Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

Quino Host Plant (Dudek)

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2m

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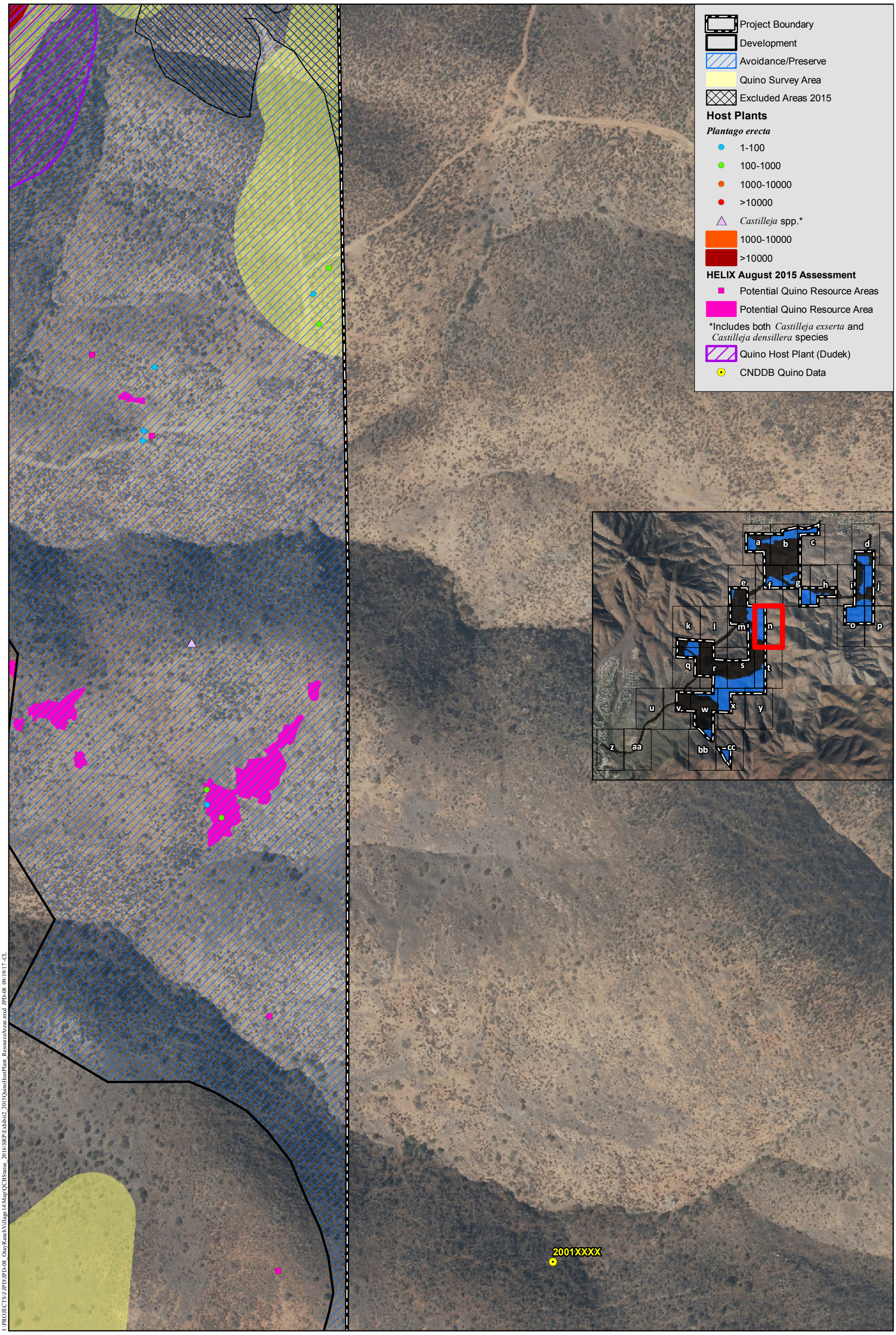

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2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N 0 200 Feet

Exhibit 2n

Project Boundary

Avoidance/Preserve

Host Plants

Plantago erecta

1-100

100-1000

1000-10000

>10000

Castilleja spp.*

1000-10000

>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas

Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2o

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Project Boundary

Avoidance/Preserve

Host Plants

Plantago erecta

1-100

100-1000

1000-10000

>10000

Castilleja spp.*

1000-10000

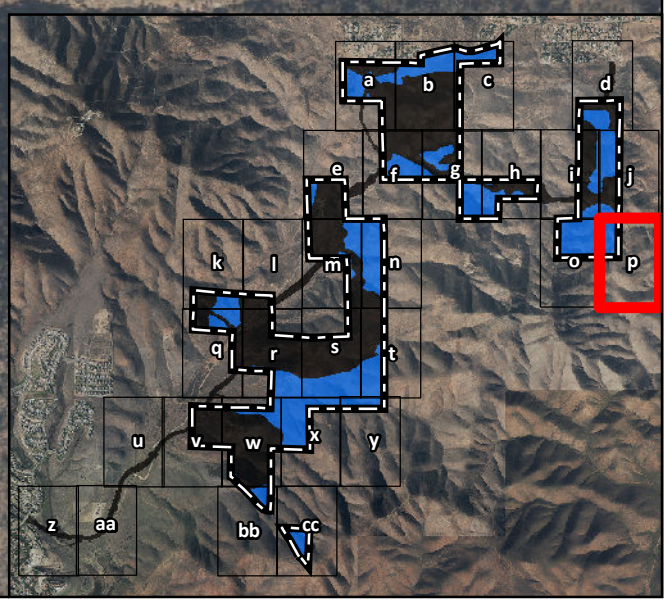
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas

Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species



2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2p

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Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*
1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

CNDDB Quino Data
USFWS Quino Data

Proctor Valley Road

1971
1990XXXX

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2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2q

Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb cc

I:\PROJECTS\JPD\JPD-08_OtayRanchVillage14\Map\QCBStatus_2016\SRPExhibit2_2015QuinoHostPlant_ResourceAreas.mxd JPD-08 09/19/17-CL

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N 0 200 Feet

Exhibit 2r

Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

USFWS Quino Data

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb cc

2001

I:\PROJECTS\OJPD\JPD-08_OtayRanchVillage14\Map\QCBStatus_2016\SRP\Exhibit2_2015QuinoHostPlant_ResourceAreas.mxd JPD-08 09/19/17-CL

09/19/17-CL

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2s

Project Boundary
Development
Avoidance/Preserve
Quino Survey Area

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

L:\PROJECTS\JPD\JPD-08_OtayRanchVillage14\Map\QCBStatus_2016\SRP\Exhibit2_2015QuinoHostPlant_ResourceAreas.mxd JPD-08 09/19/17-CL

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2t

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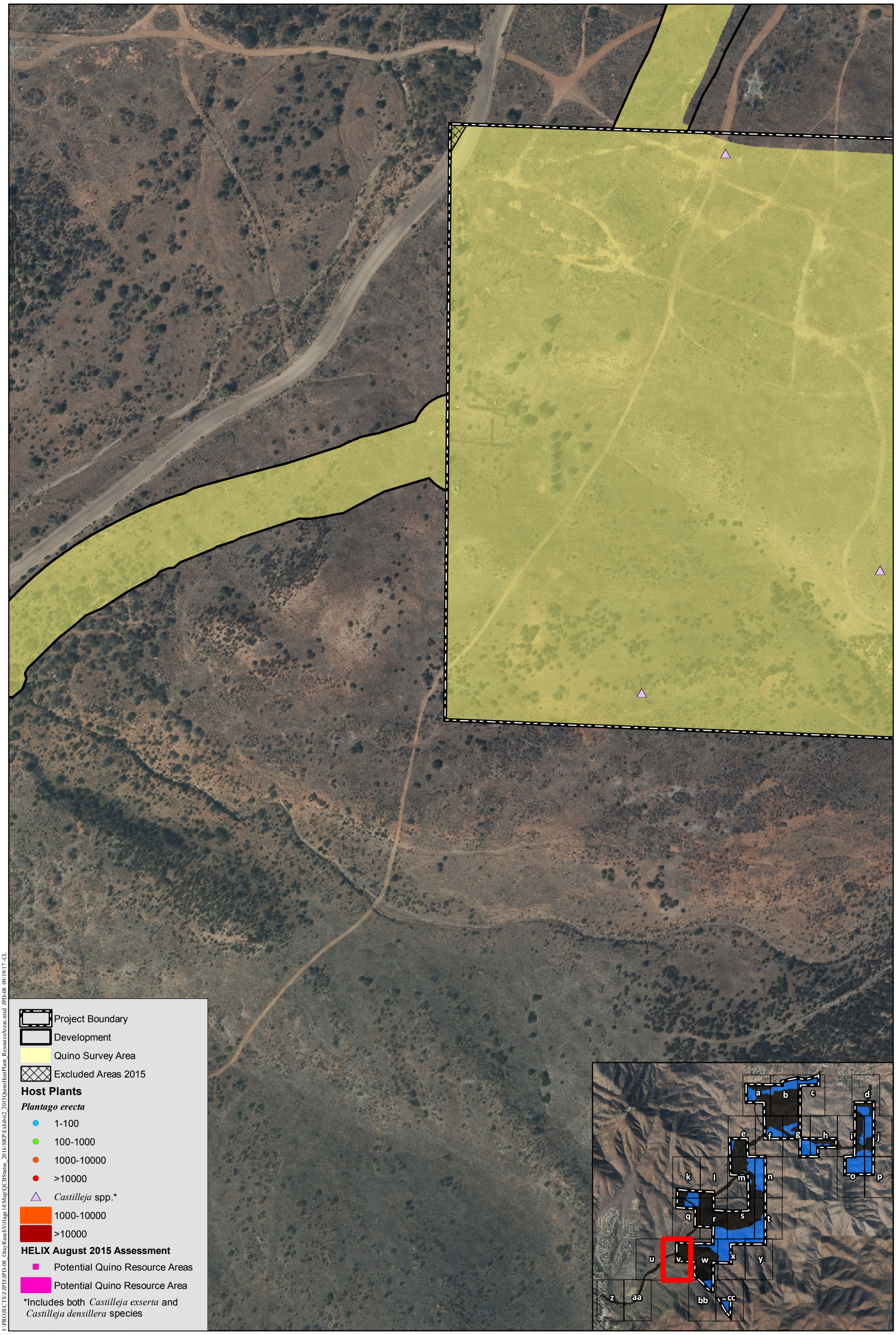
2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2u



2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2v

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Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb cc

I:\PROJECTS\JJPD\JPD-08_OtayRanchVillage14\Map\QCBStatus_2016\SRP\Exhibit2_2015QuinoHostPlant_ResourceAreas.mxd JPD-08 09/19/17-CL

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2w

Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v w x y z aa bb cc

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

Exhibit 2x

HELIX Environmental Planning

N 0 200 Feet

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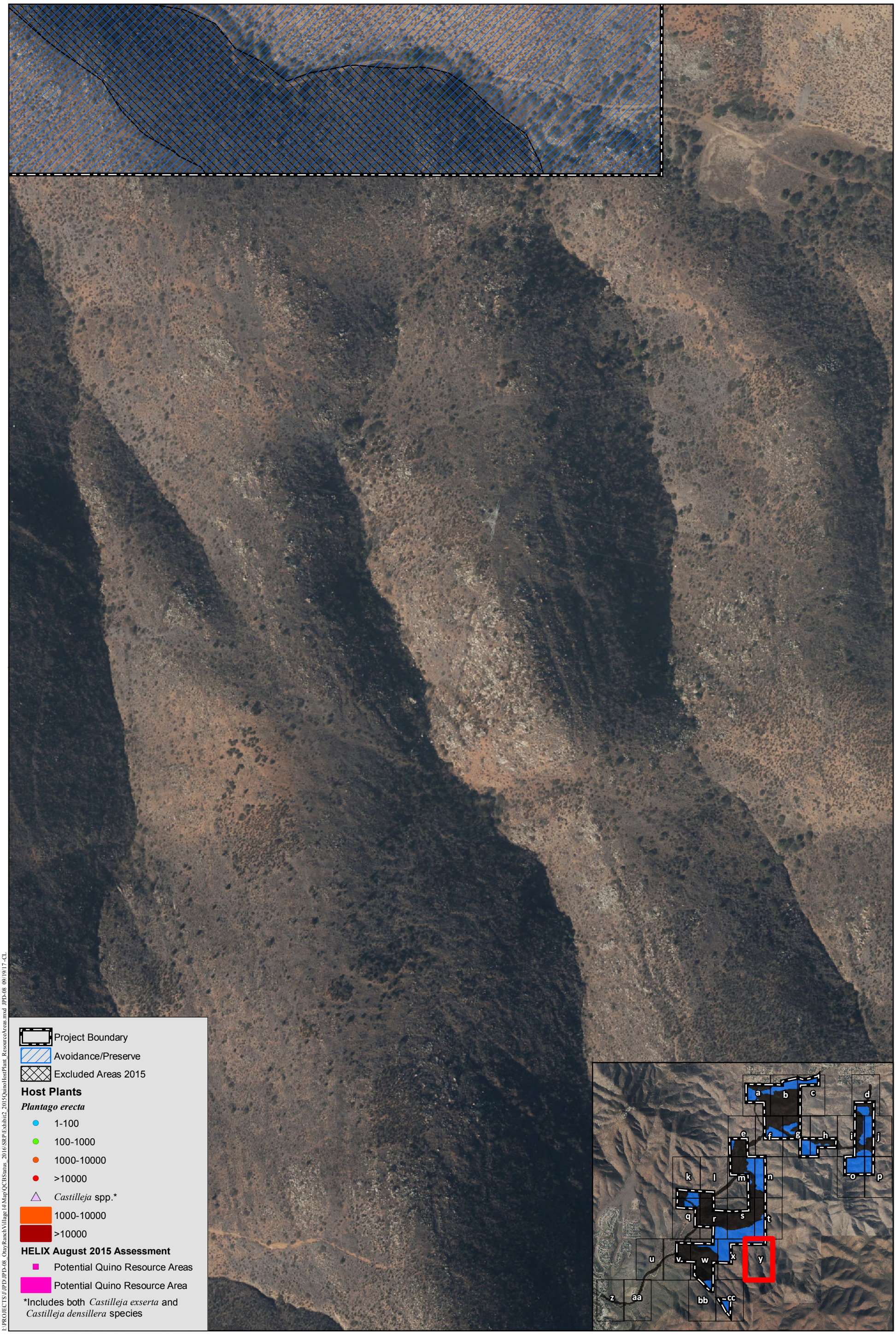

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2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N 0 200 Feet

Exhibit 2y

Project Boundary
Development
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2z

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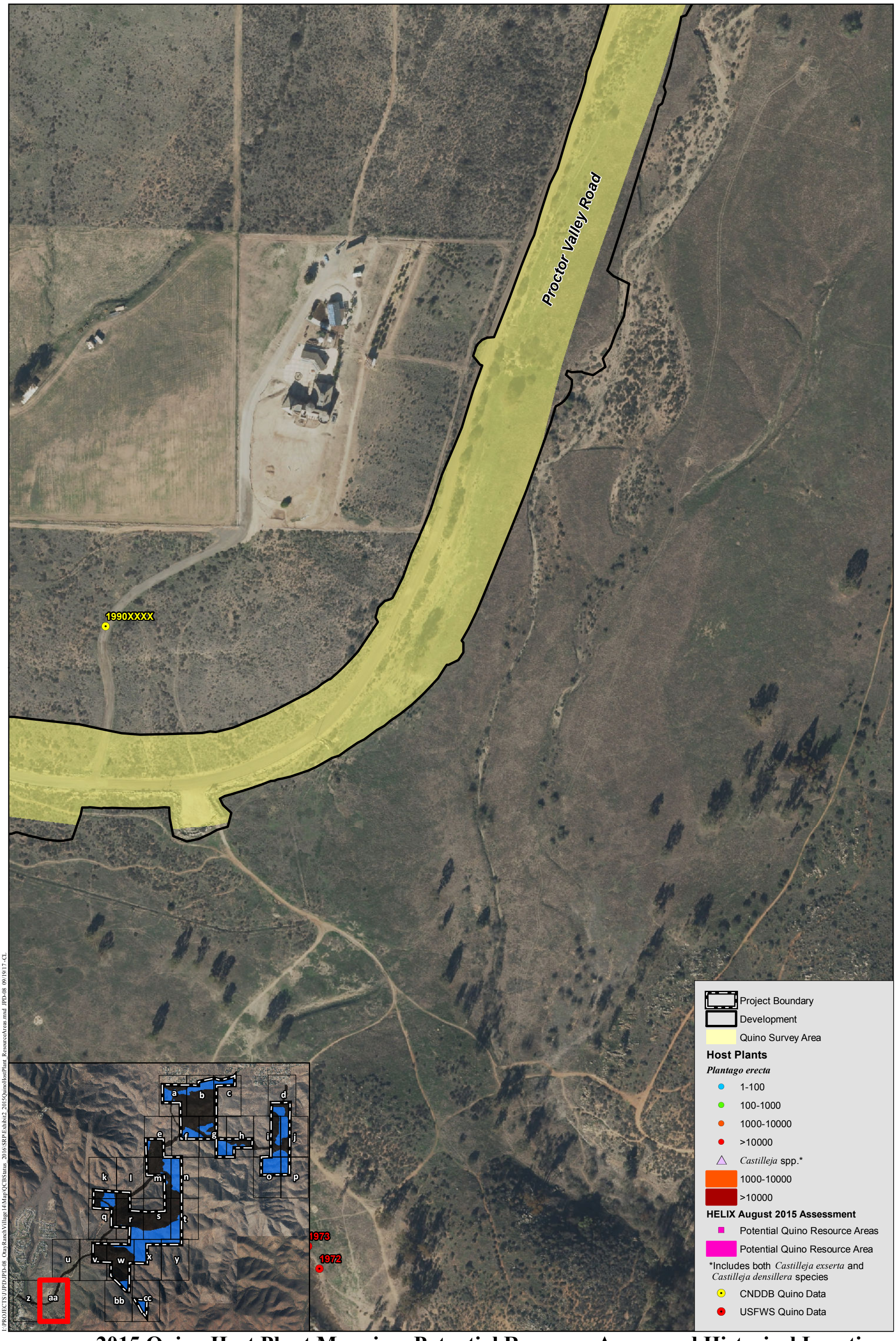

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2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N 0 200 Feet

Exhibit 2aa

Project Boundary
Development
Avoidance/Preserve
Quino Survey Area
Excluded Areas 2015

Host Plants

Plantago erecta

1-100
100-1000
1000-10000
>10000

Castilleja spp.*

1000-10000
>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas
Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

USFWS Quino Data

2011
2011
2008

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

0 200 Feet

Exhibit 2bb

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Project Boundary

Avoidance/Preserve

Host Plants

Plantago erecta

1-100

100-1000

1000-10000

>10000

Castilleja spp.*

1000-10000

>10000

HELIX August 2015 Assessment

Potential Quino Resource Areas

Potential Quino Resource Area

*Includes both *Castilleja exserta* and *Castilleja densillera* species

CNDDB Quino Data

USFWS Quino Data

a b c d e f g h i j k l m n o p q r s t u v. w x y z aa bb cc

2000XXXX

2000

2009

1:\PROJECTS\JJPD\JPD-08_OtayRanchVillage14\Map\QCBStatus_2016\SRP\Exhibit2_2015QuinoHostPlant_ResourceAreas.mxd JPD-08 09/19/17-CL

2015 Quino Host Plant Mapping, Potential Resource Areas, and Historical Locations

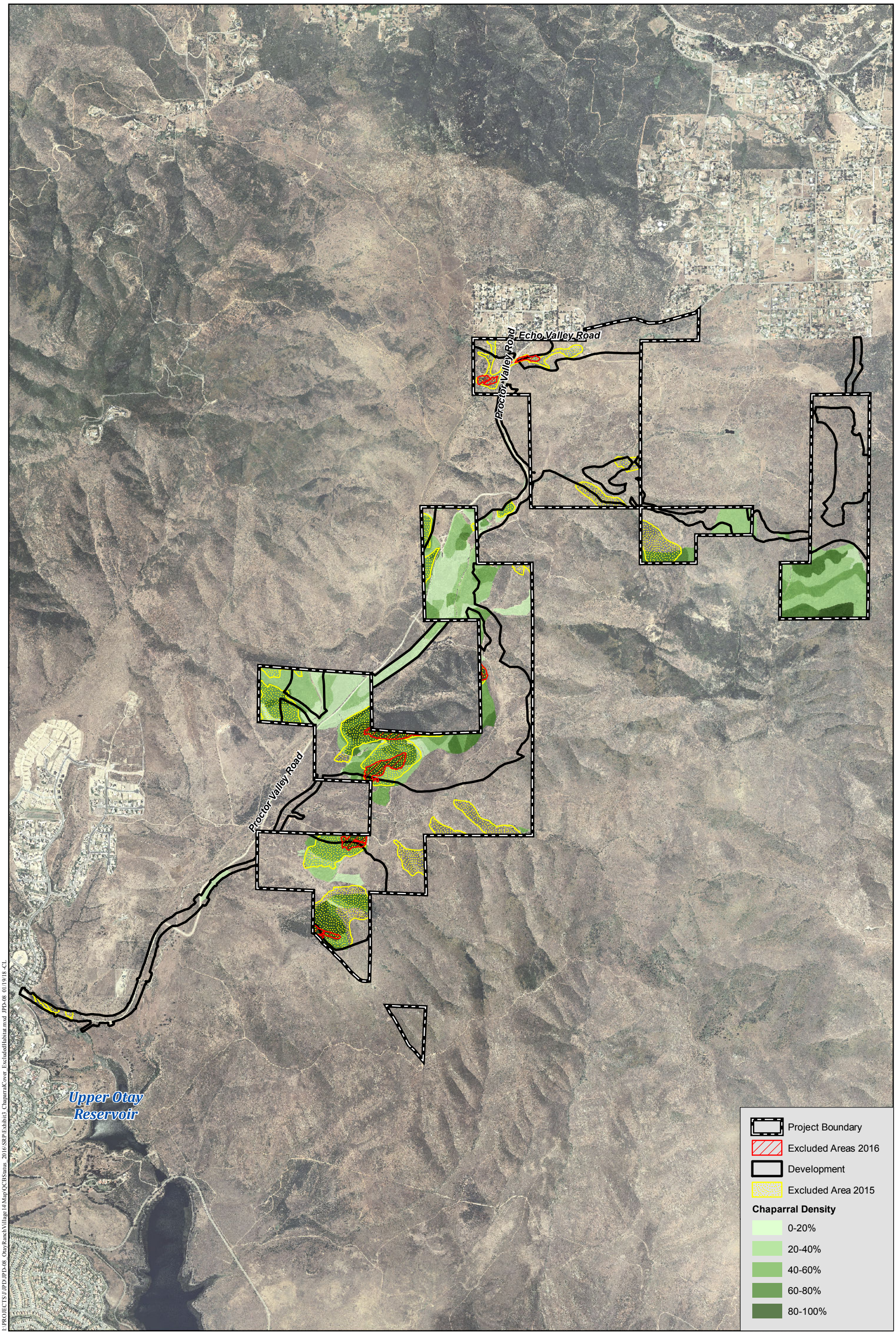
OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 200 Feet

Exhibit 2cc



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Chaparral Cover and QCB Excluded Habitat

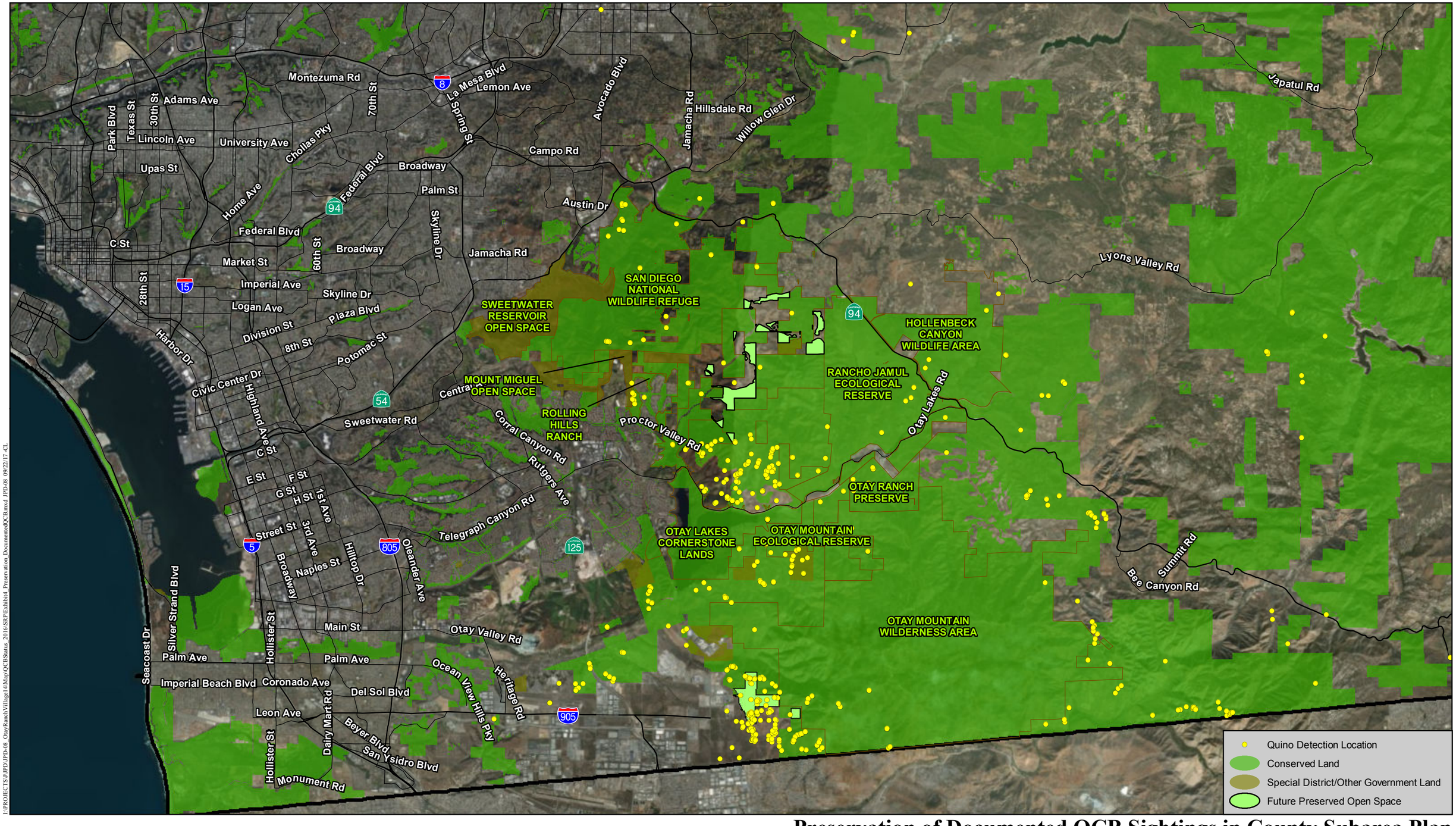
OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N

0 2,100 Feet

Exhibit 3



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Preservation of Documented QCB Sightings in County Subarea Plan

OTAY RANCH VILLAGE 14 AND PLANNING AREAS 16/19
DEVELOPMENT FOOTPRINT AND PRESERVE

HELIX Environmental Planning

N 0 2 Miles

Exhibit 4

HELIX
Environmental Planning

Otay Ranch Proctor Valley Village & Preserve

Quino Checkerspot Butterfly Survey Report

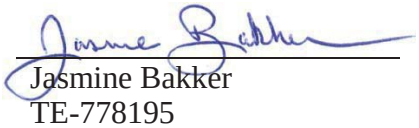
June 3, 2015

Prepared for:
Jackson Pendo Development Company for GDCI Proctor Valley, LP
2245 San Diego Avenue, Suite 223
San Diego, CA 92110

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

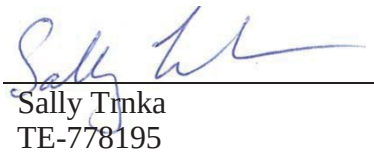
Otay Ranch Proctor Valley Village & Preserve
Quino Checkerspot Butterfly Survey Report

I certify that the information in this survey report and attached exhibits fully and accurately represent our work:

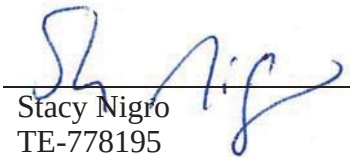


Jasmine Bakker
TE-778195

Erica Harris
TE-778195



Sally Trnka
TE-778195

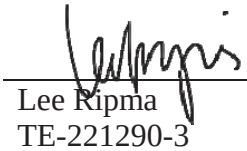


Stacy Nigro
TE-778195

Jim Rocks
TE-063230-4

Melanie Rocks
TE-082908-1

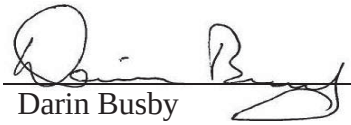
Brian Lohstroh
TE-063608-5



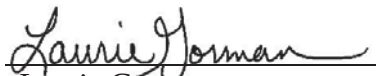
Lee Ripma
TE-221290-3

Garrett Huffman
TE-20186A-1

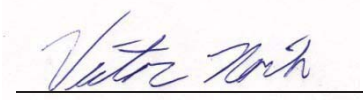
Melanie Dicus
TE-049175-3



Darin Busby
TE-115373-3



Laurie Gorman
TE-233367-2



Victor Novick
TE-069534-2

Travis Cooper
TE-170389-5

Alicia Hill
TE-06145B-0

Otay Ranch Proctor Valley Village & Preserve
Quino Checkerspot Butterfly Survey Report

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

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1.0 INTRODUCTION

This report documents the results of HELIX Environmental Planning, Inc.'s (HELIX's) 2015 Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) survey of the Proctor Valley - Otay Ranch Village 14 Project site. HELIX biologists performed the protocol survey (comprising seven site visits) under HELIX's Threatened/Endangered Species Permit No. TE778195. Consultants (Busby Biological Services, Inc. and Rocks Biological) conducted surveys under their individual permits (please refer to the title page for a complete list of individual permit numbers).

The Project site is located predominantly within the County of San Diego and portions of the City of Chula Vista in southwestern San Diego County, California in an area commonly known as Proctor Valley. It is further located within Sections 17, 18, 19, 20, 25, and 30 of Township 17 South, Range 1 West and 1 East of the U.S. Geological Survey (USGS) 7.5-minute Jamul Mountains quadrangle map (Figure 1). The Project site and associated study area are situated along Proctor Valley Road and are southeast of San Miguel Mountain, north of Upper Otay Reservoir, and west of the Jamul Mountains. The Project site also includes portions of the California Department of Fish and Wildlife Rancho Jamul Ecological Reserve located in Otay Ranch Village 14. Elevations range from approximately 560 to 1,320 feet above mean sea level. Vegetation communities within the study area consist primarily of chamise chaparral, coastal sage scrub, non-native grassland, and southern mixed chaparral. Eucalyptus woodland and disturbed habitat comprising unpaved roads and trails are also present.

2.0 METHODS

The study area comprises the proposed development footprint, including limits of brush management and potential Proctor Valley Road realignment areas, and totals approximately 778 acres (Figure 2). A QCB habitat assessment of the study area was conducted by HELIX biologist Jasmine Bakker on February 12, 2015. Based on this habitat assessment, approximately 216 acres were excluded from the survey area, largely as dense chamise chaparral or southern mixed chaparral. The 562-acre QCB survey area was divided into smaller areas and distributed amongst the surveyors to ensure 100 percent coverage of the survey area.

Seven weekly protocol surveys were conducted in accordance with the U.S. Fish and Wildlife Service (USFWS) Survey Protocol for Quino Checkerspot Butterfly (2014) by HELIX biologists Jasmine Bakker, Erica Harris, Stacy Nigro, and Sally Trnka, and consultants Busby Biological Services, Inc. and Rocks Biological (Appendix A). HELIX biologists Tara Baxter, Laura Moreton, and Ben Rosenbaum participated as supervised individuals. Surveys began on February 17, 2015 and continued through April 2, 2015. The first QCB in Riverside County was reported at Oak Mountain by Adam Malisch on February 26, 2015 (Quino Biologists United 2015). The first QCB in San Diego County was reported at Marron Valley by Alison Anderson on March 12, 2015; however, additional sightings of QCB within San Diego County were limited. The seventh and last survey was conducted the week of March 30; however, the seventh survey was not completed for the entire survey area because surveys were discontinued due to host and nectar resources conditions and limited QCB sightings in San Diego County (see additional details in Section 3.0).

Surveys consisted of walking through appropriate habitat and identifying all butterflies observed by sight and with the aid of binoculars. Larval host plants were mapped with the aid of hand-held Global Positioning System (GPS) units (Figure 3), and potential nectar plant species were documented. Surveys covered between 5 and 10 acres per hour, with the exception of the first survey conducted on February 20 due to limited protocol weather conditions.

Identification of butterflies was based on personal knowledge, museum specimens, the San Diego Natural History Museum website, and field guides by Shiraiwa (2009) and Glassberg (2001). Other nomenclature for this report is taken from Holland (1986) and Oberbauer (2008) for vegetation communities and Baldwin et al. (2012) for plants.

3.0 RESULTS

No QCB or QCB larvae were detected within the survey area during the 2015 protocol surveys.

Surveyors observed a total of 3,849 butterfly individuals representing at least 32 butterfly species during the seven surveys. The most common butterflies observed were Behr's metalmark (*Apodemia mormo virgulti*), funereal duskwing (*Erynnis funeralis*), southern blue (*Glaucopsyche lygdamus australis*), ladies (*Vanessa* spp.), and Sarah's orangetip (*Anthocharis sara sara*).

Two larval host plant species were observed within the survey area: dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta*). Parish's owl's clover (*Castilleja densiflora*), a potential host plant species similar to purple owl's clover, was more commonly observed in small patches throughout the survey area than purple owl's clover. Dwarf plantain was mapped in patches of low density (1 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 – 10,000 plants); the owl's clover were mapped in low density patches (Figure 3). High density patches of dwarf plantain were mapped as polygons if they were in areas larger than approximately 250 square feet, and a few of those were reported to have greater than 10,000 plants. Host plants were in good condition during the first 6 weeks of surveys and representative of a typical year; however, by the seventh week dwarf plantain numbers decreased and most individuals has senesced.

Seven potential nectar sources known to be utilized by QCB were noted within the survey area: popcorn flower (*Cryptantha* and *Plagiobothrys* spp.), California buckwheat (*Eriogonum fasciculatum*), goldfields (*Lasthenia* spp.), ground pink (*Linanthus dianthiflorus*), goldenstar (*Muilla maritima*), rancher's fiddleneck (*Amsinckia intermedia*), and onion (*Allium* sp.). Other potential nectar sources were documented on survey forms and field notes. California buckwheat was a dominant within coastal sage scrub and was observed flowering throughout the seven surveys. Popcorn flower was present throughout the survey area and onion was common within patches of grassland intermixed with the chaparral communities on the north-facing slopes. Ground pink and goldfields occurred in smaller, isolated patches, and rancher's fiddleneck occurred occasionally along the road and trails.

Dominant plant species within the coastal sage scrub were primarily California buckwheat, California sagebrush (*Artemisia californica*), San Diego sunflower (*Bahiopsis laciniata*), laurel sumac (*Malosma laurina*), and deerweed (*Acmispon glaber*). Dominant plant species within the