0.0107	0.0364	0.0361	0.0725	8.9400e-003	0.0361	0.0450	0.0000	962.6174	962.6174	0.0337	0.0000	963.4596
Maximum	**0.4262**	**1.4475**	**3.8112**	**0.0107**	**0.0364**	**0.0361**	**0.0725**	**8.9400e-003**	**0.0361**	**0.0450**	**0.0000**	**962.6174**	**962.6174**	**0.0337**	**0.0000**	**963.4596**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2058	0.4262	1.4475	3.8112	0.0107	0.0364	0.0361	0.0725	8.9400e-003	0.0361	0.0450	0.0000	962.6162	962.6162	0.0337	0.0000	963.4584
Maximum	**0.4262**	**1.4475**	**3.8112**	**0.0107**	**0.0364**	**0.0361**	**0.0725**	**8.9400e-003**	**0.0361**	**0.0450**	**0.0000**	**962.6162**	**962.6162**	**0.0337**	**0.0000**	**963.4584**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Natural Gas Power Plant at Parking Lot Site - Decommissioning - San Diego Air Basin, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
149	1-1-2058	3-31-2058	0.9337	0.9337
150	4-1-2058	6-30-2058	0.9441	0.9441
		Highest	0.9441	0.9441

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Decommissioning	Demolition	1/1/2058	6/30/2058	5	129	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Decommissioning	Concrete/Industrial Saws	1	8.00	81	0.73
Decommissioning	Excavators	3	8.00	158	0.38
Decommissioning	Rubber Tired Dozers	5	8.00	247	0.40
Decommissioning	Scrapers	1	8.00	367	0.48
Decommissioning	Off-Highway Trucks	2	8.00	402	0.38
Decommissioning	Cranes	1	8.00	231	0.29
Decommissioning	Tractors/Loaders/Backhoes	10	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Decommissioning	23	48.00	6.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization Rural **Wind Speed (m/s)** 2.6 **Precipitation Freq (Days)** 40

Climate Zone 13 **Operational Year** 2016

Utility Company San Diego Gas & Electric

CO2 Intensity (lb/MWhr) 720.49 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - CalEEMod does not have a “Utility” land use type as a default option; therefore, “General Light Industry” was chosen as the closest appropriate option.

Construction Phase - No demolition, paving, or architectural coating phases. Total construction is estimated to last two years. Assumed 4 months site prep, 4 months grading, 16 months construction/installation.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks.

Off-road Equipment - Construction mix per DOPAA. "Off-highway trucks" = water trucks and "Other construction equipment" = pile drivers.

Grading - Conservatively assumes that the full project footprint would be graded & prepped (194 ac for PV footprint), but all cut/fill would remain onsite.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.6494	16.8859	11.0393	0.0155	2.2542	0.9110	3.1652	1.1213	0.8419	1.9632	0.0000	1,432.7304	1,432.7304	0.3931	0.0000	1,440.9858
2017	1.6515	15.7261	10.0409	0.0180	0.1132	0.8901	1.0034	0.0304	0.8289	0.8594	0.0000	1,619.2283	1,619.2283	0.4149	0.0000	1,627.9406
Total	**3.3009**	**32.6119**	**21.0801**	**0.0335**	**2.3674**	**1.8011**	**4.1685**	**1.1518**	**1.6708**	**2.8226**	**0.0000**	**3,051.9587**	**3,051.9587**	**0.8080**	**0.0000**	**3,068.9264**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	1.6494	16.8858	11.0393	0.0155	1.0667	0.9110	1.9776	0.5186	0.8419	1.3604	0.0000	1,432.7288	1,432.7288	0.3931	0.0000	1,440.9842
2017	1.6515	15.7260	10.0408	0.0180	0.1132	0.8901	1.0034	0.0304	0.8289	0.8594	0.0000	1,619.2265	1,619.2265	0.4149	0.0000	1,627.9388
Total	**3.3009**	**32.6119**	**21.0801**	**0.0335**	**1.1799**	**1.8011**	**2.9810**	**0.5490**	**1.6708**	**2.2198**	**0.0000**	**3,051.9553**	**3,051.9553**	**0.8080**	**0.0000**	**3,068.9230**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.16**	**0.00**	**28.49**	**52.33**	**0.00**	**21.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	4/30/2016	5	86	
2	Grading	Grading	5/1/2016	8/30/2016	5	87	
3	Building Construction	Building Construction	9/1/2016	12/31/2017	5	347	

Acres of Grading (Site Preparation Phase): 194

Acres of Grading (Grading Phase): 194

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Scrapers	2	6.00	361	0.48
Site Preparation	Off-Highway Trucks	2	6.00	400	0.38
Grading	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Generator Sets	3	6.00	84	0.74
Building Construction	Cranes	2	6.00	226	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Site Preparation	Graders	2	6.00	174	0.41
Building Construction	Other Construction Equipment	2	6.00	171	0.42
Building Construction	Off-Highway Trucks	2	6.00	400	0.38
Building Construction	Trenchers	2	6.00	80	0.50
Grading	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	15	6.00	97	0.37
Building Construction	Rubber Tired Loaders	5	6.00	199	0.36
Grading	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	10	6.00	97	0.37
Grading	Graders	4	6.00	174	0.41
Site Preparation	Rubber Tired Dozers	5	6.00	255	0.40
Building Construction	Welders	3	6.00	46	0.45

Construction of a Solar Photovoltaic System at MCB Camp Pendleton - Alternative 1

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	21	53.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	37	59.00	23.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

MCB Solar PV System - Alternative 1 - Decommissioning

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.56	1000sqft	1.05	45,560.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Construction Phase - Estimated two months for decommissioning.

Off-road Equipment - Equipment mix per DOPAA.

Trips and VMT - "Vendor" trips include water truck trips to and from the site.

MCB Solar PV System - Alternative 1 - Decommissioning

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.0871	0.3808	0.8136	1.9200e-003	0.0357	8.0800e-003	0.0438	6.6400e-003	8.0800e-003	0.0147	0.0000	181.4251	181.4251	6.9200e-003	0.0000	181.5705
Total	**0.0871**	**0.3808**	**0.8136**	**1.9200e-003**	**0.0357**	**8.0800e-003**	**0.0438**	**6.6400e-003**	**8.0800e-003**	**0.0147**	**0.0000**	**181.4251**	**181.4251**	**6.9200e-003**	**0.0000**	**181.5705**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2053	0.0871	0.3808	0.8136	1.9200e-003	0.0232	8.0800e-003	0.0313	4.7400e-003	8.0800e-003	0.0128	0.0000	181.4249	181.4249	6.9200e-003	0.0000	181.5702
Total	**0.0871**	**0.3808**	**0.8136**	**1.9200e-003**	**0.0232**	**8.0800e-003**	**0.0313**	**4.7400e-003**	**8.0800e-003**	**0.0128**	**0.0000**	**181.4249**	**181.4249**	**6.9200e-003**	**0.0000**	**181.5702**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**34.96**	**0.00**	**28.51**	**28.61**	**0.00**	**12.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

MCB Solar PV System - Alternative 1 - Decommissioning

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2053	2/28/2053	5	43	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Scrapers	1		361	0.48
Demolition	Off-Highway Trucks	2		400	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	5	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	10	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	19	48.00	6.00	207.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

MCB Pendleton Proposed 49.9MW Peaker Plant

59 degrees F	Fuel	Annual Process Throughput		Annual Process Duration		Criteria Pollutant	Emission Factors		Potential Emission Estimates Pre Treatment		
		rate	unit	hr	unit		rate	unit	ppm @15% O2	lb/hr	ton/yr
Gas Turbine Emissions	Natural Gas	3,690,507	MMBtu HHV	8760	hr	VOC	0	lb/MMBtu	0	0.00	0.00
		3,690,507	MMBtu HHV	8760	hr	NOx	0.055	lb/MMBtu	15	22.98	100.66
		3,690,507	MMBtu HHV	8760	hr	CO	0.056	lb/MMBtu	25	23.39	102.46
		3,690,507	MMBtu HHV	8760	hr	PM10	0.002	lb/MMBtu		0.82	3.60
		3,690,507	MMBtu HHV	8760	hr	CO2	119.431	lb/MMBtu	34400	50,315.04	220,380

SCR % Control Requirement 86.67%

Oxidation Catalyst % Control Requirement 80.00%

Criteria Pollutant	Potential Emission Estimates Post Treatment			
	ppm @15% O2	lb/hr	ton/yr	lb/day
VOC	0.00	0.00	0.00	0.00
NOx	2.00	3.06	13.42	73.54
CO	***5.00***	4.68	20.49	112.29
PM10	0.00	0.82	3.595104	19.70
CO2	34,400	50,315	220,380	1,207,561

20 degrees F	Fuel	Annual Process Throughput		Annual Process Duration		Criteria Pollutant	Emission Factors		Potential Emission Estimates Pre Treatment		
		rate	unit	hr	unit		rate	unit	ppm @15%	lb/hr	ton/yr
Gas Turbine Emissions	Natural Gas	4,027,181	MMBtu HHV	8760	hr	VOC	0	lb/MMBtu	0	0.00	0.00
		4,027,181	MMBtu HHV	8760	hr	NOx	0.054	lb/MMBtu	15	25.03	109.65
		4,027,181	MMBtu HHV	8760	hr	CO	0.055	lb/MMBtu	25	25.44	111.45
		4,027,181	MMBtu HHV	8760	hr	PM10	0.002	lb/MMBtu		0.82	3.60
		4,027,181	MMBtu HHV	8760	hr	CO2	119.355	lb/MMBtu	34400	54,870.48	240,333

SCR % Control Requirement 86.67%

Oxidation Catalyst % Control Requirement 80.00%

Criteria Pollutant	Potential Emission Estimates Post Treatment			
	ppm @15% O2	lb/hr	ton/yr	lb/day
VOC	0.00	0.00	0.00	0.00
NOx	2.00	3.34	14.62	80.11
CO	***5.00***	5.09	22.29	122.14
PM10	0.00	0.82	3.60	19.70
CO2	34,400	54,870	240,333	1,316,892

Unrestricted

District San Diego County APCD BACT Permit Limits

	Applied Energy LLC	Orange Grove	Escondido Energy Center LLC	El Cajon Energy LLC	University of San Diego
ATC Date	3/20/2009	12/4/2008	7/2/2008	12/11/2009	3/2/2000
Plant Size, MW	42	49.8	46.5	49.95	25.788
Plant Type	Combined Cycle	Peaking Simple Cycle	Peaking Simple Cycle	Peaking Simple Cycle	Combined Cycle
Nox, PPM	2	2.5	2.5	2.5	2.5
Nox Control Tech	SCR, water injection	SCR, water injection	SCR, water injection	SCR, water injection	Low Nox, SCONOX and SCOSOX
Nox ppmv @ % oxygen	15		15		15
VOC, PPM	2	2	2	2	
VOC Control Tech	Oxidation Catalyst	Oxidation Catalyst	Oxidation Catalyst	Oxidation Catalyst	
VOC ppmv @% oxygen	15				
CO PPM					5
CO Control Tech					Low Nox, SCONOX and SCOSOX
Co ppmv@ % oxygen					15

Run Results

LHV	Btu/lb	20,122
Fuel Temperature	°F	59
Per R Marks HHV/LHV		1.1107

INPUT DATA											
Run identity	Case	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ambient temp.	**°F**	**10**	**20**	**30**	**40**	**50**	**59**	**60**	**70**	**80**	**90**
Relative humidity	%	45	45	45	45	45	45	45	45	45	45
Load	%	100	100	100	100	100	100	100	100	100	100
Turbine speed	rpm	6100	6100	6100	6100	6100	6100	6100	6100	6100	6100
OUTPUT DATA											
Power output	kW	43714	42775	41866	40914	39922	38892	38748	37301	35779	33684
Efficiency	%	40.22	40.2	40.18	40.12	40.03	39.89	39.86	39.55	39.16	38.47
Heat Rate	Btu/kWh LHV	8483	8488	8493	8505	8523	8555	8561	8628	8713	8869
Fuel flow	lb/s	5.12	5.012	4.909	4.804	4.697	4.593	4.579	4.443	4.304	4.124
Fuel flow	lb/hr	18432	18043.2	17672.4	17294.4	16909.2	16534.8	16484.4	15994.8	15494.4	14846.4
Fuel flow	MMBtu/hr LHV	370.826	363.074	355.568	347.974	340.255	332.721	331.722	321.833	311.742	298.743
Fuel flow	MMBtu/hr HHV	411.876	403.267	394.929	386.494	377.921	369.553	368.443	357.460	346.252	331.814
Fuel flow	MMBtu/hr LHV	370.889	363.065	355.604	347.998	340.247	332.713	331.699	321.847	311.778	298.739
Exhaust flow	lb/s	273.7	269.5	265.4	261.1	256.6	252	251.4	244.9	238	228.7
Exhaust temp.	°F	854	858	862	867	872	877	878	886	895	907
Heat cont. Ref. T	°F	---	---	---	---	---	---	---	---	---	---
Exhaust heat cont.	MBtu/h	---	---	---	---	---	---	---	---	---	---
Inlet Cooler	---	No	No	No	No	No	No	No	No	No	No
Air after cooler	°F	0	0	0	0	0	0	0	0	0	0
Temp. GT_inlet	°F	0	0	0	0	0	0	0	0	0	0
Water flow	lb/s	0	0	0	0	0	0	0	0	0	0
Chill. P. / Evap eff.	kJ/s / %	0	0	0	0	0	0	0	0	0	0
ADDITIONAL INFORMATION											
Actual inlet loss	Inch H2O	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Actual outlet loss	Inch H2O	2	2	2	2	2	2	2	2	2	2
Compressor inlet air	lb/s	270.2	266.1	262.1	257.8	253.4	248.9	248.3	241.9	235.1	225.9
Compr. discharge temp	°F	868.4	876.9	885.3	893.8	902.1	909.7	910.6	919	927.4	935.7
Compr. discharge press.	psia	391.2	385.3	379.5	373.4	367.2	360.7	359.8	350.8	341.4	328.4
Load stress factor, Cx	EOH/H	1	1	1	1	1	1	1	1	1	1

Fuel flow (MMBtu/hr LHV): HR basis
Fuel flow (MMBtu/hr HHV): HR basis — 3,532,614.662
Fuel flow (MMBtu/hr LHV): Wt basis

EXHAUST GAS COMPOSITION											
SO2	% WT	0	0	0	0	0	0	0	0	0	0
H2O	% WT	3.9	3.91	3.94	4	4.08	4.2	4.21	4.4	4.66	5.01
CO2	% WT	4.99	4.96	4.93	4.91	4.88	4.86	4.86	4.84	4.82	4.81
N2	% WT	74.13	74.11	74.07	74.03	73.95	73.86	73.85	73.7	73.5	73.23
O2	% WT	15.73	15.76	15.79	15.81	15.82	15.83	15.82	15.81	15.77	15.7
Ar	% WT	1.26	1.26	1.26	1.26	1.25	1.25	1.25	1.25	1.25	1.24
SO2	% VOL	0	0	0	0	0	0	0	0	0	0
H2O	% VOL	6.18	6.2	6.25	6.34	6.47	6.65	6.67	6.96	7.36	7.9
CO2	% VOL	3.24	3.22	3.2	3.19	3.17	3.15	3.15	3.13	3.12	3.1
N2	% VOL	75.63	75.6	75.55	75.47	75.35	75.2	75.18	74.94	74.62	74.19
O2	% VOL	14.05	14.08	14.1	14.11	14.12	14.11	14.1	14.07	14.02	13.93
Ar	% VOL	0.9	0.9	0.9	0.9	0.9	0.89	0.89	0.89	0.89	0.88

EMISSIONS COMPOSITION											
NOx	ppmv(d)@15%	15	15	15	15	15	15	15	15	15	15
	lb/s	0.0062	0.0061	0.006	0.0058	0.0057	0.0056	0.0056	0.0054	0.0052	0.005
	lb/hr	22.32	21.96	21.6	20.88	20.52	20.16	20.16	19.44	18.72	18
	lb/MMBtu HHV	0.05419103	0.054455302	0.0546933	0.0540241	0.054297	0.05455235	0.0547167	0.0543837	0.0540646	0.0542472
CO	ppmv(d)@15%	25	25	25	25	25	25	25	25	25	25
	lb/s	0.0063	0.0062	0.0061	0.0059	0.0058	0.0057	0.0057	0.0055	0.0053	0.0051
	lb/hr		22.32				20.52				
	lb/MMBtu HHV		0.055348012				0.055526499				
CO2	ppmv(d)@15%	34,400	34,400	34,400	34,400	34,400	34,400	34,400	34,400	34,400	34,400
	lb/s	13.66	13.37	13.1	12.82	12.53	12.26	12.22	11.86	11.48	11
TOC(CH4)	ppmv(d)@15%	5	5	5	5	5	5	5	5	5	5
	lb/s	0.002	0.002	0.0019	0.0019	0.0018	0.0018	0.0018	0.0017	0.0017	0.0016
VOC (CH4)	ppmv(d)@15%	0	0	0	0	0	0	0	0	0	0
	lb/s	0	0	0	0	0	0	0	0	0	0
PM10	lb/s	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

GT Exhaust							
Ambient temp.	degF		20	59			
Gross Output	kW		42,775	38,892			
Aux Load		1.50%					
Net Output	kW		42,133	38,309	Max size, kW	49,900	118.43%
Annual operating hours			8,760				
NOx - uncontrolled	ppmvd@15% O2		15	15			
NOx - controlled	ppmvd@15% O2		2	2			
NOx - controlled	lb/hr						
NOx - controlled	lb/yr						
CO - uncontrolled	ppmvd@15% O2		25	25			
CO - controlled	ppmvd@15% O2		5	5			
CO - controlled	lb/hr						
CO - controlled	lb/yr						
						20F	60F
Annual fuel at 20F ambient	MMBtu/yr		3,532,615	3,237,287		4,183,797	3,834,030