DRAFT

Campo Wind Project with Boulder Brush Facilities
Biological Technical Report

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MAY 2019

Printed on 30% post-consumer recycled material.

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ACOE	U.S. Army Corps of Engineers
amsl	above mean sea level
APLIC	Avian Power Line Interaction Committee
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BSA	biological study area
BTR	Biological Technical Report
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CWA	federal Clean Water Act
DS	Data Station
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FR	Federal Register
gen-tie line	generation transmission line
I	Interstate
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MM	Mitigation Measure
MW	megawatt
NEPA	National Environmental Policy Act
NWP	Nationwide Permit
O&M	operation and maintenance
OHWM	ordinary high-water mark
SWPPP	stormwater pollution prevention plan
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRRS	Worker Response Reporting System

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SUMMARY

This Biological Technical Report was prepared to evaluate the proposed Campo Wind Project with Boulder Brush Facilities (Campo Wind Project or Project), located on the Campo Indian Reservation (Reservation) and adjacent private lands in southeast San Diego County. The Reservation lands are held in trust by the federal government, as administered by the Bureau of Indian Affairs. The Campo Wind Project includes Campo Wind Facilities On-Reservation and Boulder Brush Facilities Off-Reservation. The Campo Wind facilities would involve construction and operation of up to 60 wind turbines, an electrical collection and communication system, On-Reservation portion of the generation transmission (gen-tie) lines, a Collector substation, an operations and maintenance facility and associated parking areas, temporary staging areas, meteorological towers, and access roads. The Boulder Brush Facilities consist of Off-Reservation improvements including the Off-Reservation portions of the gen-tie, high-voltage substation, access roads, and a switchyard.

Vegetation mapping, formal jurisdictional delineation of waters and wetlands, and focused surveys were conducted in 2017 and/or 2018, including Quino checkerspot butterfly (*Euphydryas editha quino*) surveys. Additional surveys to document avian, eagle, and raptor activity were completed in 2017 through 2019. This report documents the results of Dudek's field work, along with previous studies of the Project Area, and an analysis of the impacts and mitigation measures related to the Project.

Dudek biologists mapped 20 vegetation communities and land cover types within the study area: big sagebrush scrub (including disturbed); coast live oak woodland; developed, disturbed habitat emergent wetland; freshwater marsh; granitic chamise chaparral; granitic northern mixed chaparral; montane buckwheat scrub; mulefat scrub; non-native grassland; non-native grassland broadleaf-dominated; red shank chaparral; scrub oak chaparral; southern coast live oak riparian forest; southern willow scrub; upper Sonoran subshrub scrub; unvegetated stream channel; and valley sacaton grassland.

Dudek biologists detected the following federally-protected species during surveys: golden eagle (*Aquila chrysaetos*), as well as a number of migratory birds. While not detected during the 2018 surveys, Quino checkerspot butterfly was observed during 2010 focused surveys by AECOM.

The Project would result in impacts to 992.79 acres. This includes impacts to 1.74 acres of non-wetland waters and 0.68 acres of wetland waters of the United States. The Project would result in potentially significant direct impacts to special-status wildlife species habitat. Mitigation would include pre-construction monitoring and other best management practices, fire protection, and any conditions that accompany any necessary federal agency permits. All significant impacts would be reduced to less than significant with implementation of mitigation measures.

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1 INTRODUCTION

1.1 Purpose of the Report

This Biological Technical Report analyzes the impacts to biological resources potentially resulting from construction and operation and maintenance (O&M) of the Project. The purpose of this report is to (1) describe the existing conditions of biological resources within the Project Area (composed of consists of the entire approximately 16,000-acre Reservation Boundary and approximately 2,000-acre of private parcels within the Boulder Brush Boundary)), including federally-regulated vegetation communities, jurisdictional water and wetland resources, plants, wildlife, and wildlife movement; (2) discuss potential impacts to biological resources that would result from development of the property and describe those impacts in terms of biological significance in view of federal policies; and (3) recommend mitigation measures for potential impacts to federally-regulated biological resources. Recommendations follow federal laws and regulations, including the National Environmental Policy Act (NEPA). The Project is described in detail in Appendix B, Project Description Details, of the Environmental Impact Statement (EIS), and is under the jurisdiction of the County of San Diego (County). Part of the County's review includes the preparation of an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) that will also be subject to public review and comment and addresses state and local regulated species potentially impacted by the Project.

1.2 Project Location

The Project is located on the Reservation in southeastern San Diego County and neighboring private lands under the jurisdiction of the County, approximately 50 miles east of the City of San Diego, California. The Reservation is located in the southern Laguna Mountains and surrounded by the unincorporated communities of Campo, Boulevard, and Live Oak Springs (Figure 1, Project Location; all figures provided in Appendix A). The Reservation covers over 16,000 acres and includes lands both north and south of Interstate (I) 8 along the Tecate Divide, extends from the Manzanita Indian Reservation south to approximately 0.25 miles from the U.S./Mexico international border. The Project Area is composed of future leased lands and additional Project components and additional private lands located Off-Reservation. The Project Area is surrounded by low-density rural commercial and residential developments throughout the Reservation and nearby communities; Church Road and I-8 bisect the study area. The Project Area discussed in this report covers the lease lands and additional Project components within the overall Reservation (Figure 1). The Off-Reservation Boulder Brush Facilities are located outside the Reservation (Figure 1). The Project Site is approximately 2,700 acres consisting of the Campo Wind Corridor that is approximately 2,200 acres On-Reservation within which Campo Wind Facilities are proposed and the Boulder Brush Corridor that is approximately 500 acres Off-Reservation within

which Boulder Brush Facilities are proposed. Disturbance limits of approximately 1,000 acres would occur within the Project Site (approximately 800 acres within the Campo Wind Corridor On-Reservation and approximately 200 acres within the Boulder Brush Corridor Off-Reservation).

1.3 Project Description

The Project includes two main components: (1) the Campo Wind Facilities, including associated buildings and infrastructure, and (2) the Boulder Brush Facilities. The Project would include construction of approximately 60 wind turbines, electrical collection and communication system, a generation transmission (gen-tie) line, a collector substation, a high-voltage substation, a 500 kilovolt (kV) switchyard and incoming/outgoing connection lines to connect the 500 kV switchyard to the Sunrise Powerlink, O&M buildings and associated parking areas, temporary staging areas, permanent and temporary meteorological towers, and various access roads. A detailed project description is provided in Appendix B, Project Description Details, of the EIS.

Alternative 2 (Reduced Intensity – Approximately 202 MW) would include a reduction in the Project's footprint, number of turbines, and generating capacity of approximately 20%, with 48 turbines that would produce approximately 4.2 megawatts (MW) each, for a total production of approximately 202 MW. All Alternative 2 components, including general location of the turbines and Project area, phases of construction, and substation locations, would be similar to those of Alternative 1, with the exception of the strings of turbines in the southwest and northwest of the Reservation, which would be eliminated, reducing the number of wind turbines.

It is assumed that the Campo Wind Facilities would operate for the term of the lease between the Campo Band of Diegueño Mission Indians (Tribe) and Terra-Gen Development Company LLC (Terra-Gen) (Campo Lease). If the Campo Wind Facilities were to be decommissioned, a decommissioning plan would be prepared and implemented consistent with the requirements of the Campo Lease to remove the energy facilities and electrical equipment from the Reservation . Except for those facilities that would be owned and operated by SDG&E, a decommissioning plan would be prepared and implemented to remove the Boulder Brush Facilities from the private lands, and the impacted areas would be returned to a use consistent with its current zoning.

1.4 Standard Best Management Practices

Standard best management practices (BMPs) would be implemented during construction, O&M, and decommissioning of the Project. Table 1 outlines BMPs relevant for avoidance and minimization of impacts to biological resources.

Table 1
Standard Best Management Practices

Project Action	General Description
Equipment maintenance	All equipment operating on site would be in good working condition and free of leaks.
Trash abatement	Spoils, trash, or any construction-generated debris would be removed to an approved off-site disposal facility. A trash abatement program would be established. Trash and food items would be contained in closed containers and removed daily to reduce the attraction of opportunistic predators such as common ravens and feral cats and dogs that may prey on sensitive species.
Wildfire prevention	Wildfires would be prevented by exercising care when driving and by not parking vehicles where catalytic converters could ignite dry vegetation. All construction vehicles would carry water and shovels or fire extinguishers in the field, or high fire risk installations (e.g., electric lines) may need to be delayed. The use of shields, protective mats, or other fire-prevention equipment would be used during grinding and welding to prevent or minimize the potential for fire. Smoking would take place within designated areas and away from vegetated areas. Cigarette butts would be disposed of in proper receptacles (e.g., vehicle ashtrays or outdoor metal cigarette ashtrays).
Erosion, runoff, and sedimentation prevention	All construction activities would cease during heavy rains (i.e., rainfall over 0.2 inches within a 24-hour period) to prevent unnecessary erosion, runoff, and sedimentation and would not resume until conditions are suitable for the movement of equipment and materials. Additionally, construction activities would be subject to restrictions and requirements that address erosion and runoff, including the federal Clean Water Act and the National Pollution Discharge Elimination System program. Preparation and implementation of a Project-specific stormwater pollution prevention plan will be required.
Toxic substances	Vehicles would carry a Hazardous Material Spill Kit for use in the event of a spill. All personnel working on site would be trained in using these kits. Spill containment materials must be on site or readily available for any equipment maintenance or refueling.
Pets and firearms	Workers would be prohibited from bringing domestic pets and firearms to the site.
Speed limit	Vehicle speeds on site would be restricted to 15 miles per hour (24 kilometers per hour) during all phases of the Project. Speed limit signs would be posted throughout the site to remind personnel of travel speed restrictions.
Work hours	Construction would occur during the daytime only, and no construction would take place at night.[a] "Night" is defined as between 7:00 p.m. and 7:00 a.m.
Lighting	Construction activities would not include nighttime lighting. Temporary security lighting around staging areas may be required for safety during construction activities up until 7:00 p.m. Operations-related lighting is limited to (1) restricted exterior lighting installed on turbines for Federal Aviation Administration aviation warning lights and (2) permanent motion-sensitive, directional security lights installed to provide adequate illumination around the Project collector substation. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties.

[a] No construction activities will occur at night; however, due to the California Department of Transportation (Caltrans) restriction on oversize loads during peak traffic hours, some equipment deliveries may occur after hours.

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2 REGULATORY SETTING

This chapter provides general background about the Project's regulatory setting. The majority of the Project would occur on the Reservation. The Tribe and the Reservation are subject to federal and Tribal law. However, Tribal law is not applicable to the Project pursuant to the Campo Lease between the Tribe and Terra-Gen. The Reservation is not under the jurisdiction of the state or County.

Federal laws, regulations and guidance applicable to the Project are listed below, and include NEPA, the federal Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), the federal Clean Water Act (CWA), and Executive Orders (EOs) 11988, 11990, and 13112. The Biological Resources Technical Report for the Campo Wind with Boulder Brush Facilities Project Environmental Impact Report (County Environmental Impact Report Biological Technical Report (EIR BTR); Dudek 2019) outlines the state and local regulations associated with the Boulder Brush Facilities. State and local regulations applicable with the Boulder Brush Facilities includes California Endangered Species Act (CESA), California Fish and Game Code, Porter-Cologne Water Quality Control Act, California Environmental Quality Act (CEQA), East County Multiple Species Conservation Program (MSCP) Plan, and County Resource Protection Ordinance (RPO). The Project also followed the U.S. Fish and Wildlife Service (USFWS) voluntary Land-Based Wind Energy Guidelines (Guidelines) (USFWS 2012).

2.1 National Environmental Policy Act

The approval of a land lease by the Bureau of Indian Affairs (BIA) constitutes a federal action, subject to compliance with NEPA (42 USC, Sections 4321–4347, as amended). The purpose of NEPA is to ensure that potential environmental impacts of any proposed federal action are fully considered and made available for public review. The scope of the NEPA analysis considers the effects of proposed and alternative actions on the human environment, which includes biological resources and nonbiological resources, such as cultural resources. The BIA can approve a land lease only after the NEPA review process has been completed.

2.2 Endangered Species Act

The ESA (16 USC 1531 et seq.) is implemented by USFWS through a program that identifies and provides for protection of various species of fish, wildlife, and plants deemed to be in danger of or threatened with extinction. As part of this regulatory act, the ESA provides for designation of critical habitat, defined in ESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and that "may require special management considerations or protection."

Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species."

2.3 USFWS Land-Based Wind Energy Guidelines

The Department of the Interior's USFWS and the Wind Turbine Guidelines Federal Advisory Committee developed the Guidelines. These voluntary Guidelines provide a structured, scientific process for addressing wildlife conservation concerns at all stages of land-based wind energy development. They also promote effective communication among wind energy developers and federal, state, and local conservation agencies and tribes. When used in concert with appropriate regulatory tools, the Guidelines form the best practical approach for conserving species of concern and help minimize impacts on wildlife and their habitats from the growing wind energy economy.

2.4 Migratory Bird Treaty Act

The MBTA prohibits the intentional take of any migratory bird or any part, nest, or eggs of any such bird. Under the MBTA, "take" is defined as pursuing, hunting, shooting, capturing, collecting, or killing, or attempting to do so (16 USC 703 et seq.). In December 2017, Department of the Interior Principal Deputy Solicitor Jorjani issued a memorandum (M-37050) that interprets the MBTA's "take" prohibition to apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs. Unintentional or accidental take is not prohibited (DOI 2017). Additionally, EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The EO requires federal agencies to work with USFWS to develop a memorandum of understanding. USFWS reviews actions that might affect these species.

2.5 Bald and Golden Eagle Protection Act

Bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are federally protected under the BGEPA, which was passed in 1940 to protect bald eagles and amended in 1962 to include golden eagles (16 USC 668 et seq.). This act prohibits the take, possession, sale, purchase, barter, offer to sell or purchase, export or import, or transport of bald eagles and golden eagles or their parts, eggs, or nests without a permit issued by USFWS. The definition of "take" includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The definition of "disturb" has been further clarified by regulation as follows: "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal

breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR, Part 22.3).

The BGEPA prohibits any form of possession or taking of both eagle species, and the statute imposes criminal and civil sanctions, as well as an enhanced penalty provision for subsequent offenses. Further, the BGEPA provides for the forfeiture of anything used to acquire eagles in violation of the statute. The statute exempts from its prohibitions on possession the use of eagles or eagle parts for exhibition, scientific, or Native American religious uses.

In November 2009, USFWS published the Final Eagle Permit Rule (74 FR 46836–46879) providing a mechanism to permit and allow for incidental (i.e., nonpurposeful) take of bald and golden eagles pursuant to the BGEPA (16 USC 668 et seq.). The previous year, 2008, USFWS adopted 50 CFR Part 22.11(a), which provides that a permit authorizing take under ESA Section 10 applies with equal force to take of golden eagles authorized under the BGEPA. These regulations were followed by issuance of guidance documents for inventory and monitoring protocols and for avian protection plans (USFWS 2010). In January 2011, USFWS released its Draft Eagle Conservation Plan Guidance aimed at clarifying expectations for acquiring take permits by wind power projects, consistent with the 2009 rule (USFWS 2011).

On December 16, 2016, USFWS adopted additional regulations regarding incidental take of golden eagles and their nests (81 FR 91494 et seq.). Most of the new regulations address "programmatic eagle nonpurposeful take permits" such as those typically requested by members of the alternative energy industry, including wind farms. For example, the new regulations extend the duration of such permits from 5 to 30 years. In addition, the new regulations modify the definition of the BGEPA "preservation standard" to mean "consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units and the persistence of local populations throughout the service range of each species" (81 FR 91496–91497). This process has also resulted in standardizing mitigation options for permitted take.

2.6 Clean Water Act

Pursuant to CWA Section 404, the U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged and/or fill material into "waters of the United States." The term "wetlands" (a subset of waters of the United States) is defined in 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

In the absence of wetlands, the limits of ACOE jurisdiction in nontidal waters, such as intermittent streams, extend to the "ordinary high-water mark" (OHWM), which is defined in 33 CFR 328.3(e).

2.7 EO 11988, Floodplain Management

EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. This EO provides an eight-step process that agencies carry out as part of their decision-making process for projects that have potential impacts to or within a floodplain.

2.8 EO 11990, Protection of Wetlands

Pursuant to EO 11990, each federal agency is responsible for preparing implementing procedures for carrying out the provisions of the EO. The purpose of this EO is to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for any activity located in wetlands, unless the head of the agency finds that there is no practical alternative to such activity, and the proposed action includes all practical measures to minimize harm to wetlands that may result from such actions. In making this finding, the head of the agency may take into account economic, environmental, and other pertinent factors. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands. The evaluation process follows the same eight steps as for EO 11988, Floodplain Management.

2.9 EO 13112, Invasive Species

EO 13112 requires federal agencies to "prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause." An invasive species is defined by the EO as "an alien species [a species not native to the region or area) whose introduction does or is likely to cause economic or environmental harm or harm to human health."

2.10 EO 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects

EO 13807, published in 2017, is intended to provide more efficient decisions in processing environmental reviews and authorization decisions regarding infrastructure projects, including energy production and generation projects. The EO states, "Federal agencies should follow

transparent and coordinated processes for conducting environmental reviews and making authorization decisions. These processes must include early and open coordination among Federal, State, tribal, and local agencies and early engagement with the public." Additionally, it states that projects must identify milestones and completion dates for action items by each agency on federal environmental review or authorization required for a project within a specific timeframe. The timeframe for "processing of environmental reviews and authorization decisions for new major infrastructure projects should be reduced to not more than an average of approximately 2 years, measured from the date of the publication of a notice of intent to prepare an environmental impact statement." Order No. 3355 implementing this EO further streamlined NEPA review, including process changes such as a limit of 150 pages and review timelines to 1 year from Notice of Intent to Final EIS, with delays of greater than 3 months requiring approval by the Assistant Secretary.

2.11 California Endangered Species Act

California Department of Fish and Wildlife (CDFW) administers the CESA (California Fish and Game Code (CFGC) Section 2050 et seq.), which prohibits the "take" of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in California. Under CESA Section 86, take is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy."

CFGC Sections 3511, 4700, and 5515 designate certain birds, mammals, and fish as "fully protected" species. These species may not be taken or possessed without a permit from the Fish and Game Commission, and such take may only occur pursuant to scientific research or in connection with an authorized Natural Communities Conservation Plan (NCCP). No "incidental take" of fully protected species is allowed.

CESA Sections 2080 through 2085 address the taking of threatened, endangered, or candidate species by stating, "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act (CFGC Sections 1900–1913), or the California Desert Native Plants Act (Food and Agricultural Code, Section 80001)."

CFGC Section 2081(b) and (c) authorizes take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. In such cases, CDFW issues the applicant an incidental take permit, which functions much like an incidental take

statement in the federal context. CDGC Sections 2081(b) and (c) also require CDFW to coordinate consultations with USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, Section 2080.1 of CESA allows CDFW to adopt a federal incidental take statement or a 10(a) permit as its own, based on its findings that the federal permit adequately protects the species and is consistent with state law. CDFW may not issue a Section 2081(b) incidental take permit for take of "fully protected" species. The CFGC lists the fully protected species in Section 3511 (birds), Section 4700 (mammals), Section 5050 (reptiles and amphibians), and Section 5515 (fish).

2.12 California Fish and Game Code

Streambed Alteration Agreement

Pursuant to CFGC Section 1602, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A Streambed Alteration Agreement (CFGC Section 1602 et seq.) is required for impacts to jurisdictional resources, including streambeds and associated riparian habitat.

Birds and Mammals

According to CFGC Sections 3511 and 4700, which regulate birds and mammals, a fully protected species may not be taken or possessed. CDFW may not authorize the take of such species except for necessary scientific research, for the protection of livestock, and when the take occurs for fully protected species within an approved NCCP.

California Fish and Game Code

The CFGC provides protection for wildlife species. It states that no mammals, birds, reptiles, amphibians, or fish species listed as fully protected can be "taken or possessed at any time." In addition, CDFW affords protection over the destruction of nests or eggs of native bird species (CFGC Section 3503), and it states that no birds in the orders of Falconiformes or Strigiformes (birds of prey) can be taken, possessed, or destroyed (CFGC Section 3503.5). CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock (CFGC Section 3511). Separate from federal and state designations of species, CDFW designates certain vertebrate species as Species of Special Concern based on declining population levels, limited ranges, and/or continuing threats that have made them vulnerable to extinction.

California Native Plant Protection Act

The Native Plant Protection Act of 1977 (CFGC Section 1900–1913) directed CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare," and to protect endangered and rare plants from take. When CESA was passed in 1984, it expanded on the original Native Plant Protection Act, enhanced legal protection for plants, and created the categories of "threatened" and "endangered" species to parallel FESA. CESA categorized all rare animals as threatened species under CESA, but did not do so for rare plants, which resulted in three listing categories for plants in California: rare, threatened, and endangered. The Native Plant Protection Act remains part of the CFGC, and mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and project proponents.

2.13 Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act protects water quality and the beneficial uses of water. It applies to surface water and groundwater. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the Regional Water Quality Control Boards (RWQCBs) develop regional basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of statewide plans and basin plans. Waters regulated under the Porter–Cologne Water Quality Control Act include isolated waters that are no longer regulated by ACOE. Developments with impacts to jurisdictional waters must demonstrate compliance with the goals of the act by developing Stormwater Pollution Prevention Plans (SWPPPs), standard urban stormwater mitigation plans, and other measures to obtain regulatory permits from the RWQCB.

2.14 California Environmental Quality Act

CEQA requires identification of a project's potentially significant impacts on biological resources and feasible mitigation measures and alternatives that could avoid or reduce significant impacts. CEQA Guideline 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors". A rare animal or plant is defined in CEQA Guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the

federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

2.15 East County Multiple Species Conservation Program Plan

The County is in the process of developing the East County MSCP Plan. The East County MSCP Plan is currently in draft form with no current schedule for completion. The intent of preparing the East County Plan is to create a large, connected preserve system that addresses the regional habitat needs for multiple species. The future East County MSCP Plan would cover approximately 1.6 million acres within the eastern unincorporated portion of the San Diego County. The Cleveland National Forest is located along the western boundary of the East County MSCP Plan area. The East County MSCP Plan area is bounded by Riverside County to the north, Imperial County on the east, and Mexico to the south. Tribal lands will be excluded from the East County MSCP Plan. The East County MSCP Plan is a cooperative effort among the County of San Diego, USFWS, and CDFW. Authority for this process comes from the California Natural Community Conservation Planning Act and Section 10(a) of FESA that addresses habitat conservation plans.

The Project Site is located within the draft East County MSCP Plan area (Figure 2-2, Regional Planning). Projects in this area are subject to the Planning Agreement for the East County MSCP (County of San Diego 2014), which is intended to determine if project approval would have an effect on the preparation and approval of the draft East County MSCP. A Preliminary Planning Map has been completed for the East County MSCP. According to this map, the Project Site falls partially within a preliminarily delineated Focused Conservation Area of the East County MSCP Planning area, which suggests that the area has regional conservation value (Figure 2-2).

Until the East County MSCP Plan is drafted and approved, the Planning Agreement between the County and the Resource Agencies (County of San Diego 2014) remains in place and applies to the Project. The Planning Agreement outlines Preliminary Conservation Objectives for the East County MSCP (County of San Diego 2014). In addition to the preliminary conservation objectives, the Planning Agreement for the draft East County MSCP Plan identifies an interim project review process, including a set of preserve design principles that interim projects are evaluated against during the period when the East County MSCP Plan is in preparation.

2.16 County Resource Protection Ordinance

The RPO, administered by the County, regulates biological and other natural resources within the County. These resources include wetlands, wetland buffers, floodways, floodplain fringe, steep

slope lands, sensitive habitat lands, and significant prehistoric or historic sites. The RPO stipulates that no impacts may occur to wetlands except for scientific research; removal of diseased or invasive exotic plant species; wetland creation and habitat restoration; revegetation and management projects; and crossings of wetlands for roads, driveways, or trails/pathways when certain conditions are met. The same exemptions apply to impacts to wetland buffer areas and improvements necessary to protect adjacent wetlands. Sensitive habitat lands are unique vegetation communities, and support sensitive species, lands essential to the healthy functioning of a balanced natural ecosystem, and wildlife corridors. Impacts to sensitive habitat lands may be allowed "when all feasible measures necessary to protect and preserve the sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species" (County of San Diego 2012).

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3 METHODS

3.1 Literature Review

Special-status plant and wildlife species present or potentially present within the Project Site were identified through an extensive literature and desktop mapping review of the following sources: USFWS Critical Habitat and Occurrence Data (USFWS 2018), CDFW's California Natural Diversity Database (CNDDB) (CDFW 2018a, 2018b, 2018c), California Native Plant Society's Online Inventory of Rare and Endangered Vascular Plants (CNPS 2018), and the San Diego Plant Atlas (SDNHM 2018). In addition, previous work conducted by AECOM that overlaps with the current Project Site was reviewed and incorporated into this report where appropriate.

3.2 Field Reconnaissance

3.2.1 On Reservation

In 2010, AECOM conducted the following surveys within a study area larger than and generally encompassing the Campo Wind Corridor development limits on the Reservation: vegetation mapping; jurisdictional delineation; rare plant surveys; general wildlife surveys; and protocol surveys for Quino checkerspot butterfly, arroyo toad, least Bell's vireo, and southwestern willow flycatcher. The following avian and bat field surveys were conducted: raptor nest searches (including aerial and ground-based nest searches); 30-minute point counts; all-day eagle point counts; bird area searches; and bat use studies (including active and passive bat surveys). In 2010 and 2011, aerial and ground-based golden eagle nest searches were conducted by Bloom Biological and WRI. AECOM, the Tribe and the previous applicant consulted the USFWS regarding the proposed biological surveys.

Between 2017 and 2018, Dudek conducted a Quino checkerspot butterfly habitat assessment and focused surveys, avian field surveys (including raptor nest searches, 30-minute point counts, and all-day eagle point counts), vegetation mapping, and a jurisdictional delineation of waters and wetlands within the study area in support of the Project. Table 2a lists the dates, conditions, and survey focus for each survey performed on the Reservation. Some of the avian studies will continue into 2019.

All surveys were conducted by personnel qualified to perform the biological surveys. Special-status biological resources were mapped within the Project Site (i.e., areas of proposed disturbance). The data gathered from the avian field surveys and avian risk assessment are a separate document from this report; therefore, these surveys are not discussed further. Any special-status species observed during these surveys are included in the biological analysis of this report.

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
Vegetation Mapping, Jurisdictional Delineation, and Rare Plant Surveys				
2010-04-13 to 2012-09-20	Varied	Varied	VEG/RP	Varied[a]
2012-02-21 to 2010-09-27	Varied	Varied	JD	Varied[a]
2017-09-27	9:15 a.m.–2:03 p.m.	CJA, KCD	JD, reconnaissance	70°F–78°F; 0% cc; 0–2 mph wind
2017-10-02	8:15 a.m.–4:20 p.m.	KCD, RM	VEG/JD	60°F–67°F; 0%–10% cc; 2–10 mph wind
2017-10-04	10:22 a.m.–3:03 p.m.	PCS, RM	VEG/JD	73°F–76°F; 0% cc; 0–1 mph wind
2017-10-06	8:15 a.m.–4:00 p.m.	RM	VEG/JD	55°F–68°F; 30%–40% cc; 2–4 mph wind
2017-10-16	8:06 a.m.–3:39 p.m.	CJA, MF, RM	VEG/JD	73°F–83°F; 0% cc; 0–8 mph wind
2017-10-17	8:42 a.m.–3:36 p.m.	CJA, MF, KCD, MO	VEG/JD	76°F–87°F; 40% cc; 0–5 mph wind
2017-10-18	7:35 a.m.–3:32 p.m.	KCD, MO, RM	VEG/JD	65°F–80°F; 0%–70% cc; 1–20 mph wind
2017-10-19	8:10 a.m.–3:20 p.m.	KCD, MO, RM	VEG/JD	53°F–70°F; 20%–30% cc; 2–22 mph wind
2017-10-24	9:22 a.m.–4:44 p.m.	CJA, KCD, OK, ME, MO	VEG/JD	80°F–82°F; 0% cc; 0–20 mph wind
2017-10-25	7:37 a.m.–3:30 p.m.	CJA, MF, KCD, MO	VEG/JD	70°F–85°F; 0% cc; 1–6 mph wind
2017-10-26	7:30 a.m.–3:02 p.m.	KCD, MO	VEG/JD	53°F–79°F; 0% cc; 1–10 mph wind
2018-07-10	7:30 a.m.–2:55 p.m.	LM, MF	JD	74°F–82°F; 100% cc; 0 mph wind
2018-07-12	7:45 a.m.–2:15 p.m.	LM	JD	74°F–88°F; 40%–100% cc; 1–5 mph wind
2018-07-17	7:20 a.m.–3:50 p.m.	MF, MO	JD	74°F–90°F; 70%–90% cc; 0–3 mph wind
2018-07-18	7:19 a.m.–3:59 p.m.	LM, MO	JD	74°F–88°F; 40%–90% cc; 0–5 mph wind
2018-07-24	7:25 a.m.–2:30 p.m.	MF, OK	JD	75°F–105°F; 0%–10% cc; 0–8 mph wind
2018-07-25	7:05 a.m.–3:29 p.m.	LM, MF	JD	83°F–103°F; 0%–30% cc; 0–3 mph wind
2018-07-26	7:30 a.m.–2:40 p.m.	BB, LM, MO, OK	JD	80°F–99°F; 0%–10% cc; 0–8 mph wind
2018-07-30	7:50 a.m.–2:45 p.m.	BM, MF, RM, SL	VEG/JD	80°F–96°F; 0% cc; 0–5 mph wind
2018-07-31	6:27 a.m.–2:20 p.m.	BM, SL	VEG/JD	70°F–95°F; 0%–50% cc; 5–10 mph wind
2018-08-01	6:31 a.m.–3:06 p.m.	BM, SL	VEG/JD	71°F–90°F; 0%–70% cc; 0–5 mph wind
2018-08-02	6:30 a.m.–2:19 p.m.	BM, SL	VEG/JD	67°F–90°F; 10%–30% cc; 0–10 mph wind
2018-08-03	6:19 a.m.–2:34 p.m.	BM	VEG/JD	70°F–90°F; 0%–10% cc; 3–10 mph wind
2018-08-06	6:30 a.m.–2:21 p.m.	BM	VEG/JD	72°F–101°F; 0% cc; 0–7 mph wind
2018-08-07	6:23 p.m.–2:30 p.m.	BM, SL	VEG/JD	66°F–101°F; 0%–10% cc; 0–10 mph wind
2018-08-08	6:00 a.m.–2:15 p.m.	BM, SL	VEG/JD	68°F–96°F; 0%–40% cc; 2–10 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2018-09-25	9:09 a.m.–4:07 p.m.	CA, PS	JD	81°F–85°F; 0% cc; 0–2 mph wind
2018-10-05	9:06 a.m.–5:07 p.m.	CA, EB	JD	68°F–73°F; 0%–30% cc; 0–1 mph wind
Quino Checkerspot Butterfly Habitat Assessment and Focused Surveys				
2010-03-01 to 2012-09-20	Varied	AECOM	QCB habitat assessment	Varied[a]
2010-03-22 to 2010-05-20	Varied	AECOM	QCB focused surveys	Varied[a]
2018-03-12 to 2018-05-16	Varied	Dudek and subconsultants	QCB	Varied[c]
Arroyo Toad Surveys				
2010-04-25 to 2010-06-10	Varied	AECOM	ARTO	Varied[a]
Avian and Bat Field Surveys				
2010-03-30 to 2010-06-04	Varied	AECOM	2010 eagle aerial nest searches	Varied[a]
2011-02-14 to 2011-05-11	Varied	AECOM	2011 eagle aerial nest searches	Varied[a]
2010-04-11 to 2010-05-08	Varied	AECOM	2010 ground-based nest search	Varied[a]
2011-04-16 to 2011-07-07	Varied	AECOM	2011 ground-based nest search	Varied[a]
2010-04-15 to 2011-04-15	Varied	AECOM	30-minute point counts	Varied[a]
2010-04-23 to 2010-10-15	Varied	AECOM	Bird area searches	Varied[a]
2012-05-07 to 2012-05-31	Varied	AECOM	All-day point counts	Varied[a]
2010-05-13 to 2011-05-03	Varied	AECOM	Bat roost site/ hibernacula searches and acoustic monitoring at potential roosting/ foraging areas	Varied[a]
2017-09-08	9:49 a.m.–5:58 p.m.	MF, SC	Avian point count (30-minute interval)	78°F–84.6°F; 20%–70% cc; 0–3 mph wind
2017-09-14	7:23 a.m.–4:57 p.m.	KS	Avian point count (30-minute interval)	53°F–67°F; 0% cc; 7–20 mph wind
2017-09-22	11:03 a.m.–5:44 p.m.	SC	Avian point count (30-minute interval)	55.4°F–61.6°F; 0%–10% cc; 1–9 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2017-09-25	7:27 a.m.–2:13 p.m.	KS	Avian point count (30-minute interval)	55°F–75°F; 30%–10% cc; 0–5 mph wind
2017-10-02	8:29 a.m.–3:15 p.m.	KS	Avian point count (30-minute interval)	57°F–74°F; 0% cc; 0–13 mph wind
2017-10-02	3:21 p.m.–3:27 p.m.	AC	Eagle counts	69°F–77°F; 0%–10% cc; 0–10 mph wind
2017-10-03	8:00 a.m.–4:00 p.m.	SCA, AC	Eagle counts	52.4°F–71.2°F; 0%–80% cc; 2–9 mph wind
2017-10-04	8:00 a.m.–2:00 p.m.	MF, SCA, AC	Eagle counts	64°F–81°F; 0% cc; 0–8 mph wind
2017-10-05	10:00 a.m.–4:00 p.m.	SCA	Eagle counts	76.4°F–85.8°F; 0% cc; 1–8 mph wind
2017-10-09	8:20 a.m.–6:01 p.m.	KS, SC, DS	Avian point count (30-minute interval)	60°F–62.1°F; 0% cc; 4–5 mph wind
2017-10-09	8:06 a.m.–3:00 p.m.	SCA, MP	Eagle counts	62.1°F–71.3°F; 0% cc; 14–24 mph wind
2017-10-10	8:17 a.m.–2:21 p.m.	KS, DS, AB, DM	Avian point count (30-minute interval)	64°F–73°F; 0% cc; 3–5 mph wind
2017-10-10	7:00 a.m.–3:30 p.m.	MP, DB	Raptor survey	NR
2017-10-10	8:00 a.m.–3:00 p.m.	AB, SCA, AC	Eagle counts	63°F–83°F; 0% cc; 3–5.1 mph wind
2017-10-11	7:48 a.m.–2:15 p.m.	KS	Avian point count (30-minute interval)	64°F–76°F; 10% cc; 0–5 mph wind
2017-10-11	7:40 a.m.–3:30 p.m.	AC, SCA	Eagle counts	65°F–81°F; 10% cc; 0–16 mph wind
2017-10-12	8:28 a.m.–2:54 p.m.	SCA, MF, AB, AC	Eagle counts	69.2–76.5°F; 0% cc; 0–12 mph wind
2017-10-16	9:30 a.m.–5:04 p.m.	SC	Avian point count (30-minute interval)	79.8–81°F; 0% cc; 0–8 mph wind
2017-10-16	7:56 a.m.–2:58 p.m.	SCA, AC	Eagle counts	75.4°F–89.6°F; 10% cc; 5–12 mph wind
2017-10-17	8:22 a.m.–2:22 p.m.	KS, OK	Avian point count (30-minute interval)	73°F–88°F; 40%–50% cc; 0–7 mph wind
2017-10-17	8:19 a.m.–2:51 p.m.	FH	Eagle counts	76°F–88°F; 40%–70% cc; 1.5–6.8 mph wind
2017-10-18	7:57 a.m.–1:33 p.m.	SC	Avian point count (30-minute interval)	71.3°F–88.7°F; 20%–60% cc; 0–13 mph wind
2017-10-18	7:56 a.m.–2:59 p.m.	MP, SCA, FH	Eagle counts	67.3°F–82.6°F; 20%–70% cc; 0–20 mph wind
2017-10-19	7:45 a.m.–2:54 p.m.	KS	Avian point count (30-minute interval)	60°F–73°F; 30%–70% cc; 0–5 mph wind
2017-10-19	8:08 a.m.–2:47 p.m.	FH, SCA, MP	Eagle counts	62.2°F–75°F; 20%–90% cc; 1.2–12.7 mph wind
2017-10-20	8:12 a.m.–2:57 p.m.	SCA, FH, MP	Eagle counts	53.6°F–57.9°F; 80%–100% cc; 8–17 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2017-10-23	7:48 a.m.–1:40 p.m.	SC	Avian point count (30-minute interval)	73.6°F–86.4°F; 0% cc; 5–11 mph wind
2017-10-23	7:47 a.m.–2:58 p.m.	SCA, RS	Eagle counts	73.2°F–90.1°F; 0% cc; 12–13 mph wind
2017-10-24	8:47 a.m.–1:35 p.m.	SC	Avian point count (30-minute interval)	75°F–80°F; 0% cc; 10–35 mph wind
2017-10-24	8:01 a.m.–3:08 p.m.	FH, SV, MP	Eagle counts	71°F–85°F; 0%–10% cc; 7.8–14.8 mph wind
2017-10-25	8:00 a.m.–3:00 p.m.	RS, FH	Eagle counts	69°F–84°F; 0% cc; 9–15 mph wind
2017-10-26	8:12 a.m.–2:54 p.m.	FH, SCA, RS	Eagle counts	70.3°F–87.5°F; 0% cc; 2.3–10.2 mph wind
2017-10-27	7:59 a.m.–2:07 p.m.	MF	Avian point count (30-minute interval)	67°F–86°F; 0% cc; 1–3 mph wind
2017-10-27	8:53 a.m.–2:51 p.m.	FH, SCA	Eagle counts	77.2°F–90°F; 0% cc; 1.4–4.5 mph wind
2017-10-30	7:35 a.m.–2:16 p.m.	KS, OK	Avian point count (30-minute interval)	46°F–64°F; 0–10% cc; 0–15 mph wind
2017-10-30	7:04 a.m.–3:12 p.m.	MO, MF, SCA, MP	Eagle counts	50°F–61°F; 10–100% cc; 0–20 mph wind
2017-10-31	7:37 a.m.–1:11 p.m.	KS	Avian point count (30-minute interval)	49°F–61°F; 100% cc; 2–3 mph wind
2017-10-31	7:35 a.m.–3:13 p.m.	MO, MF	Eagle counts	52°F–60°F; 90%–100% cc; 2–8 mph wind
2017-11-01	7:35 a.m.–1:40 p.m.	KS, SC	Avian point count (30-minute interval)	47°F–66°F; 0%–40% cc; 0–11 mph wind
2017-11-01	7:58 a.m.–3:00 p.m.	MF, SCA	Eagle counts	48°F–65°F; 0%–10% cc; 0–7 mph wind
2017-11-03	7:36 a.m.–3:12 p.m.	MO, SCA, RS	Eagle counts	42°F–65°F; 30%–100% cc; 0–4 mph wind
2017-11-06	6:40 a.m.–1:28 p.m.	KS, OK	Avian point count (30-minute interval)	54°F64°F; 10%–80% cc; 2–5 mph wind
2017-11-06	07:54 a.m.–15:03 p.m.	RS, SC	Eagle counts	46°F–64°F; 10%–100% cc; 5–20 mph wind
2017-11-07	7:40 a.m.–12:07 p.m.	KS, SC, OK	Avian point count (30-minute interval)	56°F–63.1°F; 90%–100% cc; 0–6 mph wind
2017-11-07	8:00 a.m.–3:16 p.m.	RS, SCA	Eagle counts	56°F–64°F; 100% cc; 2–10 mph wind
2017-11-08	8:16 a.m.–3:13 p.m.	BD, SC, OK	Avian point count (30-minute interval)	49°F–64°F; 80%–90% cc; 4–7 mph wind
2017-11-08	7:18 a.m.–3:10 p.m.	MO, DM, RS	Eagle counts	51°F–69°F; 70%–100% cc; 0–12 mph wind
2017-11-09	7:41 a.m.–3:08 p.m.	MO, SCA, DM, MF	Eagle counts	48°F–67°F; 0% cc; 0–10 mph wind
2017-11-13	7:27 a.m.–1:09 p.m.	KS	Avian point count (30-minute interval)	60°F–76°F; 80%–90% cc; 0–4 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2017-11-13	8:02 a.m.–3:03 p.m.	RS, KCD, SCA	Eagle counts	60°F–72°F; 50%–100% cc; 0–12 mph wind
2017-11-14	7:42 a.m.–1:28 p.m.	SC, OK	Avian point count (30-minute interval)	64.1°F–79.3°F; 30% cc; 0–6 mph wind
2017-11-14	8:01 a.m.–3:01 p.m.	RS, MF, SCA	Eagle counts	63°F–76°F; 60%–90% cc; 2–12 mph wind
2017-11-15	7:50 a.m.–12:01 p.m.	KS, OK	Avian point count (30-minute interval)	67°F–79°F; 80% cc; 0–2 mph wind
2017-11-15	8:00 a.m.–3:00 p.m.	MF, SCA, RS	Eagle counts	68°F–79°F; 40%–90% cc; 0–5 mph wind
2017-11-16	7:49 a.m.–1:53 p.m.	KS, MF	Avian point count (30-minute interval)	70°F–76°F; 20%–40% cc; 0–5 mph wind
2017-11-16	8:01 a.m.–2:56 p.m.	SCA, SC	Eagle counts	74.2°F–75.7°F; 40%–50% cc; 2–12 mph wind
2017-11-17	8:30 a.m.–2:55 p.m.	RS, SCA	Eagle counts	61°F–60°F; 80%–90% cc; 8–20 mph wind
2017-11-20	7:59 a.m.–3:03 p.m.	KS, SC, OK	Avian point count (30-minute interval)	61°F–73°F; 20%–30% cc; 0–8 mph wind
2017-11-20	8:20 a.m.–2:10 p.m.	KP, DM, FH	Eagle counts	68°F–74°F; 40%–70% cc; 2–15 mph wind
2017-11-21	8:18 a.m.–1:08 p.m.	KS, SC, OK	Avian point count (30-minute interval)	68°F–78°F; 10% cc; 3–5 mph wind
2017-11-21	11:04 a.m.–3:00 p.m.	MO, DM, SCA	Eagle counts	77°F–74°F; 10%–20% cc; 2–10 mph wind
2017-11-22	8:01 a.m.–3:10 p.m.	DM, SCA	Eagle counts	64°F–76°F; 0% cc; 4–20 mph wind
2017-11-27	8:28 a.m.–1:40 p.m.	KS, MF, SC, OK	Avian point count (30-minute interval)	52°F–60°F; 70%–100% cc; 2–5 mph wind
2017-11-27	8:43 a.m.–2:57 p.m.	MO	Eagle counts	49°F–51°F; 60%–90% cc; 0–25 mph wind
2017-11-28	7:48 a.m.–12:53 p.m.	DM, OK, KS, MF	Avian point count (30-minute interval)	54°F–60°F; 40%–80% cc; 6–8 mph wind
2017-11-28	7:55 a.m.–3:00 p.m.	RS	Eagle counts	54°F–59°F; 50%–100% cc; 9–15 mph wind
2017-11-29	7:45 a.m.–3:13 p.m.	MO, KP, CJA	Eagle counts	53°F–58°F; 90% cc; 2–30 mph wind
2017-11-30	8:31 a.m.–3:00 p.m.	RS, KP, DM	Eagle counts	59°F–65°F; 100% cc; 6–1 mph wind
2017-12-01	9:15 a.m.–3:00 p.m.	KP	Eagle counts	69°F–72°F; 10% cc; 2–7 mph wind
2017-12-05	8:00 a.m.–2:36 p.m.	DM, OK	Avian point count (30-minute interval)	44°F–53°F; 20% cc; 25–30 mph wind
2017-12-06	8:12 a.m.–12:16 p.m.	DM, MF, OK	Avian point count (30-minute interval)	48°F–50°F; 0%–10% cc; 3–20 mph wind
2017-12-07	7:16 a.m.–1:41 p.m.	MF	Avian point count (30-minute interval)	48°F–56°F; 0% cc; 5–15 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2017-12-11	8:24 a.m.–12:05 p.m.	MF, OK	Avian point count (30-minute interval)	61°F–66°F; 0% cc; 1–3 mph wind
2017-12-14	7:41 a.m.–1:44 p.m.	MF, OK	Avian point count (30-minute interval)	57°F–62°F; 0%–10% cc; 3–20 mph wind
2017-12-19	7:29 a.m.–1:43 p.m.	MF, OK	Avian point count (30-minute interval)	50°F–68°F; 0% cc; 0–4 mph wind
2017-12-20	7:33 a.m.–12:33 p.m.	MF, OK	Avian point count (30-minute interval)	43°F–59°F; 10%–20% cc; 0–3 mph wind
2017-12-21	7:55 a.m.–2:32 p.m.	MF, OK	Avian point count (30-minute interval)	37°F–48°F; 0% cc; 2–5 mph wind
2017-12-26	8:14 a.m.–1:06 p.m.	KS	Avian point count (30-minute interval)	61°F–66°F; 40%–80% cc; 0–3 mph wind
2017-12-27	7:55 a.m.–11:43 a.m.	OK	Avian point count (30-minute interval)	55°F–71°F; 10% cc; 2–6 mph wind
2017-12-28	8:00 a.m.–1:43 p.m.	SC	Avian point count (30-minute interval)	61°F–75°F; 0% cc; 0–10 mph wind
2017-12-29	7:28 a.m.–2:35 p.m.	OK	Avian point count (30-minute interval)	52°F–78°F; 0% cc; 0–2 mph wind
2018-01-02	8:07 a.m.–4:00 p.m.	KS, SC	Avian point count (30-minute interval)	62°F–67°F; 10% cc; 2–8 mph wind
2018-01-03	7:43 a.m.–12:15 p.m.	MF	Avian point count (30-minute interval)	60°F–61°F; 100% cc; 1–4 mph wind
2018-01-04	7:48 a.m.–1:55 p.m.	MF	Avian point count (30-minute interval)	60°F–69°F; 0% cc; 0–3 mph wind
2018-02-09	8:18 a.m.–5:00 p.m.	BD	Avian point count (30-minute interval)	50°F–74°F; 0%–50% cc; 0–0 mph wind
2018-07-11	7:53 a.m.–12:58 p.m.	MF, SCA	Avian point count (30-minute interval)	80°F–79.3°F; 10%–90% cc; 0–11 mph wind
2018-07-13	7:26 a.m.–12:49 p.m.	SCA	Avian point count (30-minute interval)	80.9°F–84.1°F; 10%–40% cc; 0–15 mph wind
2018-07-18	7:33 a.m.–1:34 p.m.	SCA	Avian point count (30-minute interval)	76.5°F–86.9°F; 50%–80% cc; 3–17 mph wind
2018-07-19	8:51 a.m.–2:03 p.m.	SC	Avian point count (30-minute interval)	82°F–92°F; 0%–40% cc; 5–15 mph wind
2018-07-20	7:59 a.m.–12:20 p.m.	KS	Avian point count (30-minute interval)	76°F–90°F; 0%–10% cc; 0–7 mph wind
2018-07-23	7:34 a.m.–1:01 p.m.	SCA	Avian point count (30-minute interval)	73°F–102.1°F; 0%–20% cc; 0–2 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2018-07-24	7:43 a.m.–1:55 p.m.	KS	Avian point count (30-minute interval)	90°F–106°F; 10% cc; 0–5 mph wind
2018-07-25	8:00 a.m.–12:48 p.m.	SCA	Avian point count (30-minute interval)	90.5°F–98.2°F; 0%–40% cc; 3–18 mph wind
2018-07-31	6:46 a.m.–12:43 p.m.	SCA	Avian point count (30-minute interval)	79.7°F–100.2°F; 20%–70% cc; 0–13 mph wind
2018-08-01	8:28 a.m.–12:35 p.m.	KS	Avian point count (30-minute interval)	80°F–93°F; 0%–80% cc; 0–17 mph wind
2018-08-03	6:46 a.m.–1:30 p.m.	OK	Avian point count (30-minute interval)	67°F–91°F; 0% cc; 0–15 mph wind
2018-08-07	7:03 a.m.–11:07 a.m.	KS	Avian point count (30-minute interval)	85°F–100°F; 0% cc; 0–4 mph wind
2018-08-08	6:39 a.m.–11:40 a.m.	SCA	Avian point count (30-minute interval)	74.9°F–93.9°F; 10%–20% cc; 1–4 mph wind
2018-08-09	6:43 a.m.–12:45 p.m.	SCA	Avian point count (30-minute interval)	75.7°F–91.7°F; 10–50% cc; 2–11 mph wind
2018-08-09	6:25 a.m.–8:15 p.m.	AC	Avian point count (30-minute interval)	75°F–84°F; 10%–20% cc; 2–6 mph wind
2018-08-13	6:52 a.m.–1:14 p.m.	OK, SCA	Avian point count (30-minute interval)	62°F–86°F; 0%–10% cc; 3–6 mph wind
2018-08-14	6:34 a.m.–11:29 a.m.	SCA, AC	Avian point count (30-minute interval)	61.2°F–81°F; 0%–10% cc; 1–7 mph wind
2018-08-20	6:55 a.m.–11:17 a.m.	SCA, KS	Avian point count (30-minute interval)	71.3°F–84.9°F; 20%–50% cc; 1–12 mph wind
2018-08-21	6:44 a.m.–12:04 p.m.	SCA, AC	Avian point count (30-minute interval)	68.3°F–87.2°F; 10%–20% cc; 1–12 mph wind
2018-08-27	6:45 a.m.–11:18 a.m.	OK	Avian point count (30-minute interval)	60°F–79°F; 0%–30% cc; 2–9 mph wind
2018-08-28	6:46 a.m.–10:31 a.m.	SCA	Avian point count (30-minute interval)	65.1°F–77.9°F; 20%–40% cc; 2–13 mph wind
2018-08-29	6:28 a.m.–12:11 p.m.	SCA	Avian point count (30-minute interval)	61°F–89.2°F; 20%–40% cc; 0–9 mph wind
2018-08-30	6:48 a.m.–11:16 a.m.	KS	Avian point count (30-minute interval)	70°F–92°F; 0%–10% cc; 0–3 mph wind
2018-09-04	9:05 a.m.–1:52 p.m.	SCA	Avian point count (30-minute interval)	79.2°F–83.8°F; 10% cc; 5–18 mph wind
2018-09-05	7:44 a.m.–11:53 a.m.	SCA	Avian point count (30-minute interval)	73.4°F–88°F; 0% cc; 1–4 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2018-09-06	7:33 a.m.–12:14 p.m.	OK	Avian point count (30-minute interval)	70°F–83°F; 0% cc; 0–7 mph wind
2018-09-07	7:53 a.m.–1:20 p.m.	KS	Avian point count (30-minute interval)	81°F–96°F; 10% cc; 0–4 mph wind
2018-09-11	7:34 a.m.–12:2 p.m.	SCA	Avian point count (30-minute interval)	70°F–91.3°F; 0% cc; 1–5 mph wind
2018-09-12	7:44 a.m.–12:52 p.m.	SCA	Avian point count (30-minute interval)	70.5°F–86.2°F; 0% cc; 1–20 mph wind
2018-09-13	7:40 a.m.–11:44 a.m.	OK	Avian point count (30-minute interval)	68°F–83°F; 0% cc; 6 mph wind
2018-09-14	7:42 a.m.–1:18 p.m.	OK	Avian point count (30-minute interval)	72°F–91°F; 0% cc; 0–13 mph wind
2018-09-17	7:52 a.m.–11:50 a.m.	SCA	Avian point count (30-minute interval)	72°F–84.2°F; 10% cc; 1–9 mph wind
2018-09-18	7:35 a.m.–10:47 a.m.	SCA	Avian point count (30-minute interval)	69.2°F–85.8°F; 0% cc; 1–5 mph wind
2018-09-20	7:37 a.m.–1:40 p.m.	OK	Avian point count (30-minute interval)	69°F–83°F; 0–30% cc; 6–7 mph wind
2018-09-21	7:35 a.m.–1:04 p.m.	SCA	Avian point count (30-minute interval)	74.1°F–91.5°F; 0–40% cc; 2–10 mph wind
2018-09-24	7:57 a.m.–12:27 p.m.	OK	Avian point count (30-minute interval)	66°F–79°F; 0% cc; 0–16 mph wind
2018-09-25	7:34 a.m.–12:00 p.m.	SC	Avian point count (30-minute interval)	64°F–84°F; 0% cc; 0–13 mph wind
2018-09-27	7:28 a.m.–1:07 p.m.	MF	Avian point count (30-minute interval)	73°F–95°F; 0% cc; 0–2 mph wind
2018-09-28	8:12 a.m.–2:29 p.m.	SC	Avian point count (30-minute interval)	78°F–90°F; 0% cc; 3–17 mph wind
2018-10-01	7:34 a.m.–12:03 p.m.	SC	Avian point count (30-minute interval)	72°F–73°F; 80–100% cc; 0–20 mph wind
2018-10-02	8:26 a.m.–1:46 p.m.	SC	Avian point count (30-minute interval)	64°F–70°F; 90%–100% cc; 0–10 mph wind
2018-10-02	8:08 a.m.–3:50 p.m.	FH	Eagle counts	64°F–67°F; 100% cc; 2–11 mph wind
2018-10-03	9:04 a.m.–2:24 p.m.	KS	Avian point count (30-minute interval)	64°F–73°F; 30%–90% cc; 1–12 mph wind
2018-10-03	8:21 a.m.–3:00 p.m.	RS, FH	Eagle counts	60°F–76°F; 20%–80% cc; 2–9 mph wind
2018-10-04	8:06 a.m.–12:18 p.m.	MF	Avian point count (30-minute interval)	54°F–61°F; 60%–70% cc; 2–3 mph wind
2018-10-04	9:13 a.m.–3:00 p.m.	RS, FH	Eagle counts	55°F–66°F; 30%–90% cc; 3–13 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2018-10-05	7:54 a.m.–3:54 p.m.	FH	Eagle counts	55°F–74°F; 10% cc; 2–8 mph wind
2018-10-06	8:30 a.m.–4:05 p.m.	DM, FH	Eagle counts	52°F–65°F; 20%–60% cc; 5–19 mph wind
2018-10-08	8:07 a.m.–2:58 p.m.	RS, FH	Eagle counts	62°F–74°F; 0%–60% cc; 1–21 mph wind
2018-10-09	8:12 a.m.–2:25 p.m.	SC	Avian point count (30-minute interval)	65°F–74°F; 0% cc; 0–9 mph wind
2018-10-09	8:30 a.m.–2:49 p.m.	RS, FH	Eagle counts	65°F–84°F; 0% cc; 1–3 mph wind
2018-10-10	7:49 a.m.–12:11 p.m.	KS	Avian point count (30-minute interval)	55°F–76°F; 0%–10% cc; 0–5 mph wind
2018-10-10	8:03 a.m.–4:00 p.m.	RS, PL	Eagle counts	62°F–63°F; 0% cc; 0–16 mph wind
2018-10-11	9:02 a.m.–2:45 p.m.	KS	Avian point count (30-minute interval)	52°F–71°F; 10%–90% cc; 3–5 mph wind
2018-10-11	8:04 a.m.–4:05 p.m.	RS, OK	Eagle counts	53°F–72°F; 10%–100% cc; 2–3 mph wind
2018-10-12	8:27 a.m.–12:08 p.m.	SC	Avian point count (30-minute interval)	55°F–66°F; 20%–60% cc; 7–20 mph wind
2018-10-12	8:00 a.m.–4:00 p.m.	RS, OK, PL	Eagle counts	60°F–71°F; 10% cc; 8–21 mph wind
2018-10-15	8:01 a.m.–12:35 p.m.	SC	Avian point count (30-minute interval)	57°F–62°F; 10% cc; 8–30 mph wind
2018-10-15	8:22 a.m.–3:53 p.m.	RS, OK, FH	Eagle counts	53°F–54°F; 0%–10% cc; 10–30 mph wind
2018-10-16	8:31 a.m.–2:45 p.m.	SC	Avian point count (30-minute interval)	59°F–70°F; 0% cc; 5–15 mph wind
2018-10-16	8:07 a.m.–3:58 p.m.	OK, FH	Eagle counts	54°F–61°F; 0% cc; 13–16 mph wind
2018-10-17	7:46 a.m.–1:53 p.m.	OK	Avian point count (30 minute interval)	50°F–66°F; 0% cc; 3–5 mph wind
2018-10-17	8:00 a.m.–4:00 p.m.	KS, MF, FH	Eagle counts	54°F–64°F; 0% cc; 1–25 mph wind
2018-10-18	7:47 a.m.–11:13 a.m.	OK	Avian point count (30-minute interval)	57°F–68°F; 0% cc; 3–15 mph wind
2018-10-18	7:21 a.m.–3:30 p.m.	FH, MF	Eagle counts	57°F–67°F; 0% cc; 9–26 mph wind
2018-10-19	8:38 a.m.–3:10 p.m.	OK	Avian point count (30-minute interval)	65°F–70°F; 0% cc; 3–20 mph wind
2018-10-19	7:30 a.m.–3:58 p.m.	FH	Eagle counts	63°F–66°F; 0% cc; 14–25 mph wind
2018-10-22	8:20 a.m.–3:52 p.m.	RS, FH, SC	Eagle counts	72°F–75°F; 0%–100% cc; 0–1 mph wind
2018-10-23	8:14 a.m.–12:21 p.m.	KS, SC	Avian point count (30-minute interval)	64°F–75°F; 0%–30% cc; 3–17 mph wind
2018-10-23	8:13 a.m.–4:00 p.m.	RS, FH	Eagle counts	65°F–75°F; 0% cc; 0–5 mph wind
2018-10-24	8:02 a.m.–4:00 p.m.	RS, FH, PL	Eagle counts	68°F–84°F; 0%–10% cc; 0–3 mph wind
2018-10-25	7:30 a.m.–11:38 a.m.	OK	Avian point count (30-minute interval)	56°F–80°F; 0% cc; 0–3 mph wind

Table 2a
Schedule of Surveys – On Reservation

Date	Hours	Personnel	Focus	Conditions
2018-10-26	7:31 a.m.–12:25 p.m.	MF	Avian point count (30-minute interval)	62°F–76°F; 0% cc; 0–8 mph wind
2018-10-26	8:35 a.m.–3:45 p.m.	RS, FH	Eagle counts	74°F–76°F; 0% cc; 7–14 mph wind
2018-10-29	8:10 a.m.–3:00 p.m.	FH, RS, OK	Eagle counts	62–75°F; 70%–80% cc; 3–13 mph wind
Riparian Birds				
2010-04-23 to 2010-07-16	Varied	AECOM	LBVI	Varied[a]
2010-05-27 to 2010-07-16	Varied	AECOM	SWFL	Varied[a]

Personnel: AB = Abby Bergsma; AC = Alex Chaney; BB = Bryon Bigrigg; BD = Ben Delancey; BM = Brynne Mulrooney; CJA = Callie Amoaku; DB = Durk Batey; DM = Dilip Mahto; FH = Fern Hoffman; KCD = Kathleen Dayton; KP = Kim Parsons; LM = Lindsy Mobley; ME = Megan Enright; MF = Mackenzie Forgey; MO = Monique O'Conner; MP = Marshall Paymard; OK = Olivia Koziel; PCS = Patricia Schuyler; PL = Paul Lemons; RM = Randall McInvale; RS = Rachael Smith; SC = Shana Carey; SCA = Susan Carlton; SL = Shelley Lawrence; SV = Shane Valiere.
Survey Designations/Focus: RP = rare plant surveys; VEG = vegetation mapping; JD = jurisdictional delineation; QCB = Quino checkerspot butterfly; ARTO = arroyo toad; LBVI = least Bell's vireo; SWFL = southwestern willow flycatcher.
Notes: °F = degrees Fahrenheit; cc = cloud cover; mph = miles per hour.

[a] AECOM 2012.
[b] The schedule for the 2011 focused Quino checkerspot butterfly surveys is included in Appendix B-2, 2011 Focused Quino Checkerspot Butterfly Survey for the Jewell Valley Wind Project, San Diego County, California.
[c] The schedule for the 2018 focused Quino checkerspot butterfly surveys is included in Appendix C-1, 2018 Focused Quino Checkerspot Butterfly Survey Report for the Campo Wind Project, Campo, San Diego County, California.

3.2.1.1 Vegetation Community and Land Cover Mapping

Vegetation communities and existing land uses within the Project Site were mapped in the field using a GIS application or directly onto a 200-foot-scale (1 inch = 200 feet) aerial photograph–based field map of the study area. Following completion of the fieldwork, vegetation polygons were transferred to a topographic base and digitized using ArcGIS. Once in ArcGIS, the acreage of each vegetation community and land cover present within the study area was determined. Vegetation community classifications used in this report follow Holland (1986) and Oberbauer et al. (2008).

3.2.1.2 Plants and Wildlife

Plant species encountered during the field surveys were identified and recorded. Latin and common names for plant species with a California Rare Plant Rank (formerly California Native Plant Society List) follow the California Native Plant Society's Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2018). For plant species without a California Rare Plant Rank, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2018), and common

names follow the U.S. Department of Agriculture's Natural Resources Conservation Service PLANTS Database (USDA 2018a).

Wildlife species observed or detected during the field surveys were recorded. In addition to species actually detected, expected wildlife use of the study area was determined based on known habitat preferences of local species and knowledge of their relative distributions in the area. Latin and common names of animals follow Crother (2012) for reptiles and amphibians, the American Ornithological Society for birds (AOS 2017), the North American Butterfly Association for butterflies (NABA 2016), and Wilson and Reeder (2005) for mammals.

3.2.2 Off-Reservation

The following surveys for the Off-Reservation portion of the Project were conducted by Dudek between 2017 and 2019:

- Spring season rare plant surveys (two seasons)
- Late season rare plant surveys with a focus on Tecate tarplant (*Deinandra floribunda*) (two seasons)
- Laguna Mountain skipper (*Pyrgus ruralis lagunae*) habitat assessments (specific search for host plant Cleveland's horkelia (*Horkelia clevelandii*))
- Quino checkerspot (*Euphydryas editha quino*) habitat assessments and focused surveys
- Vegetation mapping
- Golden eagle (*Aquila chrysaetos*) habitat assessment
- Bird utilization counts and small bird counts
- Raptor surveys
- Least Bell's vireo (*Vireo bellii pusillus*) southwestern willow flycatcher (*Empidonax traillii extimus*) habitat assessment and focused surveys
- Peninsular bighorn sheep (*Ovis canadensis nelsoni*) focused surveys
- Jurisdictional delineation

Table 2b lists the dates, conditions, and survey focus for each survey performed.

Table 2b
Schedule of Surveys – Off Reservation

Date	Hours	Personnel	Focus	Conditions
Vegetation Mapping and Jurisdictional Delineation				
2018-06-06	8:20 a.m.–6:12 p.m.	EJB	VEG	75°F–76°F
2018-06-07	9:15 a.m.–4:51 p.m.	EJB, MF	VEG	75°F–84°F; 0% cc; 0–5 mph wind
2018-06-08	10:16 a.m.–4:30 p.m.	LM	VEG	70°F–80°F; 0% cc; 1–3 mph wind
2018-06-11	6:19 a.m.–7:07 p.m.	EJB	VEG	66°F–77°F; 0–60% cc; 0–2 mph wind
2018-06-12	7:04 a.m.–3:28 p.m.	EJB	VEG	64°F–82°F; 0% cc; 0–1 mph wind
2018-06-20	8:56 a.m.–4:57 p.m.	CJA, PCS	JD	82°F–90°F; 0% cc; 0–2 mph wind
2018-07-03	7:40 a.m.–2:18 p.m.	CJA, JM, LM, PCS	JD	80°F–87°F; 0% cc; 0–1 mph wind
2018-07-05	8:00 a.m.–2:13 p.m.	CJA, MF	JD	87°F–97°F; 0% cc; 0–1 mph wind
2018-09-06	6:28 a.m.–5:07 p.m.	EJB	VEG, JD	57°F–80°F; 0%-100% cc; 0–8 mph wind
Rare Plant Survey				
2017-05-11	10:14 a.m.–12:00 p.m.	EJB	RP	Air Temp: 73°F–76°F; Ground Temp: 77°F; 0% cc; 0–1 mph wind; clear
2017-05-17	9:11 a.m.–5:27 p.m.	EJB, JW, ME	RP	59°F–66°F; 80%–100% cc; 0–3 mph wind
2017-05-18	8:19 a.m.–4:12 a.m.	EJB, JM, JW, ME, SCG	RP	59°F–76°F; 0% cc; 0–3 mph wind
2017-05-19	8:18 a.m.–2:18 p.m.	EJB, ME, SCG	RP	60°F–78°F; 0%–90% cc; 0–3 mph wind
2017-07-17	7:50 a.m.–2:35 p.m.	EJB, KCD	RP	77°F–96°F; 0%–30% cc; 1–10 mph wind
2017-07-18	6:50 a.m.–1:00 p.m.	EJB, MO	RP	71°F–91°F; 0%–10% cc; 0–3 mph wind
2017-07-21	6:43 a.m.–12:30 p.m.	EJB, KCD	RP	62°F–95°F; 0% cc; 1–5 mph wind
2017-07-26	6:11 a.m.–11:42 a.m.	EJB	RP	55°F–89°F; 0%–20% cc; 0–3 mph wind
2017-07-27	6:20 a.m.–11:30 a.m.	EJB, KCD	RP	68°F–91°F; 0%–10% cc; 0–2 mph wind
2018-05-08	7:00 a.m.–5:04 p.m.	EJB	RP	62°F–78°F; 0%–20% cc; 0–1 mph wind
2018-05-10	6:44 a.m.–6:18 p.m.	EJB	RP	60°F–87°F; 0%–100% cc; 0–1 mph wind
2018-05-11	7:21 a.m.–4:14 p.m.	EJB	RP	65°F–70°F; 0%–40% cc; 0–1 mph wind
2018-05-12	7:41 a.m.–5:28 p.m.	EJB	RP	61°F–67°F; 0%–70% cc; 0–1 mph wind
2018-05-13	8:38 a.m.–5:49 p.m.	EJB	RP	67°F–70°F; 10% cc; 0–2 mph wind
2018-05-15	7:32 a.m.–5:34 p.m.	EJB	RP	60°F–71°F; 0%–40% cc; 0–1 mph wind
2018-05-16	8:44 a.m.–4:20 p.m.	EJB, LM	RP	67°F–74°F; 20%–30% cc; 0–1 mph wind
2018-05-17	8:23 a.m.–4:17 p.m.	EJB, LM	RP	64°F–69°F; 50%–70% cc; 0–3 mph wind
2018-05-18	7:43 a.m.–2:02 p.m.	EJB, MF	RP	68°F–75°F; 10%–20% cc; 0–2 mph wind
2018-05-24	8:03 a.m.–5:10 p.m.	EJB, MF	RP	65°F–75°F; 0% cc; 0–2 mph wind
2018-05-25	8:14 a.m.–1:58 p.m.	EJB, LM	RP	71°F–78°F

Table 2b
Schedule of Surveys – Off Reservation

Date	Hours	Personnel	Focus	Conditions
2018-06-01	7:49 a.m.–5:19 p.m.	EJB, LM	RP	69°F–74°F; 0%–60% cc; 0–1 mph wind
2018-08-01	7:09 a.m.–3:07 p.m.	EJB	RP	68°F–95°F; 0%–10% cc; 0–2 mph wind
2018-08-02	9:06 a.m.–3:58 p.m.	EJB	RP	75°F–105°F; 0%–20% cc; 0–4 mph wind
2018-08-03	7:49 a.m.–3:56 p.m.	EJB	RP	75°F–108°F; 0%–10% cc; 0–4 mph wind
Quino Checkerspot Butterfly Habitat Assessment and Focused Surveys				
2011-03-11 to 2011-04-10	Varied	Dudek and subconsultants	QCB	Varied[a]
2018-02-16 to 2018-04-06	Varied	Dudek and subconsultants	QCB	Varied[b]
Bird Utilization Counts and Small Bird Counts				
2018-05-15	10:10 a.m.–5:52 p.m.	FH	Eagle counts	71°F–77°F; 0%–10% cc; 0–25 mph wind
2018-05-16	9:05 a.m.–5:03 p.m.	FH	Eagle counts	71°F–83°F; 0% cc; 4–26 mph wind
2018-05-17	8:23 a.m.–4:18 p.m.	FH	Eagle counts	60°F–75°F; 0% cc; 4–25 mph wind
2018-05-21	8:20 a.m.–4:14 p.m.	FH	Eagle counts	56°F–75°F; 0%–20% cc; 3–21 mph wind
2018-05-22	8:13 a.m.–4:14 p.m.	FH	Eagle counts	62°F–85°F; 0%–10% cc; 0–15 mph wind
2018-05-23	8:18 a.m.–4:04 p.m.	FH	Eagle counts	73°F–78°F; 0%–10% cc; 1–14 mph wind
2018-05-31	6:32 a.m.–12:43 p.m.	KS	Small bird count	54°F–76°F; 0%–40% cc; 0–30 mph wind
2018-06-01	7:55 a.m.–3:50 p.m.	AC	Eagle counts	68°F–80°F; 0% cc; 4–16 mph wind
2018-06-04	8:14 a.m.–4:21 p.m.	FH	Eagle counts	84°F–97°F; 10%–20% cc; 1–12 mph wind
2018-06-07	6:20 a.m.–12:32 p.m.	KS	Small bird count	53°F–84°F; 0% cc; 0–22 mph wind
2018-06-07	8:50 a.m.–5:18 p.m.	FH	Eagle counts	74°F–78°F; 0% cc; 3–19 mph wind
2018-06-08	8:00 a.m.–4:00 p.m.	SC	Eagle counts	74°F–91°F; 0% cc; 5–15 mph wind
2018-06-11	8:45 a.m.–4:06 p.m.	FH	Eagle counts	74°F–86°F; 0%–10% cc; 1–14 mph wind
2018-06-12	9:45 a.m.–5:45 p.m.	FH	Small bird count	83°F–94°F; 10%–30% cc; 1–15 mph wind
2018-06-13	8:24 a.m.–4:00 p.m.	FH	Eagle counts	81°F–91°F; 10%–20% cc; 2–18 mph wind
2018-06-18	8:40 a.m.–4:31 p.m.	FH	Eagle counts	63°F–88°F; 0% cc; 2–13 mph wind
2018-06-19	9:30 a.m.–5:17 p.m.	FH	Small bird count	80°F–89°F; 0% cc; 0–11 mph wind
2018-06-20	8:40 a.m.–4:46 p.m.	FH	Eagle counts	76°F–95°F; 10% cc; 4–17 mph wind
2018-06-21	8:30 a.m.–4:31 p.m.	FH	Eagle counts	75°F–94°F; 10% cc; 2–15 mph wind
2018-06-25	8:45 a.m.–4:10 p.m.	FH	Eagle counts	79°F–93°F; 0% cc; 2–15 mph wind
2018-06-26	9:25 a.m.–4:40 p.m.	FH	Small bird count	84°F–95°F; 0% cc; 2–17 mph wind
2018-06-27	8:30 a.m.–4:35 p.m.	FH	Eagle counts	73°F–90°F; 0% cc; 6–23 mph wind
2018-06-28	8:13 a.m.–4:29 p.m.	FH	Eagle counts	76°F–87°F; 0% cc; 2–27 mph wind

Table 2b
Schedule of Surveys – Off Reservation

Date	Hours	Personnel	Focus	Conditions
2018-07-02	7:20 a.m.–1:10 p.m.	SC	Small bird count	68°F–94°F; 0%–20% cc; 2–19 mph wind
2018-07-12	6:55 a.m.–12:45 p.m.	KS	Small bird count	70°F–87°F; 0%–30% cc; 0–10 mph wind
2018-07-16	9:53 a.m.–3:46 p.m.	RM, OK	Small bird count	88.5°F–95°F; 10%–90% cc; 0–8 mph wind
2018-07-26	9:30 a.m.–3:50 p.m.	FH	Small bird count	93°F–96°F; 0%–40% cc; 1–14 mph wind
2018-08-03	11:28 a.m.–5:47 p.m.	FH	Small bird count	88°F–98°F; 10% cc; 8–12 mph wind
2018-08-09	11:15 a.m.–5:20 p.m.	FH	Small bird count	84°F–88°F; 50%–90% cc; 3–9 mph wind
2018-09-05	12:00 p.m.–7:00 p.m.	FH	Small bird count	74°F–84°F; 10% cc; 2–3 mph wind
2018-09-11	11:00 a.m.–6:12 p.m.	FH	Small bird count	74°F–84°F; 0% cc; 2–14 mph wind
2018-09-18	8:00 a.m.–2:04 p.m.	KS	Small bird count	77°F–90°F; 0% cc; 1–8 mph wind
2018-09-27	8:06 a.m.–2:45 p.m.	SC	Small bird count	65°F–92°F; 0% cc; 0–9 mph wind
2018-10-02	8:00 a.m.–4:00 p.m.	PL	Eagle counts	64°F–73°F; 50%–90% cc; 1–16 mph wind
2018-10-04	8:02 a.m.–4:00 p.m.	PL	Eagle counts	58°F–70°F; 70%–90% cc; 2–18 mph wind
2018-10-05	8:00 a.m.–4:00 p.m.	PL	Eagle counts	55°F–70°F; 40%–90% cc; 1–15 mph wind
2018-10-10	8:09 a.m.–4:00 p.m.	FH	Eagle counts	57°F–67°F; 10% cc; 4–22 mph wind
2018-10-11	8:08 a.m.–3:56 p.m.	FH	Eagle counts	54°F–60°F; 10% cc; 9–15 mph wind
2018-10-11	8:08 a.m.–3:45 p.m.	SC	Small bird count	55°F–71°F; 20%–50% cc; 6–17 mph wind
2018-10-17	7:58 a.m.–3:57 p.m.	PL	Eagle counts	56°F–59°F; 0% cc; 2–17 mph wind
2018-10-18	8:00 a.m.–4:00 p.m.	KS	Eagle counts	56°F–63°F; 0% cc; 8–25 mph wind
2018-10-25	8:38 a.m.–2:40 p.m.	MF	Small bird count	68°F–79°F; 0%–30% cc; 0–4 mph wind
2018-10-26	7:50 a.m.–3:50 p.m.	PL	Eagle counts	58°F–75°F; 0%–10% cc; 1–12 mph wind
2018-10-31	8:00 a.m.–4:00 p.m.	KS	Eagle counts	52°F–66°F; 0%–10% cc; 7–18 mph wind
2018-11-02	7:56 a.m.–2:44 p.m.	SC	Small bird count	67.5°F–70.1°F; 0% cc; 1–8.1 mph wind
2018-11-06	8:15 a.m.–4:15 p.m.	PL	Eagle counts	63°F–73°F; 0%–10% cc; 1–8 mph wind
2018-11-07	8:10 a.m.–3:05 p.m.	SC	Small bird count	70.6°F–76.3°F; 0% cc; 1–10.3 mph wind
2018-11-12	9:08 a.m.–3:25 p.m.	OK	Small bird count	50°F–55°F; 0% cc; 10–23 mph wind
2018-11-16	7:40 a.m.–3:42 p.m.	PL	Eagle counts	54°F–65°F; 0%–10% cc; 3–10 mph wind
2018-11-20	7:02 a.m.–12:16 p.m.	KS	Small bird count	48°F–62°F; 0%–30% cc; 0–4 mph wind
2018-11-27	7:41 a.m.–3:43 p.m.	PL	Eagle counts	50°F–64°F; 0%–10% cc; 0–7 mph wind
2018-11-28	8:00 a.m.–4:00 p.m.	SV	Eagle counts	55°F–57°F; 0%–10% cc; 0–17 mph wind
2018-11-28	9:10 a.m.–3:23 p.m.	OK	Small bird count	58°F–61°F; 0%–10% cc; 10–16 mph wind
2018-12-08	8:33 a.m.–2:46 p.m.	OK	Small bird count	51°F–55°F; 0% cc; 2–13 mph wind
2018-12-14	8:56 a.m.–3:29 p.m.	OK	Small bird count	53°F–55°F; 0%–30% cc; 1–2 mph wind

Table 2b
Schedule of Surveys – Off Reservation

Date	Hours	Personnel	Focus	Conditions
Riparian Bird Surveys				
2018-05-19 through 2018-07-28	Varied	Varied	LBVI and SWFL	Varied[c]
Peninsular Bighorn Sheep Survey				
2018-07-23	7:45 a.m.–11:45 a.m.	KS, SC	Peninsular bighorn sheep	70°F–95°F; 0%–10% cc; 2–7 mph wind
2018-07-26	6:00 a.m.–12:00 p.m.	KS, SC	Peninsular bighorn sheep	64°F–95°F; 0% cc; 0–5 mph wind
Bat Surveys				
2011-09-27 through 2012-06-19	Varied	Varied	Acoustic bat surveys	Varied

Personnel: AC = Alex Chaney; CJA = Callie Amoaku; EJB = Erin Bergman; FH = Fern Hoffman; JM = Jake Marcon; JW = Janice Wondolleck; KCD = Kathleen Dayton; KS = Kevin Shaw; LM = Lindsy Mobley; ME = Megan Enright; MF = Mackenzie Forgey; MO = Monique O'Conner; OK = Olivia Koziel; PCS = Patricia Schuyler; PL = Paul Lemons; RM = Randall McInvale; SC = Shana Carey; SCG = Scott Gressard; SV = Shane Valiere.
Survey Designations/Focus: RP = rare plant surveys; VEG = vegetation mapping; JD = jurisdictional delineation; QCB = Quino checkerspot butterfly; LBVI = least Bell's vireo; SWFL = southwestern willow flycatcher.
Notes: °F = degrees Fahrenheit; cc = cloud cover; mph = miles per hour.

3.3 Focused Surveys for Candidate, Proposed, or Listed Species under ESA and/or Federally Regulated Resources

3.3.1 Federally Listed Plants

There are no federally listed plants with a potential to occur within the Project Site. Focused special-status plant surveys were not conducted on the Reservation, but they were conducted in the Off-Reservation portion of the Project to support the CEQA analysis not included in this report. As a preliminary step, Dudek has reviewed the physical characteristics of the Project Site (including biology, geography, elevation, vegetation, soils, etc.), other projects near the Project Site, and the CNDDB and California Native Plant Society records to compile a list of federally-listed or candidate species with potential to occur on site. Special-status plants with potential to occur that have been recorded within the Campo, Cameron Corners, Live Oak Springs, and Tierra Del Sol USGS quadrangles and surrounding quadrangles (CNPS 2018; CDFW 2018d) include only one federally-listed plant: San Bernardino blue grass (*Poa atropurpurea*). San Bernardino blue grass is a federally endangered plant that typically blooms May to July (or sometimes April to August) and occurs in mesic meadows and seeps (CNPS 2018). No critical habitat for San Bernardino blue grass occurs in the Project Site, and the nearest record for this species is

approximately 10 miles north of the Project Site, with all other occurrences farther north (USFWS 2018; CDFW 2018d). Since the Project Site is outside the known range for the species and there is no suitable habitat for this species in the Project Site, focused surveys were not conducted for special-status plants. In addition, AECOM conducted rare plant surveys in areas that overlap the Project Site and also determined that there are no federally listed plant species with a potential to occur in the Project Site.

3.3.2 Jurisdictional Waters and Wetlands Delineation Surveys

Dudek biologists and subconsultants conducted a formal jurisdictional delineation for the Project Site from September through October 2017 and again in July through October 2018. The delineations were conducted in accordance with the methods prescribed in the 1987 Wetland Delineation Manual (ACOE 1987), the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (ACOE 2008a), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (ACOE 2008b). The information required to process an approved jurisdictional determination in accordance with the Clean Water Rule was gathered for the Project Site. During the jurisdictional delineation surveys, the Project Site was walked and evaluated for evidence of an OHWM, surface water, saturation, wetland vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations. Jurisdictional features were mapped using either the Esri Collector mobile application or a GPS unit.

Pursuant to the CWA, ACOE wetland waters include those supporting all three wetlands criteria described in the ACOE Manual: hydric soils, hydrology, and hydrophytic vegetation.

3.3.3 Quino Checkerspot Butterfly Surveys

3.3.3.1 2010 AECOM Quino Checkerspot Butterfly Habitat Assessment and Protocol Surveys

In 2010, AECOM biologists completed a site habitat assessment in accordance with the 2002 Quino Checkerspot Butterfly Survey Protocol (USFWS 2002) to determine presence or absence of the species and identify potential Quino checkerspot butterfly resources (i.e., suitable habitat and potential host plants) (Figure 2, 2010 Quino Checkerspot Butterfly Survey Area). The 2010 USFWS protocol surveys conducted by AECOM overlapped with a large portion (63%) of the current study area. In accordance with the then-current USFWS 2002 survey protocol for the Quino checkerspot butterfly, the initial habitat assessment conducted by permitted biologists in March

2010 identified approximately 1,806 acres (731 hectares) that required adult USFWS protocol surveys (referred to as "Quino survey area") within what AECOM described as the "biological study area" (BSA).

Following the initial habitat assessment, USFWS protocol surveys were conducted by permitted Quino checkerspot butterfly biologists to determine presence or absence of the species within the "Quino survey area" (see Figure 2). The "Quino survey area" was expanded by 516 acres (209 hectares) after additional suitable open habitat within chaparral and scrub communities was discovered. Therefore, the "Quino survey area" increased to approximately 2,322 acres (940 hectares). Detailed survey methods and results can be found in the Quino checkerspot butterfly report submitted to USFWS (Appendix B-1).

3.3.3.2 2011 Protocol Surveys

The 2011 focused Quino checkerspot butterfly surveys were performed for a different proposed project (Jewell Valley Wind Project) and different project applicant (Figure 3, 2011 Quino Checkerspot Butterfly Survey Area – Boulder Brush). The survey areas were developed based on discussions with the previous project applicant that identified potential areas on site that would likely be most suitable for development. Portions of these focused surveys overlap with the current Project Site.

Focused Quino checkerspot butterfly surveys were conducted over five visits within a 5-week period between March 9 and April 15, 2011. Surveys were conducted by Quino checkerspot butterfly-permitted biologists Anita Hayworth (TE-781084), Brock Ortega (TE-813545-5), David Waller (TE-025394-2), Jeffrey Priest (TE-840619-2), Kamarul Muri (TE-051250-0), Paul Lemons (TE-051248-2), Tricia Wotipka (TE840619-2), Vipul Joshi (TE-019949-0), and Viviane Marquez (TE-800930-9) in accordance with the most current USFWS protocol for that period (USFWS 2002; 67 FR 18355–18395).

The site was divided into five survey polygons, each representing a single-day survey effort (i.e., in accordance with USFWS protocol) (Figure 3). These survey areas were numbered and assigned to Dudek's permitted biologists. The biologists were provided with 200-scale (1 inch = 200 feet) aerial photographs of each survey polygon. These photographs were used for mapping host plant populations. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species. GPS units also were available for recording locations of host plant populations.

The survey methods consisted of slowly walking roughly parallel transects throughout all potential habitat within the survey area (i.e., all areas that are not excluded per the survey protocol, generally including sage scrub, open chaparral, grasslands, open or sparsely vegetated areas, hilltops,

ridgelines, rocky outcrops, trails, and dirt roads). Survey routes were arranged to thoroughly cover the survey area at a rate of no more than 10–15 acres per hour.

Surveys were conducted only during acceptable weather conditions (i.e., surveys were not conducted during fog, drizzle, or rain; sustained winds greater than 15 miles per hour measured 4–6 feet above ground level; temperature in the shade at ground level less than 60°F on a clear, sunny day; or temperature in the shade at ground level less than 70°F on an overcast or cloudy day). Survey times, personnel, and conditions during the Quino checkerspot butterfly survey are provided in the 45-day report in Appendix B-2, 2011 Focused Quino Checkerspot Butterfly Survey for the Jewell Valley Wind Project, San Diego County, California.

3.3.3.3 2018 Quino Checkerspot Butterfly Habitat Assessment and Protocol Surveys

Dudek biologists conducted a site habitat assessment for Quino checkerspot butterfly in 2018 per the Quino survey guidelines published on December 15, 2014 (USFWS 2014). Prior to the focused surveys, Dudek biologists conducted a habitat assessment within the study area to identify suitable habitat and exclude unsuitable habitat. Excluded areas consisted of developed areas and densely vegetated chaparral with tall shrubs forming closed canopies. Host plant surveys were performed in concert with the habitat assessment and augmented during the survey effort.

Focused Quino checkerspot butterfly surveys were conducted over 10 visits between March 3, 2018, and May 15, 2018, per the Quino checkerspot butterfly survey guidelines published on December 15, 2014 (USFWS 2014).[1] The survey area consisted of suitable habitat for Quino checkerspot butterfly (Figure 4, 2018 Quino Checkerspot Butterfly Survey Areas). Surveys were conducted by Quino checkerspot butterfly-permitted biologists Anita Hayworth (TE-781084-9.1), Brock Ortega (TE-813545-6), Callie Amoaku (TE-36118B-1), Erin Bergman (TE-813545-5), Darin Busby (initially working under Melissa Busby's permit until permit renewal of TE-115373-4), Melissa Busby (TE-0807792-3), David Erik LaCoste (TE-027736-6), Paul Lemons (TE-051248-5), Margie Mulligan (TE-88969B-0), Jeffrey Priest (TE-840619-6), Diana Saucedo (TE-221287-1), Patricia Schuyler (TE-27502B-1), and Tricia Wotipka (working under TE-840619-6).

The biologists were provided with 200-scale (1 inch = 200 feet) aerial maps of the survey area. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species.

[1] Only nine passes were completed at survey area 1 due to weather-related survey cancellations. These weather-related delays were discussed with USFWS staff, who provided permission to edit the survey timing to better match climatic conditions at this higher-elevation site.

Surveys also focused on identifying Quino checkerspot butterfly host plants; however, only dried host plants in 2017 were observed. Therefore, no host plants were mapped during surveys in 2018.

The survey methods consisted of slowly walking roughly parallel transects spaced approximately 30 feet (10 meters) apart throughout all suitable habitats within the study area. The Project site was divided into 10 survey areas, ranging from 62 to 82 acres (Figures 2–6, Survey Results, of Appendix C-1, and Figures 1–3 of Appendix C-2). Survey routes were arranged to thoroughly cover the survey area at a rate of no more than 5 to 10 acres per person-hour.

Surveys were conducted only during acceptable weather conditions (i.e., surveys were not conducted during fog, drizzle, or rain; winds greater than 15 mph measured 4 to 6 feet above ground level for more than 30 seconds; temperature in the shade at ground level less than 60°F on a clear, sunny day; or temperature in the shade at ground level less than 70°F on an overcast or cloudy day). Survey times, personnel, and conditions during the Quino checkerspot butterfly survey are shown in Table 1 of the focused survey report provided in Appendices C-1 and C-2.

Additional focused Quino checkerspot butterfly surveys are currently being conducted on the Off-Reservation portion of the Project Site (Boulder Brush Corridor).

3.3.4 Arroyo Toad Surveys

AECOM biologists conducted USFWS protocol surveys for arroyo toad (*Anaxyrus californicus*) in 2010. Prior to surveys, an arroyo toad habitat assessment was conducted to determine the extent of potentially suitable habitat within the 2010 BSA. Based on the habitat assessment, four areas within the 2010 BSA were found to support potentially suitable arroyo toad breeding and aestivating habitat (state of dormancy somewhat similar to hibernation to prevent dehydration during hot or dry times of the year), totaling approximately 3 acres. No arroyo toads were observed during the 2010 focused surveys. The 2010 habitat assessment and focused survey concluded that the BSA supports moderate habitat for arroyo toad due to the presence of sandy stream channel substrates, flat sandy terraces adjacent to stream channels, and a watercourse of braided channels in some locations (AECOM 2012). However, most of these habitat components were minimally represented, and the suitable drainages that do occur are isolated from known arroyo toad populations in the region (AECOM 2012). The closest known arroyo toad occurrences are located approximately 5.5 miles west of the study area in the Cottonwood Creek area (USFWS 2018). There are no records of arroyo toad east of this location (USFWS 2018; CDFW 2018a), and the closest watersheds supporting arroyo toad are the Morena Reservoir–Cottonwood Creek (HUC 180703050103) and Kitchen Creek–Cottonwood Creek (HUC 180703050102) watersheds, approximately 11 miles west and 26 miles south of the Project, respectively. There is one record at the southern edge of the Bell Valley–Campo Creek watershed (HUC 180703050303) in Campo

Creek near the Mexico border approximately 10 miles downstream from the Reservation boundary (USFWS 2018). Dispersal distances for arroyo toad are estimated at 2 miles (USFWS 1999). Therefore, arroyo toad is not expected to occur within the previous or current Project Site.

Additionally, the four suitable areas surveyed in 2010 are located outside of the current Project Site. Due to the low potential for arroyo toads to occur based on limited habitat, lack of records in nearby watersheds, and the negative surveys from 2010 conducted nearby, it was determined that updated protocol surveys were not required for the current Project.

The Off-Reservation portion of the Project Site lacks suitable habitat for this species, such as perennial or intermittent stream channels; therefore, no focused surveys were conducted.

3.3.5 Riparian Bird Surveys

3.3.5.1 2010 USFWS Protocol Surveys

AECOM conducted USFWS protocol surveys for least Bell's vireo in April through July 2010. Per the current USFWS survey protocol for the species, qualified biologists conducted eight surveys separated by at least 10 days each during the breeding season from April 10 through July 31, 2010, following the initial habitat assessment (USFWS 2001). USFWS protocol surveys were completed between dawn and 11:00 a.m. and involved walking through suitable habitat and stopping frequently to listen and look for the species. Data recorded during each survey included date of survey, survey number, time, weather conditions, field biologists, and all wildlife species observed.

Permitted biologists conducted USFWS protocol surveys for southwestern willow flycatcher following the currently accepted USFWS survey protocol for the species (Sogge et al. 2010). Per the USFWS survey protocol, one survey is to be made between May 15 and May 31, two surveys between June 1 and 24, and two surveys between June 25 and July 17. USFWS protocol surveys were separated by at least 5 days and conducted between dawn and 11 a.m. Surveys involved walking through suitable habitat and stopping frequently to look and listen for the species. If individuals were not observed after a few minutes of passive observation, a tape of recorded southwestern willow flycatcher vocalizations was used to induce southwestern willow flycatcher responses in the immediate vicinity. Data recorded during each survey included date of survey, survey number, time, weather conditions, field biologists, and all wildlife species observed. Detailed survey methods and results can be found in the focused survey report submitted to USFWS (Appendix D-1).

Based on the low potential to occur, prior negative surveys within the Reservation Boundary in 2010 and the Boulder Brush Boundary in 2018, and the long distance to the closest known record of the species (approximately 25 miles for southwestern willow flycatcher and 6 miles for least

Bell's vireo), updated surveys were not performed in 2018. However, pre-construction surveys for nesting birds (including neotropical riparian species) will be conducted to verify that neither least Bell's vireo nor southwestern willow flycatcher are breeding in the Project Site.

3.3.5.2 2018 Riparian Bird Survey Area

Suitable habitat areas within and surrounding the Boulder Brush Corridor were surveyed eight times for vireo and five times for flycatcher (Figure 5, Riparian Bird Survey Area and Acoustical Bat Survey). Focused surveys for these species were initiated on May 19, 2018, and continued through July 28, 2018. The survey report is provided in Appendix D-2, 2018 Least Bell's Vireo and Southwestern Willow Flycatcher Focused Survey Report for the Torrey Wind Project, Boulevard, San Diego County, California. Surveys for least Bell's vireo and flycatcher were not conducted concurrently. Due to differences in detectability, surveys were conducted sequentially, with surveys for the flycatcher first (i.e., first thing in the morning) and surveys for the vireo conducted immediately after flycatcher surveys. Additionally, for linear survey routes within a riparian corridor, flycatchers were surveyed from the starting point to the end, and vireos were surveyed on the way back. All surveys consisted of slowly walking a methodical, meandering transect within and adjacent to all riparian habitat on site. The perimeter also was surveyed. This route was arranged to cover all suitable habitat on site. A vegetation map (1:2,400 scale; 1 inch = 200 feet) of the biological study area was available to record any detected vireo or flycatcher. Binoculars were used to aid in detecting and identifying wildlife species.

The five surveys conducted for flycatcher followed the currently accepted protocol (Sogge et al. 2010), which states that a minimum of five survey visits is needed to evaluate a project's effects on flycatchers. The protocol recommends one survey between May 15 and 31, two surveys between June 1 and June 24, and two surveys between June 25 and July 17. Consistent with the protocol, surveys during the final period (June 25 and July 17) were separated by at least 5 days. A tape of recorded flycatcher vocalizations was used, approximately every 50 to 100 feet within suitable habitat, to induce flycatcher responses. If flycatcher were detected, tape playback ceased immediately to avoid harassment.

In concurrence with the accepted Least Bell's Vireo Survey Guidelines (USFWS 2001), eight focused surveys were conducted by qualified Dudek biologist within all riparian areas and any other potential vireo habitats between April 10 and July 31, 2018. The site visits were conducted at least 10 days apart to maximize the detection of early and late arrivals, females, non-vocal birds, and nesting pairs. Taped playback of vireo vocalizations was not used during the surveys. Surveys were conducted between dawn and noon and were not conducted during periods of excessive or abnormal cold, heat, wind, rain, or other inclement weather.

3.3.6 Golden Eagle Aerial and Ground Nest Searches

3.3.6.1 2010–2011 Aerial-Based Nest Searches and Monitoring

In 2010 and again in 2011, aerial nest searches for eagles were conducted to inventory eagle nests within an approximately 10-mile (16-kilometer) radius of the 2010 BSA identified in the AECOM biological resources technical report (AECOM 2012). These surveys were conducted via helicopter in 2010 by Bloom Biological and WRI on behalf of the Project as described in the AECOM report, and in 2011 by the San Diego Zoo Institute for Conservation Research and WRI. Per USFWS-recommended methods (USFWS 2010, 2011), eagle aerial nest searches were conducted in all suitable habitat within an approximately 10-mile (16-kilometer) radius from the Eagle Project Footprint[2] (Figure 6, 2010 and 2011 Eagle Nest Surveys (see Appendix A)). The 10-mile (16-kilometer) radius from the Eagle Project Footprint extends into northern Baja California, Mexico; searches of the Mexico portion of the survey area were conducted on June 4, 2010, by WRI and on May 4, 2011, by the San Diego Zoo Institute for Conservation Research.

In the U.S. portion of the survey area, searches were conducted between February and June 2010 and 2011, when resident eagles are actively nesting. Aerial nest searches were conducted in accordance with low-disturbance protocols described in the USFWS Interim Golden Eagle Inventory and Monitoring Protocols (USFWS 2010) and Draft Eagle Conservation Plan Guidance (USFWS 2011). Each aerial nest search was conducted using one helicopter with at least two raptor specialists on board. Raptor specialists had at least three field seasons of experience conducting helicopter-borne raptor surveys around cliff ecosystems. The helicopter was flown systematically over all suitable eagle nesting habitat such as cliffs, transmission towers, large trees, and known nest locations within the survey area. Nests of other raptor species were also recorded. The following data were collected during the golden eagle aerial nest searches:

- Unique identification number;
- Name of observer(s);
- Date and time of observation;
- Location (GPS coordinates and plotted on an aerial photograph);
- Species and age class;
- Status of the nest (e.g., active (nesting behavior/sign observed) or inactive (nesting behavior/sign not observed));

[2] The "Eagle Project Footprint" is defined as the minimum convex polygon that encompasses the 2010 Project components, plus a 328-foot (100-meter) radius (USFWS 2011).

- Number of eggs or young present;
- Nest substrate (e.g., tree species, cliff face);
- Nest elevation;
- Weather during observation;
- Detailed notes on nesting chronology (incubation behavior, hatch date, fledge date, date nesting failure first observed/or confirmed, number of young present at each visit at greater than 51 days of age); and
- A photograph with the nest location indicated.

3.3.6.2 2010–2011 Ground-Based Nest Searches and Monitoring

Ground-based nest searches were conducted by Bloom Biological from April through July 2010 and 2011 throughout the Reservation to inventory raptor nests that are not typically visible from the air. After raptor nest inventory was completed (via aerial and ground-based searches), active raptor nests (all species) within the Reservation boundary were revisited to document and monitor nesting status and success. The data collected for each nest location and/or raptor observation was the same as listed above for the aerial nest searches, with emphasis on documenting nesting chronology and habitat associations. Raptor nests were classified as either active-failed (nest was used in that calendar year, but did not fledge any chicks), active-fledged (nest was used that calendar year and fledged at least one chick), inactive (no refurbishment of historic nest; nest was not used in that calendar year), or unknown (it could not be determined if the nest had been active that calendar year). In 2011, raptor chicks in nests found within the Reservation were banded to the extent feasible in an effort to further understand nest success and local demographics, and to allow for individual identification should carcasses be recovered during post-construction monitoring.

3.3.6.3 2017–2019 Eagle Point Counts

Surveys were conducted within the study area from October through December 2017, and in January 2018 to present (Figure 7, 2018 Eagle Point Count Surveys). These surveys follow the techniques outlined in the USFWS Land-Based Wind Energy Guidelines (USFWS 2012) and the California Guidelines (CEC and CDFG 2007). Surveys are performed from observation points on ridgelines or hilltops selected to provide the best visual coverage of the Project site with unobstructed views of the surrounding areas. The USFWS guidelines (USFWS 2012) recommend at least 30% of the area within a 0.62-mile (1-kilometer) radius of potential wind turbine locations be covered or sampled by point counts (USFWS 2012) (see Figure 7). Surveys are conducted between 0800 and 1600 hours, or as close to those hours as possible given Tribal constraints. Surveys are performed during the spring and fall periods and included three surveys each week at each point. Weather conditions (time, temperature,

maximum and minimum wind speeds, wind direction, cloud cover, and visibility) are collected at the beginning, ending, and each hour of the survey. The following data are recorded for each golden eagle and/or raptor (not including corvids):

- Unique identification number
- Name of observers
- Date and time of observation
- Species
- Number of individuals, sex, and age class
- Detection type (visual or auditory)
- Location of initial detection (distance/direction from observer and plotted on aerial imagery)
- Behaviors observed (soaring, flapping, circling, hunting, perching, territorial, and/or other)
- Duration of observation
- Flight heights above the ground at initial detection, maximum, and minimum heights
- Flight path and direction (plotted on aerial imagery)

The data collected during these surveys (e.g., species occurrence, basic site use) are intended to support potential future agency coordination.

3.3.7 Bat Surveys

3.3.7.1 2010–2011 Bat Surveys

Bat surveys conducted in 2010 and 2011 included surveys to identify and passively monitor potential roost sites/hibernacula, and passive monitoring of bat activity across the BSA. Bat specialists conducted roost site/hibernacula (hibernation sites) surveys to identify potential bat roost sites and hibernacula within the BSA and immediate vicinity. Prior to leading field surveys, an initial habitat assessment was conducted to review vegetation mapping and topography that would be suitable for roosting and hibernation sites within rock outcrops, caves, abandoned mines, potentially suitable tree roots, and foraging areas in the 2010 BSA and immediate vicinity (AECOM 2012).

Following an initial habitat assessment, roost site/hibernacula searches identified potential sites that could support high densities of individuals (e.g., maternal roost sites) to assist in characterizing bat use of the BSA and immediate vicinity. Sites searched by biologists that potentially support individuals include abandoned buildings, occupied buildings, railroad trestles, cliff edges, tree snags, underground bunkers, culverts, boulder crevices, and highway overpasses for potential roost

sites and hibernacula. Urine stains or guano identified during the searches were indicators of past and/or present roosting. Visual inspections for urine stains at potential roosting locations were performed using infrared lighting. The presence of guano or urine staining did not necessarily indicate that bats are currently using a roost site, but did inform the suitability assessment of the potential roost site.

Two potential roosting and/or foraging areas were identified within the BSA and immediate vicinity. Bat use at these sites was passively monitored using AnaBat SD1 ultrasonic detectors (Titley Electronics Pty Ltd., NSW, Australia). One detector was placed at a pond in the central portion of the Reservation for two nights in May 2010. Bat species often frequent ponds due to high concentrations of insect prey and to drink (Lauber 1968, as cited in AECOM 2012). A second detector was placed within oak woodland habitat at the south end of the Reservation for two nights in May 2011. Bat species may roost or forage within and around oak woodland habitats (Stokes 2011 pers. comm., as cited in AECOM 2012).

Signals were recorded onto a high-speed CompactFlash disk (SanDisk 2 to 4 GB or equivalent) in each SD1 unit. Recorded data were analyzed using AnalookW, a software program that generates and date/timestamps time-frequency spectrograms of each signal. Bat species were identified by visually comparing each spectrogram of bat echolocation calls to a library of spectrograms of known bat species.

Identification of bat species based on echolocation calls relied on analysis of a number of call parameters, including base frequency, call shape (slope as measured in octaves per second and overall pattern), pattern of calls within a sequence, inter-pulse interval, and call duration (Pierson et al. 2006, as cited in AECOM 2012). Due to identification constraints, only those spectrograms that could be reliably matched to the spectrograms of known species were identified to the species level. Some species are readily distinguished from other taxa based on particular combinations of call characteristics. While all species produce sequences that are diagnostic, a large percentage of calls cannot be assigned to a species unless the animal has also been visually observed. Spectrograms that were indistinguishable within a group of species were assigned to a frequency category for that group (e.g., 50 kilohertz for California myotis (*Myotis californicus*) and Yuma myotis (*M. yumanensis*), and 40 kilohertz for small-footed myotis (*M. ciliolabrum*) and long-legged myotis (*M. volans*)).

Bat use across the BSA was passively monitored from May 2010 to May 2011 using 12 AnaBat SD1 ultrasonic detectors. Two AnaBat detectors were attached to each of the six temporary meteorological towers located within the BSA. The microphones of each AnaBat detector were enclosed in a bat-hat (a protective PVC shroud; EME Systems, Berkeley, California) and attached to the tower at two heights. An AnaBat microphone was attached to each tower at approximately 190 feet (58 meters)

above ground level, a height selected to optimize recording of bat activity within the rotor-swept zone of wind turbines. An AnaBat microphone was also attached to each tower at a height just above the canopy level of the surrounding vegetation (approximately 16 to 33 feet (5 to 10 meters) above ground level). Each microphone was attached to the SD1 receivers via shielded cabling wrapped and taped around each tower. The two receivers at each tower were housed in a weatherproof enclosure attached to the base of the tower. Both receivers were powered by a single solar panel connected to a voltage regulator and 12-volt battery (also housed in the enclosure).

Each AnaBat receiver located at the six temporary meteorological towers was programmed to record ultrasonic signals from approximately sunset to sunrise every day for 1 year. Signals were recorded onto a high-speed CompactFlash disk located in each SD1 unit. These data were transferred biweekly to a computer and analyzed using AnalookW. Each spectrogram of bat echolocation calls was visually compared to a library of spectrograms of known bat species to determine, where possible, species identity.

The impacts analysis for this report relied on the data collected for and documented in the 2012 AECOM report.

3.3.7.2 2011–2012 Bat Surveys

Dudek conducted passive acoustic bat surveys from September 2011 to September 2012 to determine general bat presence, activity levels, and species composition in proposed turbine areas. Dudek used broadband acoustic detectors (AnaBat SD2) that are programmed to record bat calls each day from one half-hour before sunset to one half-hour after sunrise each day of the study.

Dudek attached two bat echolocation microphones to two different meteorological towers on a Project site immediately east of the study area. While this survey was not completed within the On-Reservation portion of the study area, the towers were approximately 1 and 3 miles from the study area within similar vegetation communities and topography represented in the study area. Therefore, the data provides information that can be applied to the surrounding areas. The location of the Off-Reservation survey is shown on Figure 5. One microphone was mounted approximately 15 feet from the ground (low mic) while the second microphone was mounted near the top of the tower, approximately 200 feet from the ground. The microphone enclosures are fitted with Plexiglas sound reflector plates positioned at 45 degrees below horizontal so that the angle of the call reception is pointed upward at 45 degrees. The AnaBat detector is powered by a 12-volt battery that is recharged daily by a 10-watt solar panel attached to the tower. The microphones were rotated between the two heights on a biweekly basis to ensure bat calls are recorded at different heights.

Identification of species used the methods of O'Farrell and Miller (1999) based on frequency characteristics, call shape, and comparison with a comprehensive library of vocal signatures developed by O'Farrell and Miller. An index of activity, or the magnitude of each species' contribution to spatial use, was obtained for the monitoring station using the sum of 1-minute time increments for which a species was detected as present divided by the number of nights of sampling (Miller 2001). The index of activity was multiplied by a factor of 100 to scale the smallest index values up to whole numbers and rounded to the nearest whole number for ease in interpreting the tables.

3.3.8 Peninsular Bighorn Sheep Surveys

Dudek performed a pedestrian transect survey in July 2018 in open habitats within and surrounding the Off-Reservation portion of the study area to search for Peninsular bighorn sheep sign, including tracks and pellets. This effort was concentrated on the more open northeastern and southwestern habitat on the portion of the Off-Reservation Project site on private lands and was not constrained to just the study area; instead, it focused on areas where there could be a potential for bighorn sheep to occur.

3.4 Survey Limitations

Focused wildlife surveys were conducted per the appropriate protocols, where required, which resulted in most wildlife surveys being conducted during the day. Birds represent the largest component of the vertebrate fauna. Because birds are active in the day, diurnal surveys maximized the number of observations of this portion of the fauna. Daytime surveys, however, may result in fewer observations of animals that are more active at night, such as mammals. Similarly, many species of reptiles and amphibians are nocturnal or cryptic in their habits and may be difficult to observe using standard meandering transects. Performance of diurnal surveys are standard practice, however, the 2010 arroyo toad surveys included nocturnal surveys, which allowed identification of amphibians and reptiles detectable in those habitat types.

4 EXISTING CONDITIONS

4.1 Project Site Description

The Project Area (composed of the Campo Corridor and Boulder Brush Corridor) is located in the inner-montane zone of southeastern San Diego County, west of a desert transition zone associated with the Sonoran Desert. Elevation within the entire Reservation ranges from 3,000 feet above mean sea level (amsl) to 4,450 feet amsl. Topography of the Reservation exhibits a range from moderate to steep ridges, to semiarid plateaus and valleys. The Project Area is in a desert transition zone, supporting desert and high desert habitats and vegetative communities. The Project Area is in the central area of the Peninsular Ranges geomorphic province. Altitude and relief generally decrease from east to west toward the Pacific Ocean. Seismicity is common throughout the Southern California region, with the San Andreas Fault located approximately 65 miles east-northeast near the Salton Sea. Although, areas like the Project Area appear to be relatively quiescent compared to nearby fault lines.

The Reservation supports large, intact expanses of relatively undisturbed habitats characteristic of the region. Dense chaparral covers much of the undeveloped portions of the Reservation, with oak woodlands and riparian habitats present along scattered canyons. A series of north–south-oriented ridges separated by the occasional broad valley or narrow drainages dominate the topography, and various large rock outcrops occur primarily along the ridgelines. Scattered, low-density commercial and residential developments are located within and adjacent to the Reservation. Other development features present include major transportation corridors (I-8 and State Route (SR) 94), asphalt and compacted earthen roads, trails, and fencing.

Drainage patterns on the Reservation vary greatly across topographic changes. Campo Creek flows in an east–west direction through the southern portion of the Reservation. There are numerous tributaries to Campo Creek, as well as seeps and springs on the Reservation. Surface water on the Reservation is not sufficient to support domestic uses; therefore, domestic water resources are solely from groundwater wells.

The Off-Reservation portion of the Project Area located on private land covers approximately 2, 000 acres consisting of private parcels in southeastern San Diego County, California (Figure 1, Project Location). This portion of the Project site is on private land in the McCain Valley area, north of the community of Boulevard, and is accessed via I-8 and Ribbonwood Road. The study area for the Boulder Brush facilities is 487.5 acres (a 100-foot buffer from each Project component).

This portion of the Off-Reservation Project Site lies between two major drainage divides: the Tecate Divide to the west, and the In-Ko-Pah Mountains to the east. It occurs within the Live Oak

Springs and Sombrero Peak USGS topographic quadrangles. The landscape consists of a mixture of large-lot rural residences and open space with mountainous terrain consisting of steep slopes, prominent ridgelines, and rock outcroppings. The terrain in the area ranges from valley bottoms to house-sized boulder-covered ridgelines. The elevation ranges across the study area from approximately 3,600 feet amsl to approximately 4,000 feet amsl. The U.S. Department of Agriculture Soil Survey mapped the study area as being underlain by the following soil types: Calpine coarse sandy loam, 5% to 9% slopes; La Posta loamy coarse sand, 5% to 30% slopes, eroded; La Posta rocky loamy coarse sand, 5% to 30% slopes, eroded; Loamy alluvial land; Mottsville loamy coarse sand, 2% to 9% slopes; and Tollhouse rocky coarse sandy loam, 5% to 30% slopes, eroded (USDA 2018b).

The Project Area is primarily undeveloped. A number of dirt roads and trails that provide access to each parcel crisscross this portion of the Project site. The area consists of private lands which have historically been used for recreational vehicle activity, including motocross, all-terrain vehicle use, and other recreational off-highway sporting use. This is a licensed use for the site and is expected to continue after Project construction. Portions of the Project Area have been, and continue to be, used for horseback riding, hiking, mountain biking, off-roading, motorcycling, and shooting. Existing land uses within the vicinity of the Project Area can be characterized as predominantly rural, large-lot ranches and single-family homes with a mixture of small-scale agriculture, recreational, and open space, with the exception of the Tule Wind Project, located on both Bureau of Land Management and County of San Diego lands. The 500 kV Sunrise Powerlink traverses the northern portion of the Project Area.

4.2 Vegetation Communities, Land Covers, and Floral Diversity

Twenty-four vegetation communities and land cover types were mapped by Dudek within the study area. Native vegetation communities within the Project Site include big sagebrush scrub (including disturbed), chamise chaparral, coast live oak woodland, emergent wetland, freshwater marsh, granitic chamise chaparral, granitic northern mixed chaparral, montane buckwheat scrub, mulefat scrub, non-native grassland, non-native grassland broadleaf-dominated, red shank chaparral, scrub oak chaparral, semi-desert chaparral, southern arroyo willow riparian forest, southern willow scrub, upper Sonoran subshrub scrub, valley sacaton grassland, and wildflower field. Developed, disturbed habitat, unvegetated channel, and eucalyptus woodland occur within the Project Site. These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008). The vegetation communities and land cover types listed above are summarized in Table 3 and further described below. Their spatial distributions are presented on the Figure 8 series (Existing Biological Resources; see Appendix A).

Table 3
Vegetation Communities and Land Cover Types in the Project Site

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code[a])	On-Reservation (Acres)	Off-Reservation (Acres)	Total (Acres)
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	80.5	14.6	95.1
	Urban/Developed (12000)	19.2	0.2	19.4
	Eucalyptus Woodland (79100)	—	1.2	1.2
	Disturbed and Developed Areas Subtotal[b]	*99.8*	*16.0*	*115.8*
Scrub and Chaparral (30000)	Montane Buckwheat Scrub (32800)	131.2	56.6	187.8
	Big Sagebrush Scrub (35210)	91.5	34.7	126.2
	Disturbed Big Sagebrush Scrub (35210)	0.3	—	0.3
	Granitic Northern Mixed Chaparral (37131)	233.5	172.6	406.1
	Chamise Chaparral (37200)	—	1.1	1.1
	Granitic Chamise Chaparral (37210)	1,240.3	11.5	1,251.8
	Red Shank Chaparral (37300)	116.8	95.1	211.9
	Semi-Desert Chaparral (37400)	-	45.5	45.5
	Scrub Oak Chaparral (37900)	46.6	—	46.6
	Upper Sonoran Subshrub Scrub (39000)	44.5	—	44.5
	Scrub and Chaparral Subtotal[b]	*1,904.6*	*417.0*	*2,321.6*
Grasslands, Vernal Pools, Meadows, and other Herb Communities (40000)	Valley Sacaton Grassland (42120)	0.5	—	0.5
	Non-Native Grassland (42200)	58.5	—	58.5
	Non-Native Grassland Broadleaf-Dominated (42210)	3.6	—	3.6
	Wildflower field (42300)	—	19.5	19.5
	Grasslands, Vernal Pools, Meadows, and other Herb Communities Subtotal[b]	*62.6*	*19.5*	*82.1*
Bog and Marsh (50000)	Freshwater Marsh (52400)	<0.1	—	<0.1

Table 3
Vegetation Communities and Land Cover Types in the Project Site

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code[a])	On-Reservation (Acres)	Off-Reservation (Acres)	Total (Acres)
	Emergent Wetland (52440)	3.3	3.5	6.8
	Bog and Marsh Subtotal[b]	*3.3*	*3.5*	*6.8*
Riparian and Bottomland Habitat (60000)	Southern Arroyo Willow Riparian Forest (61320)	—	0.6	0.6
	Mulefat Scrub (63310)	0.2	—	0.2
	Southern Willow Scrub (63320)	0.8	—	0.8
	Riparian and Bottomland Habitat Subtotal[b]	*1.0*	*0.6*	*1.6*
Woodland (70000)	Coast Live Oak Woodland (71160)	73.4	0.5	73.9
	Woodland Subtotal[b]	*73.4*	*0.5*	*73.9*
Waters of the U.S./State	Unvegetated Stream Channel (64200)	5.5	1.5	7.0
	Waters of the U.S./State Subtotal[b]	*5.5*	*1.5*	*7.0*
	Total[b]	**2,150.1**	**487.5**	**2,637.6**

[a] Holland (1986) as modified by Oberbauer et al. (2008).
[b] Totals may not sum due to rounding.

4.2.1 Big Sagebrush Scrub (35210)

Big sagebrush scrub contains soft-woody shrubs, from 1.5 to 6.5 feet tall, with bare ground underneath and between shrubs (Oberbauer et al. 2008). Big sagebrush scrub typically occurs on a wide variety of soils and terrain, including rocky, well-drained slopes and fine-textured valley soils with high water table. In San Diego County, this vegetation community occurs on alluvial washes along dry margins of high desert and montane valleys. Characteristic species include big sagebrush (*Artemisia tridentata*), four-winged saltbush (*Atriplex canescens*), blackbrush (*Coleogyne ramosissima*), and California brome (*Bromus carinatus*).

Within the study area, areas mapped as big sagebrush scrub are dominated by big sagebrush. Less commonly occurring species interspersed within this vegetation community include slender woolly buckwheat (*Eriogonum gracile*), shortpod mustard (*Hirschfeldia incana*), California buckwheat (*Eriogonum fasciculatum*), cheatgrass (*Bromus tectorum*), and wild tarragon (*Artemisia dracunculus*). Disturbed big sagebrush is mapped where non-native grasses and herbs are present at 20% to 50% absolute cover.

4.2.2 Chamise Chaparral (37200)

Chamise chaparral is dominated by chamise while associated species contribute minimal cover within the vegetation community. Established stands are densely intermingled making it almost impossible to penetrate. These dense stands consist of little herbaceous understory. This community is well adapted to fire regimes Granitic soils and granitic boulders are not present within this community. Chamise chaparral is found on shallow dry soils and xeric slopes (Oberbauer 2008).

Within the study area, areas mapped as chamise chaparral contain primarily chamise and lack granitic soils and boulders. In many areas with the chamise chaparral community, chamise is the only subshrub present. Less commonly occurring species include infrequent distributions of hybrid scrub oak, sugarbush, desert ceanothus, and California buckwheat. Fringed spineflower was the most abundant annual in openings of chamise chaparral.

4.2.3 Coast Live Oak Woodland (71160)

Coast live oak woodland is dominated by a single evergreen species: coast live oak with a canopy height reaching 32.8 to 82.0 feet (10 to 25 meters). This vegetation community generally occurs along drainages. The shrub layer is poorly developed but may include toyon (*Heteromeles arbutifolia*), gooseberry (*Ribes* spp.), or laurel sumac. The herb component is continuous, dominated by a variety of introduced species (Oberbauer et al. 2008).

Within the study area, areas mapped as coast live oak woodland are dominated by coast live oak with an understory of ripgut brome (*Bromus diandrus*), bare ground, and small scattered subshrubs. Less-common associated species include California buckwheat, big sagebrush, and Douglas' knotweed (*Polygonum douglasii*).

4.2.4 Developed (12000)

Developed refers to areas that have been constructed upon or disturbed so severely that native vegetation is no longer supported. Developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with a large amount of debris or other materials (Oberbauer et al. 2008).

Within the study area, developed areas include roads, buildings, and the I-8 freeway.

4.2.5 Disturbed Habitat (11300)

Disturbed habitats are areas that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association (Oberbauer et al. 2008). These areas may continue to retain soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, temporary construction staging areas, off-road-vehicle trails, areas repeatedly cleared for fuel management, or areas that are repeatedly used in ways that prevent revegetation (e.g., parking lots, trails that have persisted for years).

Within the study area, dirt roads, prominent dirt trails, and off-highway-vehicle areas are mapped as disturbed habitat. The disturbed habitat mostly consists of bare ground with few plant species. Plant species that were present within the disturbed habitat include big sagebrush, California buckwheat, and salt heliotrope (*Heliotropium curassavicum*) on some of the dirt roads and trails.

4.2.6 Emergent Wetland (52440)

Emergent wetland is a generally persistent wetland dominated by low-growing, perennial plant species. It occurs in channels, seeps, and springs, and along the margins of perennial aquatic features. This vegetation community can be dominated by various wetland plant species, including sedges (*Carex* spp.), pale spike rush (*Eleocharis macrostachya*), rushes (*Juncus* spp.), curly dock (*Rumex salicifolius*), and many others (Oberbauer et al. 2008).

Within the study area, areas mapped as emergent wetland are dominated by Mexican rush (*Juncus mexicanus*), curly dock (*Rumex crispus*), cocklebur (*Xanthium strumarium*), smartweed (*Persicaria lapathifolia*), lambsquarters (*Chenopodium album*), prostrate pigweed (*Amaranthus*

albus), annual rabbitsfoot grass (*Polypogon monspeliensis*), shortpod mustard, and Canadian horseweed (*Erigeron canadensis*). Less commonly occurring species within the fringes of this vegetation community include tamarisk (*Tamarix ramosissima*), mulefat (*Baccharis salicifolia*), Fremont cottonwood (*Populus fremontii*), arroyo willow (*Salix lasiolepis*), salt heliotrope (*Heliotropium curassavicum*), and sandbar willow (*Salix exigua*).

4.2.7 Eucalyptus Woodland (79100)

Eucalyptus woodland is not recognized by Holland (1986), but is recognized by Oberbauer et al. (2008). This "naturalized" vegetation community is fairly widespread in Southern California and is considered a woodland habitat. It typically consists of monotypic stands of introduced Australian eucalyptus trees (*Eucalyptus* spp.). The understory is either depauperate (i.e., lacking species variety) or absent, owing to high leaf litter. Although eucalyptus woodlands are of limited value to most native plants and animals, they frequently provide nesting and perching sites for several raptor species.

4.2.8 Freshwater Marsh (52400)

Freshwater marsh is a wetland habitat that develops at permanently flooded sites by freshwater lacking a significant current (Oberbauer et al. 2008). Because it is permanently flooded by fresh water, there is an accumulation of deep, peaty soils. It typically is dominated by species such as cattails (*Typha* spp.), sedge (*Carex* spp.), yellow nutsedge (*Cyperus esculentus*), and bulrushes (*Scirpus* spp.).

Within the study area, areas mapped as freshwater marsh are dominated by broadleaf cattail (*Typha latifolia*).

4.2.9 Granitic Chamise Chaparral (37210)

Granitic chamise chaparral contains shrubs, overwhelmingly dominated by chamise (*Adenostoma fasciculatum*), from 3 to 10 feet tall, with little cover provided by other species. Mature stands of granitic chamise are densely interwoven and contain few herbaceous species within the understory (Oberbauer et al. 2008). Stump sprouting allows this vegetation to adapt to repeated fires. Granitic chamise chaparral typically occurs on dry slopes and ridges (Holland 1986). The chamise chaparral alliance is ranked by CDFW as a G5S5 alliance (CDFG 2010). This ranking indicates that globally and within California the alliance is widespread, abundant, and is considered secure (CDFG 2010; NatureServe 2014).

Within the study area, areas mapped as granitic chamise chaparral is dominated by chamise. Associated species include California buckwheat, cheatgrass, and common Mediterranean grass (*Schismus barbatus*). Other less commonly occurring species include Mojave yucca (*Yucca*

schidigera), manzanita (*Arctostaphylos* sp.), big sagebrush, hybrid oak (*Quercus ×acutidens*), and deer weed (*Acmispon glaber*).

4.2.10 Granitic Northern Mixed Chaparral (37131)

Granitic northern mixed chaparral is similar to northern mixed chaparral but with granitic soils. Granitic northern mixed chaparral contains broad-leaved sclerophyll shrubs, from 6.5 to 13 feet tall, with little to no understory vegetation (Oberbauer et al. 2008). Granitic northern mixed chaparral forms on granitic soils on dry, rocky, often steep slopes. The shrubs form a dense layer, are typically deep rooted, and are adapted to repeated fires, to which many species respond by stump sprouting. Plant growth is highest in the spring, reduced in the late summer-fall dry season, and the flowering season extends from late winter to early summer. Characteristic species include chamise, chaparral white thorn (*Ceanothus leucodermis*), desert ceanothus (*Ceanothus perplexans*), bigberry manzanita (*Arctostaphylos glauca*), sugarbush (*Rhus ovata*), and birch leaf mountain mahogany (*Cercocarpus betuloides*).

Within the study area, areas mapped as granitic northern mixed chaparral are dominated by chamise, birchleaf mountain mahogany (*Cercocarpus betuloides* var. *betuloides*), California buckwheat, and holly leaf cherry (*Prunus ilicifolia*). Less commonly occurring species within this vegetation community include manzanita, cheatgrass, common Mediterranean grass, California cholla (*Cylindropuntia californica*), chaparral white thorn (*Ceanothus leucodermis*), and redshank (*Adenostoma sparsifolium*).

4.2.11 Montane Buckwheat Scrub (32800)

Flat-topped buckwheat is a monoculture community usually resulting from a disturbance and transitioning to coastal sage scrub or chaparral (Oberbauer et al. 2008). Dominant species include California buckwheat and deerweed.

Within the study area, areas mapped as flat-topped buckwheat are dominated by California buckwheat (*Eriogonum fasciculatum* var. *polifolium*). Less commonly occurring species within this vegetation community include chamise, hybrid oak (*Quercus ×acutidens*), birchleaf mountain mahogany, manzanita, cheatgrass, and common Mediterranean grass.

4.2.12 Mulefat Scrub (63310)

Mulefat scrub is a depauperate, tall, herbaceous riparian scrub strongly dominated by mulefat. This early seral community is maintained by frequent flooding. Site factors include intermittent stream channels with fairly coarse substrate and moderate depth to the water table (Oberbauer et al. 2008). This community type is widely scattered along intermittent streams and near larger rivers.

Within the study area, areas mapped as mulefat scrub are dominated by mulefat. Less commonly occurring species within this vegetation community include western ragweed and wild tarragon.

4.2.13 Non-Native Grassland (42200)

Non-native grassland consist of dense to sparse cover of annual grasses with flowering culms between 0.5 to 3 feet in height (Oberbauer et al. 2008). Non-native grassland generally occurs on fine-textured loam or clay soils that are moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

Within the study area, areas mapped as non-native grassland are dominated by cheatgrass and common Mediterranean grass. Less commonly occurring species within this vegetation community include slender woolly buckwheat and longstem buckwheat (*Eriogonum elongatum*).

4.2.14 Non-Native Grassland Broadleaf-Dominated (42210)

Non-native grassland broadleaf-dominated is dominated by one or several non-native, invasive broadleaf species for more than 50% of the total vegetated cover (Oberbauer et al. 2008). Non-native grassland broadleaf-dominant is a subset of the non-native grassland vegetation community and resulted in the establishment of extensive dominant broadleaf species caused by disturbance and/or a nearby seed source. Characteristic species include black mustard (*Brassica nigra*), shortpod mustard, fennel (*Foeniculum vulgare*), and *Centaurea* spp.

Within the study area, areas mapped as non-native grassland are dominated by prickly lettuce (*Lactuca serriola*) and bull thistle (*Cirsium vulgare*).

4.2.15 Red Shank Chaparral (37300)

Red shank chaparral is dominated by pure stands of redshank of at least 50% cover (Oberbauer et al. 2008). Red shank chaparral shrub layer is typically open, 6.5 to 13 feet in height, and confined to granitic soils. This vegetation community occurs on interior cismontane slopes between 300 and 6,000 feet with greater precipitation and colder winters. Plant species observed within this vegetation community include chamise, tulip pricklypear (*Opuntia phaeacantha*), desert ceanothus, and bigberry manzanita.

Within the study area, areas mapped as red shank chaparral are dominated by redshank. Areas mapped as redshank chaparral consisted of redshank communities with over 75% cover of redshank. Less commonly occurring species include California buckwheat, *Cercocarpus* sp., and non-native grasses.

4.2.16 Scrub Oak Chaparral (37900)

Scrub oak chaparral is a dense, evergreen chaparral up to 20 feet tall (Oberbauer et al. 2008). Scrub oak chaparral is dominated by scrub oak (*Quercus berberidifolia*) of at least 50% cover and usually occurs in small patches within a variety of other communities. This mesic community occurs at elevations up to 5,000 feet and recovers from fire more quickly than other chaparrals. In San Diego County, scrub oak chaparral occurs on north-facing or mesic slopes. Characteristic species include *Quercus* spp., Eastwood manzanita (*Arctostaphylos glandulosa*), *Ceanothus* spp., toyon, and California buckthorn (*Frangula californica* ssp. *californica*).

Within the study area, areas mapped as scrub oak chaparral are dominated by hybrid oak, chamise, birchleaf mountain mahogany, and California buckwheat.

4.2.17 Semi-Desert Chaparral (37400)

Semi-desert chaparral contains 5- to 10-foot-tall sclerophylls in an open layer dominated by *Juniperus*, *Eriogonum*, and *Opuntia* (Oberbauer et al. 2008). Semi-desert chaparral occurs in dry, cold winters and dry, hot summers, and on rocky soils or recently burned sites. This vegetation community is less fire-prone than other chaparrals due to lower fuel loads. Semi-desert chaparral is found in San Diego County on high desert plateaus and escarpment of the Peninsular Range. Characteristic species include chamise, bigberry manzanita, California buckwheat, and California juniper (*Juniperus californica*).

Within the study area, semi-desert chaparral is dominated by cactus species and characteristic desert associates including California joint fir (*Ephedra californica*), flatbud prickly poppy (*Argemone munita*), numerous combseeds (*Pectocarya* spp.), California buckwheat, tulip pricklypear, Gander's buckhorn cholla (*Cylindropuntia ganderi*), and brownspined pricklypear (*Cylindropuntia californica* var. *parkeri*). Less commonly occurring associates within this community include California juniper (*Juniperus californica*) and desert ceanothus.

4.2.18 Southern Arroyo Willow Riparian Forest (61320)

Southern arroyo willow riparian forest is a winter-deciduous riparian forest dominated by broad-leafed trees and arroyo willow. Typically it consists of a moderately tall, closed, or nearly closed canopy, with an understory of shrubby willows (Oberbauer et al. 2008). Southern arroyo willow riparian forest is characterized by the presence of several species besides arroyo willow, including San Diego sagewort (*Artemisia palmeri*), mulefat, Cucamonga manroot (*Marah macrocarpa*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), Goodding's willow (*Salix gooddingii*), sandbar willow (*Salix exigua*), and yellow willow (*Salix lasiandra*) (Oberbauer et al. 2008). Southern arroyo willow riparian forest occurs in

sub-irrigated and frequently overflowed areas along rivers and streams that are perennially wet (Oberbauer et al. 2008).

Within the study area, areas mapped as southern arroyo willow riparian forest are dominated by red willow, mulefat, broom baccharis (*Baccharis sergiloides*), and arroyo willow with associated species including yerba mansa, Mexican rush, western ragweed, Mexican whorled milkweed (*Asclepias fascicularis*), salt cedar, wild tarragon and stinging nettle (*Urtica dioica* ssp. *holosericea*). Some sections of the southern arroyo willow riparian forest consisted of little to no herbaceous perennial plant species, and other areas were abundant with Mexican rush, yerba mansa, western ragweed and wild tarragon.

4.2.19 Southern Willow Scrub (63320)

Southern willow scrub is a dense, broad-leafed, winter-deciduous riparian thicket dominated by several willow species (*Salix* spp.), with scattered emergent Fremont cottonwood and California sycamore. This community was formerly extensive along the major rivers of coastal Southern California, but now much reduced (Oberbauer et al. 2008).

Within the study area, areas mapped as southern willow scrub are dominated by Mexican rush, arroyo willow, and western ragweed (*Ambrosia psilostachya*). Less commonly occurring species within this vegetation community include wild tarragon, big sagebrush, yerba mansa (*Anemopsis californica*), and red willow (*Salix laevigata*).

4.2.20 Unvegetated Stream Channel (64200)

Non-vegetated floodplain or stream channel is not recognized by Holland (1986) but is recognized by Oberbauer et al. (2008). According to Oberbauer et al. (2008), non-vegetated floodplain or channel is the sandy, gravelly, or rocky fringe of waterways or flood channels that is unvegetated on a relatively permanent basis. Vegetation may be present but is usually less than 10% total cover and grows on the outer edge of the channel. Non-vegetated channels occur along Campo Creek and Tule Creek and throughout portions of the study area. These resources are discussed more in Section 4.7, Jurisdictional Wetlands and Non-Wetland Waters.

4.2.21 Upper Sonoran Subshrub Scrub (39000)

Upper Sonoran subshrub scrub is a short, open scrub community that is dominated by soft-wooded, summer-dormant, drought-tolerant shrubs (Oberbauer et al. 2008). This vegetation type occurs in patches on relatively level, seasonally dry areas with soils with insufficient water-holding capacity to maintain larger shrubs.

Within the study area, areas mapped as Sonoran subshrub scrub are dominated by slender woolly buckwheat. Less commonly occurring species within this vegetation community include California buckwheat, big sagebrush, cheatgrass, common Mediterranean grass, and holly leaf cherry.

4.2.22 Valley Sacaton Grassland (42120)

Valley sacaton grassland is a midheight (3-foot) tussock-forming grassland dominated by alkali sacaton (*Sporobolus airoides*) (Oberbauer et al. 2008). Soils associated with this vegetation community are generally fine textured, poorly drained, and usually alkaline soils.

Within the study area, areas mapped as valley sacaton grassland are dominated by alkali sacaton. The areas mapped as valley sacaton grassland consisted of over 75% cover of alkali sacaton. Less commonly occurring species within this vegetation community include ripgut brome, cheatgrass, and Mexican rush. It is located within a floodplain.

4.2.23 Wildflower Field (42300)

Wildflower fields consist of native herb dominated communities. Wildflower fields are noted for an obvious annual wildflower display. Dominance of flowers varies from year to year depending on rainfall patterns. Site factors include being associated with grasslands and oak woodlands. Within San Diego County, sandy soils are often present within these vegetation communities.

Wildflower fields in the study area consist of abandoned pasture for grazing animals. Range managers may have irrigated some of these areas historically, since leftover water pipes and irrigation equipment were found in some sections of these pasture lands. During the spring season, needle goldfields dominated this vegetation community, creating a blanket of yellow across the range. Less commonly occurring wildflowers like variable linanthus (*Leptosiphon parviflorus*) were also mixed in with the needle goldfields. In the late season giant woollystar (*Eriastrum densifolium*) dominated the community, creating a blanket of purple in some areas of the wildflower fields. Jacumba milk-vetch also dominated the wildflower field community and is positively affected by disturbance; one example of disturbance being that of historically grazed lands. Other dominant perennial herbs and annuals within the pasture include western tansymustard (*Descurainia pinnata*), tall tumblemustard (*Sisymbrium altissimum*), and herb Sophia (*Descurainia sophia*). Grass species were scattered within the vegetation community and include slender oat (*Avena barbata*), mouse barley (*Hordeum murinum*), compact brome (*Bromus madritensis* ssp. *madritensis*), and rat-tail fescue (*Festuca myuros*). Less commonly occurring species include cheatgrass, Mediterranean grass, shortpod mustard, and London rocket (*Sisymbrium irio*).

4.3 Floral Diversity

During surveys conducted by Dudek biologists on the Reservation, 119 vascular plant species, consisting of 96 native species (81%) and 23 non-native species (19%), were recorded during vegetation mapping, jurisdictional delineation, and Quino checkerspot surveys. In 2010, AECOM performed focused rare plant surveys. An additional 237 vascular plant species were recorded during these previous surveys conducted by AECOM, including an additional 218 native species and 19 non-native species.[3] Fifty-nine families are represented on site, with nearly half of the species coming from the Asteraceae, Boraginaceae, Poaceae, Fabaceae, and Brassicaceae families. No federally listed plant species were observed in the Project Site. A cumulative list of plant species observed during these surveys is provided in Appendix E-1.

Off the Reservation, a total of 233 vascular plant species, consisting of 208 native species (89%) and 25 non-native species (11%), were recorded during surveys conducted in 2017 and 2018.[4] Fifty-six families are represented, with nearly half of species coming from the Asteraceae, Boraginaceae, Poaceae, Polemoniaceae, Fabaceae, and Brassicaceae families. No federally-listed species were observed. A cumulative list of plants species observed during these surveys is provided in Appendix E-2.

4.4 Wildlife Diversity

The Project Site supports habitat for common upland and riparian species. Chaparral, sagebrush scrub, woodland, and riparian habitat within the study area provide foraging and nesting habitat for migratory and resident birds and other wildlife species. Rock outcroppings, chaparral, sagebrush scrub, and woodlands in the Project Site provide cover and foraging opportunities for wildlife species, including reptiles and mammals.

On the Reservation, 181 wildlife species were observed in the Project Site by Dudek biologists during Quino checkerspot butterfly surveys, bird count surveys, eagle surveys, and 2011–2012 bat surveys. In 2010, AECOM conducted Quino checkerspot butterfly surveys, arroyo toad surveys, riparian bird surveys, eagle surveys, and bat surveys. An additional 124 species were observed in the study area during these previous surveys, conducted by AECOM. Of the 305 total species observed, 83 were butterflies and moths, 16 were reptiles, 3 were amphibians, 171 were avian

[3] Many more plant species were observed during the previous efforts because focused plant surveys were performed in 2010. Focused plant surveys were not performed as part of this current effort.

[4] These species were recorded as part of efforts for a prior wind project on the same land, the Torrey Wind Project, and for the Boulder Brush Facilities Project.

species, 16 were terrestrial mammal species, and 16 were bat species.[5] A cumulative list of wildlife species observed during these surveys is provided in Appendix F-1.

Commonly observed reptiles include western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard (*Uta stansburiana*), and gophersnake (*Pituophis catenifer*).

Commonly observed birds include western meadowlark (*Sturnella neglecta*), California scrub-jay (*Aphelocoma californica*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus*), turkey vulture (*Cathartes aura*), wrentit (*Chamaea fasciata*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), California towhee (*Melozone crissalis*), northern mockingbird (*Mimus polyglottos*), ash-throated flycatcher (*Myiarchus cinerascens*), phainopepla (*Phainopepla nitens*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), and Bewick's wren (*Thryomanes bewickii*).

Commonly observed mammals included desert cottontail (*Sylvilagus audubonii*), brush rabbit (*Sylvilagus bachmani*), California ground squirrel (*Spermophilus (Otospermophilus) beecheyi*), and coyote (*Canis latrans*). Bats observed at higher number of minutes include western small-footed myotis (*Myotis ciliolabrum*) and canyon bat (*Parastrellus hesperus*). Commonly observed invertebrate species included painted lady (*Vanessa cardui*), Behr's metalmark (*Apodemia mormo virgulti*), funereal duskywing (*Erynnis funeralis*), checkered white (*Pontia protodice*), and Pacific sara orangetip (*Anthocharis sara sara*).

A total of 159 species were observed in the Off-Reservation portion of the Project Site (i.e., Campo Corridor) during surveys conducted for the site. Of the total species observed, 22 of these are considered special status. Species observed in the Off-Reservation portion of the Project Site (i.e., Boulder Brush Corridor) were recorded during focused surveys, habitat assessments, vegetation mapping, and sensitive plant surveys. A cumulative list of wildlife species observed during these surveys is provided in Appendix F-2.

Commonly observed reptiles include western fence lizard and common side-blotched lizard.

Commonly observed birds included western meadowlark, California scrub-jay, red-tailed hawk, Anna's hummingbird, house finch, turkey vulture, wrentit, common raven, greater roadrunner, California towhee, northern mockingbird, ash-throated flycatcher, phainopepla, spotted towhee, bushtit, and Bewick's wren.

[5] Bat species recorded within the study area were noted during acoustical bat surveys conducted from September 2011 to September 2012.

Commonly observed mammals included desert cottontail, brush rabbit, California ground squirrel, and coyote.

Acoustical bat surveys were conducted in 2011 for the Jewell Wind Project previously proposed by a different applicant. The surveys resulted in the detection of 13 bat species in the vicinity of the broadband acoustic detectors, which were located along the eastern edge of the Off-Reservation portion of the study area. It is assumed that all bat species recorded during the surveys would use suitable habitat in the Off-Reservation portion of the Project Site for foraging.

Commonly observed invertebrate species included painted lady, Behr's metalmark, funereal duskywing, checkered white, and Pacific sara orangetip.

4.5 Candidate, Proposed, or Listed Species under the ESA

Federally listed species known to occur within the Campo, Cameron Corners, Live Oak Springs, and Tierra Del Sol USGS quadrangles and surrounding quadrangles (USFWS 2018; CNPS 2018; CDFW 2018a; SDNHM 2018) are summarized in Table 4.

Table 4
Federally Listed Plant and Wildlife Species Known from the Project Area Vicinity

Common Name Scientific Name	Federal Status	Habitat	Potential to Occur
Plants			
San Bernardino blue grass *Poa atropurpurea*	FE	Meadows and seeps, elevation ranging from 4,460 to 8,055 feet	**Not expected to occur.** The site is outside of the species' known elevation range, and there is no suitable vegetation present.
Amphibians			
Arroyo toad *Anaxyrus californicus*	FE	Semiarid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral, and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	**Not expected to occur.** There are no suitable perennial washes or stream channels for breeding present. The closest known arroyo toad occurrences are located approximately 5.5 miles west of the study area in the Cottonwood Creek area (USFWS 2018), a different watershed. There are no records of arroyo toad east of this location (USFWS 2018; CDFW 2018a). Surveys conducted for the 2010 BSA were negative (AECOM 2012).

Table 4
Federally Listed Plant and Wildlife Species Known from the Project Area Vicinity

Common Name Scientific Name	Federal Status	Habitat	Potential to Occur
Birds			
California condor *Gymnogyps californianus*	FE	Forages on open terrain, foothill grassland, and oak savannah; nests in cavities on steep rocks or burned hallows of old-growth conifers and giant sequoia trees	**Very Low potential to forage and not expected to nest.** There is potential foraging habitat; however, no suitable nesting vegetation present and the only records are at least 15 miles away from the site from 2017 (other years are further from the site) (USFWS 2018).
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	**Not expected to occur.** Does not occur in vicinity (CDFW 2018a), and focused protocol surveys conducted in 2010 for this species were negative. The closest known CNDDB occurrence is 27.8 miles northwest of the Project site (CDFW 2018a). There is marginal riparian habitat for this species, which prefers habitat along perennial streams and rivers.
Least Bell's vireo *Vireo bellii pusillus*	FE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	**Low potential to occur.** Focused protocol surveys conducted in 2010 for this species were negative. The closest known CNDDB occurrence is 6 miles west of the Project site (CDFW 2018a). There is marginal riparian habitat for this species, which prefers habitat along perennial streams and rivers.
Mammals			
Peninsular bighorn sheep *Ovis canadensis nelsoni pop. 2 DPS*	FE	Dry, rocky, low-elevation desert slopes, canyons, and washes; females near water during lambing season	**Not expected to occur.** The Reservation is located in the inner-montane zone of San Diego County, west of the desert slopes occupied by this species and approximately 6 miles (9.6 kilometers) from the western edge of the species' known range (CDFW 2018e). The closest CNDDB occurrence is 3.6 miles northeast of the Project site within the Jacumba and In-Ko-Pah Mountains in more suitable habitat (CDFW 2018a). The Reservation lacks the dry, rocky desert habitat preferred by this species.
Invertebrates			
Quino checkerspot butterfly *Euphydryas editha quino*	FE	Annual forblands, grassland, open coastal scrub, and chaparral; often soils with cryptogamic crusts and fine-textured clay; host plants include *Plantago erecta*, *Antirrhinum coulterianum*, and *Plantago patagonica* (Silverado Occurrence Complex)	**Known to occur.** Twenty-seven Quino observations were documented during 2010 USFWS protocol surveys. Approximately 3,803.1 acres (1,539.1 hectares) of suitable habitat was recorded. Observations were concentrated in the southern portion of the 2010 BSA (AECOM 2012). In 2018, updated surveys were conducted for the study area. No occurrences of Quino were recorded during the focused surveys.

Table 4
Federally Listed Plant and Wildlife Species Known from the Project Area Vicinity

Common Name Scientific Name	Federal Status	Habitat	Potential to Occur
Laguna Mountains skipper *Pyrgus ruralis lagunae*	FE	Restricted to montane meadows of Laguna Mountains and Mount Palomar	**Not expected to occur.** This species' range is restricted to the Laguna Mountains and Mount Palomar. The closest recorded occurrence is approximately 10 miles northwest of the study area (CDFW 2018a; USFWS 2018).

4.5.1 Plant Species

No focused special-status plant surveys were conducted within the On-Reservation portion of the Project Site in 2018 as a result of the following analysis. No sensitive plant species were detected within the On-Reservation portion of the Project Site during the 2010–2011 rare plant surveys conducted by AECOM (2012). No federally listed plants were observed during the 2018 Off-Reservation surveys. Only one federally listed plant, San Bernardino blue grass, is known from the vicinity of the Project Area. San Bernardino blue grass is federally endangered plant that typically blooms May to July (or sometimes April to August) and occurs within mesic meadows and seeps (CNPS 2018). No critical habitat for San Bernardino blue grass occurs in the Project Area, and the nearest CNDDB record for this species is approximately 10 miles north of the Project Area with all other occurrences farther north. Because the Project Area is outside of the known range for the species and because there is no suitable habitat for this species within the study area, this species is not expected to occur. Given that no sensitive plant species are expected to occur in the Project Area, sensitive plant species are not discussed further in this report.

4.5.2 Wildlife Species

Federally-listed wildlife species previously documented in the vicinity[6] of the Project Area are summarized in Table 4. Based on USFWS critical habitat and occurrence data (USFWS 2018) and CNDDB occurrence data (CDFW 2018a, 2018b, 2018c), seven federally-listed wildlife species were found to have some potential to occur within the Project Area and vicinity based on habitat or records from a nine-quadrangle search: arroyo toad, California condor (*Gymnogyps californianus*), southwestern willow flycatcher, least Bell's vireo, Peninsular bighorn sheep, Quino checkerspot butterfly, and Laguna Mountains skipper (Table 4). However, only one of the seven

[6] "Vicinity" refers to the Campo, Cameron Corners, Live Oak Springs, and Tierra Del Sol USGS quadrangles and surrounding quadrangles.

species, Quino checkerspot butterfly, is known to occur in the Project Area or has moderate or better potential for occurring.

*4.5.2.1 Quino Checkerspot Butterfly (*Euphydryas editha quino*), FE*

Quino checkerspot butterfly was listed as endangered on January 16, 1997 (62 FR 2313–2322). A recovery plan was published for the species on September 17, 2003 (USFWS 2003). Critical habitat was first designated on April 15, 2008 (67 FR 18356–18395), and was later revised on June 17, 2009 (74 FR 28776–28862). In accordance with ESA Section 4(b)(2); EO 13175, Consultation and Coordination with Indian Tribal Governments; and Secretarial Order 3206, USFWS has excluded the Reservation from critical habitat designation for Quino checkerspot butterfly. Critical habitat designated for Quino checkerspot butterfly borders the Reservation to the west and south (Figure 9, USFWS Critical Habitat).

This species is found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico (USFWS 2003). This species is found on sparsely vegetated hilltops, on ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat (typically at less than 3,000 feet amsl). This species requires host plants within these vegetation communities for feeding and reproduction. The primary larval host plant is dotseed (or dwarf) plantain (*Plantago erecta*); however, several other species have been documented as important larval host plants, including desert plantain, sometimes called woolly plantain (*Plantago patagonica*); thread-leaved bird's beak (*Cordylanthus rigidus*); white snapdragon (*Antirrhinum coulterianum*); owl's clover (*Castilleja exserta*); and Chinese houses (*Collinsia* spp.) (USFWS 2003).

4.5.2.2 Habitat and Occurrence in the 2005 through 2009 Survey Areas – Campo Landfill Project

As referenced in AECOM (2012), between 2005 and 2009, Pacific Southwest Biological Services biologists conducted USFWS protocol surveys for Quino checkerspot butterfly in the southeastern portion of the Reservation for the then-proposed, but no longer under consideration, Campo Regional Landfill Project (BIA 2010). Protocol surveys were conducted within an approximate 394-acre (159-hectare) area of open vegetation characteristic of Quino checkerspot butterfly habitat (BIA 2010). There were 23 Quino checkerspot butterfly detections recorded between March and April during these surveys (14 detections in 2005, 1 detection in 2006, and 8 detections in 2009) (PSBS 2005, 2009). No Quino checkerspot butterfly detections were made during protocol surveys in 2007 and 2008 (PSBS 2007, 2008). Potential Quino checkerspot butterfly host plants recorded during this previous survey effort included owl's clover, thread-leaved bird's beak, and Chinese houses (BIA 2010).

4.5.2.3 Habitat and Occurrence in the 2010 BSA and Vicinity

In 2010, USFWS protocol surveys were conducted for Quino checkerspot butterfly in the southeastern portion of the BSA (AECOM 2012). There were 27 Quino checkerspot butterfly observations recorded within the Reservation (Figure 10, 2010 Quino Checkerspot Butterfly Survey Results). Nineteen observations were made within in the southern portion of the 2010 BSA, and eight observations were documented from outside the BSA but within the Reservation (Figure 10).

Three potential Quino checkerspot butterfly larval host plant species were observed within the BSA during the 2010 focused surveys: Chinese houses, white snapdragon, and thread-leaved bird's beak (Figure 10). Observations of Quino checkerspot butterfly and locations of larval host plants made previously for the Campo Landfill Project and those made during 2010 surveys suggest that the southern portion of the Reservation supports a higher density of Quino checkerspot butterfly as compared to northern portions of the site (i.e., north of SR-94).

4.5.2.4 Habitat and Occurrence in the 2018 Survey Area

No Quino checkerspot butterfly or their host plants were observed during the 2018 focused surveys within the Project Site. Approximately 1,216 acres were considered potential suitable habitat within the Project Site (Figure 4).

4.5.2.5 Quino Checkerspot Butterfly Occupied Habitat

Quino checkerspot butterfly populations vary yearly based on a variety of factors, including rainfall, temperature, timing of rain events, and host plant growth patterns, among others. Low rainfall and other factors can cause larva to extend diapause and delay emergence. Lack of adult Quino checkerspot butterfly observations in one year may not be considered adequate evidence that a site is unoccupied. Therefore, potentially occupied habitat was modeled based on Quino checkerspot butterfly records and host plants observed in 2010. The habitat model is created from the following parameters based on general industry guidance from USFWS for other projects:

- 200-meter buffer around Quino checkerspot butterfly locations
- 200-meter buffer around "significant" plant populations (i.e., >20 individuals)
- Hilltops
- Ridgelines (centerline with 100-foot (31.2-meter) buffer)

Plant population buffers, hilltops, and ridgelines were added to the primary Quino checkerspot butterfly detection polygon or each other as they would connect. If the link was broken by distance or unsuitable habitat, then the potentially occupied patch would end.

The 2010 and 2018 Quino checkerspot butterfly exclusion areas were removed from the model, because those areas were determined to be unsuitable for this species. This model resulted in approximately 674.1 acres of potentially occupied habitat mapped within the On-Reservation portion of the Project Site (i.e., Campo Corridor). Figure 11, Quino Checkerspot Butterfly Modeled Habitat, shows the model and estimated occupied habitat.

No habitat was modeled specifically for the Off-Reservation portion of the Project Site (i.e., Boulder Brush Corridor) due to the lack of observations in both 2011 and 2018 focused surveys. However, a small section of the modeled habitat from the Reservation overlaps with the westernmost portion of the Off-Reservation Boulder Brush Corridor (Figure 11).

4.6 Bald and Golden Eagles

Bald and golden eagles are federally protected under the BGEPA.

4.6.1 Bald Eagle

Within mainland Southern California, bald eagles primarily winter at larger bodies of water in the lowlands and mountains (Garrett and Dunn 1981). It is fairly common as a local winter migrant at a few favored inland waters in Southern California. The greatest numbers occur at Big Bear Lake, Cachuma Lake, Lake Mathews, Nacimiento Reservoir, San Antonio Reservoir, and along the Colorado River (Zeiner et al. 1990). In San Diego County, bald eagles are observed at Lake Henshaw and occasionally at other lakes and reservoirs during the winter (Unitt 2004). Bald eagles have recently begun nesting in San Diego County, and have been recorded nesting at the Ramona Grasslands Preserve each year since 2013 (AECOM 2017; eBird 2018).

Migratory patterns of bald eagles are complex and reflect a variety of circumstances, including age of the individual, location of the breeding site, severity of climate, and food availability (Buehler 2000). Eagles from northern populations migrate south between August and January, with subadults leaving the breeding grounds earlier than adults (Buehler 2000). The migratory movements of salmon affect the movements of both adults and subadults in the Pacific Northwest, where many bald eagles move north in late summer to feed during the salmon run on the Chilkat River in Alaska. Adults from Alaska move south in fall, arriving in November and December. Adults in the southern part of the species' range are generally not migratory, but remain near the nest sites year-round (Buehler 2000). In inland areas of central and Southern California, wintering bald eagles from northern latitudes generally arrive in October or November and remain until March or April (Lehman 1994; Roberson 2002; Unitt 2004; Linthicum et al. 2007).

No bald eagles have been observed during the ongoing eagle point count surveys conducted from October 2017 to present (or during any other surveys). The Project site lacks lakes, ponds, and

perennial rivers that support fish, their typical prey. Bald eagles typically nest and roost around water sources.

4.6.2 Golden Eagle

In California, golden eagles breed January through August, with peak breeding activity occurring February through July. Breeding typically begins in January with courtship and nest building, and egg laying typically occurs in February and March (Brown 1976; CPUC and BLM 2011; WRI 2010). Golden eagles typically lay one to three eggs, which they incubate for 43 to 45 days (Beebe 1974). The hatching and then feeding of nestlings takes place March through June. After their young fledge, the adult eagles may continue to feed the young birds for several months (CPUC and BLM 2011; WRI 2010). In the prey-rich oak woodland and savanna habitats of the California Coast Ranges, established golden eagle breeding pairs typically nest in most years (Hunt et al. 1999; Hunt and Hunt 2006); however, the long breeding cycle may contribute to some pairs breeding only every other year, even when food is abundant (CPUC and BLM 2011; WRI 2010). In other situations, where overall ecosystem productivity is lower or more variable from year to year, pairs need to range farther in search of food and may not nest every year because of the energetic demands of securing dispersed prey (Kochert et al. 2002).

Lagomorphs (rabbits and hares) and ground squirrels are of primary importance in the diet of most golden eagles, including in San Diego County, but their diet may include a wide variety of other mammals, reptiles, and birds, and frequently includes carrion, especially during winter (Johnsgard 1990; Kochert et al. 2002; Olendorff 1976).

There are no suitable large trees or cliffs present for nesting; therefore, this species is not expected to nest on site. Unitt (2004) states that "The golden eagle is absent from some surprisingly large yet little disturbed areas of San Diego County, such as Cuyamaca Mountains and the Campo Plateau between Lake Morena and Jacumba." The historical breeding distribution map and general occurrence maps in Unitt (2004) also present a pocket of unoccupied habitat near the Project site. Weekly focused eagle surveys in support of eventual USFWS and CDFW coordination regarding the need for an eagle take permit have been conducted on site in 2017 through 2019 (see Section 3.3.6). Nine golden eagles were observed flying over the study area during the 2017 and 2018 eagle point count surveys (Figure 12, Results of Eagle Count Surveys). In total, as of March 2019, eagles were observed on site for approximately 20 of more than 20,000 minutes during the 2017–2019 avian point-count surveys.

Additionally, USGS has been capturing eagles and affixing telemetry transmitters to them that collect data at least every 15 minutes and up to every 30 seconds in San Diego County, and has been collecting hundreds of thousands data points since 2014 (Tracey et al. 2016, 2017). This is

the most comprehensive dataset available and it includes real-time and continual data on each individual. The Figure 13 series (USGS Golden Eagle (Birds F004–M011)) depicts the data for each individual that occurred within the 10-mile On-Reservation portion of the Project Site over this period; the data for each are summarized below by individual. Tabular data for each data point captured within the 10-mile buffer are provided in Appendix G. The Figure 13 series also depicts the data for each individual that occurred within the 10-mile Off-Reservation portion of the Project Site over this period; the data for each are summarized below by individual.

Although golden eagles have been documented within the 10-mile area, including a few brief incursions over the Project Site, these are very minor when compared to their overall use areas and geographic range. As shown in the figures, Table 5, and the discussion below, the Project Site appears to be at the very fringe of their individual territories or use areas, and likely mostly represent brief exploratory searches. The Figure 13 series show this information.

Table 5
Biotelemetry Data for Golden Eagles within 10 Miles of Project Site

Eagle ID	Date Captured	Capture Location	Primary Use Areas (Tracey et al. 2016, 2017)	Activity on/near Project Site (10-Mile Buffer)
F004	12/27/2014	Marron Valley	Biotelemetry data show this individual traveling from southeast San Diego County north through the Peninsular Ranges into the San Jacinto and San Bernardino Mountains. There is limited flight activity west to the San Gabriel Mountains and back east.	The data show a flight path through the southern portion of the Project site on April 11, 2015. The transmitter recorded the eagle flying through site between 6:05 p.m. and 6:37 p.m. and the individual then flew north (Figure 13a).
F006	2/2/2015	Santa Ysabel	Biotelemetry data show this individual traveling from Baja California north into Otay, Ramona, and Anza Borrego, and through Palm Desert and Cathedral City.	Within the 10-mile buffer, the data show a few points northeast of the Project site in the Laguna Mountains from June 2015 and one point by Horse Canyon (9 miles west) from July 2015 (Figure 13b).
F007	2/23/2015	Long Potrero	Biotelemetry data show this individual concentrated in two areas: east of Tecate, Mexico, and around Barrett Lake. Flight paths also show travel to the surrounding areas as far north as Julian and farther south of Tecate, Mexico.	Within the 10-mile buffer, the data show points from January, February, November, and December 2015 west and southwest of the Project site and along the western side of the buffer throughout most of 2016 (Figures 13c and 13d).
F008	3/14/2015	Pamo Valley	Biotelemetry data show this individual primarily concentrated around the Ramona and Santa Ysabel areas and east of Cuyamaca Reservoir in the Cleveland National Forest.	Within the 10-mile buffer, the data show points from May, June, and July 2015 west of the Project site (Figure 13e).

Table 5
Biotelemetry Data for Golden Eagles within 10 Miles of Project Site

Eagle ID	Date Captured	Capture Location	Primary Use Areas (Tracey et al. 2016, 2017)	Activity on/near Project Site (10-Mile Buffer)
F013	2/11/2016	Gregory Mountain	Biotelemetry data show this individual traveling around the Gomez Trail and Agua Tibia Creek areas on the Pauma and Pala Reservations.	Within the 10-mile buffer, the data show two points from August 2016 southwest and northwest of the Project site (Figure 13f).
F014	2/12/2016	Fremont Canyon	Biotelemetry data show this individual traveling throughout Southern California including Baja California, the San Joaquin Valley and from California to Wyoming and back.	The data show a flight path through the central portion of the Project site on March 8, 2016. The transmitter recorded the eagle flying through site between 11:41 a.m. and 11:56 a.m. and the individual continued flying in a southwest direction (Figure 13g).
F016	3/5/2016	Barrett Lake	Biotelemetry data shows this individual concentrated around Barrett Lake and flight paths in the Cleveland National Forest area as well as into Mexico.	Within the 10-mile buffer, the data show a couple of points from June and August 2016 west of the Project site in Mexico (Figure 13h).
M002	1/8/2015	Marron Valley	Biotelemetry data show this individual primarily concentrated around the San Ysidro Mountains and in the mountains south of the Tijuana area.	Within the 10-miile buffer, the data show just two points from February 2015 along the very western edge of the buffer (Figure 13i).
M005	12/1/2015	Barrett Lake	Biotelemetry data show this individual concentrated in the hills just south of Barrett Lake with some flight paths north toward Pothole Canyon and northwest toward the San Diego Country Estates.	Within the 10-mile buffer, the data show one point from October 2015 south of the Project site in Mexico (Figure 13j).
M007	12/9/2015	Long Valley	Biotelemetry data show this individual concentrated around the La Jolla Reservation with flights south toward Campo and into Ensenada, Mexico.	Within the 10-mile buffer, the data show points from January, February, November, and December 2015 west and southwest of the Project site (Figure 13k). In 2016, there are two flight paths just west of the Project site in September and October, along with other points from April through August 2016 (Figure 13l).
M010	12/17/2015	Proctor Valley	Biotelemetry data show this individual concentrated east and south of Tijuana, Mexico with flight paths east of Tecate, Mexico, and the Jamul Mountains.	Within the 10-mile buffer, the data show points from February 2015 and February and March 2016 south and southwest of the Project site and into Mexico (Figures 13m and 13n).
M011	12/21/2015	Barrett Lake	Biotelemetry data show this individual concentrated the Presa El Carrizo Lake southwest of Tecate, Mexico, with additional concentrated flights around the Otay Lakes, Barrett Lake.	Within the 10-mile buffer, the data show points from February 2015 south and southwest of the Project site and into Mexico (Figure 13o) and north of the Project site in July 2016 (Figure 13p).

4.7 Jurisdictional Wetlands and Non-Wetland Waters

A formal jurisdictional delineation of waters and wetlands was conducted in 2017 and 2018 for the Project site (Figure 8 series).

The jurisdictional resources in the Project Area consist of Campo Creek, Miller Creek, and tributaries to Campo Creek, Tule Creek, and the Tijuana River. Small ephemeral channels collecting runoff and surface flow from the hillslopes and roads that drain toward Campo Creek characterize the majority of the resources in Project Area. There is an unnamed drainage with a wide floodplain bisecting the Project Area in a north–south direction. This floodplain has a low-flow channel where it receives surface flow that drains into Campo Creek, but the majority of the floodplain appears to be supported by subsurface flow, indicated by the patches of riparian herbs, shrubs, and trees within portions of the floodplain; the channel is considered an intermittent non-wetland water of the United States. There are sections of the floodplain dominated by upland species, such as big sagebrush scrub, tall tumblemustard, and cheatgrass. There are a few drainages in the northeast that appear to drain east and connect to Tule Creek, and there are a few drainages in the northwest that are part of Miller Creek. None of the ephemeral drainages within the Project Site supported hydrophytic vegetation; therefore, no data station samples were conducted. These features are considered ephemeral non-wetland waters of the United States. Some features appear to be completely isolated from Campo Creek or Tule Creek as they completely abate into uplands. There are eight disconnected features that are within 100 feet of Tule Creek or Campo Creek (or a tributary to these creeks), but that are considered waters of the United States based on the Clean Water Rule's definition of "adjacent waters." Any isolated features beyond 100 feet of Tule or Campo Creek (or a tributary to these creeks) are not considered waters of the United States.

Campo Creek receives surface and subsurface flows from the surrounding hills and mountains. Campo Creek flows west through Campo Valley and into Mexico where it connects to Tecate Creek. Tecate Creek continues flowing west and northwest, eventually entering the United States near Marron Valley where it flows into the Tijuana River. The Tijuana River outlets into the Pacific Ocean at Imperial Beach. Therefore, these waters in the Project Area are considered subject to regulation by the ACOE.

Tule Creek receives surface and subsurface flows from headwaters originating in the Laguna Mountains northwest of the Project Area. It continues draining in a downward gradient in an east and southeast orientation into Tule Lake, located approximately 4.5 miles southeast of the Project Area. Water then flows into Tule Canyon, which eventually outlets into Carrizo Creek where it drains north/northeast. Carrizo Creek turns into Carrizo Wash and connects to San Felipe Wash and eventually into the Salton Sea to form a significant nexus to a traditional navigable water. Therefore, these waters in the Project Area are considered subject to regulation by the ACOE.

Miller Creek receives surface flow from the surround hills and mountains. Miller Creek drains east and south until it connects with Campo Creek just east of the Project Site.

The Tijuana River flows through Mexico and along the U.S./Mexico border until it drains into the Pacific Ocean south of San Diego. The tributaries in the southwest corner of the Project site appear to flow through a series of tributaries in Mexico until reaching the Tijuana River.

The Project Site supports non-wetland stream features, wetland habitat associated with the unnamed channel and floodplain, as well as some basins and seeps/springs that are all considered jurisdictional waters of the United States (Figure 8 series). One seep/spring supports an emergent wetland that is otherwise in a completely upland area in the northeast corner of the Project Site (Data Station (DS) 1a–b). Another seep/spring supports a small freshwater marsh adjacent to a dirt road near Live Oak Trail (DS 2a–b, DS 3). Emergent wetland and southern willow scrub, and valley Sacaton grassland occur within the unnamed channel/floodplain and meet the definition of a three-parameter wetland (DS 5a–b, DS 6a–b, DS 7a–b, and DS 8a–d). Data stations in the Off-Reservation area are primarily associated with non-wetland waters (DS 9–12f). Table 6 includes the jurisdictional aquatic resources within the Project Site and Table 7 includes the results of the data station samples within the Project Area. Appendix H includes the data station forms and OHWM datasheets representing the non-wetland waters mapped in the Project Area. These features are shown on the Figure 8 series.

Table 6
ACOE Jurisdictional Resources on the Project Site

Vegetation Community	Jurisdiction	Acres
Emergent wetland Freshwater marsh Valley sacaton grassland	Wetland waters of the United States	3.69
Southern willow scrub	Wetland waters of the United States	0.71
Unvegetated channel – ephemeral	Waters of the United States	5.98
Unvegetated channel – intermittent	Waters of the United States	0.40
	Total Jurisdictional Resources	**10.78**

Table 7
Data Station Results – Study Area

Sample Point	Hydrophytic Vegetation	Hydric Soils	Hydrology	Jurisdiction
DS 1a	Yes	Yes	Yes	ACOE wetland waters of the United States

Table 7
Data Station Results – Study Area

Sample Point	Hydrophytic Vegetation	Hydric Soils	Hydrology	Jurisdiction
DS 1b	Yes	Yes	No	ACOE non-wetland waters of the United States
DS 2a	Yes	No	No	ACOE non-wetland waters of the United States
DS 2b	Yes	No	No	ACOE non-wetland waters of the United States
DS 3	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 4	No	No	Yes	ACOE non-wetland waters of the United States
DS 5a	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 5b	No	No	Yes	ACOE non-wetland waters of the United States
DS 6a	No	No	Yes	ACOE non-wetland waters of the United States
DS 6b	No	Yes	Yes	ACOE non-wetland waters of the United States
DS 7a	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 7b	Yes	No	No	ACOE non-wetland waters of the United States
DS 8a	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 8b	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 8c	Yes	Yes	Yes	ACOE wetland waters of the United States
DS 8d	No	Yes	Yes	ACOE non-wetland waters of the United States
DS 9	No	No	Yes	ACOE non-wetland waters of the United States
DS 10a	Yes	No	Yes	ACOE non-wetland waters of the United States
DS 10b	No	No	Yes	ACOE non-wetland waters of the United States
DS 10c	No	No	No	N/A
DS 11	No	Yes	Yes	N/A
DS 12a	Yes	No	No	N/A
DS 12b	No	No	No	N/A
DS 12c	Yes	No	Yes	ACOE non-wetland waters of the United States
DS 12d	Yes	No	Yes	N/A
DS 12e	No	No	Yes	N/A
DS 12f	No	No	No	N/A

DS = Data Station; N/A = not applicable.

4.8 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to population viability by allowing the exchange of genes between populations, which helps maintain genetic diversity; by providing access to adjacent habitat areas, representing additional territory for

foraging and mating; by allowing for a greater carrying capacity; and by providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires). Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. The linkage represents a potential route for gene flow and long-term dispersal. Habitat linkages may serve as both habitat and avenues of gene flow for small animals such as passerine birds, small mammals, reptiles, and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as "stepping stones" for dispersal.

Previous studies identified the undeveloped portions of the study area as suitable for wildlife movement and related local dispersal (e.g., juvenile animals from natal areas) (AECOM 2012). The BSA previously identified by AECOM in 2010 may function as a portion of the home ranges (e.g., foraging for food or water, defending territories, searching for mates, breeding areas, or cover) for large-ranging species. For example, cougar (*Puma concolor*) ranges are approximately 22,981 acres (9,300 hectares) for 12 adult females and 89,699 acres (36,300 hectare) for 2 adult males in Southern California. Mule deer (*Odocoileus hemionus*) ranges are approximately 121 to 2,812 acres (49 to 1,138 hectares) (Dickson et al. 2004; Kie et al. 2002), depending on the habitats available. Smaller species, such as butterflies, amphibians, reptiles, birds, and small mammals, have smaller home ranges; therefore, individuals of these species present in the study area may spend most of their lives within the study area. The dispersal of these species occurs over multiple generations (Penrod et al. 2006).

At the regional scale, large wildlife species and birds use the Project Area for dispersal (e.g., individuals extending range distributions) and seasonal migration. In the Project Area, upland habitat may provide vegetative cover to shelter wildlife to support movement for wildlife species (Penrod et al. 2006). The Project Area is part of a linkage that connects habitats between the Cleveland National Forest to the north and habitats in Baja California to the south, and along the U.S./Mexico international border (CBI 2003; CBI et al. 2015). The La Posta Linkage planning area borders the Project Area on the west; however, the linkage excludes the Project Area in the analysis because of access and land use planning constraints (CBI 2003). However, several of the focal species identified in the La Posta Linkage and habitat supporting these species were detected in the Project Site, including Quino checkerspot butterfly, golden eagle, black-tailed jackrabbit (*Lepus californicus*), and Blainville's horned lizard (*Phrynosoma blainvillii*); thus, the Project Site contributes to a linkage that sustains wildlife movement. However, major transportation corridors (i.e., I-8 and SR-94) represent significant barriers to wildlife movement and sources of mortality for large wildlife species (CBI 2003). Smaller roads can be significant barriers to less-mobile species but are less of an impediment to the movement of large wildlife species (CBI 2003).

The Project Area and immediate vicinity are located within the Pacific Flyway, a major migration route for birds that travel north–south between North and South America. Small bird (passerine) migration occurs mostly at night. In Southern California, the Pacific Flyway spans a broad front, although migrating birds are not uniformly distributed across the landscape (Bloom 1985). Small birds avoid areas that are more turbulent over mountains; therefore, they mostly follow the coast or desert to reach their wintering grounds farther south (e.g., Mexico to South America). Smaller birds that do migrate through the mountains will generally seek out forested areas that provide cover during daylight hours.

Conversely, migrating raptors and other soaring birds tend to follow mountain ridges and use updrafts created by the topography. Most raptorial species (other than turkey vultures and Swainson's hawks (*Buteo swainsoni*)) migrating to and from Mexico migrate across a broad and diffuse front and are not known to concentrate movements anywhere. Many birds migrating from their winter range in western mainland Mexico to their breeding range in Northern California, the Pacific Northwest, or Alaska use San Diego County as a corridor for crossing from the desert to the coastal slope (Unitt 2007, as cited in AECOM 2012). However, this migration happens along the east side of San Diego County's mountains and is most concentrated in the canyons and valleys that lead from southeast to northwest (Unitt 2007, as cited in AECOM 2012). Therefore, the Project Area is not located within this northward migration route.

In addition to the Pacific Flyway, shorter, irregular movements of resident birds during post-breeding dispersal or in response to changes in food sources commonly occur in the region. Avian species and groups documented from the study area and immediate vicinity that are known to make these types of movements include the wrentit, some woodpeckers, jays, nuthatches, and finches (Garrett and Dunn 1981).

Based on the avian data collected for the Project and the site's location, habitat, and topography, large concentrations of migrating birds do not regularly pass through the Project Area. Additionally, radar shows migrating species travel at much higher altitudes than the proposed wind turbines will reach. Previous studies within the Project vicinity, including the Tule Wind Project, concluded that large concentrations of migrants do not appear to regularly pass through the region (Tetra Tech 2008, 2009). However, migration is not a uniform and consistent phenomenon, and it is expected that while generally low, it will vary due to vagaries of weather or other unforeseeable factors (DiGaudio et al. 2008; Kerlinger and Moore 1989; Manville 2005; Morrison 2006).

5 PROJECT IMPACTS

5.1 Definition of Impacts

This section addresses direct and indirect impacts to biological resources that would result from implementation of the Project. A number of mitigation measures are included as part of the Project to avoid, minimize, and/or mitigate potential impacts to less than significant levels; these measures are summarized in Chapter 6, Avoidance, Minimization, and Mitigation Measures. Additionally, standard BMPs are described in Table 1 in Section 1.4.

Direct Impacts. Direct effects are defined as those "which are caused by the action and occur at the same time and place" (40 CFR 1508.8(a)). Permanent direct impacts associated with the proposed Project include impacts from the loss of habitat within the limits of grading for the wind turbines, access roads, and associated Project components (i.e., Project collector substation, O&M building, parking, meteorological towers). They may also include continuing operational impacts such as avian and bat collisions with wind turbines, noise, vehicle traffic, hydrologic changes, and runoff. Temporary direct impacts are those associated with construction and include short-term effects of noise, dust, erosion, and traffic. They also will include the temporary widening of roads, temporary batching plant, temporary staging area needed for equipment and material transportation, and fuel modification zones associated with the batching plant and laydown yard. Direct impacts were quantified by overlaying the Project data layers on GIS-located biological resources.

Indirect Impacts. Indirect impacts are defined as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8(b)). Indirect impacts to biological resources may occur outside the direct limits of grading (temporary indirect impact) or from the long-term operation of the Project (permanent indirect impact). Indirect impacts may affect areas within the defined Project Site but outside the limits of grading, including non-impacted areas and areas outside the development footprint, such as downstream effects.

Temporary indirect impacts as a result of construction may include: dust and noise, which could temporarily disrupt habitat and species' vitality; changes in hydrology; disruption of wildlife activity resulting from increased human activity; short-term habitat fragmentation; invasive species; construction-related chemical pollutants; and alteration of natural fire regime. However, all Project grading would be subject to restrictions and requirements that address erosion and runoff, including the federal Clean Water Act and the National Pollution Discharge Elimination System program, preparation of a stormwater pollution prevention plan (SWPPP) and all applicable construction stormwater BMPs and post-construction source control BMPs. These

programs are expected to minimize Project impacts with respect to erosion/runoff, altered hydrology, and potential impacts from chemical pollutants.

Permanent indirect impacts to adjacent lands may include intrusions by humans and domestic pets, noise from human activity and the wind turbines, nighttime lighting, invasion by exotic plant and wildlife species, effects of toxic chemicals (fertilizers, pesticides, herbicides, and other hazardous materials associated with the O&M building and equipment), litter, habitat fragmentation, and hydrologic changes from irrigation, if applicable.

Cumulative Impacts. Cumulative impacts refer to the combined environmental effects of the proposed Project and other past, present, and probable future projects. In some cases, the impact from a single project may not be significant, but when combined with other projects, the cumulative impact may be significant.

5.2 Effects on Vegetation Communities and Land Covers

5.2.1 Direct

Direct impacts would occur on vegetation communities and land covers as a result of the proposed Project. Table 8a quantifies the impacts on the vegetation communities and land covers associated with the proposed Project. The Figure 14 series, Impacts on Biological Resources, shows these impacts. Table 8b quantifies the impacts on the vegetation communities and land covers associated with Alternative 2 (Reduced Intensity – Approximately 202 MW).

Table 8a
Impacts on Vegetation Communities and Land Cover Types – Proposed Project

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code)	On-Reservation	Off-Reservation		Total (Acres)
		Permanent Impacts (Acres)	*Temporary Impacts (Acres)*	*Permanent Impacts (Acres)*	
Bog and Marsh (50000)	Emergent wetland	0.35	0.21[a]	0	0.56
	Freshwater marsh	0.01	0	0	0.01
	Bog and Marsh (50000) Subtotal	*0.36*	*0.21*	*0*	*0.57*
Disturbed and Developed Areas (10000)	Developed	3.32	0	0.01	3.33
	Disturbed habitat	46.78	1.70	9.45	57.93
	Disturbed and Developed Areas (10000) Subtotal	*50.10*	*1.70*	*9.46*	*61.26*
Grasslands, Vernal Pools, Meadows, and other Herb Communities (40000)	Wildflower field	0	5.62	0.49	6.11
	Non-native grassland	24.04	0	0	24.04
	Non-native grassland broadleaf-dominated	0	0	0	0
	Valley sacaton grassland	0.22	0	0	0.22
	Grasslands, Vernal Pools, Meadows, and other Herb Communities (40000) Subtotal	*24.26*	*5.62*	*0.49*	*30.37*
Riparian and Bottomland Habitat (60000)	Mulefat scrub	0.05	0	0	0.05
	Southern willow scrub	0.18	0	0	0.18
	Southern arroyo willow riparian forest	0	0.06	0.05	0.11
	Unvegetated stream channel	1.46	0.27[a]	0.12	1.85
	Riparian and Bottomland Habitat (60000) Subtotal	*2.55*	*0.33*	*0.17*	*3.05*
Scrub and Chaparral (30000)	Big sagebrush scrub	33.06	10.01	2.39	45.46
	Disturbed big sagebrush scrub	0	0	0	0
	Granitic chamise chaparral	452.03	2.51	1.03	455.57

Table 8a
Impacts on Vegetation Communities and Land Cover Types – Proposed Project

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code)	On-Reservation	Off-Reservation		Total (Acres)
		Permanent Impacts (Acres)	*Temporary Impacts (Acres)*	*Permanent Impacts (Acres)*	
	Granitic northern mixed chaparral	96.57	41.24	21.56	159.37
	Montane buckwheat scrub	48.23	14.12	6.61	68.96
	Red shank chaparral	39.07	19.48	13.00	71.55
	Semi-desert chaparral	0	19.95	12.45	32.40
	Scrub oak chaparral	19.21	0	0	19.21
	Upper Sonoran subshrub scrub	10.59	0	0	10.59
	Scrub and Chaparral (30000) Subtotal	*698.76*	*107.29*	*57.05*	*863.10*
Woodland (70000)	Coast live oak woodland	22.14	11.39	1.78	34.45
	Woodland (70000) Subtotal	*22.14*	*11.39*	*1.78*	*34.45*
	Total	**797.31**	**126.54**	**68.94**	**992.79**

[a] Impacts to approximately 0.21 acres of emergent wetland and 0.12 acres of unvegetated channel are from a construction-related, temporarily cleared road that will be revegetated once construction is complete.

Table 8b
Impacts on Vegetation Communities and Land Cover Types – Alternative 2

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code)	On-Reservation	Off-Reservation		Total (Acres)
		Permanent Impacts (Acres)	*Temporary Impacts (Acres)*	*Permanent Impacts (Acres)*	
Bog and Marsh (50000)	Emergent wetland	0.35	0.21[a]	0	0.56
	Freshwater marsh	0.01	0	0	0.01
Bog and Marsh (50000) Subtotal		*0.36*	*0.21*	*0*	*0.57*
Disturbed and Developed Areas (10000)	Developed	3.22	0	0.01	3.23
	Disturbed habitat	38.30	1.70	9.45	49.45
Disturbed and Developed Areas (10000) Subtotal		*41.52*	*1.70*	*9.46*	*52.68*
Grasslands, Vernal Pools, Meadows, and other Herb Communities (40000)	Wildflower field	0	5.62	0.49	6.11
	Non-native grassland	21.07	0	0	21.07
	Non-native grassland broadleaf-dominated	2.97	0	0	2.97
	Valley sacaton grassland	0.22	0	0	0.22
Grasslands, Vernal Pools, Meadows, and other Herb Communities (40000) Subtotal		*24.26*	*5.62*	*0.49*	*30.37*
Riparian and Bottomland Habitat (60000)	Mulefat scrub	0.05	0	0	0.05
	Southern willow scrub	0.18	0	0	0.18
	Southern arroyo willow riparian forest	0	0.06	0.05	0.11
	Unvegetated stream channel	1.29	0.27[a]	0.12	1.68
Riparian and Bottomland Habitat (60000) Subtotal		*1.52*	*0.33*	*0.17*	*2.02*
Scrub and Chaparral (30000)	Big sagebrush scrub	32.66	10.01	2.39	45.46
	Disturbed big sagebrush scrub	0	0	0	0

Table 8b
Impacts on Vegetation Communities and Land Cover Types – Alternative 2

General Vegetation Community/Land Cover Category	Vegetation Type (Holland/Oberbauer Code)	On-Reservation	Off-Reservation		Total (Acres)
		Permanent Impacts (Acres)	*Temporary Impacts (Acres)*	*Permanent Impacts (Acres)*	
	Granitic chamise chaparral	393.54	2.51	1.03	397.08
	Granitic northern mixed chaparral	48.21	41.24	21.56	111.01
	Montane buckwheat scrub	37.33	14.12	6.61	58.06
	Red shank chaparral	35.26	19.48	13.00	67.74
	Semi-desert chaparral	0	19.95	12.45	32.40
	Scrub oak chaparral	18.57	0	0	18.57
	Upper Sonoran subshrub scrub	8.76	0	0	8.76
	Scrub and Chaparral (30000) Subtotal	*574.33*	*107.29*	*57.05*	*738.67*
Woodland (70000)	Coast live oak woodland	17.84	11.39	1.78	31.01
	Woodland (70000) Subtotal	*17.84*	*11.39*	*1.78*	*31.01*
	Total	**659.82**	**126.54**	**68.94**	**855.30**

5.2.2 Indirect

Temporary

Temporary (construction-related) indirect impacts from construction activities to vegetation communities outside of the limits of grading could include impacts related to or resulting from the generation of fugitive dust; temporary changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). The standard BMPs described in Table 1 address many of these potential impacts, such as keeping equipment free of leaks, using trash abatement to reduce attraction of predators, minimizing wildfires from construction-related activities, avoiding working in heavy rains, and establishing speed limits and watering to reduce dust from equipment and vehicles.

Excessive dust during grading on surrounding vegetation can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, respiration, transpiration, increased penetration of phytotoxic gaseous pollutants, and increased incidence of pests and diseases. Excessive dust is only anticipated during construction as a result of construction equipment and vehicles.

Construction activities could result in hydrologic and water-quality-related impacts adjacent to and downstream of the construction area. Hydrologic alterations include changes in flow rates and patterns in streams, which may adversely affect adjacent and downstream vegetation communities. Water-quality impacts could include chemical-compound pollution (e.g., fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation. Erosion and chemical pollution can also decrease the number of plant pollinators, increase the occurrence of non-native plants, and cause damage to and destruction of native plants.

No herbicides are proposed to be used during construction. Additionally, construction activities would follow established BMPs (Table 1) and be subject to restrictions and requirements that address erosion and runoff, including the CWA and the National Pollution Discharge Elimination System program. Preparation and implementation of a Project-specific SWPPP and compliance with the CWA are expected to minimize temporary construction-related impacts with respect to erosion/runoff and altered hydrology, and potential impacts from chemical pollutants, such that impacts would not be significant.

Permanent

Permanent (operation-related) indirect impacts could result from the proximity of the Project to vegetation communities after construction, including impacts related to O&M. O&M activities would be limited to the permanent footprint of the Project. However, indirect impacts to vegetation

communities could occur from generation of fugitive dust from vehicles (similar to the temporary impacts), habitat fragmentation, chemical pollutants if used for operation-related activities, introduction or spread of invasive species, and alteration of the natural fire regime. The standard BMPs described in Table 1 will minimize many of these potential impacts, such as speed limits to reduce dust from vehicles, material storage, and handling to avoid spills, and trash abatement to reduce attraction of predators.

Habitat fragmentation and isolation of plant populations can lead to extinction of local populations as a result of reduction in total habitat area, which reduces effective population sizes, and insularization of local populations, which affects dispersal rates (Wilcove et al. 1986; Wilcox and Murphy 1985). Although these effects are more readily observable in wildlife, there are potential ecological effects, such as changes in pollinator populations, which can result in altered plant community composition and thus adversely affect vegetation communities. The permanent impact footprint is relatively small and primarily associated with the turbine pads, which are spread out within the Project Site. Therefore, the Project is not expected to increase habitat fragmentation or isolation of plant populations.

Removal of vegetation can increase runoff from roads and other paved surfaces, resulting in increased erosion and transport of sediment into vegetation communities. If unchecked during construction these can lead to long-term adverse effects such as altered erosion, increased surface flows, and underground seepage which can favor the establishment of non-native plants. Changed hydrologic conditions can also alter seed bank characteristics and modify habitat for ground-dwelling fauna that may disperse seed. During O&M, herbicides may be used to prevent vegetation from reestablishing around structures. Any chemical herbicides shall be used strictly in accordance with U.S. Environmental Protection Agency labelling and applied by certified applicators as required. Any herbicide applications would be contained within the Project footprint, thereby minimizing indirect impacts.

Invasive plant species that thrive in edge habitats are a well-documented problem in Southern California. Exotic plant species may alter habitats and displace native species over time, leading to extirpation of native plant species and unique vegetation communities, and loss of suitable habitat for special-status wildlife species. The introduction of non-native, invasive animal species could negatively affect native species that may be pollinators of or seed dispersal agents for plants within vegetation communities.

Increased human activity after construction could result in the potential for trampling of vegetation outside of the limits of grading, as well as soil compaction, and could affect the viability of plant communities. Trampling can alter the ecosystem, creating gaps in vegetation and allowing exotic, non-native plant species to become established, leading to soil erosion. Trampling may also affect

the rate of rainfall interception and evapotranspiration, soil moisture, water penetration pathways, surface flows, and erosion. Increased human activity increases the risk for damage to adjacent vegetation communities.

The Project proposes to alter natural landscapes, impact native vegetation communities, and could potentially disrupt naturally occurring fires. Shorter-than-natural fire return intervals can preclude recovery of the native vegetation between fires, weaken the ecological system, allow for invasion of exotic species, and in some cases result in permanent transition of the vegetation to non-native communities, such as annual grassland and weedy communities (Keeley 1987; Malanson and O'Leary 1982; O'Leary et al. 1992). If the natural fire regime is suppressed, longer-than-natural fire return intervals can result in excessive buildup of fuel loads so that when fires do occur, they are catastrophic. Unnaturally long fire intervals can also result in senescence of plant communities, such as chaparral, that rely on shorter intervals for rejuvenation. The Project has potential to increase fire regime as a result of increase human activity at the site. It is estimated that one 30,000-gallon water tank would be required near the O&M building, and one 30,000-gallon tank would be needed near the collector substation site. This on-site fire prevention infrastructure would provide immediate resources for firefighting.

5.2.3 Effects Determination

Direct Impacts to Vegetation Communities. Direct impacts to vegetation communities that coincide with jurisdictional waters of the United States are considered a potential adverse effect because they are federally regulated resources (**Impact BIO-1**). These impacts are quantified and addressed in Section 5.3, Effects on Jurisdictional Aquatic Resources. There are no other vegetation communities that would be regulated by NEPA. These impacts would not be adverse through implementation of recommended **Mitigation Measure (MM) BIO-2** (Jurisdictional Waters and Wetlands Compensation). This measure requires that all temporary impacts to federally regulated jurisdictional aquatic resources be restored in place to pre-activity functions and permanent impacts be permitted through the ACOE. Permanent impacts will be mitigated through an approved mitigation bank and/or in-lieu fee program in order to achieve no net loss of jurisdictional aquatic resources.

Indirect Effects. Temporary indirect impacts from fugitive dust, altered hydrology, and increased erosion could adversely affect adjacent vegetation communities (**Impact BIO-2**). Permanent indirect impacts from invasive plant species on adjacent vegetation communities and land covers (e.g., unvegetated channel) and increased fire regime would result in a potential adverse effect (**Impact BIO-3**). These impacts would not be adverse through implementation of recommended **MM-BIO-1** (General Avoidance and Minimization Measures), which would help reduce temporary and permanent indirect impacts through

biological monitoring, environmental training to reduce impacts to resources outside of the limits of disturbance, implementation of a SWPPP to reduce impacts to jurisdictional aquatic resources outside of the limits of disturbance and avoid planting any invasive species, implementation of a fugitive dust control plan, implementation of erosion and runoff control plan, weed management, and implementation of the Campo Wind Project Fire Protection Plan.

Chapter 6 provides measures designed to avoid, minimize, and mitigate adverse impacts on vegetation communities that are regulated by ACOE under the CWA. Section 5.5 discusses impacts on habitat supporting species protected under the ESA.

Additional Off-Reservation impacts may occur on state and County resources as analyzed in the County EIR (County of San Diego 2019).

5.2.4 Alternative 2: Reduced Intensity – Approximately 202 MW

Direct Impacts on Vegetation Communities. Alternative 2 would result in direct impacts on vegetation communities that coincide with jurisdictional waters of the United States. These impacts are considered a potential adverse effect because they are on federally regulated resources. These impacts are quantified and addressed in Section 5.3, Effects on Jurisdictional Aquatic Resources. There are no other vegetation communities that would be regulated by NEPA. These effects would not be adverse through implementation of recommended **MM-BIO-2** (Jurisdictional Waters and Wetlands Compensation). This measure requires that all temporary impacts to federally regulated jurisdictional aquatic resources be restored in place to pre-activity functions and permanent impacts be permitted through the ACOE. Permanent impacts will be mitigated through an approved mitigation bank and/or in-lieu fee program in order to achieve no net loss of jurisdictional aquatic resources.

Indirect Effects. The temporary and permanent indirect effects are similar to those described for the proposed Project but would be reduced through the elimination of the turbines in the southwest portion of the Reservation. These impacts would not be adverse through implementation of recommended **MM-BIO-1** (General Avoidance and Minimization Measures).

5.3 Effects on Jurisdictional Aquatic Resources

5.3.1 Direct

The proposed Project would result in direct impacts on jurisdictional resources. Table 9a quantifies the impacts on these resources associated with the on-site portion of the proposed Project. The Figure 14 series shows the locations and extent of these impacts. Table 9b quantifies the impacts on these resources associated with the on-site portion of Alternative 2.

Table 9a
Impacts on Waters of the United States – Proposed Project

Feature Type	Type of Habitat (Oberbauer et al. 2008)	Type of Habitat (Cowardin et al. 1979)	On-Reservation	Off-Reservation Boulder Brush Facilities		Total: Acres (Linear Feet)
			Permanent Impacts: Acres (Linear Feet)	*Temporary Impacts: Acres (Linear Feet)*	*Permanent Impacts: Acres (Linear Feet)*	
Non-wetland waters	Waters of the U.S./ unvegetated channel – ephemeral	Riverine; unconsolidated Bottom, sand, ephemerally flooded, fresh	1.35 ac (11,041 ft)	0.21 ac (3,967 ft)	0.11 ac (1,908 ft)	1.67 ac (16,916 ft)
Non-wetland waters	Waters of the U.S./ unvegetated channel – intermittent	Riverine; unconsolidated bottom, sand, intermittently flooded, fresh	0	0.06 ac (305 ft)	0.01 ac (24 ft)	0.07 ac (329 ft)
Wetland	Emergent wetland Freshwater marsh Valley sacaton grassland	Riparian; emergent, lentic, riparian	0.55 ac	0	0	0.55 ac
Wetland	Southern willow scrub	Riparian; scrub-shrub, lentic, riparian	0.13 ac	0	0	0.13 ac
Total potential impacts on jurisdictional waters			**2.04 ac (11,243 ft)**	**0.27 ac (4,272 ft)**	**0.12 ac (1,932 ft)**	**2.43 ac (17,447 ft)**

ac = acres; ft = linear feet.

Table 9b
Impacts on Waters of the United States – Alternative 2 – Approximately 202 MW

Feature Type	Type of Habitat (Oberbauer et al. 2008)	Type of Habitat (Cowardin et al. 1979)	On-Reservation	Off-Reservation Boulder Brush Facilities		Total: Acres (Linear Feet)
			Permanent Impacts: Acres (Linear Feet)	*Temporary Impacts: Acres (Linear Feet)*	*Permanent Impacts: Acres (Linear Feet)*	
Non-wetland waters	Waters of the U.S./ unvegetated	Riverine; unconsolidated	1.21 ac (7,574 ft)	0.21 ac (3,967 ft)	0.11 ac (1,908 ft)	1.53 ac (13,449 ft)

Table 9b
Impacts on Waters of the United States – Alternative 2 – Approximately 202 MW

Feature Type	Type of Habitat (Oberbauer et al. 2008)	Type of Habitat (Cowardin et al. 1979)	On-Reservation	Off-Reservation Boulder Brush Facilities		Total: Acres (Linear Feet)
			Permanent Impacts: Acres (Linear Feet)	*Temporary Impacts: Acres (Linear Feet)*	*Permanent Impacts: Acres (Linear Feet)*	
	channel – ephemeral	Bottom, sand, ephemerally flooded, fresh				
Non-wetland waters	Waters of the U.S./ unvegetated channel – intermittent	Riverine; unconsolidated bottom, sand, intermittently flooded, fresh	<0.01 (203 lf)	0.06 ac (305 ft)	0.01 ac (24 ft)	0.07 ac (329 ft)
Wetland	Emergent wetland Freshwater marsh Valley sacaton grassland	Riparian; emergent, lentic, riparian	0.55 ac	0	0	0.55 ac
Wetland	Southern willow scrub	Riparian; scrub-shrub, lentic, riparian	0.13 ac	0	0	0.13 ac
Total potential impacts on jurisdictional waters			**1.90 ac (7,777 ft)**	**0.27 ac (4,272 ft)**	**0.12 ac (1,932 ft)**	**2.29 ac (13,981 ft)**

To the extent feasible, Project features have been sited to avoid potential jurisdictional waters of the United States. Remaining permanent impacts resulting from new access road (unpaved) construction are unavoidable. Construction of permanent, unpaved roads across ephemeral drainage features will be at grade to allow for water to continue flowing downstream unimpeded. Therefore they would not adversely affect the overall functions (e.g., volume, velocity, and historical direction of surface water) or values (e.g., aesthetics, flood control, and water quality) of these features.

Additional Off-Reservation impacts may occur on state and County resources as analyzed in the Draft EIS (Dudek 2019).

5.3.2 Indirect

Temporary

Temporary (construction-related) indirect impacts from grading and other construction activities to jurisdictional resources outside of the limits of grading are similar to those described for vegetation in Section 5.2.2. Potential temporary indirect impacts include generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including herbicides). The standard BMPs described in Table 1 minimize some of these potential impacts, such as keeping equipment free of leaks, avoiding working in heavy rains, and establishing speed limits to reduce dust from equipment and vehicles.

Permanent

Permanent (operation-related) indirect impacts could result from the proximity of the Project to jurisdictional resources after construction are similar to those described for vegetation in Section 5.2.2. Potential permanent indirect impacts include generation of fugitive dust from vehicles (similar to the temporary impacts) and chemical pollutants if used for operation-related activities. The standard BMPs described in Table 1 minimize some of these potential impacts, such as speed limits to reduce dust from vehicles and trash abatement to reduce attraction of predators.

5.3.3 Effects Determination

Direct Impacts. Permanent impacts to 2.43 acres of federally regulated wetland and non-wetland waters of the United States would be a potential adverse effect (see **Impact BIO-1**). These impacts will not be adverse through implementation of recommended **MM-BIO-2** (Jurisdictional Waters and Wetlands-Specific Avoidance, Minimization, and Mitigation Measures). This measure requires that all temporary impacts to federally regulated jurisdictional aquatic resources be restored in place to pre-activity functions and permanent impacts be permitted through the ACOE. Permanent impacts would be mitigated through an approved mitigation bank and/or in-lieu fee program in order to achieve a no net loss of jurisdictional aquatic resources.

Indirect Effects. Temporary indirect impacts from fugitive dust, altered hydrology and increased erosion could adversely affect adjacent jurisdictional resources (**Impact BIO-4**). Permanent indirect impacts from would be minimized through the standard BMPs described in Table 1 and would result in no adverse effect. These impacts would not be adverse through implementation of recommended **MM-BIO-1** (General Avoidance and Minimization Measures), which helps reduce temporary and permanent indirect impacts through biological monitoring, environmental training to reduce impacts to resources outside of the limits of disturbance, implementation of a SWPPP to

reduce impacts to jurisdictional aquatic resources outside of the limits of disturbance and avoid planting any invasive species, implementation of a fugitive dust control plan, implementation of erosion and runoff control plan, weed management, and implementation of the Campo Wind Project Fire Protection Plan.

It is anticipated that the Project would qualify for authorizations under CWA Section 404 Nationwide Permit (NWP) program (33 CFR 330). The specific statutory authority for the NWPs (and other CWA Section 404 General Permits) is CWA Section 404(e). CWA Section 404(e) authorizes ACOE (after notice and opportunity for public hearing) to issue NWPs that cause only minimal adverse environmental effects the aquatic environment. Additionally, the final Regional Conditions developed by the ACOE Los Angeles District are to ensure that NWP authorizations would result in no more than minimal individual and cumulative impacts to aquatic resources within its designated area of responsibility and regulatory jurisdiction. It is anticipated that regulated activities in jurisdictional waters of the United States associated with the proposed Project could be authorized through compliance with NWP 51, Land-Based Renewable Energy Generation facilities and/or NWP 12, Utility Line Activities. NWP 51 and/or NWP 12 would specify permit conditions applicable to the Project.

The Project has been designed to avoid and minimize impacts on jurisdictional aquatic resources to the greatest extent practicable, and standard BMPs (see Table 1) would be implemented. Chapter 6 provides measures designed to avoid, minimize, and mitigate impacts on potential jurisdictional waters of the United States.

5.3.4 Alternative 2: Reduced Intensity – Approximately 202 MW

Direct Impacts. Permanent impacts to 2.29 acres of federally regulated wetland and non-wetland waters of the United States would be a potential adverse effect. These impacts would not be adverse through implementation of recommended **MM-BIO-2** (Jurisdictional Waters and Wetlands-Specific Avoidance, Minimization, and Mitigation Measures). This measure requires that all temporary impacts to federally regulated jurisdictional aquatic resources be restored in place to pre-activity functions and permanent impacts be permitted through the ACOE. Permanent impacts would be mitigated through an approved mitigation bank and/or in-lieu fee program in order to achieve a no net loss of jurisdictional aquatic resources.

Indirect Effects. Temporary and permanent indirect impacts are similar to those described for the proposed Project, but would be reduced through the elimination of the turbines in the southwest portion of the Reservation. Permanent indirect impacts from would be minimized through the standard BMPs described in Table 1 and would result in no adverse effect. These impacts would

not be adverse through implementation of recommended **MM-BIO-1** (General Avoidance and Minimization Measures).

5.4 Effects on Special-Status Plant Species

5.4.1 Direct

There are no federally listed plants within the Project Site or limits of grading; therefore, no permanent or temporary direct impacts on federally listed plants would occur.

Additional Off-Reservation impacts may occur on state and County resources as analyzed in the Draft EIS (Dudek 2019).

5.4.2 Indirect

There are no federally listed plants within the Project Site or limits of grading; therefore, no permanent or temporary indirect impacts on federally listed plants would occur.

5.4.3 Effects Determination

No impacts would occur on federally listed plants; therefore, no On- or Off-Reservation permanent or temporary indirect impacts on federally listed plants would occur.

5.4.4 Alternative 2: Reduced Intensity – Approximately 202 MW

No impacts would occur on federally listed plants; therefore, no On- or Off-Reservation permanent or temporary indirect impacts on federally listed plants would occur.

5.5 Effects on Special-Status Wildlife Species

5.5.1 Direct

Quino checkerspot butterfly is the only known federally listed species to occur in the Project Site. Quino checkerspot butterfly was observed during the 2010 focused surveys within portions of the Project Site as well as elsewhere in the Project Area (see Section 4.5.2) (Figure 10). No Quino checkerspot butterflies were observed during the focused 2018 surveys; however, that does not override the results of the previous survey efforts. Dudek modeled habitat in order to estimate potentially occupied areas on site (see Section 4.5.2). There would be impacts to 222.98 acres of potentially occupied Quino checkerspot butterfly habitat (Figure 15, Impacts on Potentially Occupied Quino Checkerspot Butterfly Habitat). Quino checkerspot butterflies tend to fly

relatively close to the ground and in open habitats and they could be susceptible to collisions with construction equipment during construction activities or vehicles associated with O&M activities.

Golden eagle use in the Project Site and surrounding area is described in Section 4.6.2. The infrequent sightings during the eagle point surveys and USGS biotelemetry data suggests that the Project Site and surrounding area receives little use by eagles and is not the core territory of any eagles.

There are potential direct impacts to nesting birds protected under the MBTA due to vegetation removal, as well as collisions with wind turbines and meteorological towers, and electrocution from overhead transmission lines.

5.5.2 Indirect

Temporary

Temporary (construction-related) indirect impacts from grading and other construction activities to species' habitat outside of the limits of grading are similar to those described for vegetation in Section 5.2.2. Potential temporary indirect impacts include generation of fugitive dust; changes in hydrology resulting from construction, including sedimentation and erosion; and the introduction of chemical pollutants (including pesticides or herbicides). Additionally, construction-related noise can have a variety of indirect impacts on wildlife species, including increased stress, weakened immune systems, altered foraging behavior, displacement due to startle, degraded communication with conspecifics (e.g., masking), damaged hearing from extremely loud noises, and increased vulnerability to predators (Lovich and Ennen 2011; Brattstrom and Bondello 1983, as cited in Lovich and Ennen 2011). Construction-related noise and vibration could occur from equipment used during site preparation and grading, including vegetation clearing, and construction of the Project. Construction noise and vibration levels would vary from hour-to-hour and day-to-day, depending on the equipment in use, the operations being performed, and the distance between the source and receptor. Construction would occur during the day, and no construction is anticipated to take place at night. Increased noise and vibration can affect breeding behaviors in birds, mammals, reptiles, amphibians, and other species that use vocal methods for communication. Increased vibration can collapse small mammal, reptile, or amphibian burrows if they are located close to the construction equipment.

Construction activities increase the number of humans within the area, which can deter wildlife from using an area. Additionally, trash from construction-related activities can attract predators to an area, increasing the chance of predation on wildlife species.

The standard BMPs described in Table 1 minimize some of these potential impacts, such as keeping equipment free of leaks; avoiding working in heavy rains; establishing speed limits to

reduce dust from equipment and vehicles; using trash abatement to reduce attraction of predators; limiting work to daytime hours; and not using nighttime lighting.

Permanent

Permanent (operation-related) indirect impacts could result from the proximity of the Project to species' habitat after construction and are similar to those described for vegetation in Section 5.2.2. Potential permanent indirect impacts include generation of fugitive dust from O&M vehicles (similar to the temporary impacts), chemical pollutants if used for operation-related activities, light pollution, introduction of non-native species, habitat fragmentation, and increased fire regime. Dust can affect invertebrates as well as preventing nectaring on vegetation that is covered in dust; chemical pollutants can result in mortality of invertebrates, reptiles, and amphibians through direct contact; habitat fragmentation can prevent wildlife from foraging, expanding their ranges, moving between breeding, nesting, and foraging habitats, and overall reduce genetic diversity; and increased fire can reduce habitat or result in habitat type conversion that become unsuitable for wildlife as well as result in direct mortality of individual species. Operations-related lighting is limited to (1) restricted exterior lighting installed on turbines for Federal Aviation Administration aviation warning lights and (2) permanent motion-sensitive, directional security lights installed to provide adequate illumination around the collector substation. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties.

The standard BMPs described in Table 1 minimize some of these potential impacts, such as speed limits to reduce dust from vehicles and trash abatement to reduce attraction of predators.

5.5.3 Effects Determination

Direct Impacts. This section provides effects determinations for the direct and indirect impacts described above. There are direct impacts to 222.98 acres of potentially occupied Quino checkerspot butterfly habitat, which is a potentially adverse effect (**Impact BIO-5**). Butterfly collisions with construction equipment and/or vehicles associated with O&M activities may occur and such collisions would be an adverse effect (**Impact BIO-6**). Implementation of recommended **MM-BIO-3** (Quino Checkerspot Butterfly-Specific Avoidance, Minimization, and Mitigation Measures) would reduce adverse effects to this species through adhering to the terms and conditions provided by the USFWS during the ESA Section 7 consultation process. These terms may include off-site mitigation for permanent impacts to potentially occupied Quino checkerspot butterfly habitat, installation of construction fencing around potentially occupied areas, and, to the extent feasible, avoid construction activities in suitable habitat during the time of year when Quino checkerspot butterfly adult and larval activity is high.

As discussed in Sections 4.6.2 and 5.1, Golden eagle use on site and the surrounding area is infrequent, these areas are not core territory of any eagles, and the chance for collisions is low; therefore, no adverse effects on golden eagle would occur. No bald eagles have been observed during the ongoing eagle point count surveys conducted from October 2017 to present (or during any other surveys). The Project Site lacks lakes, ponds, and perennial rivers that support fish, their typical prey. Bald eagles also typically nest and roost around water sources, which are not on or near the Project site. The species is not expected to occur on site as more than a rare flyover.

Potential direct impacts to birds (e.g., active nests) protected under the MBTA as a result of vegetation clearing is a potential adverse effect (**Impact BIO-7**). This impact would not be adverse with implementation of recommended **MM-BIO-4** (Avian-Specific Avoidance, Minimization, and Mitigation Measures), which recommends vegetation clearance outside of the nesting bird season (generally February 15 through August 15); if avoidance is not feasible, then a nesting bird survey would be done, and buffers provided around active nests until nesting is completed.

Avian collisions with turbines or towers and/or electrocution with overhead lines is a potential adverse effect (**Impact BIO-8**). This impact would not be adverse with implementation of recommended **MM-BIO-4**, which requires preparation of an Avian Monitoring Plan to monitor the Project site for dead or injured bird and bat species; removal of dead carcasses to reduce attraction of carrion-consuming birds of prey; and implementation of recommendations by the Avian Power Line Interaction Committee (APLIC) to protect raptors and other birds from electrocution (APLIC 2006, 2012).

Indirect Effects. Temporary indirect impacts from construction-related noise and increased human activity can adversely affect nesting birds protected under the MBTA, and erosion and altered hydrology can adversely affect habitat for species such as Quino checkerspot butterfly (**Impact BIO-9**). These impacts would not be adverse through implementation of recommended **MM-BIO-1** and **MM-BIO-4**, which would help reduce temporary indirect impacts through biological monitoring, environmental training to reduce impacts to resources outside of the limits of disturbance, implementation of a SWPPP to reduce impacts to habitat and waterways outside of the limits of disturbance, implementation of a fugitive dust control plan, implementation of erosion and runoff control plan, weed management, and vegetation clearing avoidance during the nesting season (or nesting bird clearance surveys).

Habitat fragmentation is not an adverse effect of the Project because the individual wind turbine pads are small (20 feet by 20 feet) and the roads and the gen-tie line would not be fenced; therefore, wildlife would be able to continue moving freely through these areas (see Section 5.6, Impacts on Wildlife Corridors and Habitat Connectivity). Additionally, access within the Reservation would be limited to residents and personnel with permission only, and access roads would be controlled.

Controlled access might include gates or other measures to limit access to personnel. Further, the areas beyond the turbine pads would be allowed to passively revegetate and would be available for wildlife use. Therefore, the roads would not increase off-road vehicle use on the Project site. Increased fire regime as a result of fire suppression could result in potential adverse effects (**Impact BIO-10**). Implementation of recommended **MM-BIO-1** would reduce potential impacts from fire because it requires implementation of the Campo Wind Project Fire Protection Plan.

5.5.4 Alternative 2: Reduced Intensity – Approximately 202 MW

Direct Impacts. Alternative 2 would result in direct impacts to 191.58 acres of potentially occupied Quino checkerspot butterfly habitat is a potentially adverse effect. There is a low potential for butterfly collisions with construction equipment and/or vehicles associated with O&M activities. Those collisions would be an adverse effect, but that effect would be less compared to the proposed Project as a result of the reduced area. Implementation of recommended **MM-BIO-3** (Quino Checkerspot Butterfly-Specific Avoidance, Minimization, and Mitigation Measures) would reduce adverse effects to this species through adhering to the terms and conditions provided by the USFWS during the Section 7 consultation process.

As discussed above, Golden eagle use on site is infrequent, and the chance for collisions is low; therefore, no adverse effects on golden eagle would occur. Likewise, as discussed further above, no bald eagles have been observed during the ongoing eagle point count surveys conducted from October 2017 to present (or during any other surveys).

Direct impacts to birds (e.g., active nests) protected under the MBTA as a result of vegetation clearing is a potential adverse effect. This impact would not be adverse with implementation of recommended **MM-BIO-4** (Avian-Specific Avoidance, Minimization, and Mitigation Measures).

Avian collisions with turbines or towers and/or electrocution with overhead lines is a potential adverse effect, although it is reduced compared to the proposed Project with the elimination of 12 turbines. This impact would not be adverse with implementation of recommended **MM-BIO-4**.

Indirect Effects. Temporary and permanent indirect impacts are similar to those described for the proposed Project, but are expected to be lower because of the elimination of turbines in the southwest portion of the Reservation. These impacts would not be adverse through implementation of recommended **MM-BIO-1** and **MM-BIO-4.**

5.6 Effects on Wildlife Corridors and Habitat Connectivity

Studies have shown mixed results when evaluating the long-term effects of wind facilities on terrestrial wildlife. Lopucki et al. (2017) studied the effects of functioning wind projects on four terrestrial animals: European roe deer (*Capreolus capreolus*), European hare (*Lepus europaeus*),

red fox (*Vulpes vulpes*), and the common pheasant (*Phasianus colchicus*). The study concluded that: herbivorous mammals (roe deer and European hare) avoided wind farm interiors and proximity to turbines; common pheasants showed a positive reaction to wind turbine proximity; red fox had a neutral response to wind turbines; and there was no relation between fox track density and turbine proximity (Lopucki et al. 2017).

The Wyoming Game and Fish Commission (2010) concluded that elk (*Cervus canadensis*) were displaced from wind development activities during construction, but following the completion of construction, less displacement was noted. The network of roads constructed for wind projects could displace elk depending on the amount of human activity. Increased human activity can displace elk and result in increased movements (Rumble et al. 2005).

In Arizona, a study evaluated the potential of pronghorn (*Antilocapra americana*) response to wind energy development (American Wind Wildlife Institute 2017). Of the 24 pronghorn monitored, 21 of the pronghorn used the wind facility, and the remaining 3 were collared south of the study area and did not interact with the facility. The research determined that high crossing rates were associated with open grassland in the winter, but in the summer, pronghorn were more likely to use the pinyon and juniper wooded areas. Finally, pronghorn tended to use the areas within the wind facility more often in the winter months (November through February) than the summer months (April through October). There was no diurnal pattern (552 crossings took place during daylight hours compared to 520 at night).

Finally, a number of studies have determined that a variety of terrestrial wildlife were not adversely affected by wind power development (Agha et al. 2015; American Wind Wildlife Institute 2017; Lopucki et al. 2017; Walter et al. 2006; Wyoming Game and Fish Commission 2010). Based on the results of these studies, implementation of the Project is not expected to impact wildlife movement, habitat connectivity, or wildlife corridors.

5.6.1 Direct

The Project would directly impact 992.79 acres of vegetation communities that currently serve as habitat for wildlife movement. Implementation of the Project is not expected to result in permanent direct impacts to habitat connectivity and wildlife corridors. The Project Site is large, with varied habitats, and may support wildlife corridors. Although the Project would involve placement of structures and wind turbines within the landscape, the site is unfenced and the features are not considered barriers that would interfere with the movement of wildlife through the surrounding undeveloped landscapes. Therefore, the Project would not constrain wildlife movement. There is existing human activity throughout portions of the Reservation, as allowed by the Tribe, and additional human activity from O&M activities is also not expected to impact wildlife movement

throughout the Project site. The Off-Reservation portion of the Project Site is subject to regular off-road vehicle use. However, the Project would not increase off-road vehicle use on the Project site.

Likewise, the presence of turbines would not preclude the use of the Pacific Flyway for avian species, nor would it artificially constrain avian species to a modified or "unnatural" movement corridor.

5.6.2 Indirect

Temporary

Temporary (construction-related) indirect impacts would result from noise and ground vibrations through the use of mechanized equipment and increased traffic. Noise would most likely only be a disturbance to those species that are active during the day, since noise levels are less at night because construction activities would not take place at night (see Table 1). Most wildlife species, such as cougars and bobcats (*Lynx rufus*), that would use the area as a habitat corridor or territory are nocturnal and therefore would not be impacted by Project construction while foraging and moving at night. Noise from Project construction is not anticipated to hamper breeding and nesting activities of any special-status species.

No construction is anticipated to take place at night, and therefore no nighttime lighting would interfere with wildlife movement (see Table 1).

Permanent

Permanent (operation-related) indirect impacts associated with permanent lighting would consist of the O&M facility, Federal Aviation Administration lighting on selected turbines, and parking areas. These areas would include security lighting designed to minimize light pollution and preserve dark skies, while enhancing safety, security, and functionality. Some localized security-related lighting may be required during construction and/or operation. Noise associated with O&M activities is not anticipated to hamper breeding or use of the surrounding area by any common or special-status species. Wildlife species are expected to acclimate to the new facilities and equipment.

5.6.3 Effects Determination

Direct Impacts. The on-site permanent impacts associated with wind turbines are limited to a small footprint. The turbines are widely dispersed ranging from 600 feet to 1,700 feet away from each other. The Off-Reservation impacts include transmission line poles that have a very small footprint; the roads are private and unpaved and are not expected to increase vehicle use on site; and the switchyard is limited to a footprint that still allows movement in the surrounding areas. Therefore, the Project allows for nearly unimpeded movement by both terrestrial and avian species.

As described in Section 4.8, Wildlife Corridors and Habitat Linkages, a number of studies have determined that terrestrial wildlife are not adversely affected by wind power development (Agha et al. 2015; American Wind Wildlife Institute 2017; Lopucki et al. 2017; Walter et al. 2006; Wyoming Game and Fish Commission 2010). Therefore, construction and operation of the Project is not expected to have an adverse effect on wildlife movement, habitat connectivity, or wildlife corridors.

Indirect Effects. Temporary indirect impacts associated with noise are not expected to result in an adverse effect to wildlife corridors and habitat connectivity. Permanent on-site and Off-Reservation indirect impacts associated with lighting is not expected to result in adverse effects to wildlife corridors. Therefore, the potential noise and lighting impacts as a result of the Project would result in no adverse effect.

5.6.4 Alternative 2: Reduced Intensity – Approximately 202 MW

Direct Impacts. The on-site permanent impacts associated with wind turbines are limited to a small footprint. The turbines are widely dispersed ranging from 600 feet to 1,700 feet away from each other. The Off-Reservation impacts include transmission line poles that have a very small footprint; the roads are private and unpaved and are not expected to increase vehicle use on site; and the switchyard is limited to a footprint that still allows movement in the surrounding areas. Therefore, the Project would allow for nearly unimpeded movement by both terrestrial and avian species.

As described in Section 4.8, Wildlife Corridors and Habitat Linkages, a number of studies have determined that terrestrial wildlife are not adversely affected by wind power development (Agha et al. 2015; American Wind Wildlife Institute 2017; Lopucki et al. 2017; Walter et al. 2006; Wyoming Game and Fish Commission 2010). Therefore, construction and operation of the Project is not expected to have an adverse effect on wildlife movement, habitat connectivity, or wildlife corridors.

Indirect Effects. Temporary indirect impacts associated with noise are not expected to result in an adverse effect to wildlife corridors and habitat connectivity. Permanent on-site and Off-Reservation indirect impacts associated with lighting is not expected to result in adverse effects to wildlife corridors. Therefore, the potential noise and lighting impacts as a result of the Project would result in no adverse effect.

5.7 Cumulative Effects

The Council on Environmental Quality regulations define cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR 1508.7). The purpose of cumulative effects

analysis is to ensure that the federal responsible official considers the full range of consequences of the proposed action and alternatives, including the no action alternative.

Geographic Extent

The geographic extent for the analysis of cumulative impacts associated with biological resources includes the vicinity of all past, present, and reasonably foreseeable actions, within recognized ecological boundaries based on ecoregions. To define the appropriate geographic extent, a GIS-based analysis of eastern San Diego County and western Imperial County was performed. This included a review of available GIS data for watersheds, ecoregion data, and bioregion data. Map review and analysis included the San Diego Plant Atlas ecoregion maps and data (SDNHM 2018), Calflora maps and data (Calflora 2018), U.S. Environmental Protection Agency watershed maps (EPA 2018a), U.S. Environmental Protection Agency ecoregion maps (EPA 2018b), and Jepson Bioregion maps (Jepson Flora Project 2018).

Based on the above analysis, the Peninsular Ranges of the California Floristic Province, as defined in the Jepson Flora Project, were determined to be an appropriate boundary for analysis of cumulative effects on biological resources (Figure 16, Biological Cumulative Study Area Vegetation).

The Peninsular Ranges eco-geographic extent was chosen because the geographic system developed by the Jepson Flora Project "combines features of natural landscapes and biota to delimit the units, as opposed to using the often arbitrary and unnatural boundaries of counties for that purpose. The Jepson geographic system most importantly reflects broad patterns of natural vegetation (and, at a finer scale, more specific plant assemblages), geology, topography, and climate" (Jepson Flora Project 2018). In addition, habitat within the Peninsular Ranges comprises a variety of ecoregions supporting habitat for wildlife. The southern mountain ecoregion, south desert slopes, central mountains, and portions of the southern foothills are all represented within the Peninsular Ranges (SDNHM 2018).

The Peninsular Ranges of the Jepson Flora Project exclude the southern desert lowlands (SDNHM 2018). Based on an analysis of both flora and fauna, southern desert lowland flora was determined to be dissimilar to the southern mountain region, south desert slopes, and central mountains and southern foothills (SDNHM 2018).

The biological cumulative analysis study area is explained in the "Existing Cumulative Conditions" section that follows. The cumulative projects analyzed for biological resources are a subset of those projects summarized in Table 10.

Existing Conditions within the Cumulative Impacts Analysis Area

Southeastern San Diego County is considered a transition zone between biogeographic regions. The California Floristic Province occurs in the biological cumulative analysis study area, which encompasses a majority of California west of the extreme dry regions. Within the California Floristic Province, the Peninsular Ranges subregion (i.e., an area of similar climatic and plant community associations) stretches from southern Los Angeles County along the valley, foothills, and mountains south to Baja California, Mexico.

In the western and central portion of the analysis area in and around the McCain Valley, the mountain and foothill areas are characterized by a mosaic of chaparral and scrub communities that grade into oak woodlands and grasslands in the valleys. Many of the valleys are also characterized by grazing uses and rural residential development. This analysis area primarily includes transmission projects, large-scale renewable energy development, and residential and communications development in eastern San Diego County. The assemblage of plant and wildlife species, including special-status species, in the western and central portion of the analysis area is largely the same as that identified for the Project.

Cumulative Effects Assessment Methodology

The cumulative effects analysis conducted for biological resources is based on the list method and considers relevant projects from Table 10. Figure 16 shows the extent of the cumulative study area. Projects from the past, projects that are reasonably foreseeable, projects already approved, and projects pending are included. Of the cumulative projects listed in Table 10, the following projects would potentially affect biological resources within the cumulative study area: Torrey Wind Project, Energia Sierra Juarez Wind Project, Energia Sierra Juarez Transmission Project, Tule Wind Project, East County (ECO) Substation, Rugged Solar, Golden Acorn Casino and Travel Center, Freedom Ranch, Boulevard Fire Station, Rough Acres Foundation Campground Facility, Jacumba Solar, Boulevard Solar, Boulevard Energy Storage, JVR Solar, and VZW-1-8 Boulevard.

The locations of these projects can be found on Figure 16. Reasonably foreseeable projects located east of the cumulative impacts analysis area are not included because they would affect more arid vegetation communities (southern desert lowlands; SDNHM 2018) than those present on site; therefore, the proposed Project would not cumulatively contribute to impacts in natural vegetation communities of the arid regions (southern desert lowlands) or impact species that are associated with these arid (southern desert lowlands) habitat types.

Reasonably foreseeable projects located in the western, central, and southeastern portion of the cumulative impacts analysis area (within San Diego County), within the cumulative study area, as

described above, have the potential to affect similar vegetation communities as the proposed Project and therefore could contribute to cumulative impacts in natural vegetation communities in this region, or to impacts to species that are associated with these habitat types.

The cumulative impact analysis for wildlife movement and local and regional planning is similarly limited to the cumulative study area. Since the analysis area is largely undeveloped, wildlife movement through and around the reasonably foreseeable project areas would still be possible. Despite the development of the reasonably foreseeable projects, the area would remain predominantly rural with significant undeveloped areas and wildlife movement opportunity. Local and regional planning efforts are defined by the jurisdiction of the lead agency, which in the case of the proposed Project is the Bureau of Indian Affairs.

Table 10
Cumulative – Reasonably Foreseeable, Approved, and Pending Projects

Project	Type	Status	Distance from Project	Project-Related Impacts
Energia Sierra Juarez Wind Project I: Development of 400 MW of wind generation. Phase I (just north of the town of La Rumorosa in Mexico) is proposed to generate approximately 100 MW of energy with 45 to 52 turbines. Point of interconnection proposed with the ECO Substation.	PF-W	C	Approx. 15 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, and Hazards and Hazardous Materials (Fire)
Tule Wind Farm: 12,239 acres of public lands, 186 MW, with 67 wind turbines. The project would deliver power through the project substation via a 138 kV transmission line to run south to an interconnection with the proposed San Diego Gas & Electric Rebuilt Boulevard Substation.	PF-W	Phase 1 = C Phase 2 = A	Approx. 0.25 miles	Air Quality, Biological Resources, Cultural Resources, Public Services, and Hazards and Hazardous Materials (Fire)
Energia Sierra Juarez U.S. Transmission, MUP: 230 kV double-circuit power lines leading to San Diego Gas & Electric ECO Substation near the Mexican border.	PF	C	Approx. 13 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, and Hazards and Hazardous Materials (Fire)
ECO Substation: ECO Substation, Rebuilt Boulevard Substation, and 13.3-mile 138 kV line between Rebuilt Boulevard Substation and ECO Substation.	PF	C	Approx. 13 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Hydrology/Water Quality, Noise, and Hazards and Hazardous Materials (Fire)
Rugged Solar: Major Use Permit Modification MUP-12-007W1, MUP-12-007TE; MUP for the construction and operation of a 74 MW solar energy system on an approximately 765-acre site.	PF-S	UC	Approx. 5 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Hydrology/ Water Quality, Noise, Public

Table 10
Cumulative – Reasonably Foreseeable, Approved, and Pending Projects

Project	Type	Status	Distance from Project	Project-Related Impacts
				Services, and Hazards and Hazardous Materials (Fire)
Golden Acorn Casino and Travel Center: State Clearinghouse No. 2007071097: 33-acre expansion consisting of 150-room hotel, 900-space parking garage, surface parking, RV park, casino expansion, bowling alley, arcade, offices, retail, restaurants/food service, wind turbines, and water and wastewater improvements in three phases.	F	C	Approx. 4 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Noise, Public Services, Utilities, and Hazards and Hazardous Materials (Fire)
Freedom Ranch: MUP 74-011W2; Expand existing facilities from 50 beds to 125 beds in four phases. (Alcohol/Drug Treatment and Recovery Facility)	R	A	Approx. 12 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Noise, Public Services, Utilities, and Hazards and Hazardous Materials (Fire)
Boulevard Fire Station: Project would replace existing fire station along Highway 94. The fire station would be 8,496 square feet including an apparatus bay, and would have a total footprint of disturbance of approximately 30,000 square feet of the 17.5-acre parcel. The site would include water tank facilities that would be filled infrequently as well as roadway improvements along its northern boundary and roadway access improvements to Manzanita Dulce. (Fire Station)	PF	C	Approx. 4 miles	Aesthetics and Air Quality
Rough Acres Foundation Campground Facility: MUP-12-021; MUP for a campground/conference center. (Wellness Center and Campground Facility)	O	UR	Approx. 2 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Noise, Public Services, Utilities, and Hazards and Hazardous Materials (Fire)
Jacumba Community Services District Capacity Increase: Project would involve creation of new well at existing monitoring well site (Park Well) to increase capacity of JCSD water supply.	O	A	Approx. 11 miles	Hydrology Water Quality
Jacumba Solar: MUP-14-041; MUP for the construction and operation of a 20 MW solar energy system on an approximately 304-acre site.	PF-S	C	Approx. 13 miles	Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Public Services,

Table 10
Cumulative – Reasonably Foreseeable, Approved, and Pending Projects

Project	Type	Status	Distance from Project	Project-Related Impacts
				Transportation/Traffic, Utilities and Service Systems
Boulevard Solar: Major Use Permit Modification: MUP-12-010W1 MUP-12-010TE; MUP for the construction and operation of a 60 MW solar energy system on an approximately 420-acre site.	PF-S	UR	Approx. 9 miles	TBD pending completion of environmental analysis
Boulevard Energy Storage: PDS 2017-ZAP-17-006; Minor Use Permit for the construction and operation of a 100 MW energy storage facility on a 2-acre footprint.	PF	UR	Approx. 6 miles	TBD pending completion of environmental analysis
JVR Solar: MPA-17-016; Proposed construction and operation of a 100 MW solar energy system on an approximately 571-acre site.	PF-S	UR	Approx. 10 miles	TBD pending completion of environmental analysis
Cameron Solar: MUP-18-004; MUP for the construction and operation of a 1.7 MW solar energy system consisting of approximately 19 acres on a 164.7-acre parcel.	PF-S	UR	Approx. 13 miles	TBD pending completion of environmental analysis
Torrey Wind: MUP for the construction and operation of a wind energy generation facility consisting of 30 wind turbines on approximately 300 acres.	PF-W	UR	Adjacent to Project Site	TBD pending completion of environmental analysis
Meteorological Testing Facilities: NOE filed for the construction and operation of meteorological testing facilities to collect wind and climate data to determine site viability for the Torrey Wind project.	PF	UC	On Project Site	TBD pending completion of environmental analysis
Level 3 Communications LLC: Minor Use Permit PDS2001-3400-99-031; For the construction and operation of a Fiber-optic In-Line Application Facility consisting of two equipment shelters measuring 414 square feet and 286 square feet, a second facility consisting of six new shelters comprising 2,520 square feet, a 255-square-foot generator shelter, the relocation of an existing 255-square-foot generator hut, and a 8-foot, ’6-inch sound wall.	PF	C	Approx. 3.25 miles	Negative Declaration
Site Master Inc.: MUP PDS2014-MUP-14-005; MUP for the construction and operation of a 35-foot-tall faux elevated water tank with two mounted microwave dishes.	PF	C	Approx. 3.25 miles	Notice of Exemption
Pacific Telephone: MUP PDS2011-3300-76-061; MUP for the construction and operation of a 64-square-foot equipment shelter.	PF	C	Approx. 4.25 miles	Special Use Permit

Table 10
Cumulative – Reasonably Foreseeable, Approved, and Pending Projects

Project	Type	Status	Distance from Project	Project-Related Impacts
White Star Communications Site: MUP PDS2011-3300-88-064; MUP for the construction and operation of a radio communications facility for SAFE (San Diego Authority for Freeway Emergency) consisting of a tower max height of 70 feet, a mounted microwave dish, and a 200-square-foot equipment shelter with an antenna max height 40 feet.	PF	C	Approx. 4.75 miles	Negative Declaration
Pactel White Star: MUP PDS2003-3300-90-018; MUP for the construction and operation of a 100-foot lattice tower with 10-foot whip antenna on top and two buildings measuring 288 square feet and 567 square feet, a 270-square-foot building, 8 panel antennas, a 6-foot dish antenna, a 159.5-square-foot emergency standby generator surrounded by a 7-foot, 6-inch CMU block wall with roof and acoustic panel, 15 panel antennas, and a 230-square-foot equipment shelter	PF	C	Approx. 4.75 miles	Negative Declaration
SD0716 Manzanita – FWLL Modification & T-Mobile L700: Site Plan PDS2016-STP-16-022, PDS2014-STP-14-009, PDS2016-STP-16-020; Site Plan for the construction and operation of eight panel antennas, four new remote radio units (total 5), four radio frequency filters, four tower-mounted amplifiers, two surge suppressors mounted to an existing 35-foot wooden pole, two new equipment cabinets (total four), and one GPS antenna (total two).	PF	C	Approx. 2.5 miles	Notice of Exemption
VZW I-8 Boulevard: Site Plan PDS2014-STP-14-011; Site Plan for the construction and operation of 12 antennas mounted to a new 35 foot faux water tank, an associated equipment shelter, and an emergency generator.	PF	A	Approx. 2.25 miles	Biological Resources, Hazards & Hazardous Materials

PF = Public facilities and Utilities; S = Solar; W = Wind; T = Transmission; F = Federal; R = Residential; O = Other; MUP = Major Use Permit; A = Approved; UC = under construction; UR = under review; C = Completed; kV = kilovolt; MW = megawatt; ECO = East County; TM = Tentative Map.

5.7.1 Candidate, Proposed, or Listed Species under the ESA

Special-Status Wildlife Species

Direct

In order for a cumulative impact to special-status wildlife species to occur, the cumulative projects would have to result in the loss of the same special-status wildlife species or their habitat as the proposed Project such that those species become more limited in their distribution, population size, or available suitable habitat within the analysis area. The Project would impact 222.98 acres of potentially occupied Quino checkerspot butterfly habitat. As with this Project, projects within the cumulative impact study area that have impacts to Quino checkerspot butterfly habitat would be required to mitigate for these impacts through habitat mitigation and other measures specified during the Section 7 process. Therefore, the cumulative impacts would not be adverse with implementation of measures in the Section 7 process.

Indirect

Given the nature, location, and timing of the reasonably foreseeable projects, the potential for cumulatively significant indirect construction-related impacts to special-status wildlife species is low. Reasonably foreseeable projects within the biological cumulative analysis study area involve a variety of project types. Projects within a few miles of the proposed Project are generally not anticipated to be constructed simultaneously (see discussion above).

However, construction of some listed cumulative projects in close proximity to the Project may overlap, in which case noise, human presence, and erosion and altered hydrology could cause wildlife behavior modifications and avoidance of the area during construction activities. These disruptions could result in changes in habitat usage and potentially affect species fitness and productivity. The potential mortality resulting from increased vehicle use in the area and construction area hazards (e.g., trenches) across the proposed Project site and listed cumulative project site areas could lead to decreased population numbers and reduced productivity. The proposed Project and other reasonably foreseeable projects are located in a rural area and adjacent properties provide undeveloped areas for golden eagle to forage and available habitat for Quino checkerspot butterfly host plants. Permanent indirect impacts to wildlife habitat from increased fire regime could result in an adverse effect.

However, with implementation of the mitigation measures for the proposed Project, along with the minimization and mitigation measures for the cumulative projects, these impacts would be reduced to no adverse effect. Additionally, there is suitable habitat available for wildlife species, including

federally protected species, on portions of the Project Site and throughout the biological cumulative analysis study area.

5.7.2 Riparian Habitat or Sensitive Natural Community

Direct

Impacts to 2.43 acres of vegetation communities associated with jurisdictional resources are proposed, resulting in potential adverse effects because they are federally regulated resources. There are no federally sensitive vegetation communities on site. The total acreage of vegetation communities analyzed in the biological cumulative analysis study area is approximately 499,048 acres. The Project impacts (2.43 acres) and cumulative project impacts (5.80 acres) are less than 1% of the total study area (Table 11); therefore, the potential cumulative project impacts would not result in an adverse effect. Additionally, with implementation of the recommended mitigation measures for the proposed Project, along with the minimization and mitigation measures for the cumulative projects, these impacts would be further reduced.

Table 11
Cumulative Vegetation Impacts

Project Name	Potential Jurisdictional Resources	Impact Acreage
ECO Substation	Southern willow scrub/mulefat scrub	0.30
Energia Sierra Juarez U.S. Transmission	Southern cottonwood willow riparian forest	0.01
Jacumba Solar	Unvegetated channel	0.21
Rough Acres Foundation	Unvegetated channel	0.86
Rugged Solar	Alkali meadow (including disturbed)	0.10
	Tamarisk scrub	3.10
Rugged Solar – Off Site	Southern willow scrub (disturbed)	0.10
Torrey Wind	Southern arroyo willow riparian forest	0.11
	Unvegetated channel	0.41
Tule Wind Farm	Southern willow scrub	0.10
	Unvegetated channel	0.60
	Total	**5.80**

Indirect

In order for a cumulative impact to sensitive or riparian natural communities to occur, the cumulative projects would have to result in the loss of the same indirect impacts to vegetation communities as the proposed Project. Potential adverse effects could occur from fugitive dust,

altered hydrology, and increased erosion as part of the proposed Project. The cumulative projects listed in Table 11 that would result in impacts to potentially jurisdictional vegetation communities likely would have the same indirect impacts.

Construction of some cumulative projects may partially overlap or would be completed prior to commencement of Project construction activities, and impacts would be less severe than if they were constructed simultaneously. If all of the reasonably foreseeable cumulative projects in close proximity to the Project were to be constructed simultaneously, substantial dust generation, erosion, and sedimentation could degrade nearby jurisdictional resources. The cumulative indirect Project impacts could result in an adverse effect. However, with implementation of the mitigation measures for the proposed Project, along with the minimization and mitigation measures for the cumulative projects, these impacts would be not be adverse.

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6 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Purpose: To identify and recommend mitigation that would avoid or minimize the potential adverse impacts of the Project.

MM-BIO-1 General Avoidance and Minimization Measures.

(a) Project Biologist(s). A Project biologist(s) approved by the U.S. Fish and Wildlife Service (USFWS) and the Campo Band of Diegueño Mission Indians (Tribe) shall be designated by the developer. The developer shall submit the names, documented experience, any relevant permit numbers, and resumes for the Project biologist(s) to USFWS and the Tribe for approval prior to initiation of construction. The Project biologist(s) shall be responsible for the following:

- Providing training to all construction workers (may take the form of any documentable training platform).
- Reviewing and/or designating the construction area in the field with the construction contractor in accordance with the final grading plan prior to clearing, grubbing, or grading.
- Conducting a field review of the staking to be set by the professional surveyor, designating the limits of all construction activity prior to clearing, grubbing, or grading.
- Flushing wildlife species (i.e., avian or other mobile species) from occupied habitat areas immediately prior to (i.e., within 2 hours) brush-clearing and earthmoving activities.
- Regularly monitoring construction activities to verify that construction is proceeding in compliance with all permit requirements specific to biological resources.
- Overseeing the construction site so that cover and/or escape routes for wildlife from excavated areas are provided on a daily basis. All steep trenches, holes, and excavations during construction shall be covered at night with backfill, plywood, metal plates, or other means, and the edges covered with soils and plastic sheeting such that small wildlife cannot access them, and/or excavations shall provide an earthen ramp or boards to allow for a wildlife escape route at the ends and every 30 feet.

- Maintaining communication with the appropriate personnel (construction Project manager, resident engineer) so that issues relating to biological resources are appropriately and lawfully managed.
- Verifying that grading plans include a stormwater pollution prevention plan.
- Reporting any noncompliance issues to the Bureau of Indian Affairs, resident engineer, and the Tribe.

(b) Environmental Training Program. A worker environmental awareness program shall be developed and implemented prior to the start of construction. The Project biologist(s) shall use this program to conduct environmental training for construction personnel. All construction site personnel shall be required to attend the environmental training in conjunction with hazard and safety training prior to working on site.

(c) SWPPP. The stormwater pollution prevention plan (SWPPP) or equivalent shall include, at a minimum, the best management practices listed below. The combined implementation of these requirements shall protect adjacent habitats and special-status species during construction to the maximum extent practicable. At a minimum, the following measures and/or restrictions shall be incorporated into the SWPPP and noted on construction plans, where appropriate, to avoid impacts to special-status species, special-status vegetation communities, and/or jurisdictional waters during construction. The Project biologist(s) shall verify the implementation of the following design requirements:

- No planting or seeding of invasive plant species (per the most recent version of the California Invasive Plant Council's California Invasive Plant Inventory for the Project region) shall be permitted.
- Construction activity shall not be permitted in jurisdictional waters of the United States except as authorized by applicable law and permit(s), including permits and authorizations approved by the U.S. Army Corps of Engineers.
- Silt settling basins installed during the construction process shall be located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes.

- Temporary structures, staging, and storage areas for construction equipment and/or materials shall not be located in jurisdictional waters, including wetlands and riparian areas.
- Any equipment or vehicles driven and/or operated within jurisdictional waters of the United States shall be checked and maintained by the operator daily to prevent leaks of oil or other petroleum products that could be deleterious to aquatic life if introduced to the watercourse.
- No stationary equipment, such as motors, pumps, generators, and welders, or fuel storage tanks shall be located within 200 feet of jurisdictional waters of the United States.
- No debris, bark, slash sawdust, rubbish, cement, concrete, oil, or petroleum products shall be stored where it may be washed by rainfall or runoff into jurisdictional waters of the United States.
- When construction operations are completed, any excess materials or debris shall be removed from the work area.
- No equipment maintenance shall be performed within 200 feet of jurisdictional waters of the United States where petroleum products or other pollutants from the equipment may enter these areas.
- Fully covered trash receptacles that are animal-proof and weather-proof shall be installed and used by the construction contractor(s) to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Littering shall be prohibited and trash shall be removed from construction areas daily. All food-related trash and garbage shall be removed from the construction sites on a daily basis.

(d) Fugitive Dust Control Plan. The developer shall develop a fugitive dust control plan in compliance with San Diego County Air Pollution Control Regulations to reduce particulate matter less than 10 microns (PM_{10}) and fine particulate matter less than 2.5 microns ($PM_{2.5}$) emissions during construction and decommissioning. The fugitive dust control plan shall include names, addresses, and phone numbers of persons responsible for the preparation, submission, and implementation of the plan; description and location of operation(s); and a list of all fugitive dust emissions sources included in the operation.

The following dust control measures shall be implemented:

- All on-site unpaved roads shall be effectively stabilized using soil stabilizers that can be determined to be as efficient, or more efficient, for fugitive dust control than California Air Resources Board-approved soil stabilizers and shall not increase any other environmental impacts including loss of vegetation. Application of the soil stabilizer shall be undertaken strictly to the manufacturer's directions for application and cognizant of the weather forecast to avoid application immediately before a rain event.
- All material excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed areas.
- All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Soil loads shall be kept below 18 inches of the freeboard of the truck.
- Drop heights shall be minimized when loaders dump soil into trucks.
- Traffic speeds on unpaved roads shall be limited to 15 miles per hour.
- Disturbed areas shall be minimized.
- Disturbed areas shall be revegetated or stabilized using soil binders that can be determined to be as efficient, or more efficient, for fugitive dust control than California Air Resources Board-approved soil stabilizers, as soon as possible after disturbance and shall not increase any other environmental impacts including loss of vegetation.

(e) Erosion and Runoff Control. During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. This will protect jurisdictional resources from being inundated with sediment-laden runoff. Design of drainage facilities shall incorporate long-term control of pollutants and stormwater flow to minimize pollution and hydrologic changes.

(f) Weed Management. A weed management plan shall be developed and approved by the Tribe prior to the commencement of construction activities. The plan shall include a variety of measures that may be undertaken during

construction and operation and maintenance activities to prevent the introduction and spread of new weed species. The plan shall also address monitoring and educating personnel on weed identification and methods for avoiding and treating infestations. Weed control methods may include both physical and chemical control. If mulch is used, it shall be certified as weed free.

The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Adviser and implemented by a licensed applicator.

(g) Fire Protection. To minimize the potential exposure of the Project to fire hazards, a Campo Wind Project Fire Protection Plan shall be prepared and implemented in conjunction with development of the Project.

MM-BIO-2 **Jurisdictional Waters and Wetlands Compensation.** Temporary and permanent impacts to jurisdictional waters and wetlands shall be mitigated per the Project's federal Clean Water Act permit conditions. Temporary impacts shall be restored in place to pre-activity functions; permanent impacts shall be mitigated through a U.S. Army Corps of Engineers-approved mitigation bank and/or in-lieu fee program. Either of these mitigation options would result in no net loss of jurisdictional aquatic resources. A functional assessment, such as the California Rapid Assessment Method, of the jurisdictional areas proposed to be impacted and preserved at the mitigation site shall be conducted. The purpose of the functional assessment is to evaluate the existing functions and services within the jurisdictional drainages and ensure that the functions and values of the jurisdictional areas lost are replaced at the mitigation site. The precise mitigation ratio shall depend on the functions and values of the mitigation site and any restoration activities that may be conducted to further increase the functions and values of the mitigation site.

MM-BIO-3 **Implementation of USFWS-Issued Terms and Conditions.** All terms and conditions developed as part of the Section 7 consultation process with the U.S. Fish and Wildlife Service (USFWS) and provided in the Project's Biological Opinion shall be implemented. Terms and conditions shall apply to federally listed species that may be impacted by the Project. Ratios for habitat-based mitigation shall be determined during the Section 7 consultation process. The mitigation shall focus on habitat preservation and creation for long-term conservation of metapopulation dynamics. Habitat mitigation ratios will be determined through the

Section 7 consultation. Terms and conditions outlined in the Project's Biological Opinion shall take precedence over the measures outlined herein to the extent there is conflict between the two.

(a) Construction Fencing and Signage. Construction fencing and/or signage will be installed when construction of the Project occurs immediately adjacent to mapped occupied Quino checkerspot butterfly habitat to prevent unnecessary intrusion into occupied Quino checkerspot butterfly habitat. Signage shall be installed where high-use areas of the lease area border suitable Quino checkerspot butterfly habitat to prevent intrusion into sensitive habitat and remind personnel of restrictions regarding activities within these areas.

(b) Seasonal Avoidance. To the extent practicable, all construction clearing and grubbing in mapped suitable Quino checkerspot butterfly habitat associated with construction of the Project shall occur when adult and larval activity is reduced and host plants are not generally flowering or germinating, as determined by the USFWS. Vegetation management during the operation and maintenance phase of the Project shall also occur when adult and larval activity is reduced and host plants are not generally flowering or germinating, to the extent practicable.

MM-BIO-4 Avian-Specific Avoidance, Minimization, and Mitigation Measures.

(a) Vegetation Clearing Seasonal Avoidance/Nest Clearance Surveys. Vegetation clearing will take place outside of the general avian breeding season (February 15 through August 15) when practicable. If not practicable to conduct vegetation clearing outside the general avian breeding season, it is recommended that a Project biologist with a minimum of 3 years' experience conducting migratory bird surveys conduct a nest-clearance survey within 500 feet (152 meters) of a vegetation clearance area no more than 5 days prior to vegetation clearing. Vegetation clearing crews shall coordinate with the Project biologist prior to the start of construction to verify that the area has been adequately surveyed. If no active nests are discovered, vegetation clearing may proceed. If an active nest is discovered, the nest and an avoidance buffer (at least 300 feet (91 meters) for passerines and at least 500 feet (152 meters) for raptors) shall be flagged or otherwise marked for avoidance. The Project biologist shall monitor any active nest discovered on at least a weekly basis to track the status of each nest.

Vegetation clearing shall not take place within the avoidance buffer until nesting is complete (i.e., nestlings have fledged or nest has failed), as determined by the Project biologist. If clearing in a given area ceases for five or more consecutive days during the nesting season, repeat nest clearance surveys will be conducted to verify that new nesting locations have not been established.

(b) Construction Seasonal Avoidance/Pre-Construction Surveys. Construction (non-vegetation-clearing activities; see MM-BIO-3(a) for vegetation clearing restrictions) that cannot occur outside the general avian breeding season (February 15 through August 15) shall proceed under the following recommended protocols. If nest clearance surveys (see MM-BIO-3(a)) have not been conducted within 5 days of the start of construction, the Project biologist shall conduct a pre-construction nest survey within 500 feet (152 meters) of the construction area no more than 5 days prior to the start of construction in a given area of the construction footprint. Construction crews shall coordinate with the Project biologist prior to the start of construction to verify that the area has been adequately surveyed. If no active nests are discovered, construction may proceed. If an active nest is discovered, the nest and an avoidance buffer (at least 300 feet (91 meters) for passerines and at least 500 feet (152 meters) for raptors) shall be flagged or otherwise marked prior to the start of construction. The Project biologist shall coordinate with construction crews to determine the types of construction activities that may take place within the avoidance buffer. The following shall be taken into consideration when determining whether a construction activity may take place within the avoidance buffer: (1) location of nest; (2) status of nesting; (3) species-specific sensitivity to potential disturbances associated with an activity; (4) type, duration, and timing of construction activity; (5) existing level of disturbances; and (6) influence of other environmental factors on potential disturbances. The Project biologist shall be responsible for monitoring any active nests discovered on at least a weekly basis to track the status of each nest. Should the Project biologist determine that construction activities may disturb the nesting activity, then construction activities shall cease within the avoidance buffer until nesting is complete. If construction in a given area ceases for 5 or more consecutive days during the nesting season, repeat pre-construction surveys shall be required to verify that new nesting locations have not been established.

(c) Avian Monitoring Plan. To address concerns pertaining to avian and bat collisions, and inform potential future adaptive management actions if necessary, the Project shall conduct the following bat and avian monitoring during construction and operations:

- **Implementation of a Worker Response Reporting System (WRRS).** The WRRS shall provide a means of recording and collecting information on incidental discoveries of dead or injured birds and bats within the Project Site by site personnel. The WRRS shall be used by site personnel who discover bird and bat carcasses during construction and routine maintenance activities. Site personnel shall be provided a set of standardized instructions to follow in response to wildlife incidents in the Project area.
- **Notification and Implementation Activities.** In accordance with the WRRS, during construction, site personnel shall notify the Project biologist to collect the following data on the incidentally detected avian and bat wildlife: species, date, time, location (e.g., nearest Project structure), and how the animal died, if known. Results shall be reported to the Tribe and Terra-Gen on a quarterly basis unless listed species are involved. During operations, a procedure shall be developed for site personnel to collect the same data, take photographs, and notify the Project's environmental manager, who shall then notify the Tribe and Terra-Gen unless listed species are involved, in which case USFWS shall be notified within 48 hours. In the event of an injury to listed species, the USFWS shall be contacted for instruction on how to handle the situation. Workers shall be trained on the WRRS during Worker Environmental Awareness Program training. The WRRS shall be used for the life of the Project. To accommodate these requirements, a Project biologist shall be on retainer throughout the construction period, and one shall be available during the life of the Project to assist in avian and bat identifications, data collection, determination of cause of death or injury, and implementing the WRRS.

(d) Removal of Carcasses. All large animal carcasses (e.g., any domestic livestock, feral animal, or big game) incidentally found within the Project site during operation and maintenance activities shall be removed from the site to prevent attraction of carrion-consuming birds of prey.

(e) APLIC Standards. The Project shall implement 2006 and 2012 recommendations by the Avian Power Line Interaction Committee (APLIC) to protect raptors and other birds from electrocution. When properly designed and implemented, these measures can be sufficient to protect even the largest birds that may perch or roost on transmission lines or towers from electrocution. Specifically, these measures will include design specifications regarding proper pole and crossmember dimensions, phasing, and insulator design and dimensions to preclude wire-to-wire contact with a goal of providing appropriate separation between energized conductors and energized hardware and ground wire. In addition, bird diverters or other means to make lines more visible to birds will be installed where appropriate to help avoid collisions.

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