Appendix L1

Jurisdictional Delineation

HELIX
Environmental Planning

Ocotillo Wind Energy Facility

Jurisdictional Delineation

April 25, 2011

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OCOTILLO WIND ENERGY FACILITY
JURISDICTIONAL DELINEATION

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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
BTR	Biological Technical Report
BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
Corps	U.S. Army Corps of Engineers
CR	county route
EPA	Environmental Protection Agency
GPS	Global Positioning System
HELIX	HELIX Environmental Planning, Inc.
kV	Kilovolt
O&M	operation and maintenance
OHWM	ordinary high water mark
ORV	off-road vehicle
OWEF	Ocotillo Wind Energy Facility
RPW	relatively permanent body of water
RWQCB	Regional Water Quality Control Board
SAA	Streambed/Lake Alternation Agreement
SWRCB	State Water Resource Control Board
SR	state route
TNW	traditional navigable waters
USFWS	U.S. Fish and Wildlife Service
WDR	Water Discharge Requirements
WTG	wind turbine generator
WUS	Waters of the U.S.

1.0 INTRODUCTION

This report presents the results of a focused wetland delineation for the Ocotillo Wind Energy Project. The delineation was conducted to identify and map existing areas under U.S. Army Corps of Engineers (Corps) jurisdiction pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and California Department of Fish and Game (CDFG) jurisdiction pursuant to Section 1600 of the Fish and Game Code. This information is necessary to evaluate jurisdictional impacts and permit requirements associated with construction of a proposed wind energy plant. Three alternatives are currently being considered, all of which are contained within the study area used in this report. This report presents HELIX Environmental Planning, Inc.'s (HELIX's) best efforts to quantify the amount of Waters of the U.S. (WUS) and State jurisdictional habitats in the study area using the current regulations, written policies, and guidance from the regulatory agencies. Only the Corps and CDFG can make a final determination of jurisdictional boundaries.

1.1 LOCATION

The proposed project site is in the Yuha Desert, which is in the Colorado Desert region of the larger Sonoran Desert. The 7 million-acre Colorado Desert region extends from the border of the higher-elevation Mojave Desert in the north to the Mexican border in the south, and from the Laguna Mountains of the Peninsular Ranges in the west to the Colorado River in the east. The Yuha portion extends from the Jacumba Mountains in the west to the historic West Side Main Canal near the City of El Centro, and from Plaster City in the north to south of Mount Signal in Mexico.

The 12,435.6-acre proposed Ocotillo Wind Energy Project site is located almost entirely on Bureau of Land Management (BLM) land near the town of Ocotillo, Imperial County, California (Figure 1). The project site is located within 4 U.S. Geological Survey 7.5-minute quadrangle maps: Carrizo Mountain, Coyote Wells, In-Ko-Pah Gorge, and Painted Gorge (Figure 2). The northern portion of the site is generally situated north of Interstate 8 (I-8), from the Imperial/San Diego County border on its western edge to approximately 1.5 miles northeast of the town of Ocotillo on its eastern edge. The northern area includes several distinct features, including a portion of the I-8 Island, which is undeveloped rocky and hilly terrain between the eastbound and westbound lanes of I-8, Sugarloaf Mountain, and a portion of the San Diego and Arizona Eastern railroad tracks (Figure 2). County Route (CR) S2 bisects the northern project area, and I-8 passes through the southern portion of the northern project area. The southern area is much smaller than the northern area, and the majority is south of State Route (SR) 98.

1.2 PROJECT DESCRIPTION

The proposed project consists of construction, operations and maintenance (O&M), and decommissioning of a wind energy facility. The expected operation life of the Ocotillo Wind Energy Facility (OWEF) is at least 30 years, and possibly up to 40 years. Facilities for the OWEF would consist of up to 156 wind turbine generators (WTGs), above ground and below ground electrical transmission/collection system for collecting the power generated by each WTG, an electrical substation, interconnection switchyard, access roads, 2 meteorological

towers, a biological monitoring observation tower, and an O&M building (Figure 3). The dimensions of proposed WTGs include a hub height of 262 feet and a rotor diameter ranging from 351-371 feet.

2.0 SURVEYS AND METHODS

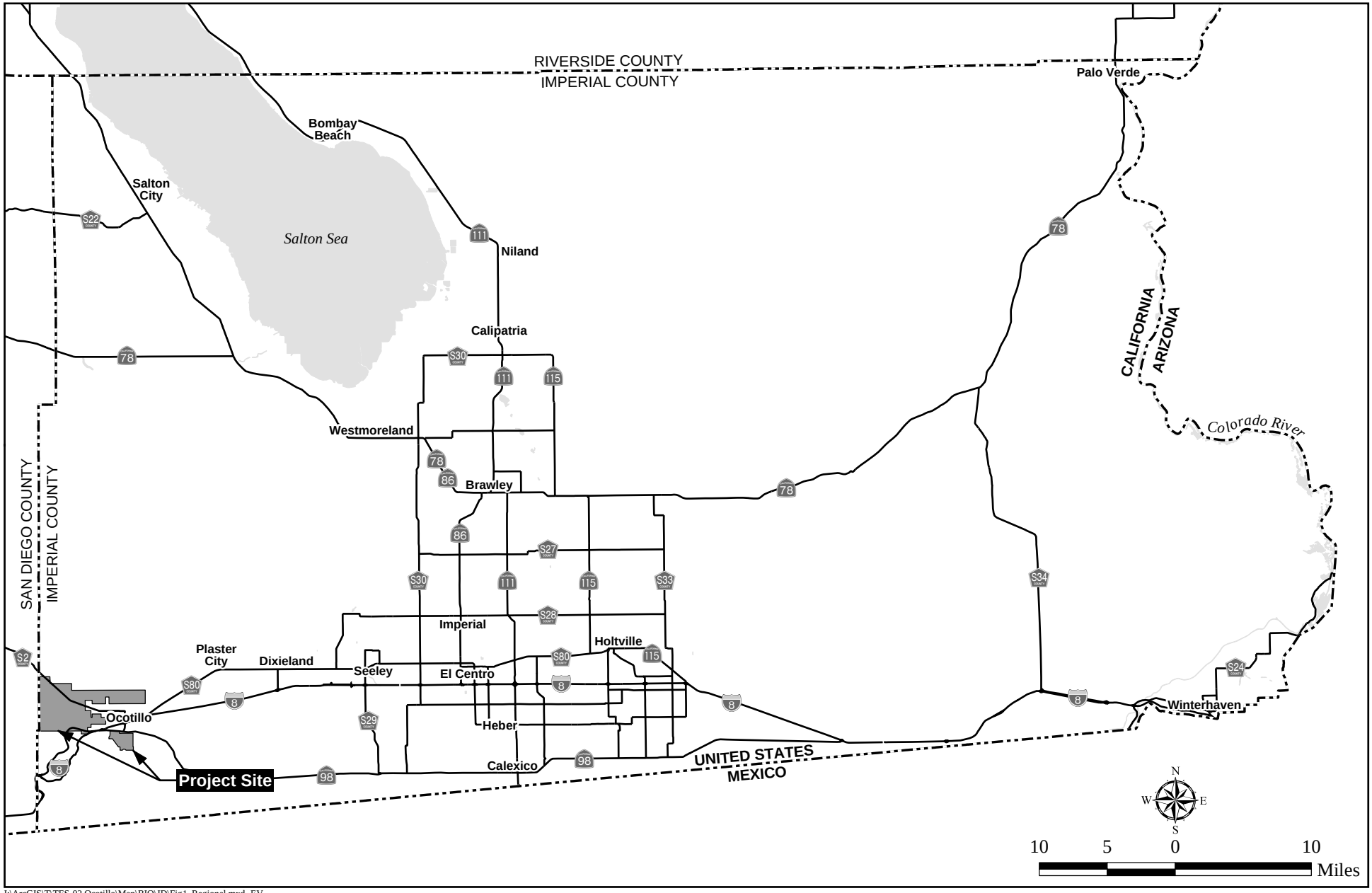
Field work for the jurisdictional delineation was conducted on October 27, 2010 by HELIX biologists Stacy Nigro and W. Larry Sward, and on November 18, 19, 22, 23, and 24, 2010 by Mr. Sward. The results presented here are consistent with input provided by the Corps on November 12, 2010. On that date, representatives from the Corps' San Diego field office (Michelle Matson, Meris Bantilan-Smith, and Lanika Cervantes) and Cold Regions Research Laboratory (Robert Lichvar and Katherine Curtis) concurred with the fieldwork conducted by HELIX on October 27, 2010. As such, subsequent field work conducted in November followed these methods.

Jurisdictional delineation data was collected along 10 transects, which were set up perpendicular along 2 baselines (Figure 4). Baseline 1 ran east-west through the portion of the study area, which is north of I-8. All 10 transects intercept this baseline. Baseline 2 is located in the portion of the project area south of I-8 and was also oriented east-west. Transects 8, 9, and 10 also intercept this baseline. The average width between transects is 3,720 feet along the Baseline 1 and 3,130 feet along Baseline 2. The entire length of each transect was surveyed on foot and jurisdictional features were mapped with the aid of a Global Positioning System (GPS) that is accurate to less than one meter. The rugged, boulder strewn hills in the southwestern part of the study area were not delineated, as they no longer contain project elements.

Additional channel width data was collected by Mr. Sward during vegetation mapping field work and fall 2010 special status plant surveys. This data helped fill in the gaps between the jurisdictional delineation transects.

The GPS data was plotted on an aerial photo-topographic base map, with a scale of one inch equal to 400 feet. The topography used for this base map was developed from aerial photography flown in the spring 2010 and mapped at 2-foot contours. The aerial photo base was specifically obtained for this project. It was flown in 2008 and has a resolution of one foot. The GPS data, aerial image, and topography were used to extrapolate the data between transects. Some of the GPS data points were essentially on top of other points on the 400 scale map. In these instances, the aggregate of their widths was used for a drainage width.

Corps jurisdictional drainages and unvegetated CDFG streambed streambeds widths are presented in this report as one of 6 size classes: one to 3 feet, 4 to 7 feet, 8 to 12 feet, 13 to 18 feet, 19 to 25 feet, and greater than 26 feet. The area calculations, however, are based on the actual drainage width. For example, a drainage that measures 5 feet in width is represented as 4 to 7 feet in width. The area for that drainage was calculated from its actual observed width and the corresponding length of the drainage at that width. The rationale behind grouping the width data into one of 6 size classes was to more easily present the data visually on the maps included



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Regional Location Map

OCOTILLO WIND ENERGY FACILITY

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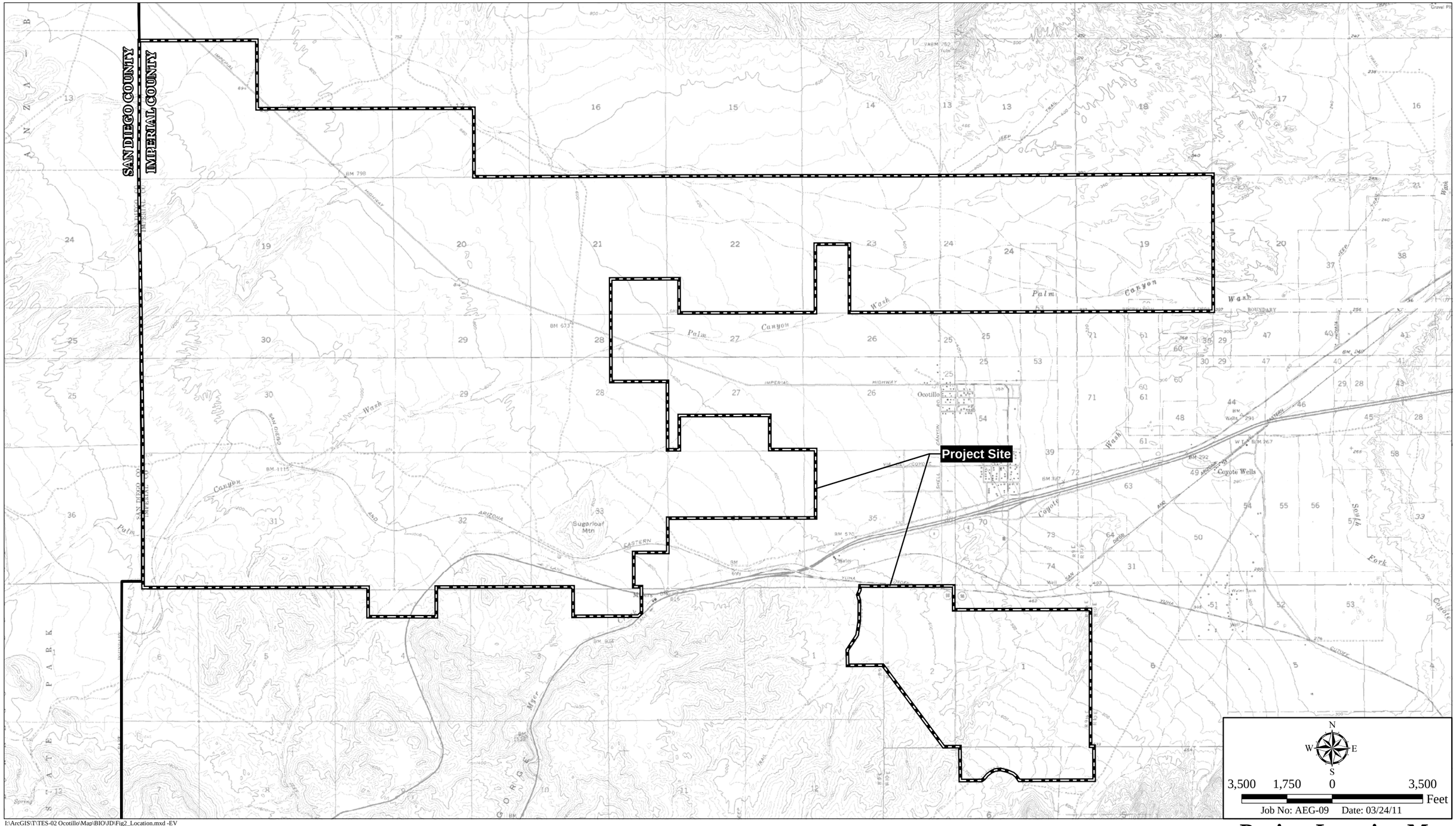
Figure 1



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Project Location Map

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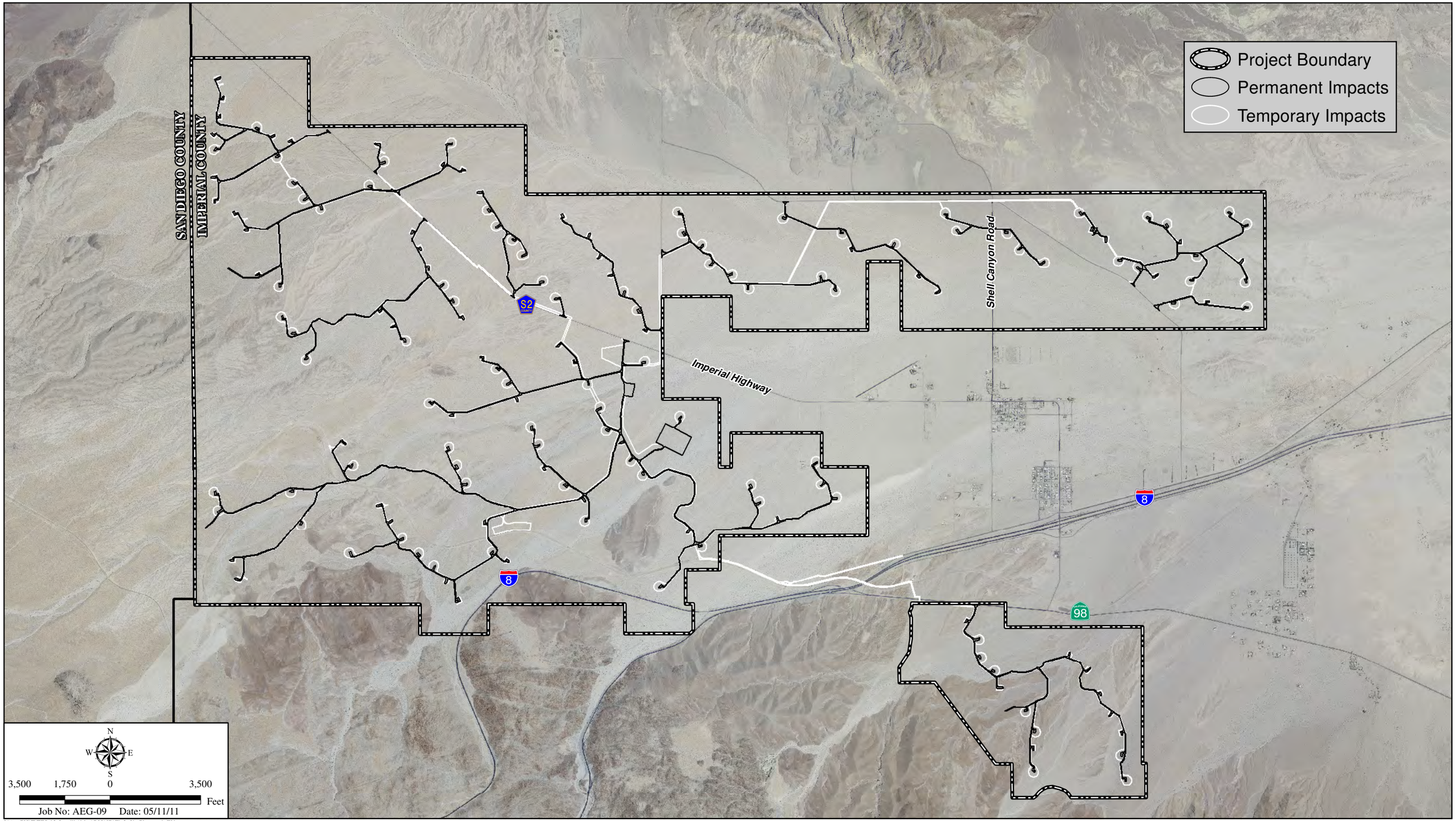
Figure 2



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Site Plan

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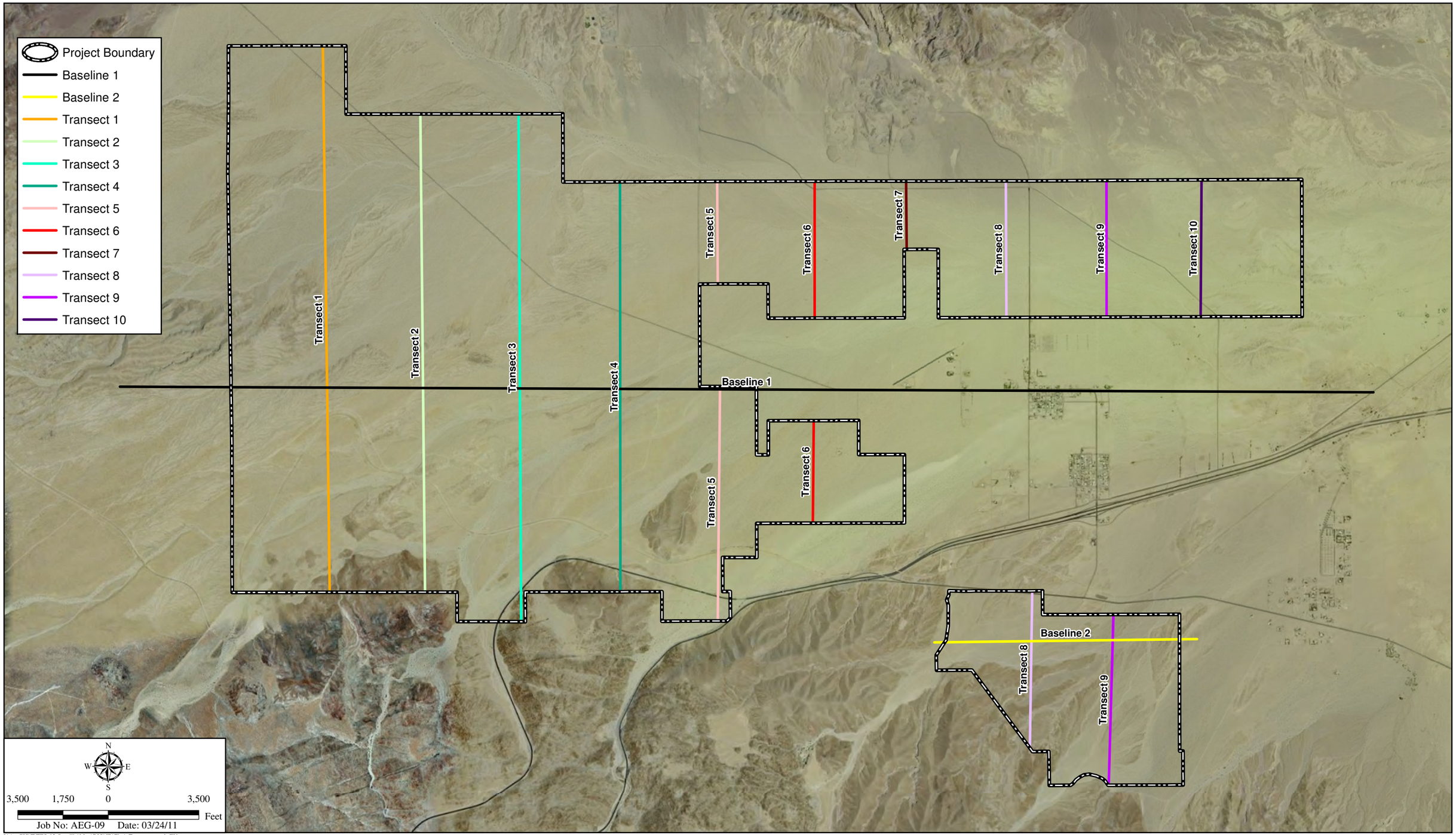
Figure 3



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Jurisdictional Delineation Transects

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Figure 4

in this report. The drainage classes are biased for the smaller width drainages because they are more common.

Integral to completing this delineation was the prior completion of a vegetation map for the study area. HELIX biologists, including Mr. Sward, were familiar with the site from fieldwork associated with completing the vegetation mapping and also from intensive rare plant surveys and other species surveys within the study area. The vegetation mapping done for the biological technical report (BTR) was done to the alliance level (Sawyer et al. 2009). In nearly all instances, this level of detail was sufficient for this report. In one area, the vegetation mapping for this report is to the association level to aid in identifying the limits of jurisdiction. Nomenclature used in this report comes from the Manual of California Vegetation (Sawyer et al. 2009) for vegetation; Baldwin, ed. (2002) for plants.

Federal Jurisdictional Areas

Activities that have the potential to discharge dredge or fill material into WUS, including adjacent wetlands, are regulated under Section 404 of the Clean Water Act (CWA), governed by 33 USC 1344 and 33 DFR 323, and administered by the Corps.

WUS are defined in the CFR (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

> All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all waters including interstate wetlands, all other waters such as interstate lakes, rivers, streams [including intermittent streams], mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such water, which are or could be used by interstate travelers for recreation or other purposes; or from which fish or shellfish are or could be taken and sold in interstate commerce; or which are or could be used for industries in interstate commerce; or wetlands adjacent to waters [other than waters that are themselves wetlands].
>
> Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.
>
> The term ordinary high water mark means that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Corps regulations define ordinary high water mark (OHWM), for the purposes of the Clean Water Act at 33 CFR 328.3(e). This section of the CFR states:

> "The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, and other appropriate means that consider the characteristics of the surrounding areas."

Among other points, the Regulatory Guidance Letter (Corps 2005) lists the following physical characteristics to consider when making an OHWM determination:

Natural line impressed on the bank
Shelving
Changes in the character of soil
Destruction of terrestrial vegetation
Presence of litter and debris
Wracking
Vegetation matted down, bent, or absent
Change in plant community
Sediment sorting
Leaf litter disturbed or washed away
Scour
Deposition
Multiple observed flow events
Bed and Banks
Water Staining

The Corps has also issued further instructions for identifying the OHWM (Lichvar and McColley 2008), which has also been used to guide for identifying the limits of Corps jurisdiction. This publication relies on stream geomorphology and vegetation response to the dominant stream discharge to aid in identifying the OHWM.

The Corps (Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as "[t]hose 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" (Environmental Laboratory 1987).

Wetland boundaries are determined using 3 mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps 2006). Following is a brief discussion of the 3 criteria and how they are evaluated.

Vegetation

"Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative, facultative wetland, and obligate wetland as defined by the U.S. Fish and Wildlife Service (1988; Table 1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table 1
DEFINITIONS OF PLANT INDICATOR CATEGORIES

Indicator Categories	Abbreviation	Probability of Occurring in Wetlands
Obligate wetland	OBL	Occur almost exclusively in wetlands
Facultative wetland	FACW	Usually found in wetlands (66 to 99 percent probability) but occasionally in uplands
Facultative	FAC	Equally likely to occur in wetland (34 to 66 percent probability) or non-wetland
Facultative upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands
Obligate upland	UPL	Occur almost exclusively in non-wetlands
No indicator	NI	Inconclusive status

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (Corps 2006). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or 2 secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- presence of reduced iron (C4)

- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine)
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- recent iron reduction in plowed soils (C8)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- thin muck surface (C7)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Natural Resource Conservation Service [NRCS] 2004).

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in 3 groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area are used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (Corps 2006).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- sulfidic odor (A4)
- stratified layers (A5)
- one centimeter muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)

- vernal pools (F9)
- Two-centimeter muck (A10)
- reduced vertic (F18)
- red parent material (TF2; indicator is currently being tested by NRCS).

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland WUS designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland WUS boundary in non-tidal areas is the OHWM.

Recent court decisions regarding the limits of WUS address isolation and significance of potentially jurisdictional features (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. Corps). The application of these decisions has been outlined by the Corps (Corps 2007; Grumbles and Woodley 2007); and the Corps and Environmental Protection Agency (EPA; 2007); and the EPA and Corps (2007). These publications explain that the EPA and Corps will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the Corps. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional WUS (Corps 2008b). Permitting for this project will be done under a preliminary jurisdictional delineation.

USGS Mapping

The U.S. Geological Survey (USGS) Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed. In our experience, the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams.

State Jurisdictional Areas

The State Water Resource Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne), as described in the California Water Code (SWRCB 2008). The California Water Code is the State's version of the Federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of

human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

Section 401 of the CWA stipulates SWRCB involvement for projects that require a federal license or permit (e.g., 404 Permit), and will result in the discharge to WUS. This must be obtained prior to issuance of a 404 Permit.

CDFG Jurisdictional Areas

California Department of Fish and Game jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFG jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFG jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., smoke tree woodland and cheesebush scrub). Within the study area, however, these are only considered CDFG jurisdictional if associated with a streambed or watercourse. There are drainages in the study area, apparently geological relicts, that show no sign of any stream flow and these are not regarded as CDFG jurisdictional. Vyverberg (2010) was also used as a reference to aid in identifying dryland streams.

CDFG regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify CDFG before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

3.0 RESULTS

3.1 EXISTING ON-SITE AND SURROUNDING LAND USES

The proposed project site is a designated BLM Limited Use Area in which all motorized vehicles are restricted to the use of marked, designated routes only. BLM dirt roads exist throughout the site, and a dirt road occurs along the 500-kilovolt (kV) transmission line which traverses the middle of the site running southwest to northeast. Illegal off-road vehicle (ORV) trails

criss-cross portions of the proposed project area, and some areas of the site are regularly used for camping, firearm activities, and ORV use. This area is also regularly patrolled by the United States Border Patrol. Despite the above-mentioned usage, the majority of the proposed project site is relatively undisturbed.

Surrounding land uses include Anza-Borrego Desert State Park to the west and BLM land to the north, east, and west of the site. The Coyote Mountains Wilderness Area is located north of the site, the Jacumba Wilderness Area is located south of the site, and the Yuha Basin Area of Critical Environmental Concern occurs southeast of the site. The town of Ocotillo and several scattered residences outside of the town are located between the northern and southern project areas.

3.2 TOPOGRAPHY

Elevations on site range from approximately 300 feet above mean sea level (AMSL) in the northeast portion of the site to 1,490 feet AMSL in the southwest portion of the site. The site generally decreases in elevation from the west to the east, with the Coyote Mountains to the north of the site, and the Jacumba Mountains to the west and south of the site. To the west the flanks of the Jacumba Mountains create rugged, rocky topographical features, low hills, and eroded badlands.

Several dry desert washes cut through the site, and run generally from west to east: Palm Canyon Wash flows through the center of the northern project area; Myer Creek Wash flows through the southern portion of the northern project area and through a portion of Coyote Wash flows through the northwest portion of the southern project area. In addition to these named washes, many unnamed and generally smaller washes exist throughout the site.

3.3 SOILS

Soil series within the study area include Rositas-Orita-Carrizo-Aco, Rock Outcrop-Rillitio-Beeline-Badland, and Rock Outcrop-Lithic Torriorthents (Winzler and Kelly 2010).

3.4 VEGETATION

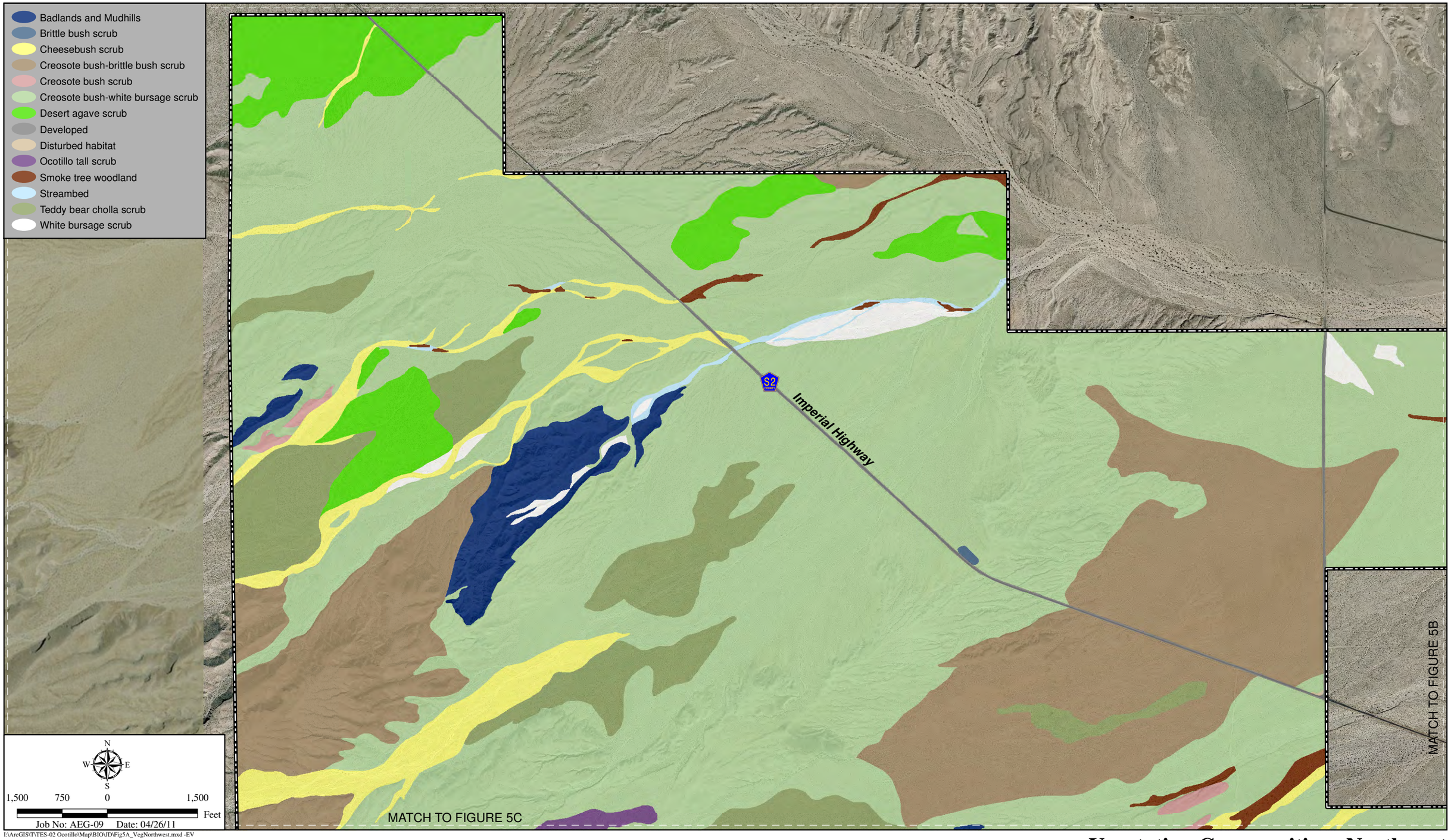
Vegetation on site consists of a variety of desert scrub and woodland habitat types (Table 2, Figures 5A through 5D). Previous field surveys revealed that no jurisdictional wetlands occur within the study area. This conclusion is based on the lack of any vegetation dominated by wetland species (Environmental Laboratory 1987, Corps 2008a, Reed 1988). Of the many vegetation types observed within the study area, 7 are associated with drainages and/or subsurface flow, and are potentially CDFG jurisdictional. These 7 vegetation types are allscale scrub, cheesebush scrub, creosote bush-allscale scrub (an association of creosote bush scrub), creosote bush-four wing saltbush scrub (also an association of creosote bush scrub), desert lavender scrub, fourwing saltbush scrub, mesquite thicket, and smoke tree woodland. None of these habitats are Corps jurisdictional. Unvegetated areas periodically scoured by surface water are potentially Corps (non-wetland WUS) and CDFG (Streambed) jurisdictional. These 8 habitat

types are regarded as potentially CDFG jurisdictional because they are dependent on groundwater or periodic surface water. These 8 potentially CDFG jurisdictional habitats described here.

Table 2
VEGETATION COMMUNITIES/HABITATS

Vegetation Community[1]/Habitat	Area[2]
Potential CDFG Habitats[7]	
Allscale Scrub	128.1
Cheesebush Scrub[4]	1,095.6
Creosote Bush Scrub[5]	938.9
Desert Lavender Scrub[4]	3.9
Fourwing Saltbush Scrub[4]	6.5
Mesquite Thicket[4]	0.8
Smoke Tree Woodland[4]	380.9
Streambed[3,4,8]	15.3
Non-CDFG Habitats	
Badlands and Mudhills[1]	162.0
Big Galleta Grass Shrub-steppe	1.9
Brittle Bush Scrub	92.9
Creosote Bush-Brittle Bush Scrub	2,280.1
Creosote Bush-White Bursage Scrub	5,877.3
Desert Agave Scrub	248.5
Developed[3]	82.9
Disturbed Habitat[3]	7.6
Ocotillo Tall Scrub[3]	23.5
Railroad[3]	12.5
Rock/Large Boulder Outcrop[3]	4.8
Teddy Bear Cholla Scrub[6]	663.0
White Bursage Scrub	176.2
Wolf's Cholla Scrub[2]	232.3
TOTAL	**12,435.6**

[1]Vegetation mapping was done to the alliance level.
[2]Acres
[3]Not listed in the Manual of California Vegetation (Sawyer et al 2009).
[4]All or portions of these habitats are CDFG jurisdictional.
[5]Two alliances of this vegetation Association are CDFG jurisdictional.
[6]Listed in the MCV as teddy bear cholla patches.
[7]The parts of allscale scrub, cheesebush scrub, creosote bush scrub, and fourwing saltbush scrub that are CDFG jurisdictional is dependent upon landscape position and consist of a subset of the acreage listed here.
[8]This is also Corps jurisdictional as non-wetland WUS. Drainages within the potential CDFG jurisdictional habitats, which are not represented on the vegetation map, are mapped elsewhere as non-wetland WUS.



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Vegetation Communities - Northwest

OCOTILLO WIND ENERGY FACILITY

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Figure 5A

MATCH TO FIGURE 5A

Shell Canyon Road

S2

Imperial Highway

MATCH TO FIGURE 5D

N
W E
S

1,500 750 0 1,500 Feet

Job No: AEG-09 Date: 04/26/11

- Allscale scrub
- Badlands and Mudhills
- Cheesebush scrub
- Creosote bush scrub
- Creosote bush-white bursage scrub
- Developed
- Disturbed habitat
- Fourwing saltbush scrub
- Mesquite thicket
- Smoke tree woodland
- Streambed
- Teddy bear cholla scrub
- White bursage scrub

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Vegetation Communities - Northeast

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 5B

MATCH TO FIGURE 5A

Railroad

8

8

MATCH TO FIGURE 5D

- Badlands and Mudhills
- Big galleta shrub-steppe
- Brittle bush scrub
- Cheesebush scrub
- Creosote bush-brittle bush scrub
- Creosote bush scrub
- Creosote bush-white bursage scrub
- Desert lavender scrub
- Developed
- Disturbed habitat
- Ocotillo tall scrub
- Railroad
- Rock/large boulder outcrop
- Smoke tree woodland
- Streambed
- Teddy bear cholla scrub
- White bursage scrub
- Wolf's cholla scrub

N
W E
S

1,500 750 0 1,500 Feet

Job No: AEG-09 Date: 04/26/11

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Vegetation Communities - Southwest

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 5C

MATCH TO FIGURE 5B

MATCH TO FIGURE 5C

Railroad

Imperial Highway

8

S2

98

Badlands and Mudhills
Brittle bush scrub
Cheesebush scrub
Creosote bush-brittle bush scrub
Creosote bush scrub
Creosote bush-white bursage scrub
Developed
Disturbed habitat
Railroad
Smoke tree woodland
Teddy bear cholla scrub
White bursage scrub

N
W
E
S

1,500 750 0 1,500 Feet

Job No: AEG-09 Date: 04/26/11

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Vegetation Communities - Southeast

OCOTILLO WIND ENERGY FACILITY

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Figure 5D

Allscale scrub

Allscale (*Atriplex polycarpa*) is the dominant in the shrub canopy. Associated shrub species include white bursage (*Ambrosia dumosa*), cheesebush (*Ambrosia salsola*), and creosote bush (*Larrea tridentata*). Herbaceous layer is variable based on soils and disturbance history. Common herbaceous species observed include desert Spanish-needle (*Palafoxia arida* var. *arida*), desert sunflower (*Geraea canescens*), few-flowered wreath plant (*Stephanomeria pauciflora*), Pierson's evening primrose (*Camissonia claviformis* var. *piersonii*), small-seed sandmat (*Chamaesyce polycarpa*), and Saharan mustard (*Brassica tournefortii*). Its landscape position is in the active floodplain of a tributary to Palm Canyon Wash. Allscale scrub is generally about one meter tall and occurs primarily in the northeastern part of the study area, in Palm Canyon Wash.

Cheesebush scrub

Cheesebush (*Ambrosia salsola*) is the dominant or co-dominant in the shrub canopy. Associated shrub species include rush sweetbush, chuparosa (*Justicia californica*), desert lavender (*Hyptis emoryi*), California ephedra, sandpaper plant (*Petalonyx thurberi* ssp *thurberi*), and creosote bush. Common herbaceous species observed include few-flowered wreath plant, desert dandelion, small-seed sandmat, desert Spanish-needle, Frost Mat (*Achyronychia cooperi*), California croton (*Croton californicus*), desert thornapple (*Datura discolor*), and kidney-leaf buckwheat (*Eriogonum reniforme*). Occasionally, emergent tree species are present, such as smoke tree (*Psorothamnus spinosus*) and desert willow (*Chilopsis linearis* ssp. *arcuata*). The canopy for this scrub is one to 2 meters tall and occurs extensively in arroyos, channels, and washes throughout the study area.

Creosote bush-allscale scrub

Creosote bush-allscale scrub is an association of creosote bush scrub alliance. The landscape position of this association, within the upper braided channels of Palm Canyon Wash, reveals its dependence on stream processes. The subset of this association with the alliance can be seen by comparing the creosote bush scrub in Figure 5B with creosote bush-allscale scrub in Figure 7B. Creosote bush and allscale are co-dominant in the shrub canopy. Associated species include white bursage, cheesebush, and indigo bush (*Prosopis schottii*). Herbaceous layer is variable based on soils and disturbance history. Common herbaceous species observed include desert Spanish-needle, desert few-flowered wreath plant, Pierson's evening primrose, small-seed sandmat, and Saharan mustard.

Creosote bush-four wing saltbush scrub

Creosote bush-four wing saltbush scrub is also considered an association of creosote bush scrub alliance. Its landscape position is in the active floodplain of a tributary to Palm Canyon Wash. The subset of this association with the alliance can be seen by comparing the creosote bush scrub in Figure 5B with creosote bush-allscale scrub in Figure 7B. Creosote bush and four-wing saltbush (*Atriplex canescens*) are co-dominant in the shrub canopy. Associated species include white bursage, cheesebush, and allscale. Herbaceous layer is variable based on soils and

disturbance history. Common herbaceous species observed include desert Spanish-needle, desert few-flowered wreath plant, Pierson's evening primrose, small-seed sandmat, and Saharan mustard. This vegetation type is present in the northeast part of the study area on alkaline, sandy soils.

Desert lavender scrub

Desert lavender (*Hyptis emoryi*) is dominant or co-dominant in the shrub canopy. Associated shrub species include cheesebush, rush sweetbush, chuparosa, indigo bush, and creosote bush. Emergent catclaw acacia and desert willow are also present in very low densities. The shrub canopy for this scrub is one to 2 meters tall. This association occurs primarily in narrow, sandy washes.

Fourwing saltbush scrub

Fourwing saltbush (*Atriplex canescens* var. *canescens*) is the dominant or co-dominant in the shrub canopy. Associated shrub species include white bursage, cheesebush, allscale, and creosote bush. Emergent honey mesquite (*Prosopis glandulosa* var. *torreyana*) is also present in several locations. The shrub canopy for this scrub is one to 2 meters tall. This vegetation type is present in the northeast part of the study area on alkaline, sandy soils.

Mesquite thickets

Honey mesquite is dominant in the low tree canopy. Shrubs including allscale, rush sweetbush, cheesebush, white bursage, fourwing saltbush, and sandpaper plant may also be present. The tree canopy is generally less than 7 meters. Within the study area, this vegetation type occurs as small, dense patches of honey mesquite. It occurs primarily in the eastern part of Palm Canyon Wash within the study area.

Smoke tree woodland

Smoke tree is the dominant tree or tall shrub canopy species, with desert willow also occurring in the tree canopy. Understory shrubs include cat-claw acacia, cheesebush, rush sweetbush, chuparosa, desert lavender, creosote bush, sandpaper plant, and indigo bush. Common herbaceous species observed include few-flowered wreath plant, small seed sandmat, kidney-leaf buckwheat, and desert Spanish needle. This association occurs in arroyos, intermittently flooded channels, and washes with sandy, well drained soils. Within the study area, this association occurs in the larger drainages. In some places, such as the Palm Canyon Wash in the western part of the study area, this woodland occurs as a relatively dense and narrow stands. In the broader sections of Palm Canyon Wash in the northeastern part of the study area, this association is less dense and other species provide relatively more cover than elsewhere in the study area. There is also a phase of this vegetation type that is relatively broad and dense, but is much more shrub like in stature than elsewhere. This phase occurs along Meyer Creek near east of the west bound section of I-8.

Streambed

Streambed was used to map sections of washes that do not support any vegetation. This is likely due to periodic scouring and deep coarse soils, but may be accentuated by ORV vehicle disturbance. This habitat type is also Corps jurisdictional.

3.5 FEDERAL JURISDICTION

Areas under Corps jurisdiction consist of non-wetland WUS and are located throughout the study area (Figures 6A through 6D) and constitute approximately 239.5 acres (Table 3). The observed drainages ranged in width from one foot to 130 feet. The largest drainage class accounted for almost one-third (32 percent) of the total jurisdictional area. The remaining drainage classes each accounted for between 10 percent and 17 percent of the total jurisdictional areas. The aggregate lengths of jurisdictional areas has a different pattern, with the smallest drainage width class (one to 3 feet) accounting for just over 50 percent of the total jurisdictional drainage length. Conversely, the largest 3 width classes, which accounted for 55 percent of the area, only accounted for 15 percent (5 percent each) of the total jurisdictional length. The remaining 2 drainage classes had 21 percent (4 to 7 feet) and 13 percent (8 to 12 feet) of the total drainage length.

Table 3
CORPS JURISDICTIONAL AREAS

NON-WETLAND WUS[1]	AREA[2]	AGGREGATE LENGTH[3]
Drainage Width[2]		
1-3	30.12	685,351
4-7	33.63	291,616
8- 12	40.07	176,561
13-18	25.74	73,494
19-25	32.14	64,478
< 26	77.46	74,470
TOTAL	**239.16**	**1,365,970**

[1]Intermittent and ephemeral drainages
[2]Acres
[3]Feet

3.6 STATE JURISDICTION

Areas under CDFG jurisdiction correspond to Corps jurisdictional areas found within the study area (Figures 7A through 7D) and constitute approximately 1,017.38 acres (Table 4). The reason the CDFG areas amount to approximately 778 acres more than the Corps areas is that there are vegetation types present that are considered jurisdictional by CDFG that extend beyond the Corps jurisdictional limits. These vegetation types, including cheesebush, creosote bush-allscale, creosote bush-fourwing saltbush, desert lavender and fourwing saltbush scrubs, mesquite

thickets, and smoke tree woodland, occur in drainages and are dependent on groundwater or periodic surface water. Creosote bush-allscale scrub and smoke tree woodland comprise most of the CDFG vegetated habitat. These habitats primarily occupy the broad floodplain of Palm Canyon Wash. These habitats are not regarded as Corps jurisdictional wetlands because they are not dominated by wetland plants.

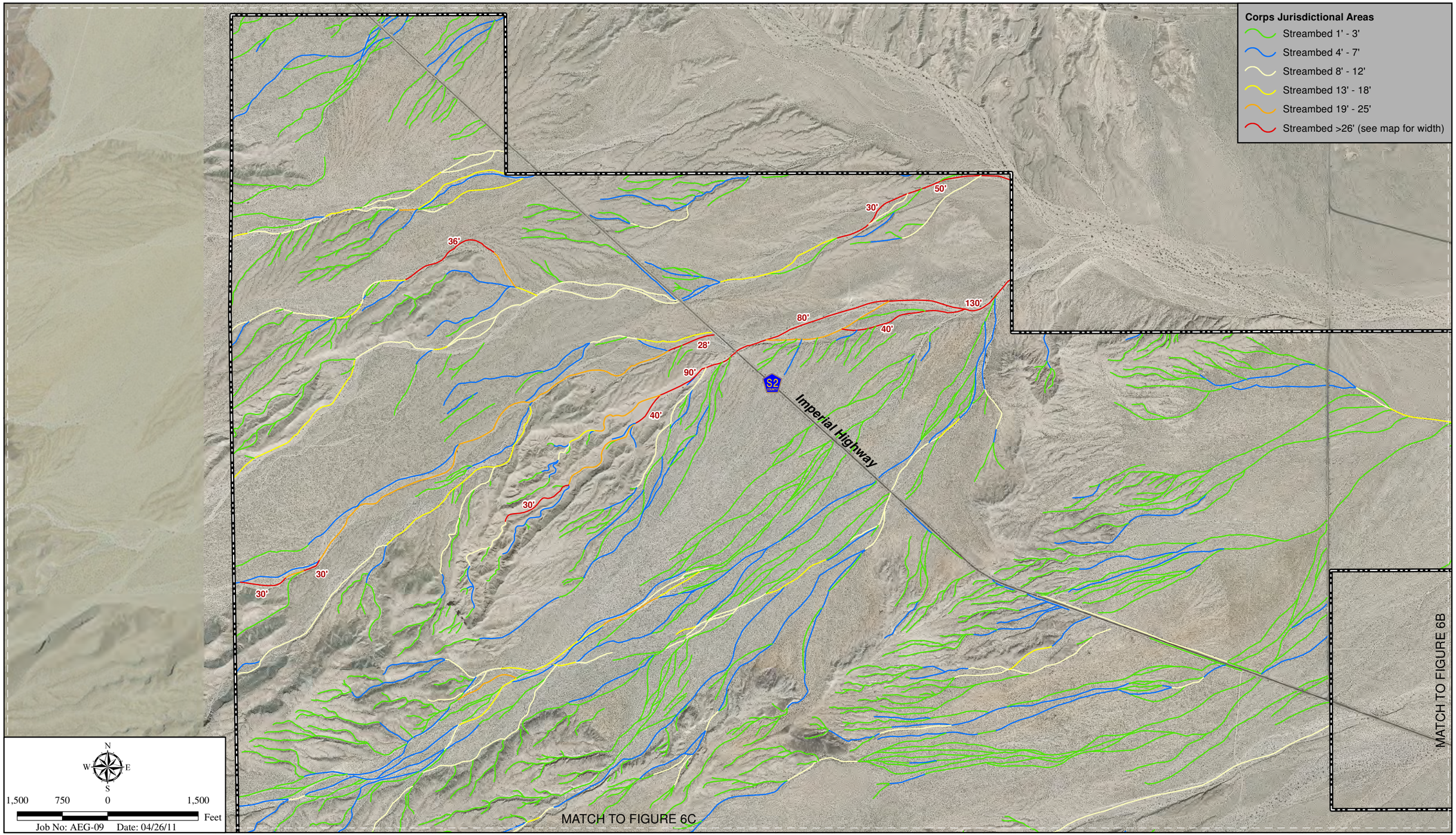
Table 4
CDFG JURISDICTIONAL AREAS

HABITAT	AREA[1]	AGGREGATE LENGTH[2]
Allscale scrub	17.51	7,296
Cheesebush scrub	379.70	162,915
Creosote bush-allscale scrub	216.01	14,927
Creosote bush-fourwing saltbush scrub	9.56	2,425
Desert lavender scrub	3.91	1,692
Fourwing saltbush scrub	6.53	196
Mesquite thickets	0.27	56
Smoke tree woodland	225.51	66,268
SUBTOTAL	**859.00**	**255,775**
Streambed Widths[3]		
1-3	27.04	626,548
4-7	26.90	236,299
8- 12	30.40	134,850
13-18	14.69	41,641
19-25	16.11	33,069
< 26	43.24	38,345
SUBTOTAL	**158.38**	**1,110,752**
TOTAL	**1,017.38**	**1,366,527**

[1]Acres
[2]Feet
[3]Intermittent and ephemeral streams

Streambeds under CDFG jurisdiction consist of unvegetated areas subject periodic scour by surface water. These are located throughout the study area (Figures 7A through 7D) and constitute approximately 158.38 acres (Table 4). The reason this is less Streambed than Corps non-wetland WUS is because in areas where there was CDFG jurisdictional habitat, the streambed was included within the habitat polygon. The observed streambeds ranged in width from one foot to 60 feet. The largest on-site jurisdictional area was recorded for the largest drainage width class; 43.24 acres for streambeds over 26 feet wide. The area for each of the remaining drainage classes is roughly equivalent regardless of the width class.

The breakdown for streambed width class and aggregate streambed length is very similar to what was observed for the Corps. The smallest drainage class accounted for over 50 percent of the

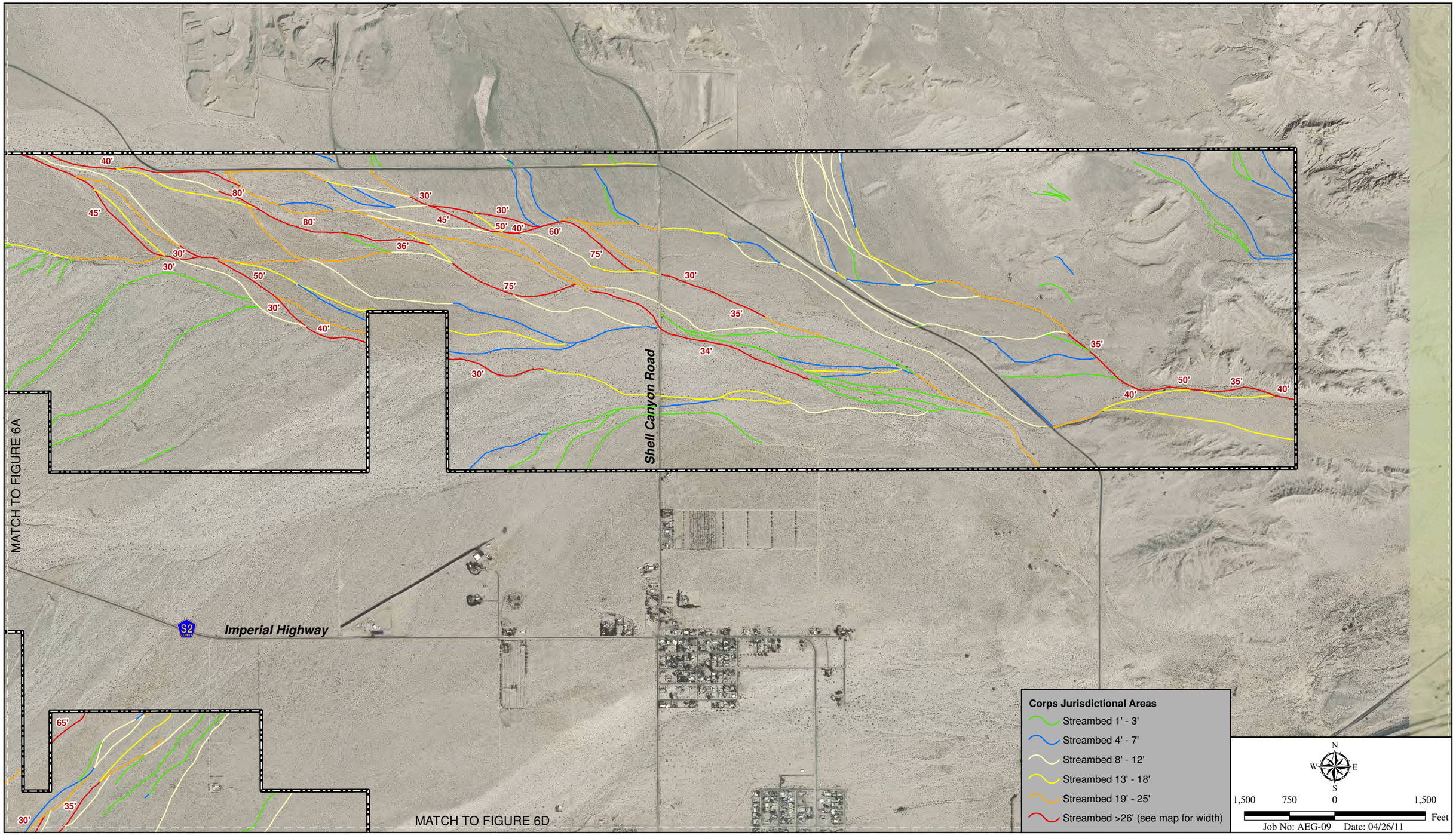


Corps Jurisdictional Delineation - Northwest

OCOTILLO EXPRESS WIND PROJECT

HELIX Environmental Planning

Figure 6A



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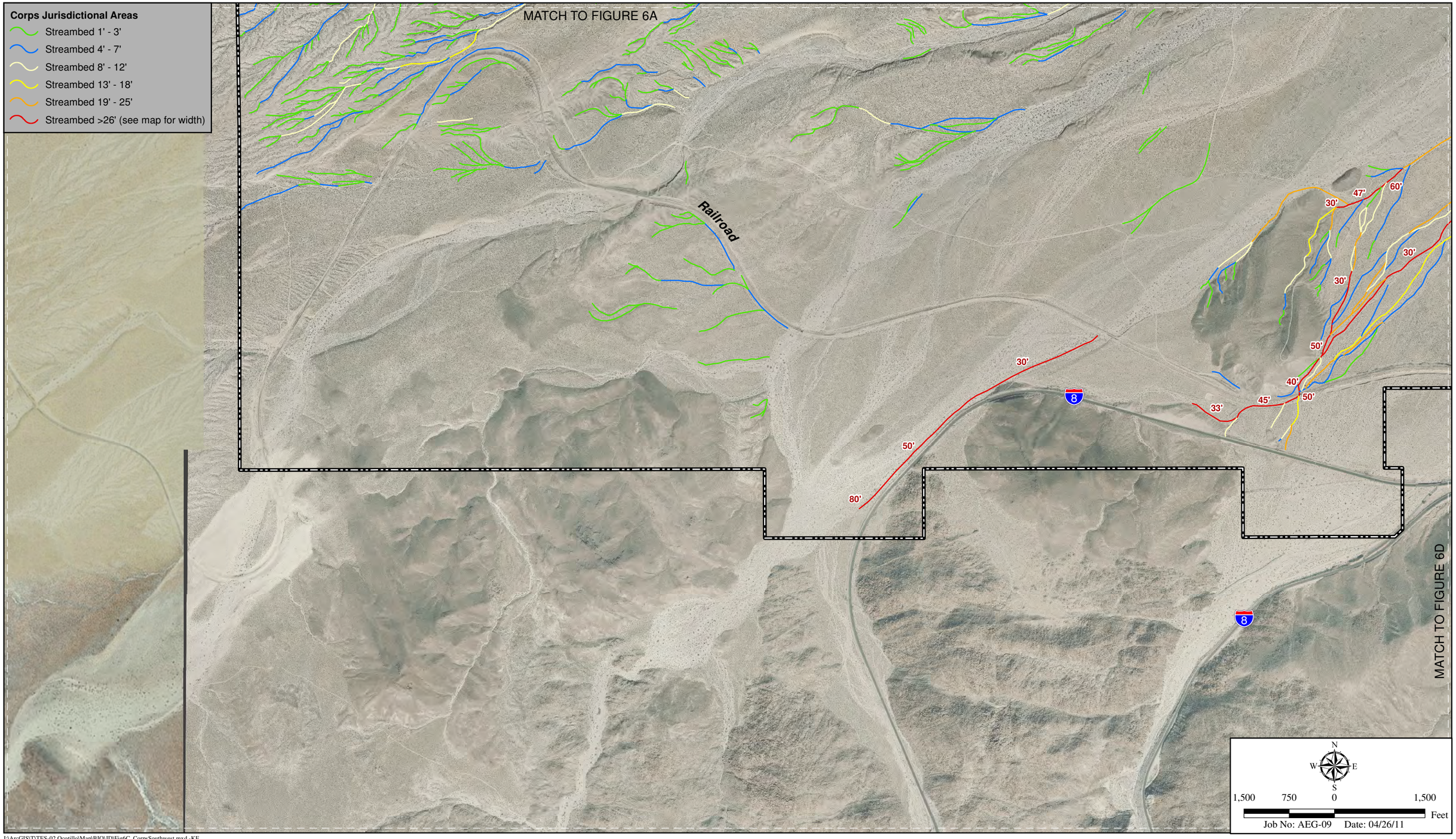
Corps Jurisdictional Delineation - Northeast

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 6B



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Corps Jurisdictional Delineation - Southwest

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 6C

MATCH TO FIGURE 6B

MATCH TO FIGURE 6C

Railroad

Imperial Highway

8

S2

98

30'

35'

40'

60'

30'

28'

Corps Jurisdictional Areas

- Streambed 1' - 3'
- Streambed 4' - 7'
- Streambed 8' - 12'
- Streambed 13' - 18'
- Streambed 19' - 25'
- Streambed >26' (see map for width)

N

W E

S

1,500 750 0 1,500 Feet

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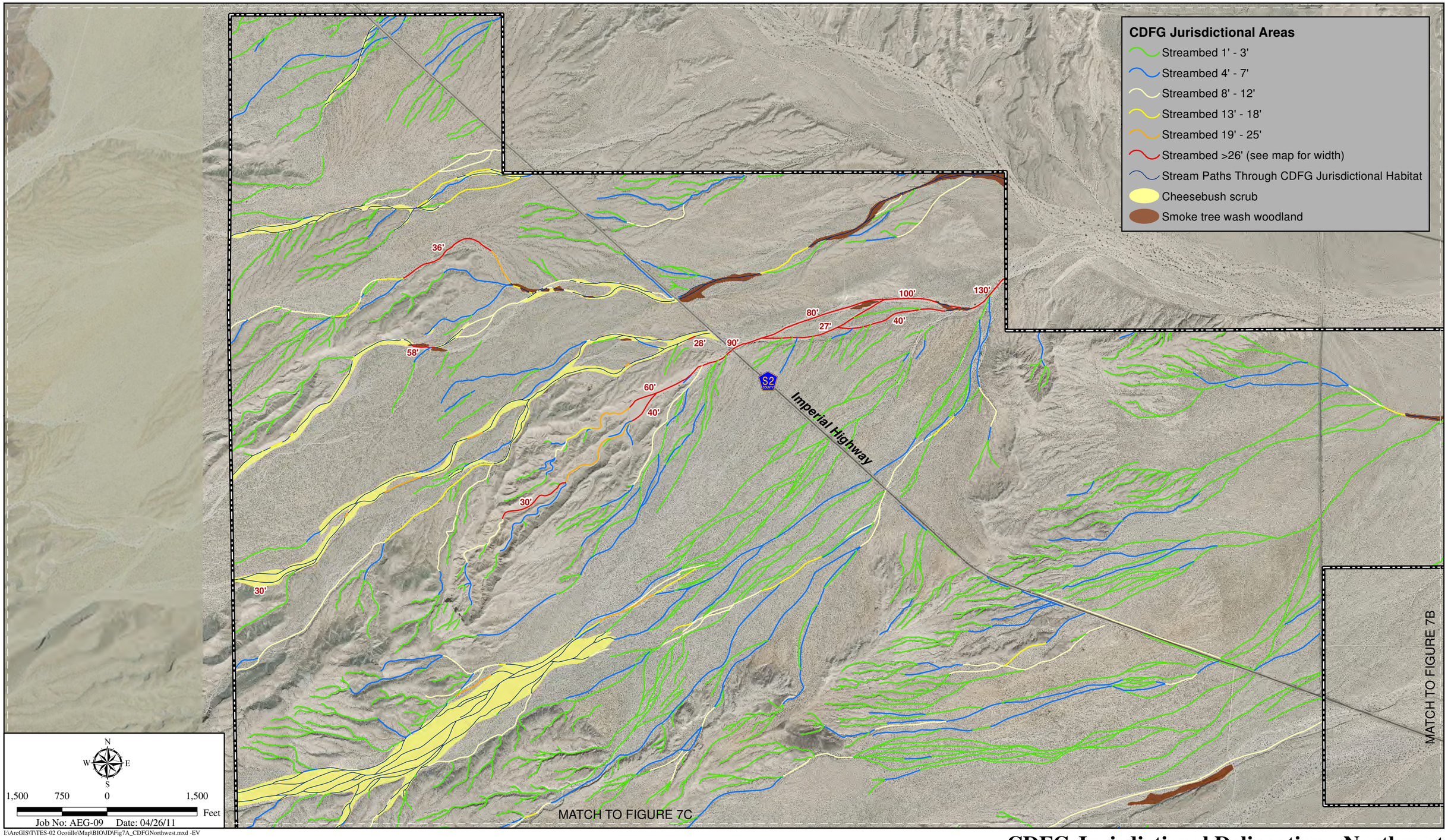
Corps Jurisdictional Delineation - Southeast

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 6D



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CDFG Jurisdictional Delineation - Northwest

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 7A

MATCH TO FIGURE 7A

Shell Canyon Road

Imperial Highway

MATCH TO FIGURE 7D

40' 80' 45' 30' 36' 30' 45' 50' 40' 60' 75' 30' 50' 30' 40' 35' 60' 65'

CDFG Jurisdictional Areas

- Streambed 1' - 3'
- Streambed 4' - 7'
- Streambed 8' - 12'
- Streambed 13' - 18'
- Streambed 19' - 25'
- Streambed >26' (see map for width)
- Stream Paths Through CDFG Jurisdictional Habitat
- Allscale scrub
- Cheesebush scrub
- Creosote bush-allscale scrub
- Creosote bush-fourwing saltbush scrub
- Fourwing saltbush scrub
- Mesquite thicket
- Smoke tree woodland

N W E S

1,500 750 0 1,500 Feet

Job No: AEG-09 Date: 04/26/11

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CDFG Jurisdictional Delineation - Northeast

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 7B

MATCH TO FIGURE 7A

Railroad

47'
60'
30'
30'
40'
50'
33'

8

8

MATCH TO FIGURE 7D

CDFG Jurisdictional Areas

- Streambed 1' - 3'
- Streambed 4' - 7'
- Streambed 8' - 12'
- Streambed 13' - 18'
- Streambed 19' - 25'
- Streambed >26' (see map for width)
- Stream Paths Through CDFG Jurisdictional Habitat
- Cheesebush scrub
- Desert lavender scrub
- Mesquite thicket
- Smoke tree woodland

N
W E
S

1,500 750 0 1,500

Feet

Job No: AEG-09 Date: 04/26/11

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CDFG Jurisdictional Delineation - Southwest

OCOTILLO EXPRESS WIND PROJECT

HELIX Environmental Planning

Figure 7C

MATCH TO FIGURE 7B

MATCH TO FIGURE 7C

Railroad

Imperial Highway

8

S2

98

30'

28'

28'

CDFG Jurisdictional Areas

- Streambed 1' - 3'
- Streambed 4' - 7'
- Streambed 8' - 12'
- Streambed 13' - 18'
- Streambed 19' - 25'
- Streambed >26' (see map for width)
- Stream Paths Through CDFG Jurisdictional Habitat
- Cheesebush scrub
- Smoke tree woodland

N
W E
S

1,500 750 0 1,500

Feet

Job No: AEG-09 Date: 04/26/11

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CDFG Jurisdictional Delineation - Southeast

OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 7D

jurisdictional length and the 3 largest width classes were nearly equal and accounted for a total of 10 percent of the observed jurisdictional streambed lengths. The remaining 2 drainage width classes accounted for 33 percent of the total jurisdictional streambed length, with the 4 to 7 foot class accounting for 21 percent and the 8 to 12 foot class accounting for 12 percent.

4.0 CONCLUSION

4.1 FEDERAL PERMITTING

Areas under Corps jurisdiction consist of non-wetland WUS and are located throughout the study area (Figures 6A through 6D) and constitute approximately 239.15 acres (Table 3). The observed drainages ranged in width from one foot to 130 feet. The largest drainage class accounted for almost one-third (32 percent) of the total jurisdictional area. The remaining drainage classes each accounted for between 10 percent and 17 percent of the total jurisdictional areas. The aggregate lengths of jurisdictional areas has a different pattern, with the smallest drainage width class (one to 3 feet) accounting for just over 50 percent of the total jurisdictional drainage length. Conversely, the largest 3 width classes, which accounted for 55 percent of the area, only accounted for 15 percent (5 percent each) of the total jurisdictional length. The remaining 2 drainage classes had 21 percent (4 to 7 feet) and 13 percent (8 to 12 feet) of the total drainage length.

Impacts to WUS are regulated by the Corps under Section 404 of the Clean Water Act (33 U.S.C. 401 et seq.; 33 U.S.C. 1344; U.S.C. 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 CFR Part 323). A federal Clean Water Act Section 404 Permit would be required for the placement of fill in WUS. A Clean Water Act Section 401 Water Quality Certification, which is administered by the State Water Resources Control Board, must be issued prior to any 404 Permit.

4.2 STATE PERMITTING

State (CDFG) jurisdictional habitats within the study area total approximately 1,017.38 acres and 1,366,528 linear feet, including 859.00 acres of vegetated habitat and 158.38 acres of non-vegetated habitat (streambed). CDFG jurisdictional vegetation types include allscale scrub, cheesebush, creosote bush-allscale, creosote bush-fourwing saltbush, desert lavender, fourwing saltbush scrub, mesquite thickets, and smoke tree woodland. The CDFG jurisdictional vegetation types occur in drainages and are dependent on groundwater or periodic surface water. Cheesebush scrub, creosote bush-allscale scrub, and smoke tree woodland comprise most of the CDFG vegetated habitat. These habitats primarily occupy the broad floodplain of Palm Canyon Wash.

Unvegetated streambeds are also under CDFG jurisdiction and constitute approximately 158.38 acres. The observed streambeds ranged in width from one foot to 60 feet. The largest on-site jurisdictional area was recorded for the largest drainage width class; 43.24 acres for streambeds over 26 feet wide . The breakdown for streambed width class and aggregate streambed length is very similar to what was observed for the Corps.

The CDFG regulates alterations or impacts to streambeds or lakes under California Fish and Game Code 1602. Section 1602 requires that the CDFG be notified if a project will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. CDFG will then determine if a Streambed/Lake Alteration Agreement (SAA) is required. The SAA is a contract between the applicant and the CDFG stating what can be done in the riparian zone and stream course (California Association of Resource Conservation Districts 2002). Impacts to CDFG habitat would be regulated under California Fish and Game Code 1602 and would require an SAA.

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