RECON

2009/2010 Weed Control Plan for the Environmentally Superior Southern Route of the SDG&E Sunrise Powerlink Project

Prepared for
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1.0 Executive Summary

This weed control plan has been prepared for the Environmentally Superior Southern Route (ESSR) and alignment right-of-way (ROW) of the San Diego Gas & Electric (SDG&E) Sunrise Powerlink Project (Project). The preparation of this plan is a requirement of Mitigation Measure B-3a, as outlined in Appendix 12 of the Project's environmental impact report/environmental impact statement (EIR/EIS) (California Public Utilities Commission and U.S. Department of the Interior, Bureau of Land Management 2008) and the associated Biological Opinion (BO) (U.S. Fish and Wildlife Service 2009).

As outlined in the EIR/EIS and BO, this document provides a comprehensive, adaptive weed control plan for preconstruction and long-term invasive weed abatement for the Sunrise Powerlink ESSR. This plan includes the results of the preconstruction weed inventory within and adjacent to the ROW and ancillary facilities (together defined in this document as the Action Area); identifies invasive weed populations that occur or have potential to occur within the Action Area; outlines appropriate preconstruction weed control measures; identifies required short- and long-term monitoring and adaptive management procedures; and identifies operation and maintenance requirements related to weed control. This plan is intended to be adaptive in order not only to control weed species that are currently known to exist on-site but also to provide a framework to control unknown weed species threats that may occur in the future.

For the purpose of this document, "weeds" are invasive, non-native plant species that have been specifically identified by the California Invasive Plant Council [Cal-IPC] in 2009 or the County of San Diego as those that have negative impacts on California's wildlands.

Twenty species of invasive weeds were observed within and adjacent to the Action Area. Of these 20, one species—yellow starthistle (*Centaurea solstitialis*)—was found to be on the San Diego County noxious weed list. Two of the observed species, Saharan mustard (*Brassica tournefortii*) and cheatgrass (*Bromus tectorum*), are described in the EIR/EIS as wildfire-promoting species. All species on the San Diego County noxious weed list or wildfire-promoting species will be treated and controlled at all points throughout the Project alignment ROW. Of the remaining 17 weed species observed in the Action Area, four species are rated as Cal-IPC High and 13 are rated as Cal-IPC Moderate. These 17 species will be treated and controlled within designated impact areas within the Action Area.

2.0 Project Description

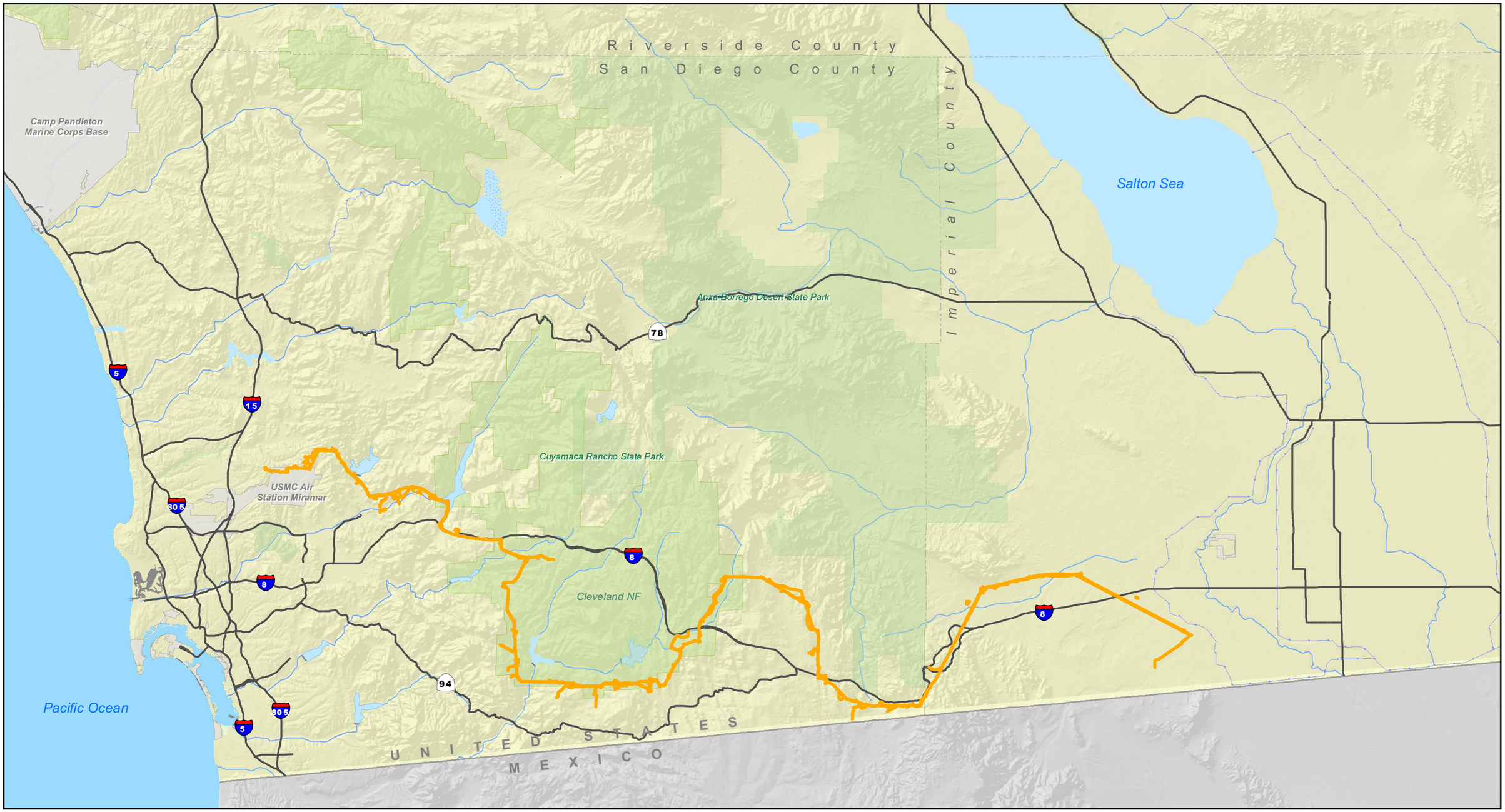
The Environmentally Superior Southern Route (ESSR) of the San Diego Gas & Electric's (SDG&E) proposed Project was approved by the California Public Utilities Commission (CPUC) in December 2008. This Project constitutes an approximately 120-mile, generally east to west-oriented transect beginning from the existing Imperial Valley Substation in southwestern Imperial County and continuing westward over the southern foot of the Peninsular Ranges and down to the middle of the coastal slope to the existing Sycamore Canyon Substation in west–central San Diego County, California (Figure 1).

2.1 Project Background

SDG&E proposes to construct a new electric transmission line between the existing Imperial Valley and Sycamore Canyon Substations, a proposed new substation (Suncrest Substation), and other system modifications and upgrades in order to reliably operate the new line. The entire Project would traverse approximately 120 miles between the El Centro area of Imperial County and southwestern San Diego County, in southern California. In order to provide a frame of reference, the right –of-way (ROW) has been assigned mileposts (MP), which range from MP 0 at the Imperial Valley Substation to MP 117.2 at the Sycamore Canyon Substation (Figure 2). The Project is described under five separate links according to the following approximate MPs: Link 1 (MP 0 to MP 53.5), Link 2 (MP 53.5 to MP 89.0), Link 3 (Suncrest Substation), Link 4 (MP 92.0 to MP 98.2), and Link 5 (MP 89.0 to 92.0 and MP 98.2 to MP 117.2).

The Project alignment ROW and ancillary facilities (the ROW and ancillary facilities together have been defined, for the purposes of this document, as the Action Area) occurs on land owned by the U.S. Forest Service (USFS), Bureau of Land Management (BLM), Department of Defense, State of California, counties of Imperial and San Diego, SDG&E, various municipal departments, and private landowners. One new substation, the proposed Suncrest Substation, and three system upgrades (reconductors from Sycamore Canyon Substation to the existing Pomerado, Scripps, and Elliott substations) are also part of the Project and will be required to operate the new transmission line.

The Action Area for the proposed Project includes the various segments that make up the approximately 120-mile ROW in southern San Diego County, as well as several system upgrades. See RECON 2009 Appendix B for the Action Area maps used for the weed surveys (April 2009) as well as the most recently revised Action Area (September 2009). The revised Action Area consists of approximately 89 miles of 200-foot-wide ROW for the 500-kilovolt (kV) overhead line, approximately 22 miles of 300-foot-wide ROW for the 230-kV overhead line, and approximately 6 miles of underground 230-kV



Project Alignment (ROW, Temporary and Permanent Impact Areas)

FIGURE 1

Environmentally Superior Southern Route (ESSR) of the Sunrise Powerlink

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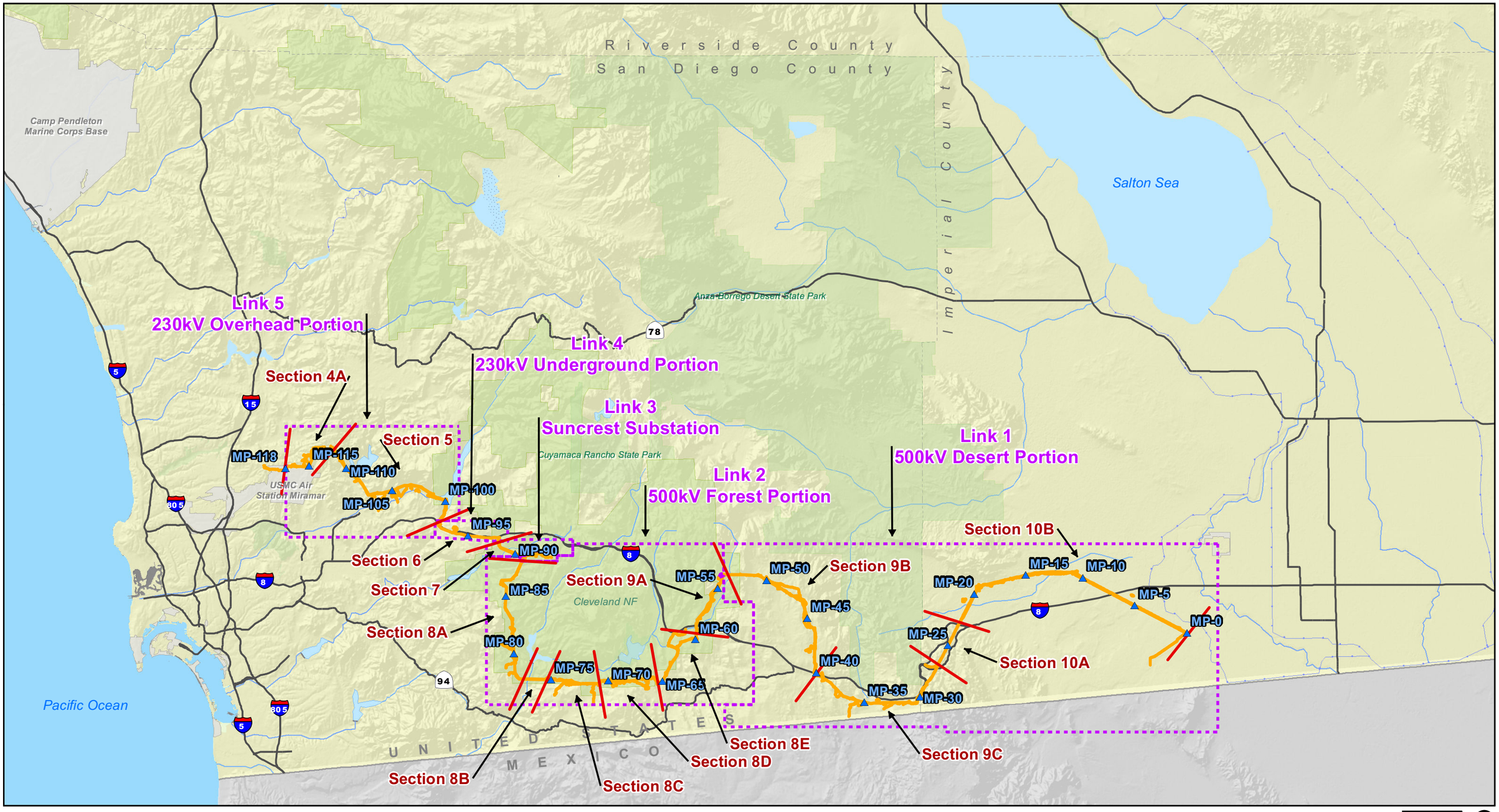

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FIGURE 2

Alignment Sections

line where the ROW would be 60 feet wide. New access roads, temporary work areas, pull and tension sites, fly yards, and staging areas that are outside of the ROW are also included in the Action Area, for a total of approximately 3,500 acres, as of August 2010.

2.2 Action Area

The Action Area spans 19 United States Geological Survey (USGS) quadrangles (Alpine, Barrett Lake, Cameron Corners, Carrizo Mountain, Coyote Wells, El Cajon, El Cajon Mountain, In-Ko-Pah Gorge, Jacumba, Live Oak Springs, Morena Reservoir, Mount Laguna, Mount Signal, Plaster City, Poway, San Vicente Reservoir, Sombrero Peak, Viejas Mountain, and Yuha Basin) with an elevation range from 10 feet on the eastern desert section to 5,640 feet in the mountains and to 820 feet at the terminus of the Project at the Sycamore Canyon Substation.

The Project passes through several ecoregions, including southern desert lowlands, south desert slopes, southern mountains, southern foothills, central foothills, and the central valley. Vegetation communities encountered on the surveys were consistent with what would be expected from a latitudinal transect across southern California, including Sonoran desert scrubs, semi-desert chaparral, chamise chaparral, redshank chaparral, coast live oak woodland, field/pasture, nonnative grasslands, and Diegan coastal sage scrub.

Topography along the Action Area varies from relatively flat in the desert lowlands to steep rocky cliffs in montane areas and to rolling foothills and canyons in the western portion. The large variety of topography along the Action Area likely contributes to the diversity of plant species and niche opportunities for rare plant species.

The Action Area has been divided into 14 sections from west to east (see Figure 2). Section 4A begins at the Sycamore Canyon Substation within the Marine Corps Air Station (MCAS) Miramar and continues to Highway 67 from approximately MP 117.2 to MP 112.0. Section 5 spans the foothills from Highway 67, south of Poway, through Eucalyptus Hills and Lakeside to connect to Alpine from approximately MP 112.0 to MP 98.2. Section 6 includes an underground conduit along Alpine Boulevard through Alpine from approximately MP 98.2 to MP 92.0. Section 7 extends from south of Alpine across the Sweetwater River to the Suncrest Substation site from approximately MP 92.0 to MP 89.2. Section 8A extends from the Suncrest Substation site near Bell Bluff to Echo Mountain from approximately MP 89.2 to MP 77.4. Sections 8B, 8C, and 8D extend from south of Barrett Lake to south of Lake Morena along rocky slopes from Echo Mountain to Hauser Mountain from approximately MP 77.4 to MP 65.2. Section 8E extends from Cameron Corners to Interstate 8 from approximately MP 65.2 to MP 57.8. Section 9A is adjacent to the La Posta Truck Trail north of Interstate 8 from approximately MP 57.8 to MP 53.5. Section 9B extends through McCain Valley from approximately MP 53.5 to MP

39.6. Section 9C extends from Boulevard to the start of the In-Ko-Pah Grade, from approximately MP 39.6 to MP 27.2. Section 10A includes the In-Ko-Pah Grade from Mountain Springs to the desert lowlands extending from approximately MP 27.2 to MP 23.5. Section 10B spans a portion of the Colorado Desert extending from approximately MP 23.5 to MP 0.

2.3 Plan Goals

As outlined in the environmental impact report/environmental impact statement (EIR/EIS) and Biological Opinion (BO), the goals of the weed control plan are to:

- Identify species within the entire ROW that the County of San Diego has identified as "targeted noxious weeds." These are limited to perennial pepperweed (*Lepidium latifolium*), yellow starthistle, purple loosestrife (*Lythrum salicaria*), and spotted knapweed (*Centaurea maculosa*) (County of San Diego 2009) through preconstruction surveys.

- Identify species within the ROW that promote the spread of wildfires, such as cheatgrass, Saharan mustard, and medusa head (*Taeniatherum caput-medusae*) through preconstruction surveys.

- Identify species categorized by the California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory as high or moderate for negative ecological impact (Appendix A) in all areas to be directly impacted by the Project. The Cal-IPC has categorized non-native invasive plant species that threaten California's wildlands as High, Moderate, or Limited ecological impact based on a combination of the species documented impacts, potential for spread, and the range of habitats they are known to tolerate (Cal-IPC 2009).

  High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

  Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

- Develop weed control treatments to control the species observed during preconstruction surveys prior to implementation of construction efforts.
- Identify methods to control the spread of weeds during construction.
- Outline methods to monitor previously mapped weed populations and identify new infestations for the lifetime of the Sunrise Powerlink.
- Develop annual weed control treatment methods for the lifetime of the Sunrise Powerlink.

Responsible Parties

Project proponent

SDG&E (Project proponent) will be responsible for funding and implementing this weed control plan. The Project proponent will be responsible for contracting with personnel qualified in implementation, maintenance, and monitoring of exotic and invasive plant removal practices described in this plan. Upon contracting with a qualified person or organization to implement this plan, the Project proponent will designate a person or group as the Weed Control Manager.

Weed Control Manager

A Weed Control Manager (WCM) shall be hired to implement this plan. The WCM can be either an individual or an organization as long as the person(s) actively managing the Project meets the qualifications outlined below to the satisfaction of the Project proponent. If the selected WCM is an organization, the project manager shall be licensed in State of California to perform pest control activities and capable of managing large-scale weed eradication projects. The WCM will be responsible for the day-to-day implementation of this plan and will carry out the requirements and objectives described herein. All pest control activities performed shall be under the prescription of a State of California Pest Control Advisor (PCA).

The individual or project manager identified by the organization contracted to implement this plan must meet the following criteria:

- Have a B.S. or B.A. degree in ecology, botany, biology, landscape maintenance, range management, or related field.
- Have at least two years of experience in native or horticultural landscaping including weed control in Southern California, preferably San Diego and Imperial Counties.

- Have a Qualified Applicator License (QAL) with licenses in the categories of right-of-way and forest or landscape management or have a PCA license.

- Have demonstrated experience in similar projects or in projects including similar skills.

3.0 Preconstruction Survey

RECON biologists and subcontractors (Corporate Guidance Solutions, Gonzales Consulting, and Roberts Consulting) conducted preconstruction weed surveys in conjunction with sensitive plant surveys between March and August 2009 (RECON 2009). A second season of surveys was also conducted from March to September 2010. In addition, Chambers Group biologist Kris Alberts conducted biological surveys (including invasive weeds) at the White Star facility (Chambers 2010). Existing substation facility upgrades at the South Bay, San Luis Rey, Encina, and Imperial Valley substations occur on land that is actively maintained free of vegetation and subsequently were not surveyed for invasive weeds. As the 2010 survey season is ongoing, this report primarily presents invasive weed data collected in 2009. Upon the completion of the 2010 survey season, invasive weeds observations will be updated in the 2010 Weed Control Plan (see Section 3.2). The entire current action area has been surveyed at least once (2009 and/or 2010) except for the existing substations described above and the following reconductoring routes: Sycamore Canyon Substation to Elliott Substation, Sycamore Canyon Substation to Pomerado Substation, and from Sycamore Canyon Substation to Scripps Substation. These reconductoring routes are currently being surveyed and will be presented in the 2010 Weed Control Plan.

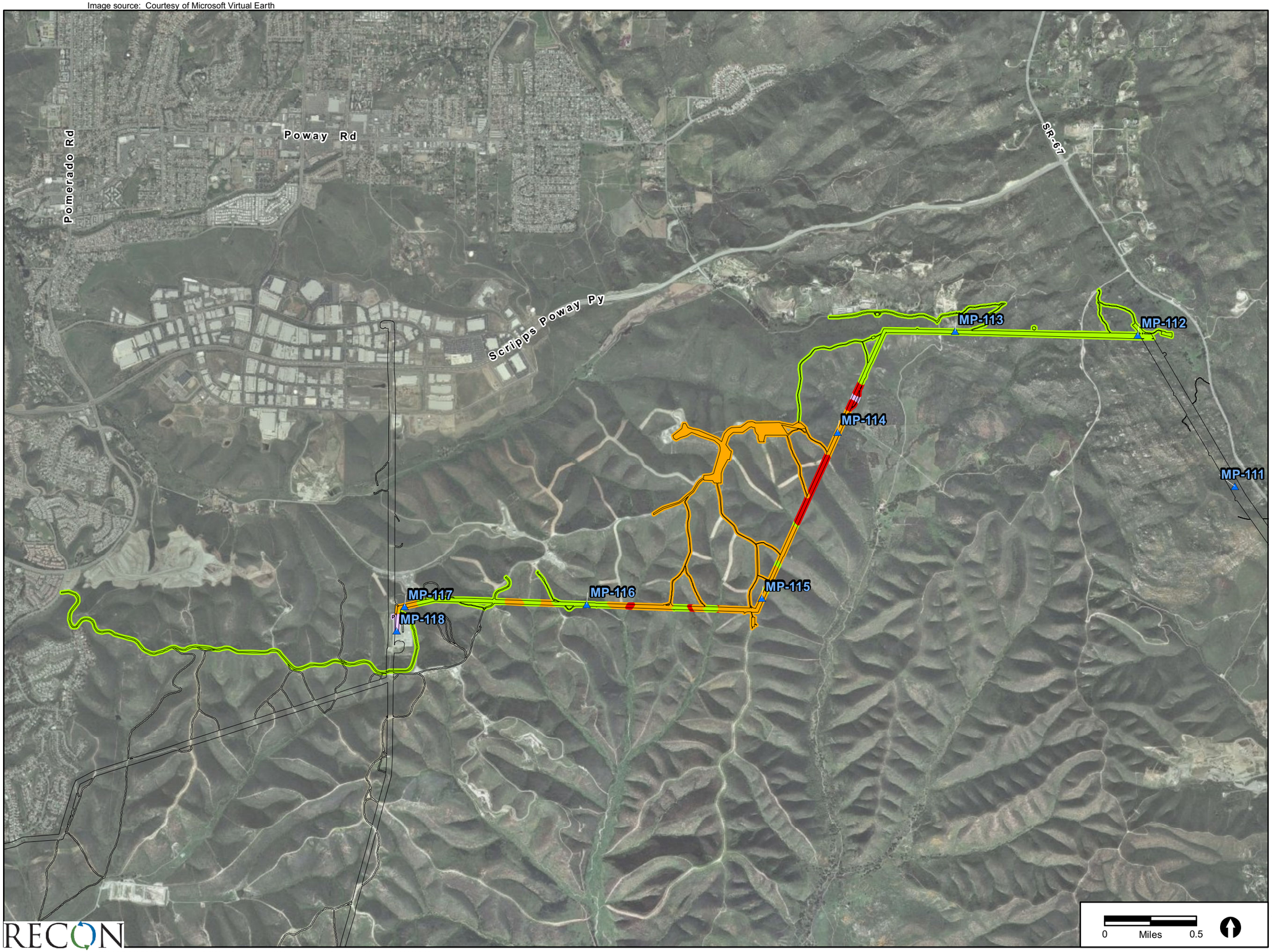
An overview of invasive species' densities within specific sections of the Action Area is provided in Figures 3A–3N.

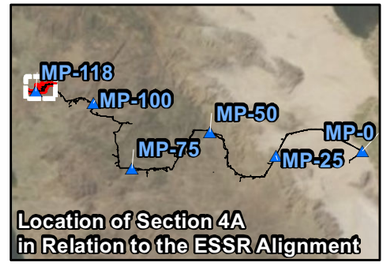
Surveys for invasive species will continue through the late summer of 2010 on both unsurveyed and previously surveyed portions of the Action Area. Once these surveys are finished, a 2010 version of this report will be completed discussing all species observed in 2009 and 2010.

3.1 Methods

The Action Area was traversed on foot by teams of biologists walking meandering transects along the centerline of the alignment ROW as designated at the time of the survey. Additional survey time was spent at areas of proposed tower sites, associated access roads, and other potential impact areas. Biologists were separated by twice the visual range of a single individual, thereby ensuring visual coverage of 100 percent of

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Low

Medium

High

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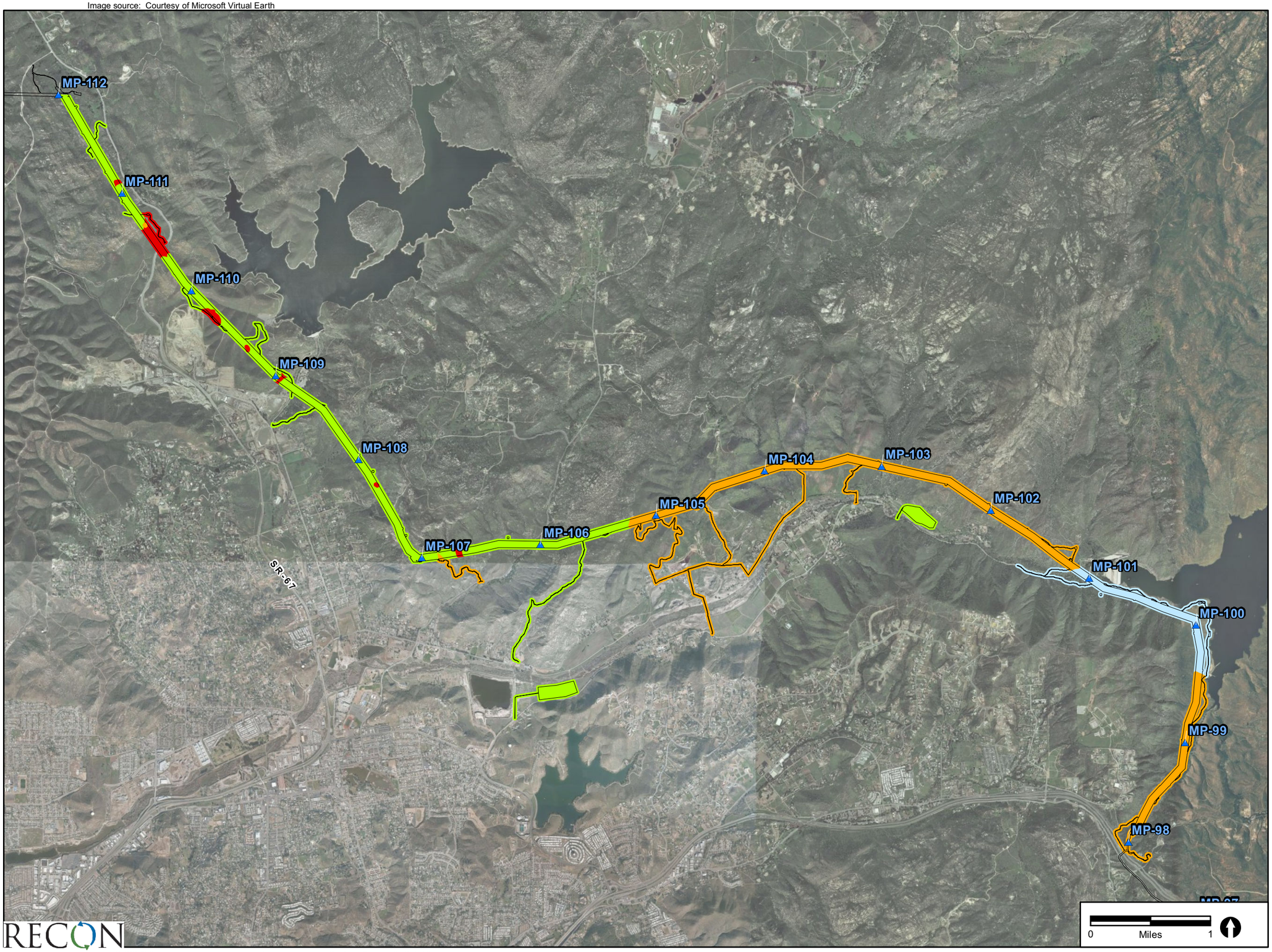
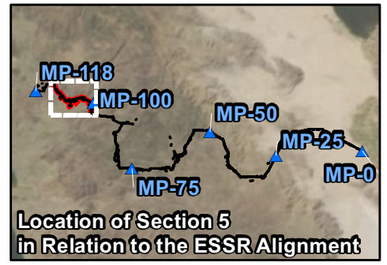
FIGURE 3A

Weed Densities within **Section 4A** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- Trace
- Low
- Medium
- High

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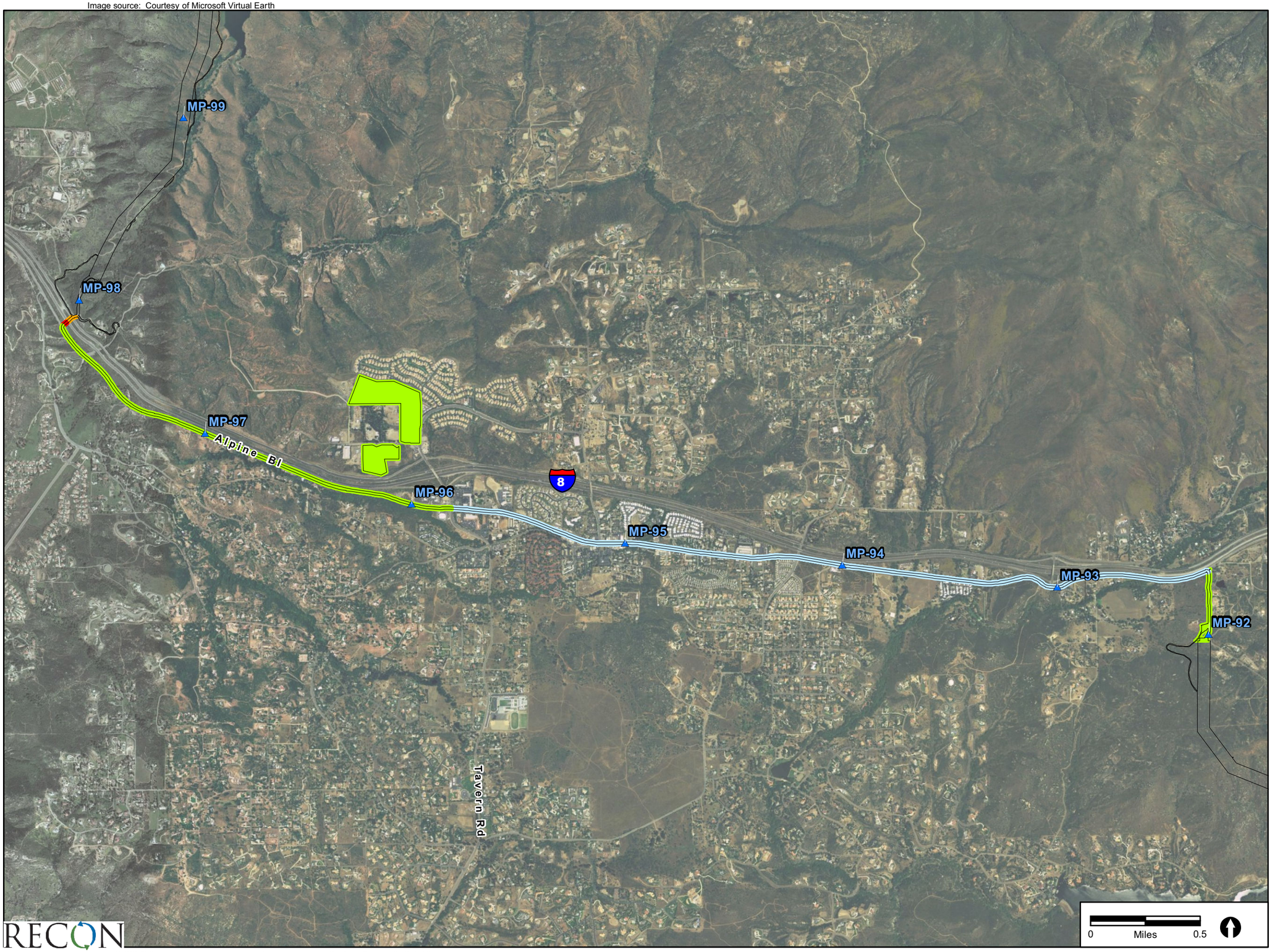
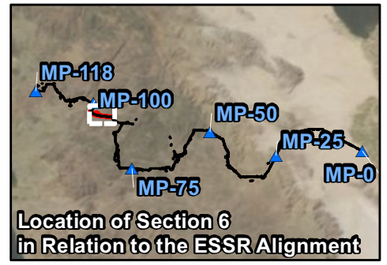
FIGURE 3B

Weed Densities within **Section 5** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- Trace
- Low
- Medium
- High

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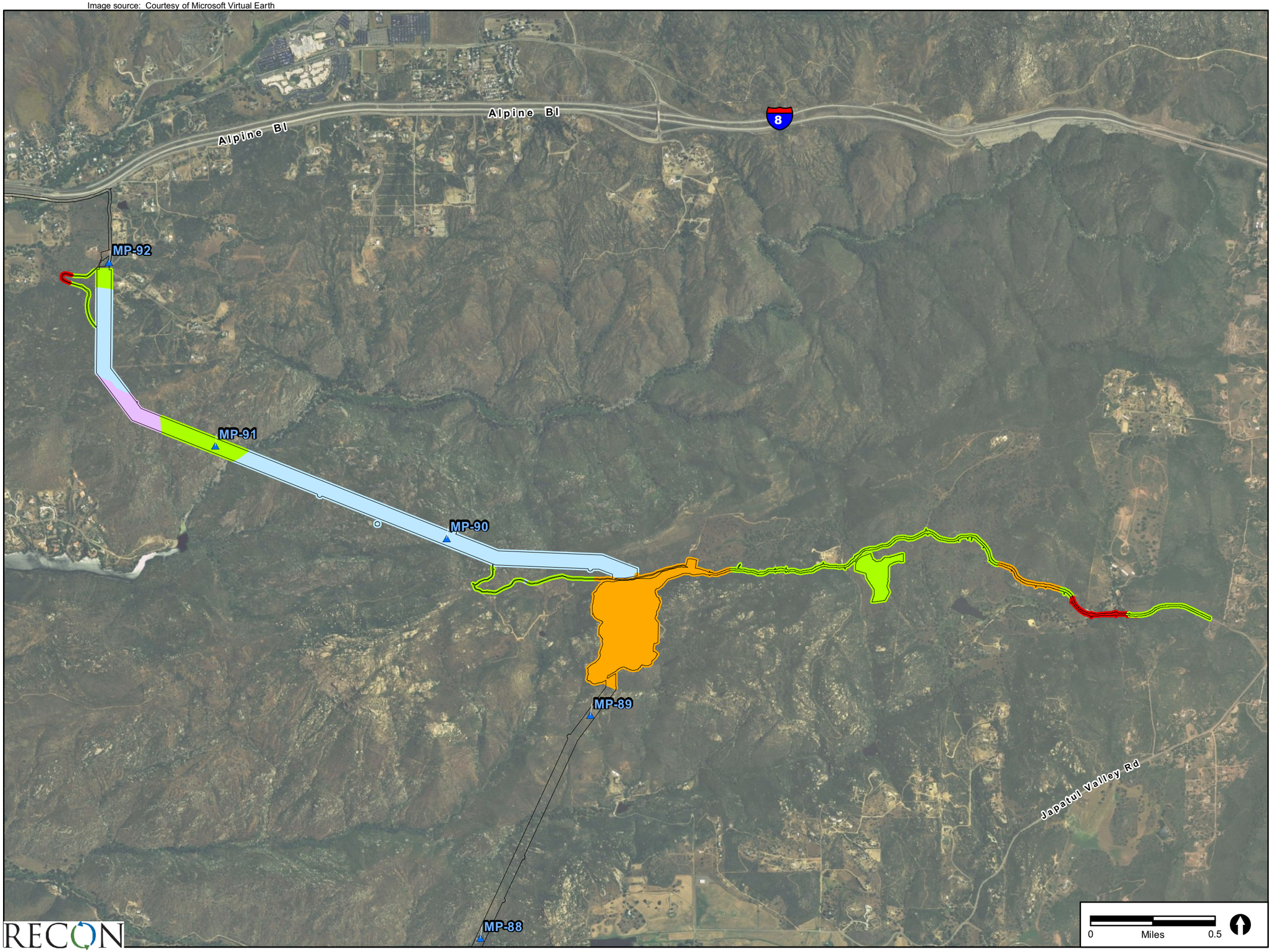
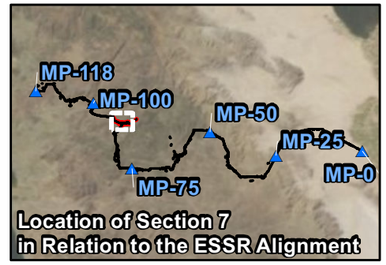
FIGURE 3C

Weed Densities within **Section 6** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- None
- Trace
- Low
- Medium
- High

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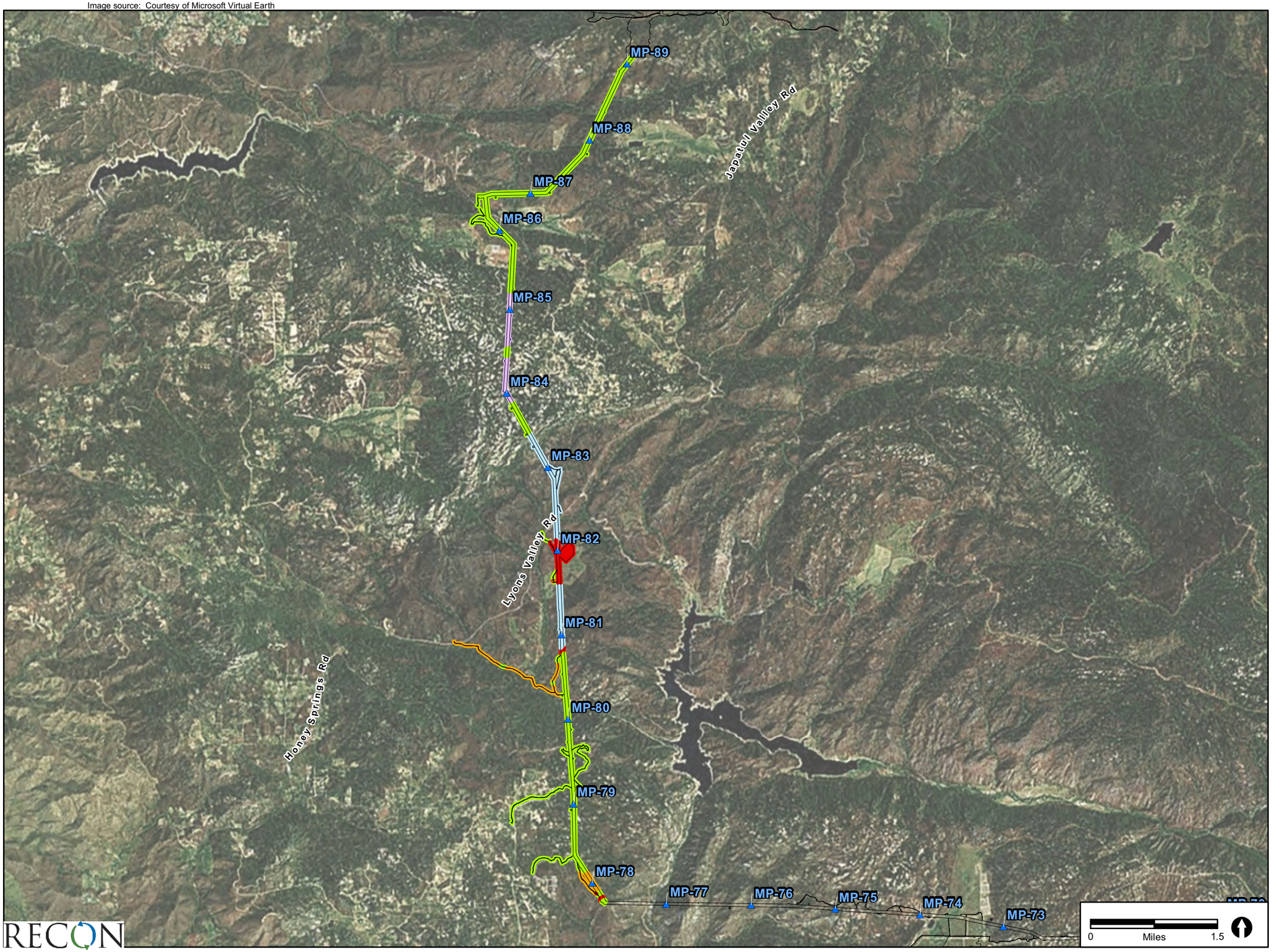
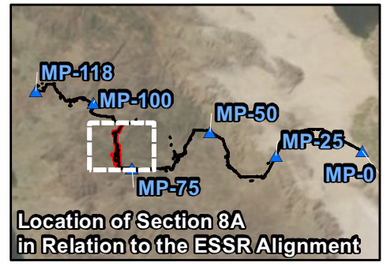
FIGURE 3D

Weed Densities within **Section 7** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- None
- Trace
- Low
- Medium
- High

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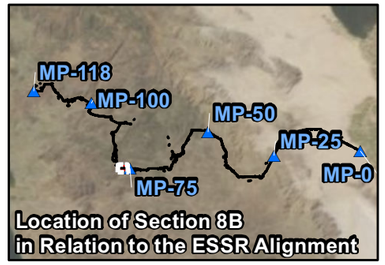
FIGURE 3E

Weed Densities within **Section 8A** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth



MP-77

MP-76

2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Low

0 Miles 0.25

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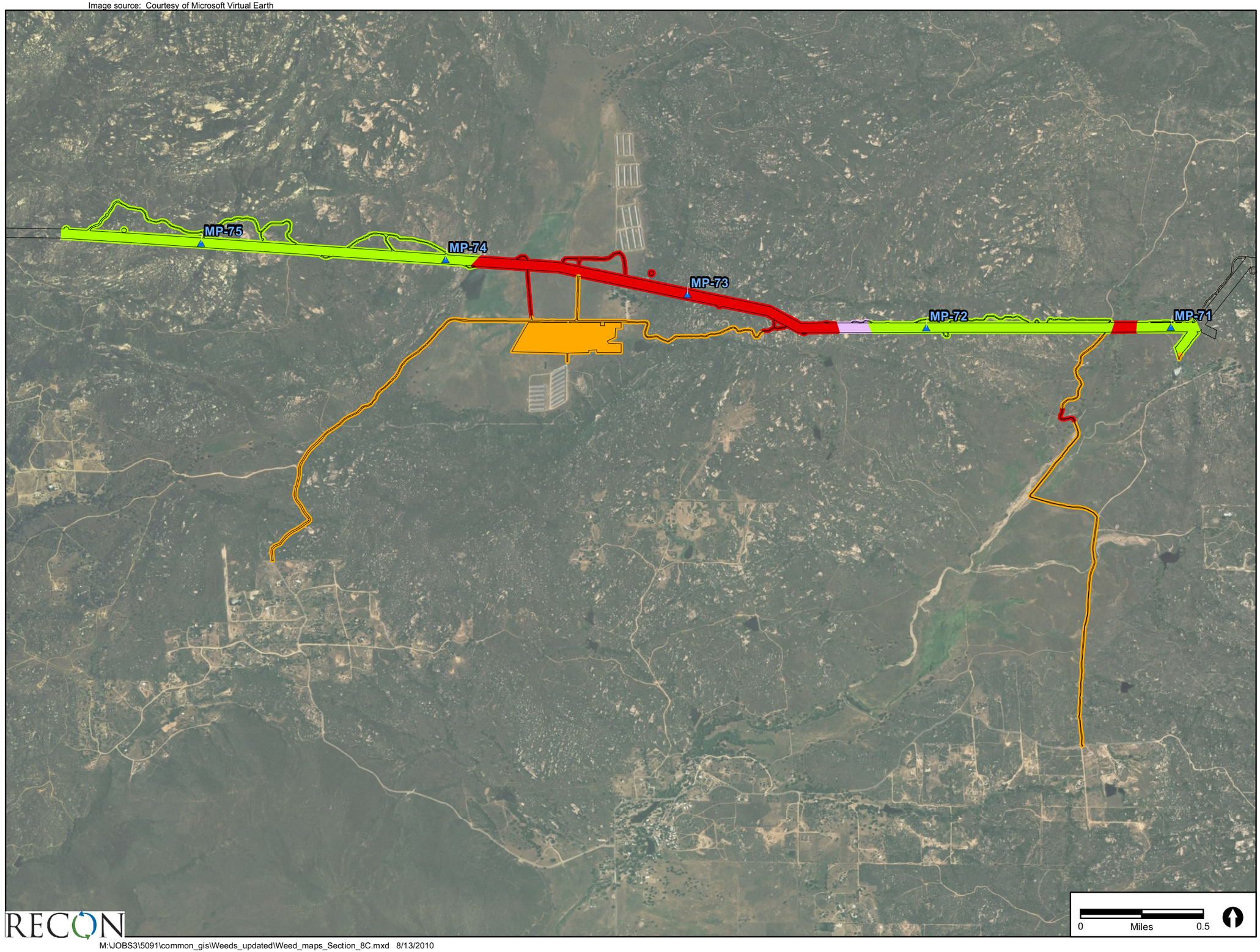
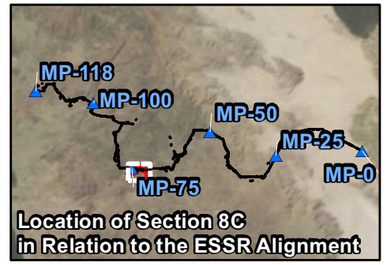
FIGURE 3F

Weed Densities within **Section 8B** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- None
- Low
- Medium
- High

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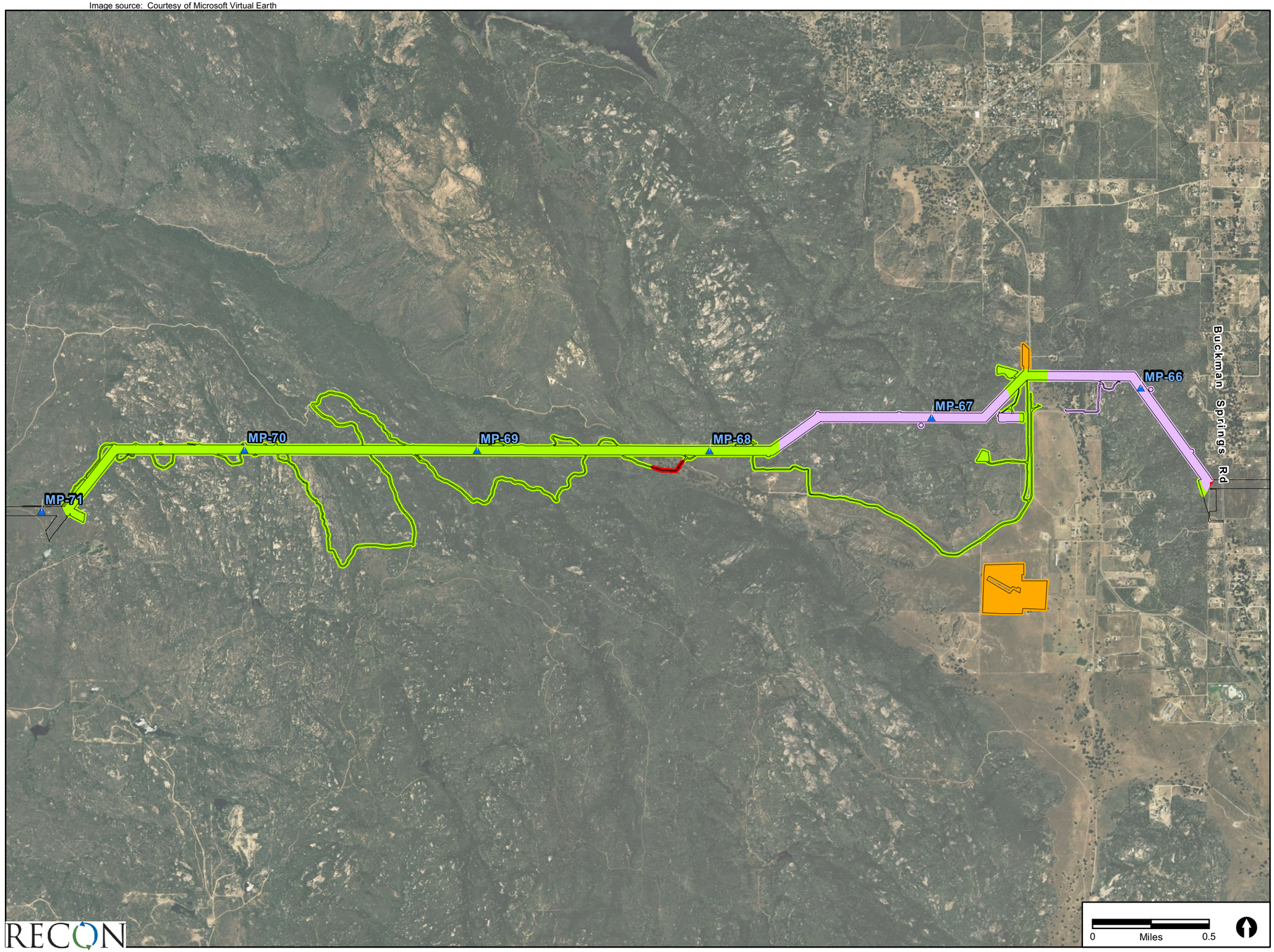
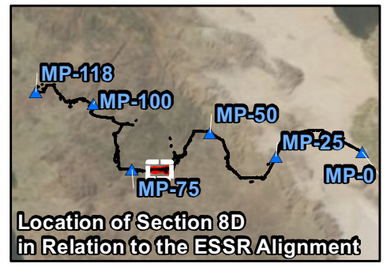
FIGURE 3G

Weed Densities within **Section 8C** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Low

Medium

High

0 Miles 0.5

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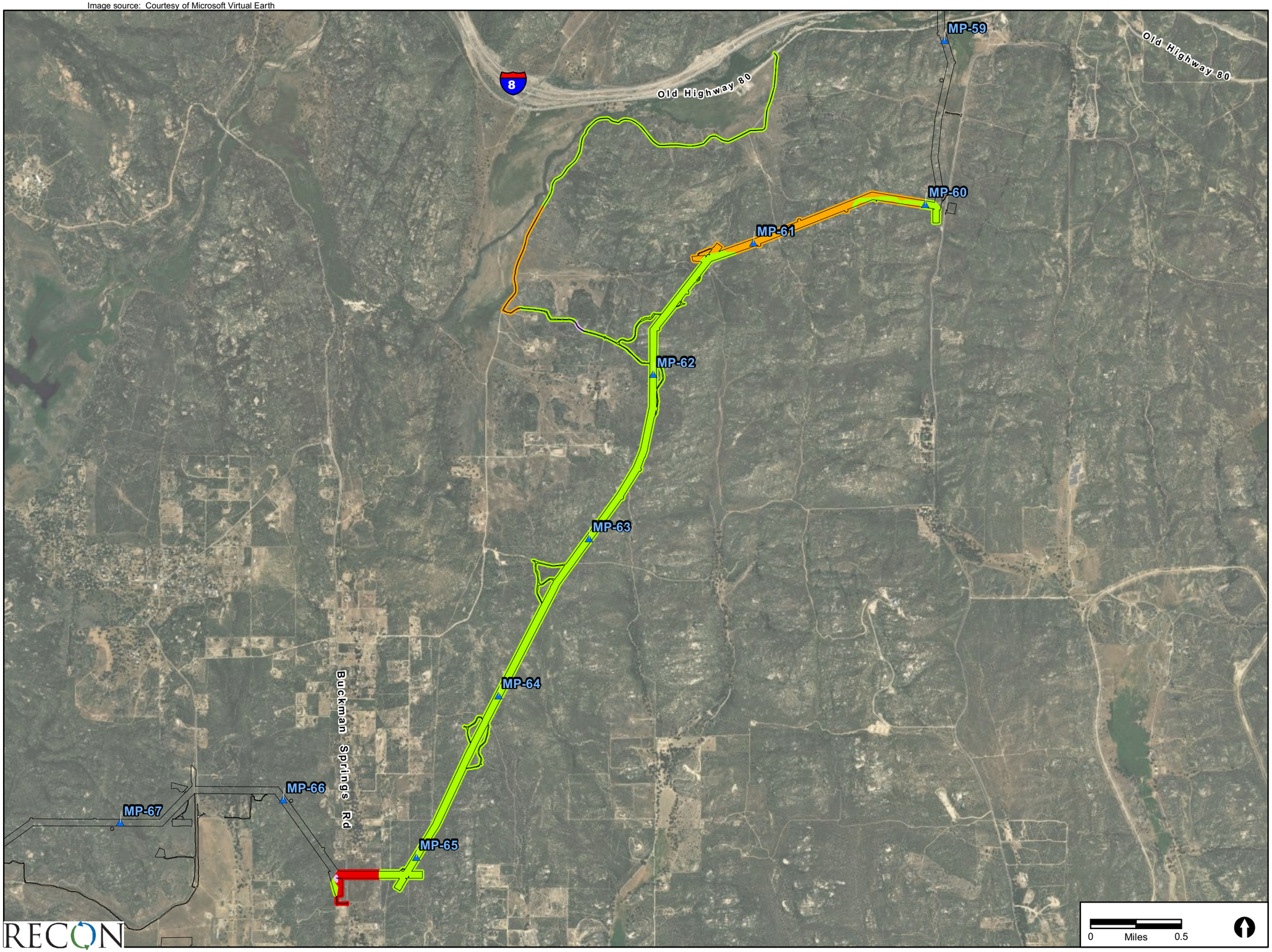
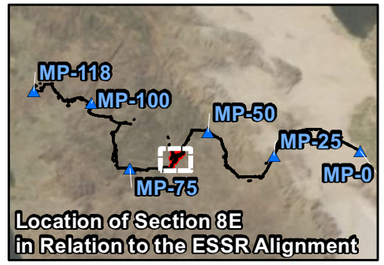
FIGURE 3H

Weed Densities within **Section 8D** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Low

Medium

High

RECON

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FIGURE 3I

Weed Densities within **Section 8E** of the ESSR Alignment

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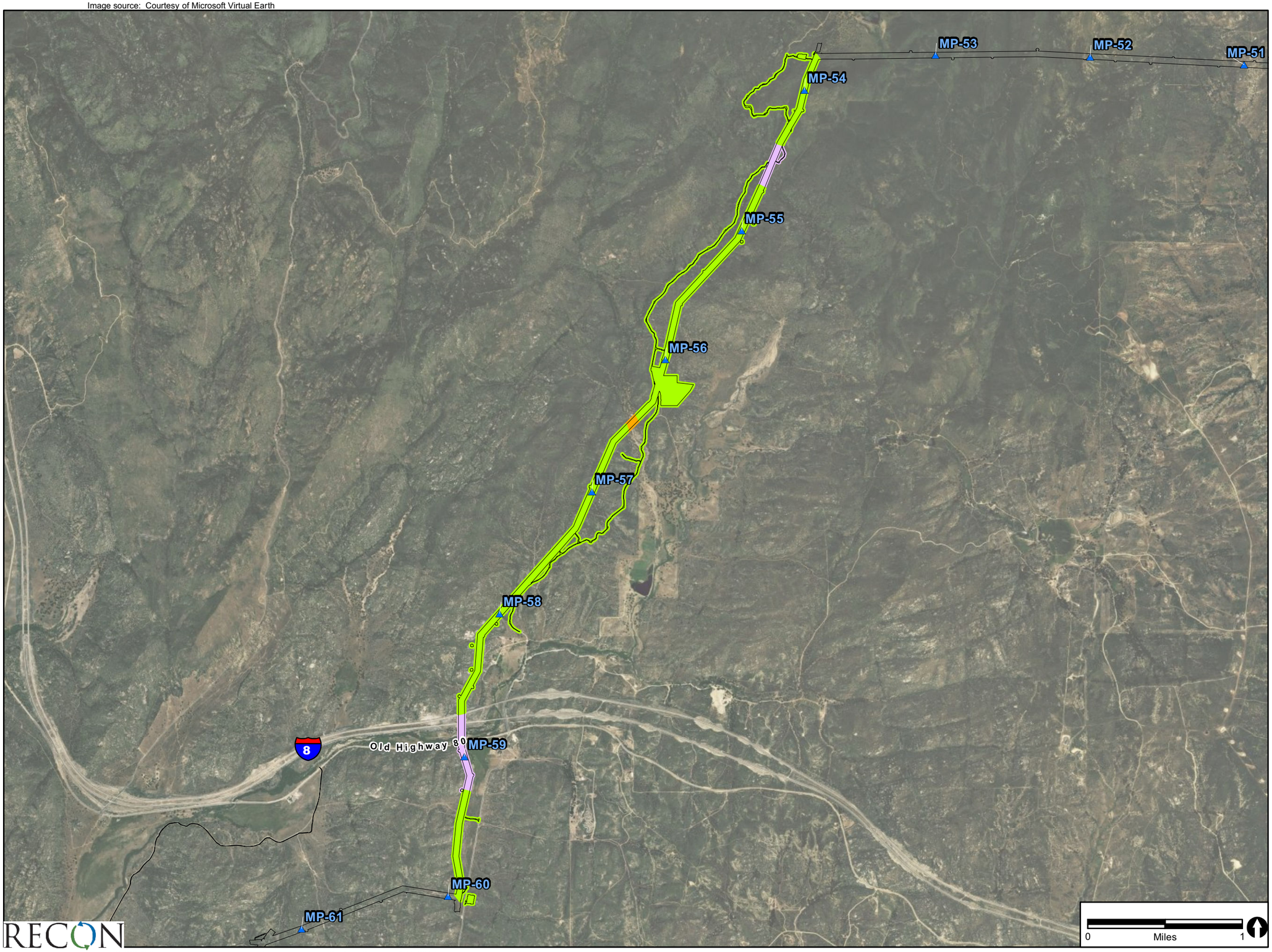

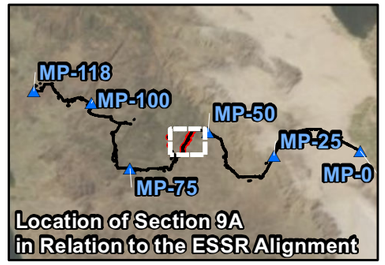

2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Low

Medium

0 Miles 1

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FIGURE 3J

Weed Densities within **Section 9A** of the ESSR Alignment

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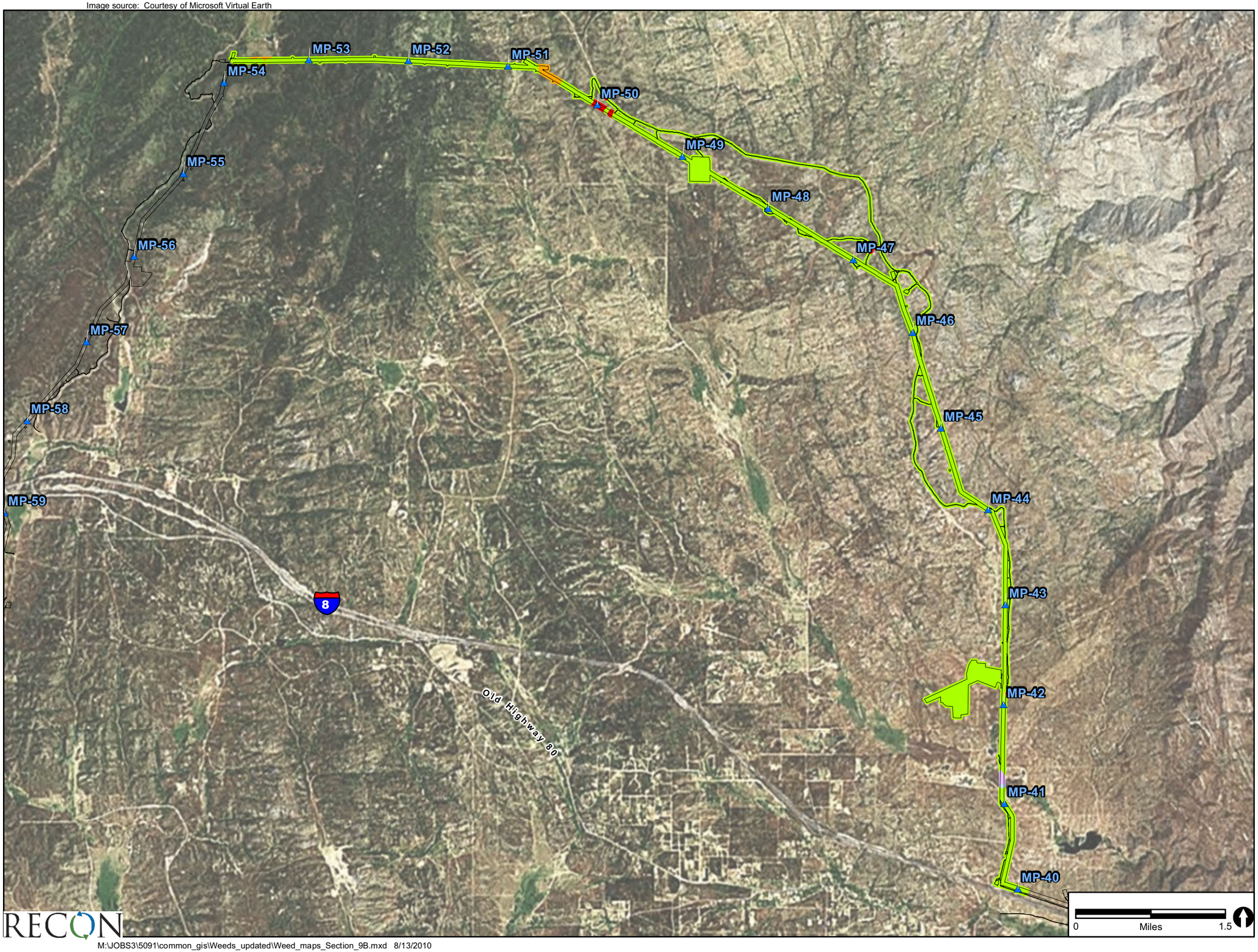

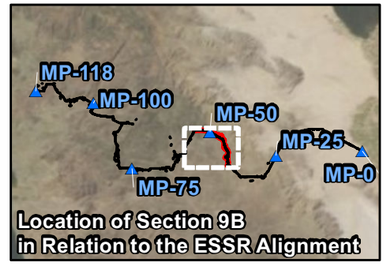

2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- None
- Trace
- Low
- Medium
- High

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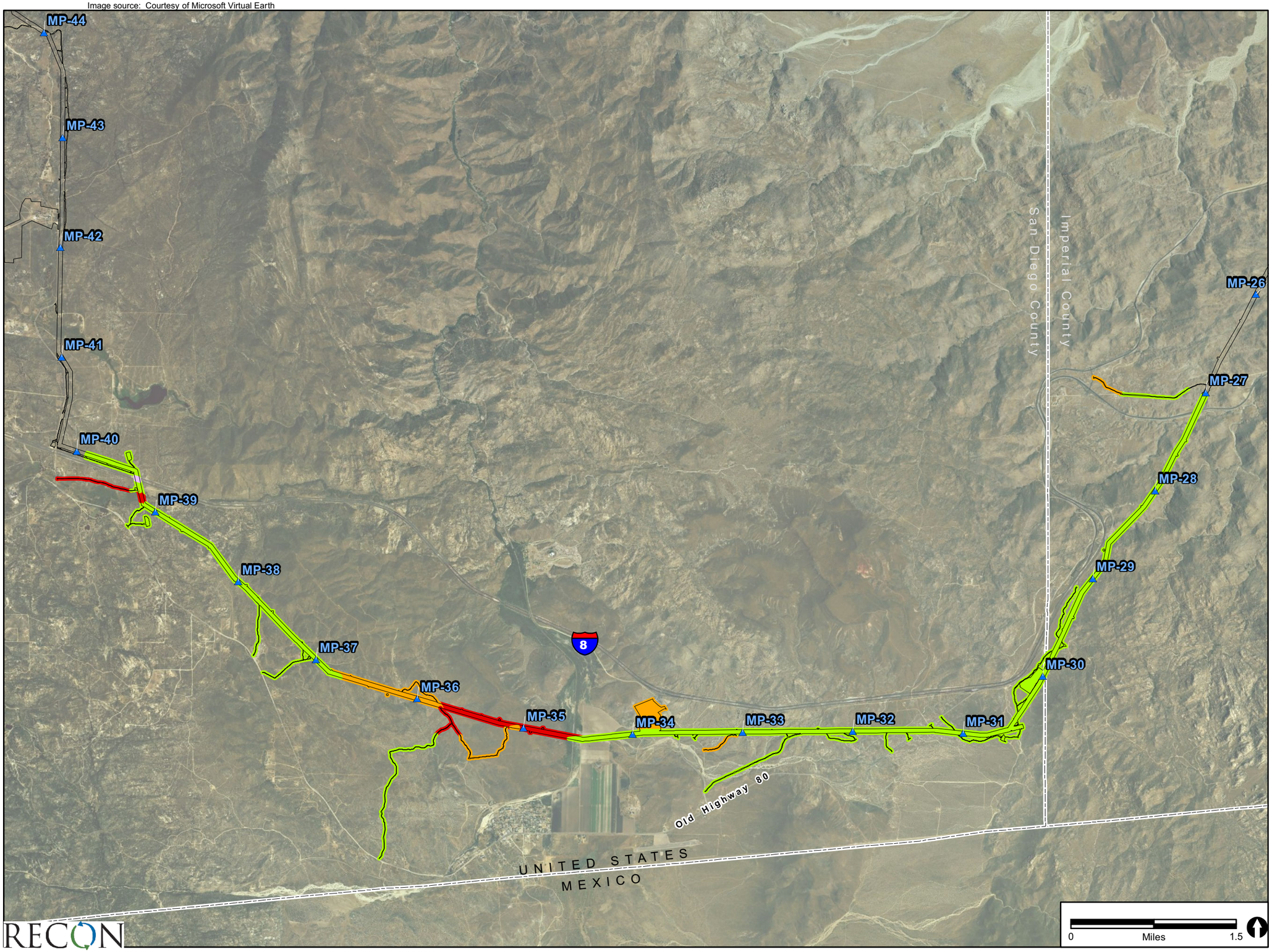
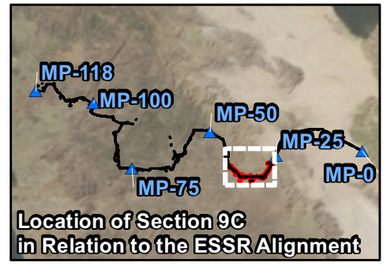
FIGURE 3K

Weed Densities within **Section 9B** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

- None
- Low
- Medium
- High

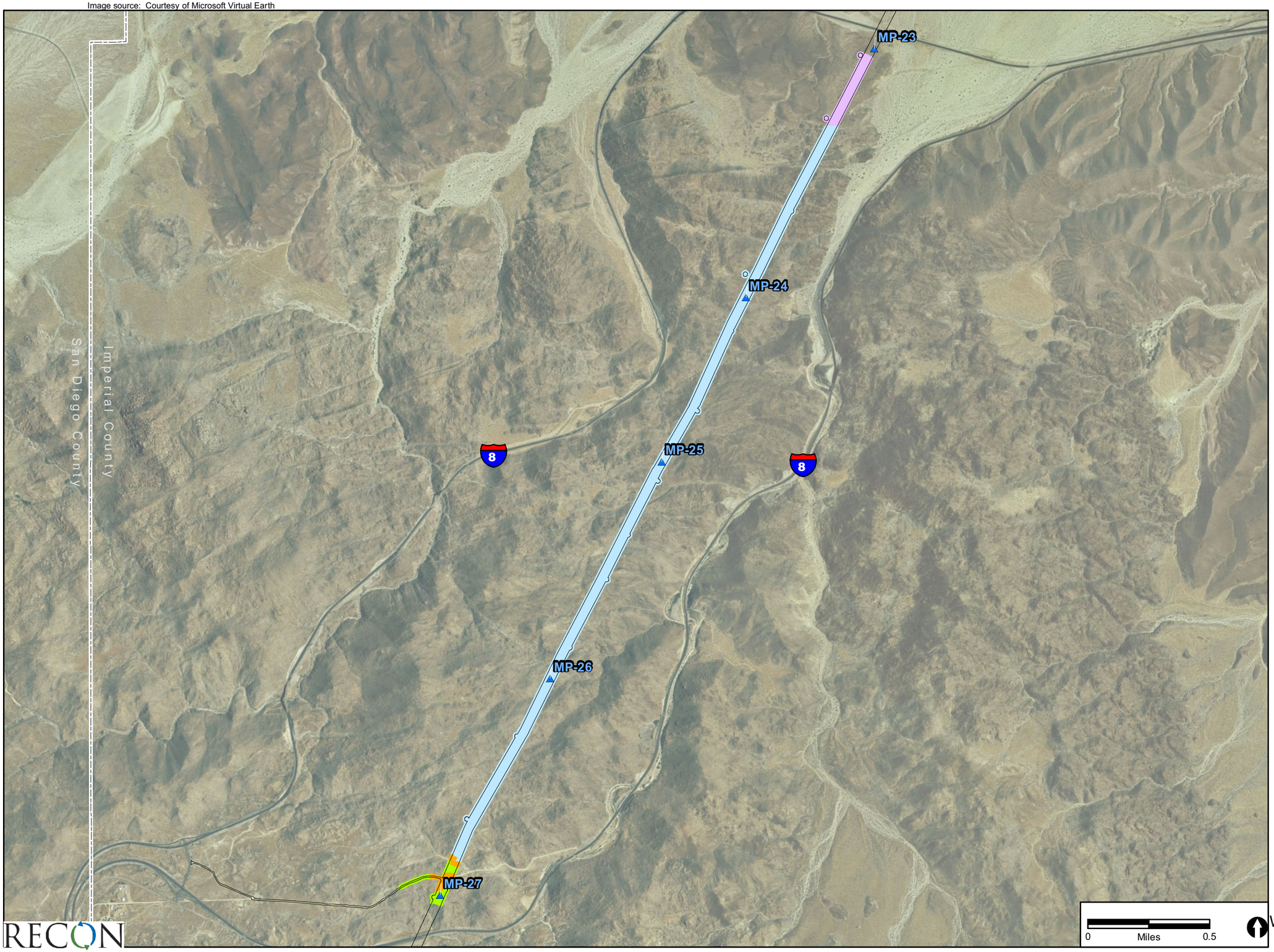
RECON

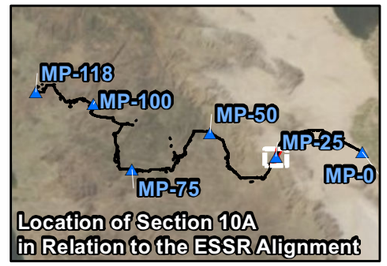
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_Section_9C.mxd 8/13/2010

FIGURE 3L

Weed Densities within **Section 9C** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Trace

Low

Medium

0 Miles 0.5

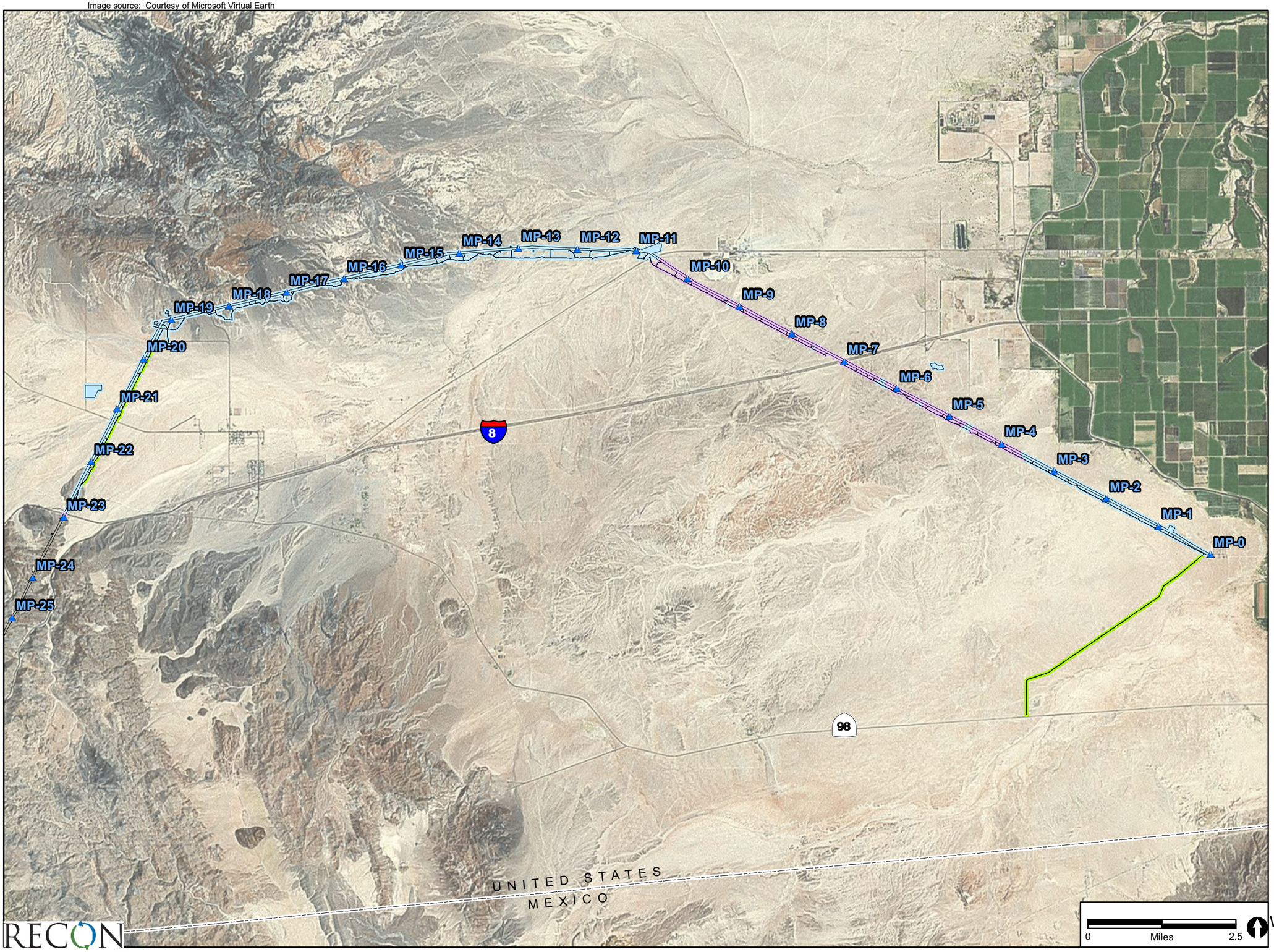
RECON

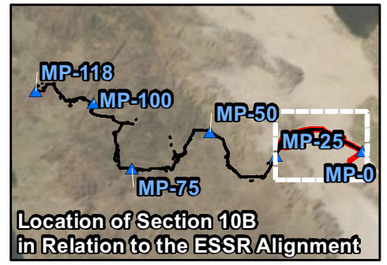
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_Section_10A.mxd 8/13/2010

FIGURE 3M

Weed Densities within **Section 10A** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

None

Trace

Low

0 Miles 2.5

RECON

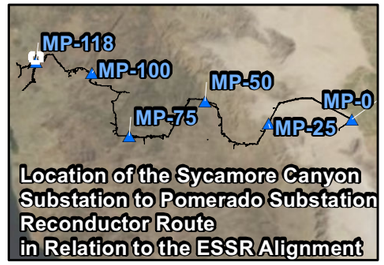
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_Section_10B.mxd 8/13/2010

FIGURE 3N

Weed Densities within **Section 10B** of the ESSR Alignment

to be

Image source: Courtesy of Microsoft Virtual Earth



2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Invasive Weed Data to be Updated in the 2010 Weed Control Plan

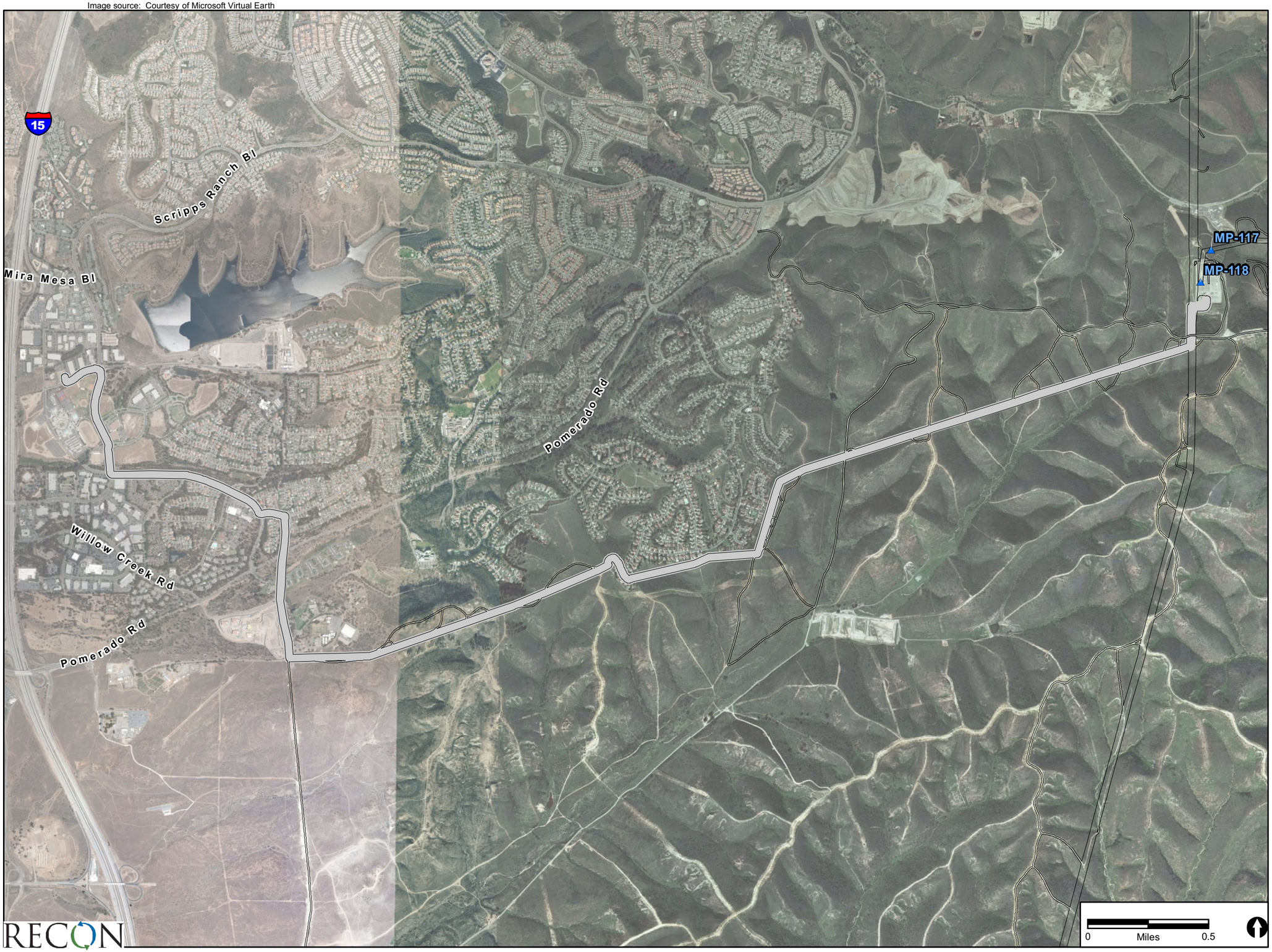
RECON

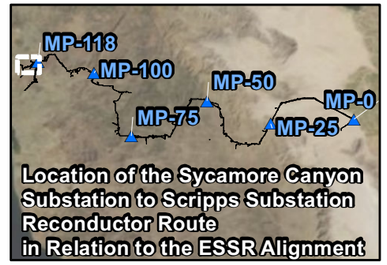
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3O.mxd 9/2/2010

FIGURE 3O

Weed Densities within the **Sycamore Canyon Substation to Pomerado Substation Reconductor Route** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Invasive Weed Data to be Updated in the 2010 Weed Control Plan

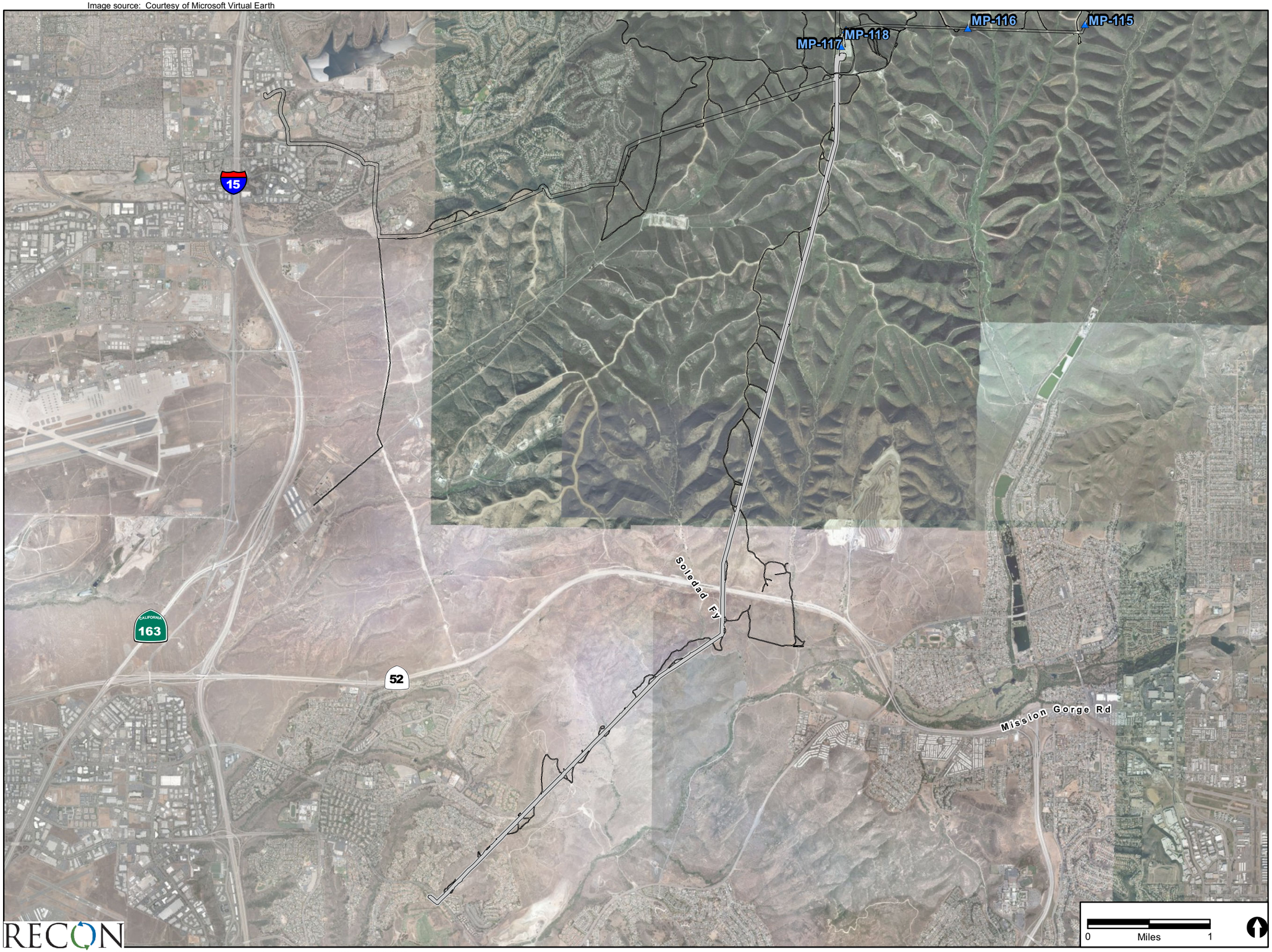
RECON

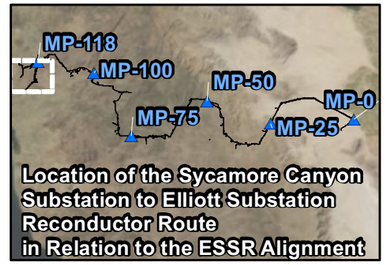
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3P.mxd 9/2/2010

FIGURE 3P

Weed Densities within the **Sycamore Canyon Substation to Scripps Substation Reconductor Route** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Invasive Weed Data to be Updated in the 2010 Weed Control Plan

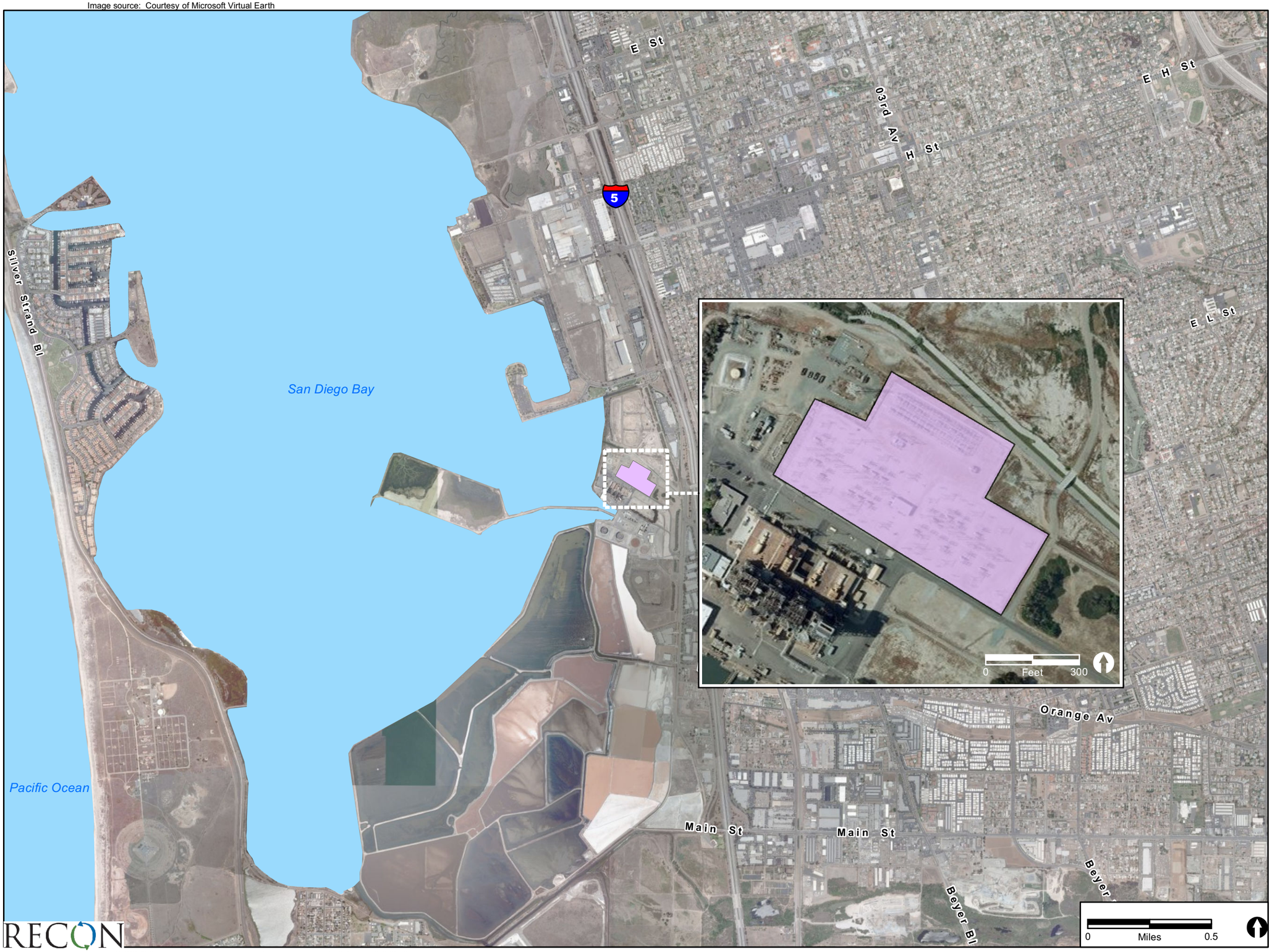
RECON

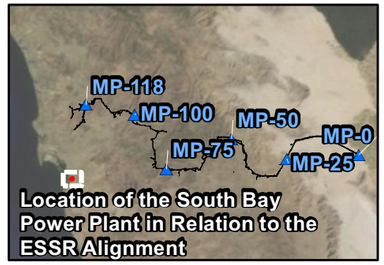
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3Q.mxd 9/2/2010

FIGURE 3Q

Weed Densities within the **Sycamore Canyon Substation to Elliott Substation Reconductor Route** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Excluded from Surveys Due to Vegetation Free Maintenance Policies

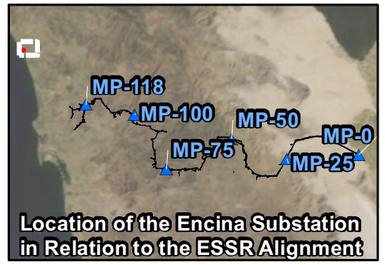
RECON

M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3R.mxd 9/2/2010

FIGURE 3R

Weed Densities within the **South Bay Power Plant** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth



Carlsbad Bl
Carlsbad Village Dr
Tamarack Av
Tamarack Av
5
Pacific Ocean
Carlsbad Bl
Palomar Airport Rd
Palomar Airport Rd
Palomar Airport Rd
El Cam Real
Palomar Airport Rd
0
Miles
0.5

2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

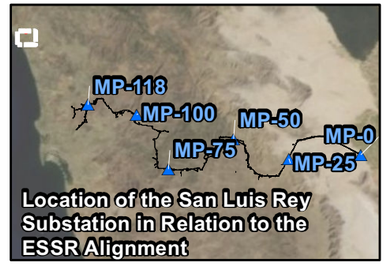
Excluded from Surveys Due to Vegetation Free Maintenance Policies

RECON

M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3S.mxd 9/2/2010

FIGURE 3S
Weed Densities within the **Encina Substation** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth



2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Excluded from Surveys Due to Vegetation Free Maintenance Policies

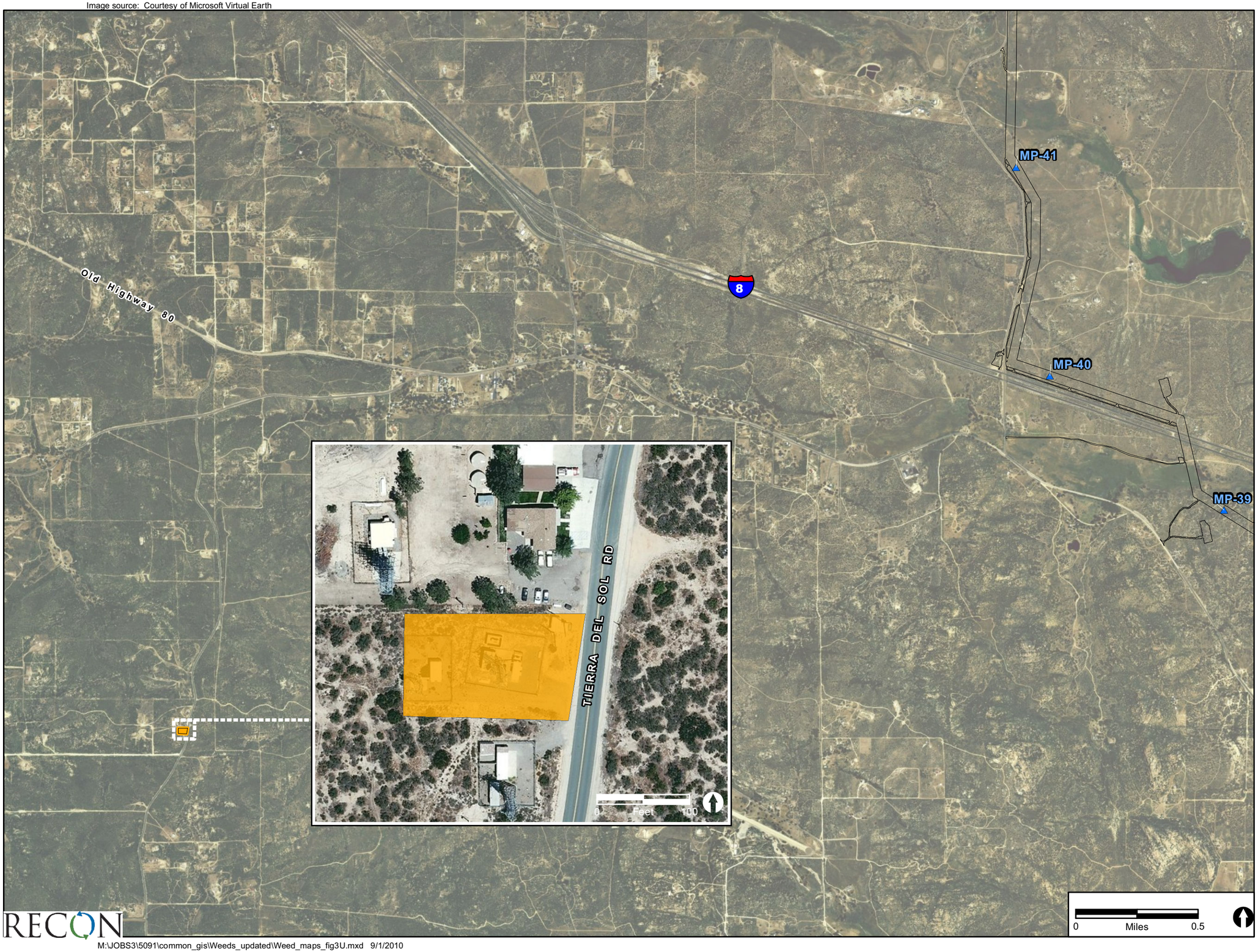
RECON

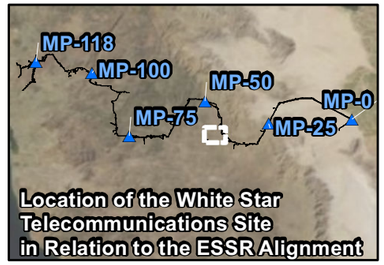
M:\JOBS3\5091\common_gis\Weeds_updated\Weed_maps_fig3T.mxd 9/2/2010

FIGURE 3T

Weed Densities within the **San Luis Rey Substation** of the ESSR Alignment

Image source: Courtesy of Microsoft Virtual Earth





2010 Action Area

Mileposts - 2010

Weed Densities 2009 Surveys (Species Combined)

Medium

RECON

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FIGURE 3U
Weed Densities within the
White Star
Telecommunications Site
of the ESSR Alignment

the distance between individual biologists. In areas of dense vegetation, the distance between biologists was reduced to an appropriate distance for complete visual coverage of the Action Area.

All weeds present within or adjacent to the alignment ROW were noted. As outlined in the EIR/EIS and BO, the survey focused on the following target species:

- Species that promote the spread of wildfires, such as cheatgrass, Saharan mustard, and medusa head.
- Species categorized by the Cal-IPC Invasive Plant Inventory as High or Moderate for negative ecological impact (see Appendix A).
- County of San Diego "targeted noxious weeds" including perennial pepperweed, yellow starthistle, purple loosestrife, and spotted knapweed (County of San Diego 2009).

A complete list of weed species with potential to occur in the Action Area is presented in Appendix A.

Surveyors recorded the location of all target weed species when encountered using Global Positioning System (GPS) handheld units (Trimble GeoXT or Garmin GPS 12). Additional location information was recorded in surveyors' field notebooks. Survey data were downloaded from the GPS units into a geographic information system (GIS) database. Following the last survey, the data in the GIS database were updated and refined with the information contained in each surveyor's field notes.

Each weed species population located within the Action Area was categorized into one of four density classes. Density categorization was based on qualitatively derived ocular cover estimates of the population. The density categories assigned are presented in Table 1.

TABLE 1
EXOTIC SPECIES DENSITY CATEGORIES

Category	Description	Density
T	Trace	Individual(s), less than 1% cover
Class 1	Low	1–25% cover
Class 2	Medium	26–50% cover
Class 3	Dense	51–100% cover

3.2 Results

A list of weed species identified and observed during the preconstruction survey is presented in Table 2. A map of observed targeted noxious weeds and Cal-IPC High or Moderate species is included in Appendix B. This list and the maps will be updated at the conclusion of 2010 surveys and included in the 2010 report.

TABLE 2
INVASIVE EXOTIC SPECIES OBSERVED IN THE ALIGNMENT ROW DURING 2009 SURVEYS*

Species	Common Name	Cal-IPC Rating	San Diego County Noxious Weed	Wildfire Promoter
Avena spp.	wild oat	Moderate	No	No
Brassica nigra	black mustard	Moderate	No	No
Brassica tournefortii	Saharan mustard	High	No	Yes
Bromus diandrus	ripgut brome	Moderate	No	No
Bromus madritensis ssp. *rubens*	foxtail chess	High	No	No
Bromus tectorum	cheatgrass	High	No	Yes
Carduus pycnocephalus	Italian thistle	Moderate	No	No
Centaurea melitensis	tocalote	Moderate	No	No
Centaurea solstitialis	yellow starthistle	High	Yes	No
Cynara cardunculus	artichoke thistle	Moderate	No	No
Cirsium vulgare	bull thistle	Moderate	No	No
Cortaderia selloana	dwarf pampas grass	High	No	No
Dittrichia graveolens	stinkwort	Moderate	No	No
Foeniculum vulgare	sweet fennel	High	No	No
Hirschfeldia incana	short-pod mustard	Moderate	No	No
Hordeum murinum	foxtail barley	Moderate	No	No
Pennisetum setaceum	fountain grass	Moderate	No	No
Sisymbrium irio	London rocket	Moderate	No	No
Tamarix ramosissima	saltcedar	High	No	No
Vulpia myuros	foxtail fescue	Moderate	No	No

* A complete list of significant invasive species observed in the 2010 survey season will be updated in the 2010 Weed Control Plan.

The Action Area passes through different landscape forms, soil types, and elevation / moisture gradients. Weed densities varied by species and habitat, although in general, in drier, transmontane areas, weeds were concentrated in drainages and within the shade and drip line of larger shrubs; while in relatively more mesic, cismontane areas, they tended to be widely distributed across the landscape. Observed acreages of targeted weed species within the ROW and within proposed impact areas (the remainder of the Action Area) can be seen in Table 3. This table will be updated to included 2010 data following completion of the 2010 survey period.

A description of the species targeted for control and control methods are presented in Section 6.2, Specific Weed Control Plans.

TABLE 3
PRESENCE OF COUNTY TARGETED WEEDS, WILDFIRE PROMOTERS, AND CAL-IPC HIGH AND MODERATE SPECIES IN ALIGNMENT RIGHT-OF-WAY AND IMPACT AREAS IN 2009*

Species	Density	Presence in ROW (acres)	Presence in Impact Areas (acres)
San Diego County Noxious Weeds**			
Yellow starthistle (*Centaurea solstitialis)*	Low	**0.2**	**0.2**
Wildfire Promoters**			
Saharan mustard (*Brassica tournefortii)*	Trace	885.1	163.3
	Low	108.2	12.2
	Medium	18.9	1.9
	Total	**1,012.2**	**117.1**
Cheatgrass (*Bromus tectorum)*	Trace	25.4	4.0
	Low	504.1	136.1
	Medium	45.2	26.0
	Dense	25.4	4.0
	Total	**600.1**	**170.1**
Cal-IPC High			
Foxtail chess (*Bromus madritensis* ssp. *rubens)*	Trace	284.8	45.0
	Low	1,873.6	319.4
	Medium	142.1	10.6
	Dense	109.8	96.0
	Total	**2,410.3**	**471.0**
Dwarf Pampas grass (*Cortaderia selloana)*	Trace	0.1	0.1
	Low	2.3	2.3
	Total	**2.4**	**2.4**
Sweet fennel (*Foeniculum vulgare)*	Trace	0.1	0.1
	Low	0.3	0.2
	Total	**0.4**	**0.3**
Saltcedar (*Tamarix ramosissima)*	Trace	94.0	94.0
	Low	0.7	0.1
	Medium	0.3	0.0
	Total	**95.0**	**94.1**
Cal-IPC Moderate			
Wild oat (*Avena* spp.*)*	Trace	132.2	20.8
	Low	278.1	94.0
	Medium	330.3	93.5
	Dense	16.9	1.0
	Total	**757.5**	**209.3**
Black mustard (*Brassica nigra)*	Trace	7.7	0.6
	Low	215.2	24.9
	Dense	2.1	0.0
	Total	**225.0**	**25.5**
Ripgut brome (*Bromus diandrus)*	Trace	0.8	0.1
	Low	317.4	83.5
	Medium	5.9	0.2
	Dense	66.3	22.7
	Total	**390.4**	**106.5**

TABLE 3
PRESENCE OF COUNTY TARGETED WEEDS, WILDFIRE PROMOTERS, AND CAL-IPC HIGH AND MODERATE SPECIES IN ALIGNMENT RIGHT-OF-WAY AND IMPACT AREAS IN 2009* (CONT.)

Species	Density	Presence in ROW (acres)	Presence in Impact Areas (acres)
Italian thistle (*Carduus pycnocephalus)*	Low	**12.1**	**11.0**
Cal-IPC Moderate (cont.)			
Tocalote (*Centaurea melitensis)*	Trace	0.9	0.2
	Low	488.5	119.0
	Medium	14.5	2.9
	Dense	0.01	0.0
	Total	**503.9**	**122.1**
Bull thistle (*Cirsium vulgare)*	Low	**95.6**	**0.0**
Artichoke thistle (*Cynara cardunculus)*	Med	**0.03**	**0.0**
Stinkwort (*Dittrichia graveolens)*	Low	**0.04**	**0.04**
Short-pod mustard (*Hirschfeldia incana)*	Trace	185.0	28.6
	Low	271.6	74.6
	Medium	181.8	138.4
	Dense	16.7	4.4
	Total	**655.1**	**246.0**
Foxtail barley (*Hordeum murinum)*	Trace	19.6	2.7
	Low	23.3	3.8
	Total	**42.9**	**6.5**
Fountain grass (*Pennisetum setaceum)*	Trace	298.1	37.2
	Low	3.6	2.2
	Medium	1.0	0.4
	Dense	0.4	0.1
	Total	**303.1**	**39.9**
London rocket (*Sisymbrium irio)*	Low	37.9	5.04
	Medium	0.9	0.0
	Total	**38.8**	**5.04**
Foxtail fescue *(Vulpia myuros)*	Low	17.7	4.1
	Medium	96.2	63.7
	Dense	69.7	5.9
	Total	**183.6**	**73.7**

* Acreage totals of invasive weeds presented above reflect the 2009 action area and survey season. Acreage totals for significant invasive weeds observed in the 2010 action area and survey season will be updated and presented in the 2010 Weed Control Plan.
** Species within this category will be treated wherever they occur within the ROW of the Project alignment.

4.0 Weed Control

Weed control and prevention procedures are required prior to initiation of construction and during active construction. These requirements are outlined below.

4.1 Preconstruction Weed Abatement

Seven Cal-IPC species with a High rating and thirteen Cal-IPC species with a Moderate rating were observed within and immediately adjacent to the Action Area. Of these twenty species, one County of San Diego "target noxious" species and two wildfire-promoting species were observed (see Table 2). San Diego County "target noxious" species and designated wildfire-promoting species will be controlled throughout the ROW and associated laydown areas. All other species will be treated and controlled within mapped impact areas. All species must be treated prior to construction or when treatments would be most effective based on the species phenology.

Weed control treatments shall include all legally permitted chemical, manual, and mechanical methods applied with the authorization of the San Diego County Agriculture Commissioner and the ROW easement land-holding agencies where appropriate. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a PCA and implemented by a QAL. Where manual and/or mechanical methods are used, disposal of the plant debris will follow the regulations set by the San Diego County Agriculture Commissioner. The timing of the weed control treatment shall be determined for each plant species in consultation with a PCA, the San Diego County Agriculture Commissioner, and Cal-IPC, as appropriate, with the goal of controlling populations before they start producing seeds.

PCA consultation shall commence prior to any weed control activities. The PCA shall make written recommendations or a prescription that details pest control activities within the project footprint. No deviation from plan shall occur without prior written approval. It is the PCA's responsibility to address guidelines administered by regulatory agencies in the written recommendation.

In accordance with the EIR/EIS, weed control measures will incorporate all legally permitted chemical, manual, and mechanical methods applied with the authorization of the San Diego County Agriculture Commissioner and the ROW easement land-holding agencies where appropriate. The primary suggested means of control of these target species during preconstruction is through the application of herbicides. Herbicides kill or inhibit plant growth and can be very effective in controlling many weed species. Different weed species may require alternate herbicides, application rates, and time of application for effective treatment.

Using herbicides to control weeds requires careful planning and a professional staff familiar with the application areas and herbicides they are using. The use of herbicides should be under the direction of a professional pesticide applicator. Prior to application, the applicators should be aware of all safety regulations and applicable environmental regulations and familiar with target versus native plants. The WCM is responsible for

meeting these requirements and approving any trained staff or certified pesticide applicators that will handle herbicides.

The method of application varies greatly from one species to the next and also with the degree of infestation. The application method ultimately chosen should minimize risks of harming non-target plants. The herbicide used should be appropriate for the given species and environmental condition. The environmental risks of using herbicides include drift, volatilization, persistence in the environment, and groundwater contamination.

Species descriptions and management measures are included in Section 6.2, Specific Weed Control Plans.

4.2 Construction Measures

As part of the environmental training program, field crews will be trained to recognize the importance of invasive plant species control and informed of the measures designed to control the spread of invasive species. Deliberate introduction of invasive plants or animals into any project site is prohibited. Heavy equipment will be inspected for invasive plant seeds or other plant material prior to entering an access road or a project site. Any plant seed or other plant material discovered on heavy equipment will be manually removed. All seeds and straw materials used during operation and maintenance (O&M) activities will be certified weed free, and all gravel and fill material would be certified weed free by the San Diego County Agriculture Commissioner's Office.

During project construction, vehicles and all equipment, and tools such as chainsaws, hand clippers, pruners, etc., will be washed (including wheels, undercarriages, and bumpers) at an off-site washing facility (e.g., a car wash or temporary truck wash station) immediately before the project construction begins. Off-site washing facilities will be used throughout the project, where feasible, to re-wash vehicles, equipment, and tools prior to returning to the project site. All off-site washing will take place where rinse water can be collected and disposed of in either a sanitary sewer or landfill; an effort will be made to use wash facilities that use recycled water.

While the use of off-site car wash facilities is acceptable, the use of these will be limited for a number of portions of the construction area; therefore SDG&E will establish temporary wash stations at strategic locations throughout the Action Area. The locations and detail specifications for establishment of these temporary wash stations are included as Appendix C. Prior to project construction, all vehicle and equipment wash station sites will be surveyed for invasive weed and rare plant species. In addition, a habitat

assessment will be conducted for threatened and endangered species. All wash station sites will be monitored during their installation.

A daily log will be kept for all vehicle/equipment/tool off-site and on-site washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log will include the signature of a responsible staff member. Logs will be available to the CPUC, BLM, USFS (for Project sections within National Forest lands), Wildlife Agencies, and biological monitor for inspection at any time and will be submitted to the CPUC on a monthly basis during construction.

5.0 Long-term Monitoring

The entire ROW and areas immediately adjacent to the ROW (where access permission can be secured) as well as at ancillary facilities (including wash stations outside the ROW) will be surveyed for San Diego County Noxious weeds and Wildfire Promoters during construction and annually for two years following construction to monitor previously identified and treated populations and to identify new invasive weed populations. After this time, for the life of the Project, surveying for San Diego County Noxious Weeds and Wildfire Promoters is required within the entire project ROW at an interval of every two years, except for at wash stations where no more surveying shall be required.

For Cal-IPC High or Moderate species, the surveys need only be conducted in the direct impact areas of the ESSR (including wash stations), but shall also occur during construction and annually for two years following construction. After this time, and for the life of the Project, surveying is required in direct impact areas at an interval of every two years, except for at wash stations where no more surveying shall be required.

Based on the species observed during preconstruction surveys and the species with potential to infest the site in the future, surveys should generally be conducted in mid-spring of each year to capture all potentially invasive species. The exact timing will be determined by the WCM based on rainfall and other environmental conditions. If evidence of late or early season weed species is noted, timing of annual surveys may be shifted to account for these species.

Surveys should focus on (1) areas where target invasive species have previously been mapped (see Appendix B); (2) areas where target species have previously been treated; (3) areas that are being actively disturbed by maintenance activities; (4) all tower and facility sites; and (5) general surveys of the alignment ROW. Prior to each survey, the target species list should be reevaluated to include new species that may be introduced to the area over time and weed species that may be classified into elevated Cal-IPC categories (such as Limited to Moderate).

Surveys should focus on the target species; however, all potentially invasive exotic species present within or adjacent to the Action Area should be noted. It is anticipated that those species listed in Table 2 will be of greatest concern. All surveys must be conducted by biologists knowledgeable of invasive exotic species to identify infestations of existing or new invasive species.

Survey areas will be traversed on foot, with teams of biologists walking meandering transects along the centerline of the alignment ROW and ancillary facilities. Biologists will survey in such a manner as to ensure visual coverage of 100 percent of the distance between individual biologists. Surveyors will record the location of all target invasive plant species when encountered using handheld GPS units and field maps. Each exotic species population located within the Action Area should be categorized into one of the four density classes (based on qualitatively derived ocular cover estimates of the population) listed in Table 1.

6.0 Long-term Adaptive Weed Control Measures

Long-term maintenance measures are described to keep the entire ROW and areas immediately adjacent to the ROW (where access permission can be secured) as well as at ancillary facilities free of species that were removed during preconstruction weed removal efforts and to prevent or control species that are not yet established but could potentially infest the site in the future. These long-term weed control measures are intended to be adaptive, to address new threats as they occur, and to prevent future infestations. Weed treatment and control shall occur on a minimum annual basis unless otherwise approved by the Pest Control Advisor, San Diego County Agricultural Commissioner, and Cal-IPC.

The Action Area of the Sunrise Powerlink is part of a larger ecosystem that includes neighboring undeveloped lands. Many weedy species are dispersed by wind, water, or transport by animals (including humans). For this reason, any adjacent areas occupied by invasive weeds may pose a threat to the Action Area. Long-term surveys for invasive plant species should include reconnaissance surveys on neighboring lands, with landowners' approval, for invasive species and potential sources of weed seed production. If populations of invasive species are discovered in parcels immediately adjacent to the Action Area and these species have the potential to disperse viable seed into these areas, then the Project proponent should work with the respective landowner to eradicate or manage the off-site problem.

The strategy for the control plan is to be adaptive. This strategy can be broken down into several steps:

- Identify the weeds present on the site that the Project proponent is required to control.

- Select the appropriate weed control options.

- Monitor and assess impacts from operation and maintenance activities required for Sunrise Powerlink on invasive species. Work with the Project proponent to address actions that may be detrimental to weed control where practical without interfering with required activities.

- Evaluate the effectiveness of control methods applied each year and use this information to refine control priorities, methods, and goals. These data can provide useful information for improved management practices and, in turn, may increase the overall quality of habitat within the Action Area.

6.1 Management Tools

The species, location, and extent of invasive species infestation will largely determine the management tools used to control populations. Consideration will also be given to the difficulty of controlling a particular invasive species. Control efforts will follow an Integrated Pest Management (IPM) approach. This approach balances cost, overall effectiveness, and environmental risk in selecting the best treatment(s) to use for any given target at any location in the Action Area.

All options of control will be considered by the WCM before action is taken. These methods may include removal by hand or machine, passive management (allowing native species to become established and outcompete invasives), or application of herbicides. Each of these management tools has advantages and disadvantages, and often the best approach is a combination of methods (Hoshovsky and Randall 2000). In addition, optimum timing of invasive species management strategies can vary by the type of plant in question. For example, for many perennial species, timing of control may not be as critical as for annual species. Annual invasive species are best controlled before they set seed in order to limit costly repeat efforts.

During the lifetime of the required long-term weed control, several strategies may be implemented.

6.1.1 Prevention

The most effective, efficient, and low-cost invasive species control strategies prevent weed invasions from ever occurring and quickly detect invasions that do occur so that invasive species can be eradicated or contained before they spread (Hoshovsky and

Randall 2000). This requires not only knowing where existing infestations occur through regular survey and mapping events, but also incorporating meaningful best management practices (BMPs) into construction activities that are aimed at containment of infestations. Management tools to prevent the establishment of weeds within a given area include regular monitoring, eradicating weeds immediately upon detection, removing seed sources from neighboring areas, and revegetating areas as soon as disturbances occur. If it is not feasible to remove a particular weed species in its entirety, preventative measures may include cutting seed heads off plants and raking and removing seeds as they fall to the ground. Many non-native invasives can be reduced with the successful establishment of native species through restoration.

The following list presents examples of BMPs that would be incorporated into construction activities to prevent the spread of weeds:

- Avoid impacts to native vegetation.
- Avoid disturbance in weedy areas. Do not stage construction activities in weedy areas.
- Avoid and minimize ground disturbance. Consider impacts of different types of equipment and when possible choose equipment that will result in the least disturbance to soil and vegetation.
- Determine whether weed control efforts should be conducted before, during, and/or after maintenance activities, and incorporate into the project schedule.
- Use physical boundaries to exclude infested areas from maintenance activities.
- Plan activities in a manner that limits the potential spread of invasive species. For example, time ground disturbance activities such that machinery is not moving through and transporting weed seeds to new locations. Movement of maintenance and construction equipment should be from areas not infested by invasive plants to areas infested by invasive plants whenever possible.
- Clean vehicles and require any contractors to clean their vehicles to prevent transport of soil and plant material before entering or leaving any construction site or site of weed infestation (see Appendix C).
- Remove seeds from clothing, footwear, vehicles, and equipment before entering non-infested areas.
- Cover material, including soil or fill, securely during transport.
- Stabilize disturbed soils as soon as possible with native seed and certified weed-free erosion control materials.

- Use only barren fill and gravel.

A worker education program is recommended to inform construction and maintenance workers how to implement the BMPs.

6.1.2 Manual Removal

Physical control often involves hand dethatching, pulling, cutting, or removal by mechanical means. These methods are labor intensive and may be used for smaller populations of weed infestations or around sensitive habitats. Physical methods of weed control may provide an advantage in these situations where desirable species may be left in place while surrounding weeds may be removed. Dethatching is a useful tool that removes the dead or dying plant material from the soil surface. Dethatching also removes weed seed that may still be attached to the plant and will also increase the effectiveness of subsequent herbicide applications.

6.1.3 Competition and Restoration

Competition and restoration involves the propagation and planting of native species so they may outcompete weeds. By increasing the density and distribution of native trees, shrubs, and herbs, there is less space available for weed species to occupy. Planting or seeding will often involve a maintenance period where watering and weeding will be necessary until the plants have become established. This method of weed management should be implemented in conjunction with another form of weed control, such as dethatching or herbicide use.

6.1.4 Chemical Control

The chemical means of controlling weeds is the application of herbicides. Herbicides kill or inhibit plant growth and can be very effective in controlling many weed species. Different weed species may require alternate herbicides, application rates, and time of application.

Using herbicides to control weeds requires careful planning and a professional staff familiar with the application areas and herbicides they are using. The use of herbicides should be under the direction of a professional pesticide applicator with either a Qualified Applicator License or a Pesticide Applicator License in the State of California. Before applying any herbicides, the applicators should be aware of all safety regulations and applicable environmental regulations and be familiar with target versus native plants. The WCM is responsible for meeting these requirements and approving any trained staff or certified pesticide applicators that will handle herbicides.

The method of application varies greatly from one species to the next and also with the degree of infestation, time of year, and environmental conditions. The application method ultimately chosen should minimize risks of harming non-target plants. The environmental risks of using herbicides include drift, volatilization, persistence in the environment, groundwater contamination, and harmful effects on animals.

Herbicide application should always include marker dyes to make the herbicide visible. Higher visibility is desirable, because it

- allows personnel to more effectively protect themselves against contamination;
- prevents unintended multiple application to a particular area or plant;
- ensures complete coverage of target area and plants;
- informs personnel of overspray and wind-drift issues, which protects non-target plants.

6.2 Specific Weed Control Plans

Appendix A identifies exotic species with the potential to occur within the Action Area. The WCM will be responsible for updating this plan with appropriate treatment measures if any additional species from this list are observed within the Action Area during annual/biannual weed surveys.

As indicated in Section 3.2 and Table 2*,* the following species were identified within the Action Area. Preconstruction removal efforts will be required as outlined in Section 4.1. Long-term monitoring for invasive species should occur on the entire ROW and, if found, removal efforts will be required as described below.

6.2.1 San Diego County Noxious Weeds

6.2.1.1 Yellow Starthistle (*Centaurea solstitialis*)

Other Weed Designation(s): Cal-IPC High

Description: Yellow starthistle is an exotic, deep-rooted winter annual native to southern Europe. Similar to *C. melitensis,* though phyllary spines are longer and more pronounced (DiTomaso and Healy 2007). Flowering generally occurs in June through September. Individuals reproduce only by seed. Seed germination is triggered by fall rains and plants will remain as rosettes until they bolt in late spring (DiTomaso and Gerlach 2000).

As yellow starthistle has a relatively heavy seed, it cannot be dispersed long distances by aeoliar transport (Roche 1992). Instead, the primary mechanism for long-distance dispersal in this plant is anthropogenic. It is frequently transported between sites on road maintenance equipment and on the undercarriage of vehicles (DiTomaso and Gerlach 2000) Yellow starthistle can be found, in general, on moderately warm grasslands, rangeland, pastures, and recreational areas (DiTomaso et al. 1999).

Current Distribution in the Action Area: Yellow starthistle was observed in the floodplain of Wilson Creek west of Barrett Lake within non-native grasslands adjacent and throughout open coast live oak woodland (see Appendix B, MP 81).

Control Options:

Physical Control. Small infestations can be pulled or hand-dug after plants have bolted (individuals will reprout from rosettes). Care must be taken to bag seed heads and monitor site for rosette resprouts (Holloran et al. 2004).

Repeated cultivation of invested areas has been shown to control yellow starthistle, though it can expose soil to rapid recolonization if subsequent rainfall occurs (DiTomaso et al. 1998). Repeated mowing has been shown to be effective if conducted when two to five percent of the plant is flowering. Mowing too early in the plants phenology has been shown to stimulate flower production, while mowing too late would not control viable seed production (Benefield et al. 1999).

Chemical Control. Broadleaf selective herbicides, such as clopyralid, have been effective in controlling yellow starthistle without harming adjacent native grass populations. Glyphosate (one percent solution) is the preferred method to treat yellow starthistle after plants have bolted, though it is also an effective control at the rosette stage if damage to surrounding plants is not an issue (DiTomaso et al. 1998).

Treatment Extent: Yellow starthistle will be treated and controlled at all locations within the project alignment ROW.

Treatment Schedule: Winter–early spring: Herbicide applications. Late spring–summer: Hand-pull bolting individuals.

6.2.2 Wildfire Promoters

6.2.2.1 Saharan Mustard (*Brassica tournefortii*)

Other Weed Designation(s): Cal-IPC High


Carianne Funicelli

Description: Saharan mustard is a Mediterranean species native to North Africa, the Middle East, and southern Europe. Currently, this plant is found throughout the low-elevation deserts of the southwest—southern Nevada, southern California, Arizona, New Mexico, and west Texas. It prefers sandy or gravelly soil, although it is also able to grow on alluvial fans and rocky hillsides. Unlike many invasives, this plant does not require disturbed soil to become established.

This plant is a robust, fast-growing winter annual with a basal rosette of leaves with stinging hairs. The basal rosette of leaves grows up to 3 feet in diameter in favorable environments (University of Nevada Cooperative Extension [UNCE] 2002). The erect stem can be 4–40 inches in height, and it branches extensively, forming a "tumbleweed" once the plant dries up and the stem breaks. The leaves smell like cabbage when they are crushed.

Plants flower early, as early as December or January, immediately following the first winter rains and may set seed as early as February. The flowers are small and dull yellow, making them inconspicuous compared to most other true mustards (Sanders and Minnich 2000). Fruits are long pods that contain between 750 and 9,000 tiny seeds each.

Saharan mustard forms dense stands that crowd out native wildflowers. It has a competitive edge with its early phenology, which allows it to usurp soil moisture from native species which develop later (Sanders and Minnich 2000). It appears that this plant may carry fire, especially when there are other low-growing invasive species (such as Mediterranean grass) present underneath.

Current Distribution in the Action Area: Saharan mustard was observed in from trace to medium densities throughout the Sonoran desert and desert transition areas of the Action Area (Sections 10A, 10B, and the eastern portions of Section 9C; see Appendix B). Saharan mustard was found in low densities within the sparse, flat Sonoran mixed woody and succulent scrub at the top of the Mountain Springs Grade near the town of In-Ko-Pah (MP 30, elevation: 3,150 ft). Densities of Saharan mustard decreased

significantly as the alignment ROW passed over the boulder-filled foothills and canyons to the east. Saharan mustard was observed in trace amounts on boulder slopes from In-Ko-Pah to Mountain Springs, outside of washes, from MP 27.6 to MP 29.3. Most washes within the Action Area, especially larger drainages such as Myers Creek, supported low densities of Saharan mustard. The Mountain Springs Grade levels out briefly near Mountain Springs Road (MP 26.5 to MP 27.6, elevation 2,000 ft.). This area contains increased areas of disturbance and weed densities due to small residential development, off-road use, and an undesignated recreational shooting area. Saharan mustard was found in medium densities along roads and adjacent to a recreational shooting area near Mountain Springs (MP 26.7). Saharan mustard was also observed in low densities on hills and slopes near Mountain Springs Road. The boulder-filled slopes from MP 26.7 to 23.2 contained trace amounts of Saharan mustard, with the majority of observations occurring within sandy drainages and swales between rocky slopes. The hill slopes of igneous cobble (MP 22.8 to MP 23.3) did not contain Saharan mustard or any other Cal-IPC invasive weed species. Saharan mustard was also observed in trace amounts throughout the Sonoran desert (MP 0 to 3.5, MP 10.7 to MP 22.8).

Control Options:

Prevention. Control of Saharan mustard along roadsides will help to prevent its spread to other areas. Do not drive vehicles, move animals, or walk through infested areas once this plant has gone to seed, especially following a rain event, as the mucilaginous coating on the seeds allow them to stick onto objects and travel to new places. Repeated treatments and monitoring on small areas are preferable to diffuse treatments over wide areas which may inadvertently increase the density of this plant (Trader et al. 2006).

Physical Control. If an infestation is small, it is possible to remove the plants by digging them out of the ground or hand-hoeing. This is especially effective if the invasion is new and there is not a seed bank existing in the soil. It is important to do this prior to seed set and also to bag and remove the plants from the site. A site should be revisited weekly in order to catch later-germinating plants, especially if there have been multiple rainfall events. Weed whipping is not recommended as the plants will simply regrow (UNCE 2002).

Chemical Control. Saharan mustard is often the first winter annual to germinate in an area, making effective herbicide treatment possible while minimizing impacts to non-target species. Triclopyr at two percent concentration has been effective at killing young rosette/early flowering plants at Lake Mead National Recreation Area (UNCE 2002). According to the National Park Service (NPS), Saharan mustard can also be controlled with 2, 4-D or dicamba (1 lb/acre), or glyphosate (1.5 lb/acre) (Mau–Crimmins et al. 2005). Application of postemergent herbicides should be done prior to development of seed pods and prior to the germination of desirable native species if possible.

Treatment Extent: Saharan mustard will be treated and controlled at all locations within the Project alignment ROW.

Treatment Schedule: Late winter to very early spring: Apply treatments. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.2.2 Cheatgrass (*Bromus tectorum*)

Other Weed Designation(s): Cal-IPC High

Description: Cheatgrass is a short annual grass native to southern Europe, northern Africa, and southwestern Asia. Its spread around the world is associated with livestock and it came to northeastern California by late in the nineteenth century (Young 2000).

It typically flowers from May to June. Seedlings are bright green with conspicuously hairy leaves. The nodding open panicles with moderately awned seeds are distinctive (Cal-IPC 2009). The seedlings are bright green with hairy leaves, and the mature plant may become reddish.

Cheatgrass's impacts on vegetation communities are well documented; it is capable of outcompeting seedlings of native species for soil moisture (Young 2000). Cheatgrass encourages fires and alters fire regimes, culminating in the conversion of native plant communities to non-native annual grassland (Young 2000).

Current Distribution in the Action Area: Cheatgrass was general observed at dry, higher elevation within the desert transition portions of the alignment ROW (see Appendix B). Cheatgrass was frequently observed in low to dense densities in McCain Valley (Section 9B, MP 39 TO MP 51).

Control Options:

Physical Control. Hand-pulling small populations of cheatgrass prior to seed production is an effective physical control measure. Mowing can be effective in reducing populations if performed within one week of flowering (Young 2000).

Chemical Control. Apply glyphosate when most plants have reached the late bud to flower stage of growth. The U.S. Army Corps of Engineers (USACE 2006) lists glyphosate, imazapic, and imazapyr as herbicides that have been used to treat cheatgrass.

Treatment Extent: Cheatgrass will be treated and controlled at all locations within the project alignment ROW.

Treatment Schedule: Early spring: Locate all populations within and adjacent to the ROW. Spring: Treat all individuals. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.3 Cal-IPC High

6.2.3.1 Foxtail Chess (*Bromus madritensis* ssp. *rubens*)

Other Weed Designation(s): None.

Description: Foxtail chess is native to southern Europe, northern Africa, and southwestern Asia; it is thought to have become established in California in the mid 1800s (Brooks 2000).

Foxtail chess is an annual grass that germinates with winter precipitation and reproduces only by seed. Its distinctive brushlike inflorescences are reddish purple at maturity. Plants growing in particularly dry conditions may be less robust and have a more open and rigid panicle. Seedlings are very similar to cheatgrass, being bright green and hairy (Brooks 2000).

Foxtail chess is implicated in a variety of detrimental ecological impacts, including competition with native species for moisture, nutrients, and light; conversion of native plant communities to non-native grasslands; promotion of wildfires and alteration of fire regimes; and injury to native and domestic animals (Brooks 2000).

This species emerges in early winter following rainfall but remains inactive until spring when rainfall combined with higher temperatures stimulate growth (University of California Davis 2007). Directed surveys for this species should be conducted during the typical flowering period (March through May). This species may be obscured in non-native grasslands by wild oat.

It may be particularly important to survey areas burned following June or October fires. Some research has indicated that sage-covered uplands, particularly those susceptible to disturbance, can have a very large increase in foxtail chess invasion (Newman 1992).

Current Distribution in the Action Area: Foxtail chess was observed in various densities throughout the Action Area, excluding the Sonoran desert (see Appendix B). In drier locales, such as Jacumba (Section 9C), foxtail chess was found in trace to low amounts and tended to be clustered within the drip lines and shade of woody perennials. Most minimally disturbed chaparral areas within the alignment ROW contained trace to low densities of foxtail chess. In more mesic, disturbed locations, such as pastures and grazed floodplains (e.g., laydown area polygon south of MP 23), foxtail chess was found to be mixed with other non-native annual grass species in medium to dense densities.

Control Options:

Physical Control. Manual removal of plants through pulling and hoeing can be effective, if done before seeds mature, but is usually feasible only with small infestations as it is labor intensive. In small infestations, covering the ground with mulch or black plastic (solarization) will reduce plant growth (Chambers and Hawkins 2002).

Chemical Control. Herbicide should only be applied prior to seed set. Glyphosate is an effective herbicide for reducing populations of foxtail chess.

The NPS recommends the use of preemergent herbicides (with one or two applications before seed set as usually sufficient (Mau–Crimmins et al. 2005). Use of preemergent herbicide should be considered carefully, however, as the impacts to native vegetation can last for many years after treatment.

Treatment Extent: Foxtail chess will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate all populations within and adjacent to the ROW. Mid-winter to late spring: Treat all individuals. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.3.2 Dwarf Pampas Grass (*Cortaderia selloana*)

Other Weed Designation(s): None.

Description: Dwarf Pampas grass is a large, showy grass, 6 to 13 feet tall, that was introduced from South America as an ornamental species; it has very attractive, large plumelike inflorescences. In its natural habitat (Argentina, Brazil, Uruguay), it grows in moist soil along river margins. In southern California, it has escaped cultivation and has spread along sandy, moist ditch banks in the coastal regions. Dwarf Pampas grass forms large clumps and grows rapidly.

Dwarf Pampas grass reproduces by seed but can also reproduce vegetatively. It competes with native vegetation and increases fire potential (DiTomaso 2000).

Current Distribution in the Action Area: A small population of dwarf Pampas grass was observed at the site of a former proposed construction yard (Stowe/Kirkham Yard) in Poway north of MP 116.5 (see Appendix B). Use of this area as a construction yard has been cancelled.

Control Options:

Physical Control. Seedlings can be effectively pulled or hand-grubbed, but larger or more established plants require a Pulaski, mattock, or shovel. It is imperative to remove all plant parts, as detached parts may take root and establish (DiTomaso 2000).

Chemical Control. Glyphosate at two percent solution with a nonionic or silicone-based surfactant is recommended. Effectiveness has been shown to be improved if plants are slightly wet (but not wet enough for the herbicide to run off) when the herbicide is applied. In addition, fall is the optimal time to spray, as the chemical is translocated faster as the plants enter dormancy (DiTomaso 2000).

An option for large, established clumps is to remove the top foliage (via cutting or burning) so that less chemical is required to treat the regrowth (as opposed to the amount needed to treat the full clump) (DiTomaso 2000).

Treatment Extent: Dwarf Pampas grass will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate all populations within and adjacent to the Action Area. Fall: Herbicide application.

6.2.3.3 Sweet Fennel (*Foeniculum vulgare*)

Other Weed Designation(s): None.

Description: Sweet fennel is native to Europe and the Mediterranean region, where it has been used for centuries as a spice and for medicinal purposes. Sweet fennel was presumably brought to North America for the same reasons and has escaped from cultivation.

Sweet fennel is a perennial herb 3 to 6 feet tall, with a strong anise odor. The stout stems are grayish green and have long vertical grooves; the flowers are yellow umbels (umbrellalike). The seeds can germinate at almost any time of the year, but plants generally do not flower until 18 months to two years. One plant can produce over 100,000 seeds in the first two years (Holloran et al. 2004).

Once a plant is established, flowering stems are produced from the perennial crown each spring. Sweet fennel has a stout taproot and will reproduce vegetatively from its root crown. Seeds are dispersed by water, humans, birds, and rodents.

Current Distribution in the Action Area: Sweet fennel was observed in two locations along the alignment ROW. A small population of sweet fennel was observed at the site of a former proposed construction yard (Stowe/Kirkham Yard) in Poway north of MP 116.5. Use of this area as a construction yard has been cancelled. Another population was observed adjacent to the alignment ROW near MP 110.8 (see Appendix B).

Control Options:

Physical Control. Hand-pulling is only feasible when plants are in the seedling stage and the soil is soft and moist. Mature plants can be dug, but it is important to remove at least the upper portion of the root crown. Digging should only occur when the infestation is light, as disturbance will expose the seed bank to light and increase germination (Holloran et al. 2004).

Mowing can be effective in heavy infestations if conducted four times per year, beginning in March–April. This technique can be effective if implemented over the course of 4 consecutive years (Holloran et al. 2004).

Chemical Control. Foliar spray of two percent glyphosate should be applied to seedlings prior to bolting. Repeat treatments are to be expected. Another option is to mow and then treat the resprouts with glyphosate (Holloran et al. 2004).

Treatment Extent: Sweet fennel will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate all population within and adjacent to the Action Area. Spring: Treat all individuals.

6.2.3.4 Saltcedar (*Tamarix ramosissima*)


Carianne Funicelli

Other Weed Designation(s): None.

Description: Saltcedar is a rhizomatous shrub that may occur as spotty to heavy infestations along drainages and shores of water bodies. The scale-like leaves have salt glands; flowers are small, white to deep pink and densely packed on racemes. The bark is

reddish brown with smooth stems less than one inch in diameter. Saltcedar is native to Eurasia and Africa and was used in the 1800s as erosion control, windbreaks, and shade and as an ornamental. It spreads by seed and vegetative growth. Saltcedar is a prolific seeder, with as many as 50,000 seeds per plant per year, produced over a long period (April to October) (Horton et al. 1960). Seeds are easily dispersed by wind or as water moves through the watercourses that they occupy. The seeds remain viable only for a few weeks, but they germinate easily in saturated soil. Horton et al. (1960) noted that receding spring and summer flows are ideal for germination and seedling establishment. Saltcedar can also reproduce vegetatively, if stems are buried in damp soil, as in a flooding situation ("layering"). Saltcedar is drought-tolerant and withstands lowered water tables as well as flooding (Carpenter 1998).

Presence of saltcedar can have devastating effects on native habitats, and it has been a pervasive problem across the American Southwest for several decades. Some of the more profound effects include dramatic narrowing of stream channels; sediment trapping; lowering of water tables; increased soil salinity, fire frequency, altered plant community composition; and decreased native wildlife diversity. Native riparian species such as cottonwood and willow can be replaced by saltcedar, which can invade to the point of dominance (Carpenter 1998). Many researchers have pointed out, however, that the saltcedar's success has been due to changing hydrologic conditions that have become less hospitable to native riparian species—thus shifting the blame from saltcedar itself to human-altered ecosystem processes (Stromberg and Chew 2002). From this perspective, control of this species is both meaningless and futile, if it is not also accompanied by the restoration of underlying ecological processes that support native vegetation communities.

Like many other invasive species, saltcedar is easily spread and difficult to eradicate. Therefore, early detection and control are critical to the successful control of this species. Most critical, however, is the reestablishment of natural hydrologic regimes if possible.

Current Distribution in the Action Area: Several small populations of saltcedar were observed within and adjacent to the Project alignment ROW. A small population of saltcedar was observed at the site of a former proposed construction yard (Stowe/Kirkham Yard) in Poway north of MP 116.5. Use of this area as a construction yard has been cancelled. Saltcedar was also observed in trace amounts in a grazed laydown area polygon south of MP 73. In addition, saltcedar individuals were observed within disturbed, seasonally mesic pastures in McCain Valley (MP 41 and MP 42). Along the desert transitional Mountain Springs Grade, saltcedar was observed in higher order washes (i.e., Myers Creek) within and adjacent to the Project alignment ROW. Saltcedar was observed in low densities in Myers Creek, where the alignment ROW crosses Myers Gorge (MP 28.2) and in medium densities on an unnamed tributary of Myers Creek near Mountain Springs Road (MP 27.1) (see Appendix B).

Control Options:

Early detection and control are critical to the successful control of this species. Post treatment monitoring is also essential since saltcedar is capable of resprouting following treatment. Seedlings will continue to establish as long as saltcedar infestations persist upwind or upstream of the Action Area.

Physical Control. Cutting alone is not an effective means of controlling saltcedar, since it tends to resprout vigorously from roots and stumps. However, cutting to the stump and then immediately applying herbicide has been effective (see below). Seedlings and small plants may be successfully uprooted by hand, if the entire root system can be removed. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

Chemical Control. The most frequently used and effective method in California is to cut an individual saltcedar shrub as close to the ground as possible and immediately (in less than 30 seconds) apply a triclopyr (e.g., Garlon® 4 or Pathfinder® II) or imazapyr (e.g., Habitat® or Polaris®) herbicide to the perimeter of the cut stems. This method is most effective during fall months, when the plants are actively translocating materials to their roots (Carpenter 1998). Foliar treatment of any resprouts is necessary. This method allows plants to be treated selectively, which is especially important if there are also native species present.

Treatment Extent: Saltcedar will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Winter–early spring: Locate all saltcedar individuals within mapped areas. Spring–summer: Treat seedlings and mature trees with an appropriate control method. Avoid treatment of mature trees in spring and summer months in areas where nesting birds occur, in these cases treat mature trees with an appropriate control method in the late winter. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck). Fall: If the cut-stump herbicide method is used, fall is the optimal time for treatment. Follow-up control should occur at least twice per year.

6.2.4 Cal-IPC Moderate

6.2.4.1 Wild Oat (*Avena* sp.)

Other Weed Designation(s): None.

Description: *Avena* sp. includes slender wild oat (*Avena barbata*) and wild oat (*Avena fatua*). Slender wild oat is very similar to wild oat but has florets that are more slender (Whitson et al. 2006). Wild oat is an annual grass that is native to Europe. It is an agricultural weed as well as a weed of roadsides, pastures, and other disturbed areas. This grass is 1 to 4 feet tall with hollow stems. Seeds can remain viable in the soil for over 10 years. They tend to outcompete native species for space, nutrients, and water (Whitson et al. 2006).

Current Distribution in the Action Area: Wild oat was observed in mildly to heavily disturbed areas in the western portion of the Project alignment ROW. It was frequently observed as part of a suite of annual non-native grasses colonizing postburn scrub, coastal foothills, roadsides, and pasturelands. Wild oat was not observed east of MP 69.5 (see Appendix B).

Control Options:

Physical Control. Specific information on the physical control of slender oat is not available. NPS (2004) recommends removal of wild oat with hand tools; because these species are so similar, effective treatment methodologies are likely to also be similar.

Chemical Control. Specific information on the chemical control of slender oat is not available. Glyphosate (NPS 2004), ethametsulfuron, and tridiphane (Mau–Crimmins et al. 2005) have been identified as effective herbicides for the treatment of wild oat; because these species are so similar, effective treatment methodologies are likely to also be similar.

Treatment Extent: Wild oat will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Spring: Locate and treat populations.

6.2.4.2 Black Mustard (*Brassica nigra*)

Other Weed Designation(s): None.

Description: Black mustard is an annual that grows 2 to 8 feet tall. The plants have erect stems covered with stiff hairs on the lower sections to smooth near the top. Leaves are stalked, the lower deeply lobed and the upper toothed. This species was introduced

from Europe and is widespread throughout North America (Whitson et al. 2006). This species can infest roadsides, disturbed areas, and small disturbed patches within otherwise native habitat.

Current Distribution in the Action Area: Black mustard was observed at various points colonizing coastal scrub and grassland within foothills in the western portion of the Project alignment ROW (see Appendix B). Extensive populations of black mustard at low densities were observed near the El Capitan Reservoir (Section 5, MP 98 to MP 105.5).

Control Options:

Physical Control. Plants can be hand-dug prior to flowering/fruiting, bagged, and removed from the site.

Chemical Control. 2,4-D, dicamba, and a combination of these two herbicides has been used to treat black mustard (USACE 2006). Glyphosate has also been observed to be effective in treating black mustard (Tomsovic 2009).

Treatment Extent: Black mustard will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Apply treatments. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.3 Ripgut Brome (*Bromus diandrus*)

Other Weed Designation(s): None.

Description: Ripgut brome is native to the Mediterranean and is thought to have been widely established in California since the late 1800s (Holloran et al. 2004). It is an annual grass with slender stems up to 30 inches tall. Distinguishing characteristics include flat leaf blades that are one-quarter inch wide and covered in fine hairs, with slightly jagged margins; drooping inflorescence with one or two spikelets of stiff red or purple-tipped awns; and fibrous roots (Holloran et al. 2004).

Ripgut brome is prone to summer fire, is known to cause injury to wildlife (hence the name ripgut), and prevents native perennial species from becoming established (Holloran et al. 2004). Reproduction is exclusively via seed, and plants can produce seeds during the winter, spring, and early summer. Ripgut brome is a very prolific seeder and seeds can remain viable in the soil for up to five years (Holloran et al. 2004).

Typically, this species emerges in early winter following rainfall but remains inactive until spring; plants continue to grow through summer.

Directed surveys for this species should be conducted during the flowering period (spring through summer).

Current Distribution in the Action Area: Ripgut brome was observed in mildly to heavily disturbed areas in the western portion of the Project alignment ROW. It was frequently observed as part of a suite of annual non-native grasses colonizing postburn scrub, coastal foothills, roadsides, and pasturelands (see Appendix B). Ripgut brome was not observed east of McCain Valley (Section 9B, MP 42).

Control Options:

Physical Control. Hand-pulling small populations of ripgut brome prior to seed production is an effective physical control measure. The best time is when seeds have formed but are not completely ripe; they contain a milky substance at this time (Holloran et al. 2004).

Larger infestations can be removed by mowing or weed-whipping before seeds mature. Cut to two inches and remove the bolting crown (Holloran et al. 2004).

Chemical Control. Apply glyphosate when most plants have reached the late bud to flower stage of growth.

Treatment Extent: Ripgut brome will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Spring–summer: Locate all populations within impact areas. Late summer–fall: Treat populations. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.4 Italian Thistle (*Carduus pycnocephalus*)

Other Weed Designation(s): None.

Description: Italian thistle is native to the Mediterranean and was introduced into California in the 1930s. It now occurs throughout much of the state at elevations below 3,000 feet (Bossard and Lichti 2000).

It is an annual or biennial thistle with a basal rosette and is more slender than many other thistle species. The stems, undersides of the spine-tipped leaves, and flower

heads are covered in a cobwebby down. On the leaves, the terminal lobe spine is longer and more robust than the other spines, and the stems are slightly winged. Pink or purple inflorescences, about one-half inch across, occur in tight terminal clusters of two to five in the fall (Holloran et al. 2004; Bossard and Lichti 2000).

Reproduction is exclusively by seed. The outer (ray flower) seeds do not have bristles and remain in the flower head until it drops. Inner (disk flower) seeds are sticky with a thin gummy coating when they first develop, which allows them to attach to passing animals or machinery; they also have bristles for wind dispersal. Germination rates are very high and seeds can remain viable in the soil for up to 10 years (Holloran et al. 2004). It thrives on disturbed soil under drought conditions (Bossard and Lichti 2000).

Current Distribution in the Action Area: Italian thistle was observed in two locations on the Project alignment ROW. It was found growing within the ROW and within the site of a former proposed construction yard southeast of the city of Poway (Section 4A, MP 112). Use of this area as a construction yard has been cancelled. Italian thistle was also observed growing in low densities along Bell Bluff Truck Trail (a dirt road) within Engelmann oak woodland near the proposed Suncrest Substation (Section 7, MP 89).

Control Options:

Physical Control. This plant will resprout if the entire root crown is not removed. Digging up plants is feasible only for small infestations and the disturbance may induce increased germination the following year of seeds in the soil. Repeated weed whipping prior to flowering can also be effective (Holloran et al. 2004).

Chemical Control. Glyphosate can be applied prior to seeding. Other herbicides that have been reported to be effective include clopyralid (used on flowering plants, causes flowers to abort); diquat (for seedlings); and 2,4-D ester and MCPA herbicide (Agritox) (Bossard and Lichti 2000). In addition, picloram has been specifically recommended for use in California, applied in February or March at concentrations of 1/8 to 1/16 lb acid equivalent per acre (Pitcher and Russo 1988).

Treatment Extent: Italian thistle will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate populations within impact areas of the Project alignment ROW. Spring: Treat populations. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.5 Tocalote (*Centaurea melitensis*)

Other Weed Designation(s): None.

Description: Tocalote is native to Europe. It is an erect winter annual with gray–green foliage that starts as a basal rosette, and the yellow spiny flower heads bloom in May and June. It has rigid branching, winged stems, and the basal leaves are deeply lobed. Flower heads are clustered, spiny, and yellow, and the spines are branched at the base (Whitson et al. 2006).

Early detection and treatment is critical because once the plants flower, they can produce viable seeds within eight days (Chambers and Hawkins 2002).

Current Distribution in the Action Area: Tocalote was observed in mildly to heavily disturbed areas in the western portion of the Project alignment ROW. It was frequently observed in trace to medium densities within coastal scrub, non-native grasslands, roadsides, and pasturelands on coastal foothills (see Appendix B).

Control Options:

Physical Control. Small infestations can be hand-dug. This is especially effective on new introductions as disturbance of the soil will not induce germination of seeds in the seed bank. Care should be taken not to spread seeds when hand-pulling. Placing the pulled plants in a garbage bag is a good measure to prevent seed spread. For large-scale infestations, tilling so that the roots are separated below the soil surface should provide complete control of these plants as long as rainfall is not expected, which can be a recipe for rapid reinfestation (DiTomaso and Gerlach 2000).

Weed whipping or mowing can be used effectively. Mowing is best when conducted at a stage where two to five percent of the seed heads are flowering and only when the lowest branches of plants are above the height of the mower blades. Repeated treatment should be expected (DiTomaso and Gerlach 2000).

Chemical Control. Mature plants are harder to control than immature plants in the rosette stage. Effective herbicides include 2,4-D, clopyralid, and glyphosate. Chemical control is an appropriate tool to use (1) on large infestations, especially when desirable plants are abundant in the understory; (2) in highly productive soils; and (3) around the perimeter of infestations to contain their spread. Picloram may be applied to seedlings or rosettes with some effect. Preemergent herbicides may provide additional control, when applied from late fall to early spring (Chambers and Hawkins 2002).

Treatment Extent: Tocalote will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Tilling or mowing should be done when soil is dry and rainfall is not expected. Early spring: Locate populations within impact areas of the Project alignment ROW. Spring: Treat populations. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.6 Bull Thistle (*Cirsium vulgare*)

Other Weed Designation(s): None.

Description: Bull thistle is native to Europe, western Asia, and North Africa; it arrived in the United States as a crop contaminant. This biennial thistle produces a basal rosette the first year and bolts the summer of the second year, reaching heights of 2 to 5 feet before setting seed and dying. Distinguishing characteristics include dark green leaves with the texture of sandpaper, winged stems, and large purple flower heads one to two inches wide with feathery bristles on the pappus (Randall 2000).

Bull thistle reproduces exclusively by seed, and each plant can produce thousands of seeds, which germinate in the spring and fall (Holloran et al. 2004). This plant thrives in disturbed areas and outcompetes native plant species.

Current Distribution in the Action Area: Bull thistle was observed within Engelmann oak woodland within the footprint of the proposed Suncrest Substation (Section 7, MP 89) (see Appendix B).

Control Options:

Physical Control. If the infestation is small, clip and bag flower heads prior to seed set. Plants can be pulled, cut (at least one to two inches below the ground and follow up in case of resprouting), or mown (close to the ground after bolting but prior to flowering; repeat one month later) (Holloran et al. 2004).

Chemical Control. Rosettes should be treated with herbicide in the fall or spring. Various herbicides have been recommended, including 2,4-D at 0.45 lbs/acre; dicamba at 0.14 lbs/acre; picloram at 0.89 lbs/acres, and various tank mixes of these chemicals (Randall 2000). USACE (2006) lists 2,4-D, clopyralid, dicamba, and dicamba + 2,4-D, metsulfuron methyl, and triclopyr + 2,4-D as herbicides that have been used to treat bull thistle.

Treatment Extent: Bull thistle will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate populations within impact areas of the Project alignment ROW. Spring: Treat individuals. All cut flowers should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck). Stems and branches can be left to decompose on-site only if the plant has not yet gone to seed and all flower heads have been removed (Holloran et al. 2004).

6.2.4.7 Artichoke Thistle (*Cynara cardunculus)*

Other Weed Designation(s): None.

Description: Artichoke thistle, also called cardoon, is a perennial herb that may grow up to 6 feet high and 6 feet wide with a cluster of large, purple flower heads. The plant reproduces from seed and may colonize riparian woodlands, natural openings in chaparral and sage scrub, or native grasslands (Pepper and Kelly 1994). Artichoke thistle is native to the Mediterranean and has become widespread over California, Australia, New Zealand, and South America. It is believed that invasive populations of this species are derived from the cultivated variety of artichoke. Artichoke thistle is found in disturbed areas and has also been observed colonizing coastal sage scrub habitat, riparian areas, and native grasslands (Pepper and Kelly 1994).

Current Distribution in the Action Area: A small population of artichoke thistle was observed in medium densities colonizing non-native grassland within and adjacent to the Project alignment ROW southeast of Poway (Section 5, MP 110.7) (see Appendix B).

Control Options:

Physical Control. As artichoke thistle has a large, storage taproot, digging and grubbing can only be effective if entire rootstock is removed. In smaller populations seed heads may be removed to stop seed production in areas where plant removal is not an option (Pepper and Kelly 1994).

Chemical Control. Glyphosate has been shown effective to use in cut stumps applications and as foliar spray in controlling artichoke thistle. Cut stump applications involve cutting and bagging the basal rosette of plants and applying glyphosate (25 percent) to the exposed root. Cut stump applications are recommended in pre-bolting plants. In cases where artichoke thistle has bolted, a glyphosate (two percent) foliar spray has been shown effective as a control (Kelly 2000).

Treatment Extent: Artichoke thistle will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Spring: Remove basal rosettes and apply herbicide to cut stumps. Summer: Bag seed heads and apply foliar spray to bolted individuals.

6.2.4.8 Stinkwort (*Dittrichia graveolens*)

Other Weed Designation(s): None.

Description: Stinkwort is an exotic aromatic annual in the sunflower family. It can grow up to 3 feet tall and has small, light green glandular foliage. It is strongly branched with small, tarplant-like yellow flowers (Cal-IPC 2009).

Stinkwort is a recent arrival to California and appears to be expanding throughout its range (Preston 1997). It forms dense colonies on disturbed areas including roadsides, unpaved parking lots, and trail edges. The sticky character of these allows them to disperse anthropogenically via attachment to clothing, tools, and vehicles.

Current Distribution in the Action Area: A small population of stinkwort was observed in low densities at the site of a former proposed construction yard (Stowe/Kirkham Yard) in Poway north of MP 116.5. Use of this area as a construction yard has been cancelled (see Appendix B).

Control Options:

Physical Control. Stinkwort can be controlled by repeated mowing before plants begin to flower. If present, flower heads should be bagged and removed from the site.

Chemical Control. Glyphosate (Roundup Pro®), aminopyralid (Milestone®), and Clopyralid (Transline®) have been shown to be effective in controlling stinkwort when applied before the plant flowers (June–August).

Treatment Extent: Stinkwort will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early summer: Mow emergent plant rosettes; apply herbicide. Late summer: Repeat early summer treatment; bag and remove any seed heads.

6.2.4.9 Short-pod Mustard (*Hirschfeldia incana*)

Other Weed Designation(s): None.

Description: Short-pod mustard is native to Europe and has been established in California since the early 1900s. Unlike many of the other common annual mustards, it does not require ground disturbance to spread. It blooms May through September. It frequently infests grasslands and coastal scrubs (Cal-IPC 2009).

Current Distribution in the Action Area: Short-pod mustard was observed intermittently throughout western cismontane foothills and desert transitional areas of the Project alignment ROW colonizing disturbed scrub, chaparral, and grasslands (see Appendix B). Short-pod mustard was not observed east of MP 34.

Control Options:

Manual Methods of Control. Plants can be hand-dug prior to flowering/fruiting, bagged, and removed from the site.

Chemical Control. Glyphosate should be applied to short-pod mustard as a foliar spray in the spring and early summer to plants in their rosette stage, before they bolt (Tomsovic 2009).

Treatment Extent: Short-pod mustard will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Spring: Locate populations within impact areas of the Project alignment ROW. Summer: Treat populations. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.10 Foxtail Barley (*Hordeum murinum*)

Other Weed Designation(s): None.

Description: Foxtail barley is a cool season annual grass that grows up to 3 feet tall and is native to Europe. It is thought to have become naturalized in California at the time of the Spanish missionaries (1700s). Foxtail barley reproduces by seed and forms dense inflorescences between April and June. The spiky inflorescence is clustered around a central axis and easily breaks apart post-senescence. Foxtail barley is known to inhabit relatively mesic areas within habitats such as roadsides, fields, pastures, and disturbed areas (DiTomaso and Healy 2007).

Current Distribution in the Action Area: Foxtail barley was observed as part of a suite of annual non-native grasses colonizing postburn scrub, coastal foothills, roadsides, and pasturelands (see Appendix B).

Control Options:

Physical Control. Hand-pulling is an effective control measure for small populations of foxtail barley, if pulled prior to seed production.

Chemical Control. Glyphosate is an effective herbicide for controlling populations of foxtail barley.

Treatment Extent: Foxtail barley will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate populations within impact areas of the Project alignment ROW. Mid-winter to late spring: Treat individuals. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.11 Fountain Grass (*Pennisetum setaceum*)

Other Weed Designation(s): None.

Description: Fountain grass is native to Africa and the Middle East; it was introduced for its ornamental value. It is a perennial bunchgrass with attractive feathery bottlebrush inflorescences that generally bloom from July through October. It has been a successful invader of wildlands throughout the world because of its ability to adapt physiologically and morphologically to different environments (Lovich 2000).

This species crowds out native vegetation and can form a dense monoculture of flammable fuel for fires. It is well adapted to and even promoted by burning (Lovich 2000).

Fountain grass has many reproductive attributes that ensure its success, including production of copious amounts of seeds; the ability to reproduce by either fertilized or unfertilized seeds; and long seed life (Lovich 2000).

Current Distribution in the Action Area: Fountain grass was observed in mildly to heavily disturbed areas in the western portion of the Project alignment ROW. It was frequently observed as part of a suite of annual non-native grasses colonizing postburn scrub, coastal foothills, roadsides, and pasturelands (see Appendix B). It was found in low to dense densities on canyon slopes on MCAS Miramar (Section 4A, MP 112–MP 115). Fountain grass was also observed in trace amounts near El Capitan Reservoir (Section 5, MP 98–MP 107).

Control Options:

Manual Methods of Control. Small infestations can be hand-dug, with care to remove the entire root crown. Plant materials should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

Chemical Control. Foliar application of glyphosate when plants are actively growing. Preemergent herbicide may also be used once an area has been treated.

Treatment Extent: Fountain grass will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Mid-spring: Survey and locate all individuals in impact areas. Physical: This perennial grass may be pulled at any time of the year. Chemical: Herbicides should be applied when plants are actively growing.

6.2.4.12 London Rocket (*Sisymbrium irio*)

Other Weed Designation(s): None.

Description: London rocket is a highly competitive winter annual, native to Eurasia. The edges of the first true leaves of seedlings are often somewhat indented, and most or all of the early leaves are deeply indented. The stems of mature plants bear long, tubular seedpods and have a small cluster of yellow flowers at the tip. This winter annual's typical flowering period is January to April (i.e., earlier than many native and non-native species). The plants usually grow to about 2 feet tall. London rocket is found in irrigated fields, moist fallow fields, and roadsides.

Current Distribution in the Action Area: London rocket was observed at two locations within or adjacent to the Project alignment ROW (see Appendix B). London rocket was

observed within Engelmann oak woodland along Bell Bluff Truck Trail (a dirt road) near the proposed Suncrest Substation (Section 7, MP 89). It was also observed in McCain Valley growing within washes and in chamise chaparral (Section 9B, MP 41 – MP 42).

Control Options:

Manual Methods of Control. Plants can be hand-dug prior to flowering/fruiting, bagged, and removed from the site.

Chemical Control. Several herbicides have been used to control *Sisymbrium* spp., including 2,4-d, imidazolinone, sulfonylurea, and triazolopyrimidine herbicides, though all may not be available for use in California (Adkins et al. 1997; Boutsalis and Powles 1995; Wolf et al. 1992; Young et al. 1992). NPS (2004) also identifies glyphosate as an appropriate herbicide. London rocket is resistant to Group B/2 herbicides, known as acetolactate synthase inhibitors (Boutsalis and Powles 1995).

Treatment Extent: London rocket will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early-spring: Locate populations within impact areas of the Project alignment ROW. Spring: Treat populations. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

6.2.4.13 Foxtail Fescue (*Vulpia myuros*)

Other Weed Designation(s): None.

Description: Foxtail fescue is an annual grass up to 2 feet tall, native to Europe. Distinguishing characteristics include folded leaf blades, hairless leaf blades and leaf sheaths, and narrow panicles (Whitson et al. 2006).

Current Distribution in the Action Area: Foxtail fescue was observed in relatively mesic areas within mildly to heavily disturbed areas in the western portion of the Project alignment ROW. It was frequently observed as part of a suite of annual non-native grasses colonizing postburn scrub, coastal foothills, roadsides, and pasturelands (see Appendix B).

Control Options:

Physical Control. Hand-pulling is an effective control measure for small populations of foxtail fescue, if pulled prior to seed production.

Chemical Control. Glyphosate is an effective herbicide for reducing populations of foxtail fescue.

Treatment Extent: Foxtail fescue will be treated and controlled within all impact areas associated with the Project alignment ROW.

Treatment Schedule: Early spring: Locate populations within impact areas of the Project alignment ROW. Mid-winter to late spring: Treat individuals. All cut vegetative material should be bagged, carried off-site, and disposed of in a responsible and legal manner to prevent the spread of weeds. Care should also be taken during transport of the materials to ensure they are secure (and do not, for example, fly out of the back of a truck).

7.0 Conclusion

Twenty species, including seven Cal-IPC species with a “High” rating and thirteen Cal-IPC species with a “Moderate” rating, were observed within and immediately adjacent to the alignment ROW. Of these, one County of San Diego “target noxious” species (yellow starthistle) and two wildfire-promoting species (Saharan mustard and cheatgrass) were observed. San Diego County “target noxious” species and designated wildfire-promoting species will be controlled throughout the ROW and associated laydown areas. All other species will be treated and controlled only within mapped impact areas. All species must be treated prior to construction or when treatments would be most effective based on the species phenology. Construction weed abatement measures will be implemented during project implementation and long-term invasive plant monitoring and control will be required. Long-term monitoring and adaptive control measures will be implemented to reduce the threats from future weed challenges.

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