ENVIRONMENTAL ASSESSMENT
Invasive Plant Management

Weed Management Plan

for the

Ocotillo Wind Energy Facility

DOI-BLM-CA-D070-2013-0060-EA

Bureau of Land Management
California Desert District
El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Office: 760-337-4400
Fax: 760-337-4490

May 02, 2013

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Page

CHAPTER 1: INTRODUCTION.....3
1.1 Background.....3
1.2 Purpose and Need for the Action.....3
1.3 Public Participation, Scoping, and Issues.....4
1.4 Relationship to Statutes, Regulations, and Plans.....4
1.5 References.....5

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES.....5
2.1 Project Location.....5
2.2 Project Setting.....5
2.3 Alternative 1 – Proposed Action – Use of Glyphosate and Triclopyr.....6
2.4 Alternative 2 – No Action.....10
2.5 Alternatives Considered but Eliminated.....10
2.6 References.....11

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS.....12
3.1 Air Quality.....12
3.1.1 Affected Environment.....12
3.1.2 Environmental Effects.....12
3.1.3 Cumulative Impacts.....13
3.1.4 References.....13
3.2 Cultural Resources.....14
3.2.1 Affected Environment.....14
3.2.2 Environmental Effects.....15
3.2.3 Cumulative Impacts.....16
3.2.4 References.....16
3.3 Human Health and Safety.....18
3.3.1 Affected Environment.....18
3.3.2 Environmental Effects.....18
3.3.3 Cumulative Impacts.....19
3.3.4 References.....19
3.4 Soils.....20
3.4.1 Affected Environment.....20
3.4.2 Environmental Effects.....20
3.4.3 Cumulative Impacts.....21
3.4.4 References.....22
3.5 Vegetation/Special Status Species/Threatened and Endangered Species.....22
3.5.1 Affected Environment.....22
3.5.2 Environmental Effects.....23
3.5.3 Cumulative Impacts.....24
3.5.4 References.....24

TABLE OF CONTENTS (cont.)

Page

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS (cont.)
3.6 Wildlife/Special Status Species/Threatened and Endangered Species 25
3.6.1 Affected Environment.....25
3.6.2 Environmental Effects 25
3.6.3 Cumulative Impacts 27
3.6.4 References.....27
3.7 Other Environmental Topics.....27

CHAPTER 4: CONSULTATION AND COORDINATION 28
4.1 Summary of Public Participation.....28
4.2 Section 7 Consultation 28
4.3 Section 106 Consultation 28
4.4 List of Preparers.....29
4.5 References.....29

CHAPTER 5: ACRONYMS 30

LIST OF TABLES

Table **Page**

1 Invasive Plant Species Observed Within the OWEF Area During 2010 Surveys 7
2 Herbicides and Application Rates to be Used.....8
3 Herbicides to be Used for Each Invasive Weed Species.....9

LIST OF APPENDICES

A Applicable Prevention Measures and Standard Operating Procedures for Applying Herbicides

LIST OF FIGURES

Figure

1 Regional Location Map
2 Project Location Map
3 Weed Management Areas

CHAPTER 1: INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental impacts of the use of two herbicides(glyphosate and triclopyr) for treatment of invasive plants on 730 acres of the Ocotillo Wind Energy Facility (OWEF) project site in the County of Imperial near the community of Ocotillo (Figures 1 and 2). The Proposed Action is proposed by the U.S. Department of Interior, Bureau of Land Management (BLM) El Centro Field Office. This EA will assist the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any significant environmental impacts (effects) could result from the analyzed actions. "Significance" is defined by NEPA and in 40 Code of Federal Regulations 1508.27.

1.1 Background

Throughout this EA, the reader will refer to two other environmental documents: (1) Final Programmatic Environmental Impact Statement (PEIS) for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States (PEIS for Vegetation Treatments; BLM 2007) and (2) Final Environmental Impact Report (EIR)/EIS for the OWEF (BLM and County of Imperial [County] 2012). The PEIS for Vegetation Treatments analyzes the potential direct, indirect, and cumulative impacts associated with the BLM's use of specific chemicals on the human and natural environment, including glyphosate and triclopyr. The EIR/EIS for the OWEF analyzes the impacts associated with construction, operations and maintenance (for approximately 30 years), and decommissioning of up to a 265-megawatt wind energy facility within an approximately 12,500-acre project area in Imperial County. Because (1) there are currently large and small stands of invasive plant species present on the OWEF site and (2) construction activities and soil disturbance associated with the OWEF could introduce new or spread existing invasive weeds, the EIR/EIS included as a mitigation measure (Veg-1d) the implementation of an Integrated Weed Management Plan (IWMP). Per this mitigation requirement, an IWMP was prepared and included in the Final EIR/EIS as Appendix L3(HELIX Environmental Planning, Inc. [HELIX] 2012). The approximately 730-acre weed control area includes all of the temporary disturbance areas during construction of the OWEF and areas within 50 feet of permanent project features (Figure 3).

The integrated pest management[1] method for invasive plant species control analyzed in this EA utilizes a combination of herbicides and manual removal methods. The herbicides that would be used on site would be limited to glyphosate and triclopyr.

1.2 Purpose and Need for the Action

The need for the Proposed Action (i.e., implementation of the IWMP) is to reduce and control five invasive plant species found on approximately 730 acres with the OWEF project site. These invasive plant species are found on the California Invasive Plant Council (Cal-IPC) list with

[1] Integrated pest management consists of a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks (U.S. Department of Interior, 2007).

ratings of High, Moderate, or Limited (Table 1) and include Saharan mustard (*Brassica tournefortii*), red brome (*Bromus madritensis* ssp. *rubens*), red-stem filaree (*Erodium cicutarium*), prickly Russian thistle (*Salsola tragus*), and rattail fescue (*Vulpia myuros*). Although the Cal-IPC rating is not used by BLM, the weeds listed above will be treated.

The Proposed Action is intended to meet and comply with Mitigation Measures Veg-1d and PHS-6 of the Final EIR/EIS for the OWEF, which specify that the project will abide by non-native invasive weed control procedures developed in cooperation with the BLM and County prior to, during, and after construction. Overall, the procedures aim to minimize the introduction of new non-native, invasive species and limit the spread of target invasive species.

Integrated pest management methods for invasive species control that are analyzed in this EA include the following:

- **Chemical** – Herbicides are chemicals that kill or injure plants. Herbicides can be categorized as selective or non-selective. Selective herbicides kill only a specific type of plant, such as broad-leaved plants, while non-selective herbicides kill all types of plants.

- **Physical** – Manual treatment involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and re-growth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth.

1.3 Public Participation, Scoping, and Issues

The BLM and County jointly prepared the EIR/EIS for the OWEF and the reader is referred to Sections 5.4 and 5.5 of the Final EIR/EIS for the OWEF for information regarding public involvement for the OWEF (BLM and County 2012:35-100). Responses to comments and comment letters also are included in the Final EIR/EIS; refer to Appendices N and O, respectively.

The BLM will also circulate this EA for a 15-day public review period, during which time the public can comment on the Proposed Action, the No Action Alternative, and the analysis presented in this EA.

1.4 Relationship to Statutes, Regulations, and Plans

The Proposed Action's relationship to applicable statutes, regulations, and plans are included in the PEIS for Vegetation Treatments (BLM 2007:1-6 through 1-9).

1.5 References

HELIX Environmental Planning, Inc. (HELIX)

2012 Ocotillo Wind Energy Facility – Integrated Weed Management Plan. February 17. Available at: ftp://ftp.co.imperial.ca.us/icpds/eir/ocotillo-express/final/appendices/14appl3-weed-management.pdf.

U.S. Department of Interior, Bureau of Land Management (BLM)

2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)

2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

2.1 Project Location

The northern portion of the OWEF project site is generally situated north of Interstate 8 (I-8), from the Imperial/San Diego County border of its western edge to approximately 1.5 miles northeast of the town of Ocotillo on its eastern edge (Figure 1). 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. County Highway S2 bisects the northern project area, and I-8 passes through the southern portion of the northern project area. The southern portion of the project is located south of I-8 and State Route 98. The OWEF project site is located almost entirely on BLM land within four U.S. Geological Survey 7.5-minute quadrangle maps: Carrizo Mountain, Coyote Wells, In-Ko-Pah Gorge, and Painted Gorge (Figure 2). The overall project area encompasses different landscape forms, soil types, and elevation/moisture gradients.

2.2 Project Setting

The project area is in the Yuha Desert, a sub-portion of 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 El Centro, and from Plaster City in the north to south of Mount Signal in Mexico.

The project area is a designated BLM Limited Use Area, as designated in the California Desert Conservation Area plan (CDCA, 1980 as amended), in which all motorized vehicles are restricted to the use of marked, designated routes only. BLM designated routes of travel exist throughout the study area, and Route No. 358 occurs along the 500-kilovolt transmission line that traverses the middle of the study area running southwest to northeast. Some areas of the site are regularly used for camping, target shooting, and off-highway vehicle use. This area is also regularly patrolled by the U.S Border Patrol. Despite the above-mentioned usage, the majority of the study area is relatively undisturbed.

Vegetation within the project area consists of a variety of desert scrub habitat types. Several dry desert washes cut through this area, and run generally from west to east: Palm Canyon Wash cuts through the center of the northern part of the project area; Myer Creek Wash cuts through the southern portion of the northern part; a piece of Coyote Wash cuts through the northwest portion of the southern part; and several additional unnamed washes cut through the overall project area.

2.3 Alternative 1 – Proposed Action – Weed Management

The Proposed Action is to implement the IWMP by utilizing two chemicals (glyphosate and triclopyr) in combination with manual methods of weed management to execute measures to lessen the potential for the dispersal or increased abundance of existing and any new non-native, invasive plant species. Chemical control is often the most efficient, least labor intensive method of killing established populations of non-native, invasive plants.

Adaptive weed control measures, utilized by the weed control manager (WCM), would be implemented during the 30-year operations and maintenance phase under this alternative. This would help prevent the spread of non-native, invasive species that are often intensified by construction-related ground disturbance, operation and maintenance activities, and other authorized site uses. These measures would control the spread of existing populations of non-native, invasive species, and identify and address threats from new non-native, invasive species as they occur.

Weed management would be conducted for the life of the project. Particular attention would be paid to all temporarily disturbed areas designated for revegetation. To this end, all targeted species would be removed from within 50 feet of permanent project features twice per year, once in mid-winter, following the first few rain events of the rainy season, and once again in spring, to remove any plants that establish from later rains or species adapted to later germination. The proposed schedule would be modified each year based on the timing and amount of rainfall and other environmental conditions, with the basic mandate that target species would be killed or removed before they produce seed. Any new species observed would be added to the target species list. The WCM would be responsible for coordinating weeding events with the Restoration Specialist (RS) and communicating any observations during monitoring that may require modifications to the maintenance program.

The primary target species for weed abatement include the following five invasive species on site: Saharan mustard, red brome, red-stem filaree, prickly Russian thistle, and rattail fescue (Table 1 and Figure 3). As described in detail in Section 5 of the IWMP (HELIX 2012: 4-8), a

comprehensive baseline inventory survey for invasive weeds was conducted in 2010 and 2011 throughout the project area. The species listed below are described in more detail in Section 5 (pages 5-8) and Appendix A (pages A-1 through A-6) of the IWMP. The "Project Risk Level" in Table 1 below came directly from the IWMP (Table 1), which was developed/determined by two qualified HELIX biologists, with knowledge of invasive weeds.

Table 1
INVASIVE PLANT SPECIES OBSERVED WITHIN THE OWEF AREA DURING 2010 SURVEYS

Scientific Name	Common Name	Federal Weed List	State Noxious Weed List	Project Risk Level
Brassica tournefortii	Saharan mustard	No	No	High
Bromus madritensis ssp. *rubens*	red brome	No	No	Moderate
Erodium cicutarium	red-stem filaree	No	No	Moderate
Salsola tragus	prickly Russian thistle	No	Yes	Moderate
Vulpia myuros	rattail fescue	No	No	Moderate

As non-native, invasive plants are identified, manual removal methods such as hand dethatching, pulling, excavating, or cutting can be used. De-thatching involves the removal of dead plant material from the soil surface, which has the benefits of (1) removing non-native, invasive seed that may still be attached to the dead vegetation; (2) allowing native seed already present in the soil, or applied to the site, to germinate more easily; and (3) increasing the effectiveness of subsequent herbicide applications. Manual removal includes the use of hand tools such as clippers, pruners, shovels, rakes, and hoes, as well as equipment such as weed-whips. Because it is highly selective, this type of control can minimize damage to existing native vegetation; however, it also is the most time-consuming and physically challenging. Manual removal is, therefore, best suited for small areas of infestation or in areas where non-native, invasive plants occur within sensitive habitat.

Manual treatments include cutting undesired plants above ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; and placing mulch around desired vegetation to limit competitive growth.

There are various methods for applying herbicides, including spraying and sponging the herbicide onto foliage. Different herbicides target specific plant types and are designed for use in various environmental conditions. During herbicide application, measures to reduce impacts to adjacent or nearby native vegetation and special status species would be implemented in accordance with the IWMP and Mitigation Measure PHS-6. Some of the most relevant measures include the following: (1) spraying herbicide during low-wind conditions (wind velocities are less than 10 mph); (2) using a sponge applicator during higher wind conditions; (3) not applying herbicide directly to wildlife, not applying if it is raining or if rain is imminent, and not applying within 50 feet of surface water; and (4) keeping vehicles on permanent access roads to avoid

crushing of plants and/or vegetation. Standard operating procedures (SOPs) for the use of herbicides have been developed by the BLM and are incorporated into the Proposed Action (refer to Appendix A).

The typical application rates of these herbicides are a 2 percent solution of glyphosate and a 0.75 percent solution of triclopyr (Table 2).

Table 2
HERBICIDES AND APPLICATION RATES TO BE USED

Chemical (Herbicide)	Typical Application Rate	Maximum Application Rate
Glyphosate	2 gallons active per 100 gallons (2 percent solution)	10 gallons active per 100 gallons (10 percent solution)
Triclopyr	3 quarts active per 100 gallons (0.75 percent solution)	8 quarts active per 100 gallons (2 percent solution)
No foam A (to be added as a surfactant)	50 ounces per 100 gallons (0.004 percent solution)	50 ounces per 100 gallons (0.004 percent solution)
Marker dye to be added to glyphosate and triclopyr	18 ounces per 100 gallon (0.001 percent solution)	24 ounces per 100 gallons (0.002 percent solution)

Glyphosate has been shown to be effective at controlling the majority of the invasive weed species found on site; triclopyr has shown to be effective at controlling Saharan mustard (*Brassica tournefortii*), woody perennial invasives (i.e., Athel tamarisk [*Tamarix aphylla*]), and broadleaf invasive weeds (i.e., prickly-lettuce [*Lactuca serriola*]; Table 3). Glyphosate would be the primary herbicide used to treat invasive weed species, including Saharan mustard, which occurs throughout the OWEF project site. If Athel tamarisk or prickly-lettuce is encountered, (although neither currently occur within the weed management area), each would be treated with triclopyr.

All herbicides used for this project would contain the marker dye Turf Mark Blue to make the herbicide visible wherever it is applied (Table 2). This dye would allow the applicator to identify: (1) which plants have been treated, thereby ensuring coverage of target plants and avoiding accidental re-treatment; (2) if drift is occurring, thereby preventing damage to native vegetation; and (3) any personal contamination, thereby facilitating rapid response. Because the dye is combined in solution with the herbicides, the effects of both the dye and the herbicide together will be discussed collectively throughout this document.

Table 3 HERBICIDES TO BE USED FOR EACH INVASIVE WEED SPECIES		
Invasive Weed Species	**Glyphosate**	**Triclopyr**
Saharan mustard (*Brassica tournefortii*)	X	X
Red brome (*Bromus madritensis* ssp. *rubens*)	X	
Red-stem filaree (*Erodium cicutarium*)	X	
Prickly-lettuce (*Lactuca serriola*)	X	X
Prickly Russian thistle (*Salsola tragus*)	X	
London rocket (*Sisymbrium irio*)	X	
Athel tamarisk (*Tamarix aphylla*)		X
Rattail fescue (*Vulpia myuros*)	X	

The surfactant No Foam A would be added to triclopyr as a wetting agent and would help ensure that the herbicide contact is maximized on the weed surface and drift is minimized on adjacent non-target vegetation. A surfactant is not needed for Glyphosate because this herbicide already includes a surfactant.

The wipe method uses a sponge-like or roller applicator that brushes herbicide onto the target foliage. A controlled flow of herbicide would drip into the sponge/roller, allowing the user to apply an appropriate level of herbicide by swiping the sponge/roller directly onto the target foliage. With this technique, an herbicide transmits from the application device only through physical contact with the target foliage. This technique essentially eliminates any chance of herbicide drift, which may occur with broadcast spray techniques. The sponge-like application devices would be hand equipped and target foliage would be treated one at a time. The wipe method would be used for larger weeds with more foliar surface area. The wipe method would also reduce herbicide drift and be used in locations where non-target vegetation needs to be avoided in the vicinity of weed species.

Weed spraying would be conducted on weeds outside of highly sensitive areas (i.e. waters of the US, areas containing rare plants, sensitive cultural resources, etc.). Herbicide application would occur from December through May to coincide with the germination period of the weeds on site. Herbicide application may also be needed between September and November if weed species germinate in response to earlier rains and cooler temperatures during any given year. Up to 3 applications may need to be conducted each year; the actual number of applications per year will depend on environmental conditions, most notably being the amount and frequency of rain events and temperature. To be most effective, weeds should be treated with herbicide prior to the development of mature seed.

Backpack sprayers would be used to control weeds in situations where plants are small and have not yet formed seed heads. Backpack sprayers would also be used to apply herbicides to individual or isolated plants. With this technique, an herbicide would be applied with backpack sprayers or small hand sprayers. This equipment may be fitted with a hooded or shielded applicator tip. The shield would focus the herbicide application directly over the target, greatly reducing the potential of drift. The use of a shield with this spray technique would allow for increased focus and accuracy. Each target would be treated one at a time, thereby excluding the

broadcast application of an herbicide. Timing of the herbicide application is similar to the wipe method described above.

The IWMP includes the use of herbicides that are approved for use in wetland areas; however, herbicides would not be applied in waters of the U.S. and therefore, will not be discussed further.

2.4 Alternative 2 – No Action

The No Action Alternative would preclude the use of herbicide or manual treatment of invasive plant species within the project site.

2.5 Alternatives Considered but Rejected

2.5.1 Physical Treatment Only Alternative

Physical treatment only would involve mechanical and manual methods; no herbicide use would occur under this alternative. Mechanical treatment would involve the use of vehicles such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, or chop existing vegetation. Manual treatment would involve the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Manual treatments include cutting undesired plants above ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; and placing mulch around desired vegetation to limit competitive growth.

Mechanical methods are also not often effective in controlling on site weed species that can grow and flower very close to ground level. While there are a number of weed species to be controlled as part of the weed management program, Saharan mustard (*Brassica tournefortii*) is the primary species targeted for control on site. This species begins the growth process as a basal rosette, producing leaves close to the ground. Upon reaching maturity, the plant will bolt, producing vertical stem. Flowers, and ultimately seeds, are produced on the stem. Mechanical control of mustard is a viable option to postpone the seeding process if the vertical growth is cut during flowering and before seed production. However, this strategy is often not successful as a control method because cut weeds can produce new flowers and seed, often closer to the ground than the initial flowering effort. Eventually, the flowering and seeding portion of the plant are very near ground level, limiting the effectiveness of mechanical mowers or line trimmers. This activity is further limited by the potential for ground disturbance, which could be destructive if unknown cultural resources are present in the treatment area, and is also counter-productive to native vegetation restoration efforts. Therefore, mechanical treatment is not a viable option.

Manual treatment also would not be viable for a project this size (730 acres of weed management area within the 12,500 acres of the OWEF project) because treatments are slow and tedious and lack the responsiveness to provide rapid, consistent, and uniformed control necessary to manage germination events and rapidly spreading weeds currently found on the project site.

Accordingly, the Physical Treatment Only Alternative was rejected from further analysis due to the facts that this alternative would not be effective as it would be too time-consuming and too invasive.

2.5.2 Chemical Treatment Only Alternative

The chemical treatment only alternative would utilize two herbicides as outlined in the IWMP but not treat weeds with mechanical or manual methods. Herbicide utilization would result in greater responsiveness during invasive species management by providing significantly more rapid, consistent, and uniformed control over germination events versus mechanical and manual methods alone. Therefore, treating weed management areas with only chemicals was rejected as a viable alternative because manual control of weeds is required around highly sensitive areas (i.e., areas containing rare plants, sensitive cultural resources, waterways of the US, etc.).

Accordingly, the Chemical Treatment Only Alternative is not analyzed further in this EA.

2.6 References

HELIX Environmental Planning, Inc. (HELIX)

2012 Ocotillo Wind Energy Facility – Integrated Weed Management Plan. February 17. Available at: ftp://ftp.co.imperial.ca.us/icpds/eir/ocotillo-express/final/appendices/14appl3-weed-management.pdf.

U.S. Department of Interior, Bureau of Land Management (BLM)

2007a Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) (cont.)

2007b Record of Decision for the Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. September. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/veis/dear_reader_letter.Par.95872.File.dat/RecordofDecision.pdf.

2007c BLM Manual 9011, Chemical Pest Control. Available at: http://www.blm.gov/ca/st/en/prog/weeds/9011.html.

1992 BLM Manual 9015 – Integrated Weed Management. December 2. Available at: http://www.blm.gov/ca/st/en/prog/weeds/9015.html.

1980 California Desert Conservation Area Plan. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert_.pdf.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

3.1 Air Quality

3.1.1 Affected Environment

The project site is designated as nonattainment for the federal and state ozone (O_3) and respirable particulate matter (PM_{10}) standards. In 2009, the U.S. Environmental Protection Agency determined that the County had attained the federal 1997 eight-hour O_3 standard, but the official redesignation to attainment is awaiting approval of the O_3 maintenance plan. The project area is designated as attainment or unclassified for the state and federal carbon monoxide (CO), nitrogen oxide (NO_X), sulfur oxide (SO_X), and fine particulate matter ($PM_{2.5}$) standards (BLM and County 2012:3.2-2).

Section 176(c) of the Clean Air Act (42 U.S.C. 7401 et seq.) requires federal agencies to comply with the General Conformity Regulations and demonstrate conformity for projects in nonattainment or maintenance areas; otherwise, the projects cannot proceed.

The analysis in BLM 2007: Table 4-3 and BLM and County of Imperial (County) 2012: Tables 4.2-4 and 4.2-6 demonstrates that this action is exempt from a conformity determination for particulate matter (PM_{10}) and ozone.

3.1.2 Environmental Effects

Alternative 1 – Proposed Action

The potential impacts of applying glyphosate and triclopyr to local and regional air quality would be nominal. Spray drift (movement of herbicide in the air to unintended locations) and volatilization (the evaporation of liquid to gas) of glyphosate and triclopyr would temporarily result in herbicide particles in the air, which may be inhaled. Herbicide particles can be transported away from the target location, depending on weather conditions and the herbicide application method. All herbicides used for this project would contain the marker dye Turf Mark Blue to make the herbicide visible wherever it is applied. Chemical volatilization is temporary in nature, and neither of the chemicals proposed for use are likely to result in substantial volatilization from soils (BLM 2007:4-9 and 4-10).

Personnel would follow the SOPs incorporated into this Proposed Action (refer to Appendix A). Removal of invasive plants would be limited to a relatively small area (about 730 acres or six percent) of the approximately 12,500-acre project site (refer to Figure 3). In addition, herbicide concentrations in the air tend to increase up to 1.5 kilometers from the point of application (concentrations may double between 0.6 and 1.5 kilometers from the application site), but then decrease slowly at greater distances (BLM 2007:4-10). The weed removal areas are not adjacent to any sensitive receptors (e.g., residences, businesses, schools, etc.), so the probability of affecting such receptors is nominal. Atmospheric concentrations of glyphosate and triclopyr resulting from spray drift from application also would be temporary in nature (most predominant

at the time and location of treatment) and, as predicted by modeling done for the PEIS for Vegetation Treatments, would not adversely affect air quality (BLM 2007:4-9 and 4-10).

Manual treatments would not result in adverse effects to air quality, due to the fact that relatively little of the weed management areas would be manually treated and no sensitive receptors are near these areas.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in adverse effects associated with air quality.

3.1.3 Cumulative Impacts

Alternative 1 – Proposed Action

Operation of the OWEF would produce lower emissions than construction. Operation emissions of the proposed OWEF would be limited to maintenance activities and vehicle trips required for operation/maintenance and a 100-horsepower propane-fueled emergency generator engine. Fugitive dust emissions during operation would be generated mostly from employee and maintenance vehicle trips and road grading activities. Approximately 10 percent of the new unpaved roads would be regraded as needed due to sedimentation deposit from storm water runoff.

As stated above, the Proposed Action would require a limited number of vehicles to drive to the treatment areas an average of a few times per year, during which time, personnel would follow the SOPs incorporated into this Proposed Action from the PEIS for Vegetation Treatments (BLM 2007a). No other past, present, or reasonably foreseeable future projects have occurred or are anticipated on the project site or within its immediate vicinity. In addition, the relatively small weed removal areas, a combined total about 730 acres or six percent of the approximately 12,500-acre OWEF project site, are not adjacent to any sensitive receptors such as residences, hospitals, and schools. Therefore, the probability of affecting such receptors is nominal, and no cumulative impacts on air quality would occur.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in negative effects to air quality as no herbicide or manual methods of invasive species removal would occur. As no action would occur, this alternative would not contribute to cumulative impacts to air quality.

3.1.4 References

U.S. Department of Interior, Bureau of Land Management (BLM)
2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)
2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

3.2 Cultural Resources

3.2.1 Affected Environment

A records search for the OWEF was conducted at the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) located at San Diego State University on January 5, 2009. The record search revealed 39 previous studies conducted within one mile of the OWEF project site, including 14 studies conducted partially or completely within the OWEF project site. A total of 210 cultural resources were previously recorded within the records search study area, including 47 isolates and 163 archaeological sites or built resources. Of the 210 previously recorded cultural resources, 83 are within the OWEF project site, which include 60 archaeological sites, 21 isolates, and 2 built resources.

Archaeological Sites

A BLM Class III intensive archaeological survey was conducted for the entire direct impact APE by Tierra Environmental Services (Tierra) in 2010 and 2011. Intensive surveys were used to methodically inventory these areas and to record the archaeological resources identified therein. The survey included approximately 11,332 acres. A total of 287 archaeological sites were documented within the project area, including 229 prehistoric sites, 29 historic sites, and 29 multi-component sites (sites containing both prehistoric and historic components). During the survey, 28 previously recorded sites and isolates could not be relocated.

Of the 287 archaeological sites discovered within the OWEF project site, 127 sites are recommended eligible for inclusion in the NRHP and 160 are recommended not eligible for inclusion in the NRHP.

Historic Buildings/Structures

Tierra identified 186 potential historic-period buildings or structures in the APE, the majority of which were historic-period residential structures in the community of Ocotillo (Tierra 2011b). Subsequent to Tierra's survey and evaluation, it was determined that the community of Nomirage (approximately six miles southeast of Ocotillo) should also be evaluated and analyzed to identify the presence of any potential historic-period resources. A second reconnaissance survey was undertaken and 57 potential historic-period resources were found to exist within the Nomirage community (Moomjian 2012). Therefore, a total of 245 potential historic-period resources were identified and evaluated for the OWEF.

The majority (177) of the potential historic-period resources in Ocotillo and all 57 potential historic-period resources in Nomirage were evaluated and recommended as not historically

and/or architecturally significant under NRHP or California Register of Historical Resources (CRHR) criteria. Nine resources were identified as potentially significant. After further research and evaluation, three potentially significant historic built environment resources were recommended as designation-eligible historical resources, including Desert View Tower (P-13-008044), Old Highway 80 (P-13-008418), and San Diego Eastern & Arizona Railroad – Desert Line (P-13-009302; Moomjian 2012). The remaining six resources also were further evaluated and recommended as not historically or architecturally significant. The BLM concurs with the above recommendations (BLM and County 2012).

Native American Values

During the BLM's Section 106 consultation process for the project, representatives of some Native American tribes informed the BLM of a TCP which, in their view, encompasses the project area (and the surrounding region) and that this area comprises a landscape which is historically, culturally, religiously and spiritually important. Very strong concern about the project and potential effects to the newly recorded archaeological sites including but not limited to trails, geoglyphs, rock features, habitation areas, previously documented enthographic resources, the viewshed from the Spoke Wheel Geoglyph and other geoglyphs and sacred sites within the project area, and both known and unknown cremations was expressed to the BLM during Section 106 consultation meetings and government-to-government meetings with Tribal Governments and/or their representatives. In consultation with the Tribes, Advisory Council on Historic Preservation (ACHP), and State Historic Preservation Officer (SHPO), the BLM has acknowledged that the TCP is of significant cultural and religious importance to at least some Tribes, and that the project will occur in an environmental setting that includes the TCP as identified by the Tribes and its relationship and association to other sites, and viewsheds including those towards Coyote, Signal and Sugarloaf Mountains.

3.2.2 Environmental Effects

Alternative 1 – Proposed Action

The effect of herbicide treatments on cultural resources would depend on the method of herbicide application and the herbicide used. Glyphosate and triclopyr can deteriorate cultural artifacts as a result of causing higher soil acidity, altering the surface of exposed artifacts, and altering or obscuring the surfaces of organic materials. The surfactant No Foam A can interfere with the radiocarbon or Carbon 14 dating of a site (BLM 1991). The cultural resources on the project site have been extensively studied as part of the analysis conducted for the EIR/EIS for the wind project and during construction of the project. During the construction of the wind project, Environmentally Sensitive Areas were established to protect the cultural resources documented on site and all project personnel went through environmental training. In an effort to reduce the potential impacts on cultural resources, herbicides would not be used in areas where cultural resources have been documented.

Impacts to National Register-eligible cultural resources would be avoided by following SOPs defined in the PEIS for Vegetation Treatments (refer to Appendix A of this EA). If National Register-eligible cultural resources were discovered during vegetation treatments, appropriate

actions would be taken to protect these resources in accordance with Appendix F of the Memorandum of Agreement for the project (BLM et al.2012).

Manual treatment of invasive plants also could cause harm to cultural resources; however, personnel conducting the treatments would stay away from known cultural resources, and would halt treatment procedures if unknown cultural resources are discovered. Accordingly, no adverse effects to cultural resources would occur from manual treatment.

The Proposed Action also would result in beneficial effects to cultural resources, because invasive plants may have long-term negative impacts on cultural resource sites by displacing native vegetation and increasing the potential for soil erosion, potentially leading to the loss of cultural resources. In addition to limiting these impacts, removal of invasive vegetation would contribute to the restoration and maintenance of historic and ethnographic cultural landscapes (U.S. Department of the Interior, National Park Service 2003).

In conclusion, the Proposed Action has the potential to have both beneficial and negative effects on cultural resources; however, negative effects would not be adverse due to the implementation of SOPs (refer to Appendix A) during treatment of invasive plants.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in the negative effects to cultural resources that would occur under the Proposed Action; however, no beneficial effects would occur under the No Action Alternative. No adverse effects to cultural resources would be associated with this alternative.

3.2.3 Cumulative Impacts

Alternative 1 – Proposed Action

Because no direct or indirect adverse impacts are expected, no cumulatively adverse effects are expected.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in negative effects to cultural resources as no herbicides or manual methods of invasive species would occur. As no action would occur, this alternative would not contribute to cumulative impacts.

3.2.4 References

Moomjian, Scott
2012 Historical Resources Evaluation and Impact Analysis for the Ocotillo Express Wind Energy Project.

Tierra Environmental Services (Tierra)

2011a Draft Archaeological Survey Report for the Ocotillo Express Wind Energy Project, Imperial County, California.

2011b Preliminary Historical Resources Reconnaissance Survey/Evaluation for the Ocotillo Express Wind Energy Project. May.

U.S. Department of Interior, Bureau of Land Management (BLM)

2007a Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

2007b Record of Decision for the Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. September. Available at: http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/veis/dear_reader_letter.Par.95872.File.dat/RecordofDecision.pdf.

1991 Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States. BLM Wyoming State Office. Casper, Wyoming.

U.S. Department of Interior, Bureau of Land Management (BLM), U.S. Army Corps of Engineers, California State Historic Preservation Officer, and Advisory Council on Historic Preservation

2012 *Memorandum of Agreement Among the BLM (California), the United States Army Corps of Engineers, Ocotillo Express LLC, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Ocotillo Express Wind Energy Project, Imperial County, California*.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)

2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

U.S. Department of the Interior, National Park Service

2003 Invasive Exotic Plant Management Plan and Environmental Assessment. Rocky Mountain National Park, Colorado.

3.3 Human Health and Safety

3.3.1 Affected Environment

The closest sensitive receptors to the proposed weed management areas are the houses located along Shell Canyon Road. The closest house is located 0.5 mile from the weed management area.

The OWEF project site is not located in any of the environmental database searches and no properties of environmental concern are located within one mile of the project site (BLM and County 2012:3.12-3). No evidence of prior or current pesticide use was located as part of a records search for the OWEF project site (BLM and County 2012:3.12-4).

3.3.2 Environmental Effects

Alternative 1 – Proposed Action

Personnel treating invasive plants with glyphosate and triclopyr would be properly trained prior to applying herbicides on site. This training would help ensure resource protection and the health and safety of occupational receptors (i.e., personnel). Accordingly, effects to personnel would not be adverse. In addition, the implementation of the SOPs included as part of the Proposed Action would ensure that public receptors would not be adversely affected by herbicide use. Such SOPs include posting signs for the public in areas where herbicide use has occurred (refer to Appendix A).

The use of herbicides could involve potential risk or the perception of risk to workers and members of the public engaging in activities in or near herbicide treatment areas. There are no risks associated with nearly all human exposures to glyphosate at the typical or maximum application rate. There is low risk to children in the general public associated with accidental exposure to consumption of glyphosate-contaminated water; however, no standing water exists within the weed management areas on the Project site (BLM 2007:4-184).

Workers face low risk from directed and broadcast ground spray applications at the upper ranges of exposures for both evaluated formulations of triclopyr (triethyamine salt [TEA] and butoxyethyl ester [BEE]) at the maximum application rate. Thus, for workers who may apply triclopyr repeatedly over a period of several weeks or longer, it is important to ensure that work practices involve reasonably protective procedures. There is low to moderate risk to the general public from triclopyr applications under direct and indirect (consumption) exposure (BLM 2007:4-189).

In addition, manual treatment methods may require the use of equipment that could involve potential injuries; however, personnel would be trained to use equipment safely and would be supervised to ensure safety.

To help minimize both environmental and personal risk, all herbicide use must be conducted under the direction of a professional pesticide applicator with either a Qualified Applicator

License or a Pesticide Applicator License. The applicator should be familiar with all safety and environmental regulations, as well as be able to identify target plant species. The Weed Control Manager is responsible for meeting these requirements and for approving any trained applicators that would handle herbicides. The Weed Control Manager can be either an individual or an organization in which the person(s) actively managing the project meets the qualifications outlined below to the satisfaction of the BLM. Specifically the Weed Control Manager shall have:

- A B.S. or B.A. degree in ecology, botany, biology, landscape maintenance, range management, or related field.
- A Qualified Applicator License and either have or contract with a State of California Pest Control Advisor license for recommendations regarding appropriate pest control methodology.
- At least 5 years of experience in native habitat restoration in southern California, preferably San Diego and Imperial counties.
- Demonstrated experience in non-native, invasive species control or in projects involving a similar skill set.
- Experience in identifying native and non-native, invasive plants from the Colorado Desert.

Alternative 2 – No Action Alternative

Personnel and the public would not be exposed to potential harm under the No Action Alternative, as no herbicides or manual methods would be used to remove invasive species from the project site.

3.3.3 Cumulative Impacts

Alternative 1 – Proposed Action

Because no direct or indirect adverse impacts are expected, no cumulatively adverse effects are expected.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in negative effects to human health or safety as no herbicides or manual methods on invasive species removal would occur. As no action would occur, this alternative would not contribute to cumulative impacts.

3.3.4 References

U.S. Department of Interior, Bureau of Land Management (BLM)
2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)
2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

3.4 Soils

3.4.1 Affected Environment

The OWEF project site is undeveloped and relatively barren, with a sparse growth of desert vegetation. Soils consist primarily of younger Holocene to Pleistocene age alluvium. The surface soil consists of medium-dense to dense, poorly graded sands with little fines at the surface. The sands become somewhat cemented in the subsurface, while non-cemented, poorly graded sands generally become more dense with depth (BLM and County 2012:3.15-1). The OWEF project site and Yuha Desert surface material is composed of silts, sands, limited clays, gravels, cobbles and boulders. No unique geologic features or geologic features of unusual scientific value for study or interpretation have been identified or would be disturbed or otherwise adversely affected by the Proposed Action (BLM and County 2012:3.15-2 through 3.15-5).

3.4.2 Environmental Effects

Alternative 1 – Proposed Action

The Proposed Action would be beneficial to soil. Noxious weeds and other invasive vegetation can impact soil function and reduce soil biodiversity. Noxious and invasive weeds may alter soil nutrient availability for native species, alter soil constituents (e.g., soil fungi and bacteria), and slow the rate of natural plant succession (BLM 2007:4-13). These conditions can lead to reduced native plant establishment and low native cover.

However, negative impacts to soils can occur from removal of invasive plant species. Herbicide treatments can affect soil fertility and function, and can kill or harm soil organisms. Herbicide applications inevitably result in contact with soils, either intentionally for systemic treatments, or unintentionally as spills, overspray, or spray drift. In addition to direct application, transmission to soil may occur when an herbicide is transported through the plant from sprayed above-ground portions to roots, where it may be released into soil. Some herbicides also can remain active in plant tissue and can be released into the soil during plant decay and result in residual herbicide activity.

Glyphosate is a polar compound that works to kill target plant material by disrupting a plant enzyme, which is not present in humans or animals. Product that is not absorbed by plant material is generally inactivated by soil adsorption (Monsanto 2005). Glyphosate is water soluble, but it has a high affinity to bind to soil particles. Adsorption of glyphosate increases with increasing clay content and cation exchange capacity, and decreasing soil pH and phosphorous content (de Jonge et al. 2001; Monsanto Company 2011; Tu et al. 2001).

Typically, the glyphosate mobility is limited to approximately 6 inches deep in soils when applied in accordance with the label; some data suggests that mobility may extend to 18-24 inches in depth in certain situations, but this is rare (EPA Glyphosate Red 1994). The active ingredients in glyphosate are biodegraded to aminomethyl phosphoric acid and then to carbon dioxide by soil organisms (BLM 2007:4-19). Glyphosate has a typical soil half-life of 47 days and a soil adsorption of 24,000 milliliters per gram (mL/g; BLM 2007:4-15).
Both formulations of triclopyr (TEA and BEE) degrade to triclopyr acid in soil. The average half-life of triclopyr acid in soil is 30 days; however, triclopyr can be persistent in plants. When plants containing triclopyr die and biodegrade, they may release triclopyr to the soil, where it can then be taken up by other plants. Triclopyr has a typical soil half-life of 46 days and a soil adsorption of 20 and 780 mL/g for TEA and BEE, respectively (BLM 2007:4-15).

Wind and water can transport glyphosate and triclopyr that have adsorbed to particles. The potential for wind and water transport depends on timing of the application, amount of herbicide applied, adsorption rates of the soil, wind speeds (for windblown transport), and amount and intensity of rain events (for water transport). Fine sand or silty textured soils, low soil stability, soil disturbance, and dryness all increase the risk for wind erosion of herbicide-containing particles (BLM 2007:4-14). To reduce the risk of wind transport, glyphosate and triclopyr would be applied during low wind (less than 10 miles per hour) conditions, as localized applications (using either a backpack sprayer or a sponge applicator), and at the minimum volume necessary to treat the invasive weeds present. To reduce the risk of water transport, glyphosate and triclopyr would not be applied prior to forecast rain events. Additionally, watering of the project site for dust control would be conducted in advance of application of glyphosate and triclopyr, and watering for dust control would not be conducted immediately following herbicide applications.

Manual treatment methods could disturb soil, leading to soil erosion and loss of soil quality. However, the use of herbicides and manual methods to treat vegetation would overall improve ecosystem function and health, including soil health. Accordingly, the Proposed Action would not result in adverse effects to soil.

Alternative 2 – No Action Alternative

Under the No Action Alternative herbicides and manual methods would not be used and invasive plants would continue to rapidly spread in the OWEF project site, resulting in dramatic and potentially irreversible effects on soil quality through changes in organic matter content, diversity and abundance of soil organisms, and nutrient and water availability.

3.4.3 Cumulative Impacts

Alternative 1 – Proposed Action

Because no direct or indirect adverse impacts are expected, no cumulatively adverse effects are expected.

Alternative 2 – No Action Alternative

As no action would occur, this alternative would not contribute to cumulative impacts.

3.4.4 References

de Jonge, H., L.W. de Jonge, O.H. Jacobsen, T. Yamaguchi, and P. Moldrup
2001 Glyphosate sorption in soils of different pH and phosphorous content. Soil Science: 166(4), p 230-238.

Monsanto Company
2011 Part II – The fate of glyphosate: translocation and exudation in the soil. Available at: http://www.monsanto.com/products/Documents/glyphosate-background-materials/RRPlus%20II%20-%20The%20Fate%20of%20Glyphosate%20-%20Translocation%20and%20Exudation%20in%20the%20Soil%20-%20FINAL%2010-4-11.pdf.

2005. History of Monsanto's Glyphosate Herbicides. June.

1994. Registration Eligibility Decision (RED) Glyphosate. Available at: http://www.epa.gov/oppsrrd1/REDs/old_reds/glyphosate.pdf.

Tu, M., C. Hurd, and J.M. Randall
2001 Glyphosate. Pages 7e.1-7e.10 of the Weed Control Methods Handbook: Tools and Techniques for Use in Natural Areas. April.

U.S. Department of Interior, Bureau of Land Management (BLM)
2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)
2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

3.5 Vegetation/Special Status Species/Threatened and Endangered Species

3.5.1 Affected Environment

A total of 19 vegetation communities were mapped in the OWEF project site, based on the National Vegetation Classification System per the BLM. Of these vegetation communities, big galleta grass shrub-steppe, brittle bush scrub, desert agave scrub, desert lavender scrub, mesquite thicket, smoke tree woodland, teddy bear cholla scrub, and white bursage scrub are considered

sensitive (i.e., highly imperiled) by the California Department of Fish and Wildlife, and some associations are of high priority for inventory (BLM and County 2012:3.18-3).

It should be noted that there are no federal- or state-listed plant species within the OWEF site, and although there are two BLM-sensitive plant species on the OWEF site (Little San Bernardino Mountains linanthus [*Linanthus maculates*] and Mountain Springs bush lupine [*Lupinus excubitus* var. *medius*]), neither was found in the weed management area (BLM and County 2012:3.18-13).

3.5.2 Environmental Effects

Alternative 1 – Proposed Action

The Proposed Action would be beneficial to non-target species, as well as vegetation communities, by the removal of invasive plant species, because it would allow native species to reestablish in areas cleared of invasive plants. This also would be beneficial to species composition and species diversity, which are equally important contributors to ecosystem function (BLM 2007:4-47). However, negative impacts to species could occur from use of herbicides on or inadvertent removal of non-target plant species.

Glyphosate is a non-selective systemic herbicide that can damage all groups or families of non-target plants to varying degrees. Glyphosate inhibits the production of aromatic amino acids and certain phenolic compounds. This leads to a variety of toxic effects in plants, which can result in cellular disruption, decreased growth, and death at sufficiently high levels of exposure. Because of its non-selective nature, glyphosate may be highly effective in spot applications (as planned by the Proposed Action) or in areas where invasive species dominate and where very few non-target plants exist (as with the Saharan mustard on the project site). Glyphosate has low residual activity, so it would not be effective for an extended period of time.

Triclopyr is a selective, systemic herbicide used on broadleaf and woody species. Triclopyr mimics auxin, a plant growth hormone, thus disrupting the normal growth and viability of plants. Direct spray of both formulations poses a high risk to plants (BLM 2007:4-62).

Risk to non-target plants from spray drift would be relatively low, because the Proposed Action would not include aerial application of glyphosate or triclopyr. In addition, personnel would apply no more than that required to effectively kill target species; therefore, the risk of surface runoff of herbicides would be low. Personnel would be trained to immediately clean up any spills of chemicals, so as not to affect nearby non-target vegetation. Personnel also would be trained to identify non-target (in addition to target) species to reduce the risk of accidental direct spraying of non-target species. The training would include having all personnel undergo an on-site orientation with the Restoration Specialist and each personnel on site would receive a field guide depicting the native and non-native, invasive species on site. The Weed Control Manager would provide additional oversight to personnel on site. Risk assessments predicted no risk to plant receptors from wind transport of herbicide particles under all of the evaluated scenarios (BLM 2007:4-47). Application rate is a major factor in determining risk, with higher rate application associated with greater risk to plants under various exposure scenarios. Personnel

would be trained in the appropriate application rate of glyphosate and triclopyr, so as to minimize impacts to non-target plant species. Accordingly, through proper training of personnel, the effect of the Proposed Action on non-target plant species would not be adverse.

The potential negative impacts to non-target plants from manual treatment methods are expected to be lower than those from chemical treatments. There would still be the potential of accidental removal of non-target plants; however, as stated above, personnel would be trained to recognize and avoid the removal of non-target species.

No effects would occur to listed or BLM-sensitive plant species from implementation of the Proposed Action because none were located within the weed management area.

Alternative 2 – No Action Alternative

Under the No Action Alternative, no herbicides or manual methods would be used to treat invasive plant species. Accordingly, there would be no chance of herbicides coming into contact with non-target plants, or the inadvertent removal of non-target species.

3.5.3 Cumulative Impacts

Alternative 1 – Proposed Action

Because no direct or indirect adverse impacts are expected, no cumulatively adverse effects are expected. Herbicide use and/or manual removal would benefit vegetation communities by allowing native plant species to reestablish in areas currently occupied by invasive plants.

Alternative 2 – No Action Alternative

The No Action Alternative would not result in any of the potential negative effects that could occur under the Proposed Action as no herbicide or manual method of removing invasive species would be used. However, this alternative would likely have a negative impacts on native plant species composition and diversity.

3.5.4 References

U.S. Department of Interior, Bureau of Land Management (BLM)
2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)
2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

3.6 Wildlife/Special Status Species/Threatened and Endangered Species

3.6.1 Affected Environment

A total of 16 federally listed and/or BLM sensitive animal species were detected within the OWEF project site during biological resource surveys conducted for the OWEF. These species include rosy boa (*Charina trivirgata*; BLM sensitive), flat-tailed horned lizard (*Phrynosoma mcallii*; BLM sensitive), golden eagle (*Aquila chrysaetos*; federal species of concern and BLM sensitive), burrowing owl (*Athene cunicularia*; federal species of concern and BLM sensitive), ferruginous hawk (*Buteo regalis*; BLM sensitive), Vaux's swift (*Chaetura vauxi*; federal species of concern), northern harrier (*Circus cyaneus*; federal species of concern), yellow warbler (*Dendroica petechia brewsteri*; federal species of concern), willow flycatcher (*Empidonax traillii*; federally listed as endangered), merlin (*Falco columbarius*; federal species of concern), prairie falcon (*Falco mexicanus*; federal species of concern), loggerhead shrike (*Lanius ludovicianus*; federal species of concern), osprey (*Pandion haliaetus*; federal species of concern), Le Conte's thrasher (*Toxostoma lecontei*; federal species of concern and BLM sensitive), western mastiff bat (*Eumops perotis californicus*; BLM sensitive), and Peninsular bighorn sheep (*Ovis canadensis nelsoni*; federally listed as endangered; BLM and County 2007:3.23-3 through 3.23-10).

3.6.2 Environmental Effects

Alternative 1 – Proposed Action

The Proposed Action would include the incorporation of the specific SOPs from the PEIS for Vegetation Treatments (BLM 2007; see Appendix A), and personnel would be trained to avoid animals while using herbicides or disrupting them when using manual removal methods. Through diligent efforts of trained personnel impacts are not expected to adversely affect the ability of species to occupy or thrive in an area.

Glyphosate applications pose low to moderate risk to terrestrial wildlife receptors under multiple exposure scenarios involving applications at the typical and maximum application rates (Monsanto Company 2011). Direct spray of small mammals and insects, assuming 100 percent absorption, poses a low risk at the typical application rate and a moderate risk at the maximum application rate. Consumption of vegetation sprayed with glyphosate poses a low risk to small mammals for scenarios involving the maximum application rate only. A large mammal consuming vegetation sprayed with glyphosate would face low acute risk for scenarios involving the typical application rate, and moderate acute/low chronic risk, for scenarios involving the maximum application rate, (BLM 2007:4-106); however, each of these scenarios assumes the large mammal would consume the sprayed weed species, which would not be typical because the large mammals that have potential to occur on site (e.g., Peninsular bighorn sheep) typically graze on native desert shrubs. A bird that consumes vegetation sprayed with glyphosate would face a low acute and chronic risk (BLM 2007:4-106). Consumption of contaminated insects would pose a low risk to both small mammals and small birds if the herbicide was applied at the typical application rate. The herbicide would pose a moderate risk if applied at the maximum rate. Acute risks from glyphosate exposure are low at the typical application rate under all

scenarios, and there are no chronic risks. Exposure scenarios with the greatest risk are direct spray and acute consumption of contaminated vegetation and insects. Glyphosate is non-selective and the most appropriate use of this herbicide is spot applications, which would be the typical application method on the project site. Spot applications would have lower risks associated with consumption of contaminated vegetation and insects than broadcast applications, as fewer non-target areas would be impacted by direct spray or spray drift (BLM 2007:4-106).

Application of the two evaluated formulations of triclopyr (TEA and BEE) poses a risk to insects, mammals, and birds under several exposure scenarios (Alligare, LLC 2010). Because risks calculated for these two formulas are the same (BLM 2007:4-109), no differentiation is made between TEA and BEE in this section. The following scenarios pose a low risk for applications at the typical rate and a moderate risk for applications at the maximum rate: first-order and 100 percent absorption of direct spray by small mammals, 100 percent absorption of direct spray by insects, acute consumption of contaminated vegetation by large mammals and large birds, acute consumption of contaminated insects by small birds and small mammals, and chronic consumption of on-site contaminated vegetation by large mammals and large birds. In addition, for the maximum application rate, there would be low risk associated with acute consumption of contaminated vegetation by small mammals following an accidental spill, acute consumption of contaminated small mammals by carnivorous mammals, and chronic consumption of off-site contaminated vegetation by large mammals. No risk is predicted for small mammals as a result of acute or chronic consumption of contaminated vegetation or water, or for predatory birds as a result of consumption of contaminated fish. In summary, acute or accidental direct spray scenarios would pose a low to moderate risk to terrestrial mammals and insects, consumption of contaminated vegetation would pose a low to moderate risk to large mammals and large birds, and consumption of contaminated insects would pose a low to moderate risk to small birds (BLM 2007:4-109).

Spot applications of glyphosate and triclopyr (as planned by the Proposed Action) would have lower risks associated with consumption of contaminated vegetation and insects than broadcast applications, as fewer non-target areas would be impacted by direct spray or spray drift.

Invasive weed species have the potential to out-compete native species and change the overall quality of the habitat. Habitat degradation could occur through the spread of existing invasive weed species within the OWEF project site. By removing invasive plants, the Proposed Action would result in long-term beneficial effects on wildlife communities by improving habitat and ecosystem function.

The potential negative impacts to animals from manual treatment methods are expected to be lower than those from chemical treatments. There would still be the potential of accidental death or injury to animals; however, as stated above, personnel would be trained to avoid such accidents.

For the reasons presented above, the effects of the Proposed Action on animal species (including special status species) are not expected to adversely affect the ability of species to occupy or thrive in an area.

Alternative 2 – No Action Alternative

Under the No Action Alternative neither herbicides nor manual removal methods would be used and weeds would proliferate causing habitat degradation.

3.6.3 Cumulative Impacts

Alternative 1 – Proposed Action

Because no direct or indirect adverse impacts are expected, no cumulatively adverse effects are expected. The Proposed Action would benefit animal species' habitats by allowing native plant species to reestablish in areas currently occupied by non-native, invasive plants.

Alternative 2 – No Action Alternative

The No Action Alternative would result in potential negative effects by allowing weed proliferate that would cause habitat degradation. As no action would occur, this alternative could contribute to cumulative impacts as weeds spread through common dispersal vectors, such as wind, animals and vehicular traffic, and could spread to other locations and impact habitat beyond the project site.

3.6.4 References

Alligare, LLC
2010 Triclopyr 4 Material Safety Data Sheet. January 26.

Monsanto Company
2011 Roundup Pro Herbicide Material Safety Data Sheet. February 11.

U.S. Department of Interior, Bureau of Land Management (BLM)
2007 Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. June. Available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html.

U.S. Department of Interior, Bureau of Land Management (BLM) and County of Imperial (County)
2012 Final Environmental Impact Report/Environmental Impact Statement for the Ocotillo Wind Energy Facility. February. Available at: http://www.icpds.com/?pid=2843.

3.7 Other Environmental Topics

Environmental topics other than those discussed above were not analyzed in this EA.

Areas of critical environmental concern, essential fish habitat, farmlands, livestock grazing, wild and scenic rivers, wild horses and burros, and wilderness/wilderness study areas/lands with

wilderness characteristics are not applicable to the Proposed Project because these resources do not exist on site or within its immediate vicinity.

Floodplains (BLM 2007:4-24 through 4-36), , paleontological resources (BLM 2007:4-146 through 4-152), recreation (BLM 2007:4-159 through 4-163), and visual resources (BLM 2007:4-152 through 4-155) were found to not be adversely affected in the PEIS for Vegetation Treatments, and thus, would not be adversely affected by the Proposed Action.

Environmental justice and social and economic values also are not applicable because no residences or businesses are located on site or immediately adjacent to it.

CHAPTER 4: CONSULTATION AND COORDINATION

4.1 Summary of Public Participation

Public review and comment on the OWEF Project were extensive. Public scoping and frequent agency meetings were completed as described in the Final EIR/EIS, Section ES.8, Public Participation and Chapter 5. All public comments received on the Draft EIS/EIR were carefully analyzed and agency responses are included in the Final EIR/EIS. Appendix O (Comment Letters) and Appendix N (Response to Comments) include all of the written comment letters received by the BLM and County of Imperial in response to the Notice of Availability and the responses to these comment letters. Additionally, 12 protests of the associated plan amendments were considered and resolved by the Director of the BLM prior to the issuance of the ROD for the OWEF. This EA and associated FONSI will be made available on the BLM El Centro website for a 15-day public review and comment period. Any comments received will be considered and addressed prior to a decision being made on this action.

4.2 Section 7 Consultation

A Section 7 consultation process was completed with the U.S. Fish and Wildlife Service for the OWEF project between May 2011 and April 2012. A Biological Opinion (BO) was issued on April 26, 2012. The BO considered invasive weeds and the associated potential impacts to the two listed species that were analyzed (Peninsular bighorn sheep and least Bell's vireo [*Vireo bellii pusillus*]). The O&M Conservation Measure No. 3 of the BO included a requirement to control invasive plant species for the life of the project according to the measures provided in the IWMP (U.S. Fish and Wildlife Service 2012:11).

4.3 Section 106 Consultation

Section 106 consultation under the National Historic Preservation Act (NHPA) for the OWEF project was completed with the execution of the Memorandum of Agreement on May 8, 2012 (BLM et al. 2012). The BLM finds that the activities covered by the Proposed Action will take place within the defined area of potential effect for the OWEF project and that there will be no additional adverse effects to historic properties by its implementation. It is therefore covered by the prior consultations for the OWEF project. No additional consultation is required pursuant to the NHPA.

4.4 List of Preparers

Bureau of Land Management, California Desert District (CDD), El Centro Field Office (ECFO), and California State Office (CASO)

R. Brian Paul, Project Manager (CDD)
Nicollee Gaddis, Planning & Environmental Coordinator (ECFO)
Andrew Trouette, Botanist (ECFO)
Christine McCollum, Archaeologist (ECFO)
Carrie Simmons, Resources Branch Supervisor (ECFO)
Sandra McGinnis, Environmental Protection Specialist (CASO)
Dianna Brink, Rangeland Management Specialist (CASO)

HELIX Environmental Planning, Inc.

Shelby Howard, Project Manager
Andrea Bitterling, Quality Assurance/Quality Control
Melissa Whittemore, Primary EA Preparer
Sheryl Horn, EA Preparer
Elizabeth Venz, Senior GIS Specialist

HELIX Environmental Construction Group

Justin Fischbeck, Weed Abatement Manager
Erik McCracken, On-site Coordinator
Zach Goedker, Qualified Applicator License Holder

4.5 References

U.S. Department of Interior, Bureau of Land Management (BLM), U.S. Army Corps of Engineers, California State Historic Preservation Officer, and Advisory Council on Historic Preservation

2012 *Memorandum of Agreement Among the BLM (California), the United States Army Corps of Engineers, Ocotillo Express LLC, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Ocotillo Express Wind Energy Project, Imperial County, California*.

U.S. Fish and Wildlife Service

2012 Formal Section 7 Opinion on the Proposed Ocotillo Express Wind Project Imperial County, California (3031-P) CAD000.06. April 26.

CHAPTER 5: ACRONYMS

BEE	butoxyethyl ester
BLM	U.S. Department of Interior, Bureau of Land Management
Cal-IPC	California Invasive Plant Council
County	County of Imperial
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
HELIX	HELIX Environmental Planning, Inc.
I-8	Interstate 8
IWMP	Integrated Weed Management Plan
NEPA	National Environmental Policy Act
OWEF	Ocotillo Wind Energy Facility
PEIS	Programmatic Environmental Impact Statement
PEIS for Vegetation Treatments	Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States
SOPs	standard operating procedures
TEA	triethyamine salt

Appendix A
APPLICABLE PREVENTION MEASURES AND STANDARD OPERATING PROCEDURES FOR APPLYING HERBICIDES

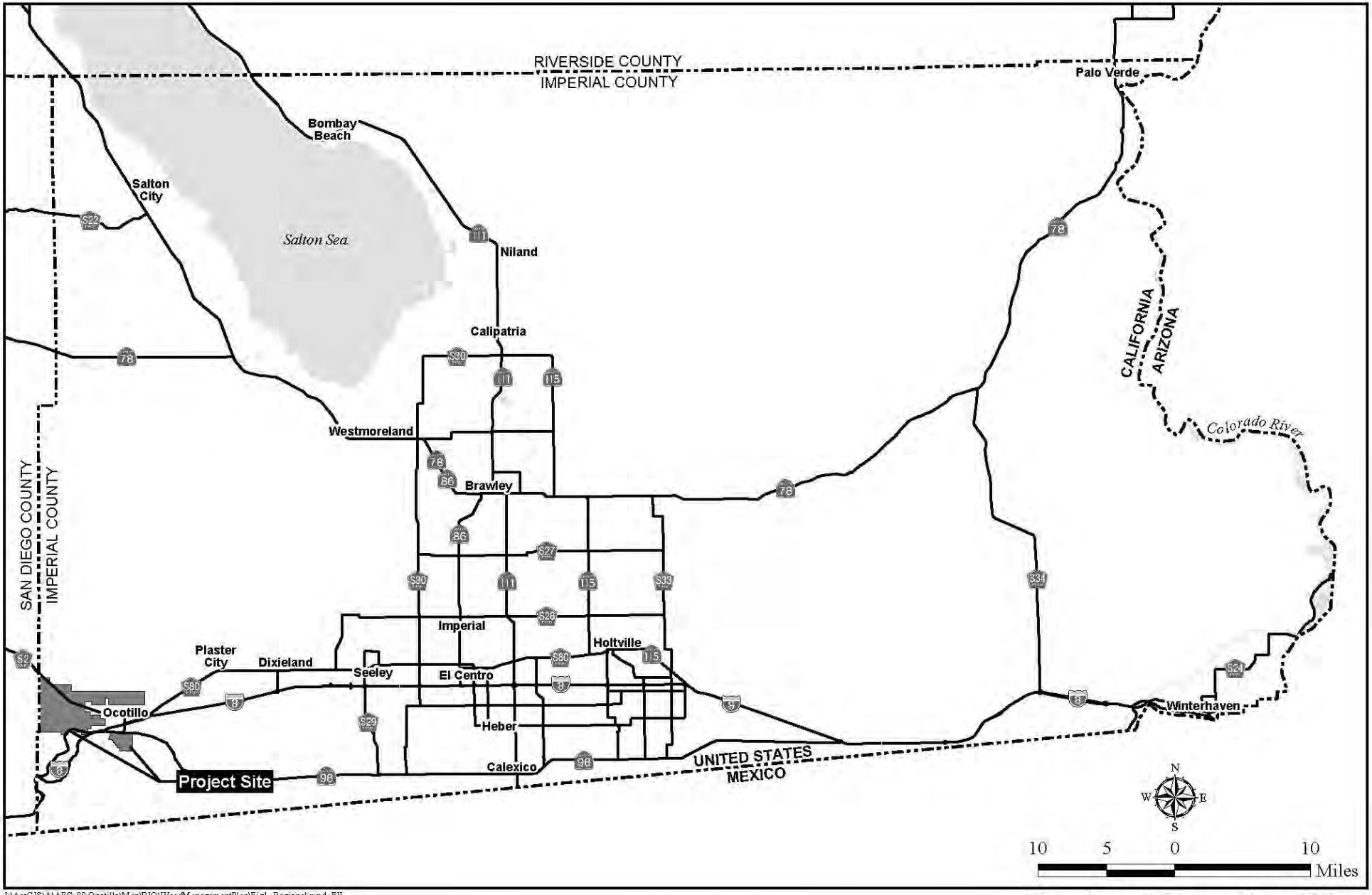
THIS PAGE INTENTIONALLY LEFT BLANK

Table A-1 APPLICABLE PREVENTION MEASURES	
BLM Activity	**Prevention Measures**
Project Development	• Minimize soil disturbance to the extent practical, consistent with project objectives. • Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict travel to periods when the spread of seeds or propagules is least likely. • Prevent the introduction and spread of weeds caused by moving weed-infested sand, gravel, borrow, and fill material. • Inspect material sources on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before use. • Prevent weed establishment by not driving through weed-infested areas. • Inspect and document weed establishment at access roads, and all disturbed areas; control infestations to prevent weed spread within the project area. • Identify sites where equipment can be cleaned. Clean equipment before entering public lands. • Clean all equipment before leaving the project site if operating in areas infested with weeds. • Inspect and treat weeds that establish at equipment cleaning sites. • Ensure that rental equipment is free of weed seed.
Revegetation	• Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover revegetation. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. • Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings). • Inspect seed and straw mulch to be used for site rehabilitation (for wattles, straw bales, dams, etc.) and certify that they are free of weed seed and propagules. • Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least three growing seasons following completion of the project. • Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available. • Provide briefings that identify operational practices to reduce weed spread. • Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established.

Table A-2 APPLICABLE STANDARD OPERATING PROCEDURES FOR APPLYING HERBICIDES	
Resource Element	**Standard Operating Procedures**
Guidance Documents	• BLM Handbook H-9011-1 (Chemical Pest Control); and Manuals 1112 (Safety), 9011 (Chemical Pest Control), 9012 (Expenditure of Rangeland Insect Pest Control Funds), 9015 (Integrated Weed Management), and 9220 (Integrated Pest Management).
General	• Prepare operational and spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to the environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow herbicide product label for use and storage. • Have licensed applicators apply herbicides. • Use only U.S. Environmental Protection Agency (USEPA)-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. • Minimize the size of application area, when feasible. • Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at: http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spill conditions to minimize risks to resources. • Take precautions to minimize drift by not applying herbicides when winds exceed 10 mph, or a serious rainfall event is imminent. • Use drift control agents and low volatile formulations. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide product label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide.

Table A-2 (cont) APPLICABLE STANDARD OPERATING PROCEDURES FOR APPLYING HERBICIDES	
Resource Element	**Standard Operating Procedures**
Air Quality (see Manual 7000 [Soil, Water, and Air Management])	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil (see Manual 7000 [Soil, Water, and Air Management])	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility.
Water Resources (see Manual 7000 [Soil, Water, and Air Management])	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Plan to treat at appropriate time of day to avoid high winds. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate a waterway. • Do not rinse spray tanks in or near waterways.
Wetlands and Riparian Areas	• Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 25 feet for vehicle and 10 feet for hand spray applications.
Vegetation (see Handbook H-4410-1 [National Range Handbook], Manual 5000 [Forest Management], and Manual 9015 [Integrated Weed Management])	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes. • Use weed-free straw and mulch for revegetation and other activities.
Wildlife (see Manual 6500 [Wildlife and Fisheries Management] and Manual 6780 [Habitat Management Plans])	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area.
Threatened, Endangered, and Sensitive Species (see Manual 6840 [Special Status Species])	• Use a wick or backpack sprayer to minimize risks to special status plants.

Table A-2 (cont) APPLICABLE STANDARD OPERATING PROCEDURES FOR APPLYING HERBICIDES	
Resource Element	**Standard Operating Procedures**
Cultural Resources and Paleontological Resources (see Handbook H-8120-1 [Guidelines for Conducting Tribal Consultation] and Handbook H-8270-1 [General Procedural Guidance for Paleontological Resource Management], Manual 8100 [The Foundations for Managing Cultural Resources], Manual 8120 [Tribal Consultation Under Cultural Resource Authorities], and Manual 8270 [Paleontological Resource Management]) (see also the Programmatic Agreement among the BLM, Advisory Council on Historic Preservation, and National Conference of State Historic Preservation Officers Regarding the Manner in which BLM will Meet its Responsibilities Under the National Historic Preservation Act)	• Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in which BLM will Meet its Responsibilities Under the National Historic Preservation Act and state protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. • Follow BLM Handbook H-8270-1 (General Procedural Guidance for Paleontological Resource Management) to determine known Condition 1 and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts. • Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.
Recreation (see Handbook H-1601-1 [Land Use Planning Handbook], Appendix C)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Use herbicides during periods of low human use, where feasible.
Rights-of-way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Use only herbicides that are approved for use in ROW areas.
Human Health and Safety	• Use protective equipment as directed by the herbicide product label. • Have a copy of MSDSs at work site. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.



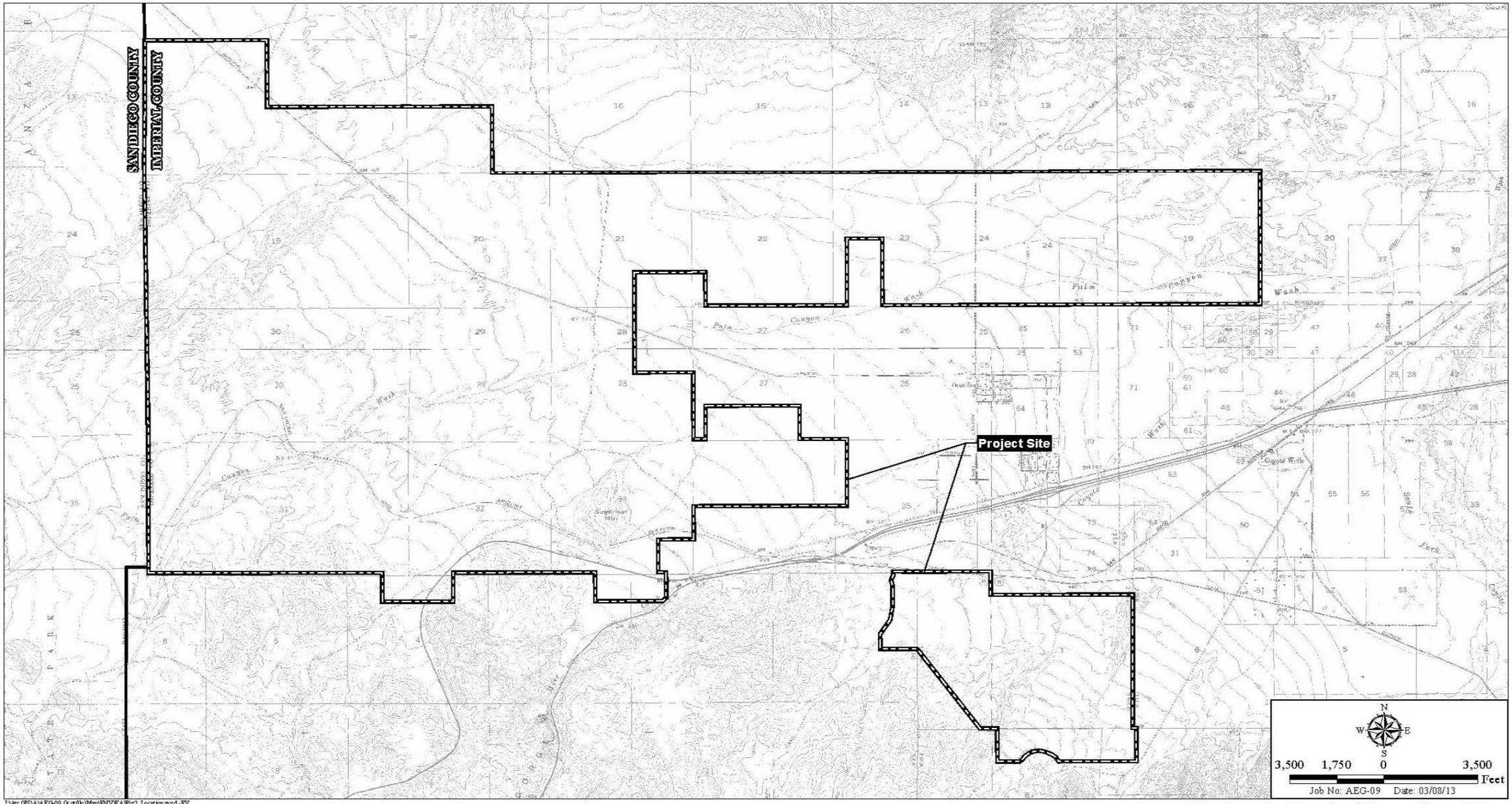
I:\ArcGIS\A\AEG-09 Ocotillo\Map\BIO\WeedManagementPlan\Fig1_Regional.mxd - EV

Regional Location Map

WEED MANAGEMENT PLAN AND PESTICIDE USE PERMIT FOR THE OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 1



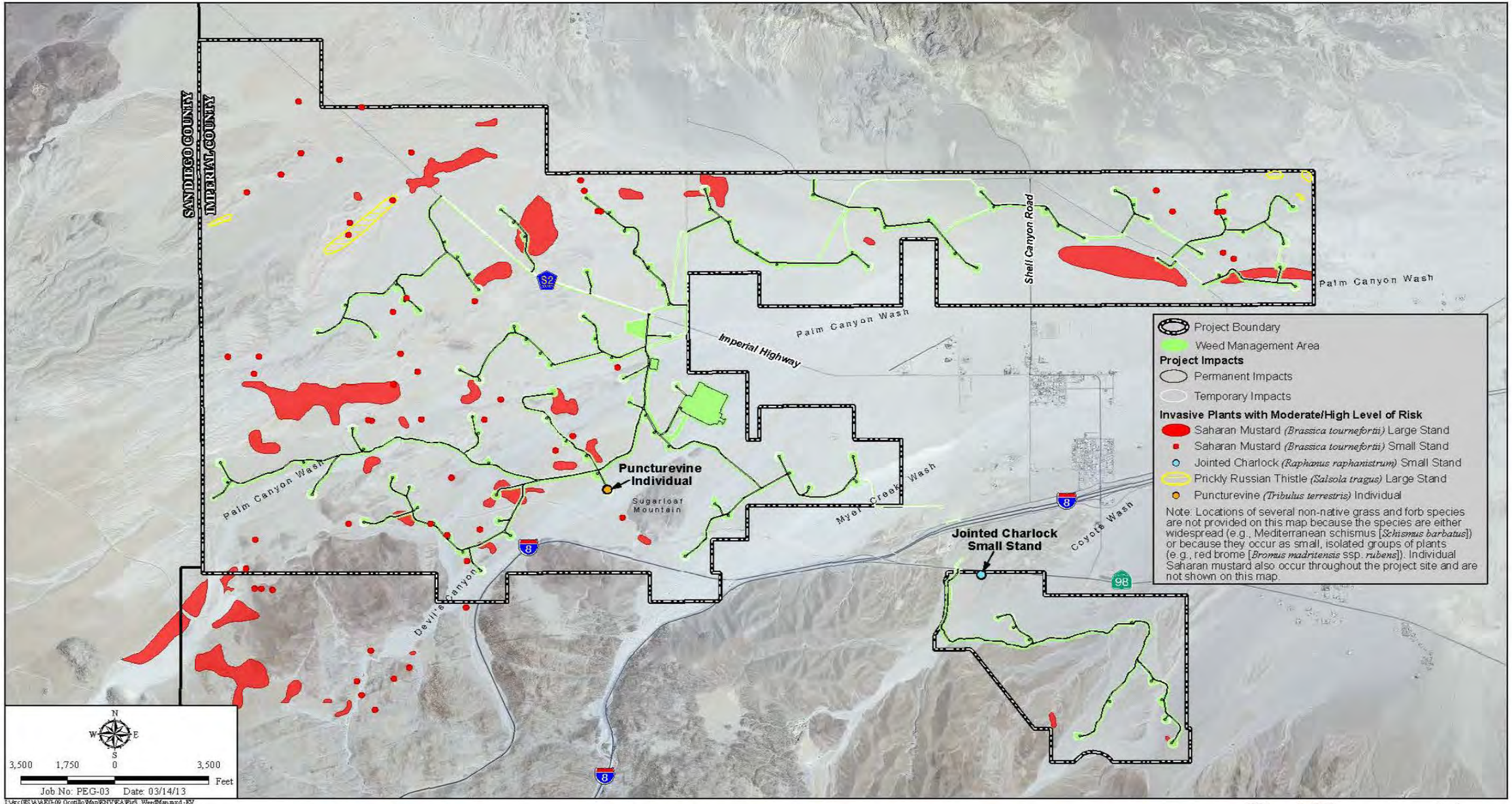
I:\Arc GIS\A\AEG-09 Ocotillo\Map\ENV\EA\Fig2_Location.mxd - EV

Project Location Map

WEED MANAGEMENT PLAN AND PESTICIDE USE PERMIT FOR THE OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 2



Weed Management Areas

WEED MANAGEMENT PLAN AND PESTICIDE USE PERMIT FOR THE OCOTILLO WIND ENERGY FACILITY

HELIX Environmental Planning

Figure 3