DRAFT

HAYASHI PRESERVE
RESOURCE MANAGEMENT PLAN

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OCTA

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Acronyms and Abbreviations

ASA	Archaeological Sensitivity Assessment
BFD	Brea-Fullerton Fire Department
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
	Chino Hills State Park
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRAM	California Rapid Assessment Method
EMP	Environmental Mitigation Program
EOC	Environmental Oversight Committee
EPA	U.S. Environmental Protection Agency
ESLs	environmentally sensitive lands
FMP	Fire Management Plan
FR	Federal Register
IA	Implementing Agreement
IPM	integrated pest management
Msl	mean sea level
NCCP/HCP	Natural Community Conservation Plan/Habitat Conservation Plan
NROC	Nature Reserve of Orange County (renamed Natural Communities Coalition)
OCFA	Orange County Fire Authority
OCTA	Orange County Transportation Authority
OSC	Open Space Conservation District
PAR	Property Analysis Report
PCAs	Priority Conservation Areas
Regulatory Agencies	USACE, SWRCB, and CDFW
RMP	Resource Management Plan
	Relatively Permanent Waters
SWRCB	State Water Resources Control Board
	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
Wildlife Agencies	USFWS and CDFW

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Executive Summary

In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax to provide funding for transportation projects and programs in the county. As part of the renewed Measure M (or Measure M2), a portion of the M2 freeway program revenues were set aside for the M2 Environmental Mitigation Program (EMP) to provide funding for programmatic mitigation to offset impacts from the 13 freeway projects covered by Measure M2. The Orange County Transportation Authority (OCTA) prepared the M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan) as a mechanism to offset potential project-related effects on threatened and endangered species and their habitats in a comprehensive manner. A key component of the Plan has included the identification and acquisition of habitat Preserves to offset habitat impacts.

The Hayashi Preserve (Preserve), purchased in 2011, is one of seven properties acquired by OCTA as part of the M2 EMP. Currently the Preserve is being managed by the California Department of Parks and Recreation (i.e. Chino Hills State Park staff) via a contract with OCTA. It is anticipated that a long-term Preserve Manager (possibly CHSP) will be in place within the next five years. The Preserve Manager is responsible for the implementation of management and monitoring tasks as outlined in this long-term Resource Management Plan (RMP). This RMP will be reviewed at least every five years and updated as necessary to prioritize management actions based on the changing Preserve needs. The RMP, including subsequent revisions, must be reviewed and approved by the Wildlife Agencies. For the purposes of this RMP, "Wildlife Agencies" is defined as the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) as the implementing agencies of the NCCP/HCP. All updates to the RMP will be shared with the OCTA Environmental Oversight Committee (EOC) as part of a public meeting.

Key issues addressed and management actions set forth in this RMP include:

- **Public Access** – A goal of this RMP is to evaluate if public access and passive recreational opportunities exist within the Preserve. If opportunities exist, then they must be compatible with the protection of biological resources. Currently there are no public trails within the Hayashi Preserve. OCTA recognizes that opportunities to connect to regional trails and planning for regional trail networks will evolve and change over time. Therefore, OCTA, and the subsequent Preserve Manager, will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made. As this Preserve sits adjacent to CHSP, it is anticipated that collaboration pertaining to future trail designation would include CHSP. It is the understanding of OCTA that CHSP is currently working on a trails plan.

- **Invasive Species Control** – Invasive plants have been identified as a threat to natural communities and sensitive species on the Preserve, and invasive plant control is expected to be a long-term, ongoing management issue. The Preserve Manager will prepare an invasive plant treatment plan within two years of RMP adoption for review and approval. The treatment plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration.

- **Fire Management Plan** – The Brea –Fullerton Fire Department (BFD), Orange County Fire Authority (OCFA) and Cal Fire are all involved in fire control within the Preserve, and their first priority will be to protect life and property. The Preserve Manager will work closely with these entities, as well as CHSP to identify fire management guidelines. Within two years from adoption of the RMP, the Preserve Manager, in coordination with OCTA and these entities, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. On a parallel process, CHSP is also finalizing their own FMP. Depending on timing, with coordination from OCTA, this Preserve may be included within the CHSP FMP. If this occurs, OCTA will not prepare a separate FMP. Prior to adoption of the FMP, fire management in the Preserve will consist primarily of conducting regular maintenance of weeds along existing fire roads, and maintaining safe access for firefighters on existing fire roads.

- **Public Outreach and Education** – The RMP sets forth the objective to develop and implement a public outreach and education program to inform and engage the public on Preserve values, goals, and guidelines to promote stewardship of biological resources and compliance with Preserve rules and regulations. If the public is properly informed of the biological values, goals, and activity restrictions within the Preserve, it is more likely that management goals and guidelines will be respected and followed.

- **Biological Monitoring and Management** – The RMP sets forth Preserve-specific management objectives and actions to ensure the long-term viability of natural communities and Covered Species by protecting, managing, and enhancing populations and suitable habitat on the Preserve. Biological monitoring will be used to determine status, threats, and populations trends of Covered Species and their habitats within the Preserve.

- **Adaptive Management** – Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, the Wildlife Agencies, and other parties with technical expertise or information to inform monitoring and adaptive management. Bi-annual meetings will be scheduled where both policy and technical expertise can be integrated into the process of revising goals and objectives, refining conceptual models, adjusting management and/or monitoring activities, or determining the allocation of funding.

- **Funding** – The RMP describes and outlines the financial requirements for start-up expenditures, ongoing Preserve management, adaptive management, effectiveness biological monitoring, and responding to changed circumstances. Using funds from the M2 EMP, OCTA has begun to establish a permanent, non-wasting endowment to provide funding for the commitments of Preserve management and monitoring in perpetuity.

Chapter 1
Introduction

The long-term Resource Management Plan (RMP) described herein provides guidelines for the management and monitoring of the Hayashi Preserve in accordance with the goals and objectives set forth in the Orange County Transportation Authority's (OCTA's) M2 Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan). The Hayashi Preserve RMP provides guidance for the ongoing protection, preservation, and adaptive management of the natural resources found within the Preserve.

OCTA will contract with a Wildlife Agency-approved land management entity to implement the Hayashi Preserve RMP. The implementation of the RMP will be funded in perpetuity ("life of the RMP") through establishment of a non-wasting endowment held and distributed by a financial institution approved by the Wildlife Agencies. If the financial institution shows signs of mismanagement or poor appropriation of funds or enters into bankruptcy, endowment funds will be redirected to another financial institution upon approval from the Wildlife Agencies.

1.1 Hayashi Preserve Acquisition

The Hayashi Preserve was purchased as part of the OCTA M2 Environmental Mitigation Program (EMP) in 2011. Located in the northern part of unincorporated Orange County (Figures 1 and 2), the Preserve is a component of the overall conservation strategy of the EMP to provide comprehensive mitigation to offset the environmental impacts of OCTA's 13 M2 freeway improvement projects. The EMP program is spearheaded by the Environmental Oversight Committee (EOC), which is made up of two OCTA Board of Directors members and representatives from the California Department of Transportation (Caltrans), Wildlife Agencies, USACE, environmental groups, and public members. The goal of the EOC was to identify conservation measures that protect and enhance habitats as mitigation for potential impacts associated with the M2 funded freeway improvement projects. The EOC will continue to serve as the interagency and public forum for decisions and oversight of the EMP.

Instead of mitigating the natural resource impacts of M2 freeway projects on a project-by-project basis, the EMP presents a comprehensive mitigation approach that provides not only replacement habitat within preserved open space areas, but also provides the opportunity to improve the overall functions and value of sensitive biological resources on a regional basis throughout Orange County (i.e., Plan Area). It does so by the enhancement of connectivity between EMP open space areas and other existing open space areas and preserves. Working collaboratively with the Wildlife Agencies, OCTA ultimately decided that the preparation of an NCCP/HCP would best serve as the EMP's main implementation tool.

Based on the evaluation of opportunities throughout the Plan Area, Priority Conservation Areas (PCAs) were identified as part of the open space acquisition process and include candidate parcels and properties that could be managed as preserved open space for mitigation purposes (CBI 2009). A standardized criteria and prioritization process was also developed to facilitate property evaluation and assessment. Properties for acquisition and restoration/preservation were selected based on some of the criteria listed below:

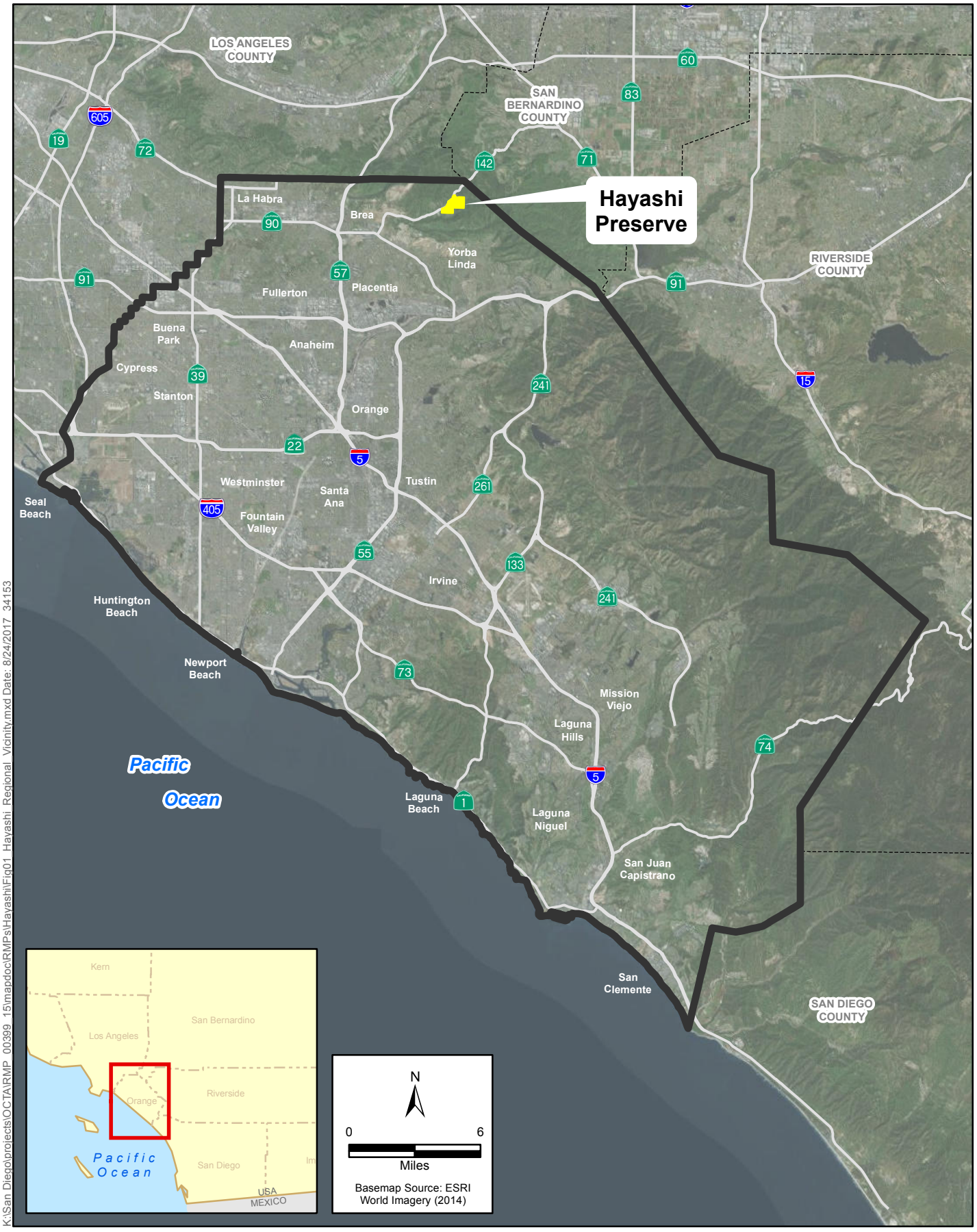

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Figure 1
Regional Vicinity Map
Hayashi Resource Management Plan

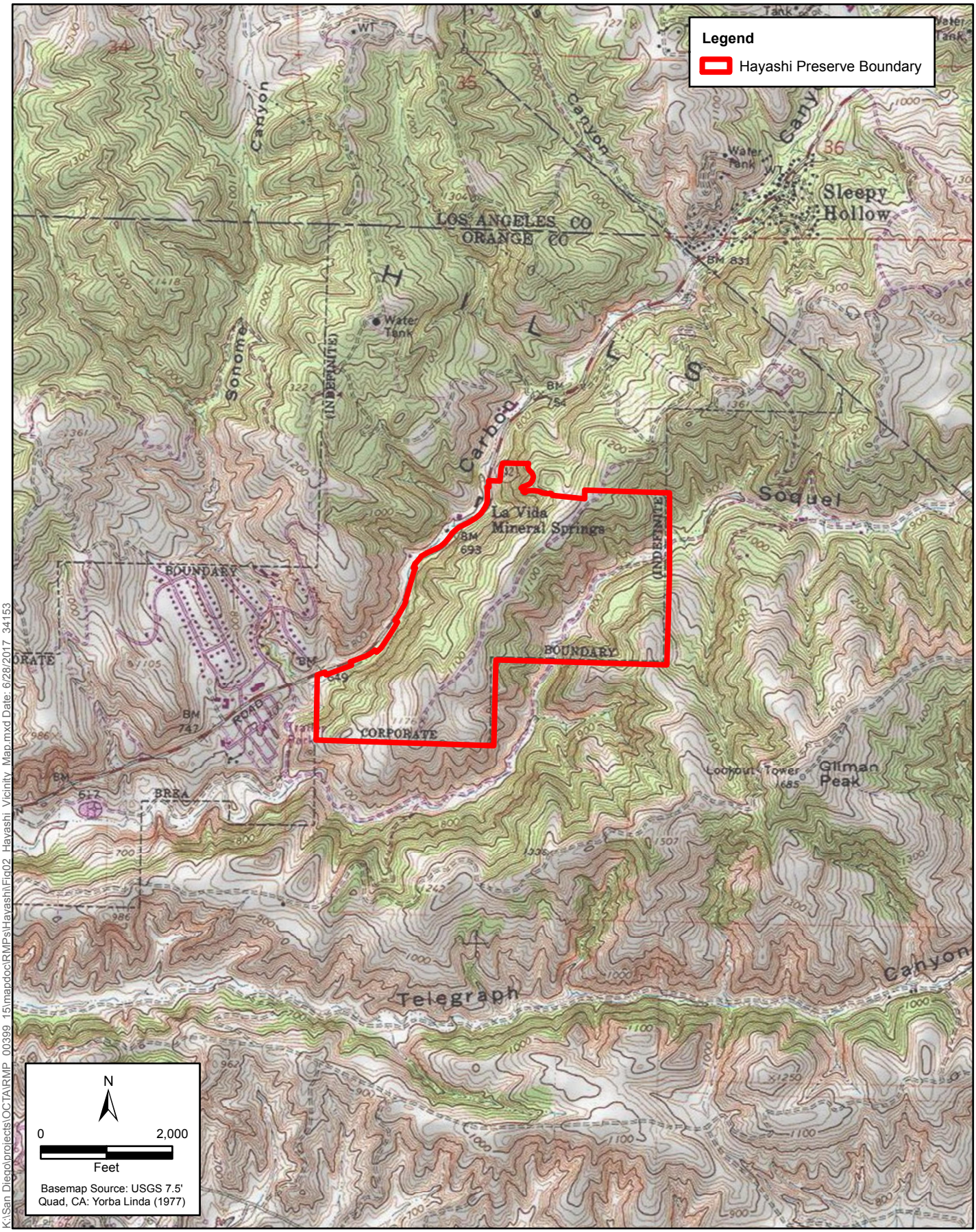

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Figure 2
Preserve Vicinity Map
Hayashi Resource Management Plan

- Contains habitats impacted by the freeway projects.
- Contains habitat for Covered Species.
- Enhances natural lands connectivity, including significant wildlife corridors.
- Has the potential to mitigate the Covered Activities.
- Adjacent to or in close proximity to already conserved lands.

The M2 NCCP/HCP was designed to complement the existing protected lands in Orange County, including lands protected under regional NCCP and HCPs in Orange County (Central and Coastal NCCP/HCP and the Southern Subregion HCP), local HCPs (such as Shell Oil and Metropolitan Water District HCP), and other federal and state lands. In support of these goals and objectives, OCTA emphasized the acquisition of parcels that added to and/or connected with currently protected areas. The M2 NCCP/HCP conservation strategy included the purchase of seven preserves that make up the M2 Preserve Area: Hayashi (301 ac), O'Neill Oaks (119 ac), Hafen (48 ac), Saddle Creek South (84 ac), Ferber Ranch (397 ac), MacPherson (204 ac), and Aliso Canyon (151 ac). The Hayashi Preserve is the northern most preserve (Figure 3).

The Hayashi Preserve satisfies many of the property acquisition criteria that was utilized to evaluate potential alignment with the OCTA EMP program including being identified as a PCA; supporting Covered Species and associated natural communities; contributing to regional biological connectivity; and containing a diversity of high quality habitat types, including oak woodland, chaparral, grassland, and riparian. A description of how the Hayashi Preserve acquisition helped to achieve the M2 NCCP/HCP biological goals and objectives is included in Section 3.1.1, "OCTA M2 NCCP/HCP Goals and Objectives Relevant to the Hayashi Preserve".

1.2 Relevant Land Use and Conservation Plans

The Hayashi Preserve is located within the jurisdictional boundaries of the City of Brea General Plan and *Carbon Canyon Specific Plan* area. In addition, the property is immediately adjacent to the Chino Hills State Park (CHSP). The Hayashi Preserve is in a location that supports connectivity between the Puente Hills to the northwest and Santa Ana Mountains to the south. Figure 4 provides a regional perspective of how the Hayashi Preserve is located within the network of protected open space lands, and Figures 5 and 6 depicts the proximity of the Preserve with the Chino Hills State Park. The following sections include a description of the relevant land use plans and conservation plans overlapping or in the vicinity of the Preserve.

1.2.1 City of Brea General Plan

The City of Brea General Plan was adopted in 2003 by the City Council. Some relevant goals for developing land use policies in the City include:

- Plan for the sustainable stewardship of natural resources.
- Create an environment in Carbon Canyon that balances the community's long-term housing needs with community open space, habitat conservation, and public safety goals.
- Preserve key wildlife migration corridors and habitat areas within Carbon Canyon.

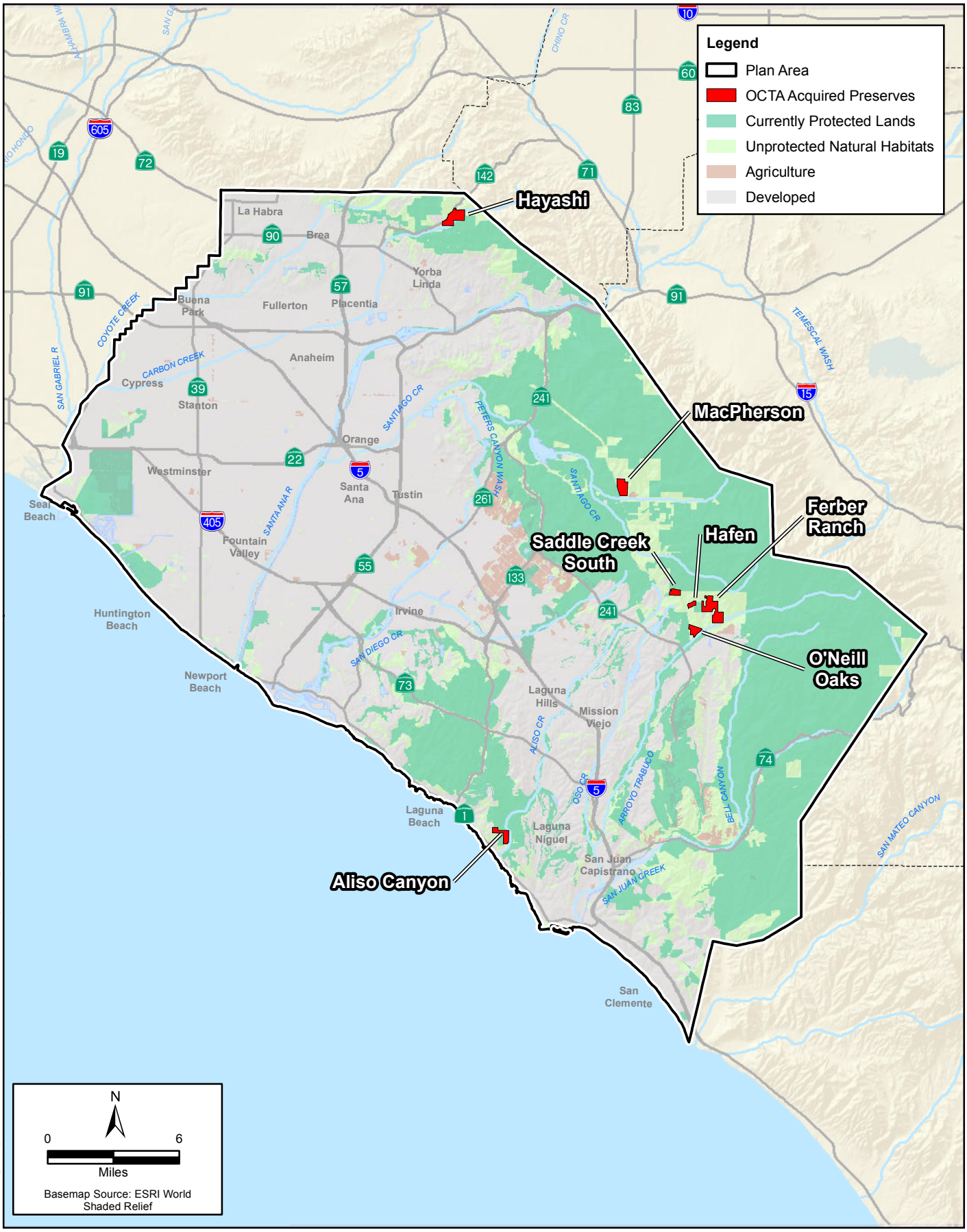

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Figure 3
M2 NCCP/HCP Preserve Area
Hayashi Resource Management Plan

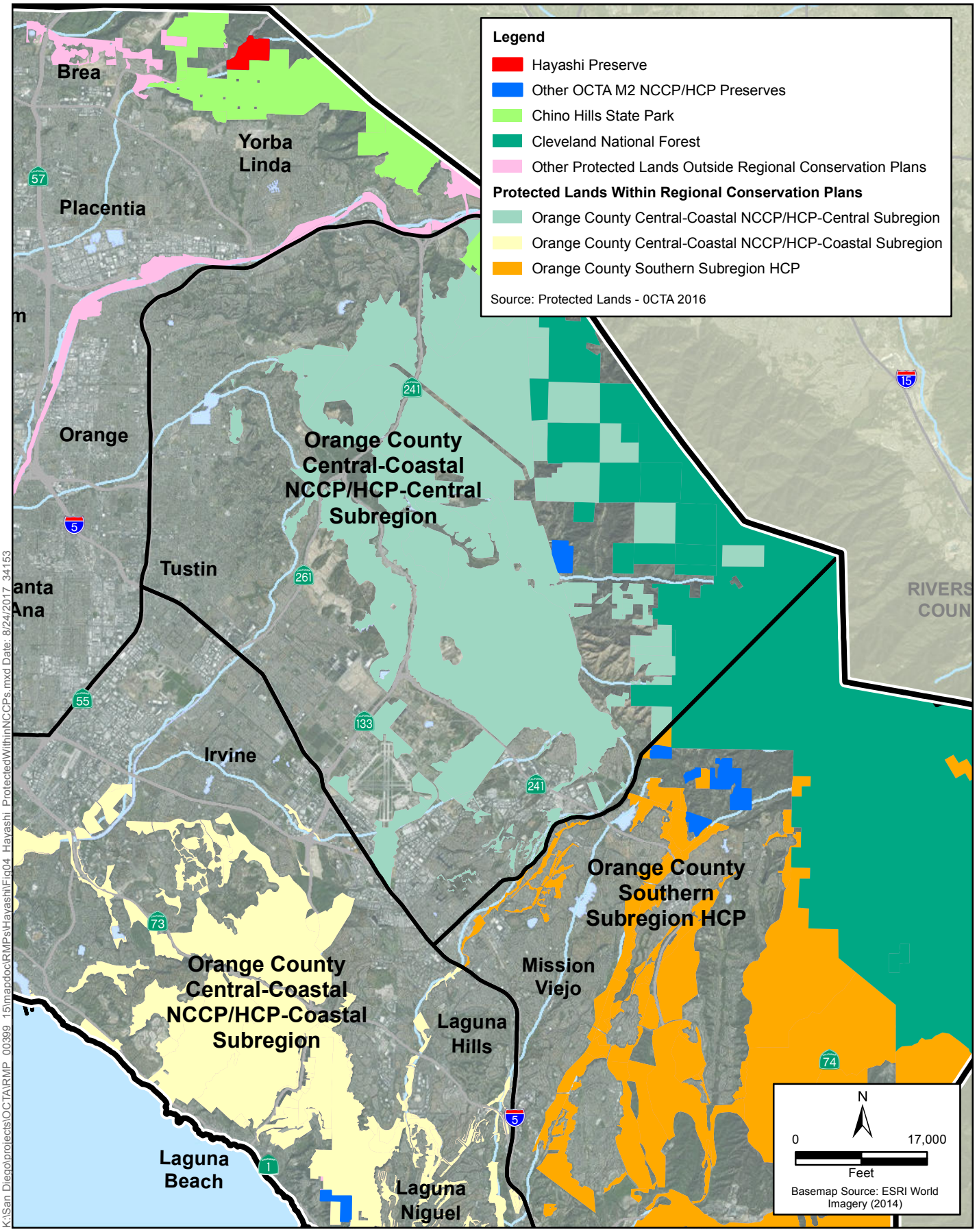

Figure 4
Protected Lands in Boundaries of Regional Conservation Plans
Hayashi Resource Management Plan

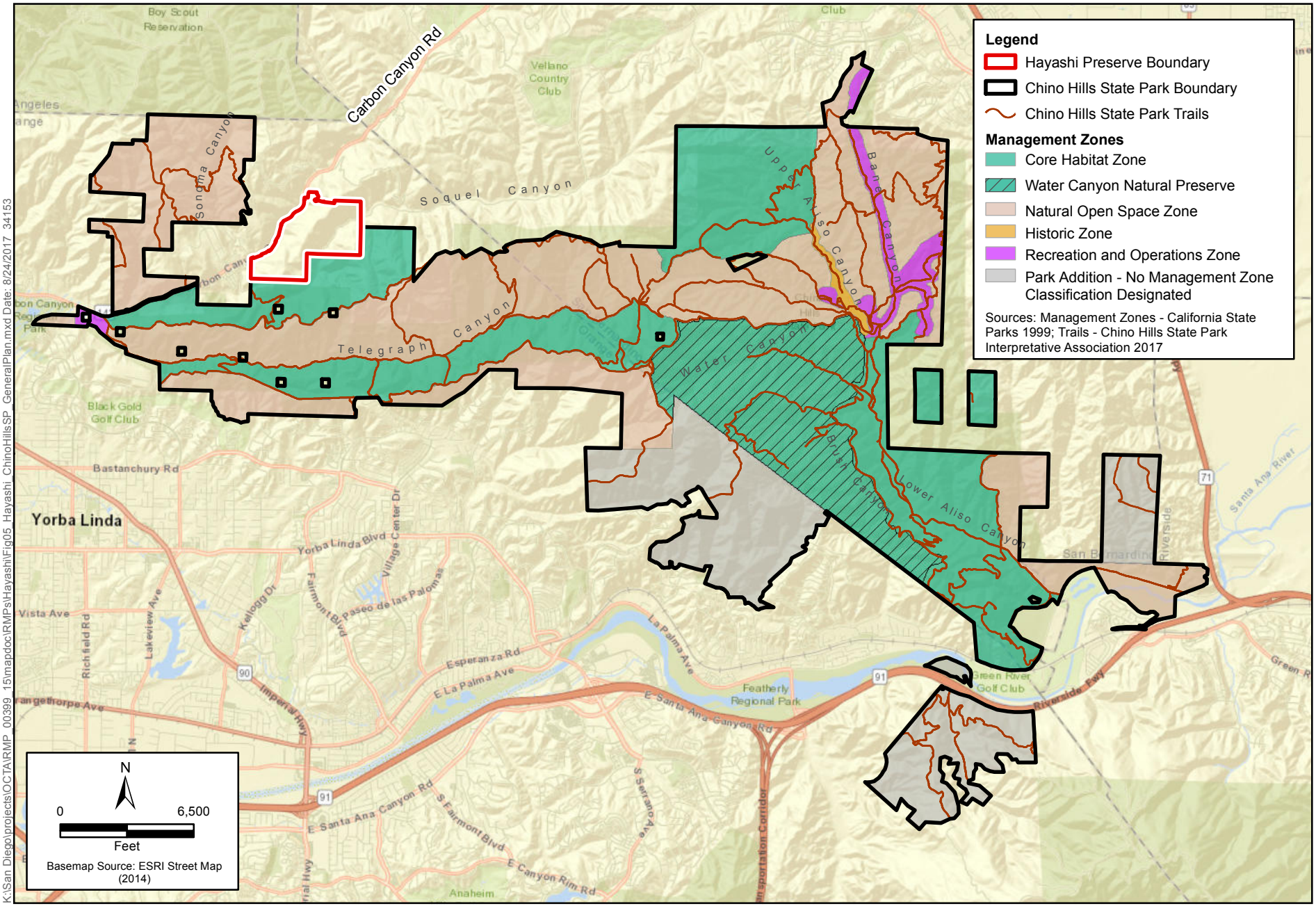

Figure 5
Chino Hills State Park General Plan - Management Zones
Hayashi Resource Management Plan

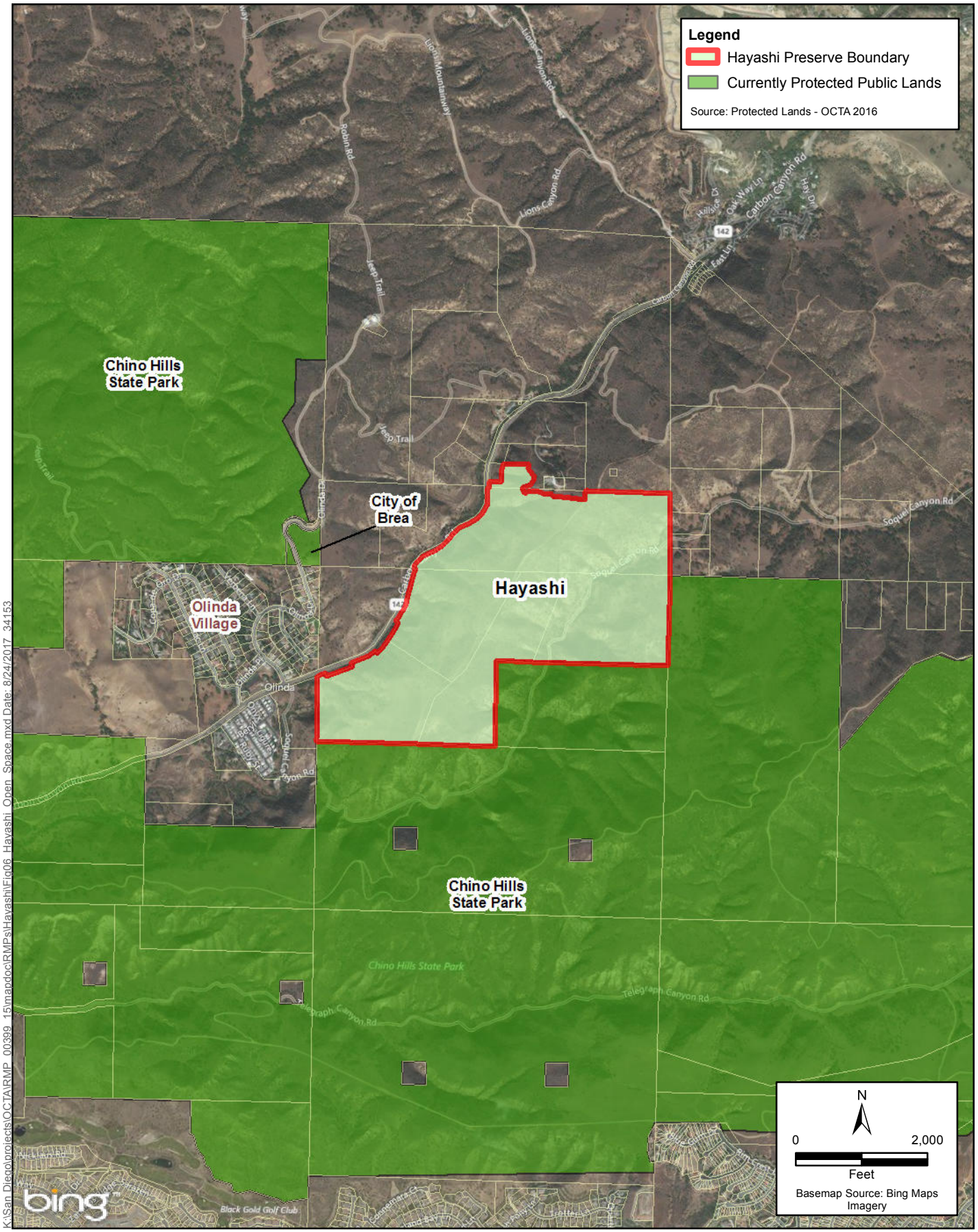

Figure 6
Open Space in Vicinity of Hayashi Preserve
Hayashi Resource Management Plan

Portions of the Hayashi property are designated as Very Low Density Residential (246 acres), Low Density Residential (37 acres), and High Density Residential (14 acres) by the General Plan and the whole Preserve is zoned Hillside Residential by the City's Zoning Code.

1.2.2 Carbon Canyon Specific Plan

Per the City of Brea's General Plan, land use designations establish basic guidelines for property development: permitted uses and maximum permitted development densities. Further development requirements are spelled out in the City's zoning ordinance. Specific Plans represent a second tool for directing development and provide a detailed plan for development within a particular area that may or may not reflect standard zoning ordinance requirements. The Carbon Canyon Specific Plan dictates the types of uses permitted, applicable development standards (setbacks, heights, landscape, architecture, etc.), and circulation and infrastructure improvements required (City of Brea 2003).

1.2.3 Chino Hills State Park General Plan

The Hayashi Preserve is located immediately adjacent to the CHSP (Figures 5 and 6). Land use policies and land management approaches within the Chino Hills State Park will influence land management on the Hayashi Preserve. The Chino Hills State Park General Plan, adopted in February 1999 by the California State Department of Parks and Recreation (CDPR), provides guidelines for long-term management, development, and operation of Chino Hills State Park (California State Parks 1999). The purpose of Chino Hills State Park is to preserve the natural, cultural, and scenic resources of the rolling hills, wooded canyons, and riparian forests that are representative of the early California landscape, and to make these resources available for public enjoyment and education. The General Plan has defined management zones for Chino Hills State Park based primarily on the degree of natural, cultural, and aesthetic resource value and sensitivity, and, secondarily on recreational, visitor service, management needs, and ecological and geographical parameters (Figure 5). The four designated management zones are:

- **Core Habitat Zone**. The Core Habitat Zone is the area of highest biological resource sensitivity in the park. The area includes very sensitive wildlife habitats that are crucial to the movement and survival of many plant and animal species. Significant disturbance of the habitat in this area could seriously affect biological diversity within the park and throughout the regional ecosystem.
- **Water Canyon Natural Preserve**. A portion of the Core Habitat Zone has been sub-classified as the Water Canyon Natural Preserve. This natural preserve, which incorporates the entire Water Canyon watershed and the upper Brush Canyon watershed, contains the northern extension of a biocorridor connecting to the Coal Canyon wildlife linkage, thereby preserving habitat crucial to the movement of sensitive wildlife and providing an important connection to the park's interior. The natural preserve also contains large stands of coastal sage scrub habitat which is necessary for the success of the California gnatcatcher, as well as fine examples of California Walnut Woodland and Coast Live Oak Woodland. The Water Canyon Natural Preserve is provided the highest level of protection for the sensitive resources found in this portion of CHSP. This sub-classification is necessary to ensure that development, inappropriate land use, or improper management decisions do not adversely affect the resources contained within the natural preserve boundary. The primary goal for the area is resource protection, taking precedence over recreational opportunities.

- **Natural Open Space Zone**. The Natural Open Space Zone protects natural, cultural, and aesthetic resources, and at the same time allows for recreational opportunities at the park. The zone generally has less biological sensitivity than the Core Habitat Zone but contains patches of higher resource sensitivity within its boundaries that will receive greater protection. The boundary of the Natural Open Space Zone is generally delineated by roads and trails, the park boundary, and other management zone boundaries.
- **Historic Zone**. The Historic Zone protects historic and prehistoric features and cultural landscapes within the park from impacts that may comprise their integrity.
- **Recreation and Operations Zone**. The Recreation and Operations Zone is designated where visitor services and operations facilities exist or could potentially be developed. Such facilities include public vehicle roads, maintenance structures, a visitor center, campgrounds, a campfire area, and employee housing.

Additional properties have been incorporated into the CHSP since the adoption of the General Plan but management zones have not been designated for these areas. A map of currently approved trails accessible within the park is available through the web site for the Chino Hills State Park Interpretative Association (http://www.chinohillsstatepark.org/park-activities/hiking) and shown in Figure 16.

1.2.4 Conservation Plans

The Central/Coastal NCCP/HCP and the Southern Subregion HCP are two large-scale conservation plans that cover portions of Orange County (Figure 4). These plans were designed to conserve substantial amounts of open space that support sensitive/covered species and habitats. The Hayashi Preserve is located north of these two sub-regional plans and helps to provide connectivity between the Central/Coastal NCCP/HCP Reserve and open space lands in southern Los Angeles, western San Bernardino and Riverside counties. (Figure 4). In addition to the formal sub-regional plans, other land area has been set aside as open space as part of individual land planning efforts in the county. This includes open space areas within large planned communities, some parks and open space managed by cities, and other HCPs. Other focused HCPs in the vicinity of the Hayashi Preserve include the Coyote Hills East HCP and Shell-Metropolitan Water District HCP. Under the Shell-Metropolitan Water District HCP, land conservation actions included setting aside a small area that became part of CHSP above Yorba Linda. In addition, this HCP allowed the State to acquire approximately 1,000 acres at a reduced price north of Carbon Canyon Road.

1.3 Covered Activities and Threats to Habitat and Covered Species within Preserve

The OCTA NCCP/HCP (Section 3.1.3) authorizes specific Covered Activities within the NCCP/HCP Preserves. These Covered Activities might adversely affect some Covered Species and their habitats but most of the effects are expected to be temporary and of limited severity. Authorized Covered Activities in the Preserves include: 1) Recreational Facilities and Maintenance; 2) Management Activities; 3) Habitat Enhancement, Restoration, and Creation; 4) Species Surveys, Monitoring, and Research; and 5) Responses to Changed Circumstances. These Covered Activities were authorized under the OCTA NCCP/HCP in order to address (i.e., manage for) the threats and stressors to Covered Species and natural communities present on the various Preserves.

Prior to OCTA's acquisition, previous land use activities (now-unauthorized encroachment activities) occurred on the property. Cattle grazing has occurred in the Chino Hills (including the Preserve) since 1771, and a review of historic aerial photographs of the property shows that grazing continued on the Preserve through 1938. Buildings or otherwise noteworthy structures are not identified in the historic aerials. However, along the northern boundary of the Preserve, an offsite residence has established some structures and landscaping on the property. This encroachment has now been resolved with a land transfer transaction and is discussed later in this document. In addition, a radio antenna is located on the ridgeline near the northern portion of the Preserve. Between 1938 and 1946, Carbon Ridge Road was extended from the area northeast of the Preserve, on to the Preserve, along Carbon Canyon Ridge. From 1946 through 1952, the width of Carbon Ridge Road onsite was increased, and additional smaller trails radiating from this ridge road were established.

While not formally used for grazing at this time, cattle are known to cross the Preserve and graze on site. Cattle were observed during the 2012 baseline biological surveys. Cattle paths cross the slopes throughout the Preserve and evidence of erosion due to cattle is visible in the southwest portion of the Preserve. Perimeter fencing was erected (by OCTA after the property was purchased) in order to protect the biological resources and keep the cattle out of the Hayashi Preserve. Management of the Hayashi Preserve as part of the OCTA NCCP/HCP must address these potential threats to conserved biological resources.

These threats may include:

- Grazing (cattle breaching fenceline)
- Introduction and spread of invasive, nonnative plant and wildlife species
- Damage and clearing of native vegetation
- Erosion caused by vegetation removal and the creation of unauthorized trails and/or unauthorized use of closed trails
- Impacts to water quality and habitat in onsite streams and other aquatic resources
- Wildfire
- Harassment of wildlife species, including disturbance of nesting bird species
- Wildlife poaching
- Disruption of wildlife movement

This RMP addresses these potential threats by providing guidance for the ongoing protection and preservation of the natural resources found within the Preserve, including Covered Species and sensitive habitats, while addressing fire protection issues and accommodating safe access and recreational use of the site by the general public.

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Chapter 2
Site Description

This chapter describes the land uses on site and adjacent to the Preserve, as well as physical characteristics and biological resources found on the Preserve. These descriptions are based on a comprehensive baseline biological survey completed by BonTerra Consulting (2013). A copy of the 2013 Baseline Biological Surveys Technical Report that includes Hayashi is included in Appendix B.

2.1 Preserve Setting, Adjacent Property Owners, and Land Uses

The 301-acre Hayashi Preserve is located within a large block of undeveloped land in northeastern Orange County. This stretch of nearly continuous wildlife habitat spans from the northern boundary of Marine Corps Base (MCB) Camp Pendleton, into the Cleveland National Forest through the Santa Ana Mountains, across the Coal Canyon linkage at SR-91 and the Santa Ana River, through the Chino Hills State Park (Figure 4). Specifically, the Preserve is located in the Chino Hills southeast of Carbon Canyon Road (State Route [SR] 142) (Figures 1 and 2), and is accessed from Carbon Canyon Road off a private dirt road, Carbon Ridge Road. Chino Hills State Park borders the southeastern boundary of the property. Surrounding land uses are mostly open space with residential development along SR-142 to the southwest of the Preserve (Figure 6).

As previously stated, cattle grazing has historically occurred in this general area. Although fencing has been installed to keep the cattle off of this Preserve, they are still known to breach the fence line and cause damage to this Preserve. There is evidence of relatively minor encroachments that have occurred on this property (adjacent residential neighbor). Carbon Ridge Road has shown some extension and expansion of the recent decades.

OCTA conducted a land survey in order to verify the property boundaries of Hayashi in 2012. Upon completion of this survey it was documented that the previous adjacent neighbor had encroached onto the Hayashi property. The encroachment included structures and landscaping. Shortly after, OCTA staff contacted the new owner of this adjacent property to discuss the encroachment. Through further discussions, OCTA and the adjacent property owner determined that a land exchange would be in the best interest for both property owners. The land exchange (finalized with the County Recorders office in 2015) consisted of the following:

- Adjacent land owner deeding 4 acres of undisturbed native habitat to OCTA
- OCTA deeding over 2 acres of disturbed/landscaped land to the adjacent land owner

This land exchange (Figure 7) resulted in two more acres to the original 299 acre Hayashi Preserve for a total of 301 acres (OCTA 2017). The additional four acres of habitat will need to be surveyed for biological resources. It appears to be in good condition and consistent with the adjacent habitat mapped (woodland and laurel sumac scrub). This additional field survey to complete the baseline monitoring effort will be conducted as part of the general stewardship monitoring of the Preserve and included in the first annual report. Regional vegetation information has been used to fill in the vegetation map for this area of the Preserve until field surveys are completed.

2.2 Physical Characteristics

The Preserve lies along Carbon Canyon between the remainder of the Chino Hills to the southeast and the Puente Hills to the northwest. A ridgeline runs across the center of the property in a northeast-southwesterly direction with steep slopes down to Soquel Canyon and Carbon Canyon. Elevations on site range from approximately 650 to 1,260 feet above mean sea level (msl). A blueline stream in Soquel Canyon crosses the eastern corner of the property. Soil types mapped on the Preserve consist of Alo clay (15 to 30 percent slopes), Anaheim clay loam (15 to 30 percent slopes, 30 to 50 percent slopes, and 50 to 75 percent slopes), Balcom clay loam (15 to 30 percent slopes), Calleguas clay loam (50 to 75 percent slopes, eroded), Cropley clay (2 to 9 percent slopes), Mocho loam (2 to 9 percent slopes), San Emigdio fine sandy loam (2 to 9 percent slopes), and Soper loam (15 to 30 percent slopes) (Figure 8).

2.3 Biological Resources

Biological surveys were conducted on the Preserve in spring/summer 2012 to establish baseline biological conditions and assess special-status species, including Covered Species, and their associated natural communities (BonTerra 2013). Subsequent ongoing monitoring results will be compared to baseline information to measure change over time. Sub-regional and regional monitoring efforts undertaken by other conservation entities such as the Natural Communities Coalition (formerly Nature Reserve of Orange County) will also be considered when evaluating Preserve-level changes/trends. Baseline biological surveys consisted of the following:

- Vegetation mapping and evaluation of habitat conditions.
- Focused plant, coastal California gnatcatcher (*Polioptila californica californica*), and bat surveys.
- A jurisdictional delineation of riparian and wetland resources.

Refer to Appendix B for the biological technical report for the Preserve (BonTerra 2013). The description of biological resources in this section is based on the 2012 effort.

2.3.1 Vegetation

Vegetation and non-vegetated habitat types were mapped on the Preserve by BonTerra Consulting in 2012 and updated using regional vegetation data for the additional property exchange area (Figure 9). In general, vegetation and other habitats on site include chaparral, grassland, riparian, woodland, and developed/nonnative. Vegetation communities and other habitats documented in 2012 on the Preserve are summarized in Table 2-1 and shown on Figure 9. Refer to Appendix B for a complete list of plant species observed during 2012 focused plant surveys. A brief description of each vegetation type and other land cover types mapped during 2012 baseline surveys follows Table 2-1.

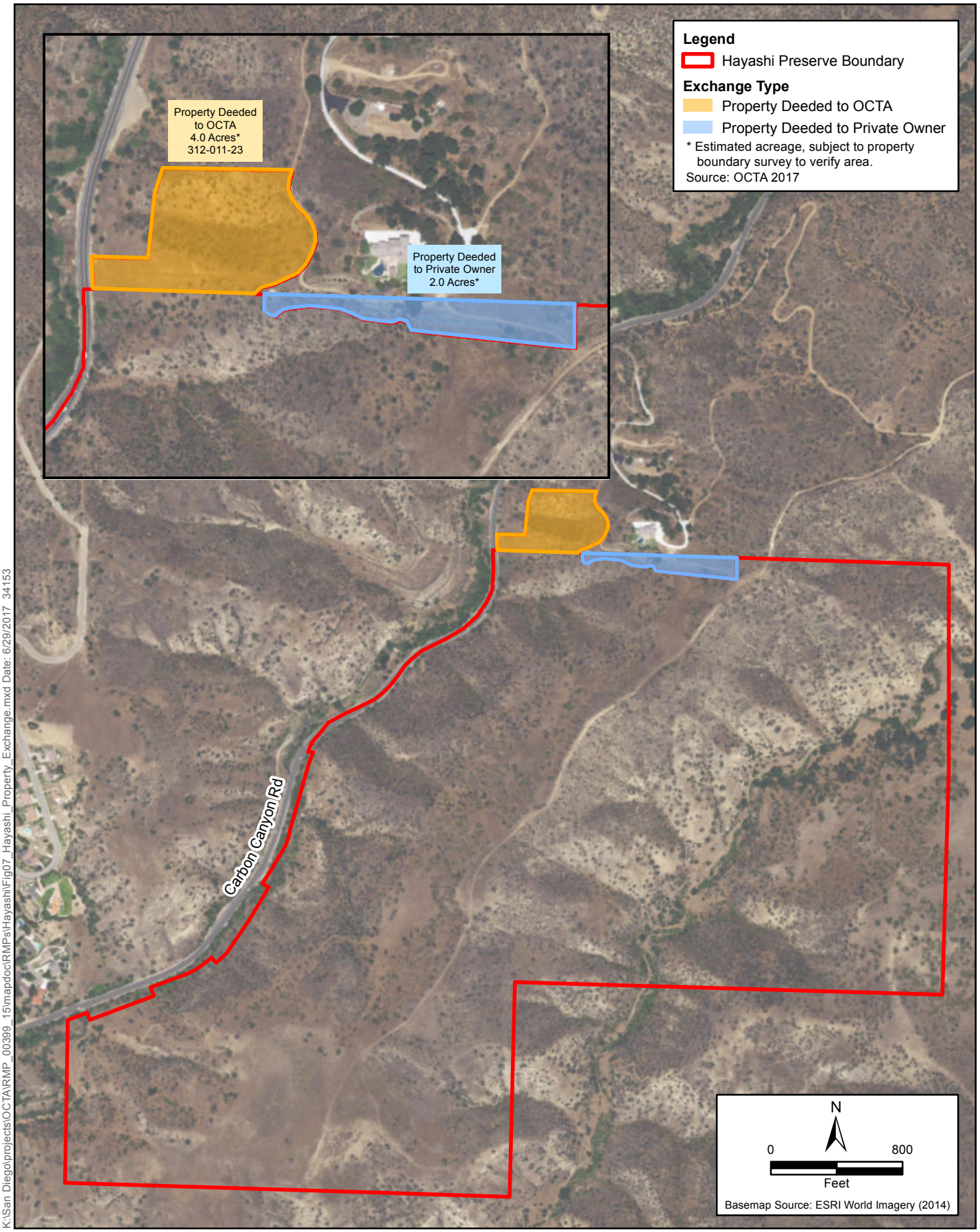

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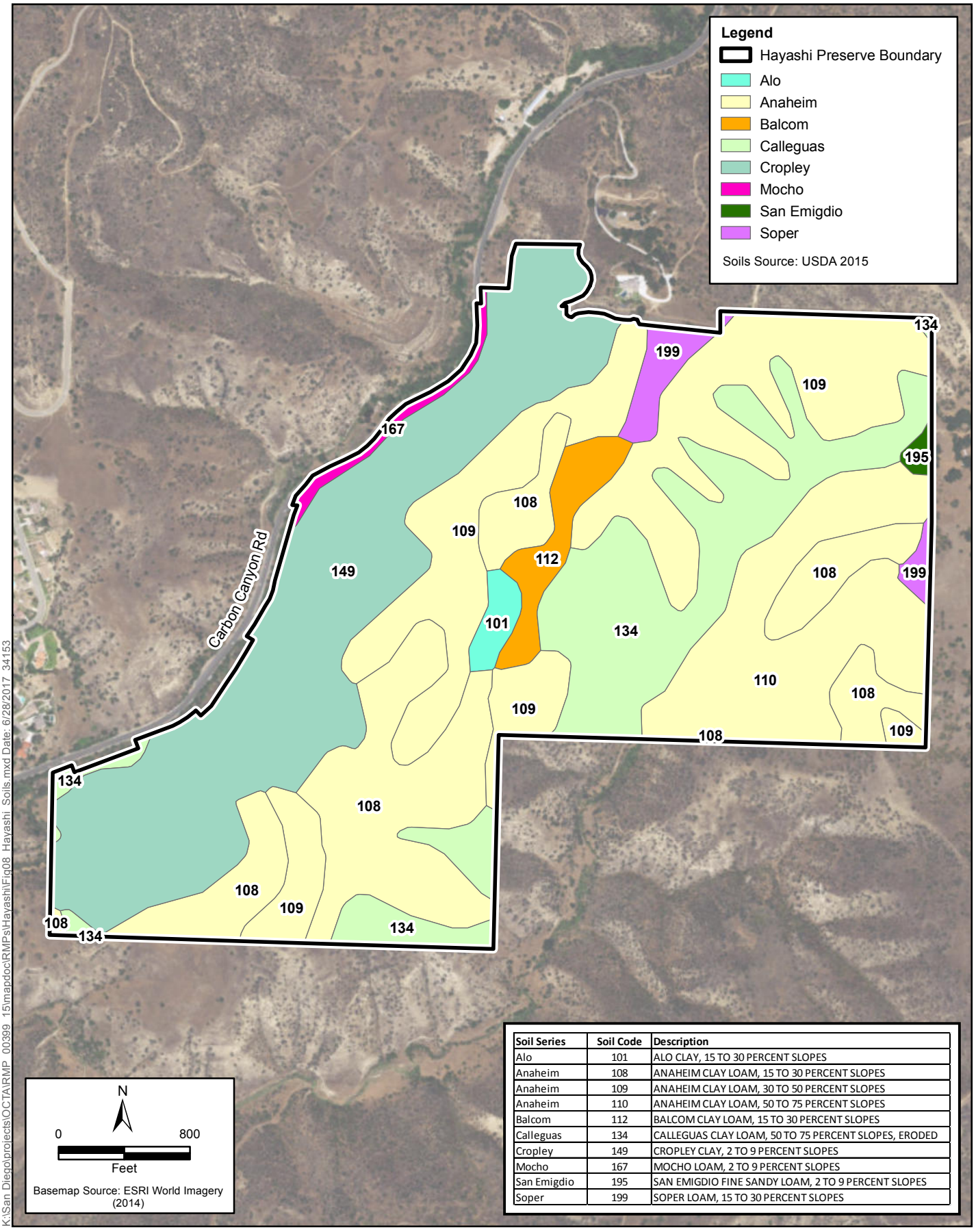
Figure 7
Property Exchange
Hayashi Resource Management Plan



Soil Series	Soil Code	Description
Alo	101	ALO CLAY, 15 TO 30 PERCENT SLOPES
Anaheim	108	ANAHEIM CLAY LOAM, 15 TO 30 PERCENT SLOPES
Anaheim	109	ANAHEIM CLAY LOAM, 30 TO 50 PERCENT SLOPES
Anaheim	110	ANAHEIM CLAY LOAM, 50 TO 75 PERCENT SLOPES
Balcom	112	BALCOM CLAY LOAM, 15 TO 30 PERCENT SLOPES
Calleguas	134	CALLEGUAS CLAY LOAM, 50 TO 75 PERCENT SLOPES, ERODED
Cropley	149	CROPLEY CLAY, 2 TO 9 PERCENT SLOPES
Mocho	167	MOCHO LOAM, 2 TO 9 PERCENT SLOPES
San Emigdio	195	SAN EMIGDIO FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES
Soper	199	SOPER LOAM, 15 TO 30 PERCENT SLOPES

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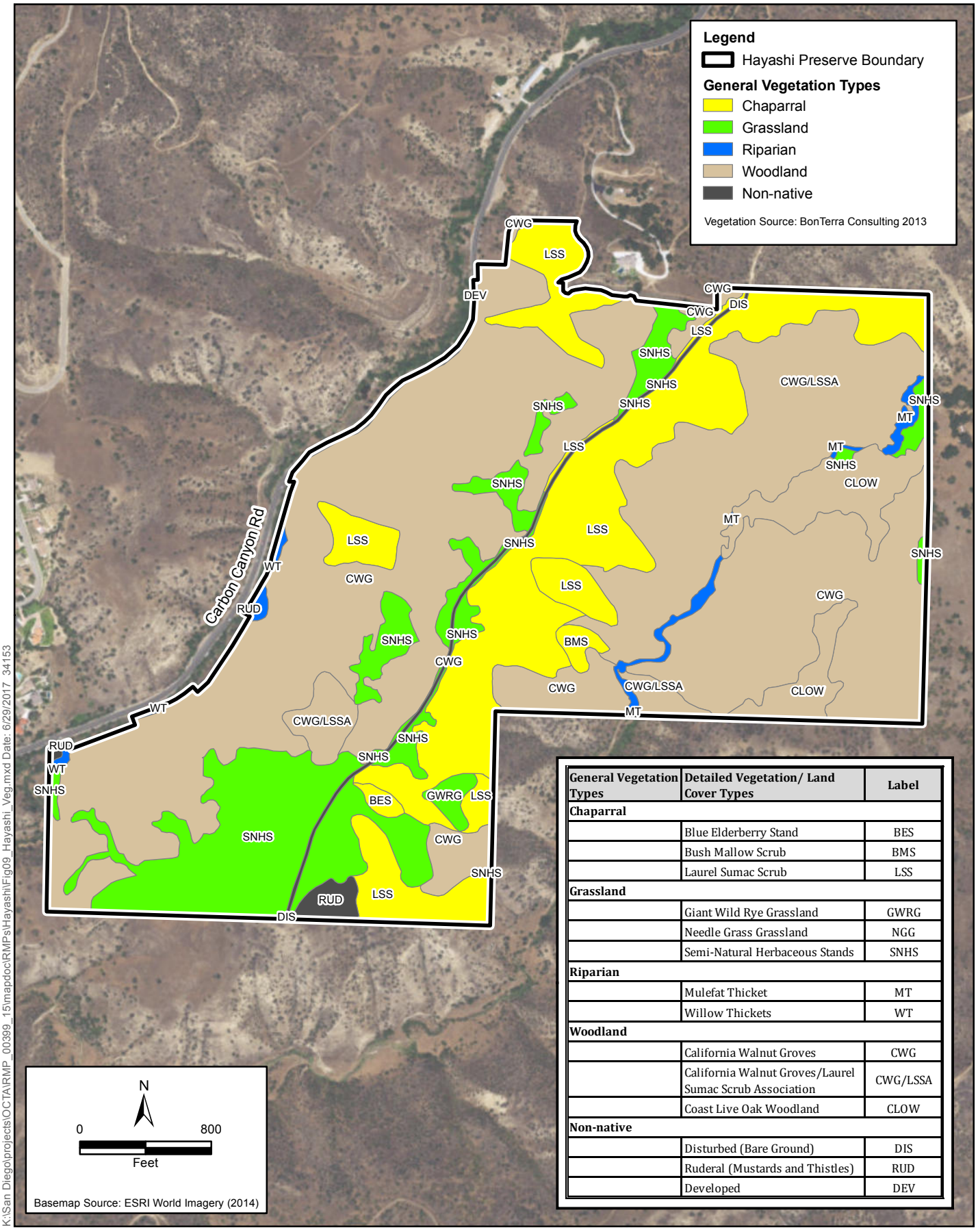
Figure 8
Soils
Hayashi Resource Management Plan



General Vegetation Types	Detailed Vegetation/ Land Cover Types	Label
Chaparral		
	Blue Elderberry Stand	BES
	Bush Mallow Scrub	BMS
	Laurel Sumac Scrub	LSS
Grassland		
	Giant Wild Rye Grassland	GWRG
	Needle Grass Grassland	NGG
	Semi-Natural Herbaceous Stands	SNHS
Riparian		
	Mulefat Thicket	MT
	Willow Thickets	WT
Woodland		
	California Walnut Groves	CWG
	California Walnut Groves/Laurel Sumac Scrub Association	CWG/LSSA
	Coast Live Oak Woodland	CLOW
Non-native		
	Disturbed (Bare Ground)	DIS
	Ruderal (Mustards and Thistles)	RUD
	Developed	DEV

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Figure 9
Vegetation Communities
Hayashi Resource Management Plan

Table 2-1. Summary of Vegetation/Land Cover Types

General Vegetation Types	Detailed Vegetation/ Land Cover Types	Acres *
Chaparral		
	Blue Elderberry Stand	0.8
	Bush Mallow Scrub	1.2
	Laurel Sumac Scrub	59.2
	Chaparral Subtotal:	**61.2**
Grassland		
	Giant Wild Rye Grassland	1.3
	Needle Grass Grassland	0.1
	Semi-Natural Herbaceous Stands	41.0
	Grassland Subtotal:	**42.4**
Riparian		
	Mulefat Thicket	2.2
	Willow Thickets	1.2
	Riparian Subtotal:	**3.4**
Woodland		
	California Walnut Groves	134.0
	California Walnut Groves/Laurel Sumac Scrub Association	43.0
	Coast Live Oak Woodland	12.1
	Woodland Subtotal:	**189.1**
Nonnative		
	Disturbed (Bare Ground)	2.0
	Ruderal (Mustards and Thistles)	2.0
	Developed	1.0
	Nonnative Subtotal:	**5.0**
	Total Acreage	***301.1***

* Note: Acres of vegetation types are slightly different from amounts included in the 2012 Baseline Survey Report in Appendix A due to adjustments to the property boundary based on property exchange and use of more current parcel boundary information.

Chaparral Types

Blue Elderberry Stand

A total of 0.8 acre of blue elderberry stands occurs on the Preserve. This vegetation type is located on a southwestern-facing slope near the southern edge of the property. It is dominated by scattered blue elderberry (*Sambucus nigra* ssp. *caerulea*) with California brittlebush (*Encelia californica*). The understory consists of nonnative grasses such as slender wild oat (*Avena barbata*).

Bush Mallow Scrub

A total of 1.2 acres of bush mallow scrub occurs on the Preserve. This vegetation type is located on a ridge near the center of the site. It is dominated by dense chaparral mallow (*Malacothamnus fasciculatus*). This species sprouts and grows vigorously after a light to moderate fire; individual shrubs are suppressed by the shade of longer-lived shrub species within a decade of fire. Lesser amounts of bush monkeyflower (*Mimulus aurantiacus*) and California everlasting (*Pseudognaphalium californicum* [*Gnaphalium c.*]) are also scattered throughout this vegetation type.

Laurel Sumac Scrub

A total of 59.2 acres of laurel sumac scrub occurs on the Preserve. This vegetation type is primarily located on the upper, southeast-facing slopes east of the main ridgeline. It is dominated by dense laurel sumac (*Malosma laurina*) and chaparral mallow; as a fire-follower, chaparral mallow is expected to be suppressed by longer-lived species as the site recovers from the 2008 Freeway Complex Fire. Areas along the ridgeline have California sagebrush *(Artemisia californica)*, black sage *(Salvia mellifera)*, and purple sage (*Salvia leucophylla*) as sub-dominant species. Blue elderberry is sub-dominant in other areas.

Grassland Types

Giant Wild Rye Grassland

A total of 1.3 acres of giant wild rye grassland occurs on the Preserve. This vegetation type is located on a plateau near the southern edge of the site. It is dominated by giant wild rye *(Elymus condensatus* [*Leymus c.*]). Nonnative grasses, such as ripgut grass (*Bromus diandrus*) are also present in this vegetation type.

Needle Grass Grassland

A total of 0.1 acre of needle grass grassland occurs on the Preserve. This vegetation type is located in an opening between California walnut groves at the northern edge of the site. It is characterized by having at least 10 percent relative cover of purple needlegrass (*Stipa pulchra* [*Nassella p.*]) and foothill needlegrass (*Stipa lepida* [*Nassella l.*]). This vegetation type has been heavily disturbed by grazing and has a high proportion of nonnative species such as ripgut grass and slender wild oat.

Semi-Natural Herbaceous Stands

A total of 41.0 acres of semi-natural herbaceous stands occur on the Preserve. This vegetation type is located along the ridgeline running across the property; down the adjacent slopes; and interspersed with woodland on the property. Ripgut grass and slender wild oat are dominant in some areas, with species such as common horehound (*Marrubium vulgare*) and tocalote (*Centaurea melitensis*) also occurring. Other areas are dominated by milk thistle (*Silybum marianum*). Scattered purple needlegrass, foothill needlegrass, and giant wild rye are present in this vegetation type; however, the coverage of these species is too low to be mapped as native perennial grassland. This vegetation type has been heavily disturbed by grazing.

Riparian Types

Mulefat Thicket

A total of 2.2 acres of mulefat thicket occurs on the Preserve. This vegetation type is located within the drainage of Soquel Canyon. It is dominated by mule fat (*Baccharis salicifolia* ssp. *salicifolia* [*B. salicifolia*]) with dense patches of California rose (*Rosa californica*) and western poison oak (*Toxicodendron diversilobum*). Herbaceous vegetation in the understory also includes salt grass (*Distichlis spicata*) and giant wild rye. Scattered coast live oaks (*Quercus agrifolia*), southern California black walnut (*Juglans californica*), and blue elderberry are also present in and adjacent to the drainage. Water is present intermittently in the drainage.

Willow Thickets

A total of 1.2 acres of willow thickets occur on the Preserve. This vegetation type is located along Carbon Canyon Creek on the northwestern edge of the property. It is dominated by a mix of willow species (e.g., Goodding's black willow [*Salix gooddingii*] and arroyo willow [*Salix lasiolepis]*). Southern California black walnut, blue elderberry, and poison hemlock (*Conium maculatum*) are also present along the creek.

Woodland Types

California Walnut Groves

A total of 134.0 acres of California walnut groves occur on the Preserve. This vegetation type is located on northwest-facing slopes throughout the property. It is dominated by an open canopy of southern California black walnuts. In some areas, sub-dominant species densely occurring in this woodland include toyon (*Heteromeles arbutifolia*), laurel sumac, and blue elderberry. In other areas, the understory is relatively open and composed of nonnative grasses.

California Walnut Groves/Laurel Sumac Scrub Association

A total of 43.0 acres of California walnut groves/laurel sumac scrub association occur on the Preserve. This vegetation type is located on the lower, southeast-facing slopes of the property. It is similar to the California walnut groves described above, but co-dominated by southern California black walnuts and laurel sumac. The tree density is also sparser in this vegetation type. Blue elderberry and chaparral mallow are sub-dominant species in some areas.

Coast Live Oak Woodland

A total of 12.1 acres of coast live oak woodland occur on the Preserve. This vegetation type is located on northwest-facing slopes east of and at the bottom of Soquel Canyon. It is dominated by a canopy of coast live oak. The understory contains nonnative grasses and western poison oak.

Nonnative Land Cover

A total of 5.0 acres of the Preserve is mapped as nonnative land cover that contains little to no native vegetation. This includes 2.0 acres of areas mapped as disturbed (bare ground) that consists of the dirt access road running along the ridgeline. A patch along the southern boundary of the Preserve

totaling of 2.0 acres is mapped as ruderal habitat dominated by mustards and thistles. Developed areas (1.0 acres) occur along Carbon Canyon road on the west side of the Preserve.

2.3.2 Wildlife

The Preserve provides habitat for a wide variety of wildlife species that are characteristic of chaparral, grassland, riparian, woodland, and disturbed (bare ground) habitats. Focused surveys for coastal California gnatcatcher, coastal cactus wren, and bats were performed on site by BonTerra Consulting in 2012.

Wildlife species observed or detected on site in 2012 include reptiles such as western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis catenifer*), and common kingsnake (*Lampropeltis getula*); birds such as California quail (*Callipepla californica),* great blue heron (*Ardea herodias*), turkey vulture *(Cathartes aura),* Cooper's hawk (*Accipiter cooperii*), red tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and western screech-owl (*Megascops kennicottii*); and mammals such as Yuma bat (*Myotis yumanensis*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), and domestic cattle (*Bos taurus*). Refer to Baseline Survey Technical Report in Appendix B (see Appendix A: Plant and Wildlife Compendia) for a complete list of wildlife species observed during 2012 surveys.

Wildlife Movement and Habitat Connectivity

Wildlife movement generally consists of three types of activities: (1) wildlife dispersal, (2) seasonal migration of wildlife species, and (3) wildlife movement related to home range activities. Below are definitions of the terms used to describe the different landscape and physical features that wildlife use to travel from one area to another.

Travel Route: This is a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) in a larger natural habitat area that is used frequently by wildlife for local or regional travel and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred by wildlife species because it provides the least amount of topographic resistance in moving from one area to another; it supplies adequate food, water, and/or cover to wildlife moving between habitat areas and provides a relatively direct link between target habitat areas.

Wildlife Corridor: This is a piece of habitat, usually linear in nature that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bordered by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate their movement while in the corridor. Larger landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife Crossing: A wildlife crossing is a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that would otherwise hinder or prevent movement. Crossings typically are human-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent "choke points" along a movement corridor.

The Preserve contributes to regional biological connectivity and wildlife movement due to its proximity to the CHSP and proximity to important wildlife movement areas, including the Puente-Chino Hills regional wildlife corridor. The Puente-Chino Hills regional wildlife corridor that provides a nearly 31-mile swath of continuous wildlife habitat between the Cleveland National Forest and the west end of the Puente Hills, above Whittier Narrows (LSA 2007). Open space on Hayashi provides a connection between CHSP property south of SR-142 and CHSP land and other open space north of SR-142.

A wildlife corridor analysis was conducted in the region surrounding the Hayashi Preserve in October 2000 (URS 2001). Mountain lion, coyote, bobcat, and mule deer were documented along the ridgeline and along Soquel Canyon within the Preserve. Soquel and Telegraph Canyons and associated ridgelines converge at SR-142 southwest of the property and there are several moderately sized drainages and ridgelines on the north side of the road that wildlife can use to move toward Sonome and Tonner Canyons to the north. The wildlife corridor between the Santa Ana Mountain Range and the Chino Hills has been identified as a crucial element for the survival of mountain lions in the Chino Hills (Beier and Barrett 1993). Surveys documented mountain lion movement in this corridor (crossing under SR-91) into the Chino Hills. OCTA has funded two restoration projects adjacent to SR-91 to help improve conditions for wildlife movement. Without this corridor, cougars are not expected to survive in the Chino Hills. Wildlife movement is expected to occur on the Preserve, as well as between the Preserve and contiguous off-site habitat.

2.3.3 Jurisdictional Resources

The Preserve is within the Los Angeles-San Gabriel River Hydrologic Unit. There are two principal drainage features on the property, Carbon Canyon Creek and Soquel Canyon Creek. These drainage features eventually connect with the Pacific Ocean, a Traditional Navigable Water (TNW), as designated by the USACE. These streambeds satisfy the USACE criteria for Relatively Permanent Waters (RPW). As a result, Carbon Canyon Creek and Soquel Canyon Creek fall within the USACE's jurisdiction. A total of 2.60 acres of "Waters of the U.S.", including wetlands, occur on the Preserve (Figure 10). Approximately 0.07 acre of isolated waters, having an Ordinary High Water Mark but no "significant nexus" to a TNW, were mapped on the property. As a result, the RWQCB would take jurisdiction over 2.67 acres on the Preserve. A total of 6.51 acres of "Waters of the State" under the jurisdiction of the CDFW also occur on the property.

As part of the jurisdictional delineation, BonTerra Consulting also evaluated the quality of the jurisdictional resources using the California Rapid Assessment Method (CRAM). CRAM is a wetland monitoring tool that was developed in response to a monitoring framework recommended by the EPA to help states meet monitoring requirements stated in the Federal Clean Water Act (EPA 2006). Personnel from the EPA, USACE, SWRCB, and CDFW (among other agencies) participated in the development of CRAM, and it is an accepted assessment tool by these agencies. CRAM scores result from the evaluation of four equally weighted attributes: (1) buffer and landscape context, (2) hydrology, (3) physical structure, and (4) biotic structure (CWMW 2012). Refer to Appendix B for details and results of the CRAM evaluation.

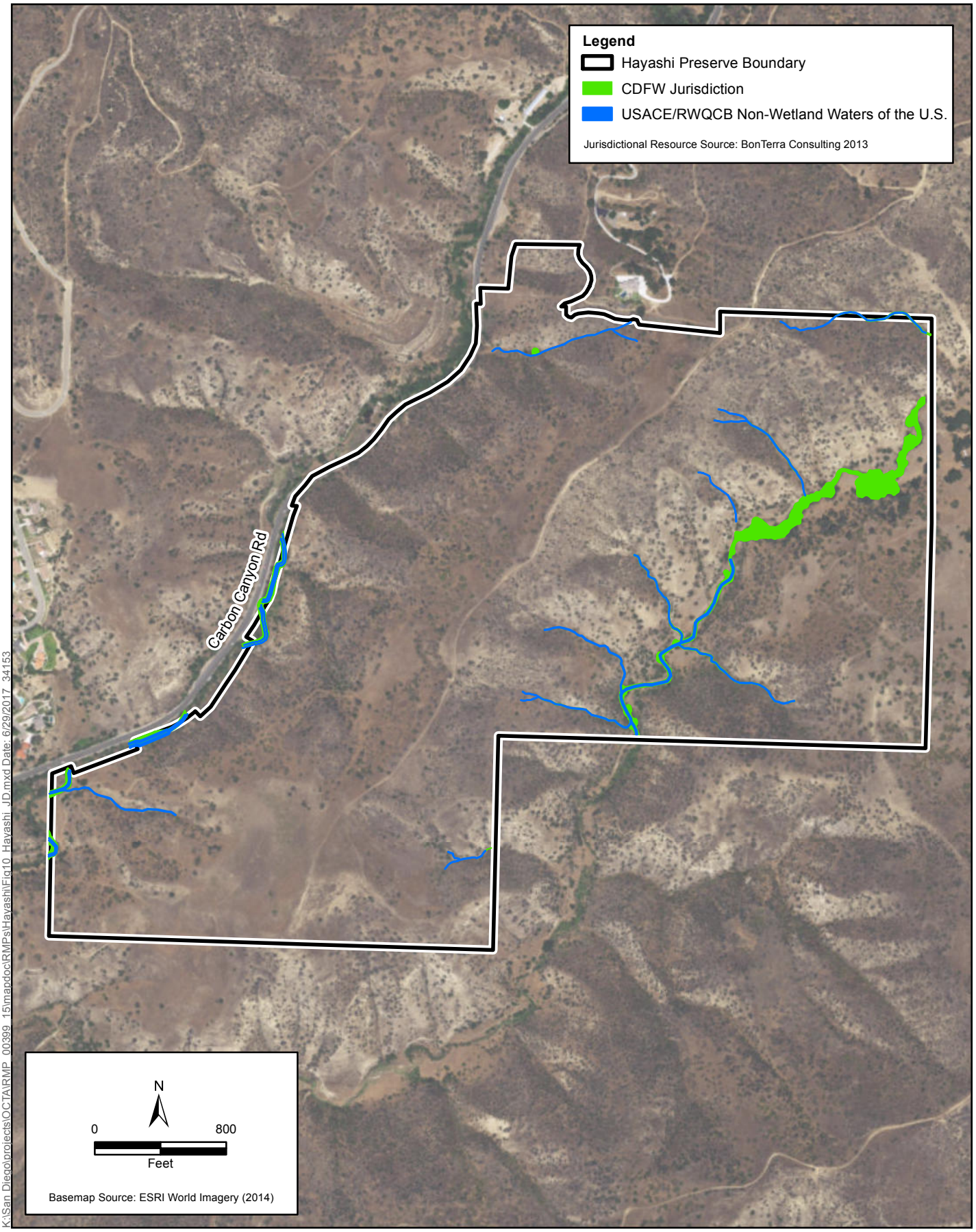

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Figure 10
Jurisdictional Resources
Hayashi Resource Management Plan

2.3.4 Special-Status Biological Resources

This section summarizes the special-status biological resources that were observed, reported, or have the potential to occur on the Hayashi Preserve. Special-status biological resources include plant and wildlife species, as well as vegetation types and habitats that have been afforded special status and/or recognition by the Wildlife Agencies (e.g., USFWS, CDFW, and CDFW's California Natural Diversity Database [CNDDB]), as well as private conservation organizations (e.g., California Native Plant Society [CNPS]). In addition to special-status biological resources, all Covered Species with the potential to occur on the Preserve are addressed in this section. In general, the principal reason an individual taxon (species, subspecies, or variety) is given such recognition is the documented or perceived decline of its population size or geographical extent and/or distribution resulting from habitat loss or degradation or other threats. Protection of special-status biological resources in compliance with State and Federal Wildlife Agencies, as well as local and private conservation organizations, must be addressed during Preserve management activities. Additionally, biological resource protection measures addressed in the M2 NCCP/HCP apply to the ongoing management of special-status resources on the Preserve.

The following biological evaluations have been conducted on the Preserve by BonTerra Consulting in 2012:

- Vegetation and habitat mapping.
- Focused surveys for coastal California gnatcatcher.
- Focused plant surveys.
- Jurisdictional delineation
- Focused bat surveys.

BonTerra Consulting prepared a comprehensive Biological Technical Report (Appendix B) for the baseline surveys completed in 2012 (BonTerra Consulting 2013). The following sub-sections summarize the special-status biological resources identified during the evaluations performed by BonTerra Consulting and other supporting materials provided by OCTA.

Special-Status Species

Special-status plant species documented at the Preserve in 2012 include Southern California black walnut (*Juglans californica*) and Hubby's phacelia (*Phacelia hubbyi*).

Special-status wildlife species documented at the Preserve in 2012 include Cooper's hawk (*Accipiter cooperii*). A Yellow- breasted chat was observed singing in riparian habitat in lower Soquel Canyon downstream of the Preserve. It may also occur upstream on the property. *Yuma myotis* was documented twice, once north of the property along the Carbon Canyon access road and another in lower Soquel Canyon downstream of the property. It is likely that a high frequency species detected near the vicinity of the Soquel Canyon record was also a *Yuma myotis*.

Tables 2-2 and 2-3 summarize the listed status of these species and provide notes on observations or potential for occurrence. Refer to Appendix B for additional information on special-status plant and wildlife species known to occur in proximity to the Preserve.

Table 2-2. Special-Status Plant Species Observed On Site during 2012 Surveys

Species	Status				Comments
	USFWS	CDFW	CRPR	M2 NCCP/HCP Covered Species	
Juglans californica Southern California black walnut	None	None	4.2	No	Observed throughout the Preserve in California walnut groves and intermixed with chaparral and coastal sage scrub vegetation.
Phacelia hubbyi Hubby's phacelia	None	None	4.2	No	Observed on site. One population was observed at the bottom of Soquel Canyon near the southern boundary of the Preserve. Four other populations were observed in annual grassland on the slope above Soquel Canyon in the central portion of the Preserve. These locations represent the first CNDDB record of this species from the Chino Hills.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank

Legend

CRPR

4 Plants of Limited Distribution – A Watch List

CRPR Threat Code Extensions

.2 Fairly Threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)

Table 2-3. Special-Status Wildlife Species Observed On Site during 2012 Surveys

Species	Status			Comments
	USFWS	CDFW	M2 NCCP/HCP Covered Species	
Accipiter cooperii Cooper's hawk (nesting)	None	WL	No	Observed on the Preserve. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.
Icteria virens yellow-breasted chat (nesting)	None	SSC	No	Suitable habitat. May occur on the Preserve. Observed in Soquel Canyon downstream of Preserve.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife

Legend

State (CDFW)

SSC Species of Special Concern

WL Watch List

Covered Species

The term "Covered Species" refers to the 13 species included in the permits issued to OCTA by State and Federal governments as part of the M2 NCCP/HCP. No Covered Species occurrences were observed during the baseline surveys, although previously recorded occurrences in CNDDB have been recorded onsite and in the vicinity of the Preserve (Figure 11). Potentially suitable habitat for many-stemmed dudleya, coast horned lizard, orangethroat whiptail, western pond turtle, least Bell's vireo, bobcat, and mountain lion were noted during baseline surveys. For each Covered Species, a summary of whether the species has been observed/detected on site or has potential to occur, status of suitable habitat, and potential threats and stressors within the Preserve is included in Table 2-4.

Sensitive Vegetation Types

In addition to providing an inventory of special-status plant and wildlife species, the CNDDB also provides an inventory of vegetation types that are considered special status by State and Federal Wildlife Agencies, academic institutions, and various conservation groups (such as the CNPS), giving them a high priority for conservation on the Preserve. Special-status vegetation types observed on the Preserve consist of the following:

- Chaparral communities, including blue elderberry stand, bush mallow scrub, and laurel sumac scrub.
- Grassland communities, including giant wild rye grassland and needle grass grassland.
- Riparian communities, including mulefat thickets and willow thickets.
- Woodland communities, including coast live oak woodland, California walnut groves, and California walnut groves/laurel sumac scrub association.
- Jurisdictional areas, including Waters of the U.S. and Waters of the State.

Critical Habitat

The Preserve is not located in any area proposed or designated as critical habitat (Figure 12). There is critical habitat for coastal California gnatcatcher to the southwest of the Preserve.

2.4 Cultural Resources

An Archaeological Sensitivity Assessment (ASA) was conducted by LSA Associates, Inc. on the Preserve in winter 2014 (LSA 2014). The assessment included a records search, Native American coordination, field survey, and report, all of which were completed between September and December 2014. No archaeological resources were identified within the boundaries of the Preserve. Based on the lack of archaeological resources documented in proximity to the Preserve, the negative results of the current and previous field surveys, and the geomorphological setting of the Preserve, the Preserve is not considered sensitive for the presence of archaeological resources. No further archaeological studies or monitoring are recommended.

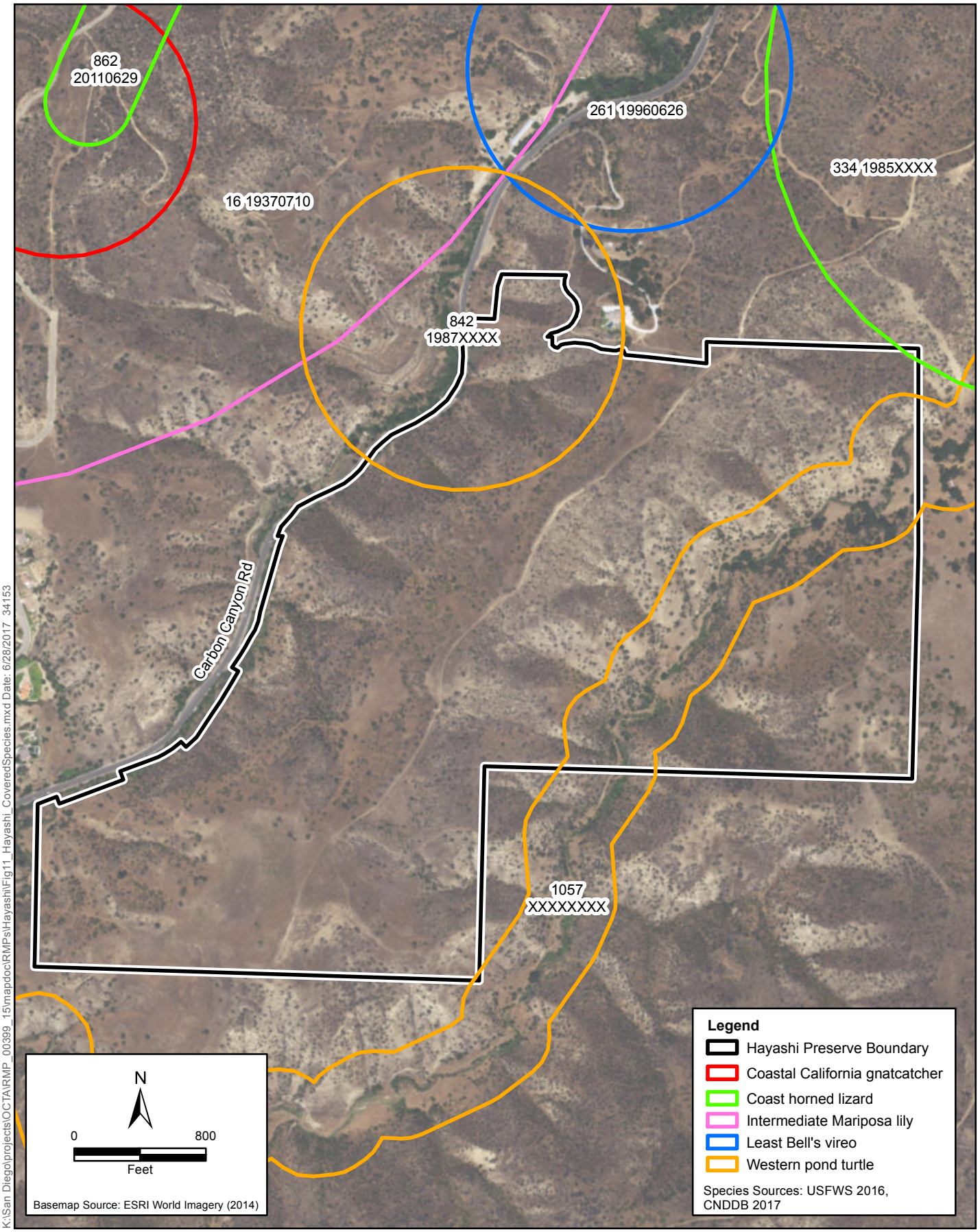

Figure 11
Covered Plants and Animals
Hayashi Resource Management Plan

Table 2-4. M2 NCCP/HCP Covered Species

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Plants			
Intermediate mariposa lily / *Calochortus weedii* var. *intermedius*	None detected during 2012 baseline surveys.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Preserve in areas with suitable conditions (e.g., soils).
Southern tarplant / *Centromadia parryi* ssp. *australis*	None detected during 2012 baseline surveys.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Preserve in areas with suitable conditions (e.g., soils).
Many-stemmed dudleya / *Dudleya multicaulis*	None detected during 2012 baseline surveys.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Preserve in areas with suitable conditions (e.g., soils).
Fish			
Arroyo chub / *Gila orcutti*	None detected during 2012 baseline surveys.	Limited potential habitat but isolated from known populations and not expected to occur on this Preserve.	Not applicable.
Amphibians and Reptiles			
Coast horned lizard / *Phrynosoma blainvillii*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve and expected to occur.	Potential threats include mortality and habitat destruction due to off-road vehicles and spread of nonnative ant species. Habitat restoration opportunities for coastal sage scrub and other suitable habitat occurs on site.
Orangethroat whiptail / *Aspidoscelis hyperythra beldingi*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve and expected to occur.	The major threat to this subspecies is loss of habitat by development. The preservation of suitable habitats on site is the best conservation opportunity for this subspecies.

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Western pond turtle / *Emys marmorata*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve and expected to occur.	Potential threats include water quality in Carbon Canyon Creek and illegal collection. Pond turtles are known to occur along Carbon Canyon Creek, adjacent to the Preserve. It is anticipated that an expanding population of turtles within Carbon Canyon Creek could immigrate to suitable habitat within Soquel Canyon, which traverses the southwestern portion of the Preserve.
Birds			
Southwestern willow flycatcher / *Empidonax traillii extimus*	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird (*Molothrus ater*) are this subspecies' greatest threats. The southwestern willow flycatcher population has not shown the same recovery that the least Bell's vireo has shown in response to riparian habitat restoration and cowbird control. Therefore, no additional opportunities or management activities has been identified.
Least Bell's vireo / *Vireo bellii pusillus*	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird are this subspecies' greatest threats. Opportunities are available for riparian habitat restoration and enhancement on the Preserve.
Cactus wren / *Campylorhynchus brunneicapillus sandiegensis*	None detected during 2012 baseline surveys.	No suitable habitat and not expected to occur on this Preserve.	Habitat loss, degradation, fragmentation, and intense fire events are the most critical threats facing this subspecies. Protection of coastal sage scrub habitat that contains cactus is crucial for the preservation of this subspecies. There are limited opportunities to provide habitat for this species on the Hayashi Preserve because the lack of cactus scrub habitat.

Common / Scientific Name	Observed/ Detected On Site	Potential to Occur/ Status of Suitable Habitat On Site	Potential Threats / Stressors within Preserve
Coastal California gnatcatcher / *Polioptila californica californica*	None detected during 2012 baseline surveys.	Limited suitable habitat and limited potential to occur.	Habitat loss, degradation, and fragmentation are the most critical threats facing this subspecies. Protection of coastal sage scrub habitat is crucial for the preservation of this subspecies. There are limited opportunities to provide habitat for this species on the Hayashi Preserve because the lack of coastal sage scrub habitat.
Mammals			
Bobcat / *Lynx rufus*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve. Native habitat and topography of the Preserve provides cover for movement along drainages and ridgelines. The Preserve is connected to large blocks of surrounding habitat that function as movement corridors.	Potential threats include illegal hunting and habitat loss. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintenance of movement opportunities through Soquel Canyon.
Mountain lion / *Puma concolor*	None detected during 2012 baseline surveys.	Suitable habitat within the Preserve. Native habitat and topography of the Preserve provides cover for movement along drainages and ridgelines. The Preserve is connected to large blocks of surrounding habitat that function as movement corridors.	Potential threats include illegal hunting and habitat loss. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintenance of movement opportunities through Soquel Canyon.

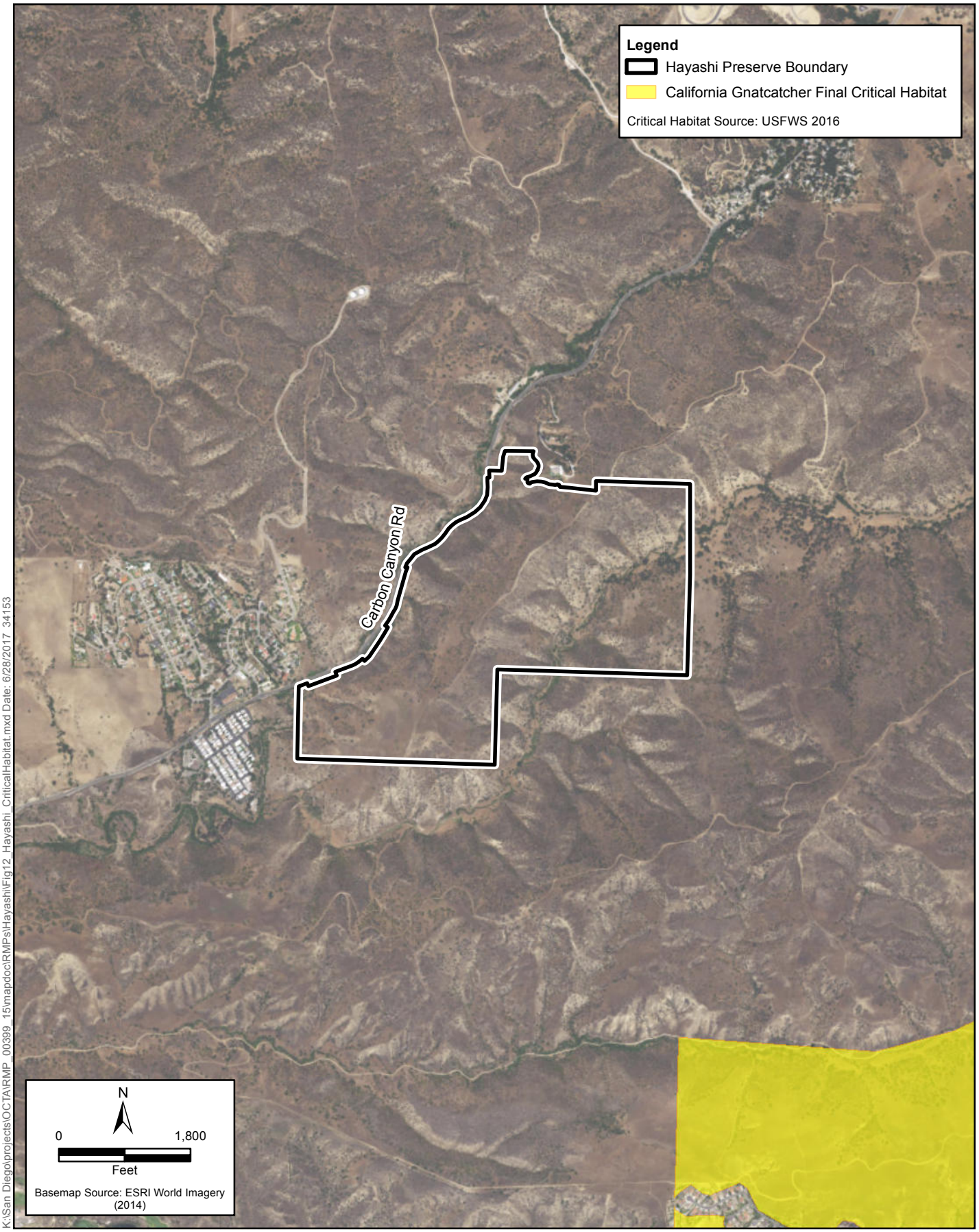

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Figure 12
USFWS Critical Habitat
Hayashi Resource Management Plan

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Chapter 3
Management and Monitoring

This chapter addresses the specific management and monitoring requirements for the Hayashi Preserve.

Roles and Responsibilities

Successful RMP implementation will depend on the cooperation of several management and implementation entities, as outlined below.

- **Implementing Entity**. OCTA is the NCCP/HCP administrator and the entity that will oversee implementation of conservation measures required to offset impacts from M2 freeway improvement projects, including management of the Hayashi Preserve. OCTA will identify a Preserve Manager who will serve as the long-term manager (and potential title holder) for the Preserve. OCTA will record a conservation easement or some other approved land protection instrument for the Preserve that will provide a legal mechanism to ensure each Preserve is maintained and managed in perpetuity as a habitat Preserve. The land protection instrument will be held by appropriate entities, depending upon the type of entity identified as the Preserve Manager.
- **Preserve Manager**. The Preserve Manager will consist of OCTA (interim) or an outside contractor or entity, as determined during RMP implementation. The Preserve Manager will be responsible for day-to-day Preserve management and operations. The Preserve Manager will coordinate with the OCTA NCCP/HCP Administrator and Wildlife Agencies regarding status and substantial changes to management activities. The Preserve Manager will prepare and submit Annual Progress Reports for the NCCP/HCP Administrator that summarize the results of research and monitoring activities, provide recommendations for future preserve management activities for the Preserve, and discuss anticipated activities for the upcoming year.
- **Monitoring Biologist**. The Monitoring Biologist may be a Preserve staff member or independent contractor. OCTA will select an individual or entity to fulfill this role. The Monitoring Biologist will be responsible for monitoring Covered Species and natural communities. The Monitoring Biologist role will be periodic based on the monitoring schedule established in the Plan. Data collection will follow accepted monitoring methods. The Monitoring Biologist will provide OCTA and Preserve Manager with monitoring reports that include data, results, and recommendations.
- **Brea-Fullerton Fire Department**. The Brea-Fullerton Fire Department (BFD) will provide oversight regarding future necessary fire management activities, such as fire access roads. BFD, and in some situations OCFA and/or CalFire, will also respond to active fires to prevent the loss of human life and property and other resources. These activities fall into two categories, regular maintenance activities and emergency activities.
- **Supporting Entities**. Supporting entities may include technical consultants, contractors, and volunteers who will assist with implementing various elements of the RMP. Technical experts will include the following:
    - **Biological Research and Monitoring** – Wildlife biologists, botanists, and certified arborists with the appropriate expertise, licenses, and permits (depending on survey requirements).

- **Restoration** – Restoration ecologists will assist with habitat restoration/enhancement planning and monitoring activities. Restoration ecologists and contractors will implement restoration/enhancement programs such as site preparation, plant establishment, and maintenance.
- **General Maintenance** – Other types of contractors may be retained to implement maintenance activities, including minor road maintenance and erosion control.

  Note that the Preserve Manager may use Preserve staff for restoration and general site maintenance tasks. Additionally, volunteers may be used to assist with monitoring and research tasks, specific restoration tasks (e.g., nonnative plant eradication, planting, site maintenance activities), educational and outreach activities, or site patrols, as appropriate.

- **Wildlife Agencies.** Both the USFWS and CDFW will review and approve the RMP and coordinate with OCTA, the Preserve Manager, and supporting biologists regarding the status of preserved natural resources, ongoing monitoring activities, and adjustments to the management program. The Wildlife Agencies will review and provide comments, if necessary, on Annual Progress Reports for the Preserve, which will be included in the NCCP/HCP annual report.

3.1 Management and Monitoring Goals, Objectives and Actions

3.1.1 OCTA M2 NCCP/HCP Goals and Objectives Relevant to the Hayashi Preserve

The M2 NCCP/HCP contains a broad set of biological goals and objectives at the landscape, natural community, and species levels that describe how the conservation actions would occur within areas important for regional conservation purposes. Goals are based on the conservation needs of the resources. Biological objectives describe in more detail the conservation or desired conditions to be achieved and have been designed to collectively achieve the biological goals. The biological goals and objectives indicate how the additional conservation of large blocks of habitat will benefit the biodiversity, natural communities, and habitat connectivity throughout key portions of the Plan Area, and provide for conservation and management of Covered Species. Biological goals for Covered Species are required by USFWS's 5-Point Policy to be included in HCPs (*Federal Register* (FR), Volume 65, Page 35242, June 1, 2000). The NCCP Act (Section 2810 of the Fish and Game Code) specifies the inclusion of conservation goals and objectives in the Planning Agreement. The following biological goals and objectives (documented in the M2 NCCP/HCP) are specifically applicable to the Hayashi Preserve:

Landscape Goal 1: Protect, manage, and enhance natural landscapes that result in conservation of areas large enough to support ecological integrity and sustainable populations of Covered Species, and are linked to each other and/or other areas of protected habitat in or adjacent to the Plan Area.

Landscape Objective 1.1: OCTA will conserve, enhance, and manage natural landscape within core and linkage areas contiguous with existing protected lands.

Landscape Goal 2: Protect and enhance natural and semi-natural landscapes important to maintain wildlife movement within the Plan Area.

Landscape Objective 2.1: OCTA will acquire, protect, and manage natural landscapes that secure wildlife movement corridors and provide landscape connectivity.

Landscape Goal 3: OCTA will protect, enhance, and/or restore natural landscapes within a range of environmental gradients and contiguous to other protected areas to allow for shifting species distributions in response to catastrophic events (e.g., fire, prolonged drought) or changed circumstances (e.g., climate change).

Landscape Objective 3.1: OCTA will acquire and/or restore natural landscapes within elevation ranges (0–500, 500–1,000, 1,000–1,500, 1,500–2,000 feet). The conservation and restoration of Covered Species habitat in or contiguous with existing Preserve lands will benefit potential shifting species distributions in response to catastrophic events and changed circumstances.

Landscape Goal 4: Protect and enhance habitat in geographically distinct areas across the Plan Area to conserve species by facilitating/promoting genetic exchange.

Landscape Objective 4.1: OCTA will acquire and/or restore natural landscapes within all the major Orange County watersheds (Hydrologic Unit Code 8) and a majority of the core and linkage areas that are contributing to genetic exchange within these areas.

Natural Community Goal 1: Protect, manage, and enhance natural communities to promote native biodiversity.

Natural Community Objectives: OCTA will acquire and/or restore chaparral, grassland, riparian, and woodland habitat to promote conservation of native biodiversity and connectivity that benefit Covered Species of these natural community types.

Natural Community Goal 2: Maintain and enhance riparian and wetland function and values to benefit Covered Species and promote native biodiversity.

Natural Community Objective 2.1: OCTA will acquire, restore, and/or enhance areas with aquatic resources (per CDFW jurisdiction). These conservation actions will protect riparian and wetlands functions and values by improving the condition and integrity of the physical streambed, aquatic and riparian habitat, and hydrology.

Species Goal 5: Provide conservation of coast horned lizard within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

Species Objective 5.1: OCTA will acquire Preserves with natural habitat that includes areas with loose, fine soils with high sand fraction, open areas with limited overstory for basking, and other features known to support coast horned lizard and OCTA will ensure that appropriate management monitoring actions are incorporated into the RMPs for each Preserve that include suitable habitat for coast horned lizard.

Species Goal 6: Provide conservation of orangethroat whiptail within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

Species Objective 6.1: OCTA will acquire Preserves that have documented occurrences of orangethroat whiptail. OCTA will ensure that appropriate management and monitoring actions are incorporated into the RMPs for each Preserve to protect and maintain habitat to support sustainable populations of orangethroat whiptail.

Species Goal 7: Provide conservation of western pond turtle within the Plan Area and minimize and mitigate impacts associated with Covered Projects and Activities.

Species Objective 7.1: OCTA will acquire a Preserve(s) with the potential to expand western pond turtle populations, potentially via translocation. OCTA will enhance the riparian and streambed habitat within the Preserve(s) to create and/or improve permanent and intermittent water sources that could provide habitat for western pond turtle.

Species Goal 10: Provide conservation of least Bell's vireo within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

Species Objective 10.1: OCTA will acquire a Preserve with the potential to enhance riparian habitat to expand least Bell's vireo habitat.

Species Goal 12: Provide conservation of bobcat within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

Species Objective 12.1: OCTA will protect and manage natural habitat that includes a combination of land cover types important for wildlife movement of mammals such as bobcat.

Species Goal 13: Provide conservation of mountain lion within the Plan Area and minimize and mitigate impacts associated with Covered Activities.

Species Objective 13.1: OCTA will protect and manage natural habitat that includes a combination of land cover types important for wildlife movement of large mammals such as mountain lion.

3.1.2 Preserve Specific Management Objectives and Actions

The Hayashi Preserve was purchased as part of the EMP because it helps achieve the conservation strategy/biological goals of the M2 NCCP/HCP by providing high quality mitigation for impacts resulting from the M2 covered freeway improvement projects. Conservation of the Hayashi Preserve ensures the preservation and enhancement of regional biological connectivity and the protection of Covered Species and their associated natural habitats. As identified in Section 3.1.1, there are a number of Plan Goals of the M2 NCCP/HCP that specifically apply to the Hayashi Preserve. In addition to the broader Plan Goals, this RMP also identifies Preserve specific management objectives and actions that support the broader Plan Goals. The Preserve-specific management objectives and actions are summarized in Table 3-1 and described in more detail in this chapter. A summary checklist and annual schedule of ongoing Preserve management and biological monitoring actions is included as Appendix A.

Table 3-1. Preserve Specific Management Objectives and Actions

Category/Goal	Management Objectives	Management Actions
Preserve Management (Section 3.2)		
Public Access (Section 3.2.1)	Evaluate opportunities to offer managed public access and recreational opportunities within the Preserve that are compatible with the protection of biological resources.	• Install gates, fencing, signage, and obstructions, as appropriate, to control unauthorized access. • Monitor and control permitted activities and unauthorized activities (e.g., use or creation of unauthorized trails). • Implement a public education and outreach program to communicate and regularly reinforce the value and purpose of the Preserve. • Participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made.
Invasive Species Control Plan (Section 3.2.2)	Implement an invasive plant species control program to protect natural communities and Covered Species habitat.	• The Preserve Manager will prepare an invasive plant treatment plan within two years of RMP adoption for review and approval by the Wildlife Agencies. The treatment plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration. • Prior to implementation of the invasive plant treatment plan, the Preserve Manager will map priority invasive species during general stewardship and biological monitoring efforts. • Establish and implement a monitoring schedule to evaluate the success of invasive plant control efforts for five years following implementation or until eradication is maintained for one year without follow-up control activities.

Category/Goal	Management Objectives	Management Actions
Habitat Restoration (Section 3.2.3)	Restore riparian corridor along Soquel Canyon to achieve a 50 percent increase of riparian habitat cover.	• During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions of the riparian habitat along Soquel Canyon. Fencing has been erected to remove cattle from this area in order to allow the habitat to passively recover and expand. Photo monitoring methods will be utilized to track progress of passive restoration. • After five years, the Preserve Manager, in consultation with the Restoration Ecologist, may determine the need for active (versus passive) restoration, including supplemental planting, to improve the cover and quality of native riparian habitat along Soquel Canyon.
Vegetation Management (Section 3.2.4)	Minimize impacts to native plants and wildlife habitat resulting from management, maintenance, or other activities on the Preserve.	• Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and approved recreation trails and installation of erosion control measures, if necessary. • The clearing of natural vegetation on the Preserve will be required to comply with the Nesting Bird Policy included in Appendix C.
Fire Management (Section 3.2.5)	Develop a Fire Management Plan (FMP) for the Preserve that maximizes protection of biological resources during fire suppression activities, to the degree feasible.	• Within two years from adoption of the RMP, the Preserve Manager, in coordination with the appropriate fire entities, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. It is also possible that within two years, this Preserve will be incorporated into the pending CHSP FMP. • Identify and map environmentally sensitive lands to be included in FMP. • If a fire occurs on the Preserve, the Preserve Manager will inventory the condition of natural communities following the fire, and will coordinate with the Monitoring Biologist, Wildlife Agencies, and Regulatory Agencies as necessary, to determine if habitat restoration is warranted.

Category/Goal	Management Objectives	Management Actions
Nonnative Animal Species Management (Section 3.2.6)	Control invasive (nonnative) animal species that are known to impact native wildlife species and habitats.	• The Preserve Manager will work towards controlling the spread of invasive ant species. • The Preserve Manager will monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat. • Implement and enforce feral and domestic animal restrictions and control.
Property Management (Section 3.2.7)	Implement routine and ongoing property management activities to ensure that the Preserve is maintained in good condition.	• Collect and dispose of trash and debris regularly to maintain the Preserve in good condition to minimize impacts to Covered Species and natural communities. • Ensure operational activities within the Preserve avoid or minimize impacts on Covered Species and natural communities from lighting or noise. • Monitor and maintain fencing and gates to control public access and trespassing. • Install and maintain signs at key access points to provide visitors with information on Preserve rules, and biological and cultural resources (as appropriate). • Inspect and identify situations requiring erosion control.
Land Uses within the Preserve (Section 3.2.8)	Allow selected activities on the Preserve that can be managed to minimize impacts to protected biological resources and facilitate ongoing resource preservation.	• Identify and allow only land uses within the Preserve that are conditionally allowed if it can be assured that the activity minimizes or avoids impacts on biological resources and ecosystem functions. • Conduct monitoring of the Preserve to ensure prohibited uses are not occurring with the Preserve.

Category/Goal	Management Objectives	Management Actions
Lands Uses Adjacent to the Preserve (Section 3.2.9)	Monitor and address negative edge effects from existing land uses adjacent to the Preserve.	• The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve. • The Preserve Manager will develop and implement a public awareness program within two years of the RMP approval to educate existing property owners in the vicinity of the Preserve of the Preserve's goals and objectives and steps they can take to protect the biological resources. • Prior to implementation of the public awareness program, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and maintain a dialogue with adjacent landowners to discuss and address edge effect issues. • To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the applicable adjacency guidelines.
Management of Cultural Resources (Section 3.2.10)	Manage the Preserve in a manner that does not impact sensitive archeological resources.	• Preserve Manager will follow directives set forth in Archeological Sensitivity Assessment (ASA) of how and where cultural resources need to be protected, and the Preserve Manager will use this information to help ensure that activities on the Preserve do not impact any sensitive cultural resources.
Public Outreach and Education (Section 3.2.11)	Develop and implement a public outreach and education program to inform and engage the public on Preserve values, goals, and guidelines to promote stewardship of biological resources and compliance with Preserve rules and regulations.	• Hold public meetings. • Develop and maintain website. • Provide educational and interpretative materials. • Develop outreach and volunteer program. • Develop an educational/outreach program focused on adjacent landowners to communicate information regarding Preserve management and obtain information regarding observations or concerns from adjacent landowners.

Category/Goal	Management Objectives	Management Actions
Biological Monitoring and Management (Section 3.3)		
Covered Plant Species (Section 3.3.2) **Plants** Plan Species Goal 2 and Species Objective 2.1	Ensure the long-term viability of Covered Plants by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Maintain database of population size of Covered Plants on Preserve. • Protect Covered Plants during property maintenance and/or from public access and recreational activities. • Protect Covered Plants during fire suppression activities • Augment populations.
Covered Animal Species (Section 3.3.3) **Reptiles** Plan Species Goal 5 and Species Objective 5.1; Species Goal 6 and Species Objective 6.1; and Species Goal 7 and Species Objective 7.1	Ensure the long-term viability of Covered Reptiles by protecting, managing, and enhancing suitable habitat on the Preserve.	• Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Protect Covered Reptiles and habitat during property maintenance and/or from public access and recreational activities.
Covered Animal Species (Section 3.3.3) **Birds** Plan Species Goal 10 and Species Objective 10.1	Ensure the long-term viability of Covered Birds by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Protect Covered Birds and habitat during property maintenance and/or from public access and recreational activities. • Protect Covered Birds and habitat during fire suppression activities.
Covered Animal Species (Section 3.3.3) **Mammals** Plan Species Goal 12 and Species Objective 12.1 and Species Goal 13 and Species Objective 13.1	Ensure the long-term viability of Covered Mammals by protecting, managing, and enhancing populations and suitable habitat on the Preserve.	• Identify status, threats, and population trends. • Identify anthropogenic conflicts. • Develop a fencing approach that protects the Preserve while facilitating wildlife movement. • Protect Covered Mammals from hunting. • Protect Covered Mammals from public access and recreational use.

Category/Goal	Management Objectives	Management Actions
Natural Communities (Section 3.3.4) Plan Natural Communities Goal 1 and Natural Communities Objective (1.1-1.5) and Natural Communities Goal 2 and Natural Communities Objective 2.1	Ensure the long-term viability of natural communities by protecting, managing, and enhancing these resources on the Preserve.	• Maintain updated vegetation map. • Identify operational or public use conflicts. • Establish long-term monitoring plots to identify vegetation conditions and trends. • Monitor nonnative invasive species eradication efforts and/or enhancement/restoration actions. • Control invasive pests or disease. • Restore natural communities impacted by altered fire regime or climate change. • Protect natural communities from public access and recreational trail use. • Protect natural communities from erosion. • Protect natural communities from edge effects.
Adaptive Management (Section 3.3.5)	Preserve Manager will manage the Hayashi Preserve in accordance with the principles and procedures for adaptive management.	Key issues for a focused adaptive management approach to address uncertainties of preserve management on the Hayashi Preserve include the following: • Monitoring of passive restoration of riparian habitat enhancement along Soquel Canyon to determine if additional active restoration is warranted. • Monitor passive restoration of Soquel Canyon through the Preserve to determine if and how habitat within Preserve can be enhanced for western pond turtle. Research and survey the area between the Hayashi Preserve and where nearby occurrence records have shown western pond turtle to be located to see if there are barriers to dispersal that could be addressed.
Annual Progress Reports (Section 3.3.6)	The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year.	Annual reports will include updates and anticipated activities for the upcoming year and will provide updates including, but not limited to: • Monitoring of preserved biological resources, including natural communities and Covered Species. • Fire management and control, general site maintenance, and encroachment issues. • Habitat restoration and enhancement. • Education and outreach.

3.2 Preserve Management

The primary purpose of the Hayashi Preserve is to help fulfill the preserve acquisition component of the M2 NCCP/HCP Plan conservation strategy. However, the Preserve may also provide recreational benefits and must accommodate site-specific operational and safety activities. This chapter provides information on the Preserve management activities for the following Preserve elements to ensure that biological resources are protected while allowing for compatible uses:

- Public Access (Section 3.2.1)
- Invasive Plant Species Control (Section 3.2.2)
- Habitat Restoration (Section 3.2.3)
- Vegetation Management (Section 3.2.4)
- Fire Management (Section 3.2.5)
- Nonnative Animal Species Management (Section 3.2.6)
- Property Management (Section 3.2.7)
- Land Uses within the Preserve (Section 3.2.8)
- Land Uses Adjacent to the Preserve (Section 3.2.9)
- Management of Cultural Resources (Section 3.2.10)
- Public Outreach and Education (3.3.11)

3.2.1 Public Access

A goal of this RMP is to evaluate if managed public access and recreational opportunities within the Preserve are appropriate / compatible with the protection of biological resources. The Preserve Manager will be responsible for enforcing access restrictions and biological protection measures as part of ongoing access management.

This section includes a discussion of existing and historic public access on the Preserve, guiding principles for defining a public access plan, elements of the proposed public access and trails system plans, and public education and enforcement guidelines.

3.2.1.1 History of Public Access on the Preserve

Prior to acquisition by OCTA, this Preserve was privately owned. The previous property owner used existing dirt roads and trails (Figure 13) for routine management of the property. The previous property owner did not authorize public access, however, trespassing was known to occur and included hikers and mountain bikers.

A review of historic aerial photographs of the property shows that between 1938 and 1946, Carbon Ridge Road was extended from the area northeast of the Preserve, on to the Preserve, along Carbon Canyon Ridge. From 1946 through 1952, the width of Carbon Ridge Road onsite was increased, and additional smaller trails radiating from this ridge road were established. The other main trail on the

Preserve occurs along Soquel Canyon and connects to Chino Hills State Park south of the Preserve and private property east of the Preserve.

3.2.1.2 Guiding Principles for Defining a Public Access Plan

During the OCTA M2 NCCP/HCP Draft Environmental Impact Report/Environmental Impact Statement public comment period between November 2014 and February 2015, OCTA received specific comments relating to public access to the Preserves. In order to develop a public access program that took these public comments into consideration, OCTA convened three stakeholder focus group meetings. These focus group meetings resulted in feedback from regional land managers, Preserve neighbors, user groups and environmental stakeholders. General principles for public access were drafted that adhered to the M2 EMP objectives and addressed the need to provide complementary access opportunities. A general framework for public access on the OCTA Preserves was established as part of this outreach effort. These general principles and framework are outlined below.

Adhere to M2 EMP Objectives

a. The M2 freeway projects will potentially impact protected biological resources. State and Federal laws require that impacts on these resources be mitigated. The M2 sales tax includes funding to mitigate for these impacts. In order to provide this mitigation, OCTA is coordinating with the Wildlife Agencies and developing an NCCP/HCP. Undeveloped properties that possess habitat and biological resources that are similar to those potentially affected by the construction of the M2 freeway projects have been purchased and are integrated into the NCCP/HCP[2] as Preserves. These Preserves will remain undeveloped and will be protected in perpetuity.

b. OCTA Preserves are conservation properties (required mitigation) that are integrated into the Wildlife Agencies' and regulatory agencies' permitting process to facilitate issuance of permits for the M2 freeway projects.

c. The Preserves will be conserved in perpetuity. The NCCP/HCP and Regulatory Agencies' permits will require that these Preserves have a biologist review the condition of the biological resources (including wildlife movement) on a regular basis to ensure that the resources are protected and that threats are adequately addressed. The biologist will make management recommendations and work with the Wildlife Agencies and Preserve Manager to ensure the resources are not degrading. These required conditions will remain in perpetuity.

d. Permits have been issued by the Wildlife Agencies and a comprehensive permitting process has been initiated with the regulatory agencies. These permits will facilitate the construction of the covered freeway improvement projects.

Provide Complementary Access Opportunities

e. Recreational access is an important co-benefit but not the principle public purpose for which properties are acquired by OCTA under the EMP. Access must be established and managed so as to ensure the permit conditions of the NCCP/HCP and Implementing Agreement, as well as the regulatory permits, are adhered to in perpetuity. The NCCP/HCP stipulates that recreational access be limited to passive activities such as walking, jogging, hiking, bird watching, non-

[2] The M2 EMP has also funded multiple restoration projects. These public access principles and guidelines do not apply to the restoration project areas as they are owned and managed by separate entities.

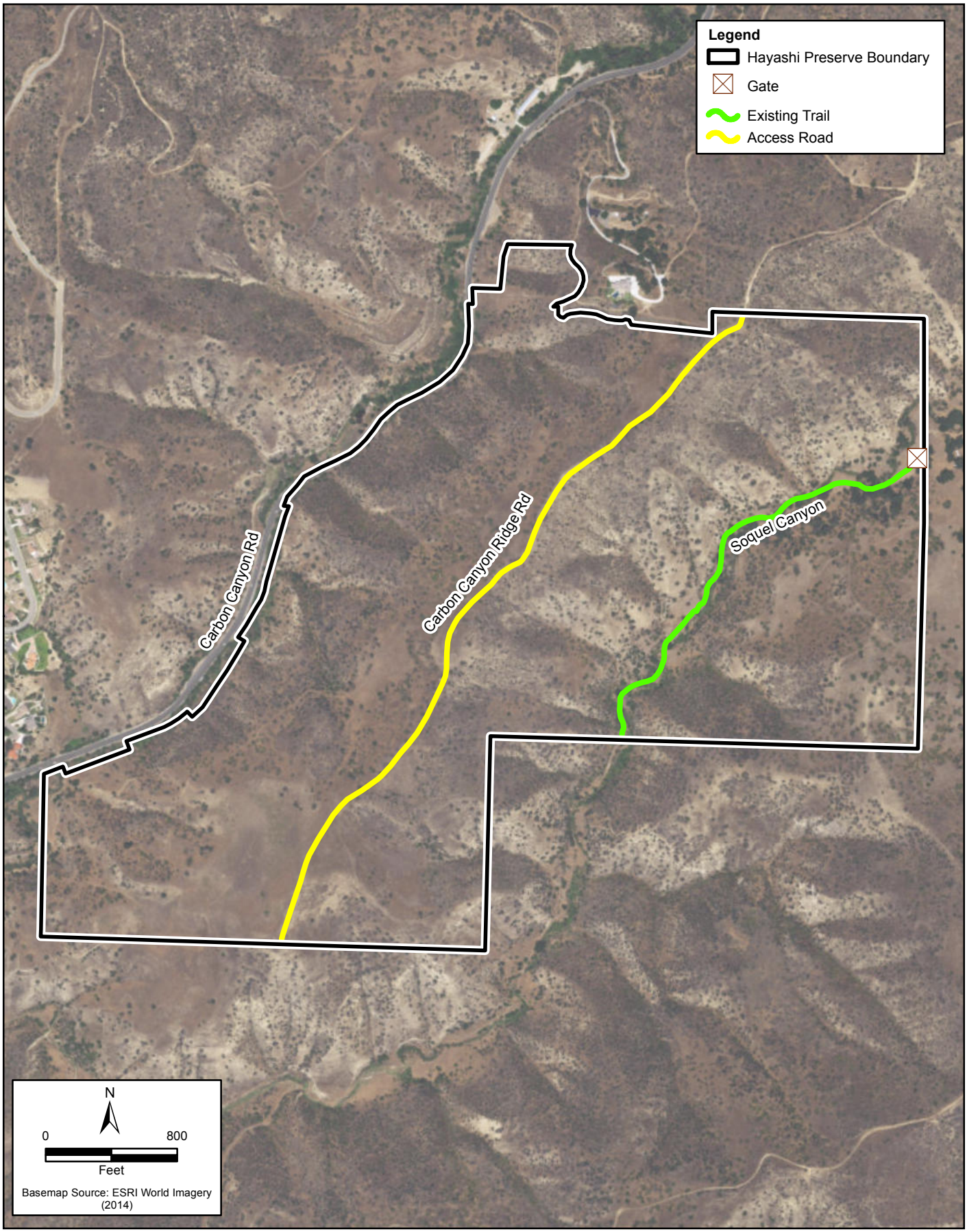

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Figure 13
Existing Roads and Trails
Hayashi Resource Management Plan

competitive mountain biking, equestrian use, and limited picnicking. Certain inherent dangers exist on the Preserves and include; mountain lions, rattlesnakes, poisonous insects, poison oak, extremes in weather, loose rocks, and steep/rugged terrain.

- Access (including public access programs) should be provided consistent with the constraints of protecting habitat and species resources, historical resources, terrain, surrounding land uses, limits of allowable impacts within Preserves, parking and/or staging area opportunities, suitable trails, access points, management costs, and community support.
- Where public access can be provided while adhering to the goals of the NCCP/HCP, existing fire and utility roads should initially form the core trail system within Preserves while making best efforts to maintain consistency and compatibility with regional trail systems. Trails should be minimized where possible to preserve intact and naturally functioning habitat. Minimizing the amount of trails on the Preserves is important as this will limit the edge effects and the proportion of the property that is exposed to potential disturbance. Single track trails may be utilized if the trail helps to form a core system and/or complete a loop within the Preserve and the use of the trail does not negatively affect sensitive resources. OCTA will be required to ensure that the number, size, and location of the trail system does not increase to more than what is approved by the Wildlife Agencies. Installation of fencing may also be necessary along certain trails to discourage off-trail activities. All trails will require maintenance to keep them safe. These tasks will be more realistic to manage if the trail system is smaller and well-defined.
- Partnerships with community and user groups should be developed to help manage and staff access as well as docent activities and responsibilities.
- A robust and sustained public education program should be established to communicate and regularly reinforce the history, purpose, and value of the Preserve system. The message should include that preserving these lands in perpetuity not only benefits biological resources, but also provides protection of historical vacant lands and view sheds which add value to the community.

The following is a **Draft Model Public Access Framework** for OCTA Preserves.

1. The default form of public access is managed or structured access by the Preserve Manager which may include limits on the dates, times, purpose, and amount of access, including some degree of supervision, potentially augmented, as conditions warrant, by:
    a. Docent-led managed access through partnerships with community and user groups;
    b. Self-managed access through partnerships with community and user groups;
    c. A permit system; and/or
    d. Open access days and locations.
2. Public access is scalable and can be actively and adaptively managed by changing the form, frequency, numbers, times of day, days of week and month, and season that activities are conducted depending upon circumstances and status of resource protection, observed impacts, and compatibility of different user groups

3. Some Preserves may have extremely limited public access opportunities because of significant habitat value[3], safety concerns, relative isolation, lack of trails or trail connections, and/or conflicts with surrounding land uses.

4. Enforcement of public access limitations and violations of access rules and policies is progressive and aimed at education and diversion of the activity to other more suitable locations rather than punishment.

5. Repeated violation of access rules and policies and/or evidence of damage or harm to the Preserves may result in fines significant enough to force change in behavior and restricted public access or closures until resource protection can be assured. Fines may vary and, depending on the type and severity of the impact, could result in a per acre cost to restore and offset damage to a Preserve. The Preserve Manager should have the capacity to actively cite repeat violators and pursue damage reimbursements.

3.2.1.3 Hayashi Public Access Plan

In order to properly assess if access is appropriate, each Preserve needs to be individually analyzed to determine what type(s) of access would be compatible. The intention is that each of the OCTA M2 Preserves would result in a specific access program based on the Draft Model Public Access Framework developed as a result of public input and the public outreach focus groups. The framework needs to be applied to each individual Preserve as each Preserve has its own set of limitations and resources. These considerations were factored into the development of the managed access plan as described in this section.

The Hayashi Preserve is located directly east of Carbon Canyon Road within City of Brea. This road experiences high volumes of traffic (especially on the weekends). The Preserve does not currently include the necessary space for adequate staging areas (parking/restroom facilities) to facilitate public access. Signs are posted along Carbon Canyon Road communicating that this portion of the road does not allow parking at any time and that vehicles will be towed if parked along this road (Figure 14). In addition, north and east of the Preserve is private property, which is currently closed to the public (Figure 15). CHSP owned and managed land occurs to the south of the Preserve, however, there are no existing roads or trails within the Preserve that connect to these CHSP lands. This is discussed in greater detail below. Due to the combination of these constraints, public access on the Preserve will be very limited. It may be possible to hold a small structured event with the help of adjacent landowners for staging and/or parking. If an event is set to occur, public access would adhere to the Preserve management roads and trails as depicted in Figure 16.

The final design of the Hayashi Preserve roads and trails was determined based on avoidance and minimization of impacts to sensitive biological resources as well as coordination with the Wildlife Agencies. Based on a review and analysis of the existing roads and trails and biological constraints on the Hayashi Preserve, the roads and trails depicted on Figure 16 will be designated as approved dirt roads and trails for preserve management. These access routes will be primarily maintained for management (protection and monitoring of the Preserve) and emergency use. If a small public event is planned at Hayashi, the maintained roads will be utilized.

[3] Significant habitat value can be defined as habitat that imperiled species are reliant upon in order to help prevent their extinction, fragmentation or reduction in range.

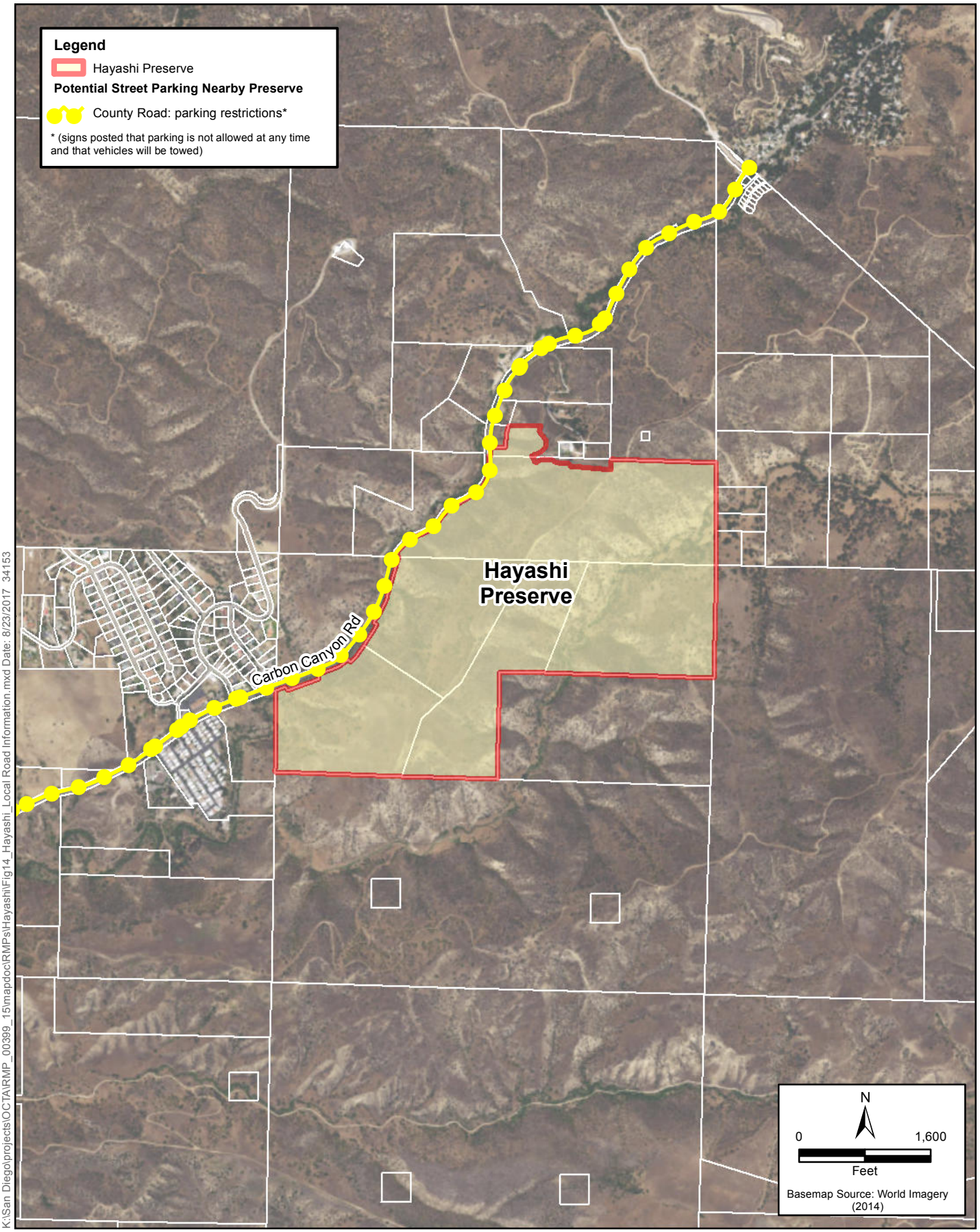

Figure 14
Local Road Information
Hayashi Resource Management Plan

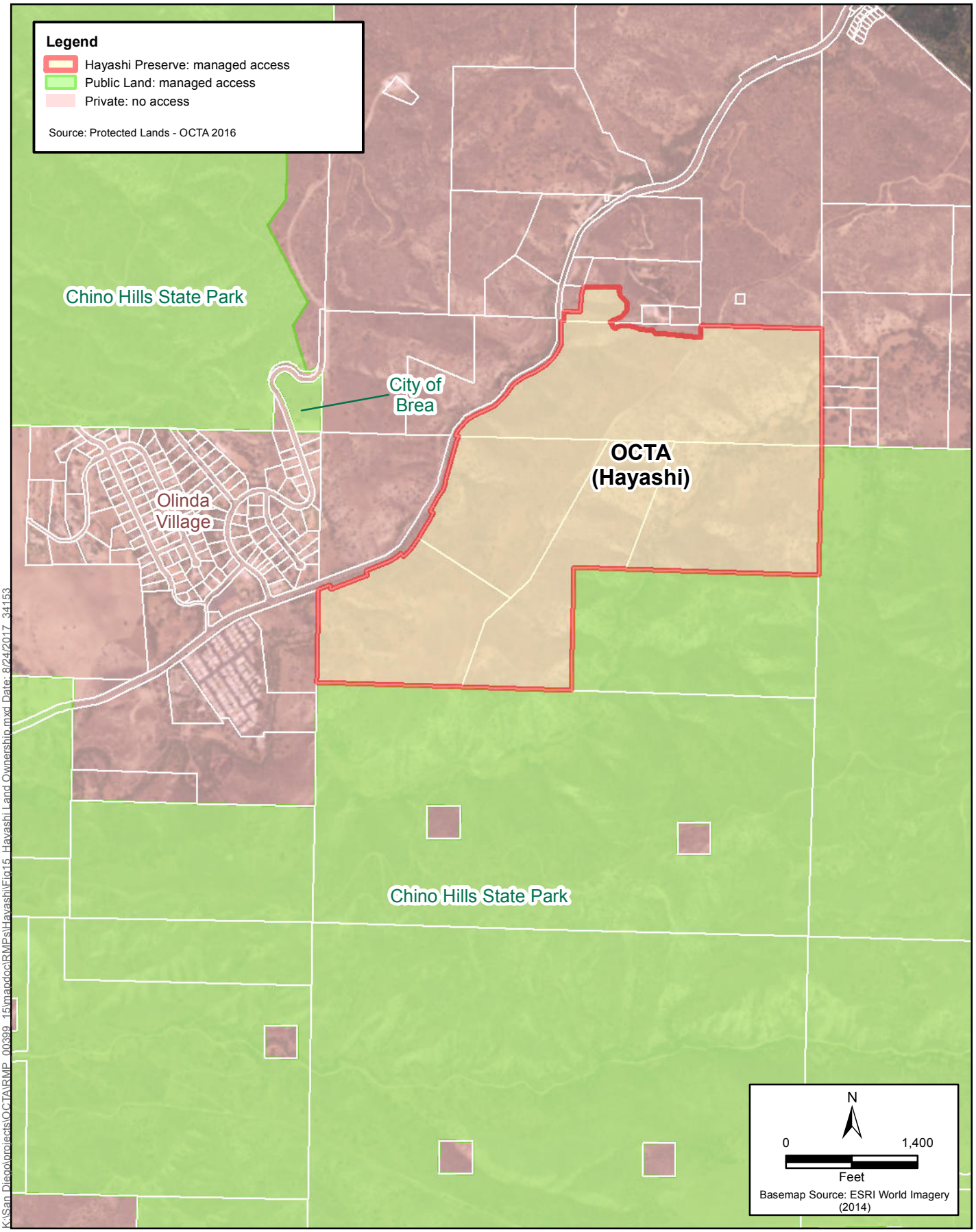

Figure 15
Surrounding Land Ownership
Hayashi Resource Management Plan

Chino Hills State Park Trails

The Chino Hills State Park General Plan was adopted in 1999 and includes definitions of different management categories (see Figure 5). It is anticipated that the Hayashi Preserve would be managed as a Core Habitat Zone and would include a level of public access to protect biological similar to how the Chino Hills State Park manages Core Habitat Zones. The current Chino Hills State Park trails map (Chino Hills State Park Interpretative Association. 2017) does not include the trail along Soquel Canyon on the trail map and does not show trails that currently connect to Hayashi Preserve (Figure 17). CHSP is currently working on a new master trail plan.

OCTA recognizes that regional trails planning evolves and changes over time. OCTA will participate in regional trails planning efforts to evaluate possible trail connections and anticipate how (and if) future trail connections could be made. This requirement will be extended to the Preserve Manager if and when OCTA transfers ownership and responsibility for managing a Preserve to another entity.

Staging and Parking Areas

Staging and/or parking does not exist at the Hayashi Preserve. Street parking near the Hayashi Preserve, along Carbon Canyon Road is prohibited (see Figure 14). Chino Hills State Park Discovery Center is approximately 2 miles southwest of the Hayashi Preserve along Carbon Canyon Road and offers adequate staging areas for the use of CHSP and also offers more than 95 miles of trails that are open to the public (during park operating hours). However, no trails exist that connect this staging area to the Hayashi Preserve.

3.2.1.4 Public Education and Enforcement of Public Access

Public education and involvement are critical components for ensuring successful management and public support of the Preserve System. If the public is properly informed of the biological values, goals, and activity restrictions within the Preserve, it is more likely that management goals and guidelines will be respected and followed. The OCTA NCCP/HCP Administrator and Preserve Managers will coordinate to determine the most effective methods and materials for educating the public. They may include the following:

- Hold annual public meetings to present information regarding Preserve goals, guidelines, restrictions, and compatible uses. These meetings may be held concurrently with the annual NCCP/HCP reporting meeting and a regularly scheduled Environmental Oversight Committee meeting and will be announced with the property public notice.
- Establish information on OCTA's website that provides information on the Preserve, Preserve Manager contact information, and links to additional information on Preserve goals and guidelines.
- Provide signs, displays, and pamphlets that explain Preserve rules and management goals.
- Develop a volunteer program that addresses a variety of education and management issues, including, but not limited to, preparation of educational materials, trail repair, erosion control, invasive species removal, native habitat and plant restoration, trash removal, biological monitoring, and management patrols.
- Prevent and remove illegal trails, trail modifications (e.g., bike jumps), and other intrusions into the Preserve, and enforce land use and recreational activity restrictions.

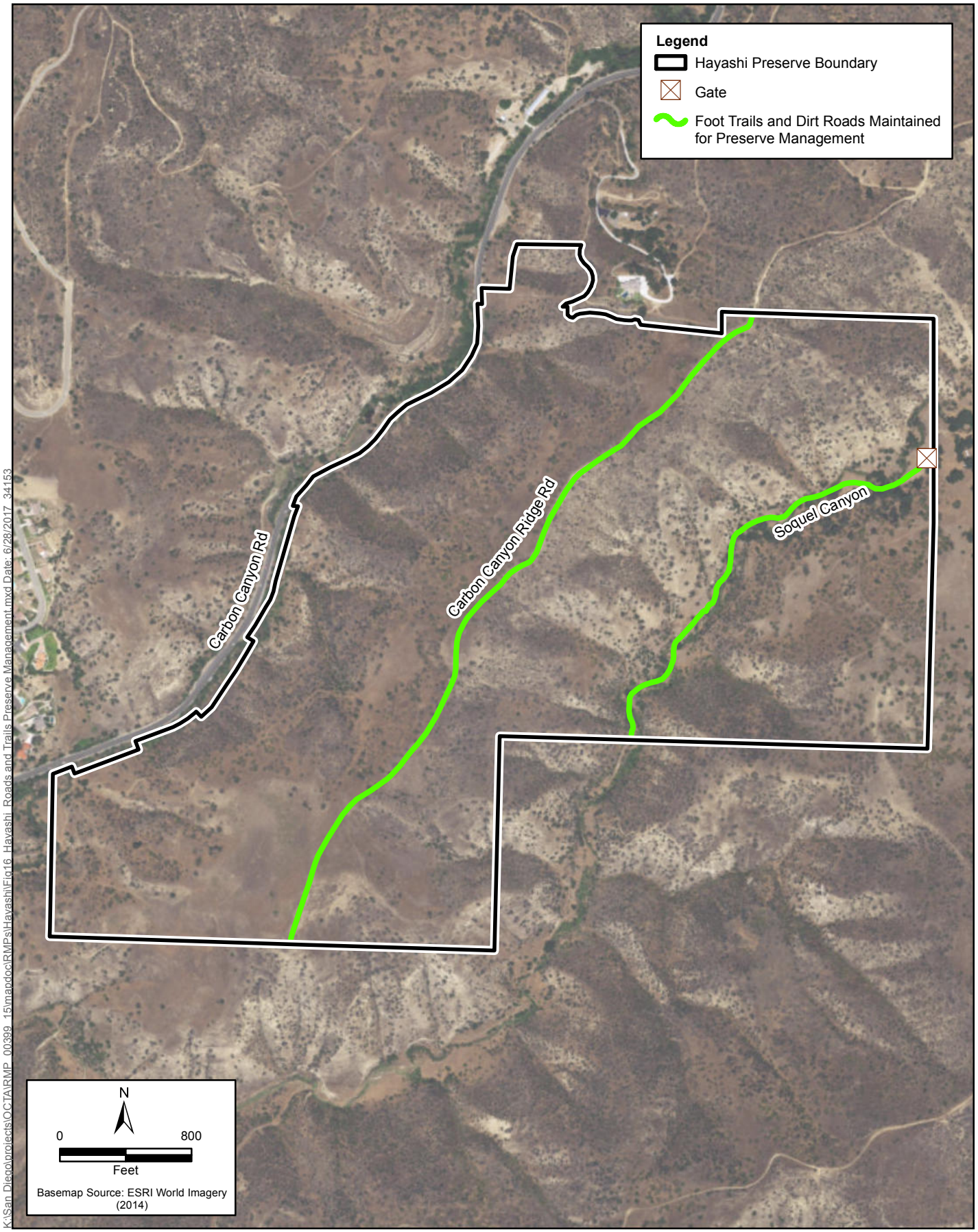

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Figure 16
Roads/Trails for Preserve Management
Hayashi Resource Management Plan

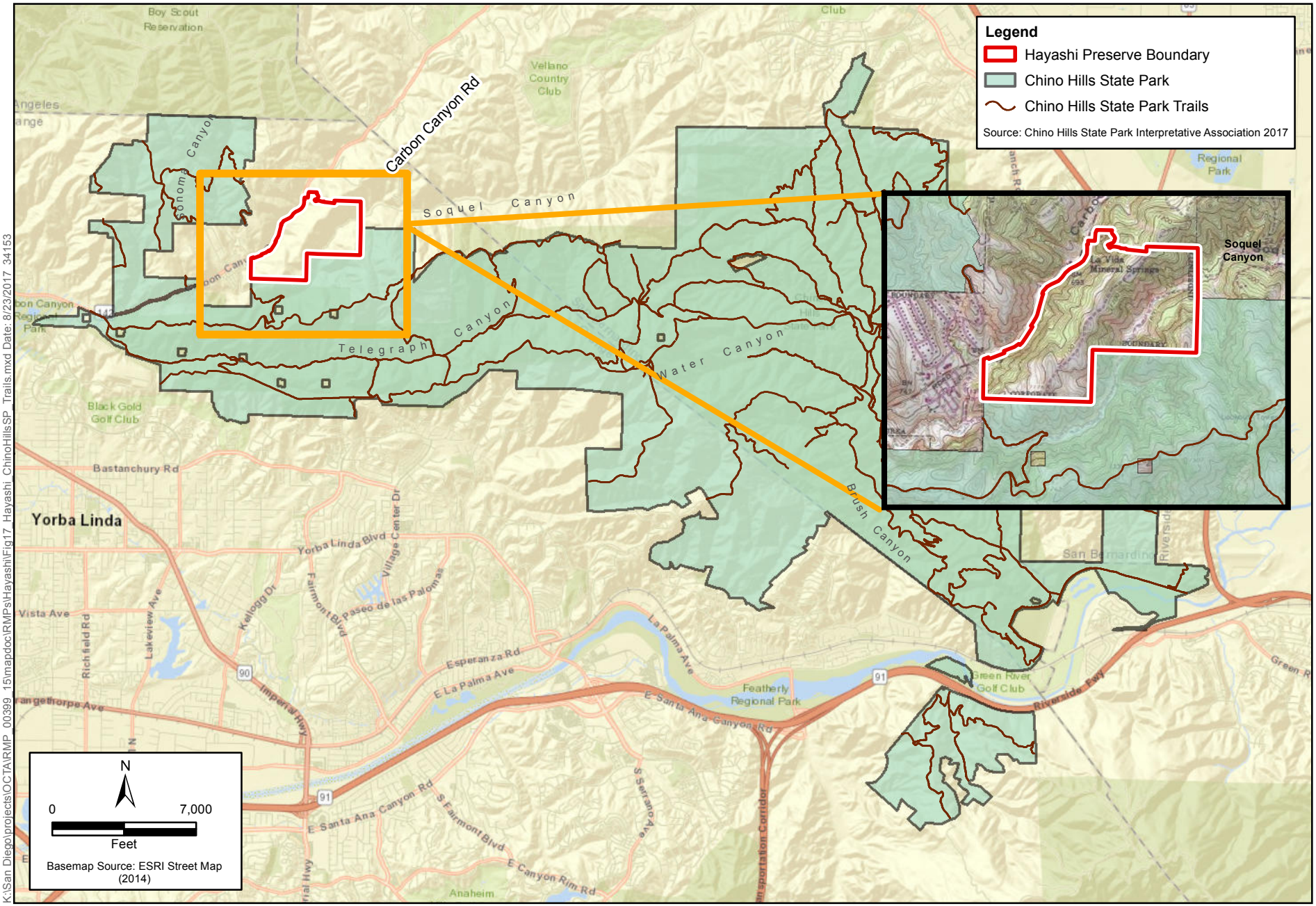

Figure 17
Chino Hills State Park Trails
Hayashi Resource Management Plan

- Encourage two-way communication with adjacent residents to collect and disseminate Preserve information

Ongoing management of the Preserve must monitor and control permitted activities and unauthorized activities (e.g., use of closed trails, illegal dumping of waste materials and debris, and encroachment) in sensitive areas to protect biological resources on the Preserve. Damage caused by unauthorized public access is potentially one of the greatest threats to Preserves near urban population centers. Without enforcement, it is often difficult to change human behavior, especially in areas that have been used historically for activities that are not compatible with biological resource protection (e.g., off-road vehicle use).

OCTA currently contracts with CHSP for management responsibilities. As such, the CHSP staff are following their enforcement guidelines but may defer to the Orange County Sheriff as they deem prudent. Preserve enforcement will consist of regular patrols of the Preserve to communicate safety measures, resource protection measures, and recreational use and access guidelines to public users (if allowed in the future). Public outreach and education, including educational materials, docents, and volunteers could supplement Preserve patrol efforts.

If recreational access occurs in the future, all persons using the Preserve for general access or recreational purposes, as well as persons responsible for authorized management and maintenance activities, will be encouraged to participate in "self-monitoring and policing" programs to minimize impacts on protected biological resources. For example, trail user groups will be encouraged to self-monitor and police their community to minimize off-trail activities and other abuses to habitat resources within the Preserve. The Preserve Manager will be responsible for enforcing public access guidelines and ensuring that only permitted recreational and general access activities occur within the Preserve.

If allowed by State and local regulations, the Preserve Manager and staff should be given the authority to issue citations and impose fines for misuse of trails and other Preserve facilities, trespassing, and other unauthorized or illegal activities. As these lands are not currently owned by the State, County codes and regulations would apply. Alternatively, the Preserve Manager may involve local law enforcement agencies (OC Sheriff) to enforce biological protection measures and to restrict prohibited activities, including issuing citations and fines. Fines levied for abuse of Preserve facilities resulting in harm to species or sensitive habitat will be sufficient to discourage repeat occurrences (subject to existing laws and regulations).

The Preserve Manager will make adjustments, as needed, to site access and recreational activities (including adjusting hours/days of use and restricting road and preserve access) to ensure protection of biological resources. Repeated offenses (minor and/or major) by the same user or users will provide grounds for permanent loss of access to the entire Preserve as a means of avoiding unacceptable adverse impacts on habitats/species within the Preserve. This will be enforced with the use of local law enforcement as well as public education regarding the reasons for closure and the corrective actions needed to reopen it.

Repeated offenses by multiple users will provide grounds for the temporary closure of trail segments and, when necessary, the entire Preserve as a means of avoiding unacceptable adverse impacts to habitats/species within the Preserve. Such temporary closures, again paired with public education efforts, will also serve to inform users regarding the need and reasons to obey Preserve rules and regulations, thereby reducing future recreational impacts on biological resources of the Preserve.

The Preserve Manager will install and/or maintain fencing, barriers, or signage at key access points, as necessary, to restrict public access and limit unauthorized activities thereby protecting resources and facilitating public safety.

3.2.2 Invasive Plant Species Control

The Hayashi Preserve has a relatively low percentage of invasive plant species but there are grassland areas along Soquel Canyon disturbed from previous grazing dominated by invasive species such as ripgut grass, slender wild oat, and milk thistle. Invasive species were identified during baseline surveys and the potential for invasive plants have been identified as a threat to natural communities and species on the Preserve. Invasive plant species control is expected to be a long-term, ongoing management issue.

The Preserve Manager will contract with a Restoration Ecologist to prepare an invasive species management plan within two years of RMP adoption. The management plan will prioritize invasive species for control; specify goals (eradication versus control); identify treatment locations, timelines (including potential re-treatments), and removal methods; provide realistic, measurable success criteria and monitoring methodology; and identify areas that may need post-treatment restoration. The treatment plan will set forth target-specific control strategies for invasive species control, using an integrated pest management (IPM) approach. The IPM approach uses the least biologically intrusive control methods and is applied at the most appropriate period in the growth cycle to achieve desired control goals. Invasive control strategies may include mechanical and chemical methods.

The invasive plant treatment plan will be reviewed and approved by the Wildlife Agencies. The treatment plan should include the following measures.

- Development of an accurate mapping of invasive plant species. The Preserve Manager in coordination with the Monitoring Biologist and Restoration Ecologist will map priority invasive species and create a spatial dataset of invasive species locations. Priority species include, but are not necessarily limited to, giant reed, salt cedar, pampas grass, and cardoon. The mapping of invasive plant species will be maintained over time through surveys completed by the Preserve Manager, Monitoring Biologist, or volunteers, focusing on areas that function as natural conduits for dispersal (trails, streams, disturbed areas). Surveys will be conducted during general stewardship monitoring, biological monitoring, or volunteer patrols. The invasive species map will be updated yearly based on mapping results.
- Chemical control will be conducted using herbicides compatible with biological goals and objectives. Pest control applicators qualified and licensed under the California Department of Pesticide Regulations will provide recommendations for chemical control.
- Best Management Practices (BMPs) will be identified for the disposal of invasive plant materials removed from the Preserve at a landfill or secure, onsite location to avoid spreading invasive seeds or propagules. Onsite storage may include chipping, mulching, and periodic spot-treatment of compost piles with herbicide to kill any germinating or re-sprouting invasive plants.
- A monitoring schedule will be established to evaluate the success of invasive plant control efforts for five years following implementation or until eradication is maintained for one year without follow-up control activities. Monitoring will be conducted by the Preserve Manager during stewardship monitoring and by the Restoration Ecologist during initial removal activities and then annually for up to five years following initial activities. Regular monitoring and annual

assessments will evaluate re-growth of target species (giant reed, salt cedar, pampas grass, and cardoon), unauthorized encroachment, and related vandalism and damage.

- Situations where the implementation of habitat restoration should be implemented in conjunction with invasive plant removal to improve native habitat cover and quality will be identified.

The Preserve Manager will implement remedial actions where necessary, based on monitoring results. These may include re-treatments, adjustments to invasive plant control methods or timing, and modifications to site protection measures. The Preserve Manager will continue to collaborate with the Restoration Ecologist to receive input regarding site conditions, changes in control methods or timing of actions, and adjustments to monitoring frequencies. Results of the implementation and monitoring of the invasive plant species control plan will be included in the Annual Reports.

3.2.3 Habitat Restoration

Habitat restoration activities may be required and/or desirable in response to different threats, stressors, and habitat conditions. This RMP identifies habitat restoration as a potential activity within the Hayashi Preserve associated with areas degraded by grazing, invasive plant species control (Section 3.2.2), response to fire events (Section 3.2.5), and biological monitoring and management (Section 3.3). At this point in time, specific habitat restoration activities have been identified for enhancement of riparian habitat along Soquel Canyon. Additional restoration activities associated with other priorities may be warranted in the future based on monitoring and future conditions.

3.2.3.1 Enhancement of Riparian Habitat Along Soquel Canyon

The Hayashi Preserve includes both Carbon Canyon Creek and Soquel Canyon Creek. Soquel Canyon is the larger tributary within the Preserve and in locations, is completely contained within the Preserve. Carbon Canyon Creek traverses SR-142 and jogs in and out of the Hayashi Preserve experiencing higher levels of noise, light, and water quality impacts. Because of these impacts, Soquel Canyon Creek has been identified as the current preferred location for riparian enhancement. Soquel Canyon has been historically disturbed by grazing. OCTA, through partnership with CHSP staff, has taken steps to remove grazing from the riparian corridor by installing fencing to allow for the passive restoration of riparian habitat. This approach has had recent documented success where grazing was removed in the adjacent Chino Hills State Park. The habitat recovered naturally after grazing was removed from the riparian zone and least Bell's vireo subsequently reoccupied the area. There are known least Bell's vireo occurrences above and below the Hayashi Preserve that are expected to act as a source population for vireo to recolonize the Hayashi riparian habitat as it recovers.

The Preserve Manager will monitor the Soquel Canyon to ensure grazing is kept off of the Preserve and the riparian habitat is initially allowed to passively restore back to original conditions. During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions at these locations using photo monitoring methods to track progress of passive restoration. After five years the goal will be to have riparian habitat cover expand by at least 50 percent. Results of the effectiveness of passive restoration will be reported in the Annual Report. After five years, the Preserve Manager, in consultation with the Restoration Ecologist, may determine the need for active (versus passive) restoration, including supplemental planting and/or grading.

If active restoration is determined necessary, the Preserve Manager will have the Restoration Ecologist develop a Restoration Plan that will be reviewed and approved by the Wildlife Agencies. This plan will include a fine-scale map of treatment area(s), along with guidelines for (1) site preparation, including any needed soils treatments, grading, supplemental water, and weed control; (2) plant establishment, including planting palettes and methods; and/or (3) follow-up maintenance, including weed control, supplemental water, pest control, and re-planting. The Restoration Plan should consider current site conditions, including soils, hydrological conditions, accessibility, proximity to municipal water sources, existing invasive plant species, and existing onsite and adjacent biological resources. The Restoration Ecologist will monitor active restoration on a quarterly basis for a minimum of one year following implementation. Monitoring will include a qualitative assessment of native plant cover, including progress towards meeting the 50-percent expansion of riparian habitat goal; identification of invasive plant species establishment; documentation of unauthorized encroachment and related vandalism and damage; and identification of necessary remedial actions, including additional native planting, grading, and modifications to site protection measures.

3.2.4 Vegetation Management

Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and trails and installation of erosion control measures, if necessary. The clearing of natural vegetation on the Preserve will be required to comply with the Nesting Bird Policy included in the OCTA M2 NCCP/HCP (a version of the policy has been slightly edited to be applicable for preserve management and is included as Appendix C). The Preserve Manager will be responsible for ensuring all staff working within the Preserve understands and follow procedures set forth for vegetation management.

The Preserve Manager will have General Maintenance staff to perform vegetation management along the designated access roads within the Preserve to allow for vehicle access for preserve management and fire protection activities. Vegetation management will be a combination of physical trimming of vegetation and possible application of herbicide treatment along the edges of access roads. Impacts on narrow endemic plant populations will be avoided by flagging known occurrences and avoiding herbicide treatments 10 feet from known occurrences.

3.2.5 Fire Management

Brea-Fullerton Fire Department (BFD) is responsible for fire control within the Preserve, and their first priority will be to protect life and property. OCTA will work closely with BFD to identify fire management guidelines, including specific fire and brush maintenance zone specifications and access route locations that minimize impacts on sensitive biological resources, and will identify areas that should be avoided to preserve sensitive biological resources. This information will be included in the Fire Management Plan.

3.2.5.1 Fire Management Plan

Within two years from adoption of the RMP, the Preserve Manager, in coordination with OCTA, BFD and applicable fire entities, will develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible. The FMP will identify environmentally sensitive lands (ESLs) that should be avoided

to minimize irreparable impacts on biological and cultural resources during fire suppression activities. The ESLs will include Covered Species locations and sensitive natural communities. A map will be prepared that shows fire management and ESLs consistent with the BFD and OCFA regional fire management program and will include the following:

- Preferred access points and access routes on the Preserve, fire hydrants, and potential staging areas for fire suppression activities.
- Covered Species, sensitive species, and sensitive natural communities that are highly susceptible to fire or fire suppression activities. The ESL map should distinguish between areas that should be protected from fire versus areas that should be protected from surface disturbance (e.g., grading) based on the ability of target resources to recover from these impacts.
- Location of bulldozer lines, if these are a potential component of the fire suppression strategy for the Preserve.
- Emergency access procedures.

3.2.5.2 Strategy and Approach

The FMP will emphasize a fire suppression strategy of controlling any smaller fires on site, where feasible. Larger fires that originate outside the Preserve and move across the Preserve may require suppression tactics within the Preserve. In these cases, BFD will establish defenses within and nearby any adjacent homes to protect life and property. The final suppression tactics will be derived from current or predicted fire weather, topography, fuels (fire behavior), and the surrounding resources (lives and property) that are at risk. Once these have been identified BFD will develop a strategy for suppressing the fire and will coordinate with OCTA and keep OCTA informed as to the course of action necessary. Coordination would include contacting CHSP dispatch in all emergency situations. BFD will engage OCTA to gain concurrence or an understanding of what actions are necessary. The Preserve Manger, OCTA, and BFD will collaborate to define the least damaging suppression strategies within the FMP and delineate this preferred area(s) graphically. Strategies should avoid ESLs during fire suppression activities, to the degree feasible.

Public and firefighter safety will be the primary consideration before and during a wildfire. Accordingly, the following measures (also consistent with CHSP policies) will be implemented at the Preserve:

- Close trails during a red flag warning or when an active fire threatens the Preserve.
- Post fire danger signs at trail heads.
- Post signs with phone numbers for Preserve users to call and report suspicious activity or fires to the 911 dispatch center.
- Post signs instructing Preserve users to immediately report fire activity to the 911 dispatch center or fire agency. The contact information for BFD headquarters is (714) 990-7655.
- In the event of a fire on the Preserve or a fire approaching the Preserve, the Preserve Manager will provide assistance to BFD, as necessary.

3.2.5.3 Post-Fire Response

The Preserve Manager will inventory the condition of natural communities following a fire on the Preserve, and will coordinate with the Monitoring Biologist, and Wildlife Agencies as necessary, to determine if habitat restoration is warranted. The OCTA NCCP/HCP Administrator and Preserve Manager will work with the Wildlife Agencies, and BFD, as necessary, to determine if fire severity and frequency meet the requirements of a Changed Circumstance as defined in the NCCP/HCP and utilize funding as appropriate to implement post-fire restoration. Options for funding this restoration include (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities, as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding.

Post-fire management activities may include, but are not limited to the following.

- Conduct emergency post-fire erosion control, where necessary.
- Repair/restore damaged fences, roads, or other official Preserve structures to pre-fire conditions.
- Monitor post-fire recovery closely. Implement control measures to remediate any resulting erosion, sedimentation, and invasion by nonnative plant species.
- Coordinate with BFD (or Cal Fire if responsible) to recontour any dozer lines created within the Preserve. Restoration or dozer lines by BFD will include, but not be limited to, recontouring lines, removing berms, scattering previously cut brush over lines, and potentially replanting available cactus pads. These activities will be agreed upon and coordinated between BFD and Preserve Manager.
- Plan all post-fire actions (e.g., habitat restoration, invasive species removal, erosion control, or trail stabilization) in consultation with the Wildlife Agencies prior to project initiation and permitted if necessary by State and Federal regulation programs. The Preserve Manager will use current information on best approaches and strategies for post-fire restoration, including erosion control, seeding, and success criteria.

3.2.6 Nonnative Animal Species Management

Nonnative animal species are potential threats and stressors to wildlife protection and productivity on the Preserve. The Preserve Manager will be responsible for the following measures specific to nonnative animal species management, including nonnative species control and feral and domestic animal restrictions and control.

3.2.6.1 Invasive Nonnative Species Control

The Preserve Manager will work towards controlling the spread of invasive ant species as follows:

- Inspect irrigation/supplemental water runoff from adjacent landowners onto the Preserve and taking steps to educate landowners or rectify the problems by other means such as coordination with local governments regarding irrigation or other urban runoff ordinances or capturing runoff in a vegetated swale on site to contain and limit adverse effects on the Preserve.
- Control irrigation/supplemental water application used for onsite restoration activities to avoid any overflow, which may attract and sustain nonnative ants by increasing soil moisture.

- Ensure that native plant materials used for habitat restoration do not contain invasive ant or other species by inspecting all container stock before it enters the Preserve.

The Preserve Manager will also need to monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat. The Preserve Manager will stay current on the latest information and science of invasive insects or other pathogens (e.g. goldspotted oak borer) and monitor for signs of infestations as part of general stewardship monitoring. If an infestation is identified, the Preserve Manager will coordinate with the OCTA NCCP/HCP Administrator and the Wildlife Agencies on any appropriate control actions.

3.2.6.2 Feral and Domestic Animal Restrictions and Control

With the exception of service animals, all dogs are prohibited within the Preserve. In general, control of feral and domestic animals will consist of the following:

- Documentation of feral or domestic animal activity.
- Establishment of a removal program or refer the infraction to the local animal control agency if a problem with feral animals or animal control is identified.
- Prohibit Preserve Management personnel from housing or allowing domestic pets on the Preserve.

3.2.7 Property Management

Property management includes routine and ongoing property management activities conducted by the Preserve Manager and staff or contractors to ensure that the Preserve is maintained in good condition.

3.2.7.1 Trash and Debris

The Preserve Manager will be responsible for collecting and disposing of trash and debris regularly to maintain the Preserve in good condition and minimize impacts on Covered Species and natural communities. Secure litter containers (e.g., closed, wildlife-proof garbage cans and recycling bins) will be provided at access points at Preserve boundaries, as appropriate. If necessary, regularly scheduled garbage collection will be implemented to minimize attraction of nuisance species.

3.2.7.2 Lighting and Noise

The Preserve Manager will be responsible for implementation of the public access plan and ensuring operational activities within the Preserve avoid or minimize impacts on Covered Species and natural communities from lighting or noise. To the degree feasible, lighting in or adjacent to the Preserve will be eliminated except where essential for roadway use, facility use, safety, or security purposes. The Preserve Manager will work with adjacent land owners and the County of Orange to shield light sources adjacent to conserved habitat so that lighting is focused downward. The Preserve will be closed during nighttime hours, which will reduce the need for additional lighting within the Preserve. As part of the public outreach efforts, the Preserve Manager will prepare and disseminate informational materials to adjacent neighbors and Preserve visitors to educate the public about the importance of minimizing edge effects such as nighttime lighting and noise.

3.2.7.3 Fencing

OCTA has installed fencing along the eastern exterior of the property using five-strand, smooth wire. Barbed wire was used in specific locations in order to keep cattle out of the Preserve. Fence type and placement was designed to limit human access but maintain wildlife movement. CDFW fencing specialists were contacted in order to assure that the fencing would not inhibit wildlife movement. In addition, a gate was installed to control access along the ridge as well as along the trail through Soquel Canyon. The Preserve Manager will be responsible for monitoring and maintaining fencing and gates to control public access and trespassing. Fencing and locks should be inspected on a regular basis (a minimum of two times per year). Damaged or missing fencing or locks should be replaced as soon as possible, but not more than one month after detection.

The Preserve Manager will identify situations that warrant the installation of additional fencing or natural barriers within the Preserve around areas that require enhancement control of public access. Natural barriers may include dense plantings of prickly, thorny, or rash-inducing plant species such as California wild rose (*Rosa californica*), cactus (*Opuntia* sp.), or poison oak (*Toxicodendron diversilobum*), as well as large rocks or logs.

3.2.7.4 Signage

The Preserve Manager will be responsible for installing and maintaining signs at key access points to provide information on Preserve rules, and biological and cultural resources (as appropriate). The Preserve Manager should install signs at Preserve boundaries, selected roads, and natural features to indicate permitted and prohibited uses in the Preserve. Signage may include (but is not limited to) the following:

- Speed limit signs along roads within the Preserve that are accessible to vehicles.
- Temporary signage indicating active habitat restoration/enhancement areas.
- Rules and regulations signs that indicate prohibited activities including (but not necessarily limited to) hunting, dumping, and dog walking.

The Preserve Manager should inspect all signage on a regular basis to ensure that signs are still in place and not damaged. Damaged or missing signs should be replaced as soon as possible after detection.

3.2.7.5 Hydrology and Erosion Control

The Preserve Manager will complete all management and operations of the Preserve in a manner designed to maintain natural hydrologic processes to the extent possible. This includes avoiding water contamination or excessive erosion that could affect hydrological systems. Minimizing impacts on hydrological systems will preserve natural ecosystem structure and function.

The Preserve Manager will inspect and identify situations requiring erosion control. Using erosion control BMPs, the Preserve Manager will install appropriate erosion control measures during regular maintenance and operation activities. These may include rice straw wattles, hay bales, silt fencing, sediment traps, and/or sandbags. These devices will be used on slopes below newly graded roads or fuel management/fire control areas to prevent erosion and deposition of materials in sensitive habitat areas, as necessary. These BMPs will also be used as necessary to reduce bank erosion (excess scour and undercutting) or sedimentation in existing streams or aquatic resources

caused by changes in hydrology due to upstream/off-Preserve development activities. These activities will utilize stream bioengineering practices utilizing native materials and biodegradable structures with the goal of achieving long-term self-sustainable conditions or dynamic equilibrium.

The Preserve Manager will inspect vulnerable areas (e.g., trails, streams or aquatic resources, and fuel maintenance areas) immediately after a heavy rain storm to identify problems with erosion and sedimentation. Where erosion or sedimentation is identified, the Preserve Manager will follow BMPs (e.g., install control devices) as soon as possible to avoid further damage. In addition, access will be restricted to limit further damage or where required for safety purposes.

3.2.8 Land Uses within the Preserve

Permitted activities include those shown to have a minimal impact on biological resources and ecosystem functions, while prohibited activities are those expected to have a detrimental effect on those resources.

3.2.8.1 Allowed Uses

The following land uses are conditionally allowed if it can be assured that the activity minimizes or avoids impacts on biological resources and ecosystem functions, while allowing certain operational, and safety uses within the Preserve.

- Provide access onto the Preserve for Preserve management, public services (e.g., fire management), or law enforcement in response to violations of Preserve rules and regulations.
- Allow restoration and enhancement of native plant communities, including the removal of nonnative species, planting or seeding native trees, shrubs and herbaceous vegetation.
- Allow for the restoration and stabilization of streambeds and banks using native bio-engineering practices using natural and biodegradable material if necessary following fire, flood, or other natural disaster or unauthorized anthropogenic activities causing unnatural degradation.
- Allow for the maintenance of road with the least environmentally damaging practices.

3.2.8.2 Prohibited Uses

The following activities are prohibited in the Preserve because they are not compatible with Preserve management, necessitate a much more rigorous level of Preserve management, present a liability to OCTA, and/or have a high potential to adversely affect biological resources.

- Development involving the construction of buildings, parking lots, or other structures. This includes residential, commercial, industrial, and institutional development. A limited amount of construction for new maintenance facilities is allowed within the habitat impact caps established by the Plan.
- Agricultural uses that require the conversion of natural habitats, including all row crops, orchards, improved pastures, nurseries, greenhouses, and feedlots.
- Active recreation, including ball fields, golf courses, improved park facilities, off-road vehicle areas, geocaching, or any other recreational activity that requires the conversion of native habitats (e.g., clearing, grubbing, or planting of nonnative vegetation or turf grasses) or facility construction (e.g., equestrian facilities, buildings, or paved pathways) or otherwise negatively affects natural vegetation or wildlife habitat values.

- Camping.
- Mineral extraction, including all sand and gravel mining activities.
- Landfills.
- Itinerant worker camps.
- Brush control or fuel management, except where it is necessary to prevent the loss of human life or property or prevent the loss of sensitive biological resources. Existing and new development adjacent to Preserves must accommodate fuel management zones or other vegetation management actions outside of the Preserve boundary.
- Shooting, target practice, hunting.
- Paintball.
- Off-road vehicle use.
- Dog walking, whether leashed or unleashed.
- Unmanned aerial vehicle (recreational drones).

3.2.9 Land Uses Adjacent to the Preserve

The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve. The types of adjacency issues that will be monitored will include, but are not limited to, trespassing, drainage, lighting, noise, invasive planting, pet and livestock control, and fuel modification zones. The Preserve Manager will enforce trespassing regulations and prevent and remove illegal intrusions into the Preserve. Barriers (fencing, rocks/boulders, appropriate vegetation) and/or signage will be installed where necessary to protect the Preserve's sensitive biological resources and direct public access to appropriate locations. Additionally, educational information will be disseminated to adjacent residents and landowners to heighten their awareness of the Preserve's role in achieving the M2 NCCP/HCP biological goals, and provide information regarding approved access, fire management, and other adjacency issues.

OCTA will coordinate with adjacent landowners and local jurisdictions to address edge effect issues primarily through public outreach, education, and dialogue. OCTA does not have land use authority, and if legal or enforcement actions are deemed necessary, OCTA and/or the Preserve Manager will coordinate with the local jurisdictions or enforcement entities (currently CHSP staff) as appropriate. For new development adjacent to the Preserve, OCTA and/or the Preserve Manager will, to the extent practicable, provide input and direction through the public review process (e.g., the California Environmental Quality Act [CEQA] and permitting process) on appropriate adjacency guidelines.

3.2.9.1 Existing Land Use

The Preserve Manager will develop and implement a public awareness program within two years of the RMP approval to educate existing property owners in the vicinity of the Preserve of the Preserve's goals and objectives and steps they can take to protect the biological resources. In coordination with the OCTA NCCP/HCP Administrator, the Preserve Manager will develop flyers and other education materials that describe the types of activities that can occur on an adjacent property that can have negative effects on biological resources. OCTA will provide information on how an

adjacent property owner can minimize these impacts. The types of issues that will be addressed will include, but not be limited to the following:

- Drainage – adjacent property owners will be encouraged to monitor drainage and irrigation that flows from their property onto the Preserve. Excessive irrigation can promote invasive plant and animal species (e.g., argentine ants) to expand into the Preserve.
- Lighting – lighting of properties adjacent to the Preserve should be directed away from the Preserve wherever feasible and consistent with public safety. Adjacent property owners will be encouraged to use low-pressure sodium lighting whenever possible.
- Invasive plant species – certain types of landscaping can introduce invasive nonnative plant species into the Preserve. Adjacent property owners will be provided with information on ways that they can landscape with species less likely to negatively impact the Preserve or use native species that reflect the adjacent native habitat.
- Invasive pests – recently numerous tree species throughout in Orange County have been damaged or killed by the polyphagous shot hole borer. This boring beetle, from the group of beetles known as ambrosia beetles, drills into trees and brings with it a pathogenic fungus (*Fusarium euwallacea*), as well as other fungal species that may to help establish the colonies. Currently, 33 tree species are known hosts to the polyphagous shot hole borer including native species such as coast live oak (*Quercus agrifolia*), California sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), red willow (*Salix laevigata*), and white alder (*Alnus rhambifolia*). In addition, the invasive Goldspotted Oak Borer beetle has been documented in Weir Canyon, located within the Irvine Ranch Natural Landmark in eastern Orange County. Both of these beetles damage native trees and are a serious threat to the Preserve ecosystem. OCTA will continue to partner with other land managers in the region for the latest survey methodology to help ensure early detection of these species. OCTA is currently a member of the Orange County Invasive Tree Pests group administered by the University of California system. This multi-agency group shares information and resources related to the ongoing research, education, and outreach activities for these beetles and other invasive pest/pathogen tree mortality issues specific to Orange County. In addition, OCTA will include information about these pests as part of the public outreach program.

As part of general stewardship monitoring, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and will identify possible solutions. The Preserve Manager will maintain a dialogue with adjacent landowners to discuss and address edge effect issues. The Preserve Manager may make suggestions on ways to minimize effects, but OCTA does not have land use authority of the adjacent properties and cannot directly enforce actions on the adjacent properties. If circumstances arise where legal or enforcement actions are deemed necessary, OCTA and/or the Preserve Manager will coordinate with the local jurisdictions or enforcement entities as appropriate.

3.2.9.2 Future Land Use

To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the following adjacency guidelines.

- Drainage – all developed and paved areas must prevent the release of toxins, chemicals, petroleum products, excess water, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the Preserve. This will be accomplished using a variety of methods, including natural detention basins, grass swales, or mechanical trapping devices.
- Lighting – lighting of all developed areas adjacent to the Preserve should be directed away from the Preserve wherever feasible and consistent with public safety. Low-pressure sodium lighting should be used whenever possible.
- Noise – uses adjacent to the Preserve should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas and any other use that may introduce noises that could affect or interfere with wildlife utilization of the Preserve.
- Invasive species – invasive nonnative plant or animal species should not be introduced into areas immediately adjacent to the Preserve. All open space slopes immediately adjacent to the Preserve should be planted with native species that reflect the adjacent native habitat.
- Fuel modification zones – fuel modification zones should be fully contained on adjacent properties for all new development. Prior to implementing new developments adjacent to the Preserve, the local fire authority should review and approve proposed fuel modification treatments to ensure that no new fuel modification will be required within the Preserve.

3.2.10 Public Outreach and Education

Public outreach and education are critical components to ensuring successful management and public support of the Preserve. A public that is informed of the Preserve's biological values, goals, and activity restrictions is more likely to respect and follow Preserve guidelines. The OCTA NCCP/HCP Administrator and Preserve Manager will coordinate the most effective methods and materials for educating the public, which may include management tasks described below.

- Hold Public Meetings – the Preserve Manager will hold annual public meetings to present goals, guidelines, restrictions, and compatible uses. These meetings may be held concurrently with the annual M2 NCCP/HCP reporting meeting and a regularly scheduled Environmental Oversight Committee meeting.
- Develop and Maintain Website – the Preserve Manager, in coordination with OCTA, will post information on the OCTA website regarding Preserve goals and guidelines, public outreach and volunteer activities, contact information, and links to other relevant Preserve information.
- Provide Educational and Interpretive Materials – the Preserve Manager will provide signs, displays, and pamphlets that explain Preserve rules and management goals and provide interpretive information on the natural resources found onsite.
- Develop Outreach and Volunteer Programs – the Preserve Manager will, to the extent feasible, develop a volunteer program that addresses education and management needs including (but not limited to) preparation of educational materials, trail repair, erosion control, invasive species removal, habitat restoration and enhancement, trash removal, biological monitoring, and management patrols.
- Develop an Educational/Outreach Program to Inform the Public and Adjacent Landowners – the Preserve Manager will implement a program that may include distributing brochures in surrounding neighborhoods, working with homeowner's associations in the vicinity, developing

an informational website, installing educational kiosks, providing outdoor experiences, etc. The Preserve Manager will coordinate with stakeholders and the Wildlife Agencies to encourage volunteer opportunities, such as trash pick-up and invasive species removal, to support RMP goals and objectives. Other activities to encourage on the Preserve include the Audubon Christmas bird counts that could supplement Preserve monitoring data and inform management strategies.

- If applicable, encourage Trail User Groups to participate in "Self-Monitoring and Policing" Programs – the Preserve Manager will collaborate with local and regional trail user groups to minimize instances of off-trail activities and other abuses to habitat resources within the Preserve.

The Preserve Manager will also collaborate with local entities to encourage scientific research on the Preserve and accommodate scientific research within the Preserve by allowing access to researchers, students, and other external conservation entities. Scientific research projects are subject to approval by the Preserve Manager, who will informally discuss the costs and benefits of the proposed work with the Wildlife Agencies as necessary. Potential research includes (but is not limited to) Covered Species biological or ecological studies, wildlife movement studies, climate change studies, habitat restoration, or nonnative species control.

3.3 Biological Monitoring and Management

3.3.1 Introduction

The primary purpose of the Preserve is to meet biological preservation requirements of the M2 NCCP/HCP Plan. However, the Preserve will also accommodate site-specific operational and safety activities. This section provides goals, objectives, and management tasks to ensure that biological resources are protected. Biological monitoring and management are critical to protection and long-term viability of biological resources and ecosystem functions on the Preserve, and are guided by all management goals (Table 3-1). Monitoring indicates status, threats, and trends of biological resources, including Covered Species and natural communities, while management provides measures to minimize adverse impacts on these resources.

Types of Monitoring

There are several types of monitoring that may potentially occur on the Preserve. Refer to the M2 NCCP/HCP Plan (Sections 7.1 and 7.2.7.4) for a full discussion of monitoring types. These types are summarized below.

- **Baseline (Inventory) Monitoring.** Identifies and characterizes the status of conserved resources, including threats and stressors, for management planning and future comparisons (e.g., trend analysis). Baseline surveys of the Hayashi Preserve were completed in 2013, and the results are summarized in Appendix B (BonTerra Consulting 2013).
- **General Stewardship Monitoring.** Identifies general management issues and documents whether management actions are completed. This monitoring is conducted in perpetuity by the Preserve Manager during regular monitoring visits (monthly or as appropriate). The Preserve Manager may be assisted by biologists and other technical experts, as needed; monitoring

personnel may record incidental data on observations, status, and threats to biological resources.

- **Effectiveness Monitoring.** Assesses status, trends, and threats to biological resources. This monitoring is conducted by the Monitoring Biologist(s) in perpetuity, according to the frequency and protocols in Table 3-2, and requires expertise in wildlife biology, botany, and, possibly, restoration ecology (Table 3-3).
- **Targeted Monitoring.** Answers specific management questions (hypotheses) and determines the effect of management actions on Covered Species and natural communities. Targeted monitoring is conducted by the Preserve Manager and/or Monitoring Biologist with input from outside sources (e.g., sampling design, data collection, analyses), as needed. Results are used to develop or refine management actions and BMPs. Targeted monitoring needs will be identified and prioritized as a result of baseline, stewardship, or effectiveness monitoring.
- **Regional Monitoring.** Identifies threats and trends to biological resources at the regional or landscape-level. OCTA may contribute Preserve monitoring data to regional assessments, as appropriate/feasible, but will not collect data outside the Preserve. OCTA will coordinate data collection methods with the Wildlife Agencies and other regional land managers to facilitate regional comparisons. OCTA will provide access for other entities to collect biological monitoring data on the Preserve, as appropriate, and will submit Preserve data to an appropriate data repository, such as the Biogeographic Information and Observation System, CNDDB, or other regional databases. OCTA will encourage scientific studies and surveys on the Preserve by academic institutions and other external conservation entities where these activities contribute to the understanding and management of Covered Species and natural communities.

Monitoring Methods

Monitoring and adaptive management on the Preserve will ensure that OCTA is in compliance with M2 NCCP/HCP Plan requirements. Monitoring establishes baseline conditions, identifies threats and trends, measures the effectiveness of conservation and management actions, and provides information to adaptively manage biological resources and improve the health and stewardship of the Preserve. Refer to the M2 NCCP/HCP Plan (Section 7.2.7.4) for an expanded discussion of monitoring guidelines. Modifications to monitoring methods will require consultation with the Wildlife Agencies as necessary, and will be documented in Annual Reports.

Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, Monitoring Biologist and other supporting biologists, external entities conducting research on the Preserve, and the Wildlife Agencies. Refer to the M2 NCCP/HCP Plan (Sections 7.2.7.2 and 7.2.7.3) for an expanded discussion of the adaptive management approach and guidelines. Adaptive management is built into Preserve management through the use of phased monitoring and evaluation to modify management actions based on monitoring results. Adaptive management measures will be coordinated with the Wildlife Agencies for approval prior to implementation.

Management Goals, Objectives, and Implementation Strategies

Goals and objectives guide decision-making and provide a standard for measuring management effectiveness and, ultimately, the biological success of the M2 NCCP/HCP Plan (Atkinson et al. 2004, Lewison and Deutschman 2014). Goals are "broad, concise visionary statements that set the overall direction for monitoring and management, while objectives are concrete, measurable statements that detail how a specific goal can be attained" (Lewison et al. 2011). A single goal may have multiple objectives. Further, each objective may require one or more implementation strategies (management tasks) (Lewison et al. 2011).

Plan goals and objectives applicable to the Preserve are presented in Section 3.1.1, while Preserve-specific goals, objectives, and management tasks are presented in Section 3.1.2 and summarized in Table 3-1. Preserve-level objectives are based on current information (Chapter 2, "Site Description"). Additional refinement of objectives to ensure they meet SMART criteria (see below) should be included in Annual Work Plans, based on site evaluations and monitoring results. SMART criteria (Adamcik et al. 2004, Lewison et al. 2011, SDMMP 2013, Lewison and Deutschman 2014) are defined as follows.

- **Specific** – objectives will be detailed, clear, concise, and unambiguous.
- **Measurable** – objectives will include criteria for measuring progress.
- **Achievable** – objectives will not be unrealistic to achieve nor below acceptable standards.
- **Results-oriented** – objectives will specify an end result.
- **Time-fixed** – objectives will specify an end-point for being met.

Management Prioritization

All management actions will be identified as either Priority 1 or Priority 2 objectives. Priority designations establish a logical stepwise process and do not necessarily infer differences in importance, as described below. Refer to the M2 NCCP/HCP Plan (Section 7.2.7.3, "Adaptive Management Guidelines") for additional information on prioritization of management actions.

- **Priority 1 Actions.** These actions identify threats and negative trends that may require management and are, thus, a predecessor to Priority 2 (management) actions. Priority 1 objectives are ongoing and generally accomplished through stewardship monitoring, effectiveness monitoring, and general Preserve management. These actions are funded through the established Preserve management budget.
- **Priority 2 Actions.** These actions identify specific management actions recognized through Priority 1 actions. Priority 2 actions will be implemented in consultation with the Wildlife Agencies as necessary, and will be further prioritized based on (1) alignment with Plan goals and objectives, (2) regional context (e.g., value or importance of a Preserve for a given resource), (3) level of threat, (4) expected effectiveness of proposed action (e.g., availability of proven methods to effect change), (5) logical sequencing (e.g., invasive species control may precede restoration), (6) catastrophic events (e.g., wildfire may necessitate a shift in priorities), (7) funding and staffing, and (8) SMARTness of objectives (i.e., well-defined objectives are easier to achieve than poorly defined objectives). In general, Priority 2 actions will be funded by using adaptive management funds, reallocating stewardship monitoring and Preserve management funds, or obtaining outside funding (e.g., grants).

Biological Monitoring Protocols

Monitoring and management objectives and management tasks for Covered Species and natural communities are described below. Table 3-2 indicates frequency and methods for monitoring Covered Species on the Preserve, while Table 3-3 indicates required qualifications for monitoring personnel. Monitoring and management objectives and tasks that influence biological resources occur under other Preserve management elements, as well. These elements are referenced in the following sections, as appropriate.

Pursuant to Chapter 7 of the OCTA NCCP/HCP, OCTA will not be responsible for collecting additional biological monitoring data (outside of their Preserves) for regional assessments but may contribute to such efforts, as appropriate/feasible, through the collection of comparable data. Data comparability will be facilitated through regular interaction with the Wildlife Agencies and Preserve Managers in other NCCP/HCP areas to support the use of similar methods, coordination of survey schedules, and other relevant efforts regarding monitoring issues. OCTA will provide access to Preserves for other entities to collect regional biological monitoring data, as appropriate, and will submit Preserve data to an appropriate data repository, such as the Biogeographic Information and Observation System (BIOS), California Natural Diversity Database (CNDDB), or other regional databases.

Table 3-2 provides protocols and a timeline for effectiveness monitoring of biological resources on the Preserve. Protocols may be refined or updated based on new information or to ensure consistency with regional monitoring efforts. OCTA will coordinate regularly with the Wildlife Agencies and Preserve Managers in other NCCP/HCP areas to ensure the most current, established protocols are used. The Preserve Manager and Monitoring Biologist, in consultation with the Wildlife Agencies and other species experts, will review and select the most appropriate monitoring method(s) to address resource-specific management questions. Targeted monitoring will likely require development of an experimental approach and quantitative or semi-quantitative sampling, and will be designed on an as-needed basis.

Table 3-2. Effectiveness Monitoring for Hayashi Preserve

Type	Frequency	Protocols/Methods
Vegetation		
Comprehensive	10 Years	Conduct comprehensive vegetation mapping using the classification system from *A Manual of California Vegetation,* second edition,[a] and *Vegetation Classification Manual for Orange County* (release pending).
Invasive Species	Annually	Conduct invasive plant surveys along natural conduits for dispersal (trails, creeks and streams, disturbed areas) during general stewardship or biological monitoring, or through volunteer patrols.

Type	Frequency	Protocols/Methods
Statistical Sampling	4 years	Conduct quantitative vegetation sampling to detect changes in species composition, cover, and structure using a sampling design and data collection protocols developed in conjunction with the Natural Communities Coalition (formerly known as Nature Reserve of Orange County [NROC]).[b] Sampling design will include stratified random sampling that considers habitat of various types and sizes, and includes adequate replication for statistical analyses.
Covered Species		
Plants		
Rare Plant Surveys	3 to 5 years, depending on precipitation conditions	Conduct special-status plant surveys following CNPS and CDFW survey guidelines.[c] In addition to population counts or estimates, collect covariate data on vegetation composition and cover, invasive nonnative plants and other threats, and map the perimeter of the population or suitable habitat. Conduct surveys during the appropriate blooming periods for each target plant species, which will vary depending on rainfall and temperature. Monitor reference populations to determine appropriate survey times (generally between March and July).
Reptiles		
Coast horned lizard	4 years	Conduct focused visual encounter surveys for terrestrial reptiles during the peak activity period for the species, following the time-constrained search methodology.[d] Devote enough time to each survey area to allow for complete coverage. Expend equal effort (staff hours) in each search area.
Orangethroat whiptail	4 years	Conduct focused visual encounter surveys for terrestrial reptiles during the peak activity period for the species, following the time-constrained search methodology.[d] Devote enough time to each survey area to allow for complete coverage. Expend equal effort (staff hours) in each search area.
Western pond turtle	4 years	Visual surveys will be conducted for western pond turtle employing the USGS protocol[e] designed to determine pond turtle presence. This protocol requires that all aquatic habitat be broken into 250-meter segments and scanned for the presence of basking sites, aquatic refugia, streamside refugia, and upland nesting habitat. Attention will be focused on identifying pond turtles within open pools and potential basking areas.

Type	Frequency	Protocols/Methods
Birds		
Least Bell's vireo	4 years	A total of three surveys will be conducted—one in mid-May, one in June, and one in early July. With the exception of the number and timing of visits, surveys for least Bell's vireo will follow the USFWS Least Bell's Vireo Survey Guidelines.[f]
Mammals		
Bobcat	4 years	Set up and monitor wildlife movement cameras for at least six months prior to effectiveness monitoring to document wildlife movement on the Preserve. A qualified wildlife biologist will assess camera results to determine wildlife movement and connectivity.
Mountain lion	4 years	Set up and monitor wildlife movement cameras for at least six months prior to effectiveness monitoring to document wildlife movement on the Preserve. A qualified wildlife biologist will assess camera results to determine wildlife movement and connectivity.

[a] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. *A Manual of California Vegetation*, second edition. California Native Plant Society. Sacramento CA.
[b] Deutschman, D., S. Strahm, D. Bailey, J. Franklin and R. Lewison 2008. *Improving Statistical Sampling and Vegetation Monitoring for Open Space in Central Orange County*. Prepared for The Nature Reserve of Orange County (NROC).
[c] California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. Sacramento CA. Available: <http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf>. Accessed: August 29 2012.
[d] Corn, P. S., and R. B. Bury. 1990. *Sampling Methods for Terrestrial Amphibians and Reptiles*. USDA Forest Service, General and Technical Report PNW-GTR-256, 34 pp.
[e] USGS 2006. *USGS Western Pond Turtle* (Emys marmorata) *Visual Survey Protocol for the Southcoast Ecoregion, Survey Protocol, Version 1.*
[f] USFWS. 2001. *Least Bell's Vireo Survey Guidelines.* Report from Carlsbad, California, Field Office, dated January 19, 2001. 3 pp.

Table 3-3 defines the skills and experience for qualified biologists to complete effectiveness monitoring. Baseline monitoring will require a biologist with at least three years of experience with the general biological resources of Orange County to identify and evaluate threat to Covered Species and habitats.

Table 3-3. Qualified Biologist Skills and Expertise Requirements

Type	Task	Skills and Expertise
Vegetation		
	Comprehensive Mapping, Invasive Species Mapping, Statistical Sampling	Botanist with at least three years of experience mapping southern California vegetation communities; working knowledge of the classification system used in *A Manual of California Vegetation,* second edition.[a] and *Vegetation Classification Manual for Orange County* (release pending).

Type	Task	Skills and Expertise
Covered Species		
Plants		
Rare Plant Surveys	Effectiveness Monitoring	Botanist with experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with plants of the area, including special-status and locally significant plants; familiarity with appropriate State and Federal statutes related to plants and plant collecting; and experience analyzing impacts of a project on native plants.[b]
Reptiles		
Coast horned lizard	Effectiveness Monitoring	Biologist with at least two years of independent experience conducting herpetological surveys; should have demonstrated experience in handling coast horned lizard.
Orangethroat whiptail	Effectiveness Monitoring	Biologist with at least two years of independent experience conducting herpetological surveys; should have demonstrated experience in handling orangethroat whiptail.
Western pond turtle	Effectiveness Monitoring	Biologist with at least two years of independent experience conducting surveys for western pond turtle using USGS visual survey protocol.[3]
Birds		
Least Bell's vireo	Effectiveness Monitoring	Trained ornithologist with at least 40 hours of observation in the field of the target species and documented experience locating and monitoring nests of the target species; must have a current a USFWS Section 10(a)(1)(A) permit for least Bell's vireo
Mammals		
Bobcat	Effectiveness Monitoring	Trained wildlife biologist with at least five years of independent experience evaluating wildlife movement and habitat connectivity.
Mountain lion	Effectiveness Monitoring	Trained wildlife biologist with at least five years of independent experience evaluating wildlife movement and habitat connectivity.

[a] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. *A Manual of California Vegetation*, second edition. California Native Plant Society. Sacramento CA.

[b] California Native Plant Society (CNPS). 2001. *CNPS Botanical Survey Guidelines*. Sacramento CA. Available: <http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf.> Accessed: August 29 2012.

3.3.2 Covered Plant Species

Covered Plant Species considered in this section include intermediate mariposa lily, many-stemmed dudleya, and southern tarplant, which were not detected during baseline survey but are considered potentially occurring based on the presence of suitable habitat. These species have similar threats and management needs and thus, are addressed together. Identified threats include off-road activity, and grazing (Appendix B); additional threats may include invasive plant species, other recreational

activities, and road maintenance. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.1) for additional information on the onsite status, habitat requirements, and threats to these species.

The following preserve-specific management objectives and tasks have been developed to address Species Goal 2 and Species Objective 2.1 from the M2 NCCP/HCP (see Section 3.1.1).

Management Objective: Ensure the long-term viability of Covered Plants by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 3.3.2.a: Identify Status, Threats, and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Plants on the Preserve.
- Conduct effectiveness monitoring every three to five years to determine status and threats to Covered Plants, using survey methodology outlined in Table 3-2. Refine the Covered Species map based on survey results.
- In addition to population counts or estimates, collect covariate data on vegetation composition and cover and invasive plants and other threats. Map the perimeter of the population or suitable habitat.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Model (M2 NCCP/HCP, Section 7.2.8.1), as appropriate.

Management Task 3.3.2.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on Covered Plants from vegetation management along access roads, trail use, and other potential disturbance activities. Record incidental observations of Covered Plants.
- Refine Covered Species map, based on monitoring results.

Management Task 3.3.2.c: Maintain Database of Population Size of Covered Plants on Preserve (Priority 1)

- Per requirements outlined in Section 5.6.2.2 of the M2 NCCP/HCP, "Covered Plant Species Policy," the OCTA NCCP/HCP Administrator is responsible for maintaining a ledger-type accounting system to track credits and debits for Covered Plants conservation and impacts. Using the results from the baseline surveys and subsequent surveys as part of general stewardship and/or effectiveness monitoring, the Preserve Manager will maintain a database of Covered Plant occurrences (locations) and population (number of individuals). Surveys must be completed by a qualified biologist (see Table 3-3) and include appropriate documentation (e.g., completing form for CNDDB). The Preserve Manager will keep track of the data of each observation and make sure surveys are not double-counting previous observations. Whenever there are updates to this dataset, the Preserve Manager will provide the information to the OCTA NCCP/HCP Administrator, who will provide documentation to the Wildlife Agencies (during submission of the Annual Report) for review and approval to receive additional credits under the Covered Plant Species Policy.

Management Task 3.3.2.d: Protect Covered Plants during Property Maintenance and/or from Public Access and Recreational Activities (Priority 1)

- Implement specific management actions where baseline surveys indicate Covered Plant populations are directly or indirectly impacted by anthropogenic (operational or recreational) threats. Specific management actions may include (but are not limited to) modifications to vegetation management activities along access roads, invasive plant control, public access, and trail use management.
- Within five years of RMP adoption, implement targeted monitoring to assess potential conflicts with vegetation management along access roads. Monitoring targets may include (but are not limited to) vegetation cover and composition and invasive species cover. Monitoring may include quantitative methods (e.g., point-intercept, quadrats) and an experimental design.
- Where impacts are detected, protect Covered Plant populations by fencing, signage, or possibly, trail closures or realignment, as appropriate.

Management Task 3.3.2.e: Protect Covered Plants during Fire Suppression Activities (Priority 1)

- Include Covered Plant populations on the ESL map to ensure that impacts are avoided or minimized during fire suppression activities. Update the ESL map based on stewardship or effectiveness monitoring.
- Include strategies to minimize direct impacts on Covered Plants in the FMP.

Management Task 3.3.2.f: Augment Populations (Priority 2)

- Restore/expand Covered Plant populations where monitoring indicates declines due to fire, disturbance, or other factors. Methods may include population augmentation through introduction of propagules (e.g., seed, bulb) collected on site or from a site in proximity, and invasive plant control. Site selection for population expansion should consider suitable habitat parameters (vegetation, soils, topography), as determined through monitoring or focused studies (e.g., soil sampling).
- The Preserve Manager will coordinate with the Monitoring Biologist and Restoration Ecologist to determine feasibility of augmentation and BMPs for implementation.
- Develop a species-specific restoration plan that specifies propagule source, augmentation methods, monitoring methods, and success criteria.
- Implement targeted monitoring to determine success of restoration/expansion efforts. Monitoring may include quantitative methods, an experimental design, and success criteria.
- Implement adaptive management (e.g., remedial measures, alternative introduction strategies) where success criteria are not met.
- Fund restoration efforts through (1) funds allocated for adaptive management, (2) reallocation of existing management priorities as appropriate, and/or (3) funds set aside for Changed Circumstances, if appropriate.

3.3.3 Covered Animal Species

Reptiles

Covered Reptile Species considered in this section include coast horned lizard, orangethroat whiptail, and western pond turtle (potentially occurring). These species have similar habitat requirements, threats, and management needs and, thus, are addressed together. Identified threats include mortality and habitat destruction from illegal off-road vehicle use, equestrian activity, grazing, and nonnative ant species (coast horned lizard) (Appendix B); additional threats may include invasive plant species, other recreational activities, and road maintenance. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.4) for additional information on status, habitat requirements, and threats.

The following preserve-specific management objectives and tasks have been developed to address Species Goal 5 and Species Objective 5.1, Species Goal 6 and Species Objective 6.1, and Species Goal 7 and Species Objective 7.1 from the M2 NCCP/HCP (see Section 3.1.1).

Management Objective: Ensure the long-term viability of Covered Reptiles by protecting, managing, and enhancing suitable habitat on the Preserve.

Management Task 3.3.3.1.a: Identify Status, Threats, and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Reptiles on the Preserve.
- Conduct effectiveness monitoring surveys once every four years, using survey methodology outlined in Table 3-2. Develop or refine the Covered Species map based on survey results.
- In addition to population counts or estimates, collect covariate data on vegetation composition and cover and invasive plants and other threats.
- Refer to vegetation mapping and invasive species mapping to inform the assessment of habitat condition for Covered Reptiles.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Model (M2 NCCP/HCP Plan, Sections 7.2.8.4), as appropriate.

Management Task 3.3.3.1.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on Covered Reptile habitat from trail use, illegal off-road vehicle activity, vegetation management along access roads, and other potential disturbance activity. Record incidental observations of Covered Reptile Species.
- Evaluate the need to implement targeted monitoring to assess potential conflicts with vegetation management along roads and/or with public access and recreational trail use. Monitoring targets may include (but are not limited to) observations of trampling species and/or presence of juveniles. Monitoring may include quantitative methods and an experimental design.
- Refine Covered Species map, based on monitoring results.

Management Task 3.3.3.1.c: Protect Covered Reptiles and Habitat during Property Maintenance and/or from Public Access and Recreational Activities (Priority 1)

- Evaluate vegetation management methods along access roads within five years of RMP adoption to determine if modifications are needed to protect Covered Reptiles.
- Evaluate public access and recreational trail use along roads and trails within five years of RMP adoption to determine if modifications are needed to protect Covered Reptiles.
- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to suitable habitat. Specific management actions may include (but are not limited to) vegetation management along access roads, invasive plant and animal control, and public access and trail use management, and habitat restoration.
- Where impacts are detected, protect Covered Reptiles and habitat by fencing, signage, or possibly, trail closures or realignment, as appropriate.

Management Task 3.3.3.1.d: Expand Western Pond Turtle Populations, Potentially Through Translocation (Priority 1)

- The 2012 baseline survey of the Hayashi Preserve did not identify western pond turtles within the Preserve, but incidental observations of western pond turtle have been reported (observed in 2011) by Chino Hills State Park staff. In addition, after the Freeway Complex Fire in 2008, numerous agencies and non-profits partnered to remove nonnative species arundo (Arundo donax) from Carbon Creek, thereby expanding opportunities for aestivation and nesting habitat adjacent to the Hayashi Preserve. Further, the fencing installed to remove grazing from the Preserve will allow the Soquel Canyon riparian zone to passively recover and expand.
- In order to understand the likelihood of pond turtle populations expanding into the Soquel Canyon riparian zone, the Preserve Manager will research and survey the area between the Hayashi Preserve and where nearby occurrence records have shown western pond turtle to be located to see if there are barriers to dispersal that could be addressed.
- Within two years from adoption of the RMP, the Preserve Manager will identify appropriate management actions to improve western pond turtle habitat and use of the Preserve, such as monitoring and as-needed adaptive management through collaboration with the Wildlife Agencies and other stakeholders.

Birds

Covered Bird Species considered in this section include least Bell's vireo (potentially occurring). Identified threats include habitat loss, degradation, and fragmentation (Appendix B); additional threats may include altered fire regime, illegal grazing, invasive plant and animal species, edge effects, small population size, drought, and pesticides. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Sections 7.2.8.5 and 7.2.8.6) for additional information on status, habitat requirements, and threats for these species.

Other Covered Bird Species (cactus wren, coastal California gnatcatcher, and southwestern willow flycatcher) are not addressed in this RMP because these species were not detected during baseline surveys and it was determined that there is no potential habitat on the Preserve. If these species are observed on the Preserve, it will necessitate development of species-specific management objectives

and management tasks; guidance for these additional species, if necessary, is provided in the M2 NCCP/HCP Plan (Section 7.2.8.7).

The following preserve-specific management objectives and tasks have been developed to address Species Goal 10 and Species Objective 10.1 from the M2 NCCP/HCP (see Section 3.1.1).

Management Objective: Ensure the long-term viability of Covered Birds by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 3.3.3.2.a: Determine Status, Threats and Population Trends (Priority 1)

- Utilize baseline surveys to identify and map Covered Birds and habitat on the Preserve.
- Conduct effectiveness monitoring every four years to determine Covered Bird population status (size, distribution) and threats, using survey methodology outlined in Table 3-2. In addition to population counts, collect covariate data on threats. Refine Covered Species map based on survey results.
- Refer to vegetation mapping and invasive species mapping to inform the assessment of riparian habitat.
- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Model (M2 NCCP/HCP, Sections 7.2.8.5 and 7.2.8.6), as appropriate.

Management Task 3.3.3.2.b: Identify Anthropogenic Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on riparian habitat from grazing, illegal trail use, vegetation management along access roads, and other potential disturbance activity. In addition, record incidental observations of Covered Birds.
- Refine Covered Species map, based on monitoring results.

Management Task 3.3.3.2.c: Protect Covered Birds and Habitat during Property Maintenance and/or from Public Access and Recreational Activities (Priority 1)

- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to suitable habitat or where surveys show a decline in Covered Bird populations or habitat; assess attribute and climatic data for potential causal effects (e.g., type conversion of riparian habitat to another vegetation type, surface disturbance). Specific management actions may include (but are not limited to) vegetation management along access roads, invasive plant and animal control, public access and trail use management, and habitat restoration.
- Evaluate vegetation management methods along access trails within five years of RMP adoption to determine if modifications are needed to protect Covered Birds and habitat.
- Implement targeted monitoring to identify significant impacts on bird populations or habitat from invasive animal species (e.g. cowbirds), vegetation management along roads, or from trail use. Monitoring targets may include (but are not limited to) vegetation cover and composition, invasive species cover, bird presence or absence, or nesting success. Monitoring may include quantitative methods and an experimental design.
- Where impacts are detected, protect Covered Birds and habitat by fencing, signage, or, possibly, trail closures or realignment, as appropriate.

Management Task 3.3.3.2.d: Protect Covered Birds and Habitat during Fire Suppression Activities (Priority 1)

- Include Covered Bird locations and riparian habitat on the ESL map to ensure that impacts are avoided or minimized during fire suppression activities. Update the ESL map based on stewardship or effectiveness monitoring.
- Include strategies to minimize direct impacts on Covered Birds in the Fire Management Plan.

Management Task 3.3.3.2.e: Enhance and Expand Riparian Habitat along Soquel Canyon (Priority 1)

- The existing riparian corridor along Soquel Canyon has been historically disturbed by grazing. OCTA, in partnership with CHSP, has taken steps to remove grazing from the riparian corridor by installing fencing to allow for the passive restoration of riparian habitat. This approach has had recent documented success where grazing was removed in the adjacent CHSP. The habitat recovered shortly after grazing was removed from the riparian zone and least Bell's vireo subsequently reoccupied the area. There are known least Bell's vireo occurrences above and below the Hayashi Preserve that are expected to act as a source population for vireo to recolonize the Hayashi riparian habitat as the riparian habitat recovers.
- The Preserve Manager will monitor the Soquel Canyon to ensure grazing is kept off of the Preserve and the riparian habitat is initially allowed to passively restore back to original conditions. During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions at these locations to track progress of passive restoration. After five years the goal will be to have riparian habitat cover expand by at least 50 percent. The Preserve Manager, in consultation with the Restoration Ecologist, may determine the need for active (versus passive) restoration, including supplemental planting and/or grading, if the riparian habitat is not expanded through passive restoration (see Section 3.2.3.1).

Mammals

Covered Mammal Species considered in this section include bobcat and mountain lion; incidental observation of both species have been noted on the Preserve. Because these species have similar habitat requirements, threats, and management needs, they are addressed together in this section. Identified threats include habitat loss and illegal hunting (Appendix B); additional threats may include vehicular mortality, altered fire regime, invasive plant and animal species, pesticides, and edge effects. Refer to Section 2.3.4 (Table 2-4), Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.8) for additional information on status, habitat requirements, and threats.

The following Preserve-specific management objectives and tasks have been developed to address Species Goal 12 and Species Objective 12.1 and Species Goal 13 and Species Objective 13.1 from the M2 NCCP/HCP (see Section 3.1.1).

Management Objective: Ensure the long-term viability of Covered Mammals by protecting, managing, and enhancing populations and suitable habitat on the Preserve.

Management Task 3.3.3.3.a: Determine Status, Threats, and Population Trends (Priority 1)

- Evaluate the need for ongoing photo monitoring surveys to identify sign of bobcat and mountain lion use on the Preserve.
- Conduct effectiveness monitoring every four years to assess wildlife movement and connectivity, using survey methodology outlined in Table 3-2. Coordinate results with

researchers conducting regional wildlife movement assessments (e.g., Dr. Winston Vickers, mountain lion radio-collar tracking) as well as other regional land managers (i.e., Natural Communities Coalition and CHSP) to evaluate the role of the Preserve in facilitating large mammal presence and movement.

- Summarize monitoring results (including findings and recommendations) in Annual Reports. Share data with other regional Preserve Managers to help decipher regional trends. Revise Conceptual Models (M2 NCCP/HCP, Section 7.2.8.8), as appropriate.

Management Task 3.3.3.3.b: Identify Anthropogenic Threats (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g., monthly, quarterly) to record and/or track impacts on natural habitat used by Covered Mammals from trail use, vegetation management, and other potential disturbance activity. In addition, record incidental observations of Covered Mammals.
- Refine Covered Species map, based on monitoring results.

Management Task 3.3.3.3.c: Develop a Fencing Plan that Protects the Preserve While Facilitating Wildlife Movement (Priority 1)

- Inventory and map existing fencing as part of baseline surveys or general stewardship monitoring and identify future fencing needs. Use fencing mapping and signs of wildlife trail use (general stewardship monitoring) to determine if fencing modifications are needed for the Preserve within two years of the adoption of the RMP.
- Ensure that all installed fencing is wildlife friendly (i.e., allows for wildlife movement; e.g., remove bottom strand of exterior fence along key areas of the Preserve that are actively used by wildlife, thereby improving wildlife movement while retaining access control functions). Monitor to ensure that the fencing remains in good condition and is tight. Portions of the Preserve require that fencing is installed to keep cattle out. This fencing will be barbed wire and may have different requirements that could also impede wildlife movement.

Management Task 3.3.3.3.d: Protect Covered Mammals from Hunting (Priority 1)

- Implement patrols and enforcement measures within the first year of Preserve management to ensure hunting is not occurring within the Preserve. Hunting is an illegal activity within the Preserve. The Preserve Manager will install appropriate signage that clearly indicates that hunting is not permitted on the Preserve.
- The Preserve Manager will establish a patrol and enforcement schedule to ensure that hunting restrictions are actively enforced within the Preserve. Patrol frequency will depend on the level of public access on the Preserve.

Management Task 3.3.3.3.e: Protect Covered Mammals from Public Access and Recreational Use (Priority 1)

- The Preserve Manager, Monitoring Biologist, and OCTA will evaluate wildlife movement monitoring data in conjunction with public access and recreation uses within two years of RMP adoption to determine whether these uses should be limited or prohibited within the Preserve to minimize human-wildlife interactions.
- Evaluate the need to implement targeted monitoring to determine effectiveness of trail closures in enhancing Covered Mammals use of the site or, specifically, wildlife movement. Monitoring

targets may include a number of animal occurrences over time or amount of movement. Monitoring may include quantitative methods and an experimental design.

- Implement specific management actions where surveys indicate anthropogenic threats in or adjacent to movement corridors or when coordination shows a decline in Covered Mammal presence or movement within the region. Specific management actions may include (but are not limited to) property management, public access and trail use management, and habitat restoration.

3.3.4 Natural Communities

Natural communities considered in this section include chaparral, grassland, riparian, and woodland habitats. Threats to these communities are varied and include invasive species, pests and disease, habitat degradation (altered fire regime, drought), public uses (including recreation), erosion, and edge effects. This section provides guidelines for monitoring and managing these communities. Refer to Section 2.3.4, Appendix B, and the M2 NCCP/HCP Plan (Section 7.2.8.9) for additional information on sensitive natural communities.

The following Preserve-specific management objectives and tasks have been developed to address Natural Communities Goal 1 and Natural Communities Objective (1.1-1.5) and Natural Communities Goal 2 and Natural Communities Objective 2.1 from the M2 NCCP/HCP (see Section 3.1.1).

Management Objective: Ensure the long-term viability of natural communities by protecting, managing, and enhancing these resources on the Preserve.

Management Task 3.3.4.a: Update Vegetation Map (Priority 1)

- Utilize vegetation map developed during baseline surveys (2012) as initial vegetation map for management and monitoring.
- Conduct comprehensive vegetation mapping according to the schedule and methods in Table 3-2 as part of effectiveness monitoring. Refine a vegetation map for the Preserve.
- Compare updated vegetation mapping results with the vegetation baseline or most recent vegetation map to identify vegetation changes, including natural communities in decline. Assess the Preserves for threats to natural communities during vegetation mapping and updates.
- Include vegetation mapping results and management recommendations in the Annual Report; incorporate management recommendations into Annual Work Plans, as appropriate.

Management Task 3.3.4.b: Identify Operational or Public Use Conflicts (Priority 1)

- Conduct general stewardship monitoring at specified intervals (e.g. monthly, quarterly) to record and/or track impacts on natural communities from trail use, erosion, invasive species, or unauthorized activities.
- Implement management actions to offset impacts, as appropriate. Where impacts are extensive, develop detailed plans (e.g., restoration, invasive plant eradication, erosion control) prior to implementation, in consultation with the Wildlife Agencies.

Management Task 3.3.4.c: Establish Long-term Monitoring Plots to Identify Vegetation Condition and Trends (Priority 1)

- Supplement vegetation mapping with quantitative data collection to assess vegetation condition and habitat quality for Covered Species. Within two years from the adoption of the RMP, identify vegetation survey locations and implement baseline surveys. Conduct quantitative vegetation monitoring in established plots every four years to detect changes in species composition, cover, and structure (Table 3-1). Conduct monitoring using a sampling design and data collection protocols developed in conjunction with Natural Communities Coalition. Sampling design will include stratified random sampling that considers habitat of various types and sizes, and includes adequate replication for statistical analyses.
- Use sampling results to detect vegetation trends on the Preserve by habitat type, and assess habitat conditions for Covered Species. Assess attribute and climatic data for potential causal effects. Where sampling indicates a decline in habitat quality that can be attributed to anthropogenic threats, identify and implement specific management actions including (but not limited to) vegetation management, invasive species control, habitat restoration, erosion control, public access and trail use management, fire management, and enforcement of policies related to the wildland/urban interface.
- Share data with other regional Preserve Managers to help decipher regional trends. Regional results will inform status and management priorities for natural communities at the Plan level.

Management Task 3.3.4.d: Monitor Nonnative Invasive Species Eradication Efforts and/or Enhancement/Restoration Actions (Priority 1)

- Monitor nonnative invasive species efforts to ensure that success criteria (as specified in the eradication plans) are met (Section 3.2.2). Additional eradication effort and/or enhancement/restoration actions will be recommended in Annual Reports, as warranted. Eradication and restoration plans will be developed and implemented by a qualified Restoration Ecologist.
- The Restoration Ecologist will be responsible for coordinating with the Preserve Manager or staff members and Restoration Contractor regarding site conditions and required remedial measures. It is anticipated that habitat enhancement/restoration monitoring activities may include monitoring one or more of the following activities:
    - Site preparation
    - Weed control
    - Plant establishment
    - General site conditions
- Specific monitoring activities and frequencies will be identified in site-specific restoration/enhancement plans and Annual Reports (management recommendations) in coordination with the Wildlife Agencies. It is anticipated that monitoring for some activities will occur only in the early phases of implementation, and others will occur throughout the restoration program.
- Implement targeted monitoring to evaluate habitat restoration success. Success criteria may include habitat structure, cover, and composition. Where success criteria are not met, modified or alternative management strategies may be required.

Management Task 3.3.4.e: Control Invasive Pests or Disease (Priority 1)

- The Preserve Manager or Monitoring Biologist will inventory natural communities at risk from invasive pests or disease (e.g., oak woodlands and riparian), and will coordinate with the Wildlife Agencies, Monitoring Biologist, and other entities to identify appropriate actions and BMPs to eliminate or reduce the threat from these species (e.g., treatment, removal, and restoration).
- OCTA and the Preserve Manager will work with the Wildlife Agencies to develop and implement an invasive species pest/disease control plan that includes both treatment and post-treatment restoration, if needed. Treatment and restoration will be funded by (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding. Habitat restoration will be implemented using current information on best approaches and strategies for restoration.
- Implement targeted monitoring to evaluate the success of pest or disease control actions. Success criteria may include number of trees without disease. Where success criteria are not met, modified or alternative management strategies may be required.

Management Task 3.3.4.f: Restore Natural Communities Impacted by Altered Fire Regime or Climate Change (Priority 2)

- The Preserve Manager will coordinate with the Monitoring Biologist and Wildlife Agencies to determine if habitat restoration is warranted for natural communities that have been altered due to habitat type conversion or prolonged drought to the degree that they can no longer support Covered Species at levels that existed at Preserve acquisition. Where restoration is warranted, implement per guidelines in Section 3.2.3, "Habitat Restoration", as appropriate.
- The Preserve Manager and OCTA will work with the Wildlife Agencies to conduct restoration efforts where determined necessary and appropriate by (1) using funds allocated for adaptive management, (2) reallocating funds from existing management priorities as appropriate, (3) pursuing outside funding sources, or (4) seeking authorization to use Changed Circumstance funding. Habitat restoration will be implemented using current information on best approaches and strategies for restoration, and restoration will be appropriate for current climatic conditions.

Management Task 3.3.4.g: Protect Natural Communities from Public Access and Recreational Trail Use (Priority 1)

- Evaluate the effects of trail use (preserve management) on natural communities within five years of RMP adoption to determine if modifications are needed to protect sensitive natural communities.
- Implement targeted monitoring, as warranted, to assess potential conflicts with trail use. Monitoring targets may include (but are not limited to) vegetation cover and composition and invasive species cover. Monitoring may use quantitative or semi-quantitative methods and an experimental design, and will be conducted in conjunction with other non-quantitative efforts to monitor trail use and activity (stewardship monitoring).
- Where trail use impacts are identified, protect sensitive natural communities by limiting and adjusting access during the certain seasons, trail closures, or trail realignments, as appropriate.

Management Task 3.3.4.h: Protect Natural Communities from Erosion (Priority 1)

- The Preserve Manager will inspect and identify areas vulnerable to erosion within two years of RMP adoption.
- The Preserve Manager and Restoration Contractor will identify and implement management actions to reduce erosion, including erosion control BMPs (e.g., sand bags, swales), closure of trails within and adjacent to creeks and streams, and improvements to flood control features.

Management Task 3.3.4.i: Protect Natural Communities from Edge Effects (Priority 1)

- The Preserve Manager will implement policies to minimize edge effects and encroachment from urban development to the Preserve. These include feral and domestic animal restrictions and control, trespassing, illegal intrusions, illegal off-road vehicle use, runoff, and vegetation management.
- The Preserve Manager will install signage and implement monitoring, patrols, and enforcement within the first year of Preserve management and in perpetuity thereafter to reduce impacts on natural communities at the wildland-urban interface. The frequency of patrols will depend upon the level and type of disturbances in and adjacent to the Preserve.

3.3.5 Adaptive Management

Adaptive management provides a strategy to improve future management actions through monitoring to evaluate management effectiveness. Where success criteria are not met, adaptive management provides a structured approach to improve management outcomes. Monitoring and adaptive management on the Preserve will be a cooperative effort between OCTA, the Preserve Manager, Monitoring Biologist and other supporting biologists, external entities conducting research on the Preserve, and the Wildlife Agencies. Refer to the M2 NCCP/HCP Plan (Sections 7.2.7.2 and 7.2.7.3) for an expanded discussion of the adaptive management approach and guidelines. Adaptive management is built into Preserve management through the use of phased monitoring and evaluation to modify management actions based on monitoring results.

Adaptive management deals with reducing uncertainty and improving management effectiveness through iterative monitoring and evaluation. Some of the key issues for a focused adaptive management approach to address uncertainties of preserve management on the Hayashi Preserve include the following:

- **Riparian Habitat Enhancement along Soquel Canyon**. Collect photo monitoring of the riparian habitat enhancement with the removal of grazing to determine if passive restoration was successful. If not, determine if active restoration is needed.
- **Evaluation of the Potential for Western Pond Turtle to Expand into Preserve**. Research and survey the area between the Hayashi Preserve and where nearby occurrence records have shown western pond turtle to be located to see if there are barriers to dispersal that could be addressed.

The accumulation of understanding and subsequent adaptation of a management strategy depends on feeding information obtained from monitoring results back into the decision-making process. The link between the technical and decision-making steps requires regular interaction and an exchange of information between the technical staff and decision-makers. This will be accomplished by bi-annual meetings involving the Preserve Managers from each of the OCTA M2 Preserves,

Monitoring Biologists, NCCP/HCP Administrator, and the Wildlife Agencies where both policy and technical expertise can be integrated into revising goals and objectives, refining conceptual models, adjusting management and/or monitoring activities, or allocating funding. Meetings should be timed such that any new information discussed assists with the planning of upcoming seasonal work (i.e., invasive species control, vegetation management, or biological surveys). Timing some meetings to coordinate with other regional conservation planning meetings is encouraged to maximize communication and cooperation in the region.

3.3.6 Annual Progress Reports

The M2 NCCP/HCP requires that Annual Progress Reports documenting the status of the EMP open space properties be submitted to the NCCP/HCP Administrator for incorporation into the M2 NCCP/HCP annual report each year. The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year. It is anticipated that the Annual Progress Report will be completed by the end of February each year. This report will be shared with the Wildlife Agencies and will be available upon request. Status updates and anticipated activities for the upcoming year will be provided for one or more of the following, depending on specific activities performed each year.

- Monitoring of preserved biological resources, including natural communities and Covered Species.
- Fire management and control, recreational uses, access, general site maintenance, and encroachment issues.
- Habitat restoration and enhancement.
- Education and outreach.

Depending on the results of monitoring activities, recommendations for adjustments to the management of resources and activities will be summarized in the Annual Progress Reports. Any adjustments to the management of resources and activities will be identified in coordination with supporting biologists, and Wildlife Agencies. Depending on the results of ongoing management and evaluations, adjustments to annual management activities may include, but are not limited to, the following:

- Modifications of existing, or the addition of new, monitoring and survey activities.
- Modifications to resource-protection measures, including the designation of restricted areas of the Preserve, road closures, and seasonal limitations on recreational use, among other measures.
- Site-specific habitat restoration and enhancement activities, including restoration of disturbed areas and control of specific invasive plant species.
- Control of nonnative animal species.
- Specific fire-management activities, including site-specific fuel-modification efforts, staging areas, and access.
- As-needed site-maintenance activities, including road repair, site-specific erosion control, and debris clean-up, among other activities.

- Modification of educational and outreach activities, including additional site tours, new signage, interpretive handout materials, and additional community coordination and outreach efforts.
- Changes to the frequency of managed access events consistent with the Public Access Plan.

Chapter 4
Financial Section

4.1 Financial Requirements

As described and outlined in this RMP, OCTA will be required to fund the following types of management and monitoring activities on the Hayashi Preserve.

- **Start-up Expenditures**. These will include preparation of Invasive Plant Species Treatment Plan, preparation of a Fire Management Plan, and additional installation and/or removal of fencing for public access control and wildlife movement.
- **Preserve Management.** This includes all general Preserve management activities such as access control, enforcement, fencing, maintenance, signage, public outreach, vegetation management, invasive species control, erosion control, and fire management. In addition, this includes periodic and ongoing biological assessments, a comprehensive annual assessment to identify major threats, Preserve-specific biological monitoring above and beyond effectiveness biological monitoring, Preserve-level data management, and Preserve-level annual reporting.
- **Adaptive Management.** The Preserve Manager will be expected to manage, and be responsible for managing, the Hayashi Preserve following the principles and procedures of adaptive management. A separate budget line-item will be set aside to fund additional and specific adaptive management actions that are above and beyond the general adaptive management steps undertaken by the Preserve Manager. The adaptive management funding is estimated to be five percent of the Preserve Management budget.
- **Effectiveness Biological Monitoring.** Comprehensive biological monitoring (following established protocols) will occur every four years for Covered Species and every 10 years for comprehensive vegetation mapping.
- **Changed Circumstances.** Events that meet the triggers of a Changed Circumstance as set forth in the M2 NCCP/HCP will be managed as they arise.

OCTA has developed initial estimates of the financial requirements for the long-term Preserve management and monitoring based on an accumulated experience with the costs and responsibilities associated with OCTA's interim management role for the Hayashi Preserve. Using these initial estimates, OCTA has developed an initial estimate of the endowment funding requirements. The final endowment funding requirements will be based on a Property Analysis Report (PAR) or PAR-like analysis that will be completed by OCTA. This analysis will itemize and define the long-term obligations using the Preserve-specific information detailed in this RMP. It is expected that additional years of interim habitat management would provide a database and sounder basis for estimating the cost of long-term management costs. The final endowment funding level will be based upon actual negotiated long-term management contracts for the Preserve. OCTA will coordinate with the Wildlife Agencies for the review and approval for the PAR analysis and determination of the permanent endowment funding requirements.

4.2 Funding Sources

OCTA will establish and manage a permanent, non-wasting endowment to provide funding for the long-term commitments of Preserve management and monitoring. There will be an endowment that will cover the annual expenses for all Preserve management and monitoring, and program management. OCTA will, most likely, contract with local management entities and biological firms for Preserve management and biological monitoring services.

OCTA will accumulate funding for the endowment using the ongoing revenue generated for the M2 EMP. OCTA estimates it will take approximately 10 years, but no longer than 15 years, from the signing of the Implementing Agreement (IA) to accumulate sufficient funding for the endowment using unappropriated funds from the annual revenue stream.

Once OCTA has established a permanent, non-wasting endowment and the endowment has been reviewed and approved by the Wildlife Agencies, the endowment will be deemed as adequate funding to carry out the obligations under the Plan, and the Wildlife Agencies will not require additional funding from OCTA.

Chapter 5
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Appendix A

Checklist of Ongoing Preserve Management and Biological Monitoring Activities

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Appendix A – Checklist for Ongoing Preserve Management and Biological Monitoring Actions

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Preserve Management (Section 3.2)						
Public Access (Section 3.2.1)	Install, monitor, and maintain gates, signage, and obstructions, as appropriate, to control unauthorized public access and grazing.	Part of monthly visits		○		
	Monitor and control permitted activities and unauthorized activities (e.g., use or creation of unauthorized trails, grazing from adjoining properties).	Part of monthly visits		○		
	Implement a public education and outreach program focused on public access.	Ad hoc	○			
Invasive Species Control Plan (Section 3.2.2)	Prior to implementation of the invasive plant treatment plan, the Preserve Manager will map priority invasive species during general stewardship monitoring efforts.	Part of monthly visits		○		
	Evaluate the success of invasive plant control efforts for five years following implementation of invasive species control treatment plan or until eradication is maintained for one year without follow-up control activities.	Per invasive species control treatment plan				○
Habitat Restoration (Section 3.2.3)	During the first five years after adoption of the RMP, the Preserve Manager will monitor conditions of riparian habitat enhancement along Soquel Canyon using photo monitoring methods to track progress of passive restoration.	Quarterly				○
Vegetation Management (Section 3.2.4)	Pruning, cutting, or clearing of native vegetation will generally be avoided except for maintenance along access roads and approved recreation trails, and installation of erosion control measures, if necessary.	As needed, but following nesting bird policy and seasonal restrictions	○			
Fire Management (Section 3.2.5)	The Preserve Manager will conduct regular maintenance of weeds along existing fire roads and maintain existing roads in a condition that will provide safe access for firefighters.	Annual	○			

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Nonnative Animal Species Management (Section 3.2.6)	The Preserve Manager will work towards controlling the spread of invasive ant species.	Part of monthly visits		○		
	The Preserve Manager will monitor and address other potential infestations of invasive insects and other pathogens that can threaten native habitat.	Part of monthly visits		○		
	Implement and enforce feral and domestic animal restrictions and control.	Part of monthly visits		○		
Property Management (Section 3.2.7)	Implement routine and ongoing property management activities to ensure that the Preserve is maintained in good condition.	Ad hoc and part of monthly visits	○	○		
Land Uses within the Preserve (Section 3.2.8)	Conduct monitoring of the Preserve to ensure prohibited uses are not occurring with the Preserve.	Part of monthly visits and enforcement patrols	○	○		
Lands Uses Adjacent to the Preserve (Section 3.2.9)	The Preserve Manager will monitor land uses adjacent to the Preserve to identify situations in which edge effects can negatively affect biological resources within the Preserve.	Ad hoc		○		
	Prior to implementation of the public awareness program, the Preserve Manager will regularly monitor the interface of the Preserve with urban/residential areas. The Preserve Manager will identify situations in which adjacent land uses create negative effects on biological resources and maintain a dialogue with adjacent landowners to discuss and address edge effect issues.	Ad hoc	○	○		
	To the extent practicable, the Preserve Manager and OCTA will coordinate with local land use authorities (e.g., for the CEQA public review process) to ensure that new developments adjacent to the Preserve adhere to the following adjacency guidelines.	Ad hoc	○			
Management of Cultural Resources (Section 3.2.10)	Manage the Preserve in a manner that does not impact sensitive archeological resources.	Ad hoc	○			

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
Public Outreach and Education (Section 3.2.11)	Hold public meetings.	Annual	○			
	Provide educational and interpretative materials and maintain website.	Ongoing	○			
	Implement outreach and volunteer program.	Ongoing	○			
Biological Monitoring and Management (Section 3.3)						
Covered **Plant** Species (Section 3.3.2)	Conduct periodic monitoring and assessment of Covered Plant Species known populations and search for new occurrences.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Plant Species.	Every 3-5 years, depending on rainfall			○	
	Update and maintain database of population size of Covered Plants on Preserve	Annual	○			
Covered **Reptile** Species (Section 3.3.3)	Conduct periodic monitoring and assessment of Covered Reptile Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Reptile Species.	Every 4 years			○	
Covered **Bird** Species (Section 3.3.3)	Conduct periodic monitoring and assessment of Covered Bird Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Bird Species.	Every 4 years			○	
Covered **Mammal** Species (Section 3.3.3)	Conduct periodic monitoring and assessment of Covered Mammal Species and their habitat.	Part of monthly visits		○		
	Conduct protocols surveys of Covered Mammal Species.	Every 4 years			○	

Category	Management Action	Frequency	Preserve Management	Stewardship Monitoring	Effectiveness Monitoring	Targeted Monitoring
	Monitor fencing to evaluate ways to facilitate wildlife movement while maintaining control of unauthorized access.	Part of monthly visits		○		
Natural Communities (Section 3.3.4)	Conduct comprehensive update of vegetation map.	Every 10 years			○	
	Monitor vegetation plots/transects to identify vegetation condition and trends	Every 4 years			○	
	Monitor threats to natural communities from nonnative species, invasive pests or disease, unauthorized public access, erosion, and/or edge effects.	Part of monthly visits		○		
Adaptive Management (Section 3.3.5)	Monitor success of passive restoration of the riparian habitat along Soquel Canyon through the removal of grazing within the Preserve through photo monitoring to determine if additional habitat restoration is warranted.	Quarterly				○
	Monitor passive restoration of Soquel Canyon through the Preserve to determine if and how habitat within Preserve can be enhanced for western pond turtle. Research and survey the area between the Hayashi Preserve and where nearby occurrence records have shown western pond turtle to be located to see if there are barriers to dispersal that could be addressed.	Annual				○
Annual Progress Reports (Section 3.3.6)	The Preserve Manager will prepare an Annual Progress Report that summarizes the results of research and monitoring activities, provides recommendations for future preserve management activities for the Preserve, and discusses anticipated activities for the upcoming year.	Annual	○			

Table A-2 – Annual Schedule for Preserve Management and Biological Monitoring Actions

Action	Frequency / Schedule	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Adopt RMP								X																						
Preserve Management																														
Prepare Invasive Species Control Plan	Within two years of RMP adoption									X																				
Implement and monitor success of invasive species control actions	Five years after invasive species control plan										X	X	X	X	X															
Prepare Fire Management Plan	Within two years of RMP adoption									X																				
Effectiveness Monitoring																														
- Rare Plants	Three to five years	B						X				X				X				X				X				X		
- Reptiles	Four years	B						X				X				X				X				X				X		
- Birds	Four years	B						X				X				X				X				X				X		
- Mammals	Four years	B						X				X				X				X				X				X		
- Natural Communities Quantitative [1]	Four years							B				X				X				X				X				X		
- Natural Communities Comprehensive	10 years	B										X										X								

Table A-2 – Annual Schedule for Preserve Management and Biological Monitoring Actions

Action	Frequency / Schedule	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Targeted Monitoring																														
Monitor success of passive restoration of riparian habitat along Soquel Canyon through photo monitoring to determine if additional habitat restoration is warranted	Five years after RMP adoption								X	X	X	X	X																	
Monitor passive restoration of Soquel Canyon through the Preserve to determine if and how habitat within Preserve can be enhanced for western pond turtle. Research and survey the area between the Hayashi Preserve and where nearby occurrence records have shown western pond turtle to be located to see if there are barriers to dispersal that could be addressed.	Five years after RMP adoption								X	X	X	X	X																	

B = Baseline Survey

[1] Methodologies to complete quantitative monitoring of natural communities are currently being reviewed with the other regional conservation entities and the Wildlife Agencies. Pilots programs have been initiated at other OCTA Preserves. This monitoring will initiated at the Hayashi Preserve once methodologies are finalized.

Appendix B

Baseline Biological Surveys Technical Report for the Hayashi Property. Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California

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Baseline Biological Surveys Technical Report for the Hayashi Property

Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California

Prepared for

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March 2013

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EXHIBITS

ATTACHMENTS

1.0 INTRODUCTION

This Biological Technical Report has been prepared to support California Environmental Quality Act (CEQA) documentation and resource management planning for the Measure M2 Freeway Environmental Mitigation Program (EMP) Acquisition Properties Evaluation Project. The EMP project includes five separate Orange County Transit Authority (OCTA) acquisition properties (Hayashi, Ferber, Hafen, O'Neill Oaks, and Saddle Creek South), located in unincorporated Orange County, California (Exhibit 1). Due to the regional reparation between the Hayashi property (located in northeast Orange County) and the remaining four properties (located in southeast Orange County), this report only covers the Hayashi property (hereinafter also referred to as the Project).

This information has been reported in accordance with accepted scientific and technical standards that are consistent with the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW[1]).

BACKGROUND

Project Description

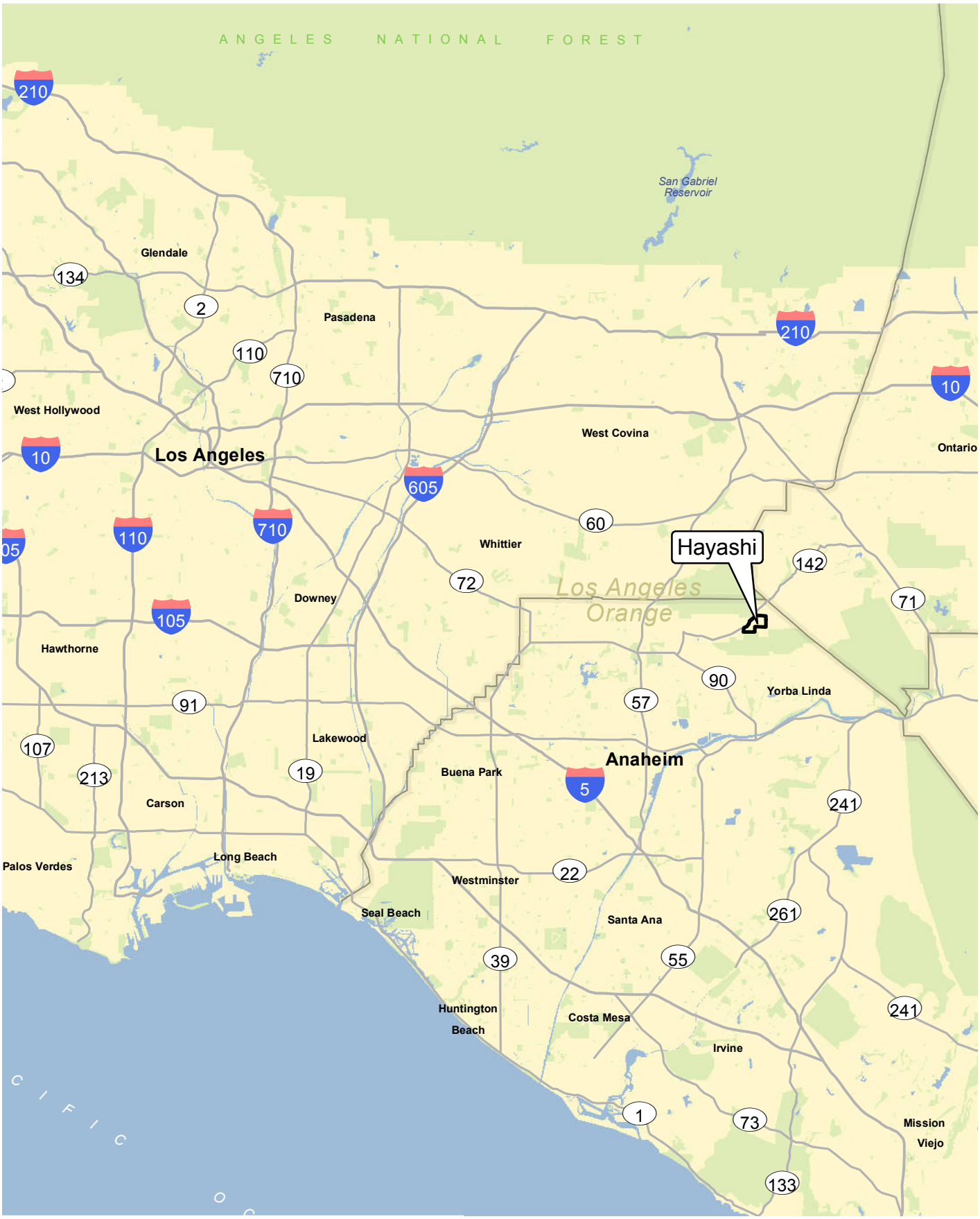
In 2006, Orange County voters approved the renewal of Measure M, effectively extending the half-cent sales tax in the County from April 2011 to March 2041. Renewed Measure M (or Measure M2) will continue to provide funding for transportation projects and programs in the County, including select freeway and roadway improvements, transit programs, and two environmental programs.

OCTA's M2 Freeway EMP provides comprehensive mitigation to offset the environmental impacts of the 13 Measure M2-funded freeway projects. The EMP is spearheaded by the Environmental Oversight Committee (EOC), which is made up of OCTA Board members and representatives from the California Department of Transportation (Caltrans), resource agencies, environmental groups, and the public.

Instead of mitigating the natural resource impacts of Measure M2 freeway projects on a project-by-project basis, the EMP presents a comprehensive mitigation approach that not only replaces habitat, but also provides the opportunity to improve the overall functions and value of sensitive biological resources throughout Orange County. Working collaboratively with the resource and regulatory agencies, it was ultimately decided by OCTA that creation of a Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP) and programmatic wetland permitting would best serve as the main implementation tools for the EMP.

As one of the key components of the conservation strategy for the NCCP/HCP and wetlands permitting, OCTA has undertaken a systematic approach to identify and acquire habitat preserves to meet the goals and objectives of these mitigation plans. A formal conservation assessment was completed by Conservation Biology Institute (CBI) for Orange County that resulted in the identification of Priority Conservation Areas (PCA), which included candidate parcels and properties that could be considered for open space purposes. OCTA soliticated willing sellers and evaluated each property using standardized criteria and a prioritization process to rank properties for purchase. Properties for acquisition were selected based on: conservation values, policy considerations, mitigation credits, mitigation plan review, and

[1] The California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW) effective January 1, 2013.



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Regional Location

Exhibit 1

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

6 3 0 6 Miles

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adoption and real estate value/economics. The results of the M2 acquisition/restoration/ management criteria evaluation for the Hayashi property are included in Attachment A.

The Hayashi property was selected and acquired in 2011. Baseline biological surveys were completed in 2012 with the following goals:

- A general biological assessment of the preserve was completed to serve as a basis to identify biological threats and assist the fundamental decisions of property management. Information on the overall condition of the property will guide the development of a site-specific Resource Management Plan (RMP).

- Comprehensive surveys of vegetation types and jurisdictional resources were completed to provide detailed knowledge of the natural habitat and a quantification of habitat type credits within the Preserve.

- Focused surveys of Covered Species and their habitats were completed to establish a baseline of the Preserve status and conditions. Results of future biological monitoring will be compared to the baseline results to evaluate habitat trends.

PROJECT LOCATION AND PHYSICAL ENVIRONMENTAL SETTING

The approximately 296-acre Hayashi property is located in the Chino Hills southeast of Carbon Canyon Road (State Route [SR] 142). Chino Hills State Park borders the southeastern boundary of the property. The property is located on the U.S. Geological Survey's (USGS') Yorba Linda 7.5-minute topographic quadrangle at Township 3 South, Range 9 West, Sections 2 and 11 (Exhibit 2). Land uses in the immediate vicinity are primarily open space with residential development along SR-142 to the southwest of the Project site. A blueline stream in Soquel Canyon crosses the eastern corner of the property. Topographically, a ridgeline runs across the center of the property in a northeast-southwesterly direction with steep slopes down to Soquel Canyon and Carbon Canyon. Elevations range from approximately 650 to 1,260 feet above mean sea level (msl). Soil types mapped on the property consist of Alo clay (15 to 30 percent slopes), Anaheim clay loam (15 to 30 percent slopes, 30 to 50 percent slopes, and 50 to 75 percent slopes), Balcom clay loam (15 to 30 percent slopes), Calleguas clay loam (50 to 75 percent slopes, eroded), Cropley clay (2 to 9 percent slopes), Mocho loam (2 to 9 percent slopes), San Emigdio fine sandy loam (2 to 9 percent slopes), and Soper loam (15 to 30 percent slopes) (Exhibit 3).

Regional Environmental Setting

The Project site is generally located within large blocks of undeveloped land in the 30,000-acre Puente-Chino Hills regional wildlife corridor that provides a 31-mile swath of continuous wildlife habitat between the Cleveland National Forest and the west end of the Puente Hills, above Whittier Narrows (Exhibit 4). This represents the "last major natural open space resource connecting Los Angeles, Orange, San Bernardino, and Riverside Counties" (Los Angeles County et al. 2003). Specifically, the Project site lies along Carbon Canyon between the remainder of the Chino Hills to the southeast and the Puente Hills to the northwest. These hills form the northern end of the Peninsular Ranges in Southern California. The rolling hills, mountains, and canyons interrupt the generally flat Los Angeles Basin on the southern and eastern sides. The hills are a result of uplift and folding along the Whittier and Chino faults (California State Parks 2011).

The Project site is immediately adjacent to the westernmost portion of the 14,102-acre Chino Hills State Park. To the southeast, open space in the Chino Hills State Park connects to larger areas of open space in the Irvine Ranch Land Reserve and the Cleveland National Forest via

Property Boundary

Hayashi

Source: USGS 7.5-minute Yorba Linda, Prado Dam Digital Quadrangles

Local Vicinity

Exhibit 2

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

2,000 1,000 0 2,000 Feet

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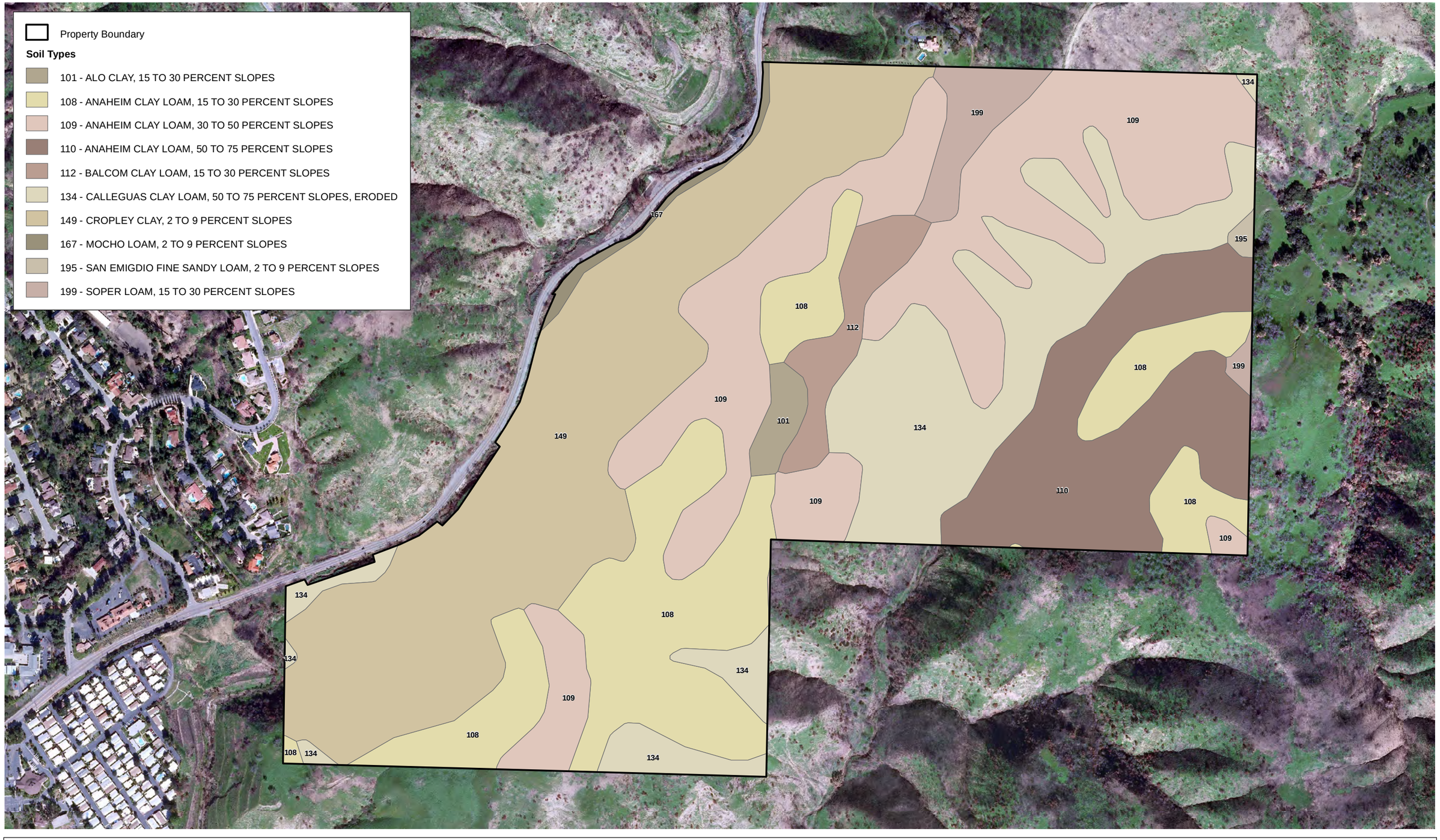

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Soil Types

Exhibit 3

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

500 250 0 500 Feet

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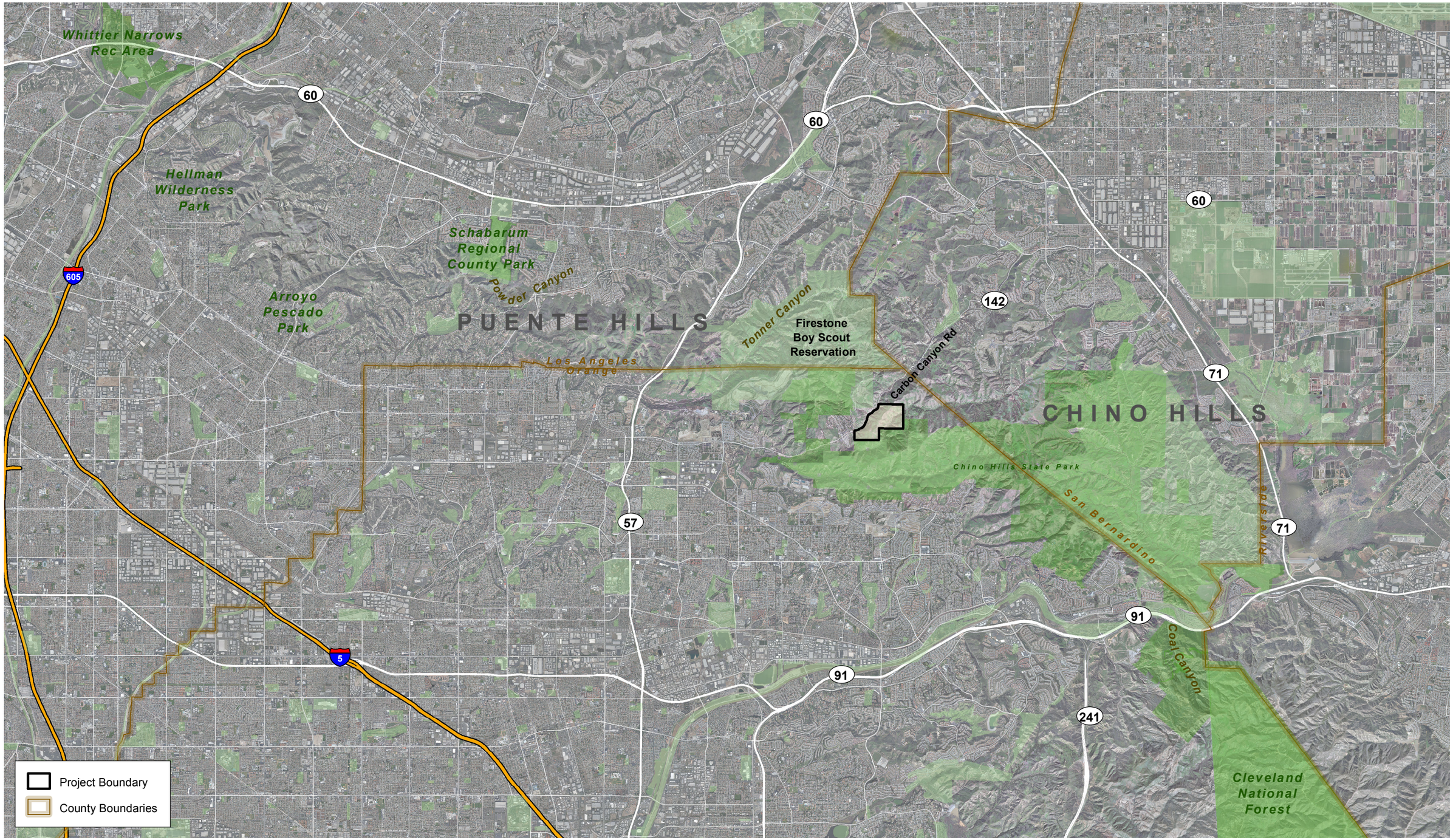

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Regional Environmental Setting

Exhibit 4

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

10,000 5,000 0 10,000 Feet

Bonterra CONSULTING

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the Coal Canyon corridor designed to facilitate wildlife movement under SR-91. On both sides of SR-91, Chino Hills State Park provides a large expanse of canyons, grasslands, and large areas of walnut woodlands. West of the park, Tonner Canyon provides a movement corridor beneath the SR-57. To the northwest of the Project site, open space extends to a Los Angeles County Significant Ecological Area, Powder Canyon, Schabarum Regional Park, Arroyo Pescadero Park, Hellman Wilderness Park, and the Whittier Narrows Recreation Area.

Fire History

Traditionally, the fire season in Southern California is from May through September (OCFA 2008). In the past, fires were started by lightning and typically moved down slopes due to falling brands and coals; they only occasionally formed the hot runs on steep slopes that are typical of today's fires (Howard 1992). This fire regime resulted in a mosaic of numerous small burns. New fires were limited by recently burned regions with very little fuel; dead wood and other fuels could not accumulate for long.

Mediterranean shrub communities, including those types found on the Project site, are resilient to wildfires at a frequency range of every 20 to 50 years (Keeley 1986). Many plant species associated with chaparral and scrub communities exhibit characteristics that constitute adaptations to frequent fires. One of the effects of fire on native habitats is the opportunity for new growth and reproduction. Without fire, a mature chaparral stand may become senile, where growth and reproduction are reduced (Schoenherr 1992). Mature chaparral is highly flammable after 30 to 60 years without fire (Howard 1992). A new fire will then typically burn hot and high into the canopy, killing much of the aboveground biomass. These canopy fires facilitate seed establishment by removing shrub cover and eliminating competitors. In the first few years after a fire, herbs and herbaceous shrubs—such as deerweed (*Acmispon glaber* [*Lotus scoparius*]), lupines (*Lupinus* spp.), paintbrushes (*Castilleja* spp.), and phacelias (*Phacelia* spp.)—are abundant. Because chaparral fires burn nitrogenous compounds in plant tissues and detritus, there is a large loss of nitrogen from the ecosystem. This allows species equipped with nitrogen-fixing bacteria to grow quickly after a fire.

While herbaceous species are establishing, the previously dominant chaparral species are also returning. Many chaparral species rely on fire to release and germinate seeds. Others resprout from roots or buds at the base of the stem. As the shrub canopy closes, whether due to resprouting of individuals burned by the fire or growth of seedlings, these herbaceous species decrease in importance.

Although natural fires are essential to the existence of chaparral and scrub communities, both unnatural increases and decreases in fire frequency can have a negative impact. Now most wildfires are started by humans, either through arson or accidents (Schoenherr 1992). In the past 15 years, Orange County has experienced its most devastating wildfires from October through April (OCFA 2008). Drought conditions contribute to an increase in dead fuels; dryer and more explosive fuels; and more intense fire behavior. In addition, sustained Santa Ana Winds increase the speed of fire and magnify the effects on the available fuel bed. Santa Ana Winds are strong, warm, and dry winds that flow down into the valleys when stable; during these conditions, high pressure air is forced across and then down the lee-side slopes of a mountain range. The descending air is warmed and dried, which produces critical fire weather conditions.

Anthropogenic increases in fire frequency can change the natural resilience of chaparral and coastal sage scrub communities. In general, when an area burns too often for the community to mature, native plants may not be able to maintain dominance. Ruderal species, including annual grasses and invasive forbs, often thrive in post-fire conditions. As a result, fires often promote the spread of non-native species into native habitats, including chaparral and scrub communities. In turn, this high degree of non-native grass and forb cover can lead to more

frequent fire return intervals (e.g., intervals of less than eight years have been reported) (Minnich and Dezzani 1998).

A decrease in fire frequency may also hinder reproduction of fire-adapted species. In the past, government agencies tried to prevent and stop the spread of wildfires through a policy of fire suppression. These efforts were found to be unsuccessful; they occasionally resulted in larger and more catastrophic fires. While they are less frequent, unnaturally large fires may burn so hot and intense that even the seeds of fire-adapted plants are destroyed.

Over the past 60 years, Orange County has experienced a number of major wildland fires (OCFA 2008). The topography and east-west alignment of Santa Ana Canyon, south of the Hayashi property, increases wind speed in the area and magnifies the effects of fire. According to the Orange County Fire Authority, this area has experienced 25 separate wildland fires since 1980, resulting in a total of 82,734 acres burned (OCFA 2008). The California Department of Forestry and Fire Protection (CAL FIRE) has also tracked significant fire events on the Hayashi property including the 1959 La Vida Fire (175.9 acres burned on site), the 1978 Soquel Fire (291.8 acres burned on site), the 1985 Shell Fire (267.5 acres burned on site), the 1985 Telegraph Fire (89.5 acres burned on site), and the 1990 Yorba Fire (34.9 acres burned on site). In 2008, the Freeway Complex Fire burned over 30,305 acres, and is the largest wildland fire in the past 40 years (OCFA 2008). This fire initially started at 9:01 AM on the north side of SR-91 east of Green River Drive. At 10:43, a second fire started near the Olinda Alpha Landfill near Carbon Canyon. These separate fires were subsequently merged into a complex. This fire consumed the property and adjacent areas and extended throughout the Chino Hills from the SR-57 to SR-91. Vegetation on the property is currently recovering from the Freeway Complex Fire.

Climate

Southern California experiences a Mediterranean climate characterized by mild, rainy winters and hot, dry summers. There can also be dramatic differences in rainfall from year to year. Consequently, the vegetation types in the Southern California area consist of drought-tolerant, woody shrubs and trees and annual, fall/winter-sprouting grasses.

The temperature in Southern California is moderated by the coastal influence of the Pacific Ocean, which creates mild conditions throughout most of the year. The stable atmosphere creates cloudless conditions, producing dry summers and a subtropical climate with many days of sunshine (Ritter 2006). The most distinguishing characteristic of a Mediterranean climate is its seasonal precipitation. In Southern California, precipitation is characterized by brief, intense storms generally between November and March. It is not unusual for a majority of the annual precipitation to fall during a few storms over a close span of time. Rainfall patterns are subject to extreme variations from year to year and longer-term wet and dry cycles.

In the City of Brea, the average daily temperature in the summer, as measured in July from 1961 to 1990, is 72.6 degrees Fahrenheit (°F), and the average daily temperature in the winter, as measured in January from 1961 to 1990, is 57.4°F (U.S. Bureau of Labor Statistics et al. 2009).

Anthropogenic Uses of the Property

Grazing

Grazing of cattle in the Chino Hills (including the Hayashi property) has occurred since 1771, after the Spanish founded Mission San Gabriel. The Chino Hills were used extensively for grazing by mission cattle. During the Mexican Republic era, the hills were used as spillover

grazing from such surrounding Mexican ranchos as Santa Ana del Chino and La Sierra Yorba. After Mexico ceded California to the United States in 1848, the lands within the Chino Hills were still used primarily for grazing.

A review of the earliest historic aerial photographs of the property showed evidence of grazing in 1938. Between 1938 and 1946, Carbon Ridge Road was extended from the area northeast of the property, on to the property, along Carbon Canyon Ridge. From 1946 through 1952, the width of Carbon Ridge Road onsite was increased, and additional smaller trails radiating from this ridge road were established.

While not formally used for grazing at this time, cattle are known to cross the property boundary and graze on site. During the 2012 general and focused biological surveys, cattle were directly observed throughout the property, including on the ridgeline, slopes, and bottom of Soquel Canyon. Cattle paths cross the slopes throughout the property and evidence of erosion due to cattle is visible in the southwest portion of the property.

Structures

The historic aerial research did not identify any buildings or otherwise significant structures on the site since 1938. However, along the northern boundary of the property, an offsite residence has established some structures and landscaping on the Hayashi property. Between 1952 and 1965, aerial photograph review suggests that trail widening and other disturbed areas where becoming established along the northern edge of the property. In 1972, an apparent cleared pad has been established immediately off site for the future residence. In 1980, cleared areas extending from the residential development onto the Hayashi property are evident, although no structures and/or landscape plantings have occurred in the area at this time. By 1994, the cleared areas extending onto the Hayashi property have become improved by ornamental landscaping and landscape structures (arbor and fencing). In addition, a radio antenna is located on the ridgeline near the northern portion of the property.

2.0 SURVEY METHODOLOGIES

This section describes the methodology used to conduct the literature review; perform general biological surveys and vegetation mapping, focused biological surveys, a jurisdictional delineation, and California Rapid Assessment Method (CRAM) analysis; and assess the property's potential to support special status species. A cumulative list of all plant and wildlife species observed on the property is included as Appendices A-1 and A-2, respectively.

LITERATURE REVIEW

BonTerra Consulting conducted a literature search to identify special status plants, wildlife, and habitats known to occur in the vicinity of the Hayashi property. This search included a review of the USGS' San Dimas, Ontario, Yorba Linda, and Prado Dam quadrangles in the California Native Plant Society's (CNPS') Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2012) and the California Natural Diversity Database (CNDDB) (CDFG 2012). In addition, a species list was obtained from the USFWS' Information, Planning, and Conservation System (IPaC) for the property.

VEGETATION MAPPING AND GENERAL SURVEYS

BonTerra Consulting Biologists David Hughes and Allison Rudalevige conducted general surveys to describe and map the vegetation types on the Hayashi property on May 22 and 23, 2012. Nomenclature for vegetation types generally follows *A Manual of California Vegetation*

(Sawyer et al. 2009). Vegetation was mapped in the field on an aerial photograph at a scale of 1 inch equals 200 feet (1″=200′). Where vegetation overlaps another type of mapping unit (e.g., a tree canopy over water or roads), the area was mapped according to the uppermost layer of vegetation.

The general surveys included an evaluation of the Project site to support special status plant and wildlife species, with special focus on Covered Species. Covered Species include intermediate mariposa lily (*Calochortus weedii* var*. intermedius*), southern tarplant (*Centromadia parryi* ssp. *australis* [*Hemizonia p.* ssp. *a.*]), many-stemmed dudleya (*Dudleya multicaulis*), arroyo chub (*Gila orcutti*), coast horned lizard (*Phrynosoma blainvillii*), Beldings orange-throated whiptail (*Aspidoscelis hyperythra* [*Cnemidophorus h.*]), Pacific [western] pond turtle (*Actinemys marmorata* [*Emys m.*]), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bells vireo (*Vireo bellii pusillus*),coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), coastal California gnatcatcher (*Polioptila californica californica*), pallid bat (*Antrozous pallidus*), long-eared myotis (*Myotis evotis*), small footed myotis (*Myotis ciliolabrum*), yuma myotis (*Myotis yumanensis*), big free-tailed bat (*Nyctinomops macrotis*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor* [*Felis c.*]). Suitable habitat and/or observed individuals were documented in field notes and with global positioning system (GPS) units and a CNDDB form was filled out for each occurrence.

During field surveys, natural or physical resources were identified (mapped and included in field notes) that "preserve, restore and enhance aquatic, riparian and terrestrial natural communities and ecosystems that support Covered Species" (OCTA 2010). Resources that provide valuable enhancement, restoration, or preservation opportunities (e.g., significant stands of non-native species requiring eradication; presence of rock outcroppings that provide niche areas for unusual plants, bats, ringtails [*Bassariscus astutus*], or other species; nesting cavities; large mammal burrows; avian rookeries/roosts; and dens) were mapped and documented in field notes. This may include significant stands of invasive plant species based on the California Invasive Plant Council (Cal-IPC) Inventory. Anthropogenic influences/structures on the property (i.e., cell towers, water towers, abandoned vehicles and/or "dumped" trash or debris) were also documented. GPS devices were utilized for recording all point locations.

Plant species were identified in the field or collected for subsequent identification using keys in Baldwin et al. (2012), Munz (1974), Abrams (1923, 1944 1951), and Abrams and Ferris (1960). Taxonomy follows Baldwin et al. (2012) and current scientific data (e.g., scientific journals) for scientific and common names. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic sign, including scat, footprints, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows Crother (2008) for amphibians and reptiles, American Ornithologists' Union (AOU 2011) for birds, and Baker et al. (2003) for mammals. All species observed were recorded in field notes and are included in Attachment B.

FOCUSED BIOLOGICAL SURVEYS

Focused biological surveys were conducted in 2012 for special status plant species, coastal California gnatcatcher, coastal cactus wren, and bats.

Special Status Plant Species

Special status plant surveys were floristic in nature and conducted following the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009) and the CNPS' Botanical Survey Guidelines (CNPS 2001). Target

species included the following Covered Species: intermediate mariposa lily, southern tarplant, and many-stemmed dudleya.

For special status plant surveys, rainfall received in the winter and spring determines the germination of many annual and perennial herb species. Rainfall data was retrieved from the California Data Exchange Center (CDEC) of the California Department of Water Resources (CDWR 2012). The Tonner Canyon sensor (CDEC Station TNR), located approximately 2.25 miles from the property, provides data for 2005 to 2012. The average precipitation for October to July is 15.02 inches. The precipitation between October 2011 and July 2012 was measured at 9.1 inches, which is 61 percent of average.

In years of low or unusual rainfall patterns, monitoring of reference populations is important in order to interpret survey results. Prior to conducting the field surveys, reference populations of target species were monitored to ensure that the scheduled surveys were comprehensive and conducted during the appropriate blooming period for these species. Intermediate mariposa lily was observed flowering in Trabuco Canyon on May 29, 2012. Southern tarplant was observed flowering in San Juan Capistrano on May 21, 2012. Many-stemmed dudleya was observed flowering in San Juan Capistrano on April 18, 2012. Although reference populations and regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results as species could possibly be present on a site but may not be detectable at the time of the surveys.

The Hayashi property was surveyed for special status plant species on June 5, 2012 by BonTerra Consulting Biologists Allison Rudalevige and Carl Demetropoulos; on June 6 by Ms. Rudalevige, BonTerra Consulting Biologists Jennifer Pareti and Jason Aguayo, and Consulting Biologist Fred Roberts; and on July 26, 2012 by Ms. Rudalevige, BonTerra Consulting Biologists Lindsay Messett and Jason Mintzer, and Consulting Biologist David Bramlet. A systematic walking survey was conducted in all areas of suitable special status plant habitat. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they are a special status species. Plants were identified using taxonomic keys, descriptions, and illustrations in Baldwin et al. (2012). Any voucher specimens collected will be deposited with the herbarium at Rancho Santa Ana Botanic Gardens in Claremont, California. Taxonomy and nomenclature follows the Baldwin et al. (2012), Hickman (1993), and current scientific journals for scientific and common names.

Coastal California Gnatcatcher and Coastal Cactus Wren

Surveys for the coastal California gnatcatcher were conducted in accordance with the guidelines issued by the USFWS for areas participating in a NCCP (USFWS 1997). These guidelines stipulate that three surveys must be conducted in suitable habitats with at least one week between site visits; the surveys can be conducted year-round. All visits must take place during the morning hours, and no more than 100 acres of suitable habitat may be surveyed per visit. Because of the habitat similarities, gnatcatcher and cactus wren surveys were conducted simultaneously.

Biologist Michael Couffer (USFWS Permit No. TE-782703-8) conducted the surveys on May 29 and 30; and June 7 and 15, 2012. The surveys covered all potentially suitable habitats for the coastal California gnatcatcher and coastal cactus wren. A summary of the focused gnatcatcher/cactus wren survey conditions on the Hayashi property is shown in Table 1 below.

TABLE 1
SUMMARY OF SURVEY DATA AND CONDITIONS FOR GNATCATCHER/CACTUS WREN SURVEYS

Date	Time	Surveyors	Weather Conditions		
			Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
May 29, 2012	0730/1218	Couffer	73/81	0-1/2-8	Clear/Clear
May 30, 2012	0700/1016	Couffer	60/74	0-1/0-3	90/Clear
June 7, 2012	0615/0930	Couffer	60/74	0-1/0-2	50/Clear
June 15, 2012	0615/0740	Couffer	60/60	0-1/0-1	100/100

Weather conditions met the USFWS survey protocol requirements for optimal gnatcatcher detection. Weather conditions that were too cold (below 55°F), too hot (above 95°F), or too windy (wind speed greater than 15 miles per hour) were avoided. Surveys were conducted by slowly walking through all appropriate habitats while listening and watching for gnatcatcher/cactus wren activity. A combination of recordings of gnatcatcher/cactus wren vocalizations and "pishing" sounds were used in an attempt to elicit responses from any gnatcatchers/cactus wren that might be present. The frequency of vocalization playback and "pishing" varied depending on conditions, such as habitat patch size and topography in each area. All bird species detected during the survey were recorded, including notable observations of special status wildlife species.

Bats

Both visual and acoustic surveys for bat species (both common and special status) were conducted on the Hayashi property. During the day, visual surveys were conducted to locate potential roost sites and foraging areas. At dusk and after dark, bat activity was monitored both visually (with spotlights after dark) and acoustically with ultrasonic bat detectors.

Site Reconnaissance

Dr. Ed West and BonTerra Consulting Biologist Ann Johnston assessed the ecological status and condition of the property on June 8, 2012. All passable roads were driven and the lower portion of Soquel Canyon Road (trail) was hiked. The general condition and use history of the site was documented and potential areas for bat roosts and foraging activity were identified.

Bat Monitoring

Acoustic monitoring was conducted on the property on June 14 through 17, 2012. Mobile surveys were conducted along Carbon Canyon Road (5 surveys), Carbon Canyon Access Road (5), Carbon Ridge Road (3), and North Spur Road leading to Soquel Canyon (2). On-foot hiking surveys were conducted along the road/trail in Soquel Canyon (3). During the mobile surveys, two vertically mounted ultrasonic detector microphones were secured to the roof of a 4x4 Jeep Wrangler. The detectors were connected individually with cabling to an EM3 EchoMeter full spectrum bat detector (SMX-US microphone, Wildlife Acoustics, Inc.) and an Anabat SD2 CF bat detector (Standard Anabat microphone, Titley Scientific, Inc.) mounted on a platform in the vehicle. The EM3 detector was programed for Wav file format recording with a 256K sample rate. A GPS unit was connected to the EM3 unit to provide GIS location of all recordings. All ultrasonic detections were digitally stamped with the date, time and location of the recordings. The SD2 detector was programmed for active monitoring. During the first hiking survey of Soquel Canyon (lower 1/3 section), the same microphones were vertically mounted on

the top bar of a Kelty metal frame backpack and connected to the EM3/SD2 detectors which were handheld during the surveys. During the survey of the upper 2/3 section of the canyon, the EM3 detector was handheld without the external microphone thus activating the internal SMX-UT microphone. The SD2 detector was also handheld with the microphone directly connected to the unit. Both units were held at above head height with the microphones pointed vertically during the on-foot surveys.

During the mobile surveys, the roads were driven slowly and all bat detections were visually and aurally monitored by watching the EM3 real-time spectrogram and listening to the speaker output on both the EM3 and the SD2. When repeated detections occurred, the vehicle was often stopped and the site was monitored for 10 to 20 minutes. These sites were also often stopped at during subsequent surveys along the same route. Similar point monitoring procedures were implemented during the hiking surveys in Soquel Canyon. Additionally, flying bats were visually searched for at dusk during each survey in areas with standing water and within areas of riparian vegetation in Soquel Canyon.

Bat Call Acoustic Analysis

Following each survey the digital recordings of all the bat calls were downloaded to a computer and analyzed to identify which species were present. The EM3 recordings were analyzed using SonoBat 3.1 (June 2012 release, SonoBat™). All recordings obtained using the SMX-US microphone were acoustically adjusted to SonoBat standards using the SMX-UT conversion tool in the SM2 Batch Attributer program. This option was turned off for analysis of all recordings obtained using the internal SMX-UT microphone in the EM3 unit. Following batch scrubbing of extraneous ultrasonic recordings (i.e., removal of all recordings of leaf rustling noise, wind, etc.) the bat calls were automatically identified using the SonoBat SonoBatch feature. Call files (wav. format) were tagged with species codes whenever the call quality met the identification threshold standards of the SonoBat program. Call files of lower quality were either tagged with a list of probable species or a general category identifying the general frequency range of the calls (e.g. High vs. Low). Calls with lower quality were not identified to species but were tagged as being bat calls.

All calls were then individually reviewed using SonoBat 3 to verify (or not) the SonoBat species identifications. All calls without species ID code tags were visually examined to determine if the calls were embedded in noise that reduced their quality but were recognizable and could be digitally extracted and re-evaluated. These call files were then processed using Raven™ (Cornell Lab of Ornithology) to remove the extraneous noise. The cleaned-up files were then re-run through SonoBat 3.1 to obtain species identifications wherever possible.

All SonoBat and GPS files for calls for which species/species group identifications could be obtained were then converted to Google Earth™ KML files and mapped using Myotisoft™ Transect 1.0.5b.

All bat calls recorded on the Anabat SD2 units were downloaded to the computer using CFRead™ (Titley Scientific) and sonograms were produced using AnalookW™ (Titley Scientific). Each sonogram was then visually compared to sonograms of known species in a digital library to determine species/species group identities. Unique calls were identified and matched to the date-time sequencing of the SonoBat calls and wav. file tags were generated for the Myotisoft KML file creation and Google Earth mapping.

REGULATORY SURVEYS

Jurisdictional Delineation

A jurisdictional delineation was conducted by BonTerra Consulting Ecologist/Regulatory Technician David Hughes with assistance from Forrest Maxon July 9 and 11, 2012, to describe and map the extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the CDFW. The delineation followed guidelines presented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). This regional supplement is designed for use with the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of "Waters of the U.S." and wetland resources. A three-parameter approach—which requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils—was used to identify wetlands on the Project site and adjacent off-site areas. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within the three parameters. However, problem areas may periodically or permanently lack certain indicators due to seasonal or annual variability of the nature of the soils or plant species on a project site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement. Non-wetland "Waters of the U.S." are delineated based on the limits of the Ordinary High Water Mark (OHWM), which can be determined by a number of factors including erosion, the deposition of vegetation or debris, and changes in vegetation.

It should be noted that the RWQCB shares the USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE's definition of the OHWM and/or the three-parameter wetlands methodology pursuant to the 1987 Wetlands Manual. The CDFW's jurisdiction is defined as the top of the bank of the stream, channel, or basin or the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake.

California Rapid Assessment Method Analysis

A CRAM analysis was conducted by Mr. Hughes on July 9 and 11, 2012 (concurrent with the jurisdictional delineation), with an additional survey on October 24, 2012. Surveys were conducted in accordance with the CRAM for Wetlands *User's Manual* (Collins et al. 2008). The CRAM analysis for Riverine Wetlands[2] was used to establish and score 100-meter-long Assessment Areas (AAs) in the principal streambed features on the property. The AA is the fundamental unit of evaluation for CRAM analysis. The AA width was defined as the outer canopy of vegetation that overhung the streambed.

Information recorded for the AA includes (1) the percentage of the AA that was surrounded by a buffer and the width of the buffer; (2) the water source for the AA; (3) the cross-sectional measurements to determine hydrologic connectivity to adjacent areas; (4) the number of plant layers within the AA; and (5) the number of co-dominant species and invasive species. Qualitative factors that were assessed include (1) the condition of the buffer surrounding the AA;

[2] CRAM uses the definition of a wetland provided by the National Wetland Inventory (NWI) of the USFWS: "Wetlands are lands transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. For the purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is not a soil and is saturated with water or covered by shallow water at some time during the growing season of each year" (Cowardin et al. 1979).

(2) the channel stability; (3) the complexity of the channel's bank with regards to the number of surfaces or features that provide habitat for species and topography; and (4) the horizontal and vertical structure of the plant community. Individual scores are obtained by "choosing the best-fit set of narrative descriptions of observable conditions ranging from the worst commonly observed (D) to the best achievable for the wetland (A)" (Collins et al. 2008). Each description has a fixed numerical value. This information was used to assess four primary attributes (i.e., Buffer and Landscape Context, Hydrology, Physical Structure, and Biotic Structure). The attribute score is calculated by first adding the values of the chosen narrative descriptions for the attribute's component metrics, and then converting the sum into a percentage of the maximum possible score for the attribute. The overall AA score is the average of the final attribute scores.

AA scores range from 25 to 100. The maximum AA score possible represents how a wetland is doing relative to the best achievable conditions for that wetland type in the state. It is assumed that the same scores for different wetlands of the same type represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type.

3.0 EXISTING BIOLOGICAL RESOURCES

This section describes the biological resources that occur or potentially occur on the property. Vegetation types, wildlife populations and movement patterns, and special status biological resources are discussed below.

VEGETATION TYPES AND OTHER AREAS

Eleven vegetation types and other areas occur on the Hayashi property: blue elderberry stand, bush mallow scrub, California walnut groves, California walnut groves/laurel sumac scrub association, coast live oak woodland, disturbed (bare ground), giant wild rye grassland, laurel sumac scrub, mulefat thicket, needle grass grassland, semi-natural herbaceous stands, and willow thickets (Table 2, Exhibit 5). These vegetation types were cross-walked to the general vegetation types used in the NCCP/HCP Plan.

- Blue Elderberry Stand
- Bush Mallow Scrub
- California Walnut Groves
- California Walnut Groves/Laurel Sumac Scrub Association
- Coast Live Oak Woodland
- Disturbed (Bare Ground)
- Giant Wild Rye Grassland
- Laurel Sumac Scrub
- Mulefat Thicket
- Needle Grass Grassland
- Semi-Natural Herbaceous Stands
- Willow Thickets

Verbena Ln
Buckthorn Dr
Olinda Pl
Carbon Canyon Rd
Amethyst
Topaz
Onyx
Sardius
Jasper
Beryl
Sapphire
Ligure
Emerald
Ruby
Canyon Rd

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Vegetation Types

Exhibit 5

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N
W E
S

500 250 0 500
Feet

BonTerra CONSULTING

(Rev: 12-03-2012 JAZ) Projects\OCTA\J008\Graphics\BioReports\ex5_veg_Hayashi.pdf

TABLE 2
VEGETATION TYPES AND OTHER AREAS ON THE PROPERTY

General Vegetation Types	Detailed Vegetation Types or Other Areas	Project Site (Acres)
Chaparral		
	Blue Elderberry Stand	0.76
	Bush Mallow Scrub	1.18
	Laurel Sumac Scrub	55.48
	Chaparral Subtotal:	**57.42**
Grassland		
	Giant Wild Rye Grassland	1.34
	Needle Grass Grassland	0.43
	Semi-Natural Herbaceous Stands	42.00
	Grassland Subtotal:	**43.77**
Riparian		
	Mulefat Thicket	2.13
	Willow Thickets	1.79
	Riparian Subtotal:	**3.92**
Woodland		
	California Walnut Groves	132.04
	California Walnut Groves/Laurel Sumac Scrub Association	42.55
	Coast Live Oak Woodland	11.55
	Woodland Subtotal:	**186.14**
Developed/Non-native	Disturbed (Bare Ground)	2.45
	Total Acreage	***293.70***

Chaparral

Blue Elderberry Stand

A total of 0.76 acre of blue elderberry stands occurs on the Hayashi property. This vegetation type is located on a southwestern-facing slope near the southern edge of the site. It is dominated by scattered blue elderberry (*Sambucus nigra* ssp. *caerulea*) with California brittlebush (*Encelia californica*). The understory consists of non-native grasses such as slender wild oat (*Avena barbata*).

Bush Mallow Scrub

A total of 1.18 acres of bush mallow scrub occurs on the Hayashi property. This vegetation type is located on a ridge near the center of the site. It is dominated by dense chaparral mallow (*Malacothamnus fasciculatus*). This species sprouts and grows vigorously after a light to moderate fire; individual shrubs are suppressed by the shade of longer-lived shrub species within a decade of fire (Sawyer et al. 2009). Lesser amounts of bush monkeyflower (*Mimulus aurantiacus*) and California everlasting (*Pseudognaphalium californicum* [*Gnaphalium c*.]) are also scattered throughout this vegetation type.

Laurel Sumac Scrub

A total of 55.48 acres of laurel sumac scrub occurs on the Hayashi property. This vegetation type is primarily located on the upper, southeast-facing slopes east of the main ridgeline. It is

dominated by dense laurel sumac (*Malosma laurina*) and chaparral mallow; as a fire-follower, chaparral mallow is expected to be suppressed by longer-lived species as the site recovers from the 2008 Freeway Complex Fire. Areas along the ridgeline have California sagebrush *(Artemisia californica)*, black sage *(Salvia mellifera)*, and purple sage (*Salvia leucophylla*) as sub-dominant species. Blue elderberry is sub-dominant in other areas.

Grassland

Giant Wild Rye Grassland

A total of 1.34 acres of giant wild rye grassland occurs on the Hayashi property. This vegetation type is located on a plateau near the southern edge of the site. It is dominated by giant wild rye *(Elymus condensatus* [*Leymus c.*]). Non-native grasses, such as ripgut grass (*Bromus diandrus*) are also present in this vegetation type.

Needle Grass Grassland

A total of 0.43 acre of needle grass grassland occurs on the Hayashi property. This vegetation type is located in an opening between California walnut groves at the northern edge of the site. It is characterized by having at least 10 percent relative cover of purple needlegrass (*Stipa pulchra* [*Nassella p.*]) and foothill needlegrass (*Stipa lepida* [*Nassella l.*]). This vegetation type has been heavily disturbed by grazing and has a high proportion of non-native species such as ripgut grass and slender wild oat.

Semi-Natural Herbaceous Stands

A total of 42.00 acres of semi-natural herbaceous stands occurs on the Hayashi property. This vegetation type is located along the ridgeline running across the site; down the adjacent slopes; and interspersed with woodland on the site. Ripgut grass and slender wild oat are dominant in some areas, with species such as common horehound (*Marrubium vulgare*) and tocalote (*Centaurea melitensis*) also occurring. Other areas are dominated by milk thistle (*Silybum marianum*). Scattered purple needlegrass, foothill needlegrass, and giant wild rye are present in this vegetation type; however, the coverage of these species is too low to be mapped as native perennial grassland. This vegetation type has been heavily disturbed by grazing.

Riparian

Mulefat Thicket

A total of 2.13 acres of mulefat thicket occurs on the Hayashi property. This vegetation type is located within the drainage of Soquel Canyon. It is dominated by mule fat (*Baccharis salicifolia* ssp. *salicifolia* [*B. salicifolia*]) with dense patches of California rose (*Rosa californica*) and western poison oak (*Toxicodendron diversilobum*). Herbaceous vegetation in the understory also includes salt grass (*Distichlis spicata*) and giant wild rye. Scattered coast live oaks (*Quercus agrifolia*), southern California black walnut (*Juglans californica*), and blue elderberry are also present in and adjacent to the drainage. Water is present intermittently in the drainage.

Willow Thickets

A total of 1.79 acres of willow thickets occurs on the Hayashi property. This vegetation type is located along Carbon Canyon Creek on the northwestern edge of the site. It is dominated by a mix of willow species (e.g., Goodding's black willow [*Salix gooddingii*] and arroyo willow [*Salix lasiolepis]*). Southern California black walnut, blue elderberry, and poison hemlock (*Conium maculatum*) are also present along the creek.

Woodland

California Walnut Groves

A total of 132.04 acres of California walnut groves occurs on the Hayashi property. This vegetation type is located on northwest-facing slopes throughout the site. It is dominated by an open canopy of southern California black walnuts. In some areas, sub-dominant species densely occurring in this woodland include toyon (*Heteromeles arbutifolia*), laurel sumac, and blue elderberry. In other areas, the understory is relatively open and composed of non-native grasses.

California Walnut Groves/Laurel Sumac Scrub Association

A total of 42.55 acres of California walnut groves/laurel sumac scrub association occurs on the Hayashi property. This vegetation type is located on the lower, southeast-facing slopes of the site. It is similar to the California walnut groves described above, but co-dominated by southern California black walnuts and laurel sumac. The tree density is also sparser in this vegetation type. Blue elderberry and chaparral mallow are sub-dominant species in some areas.

Coast Live Oak Woodland

A total of 11.55 acres of coast live oak woodland occurs on the Hayashi property. This vegetation type is located on northwest-facing slopes east of and at the bottom of Soquel Canyon. It is dominated by a canopy of coast live oak. The understory contains non-native grasses and western poison oak.

Developed/Non-native

Disturbed (Bare Ground)

A total of 2.45 acre of disturbed (bare ground) occurs on the Hayashi property. This consists of the dirt access road running along the ridgeline and areas cleared around the residential property north of the site. Disturbed areas contain little to no vegetation.

WILDLIFE POPULATIONS AND MOVEMENT PATTERNS

Vegetation on and adjacent to the property provides potential habitat for a number of wildlife species. Common wildlife species observed or expected to occur on the property and/or in adjacent off-site areas are discussed below.

Fish

Most creeks and waterways in Southern California are subject to periods of high water flow in winter and spring and little to no flow during the late summer and fall. Most drainages occurring on the Project site are expected to convey water only following storm events. However, Carbon Canyon Creek contains perennial flows. Water was observed flowing at the time of the surveys.

No fish species were observed on the property. Fish species expected to occur in Carbon Canyon Creek include green sunfish (*Lepomis cyanellus*) and western mosquitofish (*Gambusia affinis*).

Amphibians

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Terrestrial species may or may not require standing water for reproduction; they survive in dry areas by aestivating (i.e., remaining beneath the soil in burrows or under logs and leaf litter, and emerging only when temperatures are low and humidity is high). Many of these species' habitats are associated with water and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year in some habitat types depending on factors such as amount of vegetation cover, elevation, and slope/aspect.

Amphibian species are expected to occur primarily along the stream in Soquel Canyon. No amphibian species were observed on the property. Common amphibian species that may occur on the property include garden slender salamander (*Batrachoseps major*), western toad (*Anaxyrus boreas*), Pacific treefrog (*Pseudacris* [*Hyla*] *regilla*), and Baja California treefrog (*Pseudacris hypochondriaca*).

Reptiles

Reptiles are well-adapted to life in arid habitats. They have several physiological adaptations that allow them to conserve water. Reptiles can also become dormant during weather extremes, allowing them to survive prolonged droughts and paucity of food (Ruben and Hillenius 2005). Reptilian diversity and abundance typically varies with vegetation type and character. Many species prefer only one or two vegetation types; however, most species will forage in a variety of habitats. Most reptile species that occur in open areas will excavate a burrow or use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions.

Lizard species observed on the property include western fence lizard (*Sceloperus occidentalis*) and side-blotched lizard (*Uta stansburiana*). Snakes observed on the Project site include gopher snake (*Pituophis catenifer*) and common kingsnake (*Lampropeltis getula*).

Birds

A variety of bird species are expected to be residents on the property, using the habitats throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) is expected to occur on the property during the winter season, but would not occur in the summer season because it migrates north to its breeding range.

Resident bird species observed on the Project site include California quail (*Callipepla californica*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker *(Picoides nuttallii),* western scrub-jay (*Aphelocoma californica*), common raven (*Corvus corax*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), common yellowthroat (*Geothlypis trichas*), yellow warbler (*Setophaga petechia* [*Dendroica petechia*]), spotted towhee (*Pipilo maculatus*), California towhee (*Pipilo crissalis*), rufous-crowned sparrow (*Aimophila ruficeps*), and song sparrow (*Melospiza melodia*). Urban-tolerant species that occur in disturbed areas and in natural vegetation types that were also observed on the property include mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Spinus* [*Carduelis*] *psaltria*).

Wintering birds are those species that generally breed outside the region but migrate to the area for the winter season. Wintering species observed on the property include fox sparrow

(*Passerella iliaca*). Summer residents are species that migrate into the region to breed, but generally winter south of the region. Summer breeders observed during the surveys include black-chinned hummingbird (*Archilochus alexandri*), Pacific-slope flycatcher (*Empidonax difficilis*), cliff swallow (*Petrochelidon pyrrhonota*), black-headed grosbeak (*Pheucticus melanocephalus*), blue grosbeak (*Passerina caerulea*), lazuli bunting (*Passerina amoena*), hooded oriole (*Icterus cucullatus*), and Bullock's oriole (*Icterus bullockii*). During spring and fall migration, the Project site also provides foraging habitat for a variety of migratory species.

Birds of prey (raptors) observed on the property include barn owl (*Tyto alba*), western screech-owl (*Megascops kennicottii*), turkey vulture (*Cathartes aura*) (a scavenger), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). The western screech-owl (i.e., adults with two or three fledglings) was observed at a nest in an abandoned refrigerated trailer just off site.

Mammals

Active burrows are present throughout the property and could provide cover for a number of small mammal species. Small ground-dwelling mammals or their sign observed on the site include California ground squirrel (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*). Additional common small mammals expected on site include deer mouse (*Peromyscus maniculatus*), California pocket mouse (*Chaetodipus californicus*), western harvest mouse (*Reithrodontomys megalotis*), and woodrats (*Neotoma* spp.).

Open grassland communities and the leafy understory of scrub and woodland communities provide excellent foraging habitat for herbivorous mammals. Common herbivores observed during field surveys include mule deer (*Odocoileus hemionus*) and desert cottontail (*Sylvilagus audubonii*).

Medium to larger mammalian predators (both carnivorous and omnivorous species) that were observed or are expected on the property in a variety of habitats include common striped skunk (*Mephitis mephitis*), northern raccoon (*Procyon lotor*), gray fox (Urocyon cinereoargenteus), coyote (*Canis latrans*), and bobcat. The mountain lion is also among the larger mammals associated with variety of vegetation communities on site. Mountain lions are known to occur wihin the Chino Hills, and are expeced to occur on site.

Four bat species were identified from the acoustic analysis: Brazilian free-tailed bat (*Tadarida brasiliensis*), Yuma myotis, hoary bat (*Lasiurus cinereus*), and a potential western red bat (*Lasiurus blossevillii*). The species determination for the western red bat is tentative, being based on a single call sequence recording. Most of the bat activity documented on the property occurred in the lower elevation canyons and ravines where the bats are most likely to find more abundant insect food. No active bat roosts were located during the surveys. However, small numbers of foliage-roosting bats, such as the hoary bat, are likely to occur in the nearby riparian and urban areas which support large-leaved deciduous trees such as the western sycamore (*Platanus racemosa*) and/or the Freemont cottonwood (*Populus fremontii*).

Wildlife Movement

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967; Soule 1987; Harris and

Gallagher 1989; Bennett 1990). Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators and human disturbances, thus reducing the risk that catastrophic events (such as fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (e.g., foraging for food or water, defending territories or searching for mates, breeding areas, or cover). A number of terms such as "wildlife corridor", "travel route", "habitat linkage", and "wildlife crossing" have been used in various wildlife movement studies to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and to facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- ***Travel route*** **–** a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and it provides a relatively direct link between target habitat areas.

- ***Wildlife corridor*** **–** a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and to facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat linkages" or "landscape linkages") can provide both transitory and resident habitat for a variety of species.

- ***Wildlife crossing*** **–** a small, narrow area, relatively short in length and generally constricted in nature that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent "choke points" along a movement corridor, which may impede wildlife movement and increase the risk of predation.

It is important to note that in a large open space area where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors (as defined above) may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and to provide a variety of travel routes (e.g., canyons, ridgelines, trails, riverbeds, and others), wildlife will use these "local" routes while searching for food, water, shelter, and mates and will not need to cross into other large open space areas. Based on their size, location, vegetative composition and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction

of physical obstacles (such as roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food and water, and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

In general, animals discussed within the context of movement corridors typically include larger, more mobile species (such as mule deer, black bear [*Ursus americanus*], mountain lion, fox [*Urocyon* sp.], and coyote) and even some of the mid-sized mammals (such as raccoon, striped skunk, American badger [*Taxidea taxus*], and Virginia opossum [*Didelphis virginiana*]). Most of these species have relatively large home ranges through which they move to find adequate food, water, and breeding and wintering habitat. It is assumed that corridors that serve larger, more vagile species also serve as corridors for many smaller, less mobile species, such as reptiles, amphibians, and rodents (generally discussed within the context of local movement). Regional movement for these species facilitates gene flow and requires at least some local "stepping stone" movement of individuals between populations.

The availability of open space corridors is generally considered less important for bird species. Most bird species are believed to fly in more or less direct paths to desired locations; however, some habitat-specific species may not move great distances from their preferred habitat types, and are believed to be less inclined to travel across unsuitable areas.

Ideally, an open space corridor should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a wide variety of resident species in any particular region. Most species typically prefer adequate vegetation cover during movement, which can serve as both a food source and as protection from weather and predators. Drainages, riparian areas, and forested canyon bottoms typically serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. Very few species will move across large expanses of open, uncovered habitat unless it is the only option available to them. For some species, landscape linkages must be able to support animals for sustained periods, not just for travel. Smaller or less mobile animals (such as rodents and reptiles) require long periods to traverse a corridor, so the corridor must contain adequate food and cover for survival.

Regional Movement

Open space on the property provides a connection between Chino Hills State Park property south of SR-142 and Chino Hill State Park and other open space north of SR-142. Wildlife moving northwest or southeast is constrained to an approximate 3.65-mile-wide wildlife corridor by development southwest of Telegraph Canyon Road and northeast of Canyon Hills Road. This large area is currently broken up into approximate 0.29-mile-wide, 1.00-mile-wide, 1.40-mile-wide areas of habitat by Olinda Village and Sleepy Hollow, as measured at the narrowest point. These remaining corridors currently consist of undeveloped open space, though residential development is proposed across SR-142 northeast of Olinda Village. SR-142 acts as a barrier to wildlife movement along this corridor.

A wildlife corridor analysis was conducted in the region in October 2000 (URS 2001). Mountain lion, coyote, bobcat, and mule deer were documented along the ridgeline and along Soquel Canyon within the property. Soquel and Telegraph Canyons and associated ridgelines converge at SR-142 southwest of the property and there are several moderately sized drainages and ridgelines on the north side of the road that wildlife can use to move toward Sonome and Tonner Canyons to the north.

Local Movement

The property consists of a northeast-southwest oriented ridgeline and relatively steep northwest-southeast oriented canyons draining to Soquel Canyon to the east and Carbon Canyon to the west. These areas provide a variety of travel routes for local wildlife movement. Movement is expected to occur on the property, as well as between the property and contiguous off-site habitat. Wildlife that require relatively large home ranges, such as coyote and mule deer, were observed on the property.

SPECIAL STATUS BIOLOGICAL RESOURCES

The following section addresses special status biological resources that were observed, reported, or have the potential to occur on the property or in adjacent off-site areas. These resources include plant and wildlife species that have been afforded special status and/or recognition by federal and State resource agencies, as well as private conservation organizations. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitations of its population size, geographic range, and/or distribution resulting in most cases from habitat loss. Tables 5 and 6 provide a summary of special status plant and wildlife species known to occur in the Project vicinity (i.e., the USGS' San Dimas, Ontario, Yorba Linda, and Prado Dam 7.5-minute quadrangles) and include information on the status; habitat; potential for occurrence; results of focused survey efforts; and definitions for the various status designations. Generally, this list includes species reported by the CNDDB and CNPS, supplemented with species from the author's experience that either occur nearby or could occur based on the presence of suitable habitat. In addition to species, special status biological resources include vegetation types and habitats that are either unique; of relatively limited distribution in the region; or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the status of biological resources are listed below.

- ***Plants*** **–** Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2012); the CNDDB (CDFG 2012); various USFWS *Federal Register* notices regarding listing status of plant species; and the *List of Special Vascular Plants, Bryophytes, and Lichens* (CDFG 2013).

- ***Wildlife*** **–** California Wildlife Habitat Relationships Database System (CDFG BDB 2012); the CNDDB (CDFG 2012); various USFWS *Federal Register* notices regarding listing status of wildlife species; and *List of Special Animals* (CDFG 2011).

- ***Habitats*** **–** CNDDB (CDFG 2012) and *List of California Natural Communities* (CDFG 2010).

Definitions of Special Status Biological Resources

A **federally Endangered species** is one facing extinction throughout all or a significant portion of its geographic range. A **federally Threatened species** is one likely to become Endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in "take" of the species or its habitat. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm, in this sense, can include any disturbance of habitats used by the species during any portion of its life history.

Proposed species or **Candidate species** are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may soon be listed as Threatened or Endangered, these species could become listed prior to or during implementation of a proposed project. The presence of a Proposed or Candidate species within a project impact area may impose constraints on development if they are listed prior to issuance of project permits, particularly if a project would result in "take" of the species or its habitat.

The State of California considers an **Endangered species** as one whose prospects of survival and reproduction are in immediate jeopardy; a **Threatened species** as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a **Rare species** as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. Rare species applies only to California native plants. State-listed Threatened and Endangered species are protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in "take" of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates. This designation does not provide legal protection, but signifies that these species are recognized as special status by the CDFW. Recently, the CDFW downgraded some of these species from Species of Special Concern to the **Watch List**.

Species that are **California Fully Protected** and **Protected** include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite (*Elanus leucurus*). Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, §§650, 670.7) or Section 2081 of the *California Fish and Game Code.*

Species of **Local Concern** are those that have no official status with the resource agencies, but are being watched because there is either a unique population in the region or the species is declining in the region.

Special Animal is a general term that refers to species that the CNDDB is interested in tracking, regardless of legal or protective status. This term includes species designated as any of the above terms, but also includes species that may be considered biologically rare; restricted in distribution; declining throughout their range; have a critical, vulnerable stage in their life cycle that warrants monitoring; are on the periphery of their range and are threatened with extirpation in California; are associated with special status habitats; or are considered by other State or federal agencies or private organizations to be sensitive or declining.

The California Rare Plant Rank (CRPR), formerly known as CNPS List, is a ranking system by the Rare Plant Status Review group[3] and managed by the CNPS and the CDFW. A CRPR summarizes information on the distribution, rarity, and endangerment of California's vascular plants. Plants with a CRPR of **1A** are presumed extinct in California because they have not been seen in the wild for many years. Plants with a CRPR of **1B** are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of **2** are considered Rare, Threatened, or Endangered in California but are more common in other states. Plants with a CRPR of **3**

[3] A group of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector.

require more information before they can be assigned to another rank or rejected; this is a "review" list. Plants with a CRPR of **4** are of limited distribution or infrequent throughout a broader area in California; this is a "watch" list. The CRPR Threat Rank is an extension added onto the CRPR to designate the level of endangerment by a 1 to 3 ranking (CNPS 2012). An extension of **.1** is assigned to plants that are considered to be "seriously threatened" in California (i.e., over 80 percent of the occurrences threatened or having a high degree and immediacy of threat). Extension **.2** indicates the plant is "fairly threatened" in California (i.e., between 20 and 80 percent of the occurrences threatened or having a moderate degree and immediacy of threat). Extension **.3** is assigned to plants that are considered "not very threatened" in California (i.e., less than 20 percent of occurrences threatened or having a low degree and immediacy of threat or no current threats known). The absence of a threat code extension indicates plants lacking any threat information.

Vegetation Types

In addition to providing an inventory of special status plant and wildlife species, the CNDDB also provides an inventory of vegetation types that are considered special status by the State and federal resource agencies, academic institutions, and various conservation groups (such as the CNPS). Determination of the level of imperilment (i.e., exposure to injury, loss, or destruction) is based on the NatureServe Heritage Program Status Ranks that rank both species and vegetation types on a global (G) and statewide (S) basis according to their rarity, trend in population size or area, and recognized threats (e.g., proposed developments, habitat degradation, and non-native species invasion) (Faber-Langendoen et al. 2009). The ranks are scaled from 1–5. NatureServe considers **G or S 1** communities to be critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors; **G or S 2** communities to be imperiled and at high risk of extinction or elimination due to very restricted range, very few populations or occurrences, steep declines, or other factors; **G or S 3** communities to be vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors; **G or S 4** communities to be apparently secure and uncommon but not rare with some cause for long-term concern due to declines or other factors; and **G or S 5** communities to be secure. A question mark (?) denotes an inexact numeric rank, but existing information points to this rank (Faber-Langendoen et al. 2009).For vegetation alliances[4] that have State ranks of S1–S3, all associations within the alliance are considered to be highly imperiled.

Special status vegetation types observed on the Project site are described further below.

Chaparral Communities

A total of 1.18 acres of bush mallow scrub and 56.42 acres of laurel sumac scrub are present on the property. These vegetation types are ranked according to their degree of imperilment by the CDFW; both the *Malacothamnus fasciculatus* (Bush mallow scrub) Alliance and the *Malosma laurina* (laurel sumac scrub) Alliance are ranked as G4 S4. The Global/State rankings of bush mallow scrub and laurel sumac scrub indicate that they are apparently secure.

As a transitional vegetation type, areas mapped as bush mallow scrub may develop into a more complex chaparral or coastal sage scrub community. Chaparral is a "drought tolerant plant community dominated by sclerophyllous, woody shrubs shaped by a Mediterranean-type climate and naturally recurring wildfires" (Halsey 2007). It is the most extensive vegetation community in California and is not presently considered to have special status, though its status

[4] A vegetation alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover" (Sawyer et al. 2009).

in the future may be uncertain given continuing drought conditions, increased fire frequencies, and limited understanding of the system. Coastal sage scrub has, as a whole, declined approximately 70 to 90 percent in its historic range in California by the mid-1990s (Noss and Peters 1995). Sage scrub has largely been lost to land use changes in Southern California basins and foothills. The ecological function of Southern California's remaining sage scrub is threatened by habitat fragmentation and degradation, which is largely the result of invasive non-native species, livestock grazing, off-highway vehicles, altered fire regime, and air pollution (O'Leary 1995; Allen et al. 2000).

Giant Wild Rye Grassland

A total of 1.34 acres of giant wild rye grassland is ranked according to its degree of imperilment by the CDFW; the *Leymus condensatus* (giant wild rye grassland) Alliance is ranked G3 S3. Vegetation types ranked as S3 are considered of special concern. Giant wild rye grassland is described under the Herbaceous Alliances and Stands and this association tends to be short lived because they are stimulated by fire and are fairly quickly taken over by native shrubs of the coastal sage scrub zone following fire (Sawyer et al. 2009). Giant wild rye was one of the species whose abundance was maintained by Native American burning (Sawyer et al 2009). Giant wild rye does occur after fires; however, it may persist independently of fire in areas of human disturbance and urban runoff or in areas of coastal sage scrub where natural slumping and seepage occur (Sawyer et al 2009).

Blue Elderberry Stand

A total of 0.76 acre of blue elderberry stand is present on the property. This vegetation type is ranked as G3 S3. While this ranking indicates that this vegetation type is vulnerable, the blue elderberry stand on the property contains sparse elderberry individuals and an understory of non-native grasses.

Willow Thicket

A total of 2.13 acres of mulefat thickets and 1.79 acres of willow thickets are present on the property. Willow riparian woodland is ranked according to its degree of imperilment by the CDFW; black willow thickets are ranked G4 S3, arroyo willow thickets are ranked G4 S4 and mulefat thickets are ranked G5 S4. Typically, riparian vegetation provides important biological functions for an ecosystem such as (1) for cover and water sources for wildlife; (2) for filtration of runoff water and groundwater to be recharged; and (3) for flood control and sediment stabilization purposes. Riparian habitats are biologically productive as well as diverse, and are the exclusive habitat of several special status species. As a result, the resource agencies often consider riparian vegetation types to be important resources. It is estimated that as much as 95 to 97 percent of historic riparian habitats in Southern California had been lost by the late 1980s due to agriculture, urban development, flood control, and other human-caused impacts (Faber et al. 1989; Bell 1997). Additionally, since the 1970s, giant reed has become the greatest threat to the remaining riparian resources in coastal Southern California (Bell 1997). This invasive species competes with native species such as willows (Salix spp.), mule fat, and cottonwoods (Populus spp.); is difficult to control; and apparently does not provide food or nesting habitat for native species (Bell 1997).

Woodland Communities

A total of 11.55 acres of coast live oak woodland occurs on the property. Coast live oak woodland is ranked according to its degree of imperilment by the CDFW; the *Quercus agrifolia* (coast live oak woodland) Alliance is ranked G5 S4. In addition, some oak woodlands on the Project site are associated with jurisdictional resources and discussed separately below. Oak

woodlands are declining throughout California due to residential, commercial, and industrial development. They are an important resource in California that provides aesthetic, cultural, economic, and environmental value, in addition to wildlife habitat.

A total of 131.78 acres of California walnut groves occurs on the property. In addition, a total of 42.55 acres is an association of California walnut groves and laurel sumac scrub. California walnut woodland is ranked according to its degree of imperilment by the CDFW; the *Juglans californica* (California walnut groves) Alliance is ranked G3 S3 (any associations with this alliance, such as with laurel sumac, would also be considered highly imperiled). Vegetation types ranked as S3 are considered of special concern.

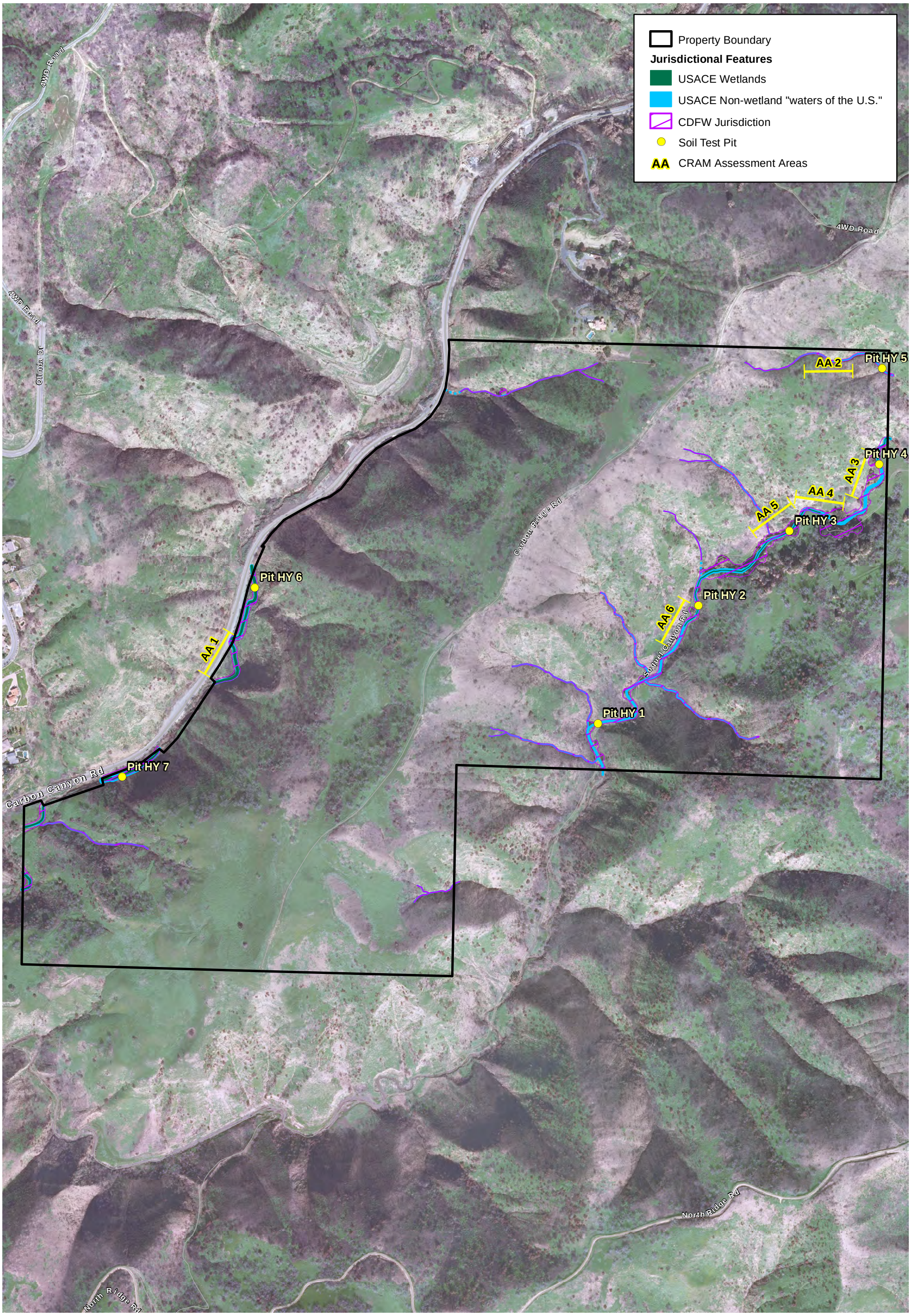
Needle grass Grassland

A total of 0.43 acre of needle grass grassland occurs on the property. Needle grass grassland is ranked according to its degree of imperilment by the CDFW; the *Nassella pulchra* (purple needle grass grassland) Provisional Alliance is ranked as G4 S3?[5] and the *Nassella lepida* (foothill needle grass grassland) Provisional Alliance is ranked as G3? S3?. Vegetation types ranked as S3 are considered of special concern. Native grasslands are believed to have covered nearly $^1/_5$ of the state and have declined by approximately 99 percent in their historic range in California (Barry 1972; Noss and Peters 1995). In the mid-nineteenth century, heavy grazing by cattle and sheep caused native perennials to be replaced by fast-growing annual grasses, which are able to take advantage of spring rains and produce seeds before the dry heat of summer. The native perennial grasses, which are more palatable to livestock than annuals, were damaged by grazing and trampling. Native grasslands have also been lost to development and conversion to agriculture. Needlegrass grassland on the property has been disturbed by grazing as well as the presence of non-native grasses and would, therefore, not be considered as biologically valuable as undisturbed types.

Jurisdictional Areas

The Hayashi property is within the Los Angeles-San Gabriel River Hydrologic Unit. There are two principal drainage features on the property, Carbon Canyon Creek and Soquel Canyon Creek. These drainage features eventually connect with the Pacific Ocean, a Traditional Navigable Water (TNW), as designated by the USACE. These streambeds satisfy the USACE criteria for Relatively Permanent Waters (RPW). As a result, Carbon Canyon Creek and Soquel Canyon Creek fall within the USACE's jurisdiction, as described in the Supreme Court's *Rapanos* decision, as do tributaries to these streambeds. A total of 2.60 acres of "Waters of the U.S.", including wetlands, occur on the property (Exhibit 6; Table 3). Isolated waters, having an Ordinary High Water Mark but no "significant nexus" to a TNW, were mapped on the property. As a result, the RWQCB would take jurisdiction over 2.67 acres on the property. A total of 6.51 acres under the jurisdiction of the CDFW occur on the property (Exhibit 6, Table 3).

[5] A question mark (?) denotes an inexact numeric rank due to insufficient samples over the full expected range of the type, but existing information points to this rank.



Jurisdictional Resources

Exhibit 6

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

550 275 0 550 Feet

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TABLE 3
"WATERS OF THE U.S." AND "WATERS OF THE STATE"
ON THE HAYASHI PROPERTY

Jurisdiction	Existing on Property (Acres)
Wetlands	0.50
Non-wetland "Waters of the U.S."	2.10
Total "Waters of the U.S." [a]	**2.60**
Isolated Feature[b]	**0.07**
Total "Waters of the State" [c]	**6.51**

[a] "Waters of the U.S." are under the jurisdiction of both the USACE and the RWQCB.
[b] The isolated feature is a drainage that does not connect to Carbon Canyon Creek and is therefore not considered "waters of the U.S.".
[c] CDFW limits include 0.16 acre of isolated streambed that does not connect to Carbon Canyon Creek.

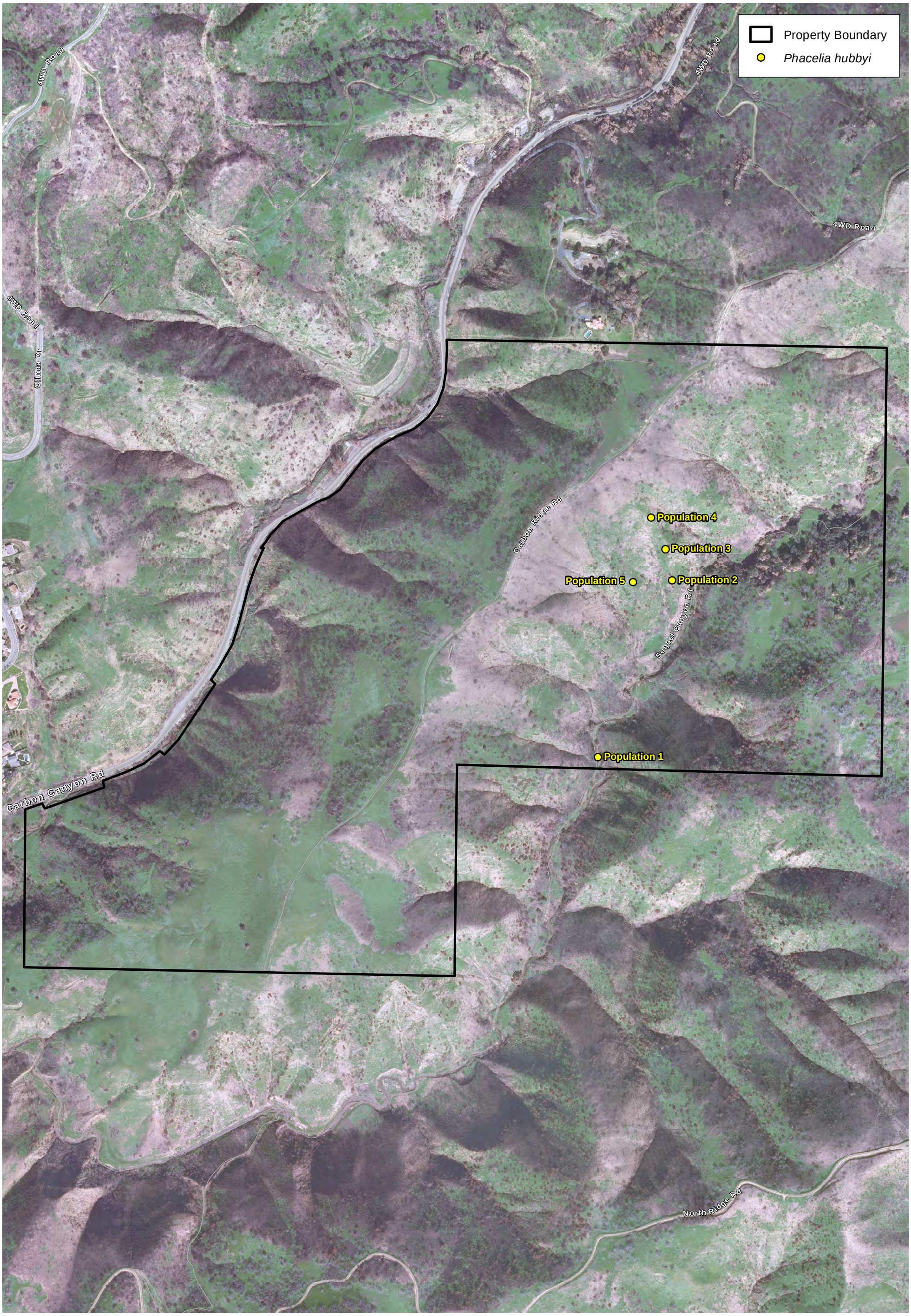
Should jurisdictional resources be impacted by management activities on the property, permits/agreements from the regulatory agencies would be required. This would consist of a USACE Section 404 Permit and Letters of Permission, a RWQCB Section 401 Water Quality Certification; and a CDFW Section 1602 Streambed Alteration Agreement.

CRAM is a tool for assessing the overall condition[6] of a wetland that was developed by a consortium of federal, State, and local scientists and managers. The results of a condition assessment can be used to infer the ability to provide various functions or services to which a wetland is most suited. This analysis can be used for a variety of applications, such as in project evaluation to inform regulatory decisions (e.g., Section 401 and 404 permitting) or restoration or mitigation site evaluation.

AA scores range from 25 to 100. The maximum AA score possible represents how a wetland is doing relative to the best achievable conditions for that wetland type in the state. It is assumed that the same scores for different wetlands of the same type represent the same overall condition and functional capacity. Therefore, these scores may be used to track the progress of restoration efforts over time; to compare impacted sites to their in-kind mitigation sites; or to compare an individual wetland to the status and trends in ambient condition of its wetland type.

Six, 100-meter-long AAs were scored for a CRAM analysis (Exhibit 6). The overall AA score ranges from 58.0 to 72.9 (Table 4). These scores reflect the generally natural condition of the property. The Buffer and Landscape Context attribute scores range from 52.8 to 100.0; the Hydrology attribute scores range from 75.1 to 91.7; the Physical Structure attribute scores range from 37.5 to 50.0; and the Biotic Structure attribute scores range from 36.1 to 66.7. The scores are generally high for buffer condition and hydrology. This reflects the large amount of open space surrounding the drainages and lack of disturbance to the water sources resulting in little or no channel degradation. The landscape connectivity score for AA1 is low compared to the other AAs since it runs along and crosses under Carbon Canyon Road. The generally low scores for Physical Structure are a reflection of the type of riparian system (i.e., generally ephemeral and uniform) as opposed to the result of anthropogenic disturbance. Because most of the jurisdictional resources are dominated by coast live oak riparian habitat or walnut woodland, the natural density of these woodlands has limited the establishment of understory species and inhibited the scores for Biotic Structure.

[6] "Condition" is defined as the state of a wetland AA's physical and biological structure, the hydrology, and its buffer and landscape context relative to the best achievable states for the same type of wetland (CWMW 2009).



Special Status Plant Locations

Exhibit 7

Measure M2 Acquisition Properties Evaluation/Hayashi Property

N W E S

550 275 0 550 Feet

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There are several areas along Soquel Canyon Creek where cattle grazing is present. Overgrazing may negatively impact the quality of drainages and surrounding buffer (e.g., through soil compaction, erosion, and facilitating the spread and persistence of non-native species) (Schoenherr 1992). Enhancement opportunities (e.g., elimination of grazing and restoration of native species) exist within both Carbon Canyon Creek and Soquel Canyon Creek. This has the potential to increase the CRAM scores for the number of co-dominant species and the vertical biotic structure metrics. Control of invasive species such as tree tobacco (*Nicotiana glauca*) and giant reed (*Arundo donax*) may increase the score for the percent of invasive co-dominant species metric. However, this enhancement may not be fully illustrated in the CRAM score for buffer condition because the coverage of non-native species is not high for all the AAs impacted by cattle. CRAM may not capture the results of an enhancement program eliminating grazing on the property; other qualitative methods should be utilized to capture the potential improvement in condition of the buffer following elimination of grazing from the property.

TABLE 4
ATTRIBUTE SCORES FOR HAYASHI ASSESSMENT AREAS

Attribute	Metric	CRAM Scores[a]					
		AA1	AA2	AA3	AA4	AA5	AA6
Buffer and Landscape Context	Landscape Connectivity	D (3)	A (12)	A (12)	A (12)	A (12)	A (12)
	Buffer Condition (submetrics below)						
	Percentage of Assessment Area with Buffer	A (12)	A (12)	A (12)	A (12)	A (12)	A (12)
	Average Buffer Width	B (9)	A (12)	A (12)	A (12)	A (12)	A (12)
	Buffer Condition	B (9)	B (9)	C (6)	C (6)	B (9)	A (12)
	Attribute Score	*52.8*	*93.3*	*85.4*	*85.4*	*93.3*	*100.0*
Hydrology	Water Source	B (9)	A (12)	A (12)	A (12)	A (12)	A (12)
	Hydroperiod/Channel Stability	B (9)	B (9)	B (9)	A (12)	A (12)	A (12)
	Hydrologic Connectivity	B (9)	A (12)	B (9)	B (9)	C (6)	C (6)
	Attribute Score	*75.0*	*91.7*	*83.3*	*91.7*	*83.3*	*83.3*
Physical Structure	Structural Patch Richness	D (3)	D (3)	D (3)	D (3)	D (3)	C (6)
	Topographic Complexity	C (6)	C (6)	C (6)	C (6)	C (6)	C (6)
	Attribute Score	*37.5*	*37.5*	*37.5*	*37.5*	*37.5*	*50.0*
Biotic Structure	Plant Community (submetrics below)						
	Number of Plant Layers	A (12)	B (9)	A (2)	A (12)	B (9)	B (9)
	Number of Co-dominant Species	B (9)	B (9)	C (6)	D (3)	C (6)	C (6)
	Percent of Invasive Co-dominant Species	C (6)	D (3)	A (12)	B (9)	B (9)	A (2)
	Horizontal Interspersion/Plant Zonation	C (6)	D (3)	D (3)	D (3)	D (3)	C (6)
	Vertical Biotic Structure	B (9)	D (3)	B (9)	C (6)	C (6)	C (6)
	Attribute Score	*66.7*	*36.1*	*61.1*	*47.2*	*47.2*	*58.3*
	Overall Assessment Area Score[b]	***58.0***	***64.6***	***66.8***	***65.4***	***65.3***	***72.9***

CRAM: California Rapid Assessment Method; AA: Assessment Area.
[a] CRAM scores are indicated by the letter score (A through D) that is assigned to each metric and the corresponding numeric value of that score is in parentheses.
[b] The overall CRAM score is calculated by averaging the four attribute scores.

Special Status Plants

Based on the results of the literature review, 30 special status plant species are known to occur in the vicinity of the property. These species and their potential for occurrence (which is based on the presence of suitable habitat) are summarized in Table 5. Note that these species are listed alphabetically according to their scientific name. Two special status plant species were observed on the Hayashi property. These species are discussed below.

TABLE 5
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Abronia villosa var. *aurita* chaparral sand-verbena	—	—	1B.1	Between January and September.	Sandy places, primarily in coastal sage scrub and chaparral habitats and alluvial washes and river benches.	Central and southern South Coast and western Sonoran (Colorado) Desert; between sea level and 5,250 feet above msl.	No suitable habitat. Not expected to occur.
Arenaria paludicola marsh sandwort	FE	SE	1B.1	Between May and August.	Wet meadows and marshes.	Southern Central Coast (i.e., Nipomo Mesa), South Coast (i.e., Santa Ana River), and Mexico; sea level to 985 feet above msl.	No suitable habitat. Not expected to occur.
Atriplex coulteri Coulter's saltbush	—	—	1B.2	Between March and October.	Alkaline soils or clay barrens in open areas of perennial grasslands, coastal sage scrub, and coastal bluff scrub.	South Coast and Channel Islands to Baja California, Mexico; sea level to 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Atriplex serenana var. *davidsonii* Davidson's saltscale	—	—	1B.2	Between April and October.	Bluffs.	Southern South Coast; sea level to 655 feet above msl.	No suitable habitat. Not expected to occur.
Berberis nevinii Nevin's barberry	FE	SE	1B.1	Between March and June.	Sandy to gravelly soils, washes, and chaparral.	Southwestern California; sea level to 2,130 feet above msl.	Outside known range. Not expected to occur.
Brodiaea filifolia thread-leaved brodiaea	FT	SE	1B.1	Between March and June.	Grasslands and vernal pools.	South Coast, San Bernardino Mountains, and western Peninsular Ranges; 80 to 2,820 feet above msl.	Suitable habitat present. Surveys not conducted during blooming period.

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Brodiaea orcutti Orcutt's brodiaea	—	—	1B.1	Between May and July.	Grasslands near streams and vernal pools.	Peninsular Ranges of southern Riverside and San Diego counties; sea level to 5,250 feet above msl.	Outside known range. Not expected to occur.
California macrophylla round-leaved filaree	—	—	1B.1	Between March and May	Open sites in grassland and scrubland.	Northern California to northern Mexico and Santa Cruz and Santa Catalina Islands; sea level to 3,940 feet above msl.	Suitable habitat present. Surveys not conducted during blooming period.
Calochortus catalinae Catalina mariposa lily	—	—	4.2	Between March and June, uncommonly as early as February.	Heavy soils in open grasslands, coastal sage scrub, and chaparral.	Southern Central Coast, western South Coast, and Channel Islands; sea level to 2,300 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Calochortus plummerae Plummer's mariposa lily	—	—	1B.2	Between May and July.	Coastal sage scrub; dry, rocky chaparral; and yellow-pine forest.	South Coast and Peninsular Ranges; sea level to 5,580 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Calochortus weedii var. *intermedius* intermediate mariposa lily *	—	—	1B.2	Between May and July.	Coastal sage scrub and chaparral on dry, rocky, open slopes.	South Coast and northern Peninsular Ranges; sea level to 2,230 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Centromadia parryi ssp. *australis* southern tarplant *	—	—	1B.1	Between May and November.	Seasonally moist, silty, alkaline soils in salt marshes, alkali meadows, mesic grasslands, vernal pools, ditches, and coastal scrub.	South Coast to northwestern Baja California, Mexico; sea level to 655 feet above msl.	Suitable habitat present. Not observed during focused surveys.

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Centromadia pungens ssp. *laevis* smooth tarplant	—	—	1B.1	Between April and September.	Disturbed sites; grasslands; and open, poorly drained flats, depressions, and waterway beds and banks.	South Coast and Peninsular Ranges to northwestern Baja California, Mexico; 295 to 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Chorizanthe parryi var. *parryi* Parry's spineflower	—	—	1B.1	Between April and June.	Open, sandy sites; often on gravelly slopes.	East-central South Coast, eastern Transverse Ranges, and northwestern edge of Sonoran Desert; 295 to 2,625 feet above msl.	No suitable habitat. Not expected to occur.
Cladium californicum California saw-grass	—	—	2.2	Between June and September.	Alkaline marshes and swamps.	Central Coast, outer South Coast Ranges, South Coast, Western Transverse Ranges, and desert to Utah, Arizona, Texas, and northern Mexico; sea level to 7,055 feet above msl.	Outside known range; no suitable habitat. Not expected to occur.
Dodecahema leptoceras slender-horned spineflower	FE	SE	1B.1	Between April and June.	Sandy or gravelly areas.	East-central South Coast, adjacent foothills of the Transverse Ranges, and Peninsular Ranges; 655 to 2,295 feet above msl.	Outside known range. Not expected to occur.

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Dudleya multicaulis many-stemmed dudleya *	—	—	1B.2	Between April and July.	Heavy (often clayey) soils in coastal sage scrub and native grassland on coastal plains and sandstone outcrops.	South Coast; sea level to 1,970 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Eriastrum densifolium ssp. *sanctorum* Santa Ana River woollystar	FE	SE	1B.1	Between May and September.	Washes, floodplains, and dry river beds.	Eastern South Coast (i.e., the Santa Ana River drainage and southwestern San Bernardino County); sea level to 1,640 feet above msl.	No suitable habitat and considered extirpated from Orange County.
Horkelia cuneata ssp. *puberula* mesa horkelia	—	—	1B.1	Between February and July.	Dry, sandy coastal chaparral and openings in oak woodlands.	Outer South Coast Ranges, Peninsular Ranges, and South Coast; 230 to 2,855 feet above msl.	Suitable habitat present. Not observed during focused surveys.
***Juglans californica* Southern California black walnut**	**—**	**—**	**4.2**		**Hillsides and canyons.**	**Outer South Coast Ranges; 100 to 2,950 feet above msl.**	**Observed on the property.**
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	—	—	1B.2	Between January and July.	Dry sandy or thin soils in coastal sage scrub and chaparral.	Southwestern California and Baja California, Mexico; sea level and 1,640 feet above msl.	Suitable habitat present. Not observed during focused surveys.

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Muhlenbergia californica California muhly	—	—	4.3	Between June and September.	Streambanks and canyons.	South Coast and San Gabriel, San Bernardino, and San Jacinto Mountains; 330 and 6,560 feet above msl.	Outside known range. Not expected to occur.
Navarretia prostrata prostrate vernal pool navarretia	—	—	1B.1	Between April and July.	Alkaline floodplains and vernal pools.	Western San Joaquin Valley, Central Coast, San Francisco Bay area, South Coast Ranges, central South Coast, and Peninsular Ranges; sea level to 2,300 feet above msl.	No suitable habitat. Not expected to occur.
Nolina cismontana peninsular nolina	—	—	1B.2	Between May and July.	Dry chaparral or coastal mountains.	South Coast, Western Transverse Ranges, and Peninsular Ranges; 655 to 4,265 feet above msl.	Suitable habitat present. Not observed during focused surveys.
Phacelia hubbyi **Hubby's phacelia**	**—**	**—**	**4.2**	**Between April and July.**	**Gravelly or rocky slopes of chaparral and grassland.**	**Northern South Coast, Western Transverse Ranges, and Santa Cruz Island; sea level to 3,281 feet above msl.**	**Observed on the property.**

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR
IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Pseudognaphalium leucocephalum white rabbit-tobacco	—	—	2.2	Between August and November, uncommonly as early as July or as late as December.	Sandy or gravelly benches, dry stream bottoms, and canyon bottoms.	South Coast, San Bernardino Mountains, and Peninsular Ranges to Arizona, New Mexico, and Mexico; sea level to 1,640 feet above msl.	No suitable habitat. Not expected to occur.
Ribes divaricatum ssp. *parishii* Parish's gooseberry	—	—	1A	Between February and April.	Moist woodlands.	South Coast and San Gabriel Mountains; 195 to 1,020 feet above msl.	No suitable habitat; considered extirpated. Not expected to occur.
Senecio aphanactis chaparral ragwort	—	—	2.2	Between January and April.	Alkaline flats and dry, open rocky areas of coastal bluff scrub and coastal sage scrub.	Central Western California and South Coast to Baja California, Mexico; 30 and 1,805 feet above msl.	Suitable habitat present. Surveys not conducted during blooming period.
Sidalcea neomexicana salt spring checkerbloom	—	—	2.2	Between March and June.	Alkaline seeps, springs, and marshes.	South Coast, San Gabriel Mountains, San Bernardino Mountains, Peninsular Ranges, and southwestern Mojave Desert to New Mexico and northern Mexico; possibly extirpated from the Western Transverse Ranges; sea level to 4,920 feet above msl.	Suitable habitat present. Not observed during focused surveys.

TABLE 9 (Continued)
SPECIAL STATUS PLANT SPECIES KNOWN TO OCCUR IN THE VICINITY OF THE PROPERTY

Species	Status			Blooming Period	Habitat	Range	Potential to Occur on the Property/Results of Focused Surveys
	USFWS	CDFW	CRPR				
Symphyotrichum defoliatum San Bernardino aster	—	—	1B.2	Between July and November.	Grasslands, seasonal or perennial wetlands, and disturbed places.	San Gabriel Mountains, San Bernardino Mountains, and Peninsular Ranges; sea level to 6,725 feet above msl.	No suitable habitat. Not expected to occur.

LEGEND

Federal (USFWS)

FE Endangered
FT Threatened

State (CDFW)

SE Endangered

California Rare Plant Rank (CRPR)

1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2 Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
4 Plants of Limited Distribution – A Watch List

CRPR Threat Code Extensions

.1 Seriously Threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Fairly Threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not Very Threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

* Proposed covered species in the NCCP/HCP

Southern California Black Walnut

Southern California black walnut was observed throughout the Hayashi property. These trees were observed in California walnut groves and intermixed with chaparral and coastal sage scrub vegetation. A tree survey would allow the number, size, and health of individual trees on the property to be quantified.

Hubby's Phacelia

Hubby's phacelia (*Phacelia hubbyi*) was observed on the Hayashi property. One population was observed at the bottom of Soquel Canyon near the southern boundary of the property. Four other populations were observed in annual grassland on the slope above Soquel Canyon in the central portion of the property. The population occurrances are summarized in Table 6 and illustrated on Exhibit 7. These locations represent the first record of this species from the Chino Hills.

TABLE 6
HUBBY'S PHACELIA POPULATIONS OBSERVED
ON THE HAYASHI PROPERTY

Population	Number of Individuals	Phenology		
		Percent Vegetative	Percent Flowering	Percent Fruiting
1	1	0	0	100%
2	55	0	20%	80%
3	80	0	60%	40%
4	15	0	20%	80%
5	10	0	0	100%

Special Status Wildlife

Based on the results of the literature review and the list of proposed covered wildlife species for the NCCP/HCP, 61 special status wildlife species are known to occur in vicinity of the property. Three of the 61 special status wildlife species were observed on site or immediately off site and are discussed below. All 61 species and their potential for occurrence (i.e., based on the presence of suitable habitat) are summarized in Table 7. Note that these species are listed taxonomically.

Cooper's Hawk

Cooper's hawk was observed flying over the Hayashi property on multiple survey visits. It is expected to occur for nesting as well as foraging on the property.

Yellow-breasted Chat

Yellow-breasted chat was observed singing in riparian habitat in lower Soquel Canyon downstream of the property. It may also occur upstream on the property.

Yuma Myotis

Yuma myotis was observed during the focused bat surveys. It was documented twice, once north of the property along the Carbon Canyon access road and another in lower Soquel

Canyon downstream of the property. It is likely that a high frequency species detected near the vicinity of the Soquel Canyon record was also a Yuma myotis.

TABLE 7
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE VICINITY OF THE PROPERTY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Invertebrates					
Branchinecta sandiegonensis San Diego fairy shrimp	FE	–	Vernal pools.	Coastal Orange County and San Diego County.	No suitable habitat. Not expected to occur.
Streptocephalus woottoni Riverside fairy shrimp	FE	–	Vernal pools and ephemeral ponds.	Coastal Ventura County south to Baja California, Mexico.	No suitable habitat. Not expected to occur.
Euphydryas editha quino Quino checkerspot butterfly	FE	–	Low-growing vegetation interspersed with barren spots, frequently on hilltops. Requires suitable host plants for egg laying.	Currently known from western Riverside County, southern San Diego County, and northern Baja California, Mexico.	Outside current known range. Not expected to occur.
Fish					
Catostomus santaanae Santa Ana sucker	FT	SSC	Small to medium-sized perennial streams, preferably with coarse gravel, rubble, or boulder substrate.	Los Angeles, San Gabriel, and Santa Ana River drainages.	Limited potential habitat in Carbon Canyon Creek; however; isolated from known populations. Not expected to occur.
Gila orcuttii arroyo chub[a]	–	SSC	Coastal freshwater streams and rivers with steady current and emergent vegetation.	Currently found at three native locations: Santa Margarita and De Luz Creeks in San Diego Couty, Trabuco and San Juan Creeks in Orange County; and Malibu Creek in Los Angeles County; introduced elsewhere.	Limited potential habitat in Carbon Canyon Creek; however; isolated from known populations. Not expected to occur.
Amphibians					
Spea hammondii western spadefoot	–	SSC	Quiet streams, vernal pools, and temporary ponds.	Great Valley and bordering foothills, and Coast Ranges from Monterey Bay south to Baja California, Mexico.	Marginally suitable habitat. Limited potential to occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Anaxyrus californicus [*Bufo microscaphus californicus*] arroyo toad	FE	SSC	Semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	Southern California and northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.
Lithobates pipiens [*Rana p.*] northern leopard frog (native populations)	–	SSC	Variety of habitats such as grasslands, brushlands, woodlands, and forests; requires aquatic habitat for overwintering and breeding.	Broadly distributed; native in California only from Modoc and Lassen counties.	Outside native range of species; not expected to occur as a native population.
Rana draytonii California red-legged frog	FT	SSC	Streams with deep pools, slow-moving water, and emergent vegetation.	California and Baja California, Mexico; extant populations in Los Aneles, Verntura, and San Diego counties.	No suitable habitat. Not expected to occur.
Reptiles					
Actinemys marmorata [*Emys m.*] Pacific [western] pond turtle[a]	–	SSC	In ponds, lakes, marshes, rivers, streams, and irrigation ditches with rocky or muddy bottom and aquatic vegetation.	Pacific slope drainages in Washington to northern Baja California, Mexico.	Suitable habitat. Expected to occur.
Phrynosoma blainvillii coast horned lizard[a]	–	SSC	Scrubland, grassland, coniferous forests, and broadleaf woodland with friable soil for burrowing.	Northern California south to northern Baja California, Mexico.	Suitable habitat. Expected to occur.
Aspidoscelis hyperytha [*Cnemidophorus hyperythus beldingi*] orangethroat whiptail[a]	–	SSC	Washes and open areas of sage scrub and chaparral in friable, gravelly soil.	Western Peninsular Ranges from Orange and San Bernardino counties south to Baja California, Mexico.	Suitable habitat. Expected to occur.
Anniella pulchra pulchra silvery legless lizard	–	SSC	In loose sandy soil of chaparral, pine-oak woodland, beach, and riparian areas.	Coast, Transverse, and Peninsular Ranges from Contra Costa County south to Baja California, Mexico.	Suitable habitat. May occur.
Salvadora hexalepis virgultea coast patch-nosed snake	–	SSC	Sandy or rocky grasslands, chaparral, sagebrush plains, piñon-juniper woodlands, and desert scrub.	Coast of California from San Luis Obispo County south to Baja California, Mexico.	Suitable habitat. May occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Thamnophis hammondii two-striped garter snake	–	SSC	Perennial or intermittent freshwater streams with rocky beds bordered by willows or other dense vegetation.	From Monterey County south to El Rosario in Baja California, Mexico.	Suitable habitat. May occur.
Thamnophis sirtalis ssp. south coast garter snake	–	SSC[b]	Associated with permanent or semi-permanent bodies of water in habitats such as grassland, woodland, scrubland, chaparral, and forest.	Coastal plain from Ventura County to San Diego County.	Suitable habitat. May occur.
Crotalus ruber red-diamond rattlesnake	–	SSC	Open scrub, chaparral, woodland, and grassland.	Orange County and San Bernardino County south to Baja California, Mexico.	Suitable habitat. May occur.
Birds					
***Accipiter cooperii* Cooper's hawk (nesting)**	**–**	**WL**	**Prefers to nest in oak woodlands and riparian woodlands. Forages primarily in forest habitats.**	**Breeds from southern Canada into northwestern and north-central Mexico. Wintering range extends south.**	**Observed on the property. Expected to occur for foraging and nesting; suitable foraging and nesting habitat.**
Accipiter striatus sharp-shinned hawk (nesting)	–	WL	Nests and forages in forest habitats.	Breeds in Alaska and Canada, portions of the U.S., in the West Indies, and south through Mexico, Central America, and South America. Migrant and winter visitor in Orange County.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.
Aquila chrysaetos golden eagle (nesting and non-breeding/ wintering)	–	FP, WL	Nests in open and semi-open habitats, such as tundra, shrublands, grasslands, woodland-brushlands, coniferous forests, farmland, and riparian habitats. Forages in broad expanses of open country.	Resident throughout Southern California, except in the Colorado Desert and Colorado River, where it is a casual winter visitor.	May occur for foraging; suitable foraging habitat. Limited potential to occur for nesting; marginal nesting habitat.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Buteo regalis ferruginous hawk (non-breeding/wintering)	–	WL	Open, dry habitats such as grasslands, shrublands, rangelands, and plowed agricultural fields.	Winter resident in California; visitor along the coast of southern California.	Not expected to occur for foraging or nesting; no suitable foraging habitat and outside the breeding range of the species.
Circus cyaneus northern harrier (nesting)	–	SSC	Breeds on the ground within dense vegetation. Forages in open habitats such as marshes and fields.	Winter migrant throughout Southern California, but a scarce local breeder.	Suitable foraging habitat; expected to occur for foraging. Suitable nesting habitat; may occur for nesting.
Elanus leucurus white-tailed kite (nesting)	–	FP	Low elevation grassland, agricultural areas, wetlands, oak woodlands, savannahs, and riparian habitat adjacent to open areas.	Resident in coastal Southern California and a visitor and local breeder on the western edge of the deserts.	Suitable foraging and nesting habitat; may occur for foraging and nesting.
Falco columbarius merlin (non-breeding/wintering)	–	WL	Breeds in forests and prairies. Occures along the coast in open grasslands, savannahs; in inland and montane valleys; and in the desert.	Breeds in northern North America, Europe, and Asia. Fall transient and rare winter visitor in California.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.
Falco mexicanus prairie falcon (nesting)	–	WL	Nests on cliffs. Forages in grassland and scrub vegetation.	Year-round resident of interior Southern California. Winter resident and rare summer resident along the Southern California coast.	Suitable foraging habitat; may occur for foraging. Outside the breeding range of the species; not expected to occur for nesting.
Coccyzus americanus occidentalis western yellow-billed cuckoo (nesting)	FC	SE	Broad areas of old-growth riparian habitats dominated by willows with dense understory.	Breeds primarily along the Sacramento River and south fork of the Kern River; from the Santa Ana River in the region.	No suitable habitat. Not expected to occur.
Asio otus long-eared owl (nesting)	–	SSC	Nests in dense trees such as oaks and willows. Forages over grasslands and other open habitats.	Breeds in Canada south to northern Baja California, Mexico. Winters throughout breeding range to the interior of Mexico.	Potentially suitable foraging and nesting habitat; may occur for foraging and nesting.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Athene cunicularia burrowing owl (burrow sites; wintering in northern counties)	–	SSC	Sparse vegetation in arid and semi-arid habitats such as grasslands, steppes, deserts, prairies, and agricultural areas. Nests in mammal burrows or man-made cavities.	In California from the Central Valley and southern California.	No suitable habitat. Not expected to occur.
Contopus cooperi olive-sided flycatcher (nesting)	–	SSC	Nests in late-successional conifer forests with open canopies. Occur at edges, openings, and clearings of dense or semi-open forests.	Breeds from western and central Alaska across central and southern Canada south to Baja California, Mexico and North Carolina.	Suitable habitat. May occur.
Empidonax traillii extimus southwestern willow flycatcher[a] (nesting)	FE	SE	Riparian habitats with dense growths of willows; often with a scattered overstory of cottonwood.	Breeds in coastal Southern California.	No suitable habitat. Not expected to occur.
Lanius ludovicianus loggerhead shrike (nesting)	–	SSC	Grasslands and other dry, open habitats.	Throughout North America; a year-round resident in Southern California.	Suitable foraging and nesting habitat; may occur for foraging and nesting.
Vireo bellii pusillus least Bell's vireo[a] (nesting)	FE	SE	Riparian habitat dominated by willows with dense understory vegetation.	Breeds throughout the Central Valley and other low-elevation river systems in California and Baja California, Mexico.	No suitable habitat. Not expected to occur.
Eremophila alpestris actia California horned lark	–	WL	Open habitats with bare ground or short vegetation, such as shortgrass prairie, deserts, brushy flats, alpine, shrubsteppe, and agricultural areas.	From Alaska and Canadian arctic south to Mexico. Common migrant and winter resident that remains to breed along the Southern California coast.	No suitable habitat. Not expected to occur.
Progne subis purple martin (nesting)	–	SSC	Breeds in cavities of conifer or western sycamore. Forages over riparian areas, forests, and woodlands.	Throughout much of eastern North American and locally in the Rocky Mountains, Sonoran Desert, Central Mexico, and Pacific coast states. Summer resident and migrant in California.	No suitable habitat. Not expected to occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren[a] (San Diego and Orange Counties)	–	SSC	Coastal sage scrub and alluvial sage scrub with prickly pear cactus and/or cholla.	Southern Orange County and San Diego County to northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.
Polioptila californica californica coastal California gnatcatcher[a]	FT	SSC	Coastal sage scrub vegetation.	Los Angeles, Orange, Riverside, and San Diego Counties south to Baja California, Mexico.	Limited suitable habitat. Not observed during focused surveys.
Dendroica petechia brewsteri yellow warbler (nesting)	–	SSC	Riparian vegetation, often with willows and cottonwoods.	Breeds in Southern California.	Suitable habitat. May occur.
***Icteria virens* yellow-breasted chat (nesting)**	**–**	**SSC**	**The border of streams, creeks, sloughs, and rivers in dense thickets and tangles of blackberry, wild grape, and willow.**	**Summer resident in Southern California along the coast and in the deserts.**	**Suitable habitat. May occur. Observed in Soquel Canyon downstream of property.**
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	–	WL	Steep, dry, rocky, south- or west-facing slopes in scrub vegetation interspersed with grasses and forbs or rock outcrops.	Year-round in Southern California.	Suitable habitat. May occur.
Ammodramus savannarum grasshopper sparrow (nesting)	–	SSC	Dense, dry or well-drained grassland.	Across North American from southern Canada south to Ecuador. Summer resident along the coastal slope of Southern California.	No suitable habitat. Not expected to occur.
Amphispiza belli belli Bell's sage sparrow	–	WL	Low, dense chamise chaparral and dry scrub vegetation, often with stands of cactus.	Resident in interior foothills or coastal Southern California.	Suitable habitat. May occur.
Pooecetes gramineus affinis Oregon vesper sparrow (non-breeding/wintering)	–	SSC	Winters on open ground in grasslands.	Winters in the Central Valley and Southern California (generally west of the coastal mountain ranges) to northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Agelaius tricolor tricolored blackbird (nesting colony)	–	SSC	Colonially nests in marsh vegetation of bulrushes and cattails. In winter, forages in grasslands, agricultural fields, dairies, and feedlots.	Primarily in California with local nesting colonies in Oregon, Washington, Nevada, and coastal Baja California, Mexico.	No suitable habitat. Not expected to occur.
Mammals					
Antrozous pallidus pallid bat[a]	–	SSC	Low elevation grasslands, shrublands, woodlands, and forests. Roosts in vaves, crevices, mines, bridges, and occasionally in hollow trees.	Throughout California excepting the high Sierra Nevada from Shasta County to Kern County and in the northwestern portion of the State.	Suitable foraging and roosting habitat; may occur for foraging and roosting.
Corynorhinus townsendii Townsend's big-eared bat	–	SSC	Wide variety of habitats excepting subalpine and alpine. Roosts in caves, mines, tunnels, buildings, or other human-made structures.	Throughout most of California.	Suitable foraging habitat; may occur for foraging. No suitable roosting habitat; not expected to occur for roosting.
Euderma maculatum spotted bat	–	SSC	Foothills, mountains, arid deserts, grasslands, and mixed conifer forests. Roosts in rock crevices, occasionally in caves and buildings.	Western North American from southern British Columbia to Mexico.	No suitable habitat. Not expected to occur.
Lasiurus xanthinus western yellow bat	–	SSC	Valley foothill riparian, desert riparian, desert wash, and palm oasis. Roosts in trees.	Mexican Plateau, coastal western Mexico, and deserts of the southwestern U.S.	Suitable foraging and roosting habitat. May occur for foraging and roosting.
Myotis ciliolabrum western small-footed myotis[a]	–	–	Arid uplands, primarily in arid wooded and brushy uplands near water. Roosts in caves, buildings, mines, crevices, and occasionally under bridges and under bark.	Southern British Columbia, Alberta, and Saskatchewan, Canada to the southwestern U.S.	Suitable foraging and roosting habitat. May occur for foraging and roosting.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Myotis evotis long-eared myotis[a]	–	–	Nearly all brush, woodland, and forest habitats, but appear to prefer coniferous woodlands and forests. Roosts in buildings, crevices, spaces under bark, and snags.	Western Canada, western U.S., and Baja California, Mexico.	Suitable foraging and roosting habitat. May occur for foraging and roosting.
Myotis yumanensis **Yuma myotis[a]**	**–**	**–**	**Open forests and woodlands, closely associated with water bodies. Roosts in buildings, mines, caves, crevices, swallow nests, and under bridges.**	**Southwestern British Columbia through the western U.S., and into central Mexico.**	**Observed during focused bat surveys in vicinity of property.**
Eumops perotis californicus western mastiff bat	–	SSC	Open, semi-arid to arid habitats including conifer and deciduous woodland, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban. Roosts in crevices in cliffs, high buildings, trees, and tunnels.	Southeastern San Joaquin Valley and Coastal Ranges from Monterey County south through Southern California, and from the coast eastward to the Colorado Desert.	Suitable foraging and roosting habitat. May occur for foraging and roosting.
Nyctinomops femorosaccus pocketed free-tailed bat	–	SSC	Pinyon-juniper woodland, desert scrub, desert succulent scrub, desert riparian, desert. Roosts in crevices in cliffs, caverns, or buildings.	Southwestern U.S. to south-central Mexico.	No suitable habitat. Not expected to occur.
Nyctinomops macrotis big free-tailed bat[a]	–	SSC	Forages over water in rugged, rocky terrain. Roosts in crevices in high cliffs or rocky outcrops.	Western U.S. to northern South American and the Caribbean Islands.	Suitable foraging habitat; may occur for foraging. Marginal suitable roosting habitat; limited potential to occur for roosting.
Lepus californicus bennettii San Diego black-tailed jackrabbit	–	SSC	Herbaceous and desert-shrub areas and open, early stages of forest and chaparral.	Pacific slope from Santa Barbara County south to northwestern Baja California, Mexico.	No suitable habitat. Not expected to occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Chaetodipus fallax fallax northwestern San Diego pocket mouse	–	SSC	Chaparral, coastal sage scrub, and grassland.	Southwest San Bernardino County south to northern Baja California, Mexico.	Suitable habitat. May occur.
Perognathus longimembris brevinasus Los Angeles pocket mouse	–	SSC	Lower elevation grasslands and coastal sage scrub with open ground and fine sandy soils.	The Los Angeles Basin, from approximately Burbank and San Fernando in the northwest, San Bernardino in the northeast, and Cabazon, Hemet, and Aguanga in the east and southeast.	Suitable habitat. May occur.
Neotoma lepida intermedia San Diego desert woodrat	–	SSC	Joshua tree woodland, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and desert habitats.	Pacific slope from San Luis Obispo south to northwestern Baja California, Mexico.	Suitable habitat. May occur.
Onychomys torridus ramona southern grasshopper mouse	–	SSC	Desert areas, especially in scrub habitats with friable soil. Also in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats.	Along the coast of Southern California from Los Angeles County south through San Diego County.	Suitable habitat. May occur.
Bassariscus astutus ringtail	–	–	Woodlands, riparian areas, and arid scrubland.	The southwestern third of the U.S. into Baja California and other portions of Mexico.	Suitable habitat. May occur.
Taxidea taxus American badger	–	SSC	Drier, open stages of shrub, forest, and herbaceous habitats with friable soil.	Throughout California excepting the extreme northwest.	Suitable habitat. May occur.
Puma concolor [*Felis c.*] mountain lion[a]	–	–	Broad variety of habitats in range excepting shrubless deserts and agricultural areas.	Latitudinal range of 110 degrees in North and South America.	Suitable habitat. May occur.

TABLE 7 (Continued)
SPECIAL STATUS WILDLIFE SPECIES KNOWN TO OCCUR
IN THE PROJECT VICINITY

Species	Status		Habitat	Range	Potential to Occur on the Project Site/Results of Focused Surveys
	USFWS	CDFW			
Lynx rufus bobcat[a]	–	–	Broad variety of habitats.	Throughout contiguous U.S., Mexico south to Rio Mescale, and Canada.	Suitable habitat. May occur.

LEGEND

Federal (USFWS)		State (CDFW)	
FE	Endangered	SE	Endangered
FT	Threatened	SSC	Species of Special Concern
FC	Candidate Species	WL	Watch List
		FP	Fully Protected

[a] Proposed covered species in the OCTA M2 NCCP/HCP.
[b] Individuals on the coastal plain from Ventura County to San Diego County, from sea level to approximately 2,790 feet above msl, are protected.

Critical Habitat

Critical habitat has been proposed or designated by the USFWS for a variety of federally listed plant and wildlife species. The Hayashi property is not located in any area proposed or designated as critical habitat.

COVERED SPECIES SUMMARY

The baseline surveys described in this document were focused towards establishing baseline knowledge of the set of species covered by the OCTA M2 NCCP/HCP. The OCTA M2 NCCP/HCP includes requirements to understand and document the status of Covered Species and their habitats within the Preserves. Table 8 provides of summary of the OCTA M2 NCCP/HCP Covered Species; whether they were observed during the baseline surveys; other information documenting the potential for the Covered Species to occur on site, and a description of the threats and opportunities for management of the Preserve to benefit Covered Species.

TABLE 8
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Project Site	Opportunities, Threats, and Management
Plants			
Calochortus weedii var. *intermedius* intermediate mariposa lily	Not observed on site.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Project site in areas with suitable conditions (e.g., soils). A resource management plan may incorporate restricting unauthorized vehicles on site and transplantation and/or seeding of this variety in suitable areas on site.
Centromadia parryi ssp. *australis* southern tarplant	Not observed on site.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Project site in areas with suitable conditions (e.g., soils). A resource management plan may incorporate restricting unauthorized vehicles on site and transplantation and/or seeding of this subspecies in suitable areas on site.
Dudleya multicaulis many-stemmed dudleya	Not observed on site.	Suitable habitat; may establish on site.	Potential threats include off-road vehicles and grazing. Opportunities occur to establish the species on the Project site in areas with suitable conditions (e.g., soils). A resource management plan may incorporate restricting unauthorized vehicles on site and transplantation and/or seeding of species in suitable areas on site.
Fish			
Gila orcutti arroyo chub	Not observed on site.	Limited potential habitat but isolated from known populations; not expected to occur.	N/A

TABLE 8 (Continued)
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Project Site	Opportunities, Threats, and Management
Reptiles			
Phrynosoma blainvillii coast horned lizard	Not observed on site.	Suitable habitat; expected to occur.	Potential threats include mortality and habitat destruction due to off-road vehicles and spread of non-native ant species. Habitat restoration opportunities for coastal sage scrub and other suitable habitat occurs on site. A resource management plan may incorporate restricting unauthorized vehicles on site and ensuring any plant/soil material brought on site is free of non-native any species.
Aspidoscelis hyperytha [*Cnemidophorus hyperythus beldingi*] orangethroat whiptail	Not observed on site.	Suitable habitat; expected to occur.	The major threat to this subspecies is loss of habitat by development. The preservation of suitable habitats on site is the best conservation opportunity for this subspecies. A resource management plan may incorporate restoration opportunities for coastal sage scrub and other native habitats utilized by this subspecies.
Actinemys marmorata [*Emys m.*] Pacific [western] pond turtle	Not observed on site.	Suitable habitat; expected to occur.	Potential threats include water quality in Carbon Canyon Creek and illegal collection. Pond turtles are known to occur along Carbon Canyon Creek, adjacent to the property. It is anticipated that an expanding population of turtles within Carbon Canyon Creek could immigrate to suitable habitat within Soquel Canyon, which traverses the southwestern portion of the property. A resource management plan may incorporate restoration and enhancement opportunities for the pond turtle on site.

TABLE 8 (Continued)
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Project Site	Opportunities, Threats, and Management
Birds			
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	Not observed on site.	No suitable habitat; not expected to occur.	Habitat loss, degradation, fragmentation, and intense fire events are the most critical threats facing this subspecies. Protection of coastal sage scrub habitat that contains cactus is crucial for the preservation of this subspecies. Habitat restoration opportunities for coastal sage scrub with cactus species occur on site.
Polioptila californica californica coastal California gnatcatcher	Not observed on site.	Limited suitable habitat; limited potential to occur.	Habitat loss, degradation, and fragmentation are the most critical threats facing this subspecies. Protection of coastal sage scrub habitat is crucial for the preservation of this subspecies. There are limited opportunities to provide habitat for this subspecies on site because coastal sage scrub is a component of the chaparral vegetation. Coastal sage scrub may be established in suitable semi-natural herbaceous stands on site.
Empidonax traillii extimus southwestern willow flycatcher	Not observed on site.	No suitable habitat; not expected to occur.	The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird (*Molothrus ater*) are this subspecies' greatest threats. The southwestern willow flycatcher population has not shown the same recovery that the least Bell's vireo has shown in response to riparian habitat restoration and cowbird control, as described below. Therefore, no additional opportunities or management activities has been identified.

TABLE 8 (Continued)
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Project Site	Opportunities, Threats, and Management
Vireo bellii pusillus least Bell's vireo	Not observed on site.	No suitable habitat; not expected to occur.	The loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird are this subspecies' greatest threats. Opportunities are available for riparian habitat restoration and enhancement on site. A resource management plan may include a cowbird control program and an exotic plant removal effort to support riparian restoration efforts on site.
Mammals			
Bat Species:			
Myotis evotis long-eared myotis	Not observed on site.	Suitable foraging and roosting habitat; may occur for foraging and roosting.	Habitat loss is the most critical threat facing this species. To provide roosting opportunities for this species, maintain mature trees and snags on site. Avoid use of pesticides that would affect prey populations.
Antrozous pallidus pallid bat	Not observed on site.	Suitable foraging and roosting habitat; may occur for foraging and roosting.	Loss of foraging areas has decreased prey availability and diversity. This species is also very sensitive to disturbance, including hiking in proximity to roost sites. To provide roosting opportunities for this species, maintain mature trees and snags and abandoned buildings on site. Avoid use of pesticides that would affect prey populations.
Myotis ciliolabrum western small-footed myotis	Not observed on site.	Suitable foraging and roosting habitat; may occur for foraging and roosting.	Loss of foraging areas has decreased prey availability and diversity. To provide roosting opportunities for this species, maintain mature trees and snags and abandoned buildings on site. Avoid use of pesticides that would affect prey populations.
Myotis yumanensis Yuma myotis	Observed during focused bat surveys in vicinity of property.	Suitable foraging habitat present; may occur for foraging.	Loss of foraging areas has decreased prey availability and diversity. Avoid use of pesticides that would affect prey populations.

TABLE 8 (Continued)
SUMMARY OF COVERED SPECIES

Species	Observations During Baseline Surveys	Potential to Occur on the Project Site	Opportunities, Threats, and Management
Nyctinomops macrotis big free-tailed bat	Not observed on site.	Suitable foraging and marginal suitable roosting habitat present; may occur for foraging, limited potential to occur for roosting.	Loss of foraging areas has decreased prey availability and diversity. To provide roosting opportunities for this species, maintain mature trees and snags and abandoned buildings on site. Avoid use of pesticides that would affect prey populations.
Other Mammals:			
Lynx rufus bobcat	Not observed on site.	Suitable habitat present.	Potential threats include illegal hunting and habitat loss. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintainence of movement opportunities through Soquel Canyon.
Puma concolor mountain lion	Not observed on site.	Suitable habitat present.	Potential threats include illegal hunting and habitat loss. Opportunities are available for on-site native habitat restoration and enhancement, which would benefit this species. Management should include maintainence of movement opportunities through Soquel Canyon.

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Attachment A

M2 Acquisition/Restoration/Management Criteria Evaluation

M2 ACQUISITION/RESTORATION/MANAGEMENT CRITERIA EVALUATION

The Hayashi property was reviewed relative to the the acquisition criteria of the M2 Acquisition/Restoration/Management Criteria. These criteria include the following.

M2 Acquisition/Restoration/Management Criteria	
Tier I	***Evaluation of Hayashi Property***
Aligns with Impacted Habitats. The site's vegetation is the same impacted by freeway projects (i.e., coastal sage scrub, riparian woodlands, grasslands, etc).	Eleven vegetation types occur on the Hayashi property including blue elderberry stand, bush mallow scrub, California walnut groves, California walnut groves/laurel sumac scrub association, coast live oak woodland, giant wild rye grassland, laurel sumac scrub, mulefat thicket, needle grass grassland, semi-natural herbaceous stands, and willow thickets. These vegetation types are similar to those vegetation types impacted by freeway projects. Therefore, the preservation and management of the Hayashi property will meet this Tier I Acquisition/Restoration/Management Criteria.
Conserves Sensitive Habitats. The site's habitat includes the conservation and possible restoration of habitats and species ranked as sensitive by the CNDDB.	A total of 249.25 acres of vegetation types of special concern to the resource agencies are present of the Hayashi property. This include 56.66 acres of sage scrub (including bush mallow scrub and laurel sumac scrub), 1.34 acres of giant wild rye grassland, 0.76 acre of blue elderberry stand, 2.13 acres of mulefat thickets, 1.79 acres of willow thickets, 11.55 acres of coast live oak woodland, 174.59 acres of California walnut groves (including 132.04 acres of California walnut groves and 42.55 acres of California walnut groves/laurel sumac scrub association), and 0.43 acre of needle grass grassland. These high value vegetation types represent approximately 85% of the entire site, illustrating the high occurrence of native vegetation types and limited presence of vegetation types that have been subject to type conversion (e.g. coastal sage scrub to non-native grassland). Portions of these habitats that contain non-native, invasive species could be enhanced through a variety of adaptive management activities that would increase the biological value of the site. The property also contains approximately 42 acres of grasslands dominated by invasive species such as ripgut grass, slender wild oat, and milk thistle. These areas have also been heavily disturbed by grazing. In addition, the site contains approximately three acres that are disturbed, and generally lack vegetation due to repeated human disturbance (e.g., dirt roads, trails). These grassland and disturbed areas could be restored and/or enhanced through a variety of adaptive management activities that would increase the biological value of the site for existing and future resources. Through preservation and management of sensitive habitat types, the Hayashi property will meet this Tier I Acquisition/Restoration/Management Criteria.
Contains Habitat for Covered Species. The site supports Endangered, Threatened, California Species of Special Concern, and other sensitive species impacted by freeway projects.	The Hayashi property contains suitable habitat for intermediate mariposa lily, southern tarplant, and many-stemmed dudleya. However, these species were not observed during focused botanical surveys on the property. The Hayashi property also contains suitable habitat and is within the known range of a variety of wildlife species proposed as Covered Species including coast horned lizard, orangethroat whiptail, pallid bat, western small-footed myotis, long-eared myotis, Yuma bat, big free-tailed bat, bobcat, and mountain lion. Yuma bat was detected in the immediate vicinity of the property during focused surveys. An addition Covered Species, the western pond turtle, is known to occur along Carbon Canyon Creek, adjacent to the property. It is anticipated that an expanding population of turtles within Carbon Canyon Creek could immigrate to suitable habitat with Soquel Canyon, which traverses the

M2 Acquisition/Restoration/Management Criteria	
Tier I	***Evaluation of Hayashi Property***
	southwestern portion of the property. Yuma bat was detected in the immediate vicinity of the property during focused surveys. In addition to proposed Covered Species, the following special status wildlife species are either known to occur on site, or may occur onsite due to the presence of suitable habitat: western spadefoot, silvery legless lizard, coast patch-nosed snake, two-striped garter snake, south coast garter snake, red-diamond rattlesnake, Cooper's hawk, sharp-shinned hawk, golden eagle, northern harrier, white-tailed kite, merlin, prairie falcon, long-eared owl, olive-sided flycatcher, loggerhead shrike, yellow warbler, yellow-breasted chat, Southern California rufous-crowned sparrow, Bell's sage sparrow, northwestern San Diego pocket mouse, Los Angeles pocket mouse, San Diego desert woodrat, southern grasshopper mouse, ringtail, and American badger. The Hayashi property has an existing riparian corridor that has been historically disturbed by grazing, that may recover significantly to support the least Bell's vireo when grazing is removed. The least Bell's vireo is known to occur in areas adjacent to the Hayashi property, and as the riparian habitat recovers, there is a likelihood this area could support vireo in the future. These proposed Covered Species and other special status plant and wildlife species are similar to those species impacted by freeway projects. Therefore, the preservation and management of the Hayashi property will meet this Tier I Acquisition/Restoration/Management Criteria.
Enhances Natural Lands Connectivity, including significant Wildlife Corridors. The site connects to protected areas, supports multiple taxa, and/or is identified as an essential habitat linkage in regional or local plans.	Open space on the Hayashi property provides a critical connection between Chino Hills State Park property to the south and other open space to the north. The Hayashi property is part of an important major natural open space connecting Los Angeles, Orange, San Bernardino, and Riverside Counties through the Puente and Chino Hills. The hills and canyons of the property provide a large expanse of scrub, grasslands, and woodlands that support a variety of species that travel throughout this area. The movement opportunities throughout the site support larger ranging species such as the mountain lion, coyote, bobcat, and mule deer. This is consistent with the County of Orange General Plan, which identified this area as "Wildlife Habitat Areas (Generalized)" and a high priority for conservation. The preservation and management of the Hayashi property will meet this Tier I Acquisition/Restoration/Management Criteria.
Considers Property Acreage. Generally larger properties are better.	The Hayashi property is considered large at approximately 296 acres.
Enhances Natural Lands Contiguity. The site borders open space and acquisition increases the amount of core habitat or reduces edge effects.	The Hayashi property provides substantial acreage to the existing resources that are already protected to the south by Chino Hills State Park. In addition, the location of the property along the northwestern edge of the park provides a buffer to the core of the State Park that was not previously protected and subject to disturbance (e.g., grazing pressures, off road vehicle use). The site also provides a greater width of preserved connectivity between the Puente Hills and Chino Hills by increasing the permanent open space along Carbon Canyon. Therefore, the preservation and management of the Hayashi property will meet this Tier I Acquisition/Restoration/Management Criteria.
Tier II	***Evaluation of Hayashi Property***
Includes Habitat Diversity. The site includes variety of habitat types with an emphasis on various stages of vegetative structural diversity and functional ecosystem diversity.	The Hayashi property contains a diversity of habitats, represented by 11 vegetation types: blue elderberry stand, bush mallow scrub, California walnut groves, California walnut groves/laurel sumac scrub association, coast live oak woodland, giant wild rye grassland, laurel sumac scrub, mulefat thicket, needle grass grassland, semi-natural herbaceous stands, and willow thickets. The property contains grasslands (needle grass

M2 Acquisition/Restoration/Management Criteria	
Tier I	***Evaluation of Hayashi Property***
	grassland, semi-natural herbaceous stands, giant wild rye grassland) that provide important habitat to many small mammals, which in turn provide a food source for a wide variety of birds of prey that are know or are expected to occur on site. The scrub and woodland areas (blue elderberry stand, bush mallow scrub, California walnut groves, California walnut groves/laurel sumac scrub association, coast live oak woodland, and laurel sumac scrub) provide the greatest vegetative structure and resources for on-site wildlife (foraging and nesting/denning opportunities). The riparian resources on site (i.e., mulefat thicket, willow thickets) provide a more limited opportunity for foraging and nesting; however, these areas are capable of increasing their vegetative structure and diversity with some adaptive management and enhancement practices that would be significantly beneficial to the on-site and off-site wildlife species that would rely on these areas and associated watercourses. Therefore, the preservation and management of the Hayashi property will meet this Tier II Acquisition/Restoration/Management Criteria.
Provides for Quality Habitat or Potential for Quality Habitat. The site includes mature habitats; has few constraints; and/or has high potential to support valuable habitat after acquisition.	The Hayashi property contains high quality habitat with native grasslands, scrub and woodland communities, and riparian habitats. In addition, the site does not appear to have been subject to farming or other active agricultural operations (except for grazing). The site has; however, been subject to repeated fire events (25 separate wildland fires since 1980, resulting in a total of 82,734 acres burned (OCFA 2008) that are likely to have affected the vegetation distribution through the site (e.g., more grasslands in areas that would normally constrain scrub or woodland communities). The site's location, proximity to other open space, lack of significant historical disturbance, and existing high quality vegetation types support the findings that the Hayashi property has few constraints and has a high potential to support valuable habitat after acquisition.
Considers the Extent of Isolation or Habitat Fragmentation. The site may be fragmented or isolated, reducing long-term biological value.	The Hayashi property is not, and cannot be in the future, either fragmented or isolated because of the site's location adjacent to Chino Hills State Park. In addition, the site also provides a greater width of preserved connectivity between the Puente Hills and Chino Hills by increasing the permanent open space along Carbon Canyon. Because of the connection to Chino Hills State Park and the other open space areas in the region, the long-term biological value of the site is expected to be maintained and/or improved by the preservation and management of the Hayashi property.

Attachment B

Plant and Wildlife Compendia

PLANT COMPENDIUM FOR THE HAYASHI SURVEY AREA

SPECIES	
***ANGIOSPERMAE* - FLOWERING PLANTS**	
MAGNOLIIDS	
***SAURURACEAE* - LIZARD'S-TAIL FAMILY**	
Anemopsis californica	yerba mansa
EUDICOTS	
***ADOXACEAE* - MUSKROOT FAMILY**	
Sambucus nigra ssp. *caerulea* [*S. mexicana*]	blue elderberry
***ANACARDIACEAE* - SUMAC FAMILY**	
Malosma laurina	laurel sumac
Rhus integrifolia	lemonadeberry
Rhus ovata	sugar bush
Toxicodendron diversilobum	western poison oak
***APIACEAE* - CARROT FAMILY**	
*Conium maculatum**	poison hemlock
Daucus pusillus	rattlesnake weed
*Foeniculum vulgare**	sweet fennel
*Torilis nodosa**	short sock-destroyer
***APOCYNACEAE* - DOGBANE FAMILY**	
Asclepias eriocarpa	kotolo, Indian milkweed
Asclepias fascicularis	narrow-leaf milkweed
Funastrum cynanchoides ssp. hartwegii [*Sarcostemma c.* ssp. *h.*]	climbing milkweed
***ASTERACEAE* - SUNFLOWER FAMILY**	
Acourtia microcephala	sacapellote
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Baccharis pilularis ssp. *consanguinea* [*B. pilularis*]	coyote brush
Baccharis salicifolia ssp. *salicifolia* [*B. salicifolia*]	mule fat
Brickellia californica	California brickellbush
Carduus pycnocephalus ssp. *pycnocephalus**	Italian thistle
Centaurea benedicta [*Cnicus benedictus*] *	blessed thistle
*Centaurea melitensis**	tocalote, Malta star-thistle
*Cirsium vulgare**	bull thistle
Corethrogyne filaginifolia	California-aster
*Cynara cardunculus**	cardoon, globe artichoke
Deinandra fasciculata [*Hemizonia f.*]	fascicled tarweed
Encelia californica	California brittlebush
Erigeron canadensis [*Conyza c.*]	common horseweed
Eriophyllum confertiflorum	golden-yarrow
Helminthotheca echioides [*Picris e.*]*	bristly ox-tongue
Heterotheca grandiflora	telegraph weed
*Hypochaeris radicata**	rough cat's-ear
Isocoma menziesii	coastal goldenbush

PLANT COMPENDIUM FOR THE HAYASHI SURVEY AREA

SPECIES	
*Lactuca serriola**	prickly lettuce
Logfia gallica [*Filago g.*]*	daggerleaf cottonrose
Malacothrix saxatilis var. *tenuifolia*	slender-leaved malacothrix
Pseudognaphalium biolettii [*Gnaphalium bicolor*]	bicolored everlasting, Bioletti's cudweed
Pseudognaphalium californicum [*Gnaphalium c.*]	California everlasting
Pseudognaphalium luteoalbum [*Gnaphalium l.*]*	weedy cudweed
*Silybum marianum**	milk thistle
Sonchus asper ssp. *asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
***BORAGINACEAE* - BORAGE FAMILY**	
Amsinckia intermedia	common fiddleneck
Eucrypta chrysanthemifolia	common eucrypta
Heliotropium curassavicum var. *oculatum*	salt heliotrope / alkali heliotrope
Phacelia cicutaria	caterpillar phacelia
Phacelia hubbyi	Hubby's phacelia
***BRASSICACEAE* - MUSTARD FAMILY**	
*Brassica nigra**	black mustard
*Hirschfeldia incana**	shortpod mustard
Lepidium lasiocarpum ssp. *lasiocarpum*	hairy peppergrass / sand peppergrass
Nasturtium officinale [*Rorippa nasturtium-aquaticum*]*	water cress
*Sisymbrium altissimum**	tumble mustard
***CAPRIFOLIACEAE* - HONEYSUCKLE FAMILY**	
Lonicera subspicata var. *denudata*	southern honeysuckle
Symphoricarpos mollis	creeping snowberry
***CARYOPHYLLACEAE* - PINK FAMILY**	
*Silene gallica**	small-flower catchfly
***CHENOPODIACEAE* - GOOSEFOOT FAMILY**	
*Chenopodium album**	lamb's quarters
*Salsola tragus**	Russian thistle
***CONVOLVULACEAE* - MORNING-GLORY FAMILY**	
Calystegia macrostegia	large-bracted morning-glory
Cuscuta californica	chaparral dodder
***CUCURBITACEAE* - GOURD FAMILY**	
Cucurbita foetidissima	coyote melon / calabazilla
Marah macrocarpus	wild cucumber / chilicothe
***EUPHORBIACEAE* - SPURGE FAMILY**	
Croton setigerus [*Eremocarpus s.*]	doveweed / turkey mullein
*Ricinus communis**	castor bean
***FABACEAE* - LEGUME FAMILY**	
Acmispon glaber var. *glaber* [*Lotus scoparius* var. *scoparius*]	coastal deerweed
Astragalus trichopodus	locoweed
Lupinus succulentus	arroyo lupine
*Medicago polymorpha**	California burclover
*Melilotus indica**	sourclover

PLANT COMPENDIUM FOR THE HAYASHI SURVEY AREA

SPECIES	
***FAGACEAE* - OAK / BEECH FAMILY**	
Quercus agrifolia	coast live oak
Quercus berberidifolia	scrub oak / California scrub oak
***GERANIACEAE* - GERANIUM FAMILY**	
*Erodium botrys**	long-beaked filaree
*Erodium brachycarpum**	short-fruited filaree
*Erodium cicutarium**	red-stemmed filaree
***GROSSULARIACEAE* - GOOSEBERRY FAMILY**	
Ribes malvaceum var. *viridifolium*	southern California currant
Ribes speciosum	fuchsia-flowered gooseberry
***JUGLANDACEAE* - WALNUT FAMILY**	
Juglans californica	Southern California black walnut
***LAMIACEAE* - MINT FAMILY**	
*Marrubium vulgare**	common horehound
Salvia apiana	white sage
Salvia leucophylla	purple sage
Salvia mellifera	black sage
Stachys ajugoides or *S. rigida*	hedge-nettle
Trichostema lanceolatum	vinegar weed
***MALVACEAE* - MALLOW FAMILY**	
Malacothamnus fasciculatus	chaparral bushmallow
*Malva parviflora**	cheeseweed
MYRSINACEAE - MYRSINE FAMILY	
*Anagallis arvensis**	scarlet pimpernel
***MYRTACEAE* - MYRTLE FAMILY**	
Eucalyptus sp.*	gum
***NYCTAGINACEAE* - FOUR-O'CLOCK FAMILY**	
Bougainvillea sp.*	bougainvillea
Mirabilis laevis var. *crassifolia* [*M. californica*]	wishbone bush / California wishbone bush
***OLEACEAE* - OLIVE FAMILY**	
Fraxinus cf. *uhleri**	shamel ash
***ONAGRACEAE* - EVENING PRIMROSE FAMILY**	
Epilobium canum	California fuchsia
Epilobium ciliatum	willow-herb
***PHRYMACEAE* - LOPSEED FAMILY**	
Mimulus aurantiacus	bush monkeyflower
Mimulus guttatus	seep monkeyflower
***PLANTAGINACEAE* - PLANTAIN FAMILY**	
Keckiella cordifolia	heart-leaved bush-penstemon
***POLYGONACEAE* - BUCKWHEAT FAMILY**	
Eriogonum fasciculatum var. *foliolosum*	leafy California buckwheat
***RANUNCULACEAE* - CROWFOOT FAMILY**	
Clematis lasiantha	chaparrl clematis, pipestem clematis
***RHAMNACEAE* - BUCKTHORN FAMILY**	
Rhamnus ilicifolia	hollyleaf redberry

PLANT COMPENDIUM FOR THE HAYASHI SURVEY AREA

SPECIES	
***ROSACEAE* - ROSE FAMILY**	
Adenostoma fasciculatum var. *fasciculatum*	common chamise
Heteromeles arbutifolia	toyon / Christmas berry
Rosa californica	California rose
Rubus ursinus	California blackberry
***RUBIACEAE* - MADDER FAMILY**	
Galium angustifolium	narrowly leaved bedstraw
***SALICACEAE* - WILLOW FAMILY**	
Salix gooddingii	Goodding's black willow
Salix lasiolepis	arroyo willow
***SOLANACEAE* - NIGHTSHADE FAMILY**	
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tobacco
Solanum douglasii	Douglas' nightshade
Solanum umbelliferum	blue witch
***URTICACEAE* - NETTLE FAMILY**	
Urtica dioica ssp. *holosericea*	hoary nettle
*Urtica urens**	dwarf nettle
***VERBENACEAE* - VERVAIN FAMILY**	
Verbena lasiostachys var. *lasiostachys*	western verbena
***MONOCOTYLEDONES* - MONOCOTS**	
***ARECACEAE* - PALM FAMILY**	
*Washingtonia robusta**	Mexican fan palm
***IRIDACEAE* - IRIS FAMILY**	
Sisyrinchium bellum	western blue-eyed grass
***JUNCACEAE* - RUSH FAMILY**	
Juncus mexicanus	Mexican rush
Juncus textilis	basket rush
***POACEAE* - GRASS FAMILY**	
*Arundo donax**	giant reed
*Avena barbata**	slender wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis ssp. *rubens**	red brome
Distichlis spicata	salt grass
Elymus condensatus [*Leymus c.*]	giant wild rye
Elymus triticoides [*Leymus t.*]	beardless wild rye
Festuca myuros [*Vulpia m.*]*	foxtail fescue
Festuca perennis [*Lolium perenne, L. multiflorum*]*	perennial ryegrass
Hordeum murinum var. *leporinum**	hare barley
Melica imperfect	little California melic grass
*Polypogon monspeliensis**	annual beard grass
Polypogon viridis [*Agrostis v.*]*	water beard grass
Stipa lepida [*Nassella l.*]	foothill needlegrass
Stipa miliacea [*Piptatherum m.*]*	smilo grass

PLANT COMPENDIUM FOR THE HAYASHI SURVEY AREA

SPECIES	
Stipa pulchra [*Nassella p.*]	purple needlegrass
***THEMIDACEAE* - BRODIAEA FAMILY**	
Bloomeria crocea	common goldenstar
***TYPHACEAE* - CATTAIL FAMILY**	
Typha sp.	*cattail*
* non-native to the region it was found cf. appears similar to	

WILDLIFE COMPENDIUM FOR THE HAYASHI SURVEY AREA

Species	
REPTILES	
***LEPIDOSAURIA* - LIZARDS & SNAKES**	
PHRYNOSOMATIDAE - ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, & HORNED LIZARDS	
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard
COLUBRIDAE - COLUBRID SNAKES	
Pituophis catenifer	gopher snake
Lampropeltis getula	common kingsnake
BIRDS	
***AVES* - BIRDS**	
ODONTOPHORIDAE - QUAILS	
Callipepla californica	California quail
ARDEIDAE - HERONS, BITTERNS, & ALLIES	
Ardea herodias	great blue heron
CATHARTIDAE - NEW WORLD VULTURES	
Cathartes aura	turkey vulture
ACCIPITRIDAE - HAWKS, KITES, EAGLES, & ALLIES	
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
FALCONIDAE - FALCONS	
Falco sparverius	American kestrel
COLUMBIDAE - PIGEONS & DOVES	
Columba fasciata	band-tailed pigeon
Zenaida macroura	mourning dove
CUCULIDAE - CUCKOOS & ROADRUNNERS	
Geococcyx californianus	greater roadrunner
TYTONIDAE - BARN OWLS	
Tyto alba	barn owl
STRIGIDAE - TRUE OWLS	
Megascops kennicottii	western screech-owl
APODIDAE - SWIFTS	
Aeronautes saxatalis	white-throated swift
TROCHILIDAE - HUMMINGBIRDS	
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
PICIDAE - WOODPECKERS	
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
TYRANNIDAE - TYRANT FLYCATCHERS	
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher

WILDLIFE COMPENDIUM FOR THE HAYASHI SURVEY AREA

Species	
CORVIDAE - CROWS & JAYS	
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
HIRUNDINIDAE - SWALLOWS	
Stelgidopteryx serripennis	northern rough-winged swallow
Petrochelidon pyrrhonota	cliff swallow
AEGITHALIDAE - BUSHTITS	
Psaltriparus minimus	bushtit
SITTIDAE - NUTHATCHES	
Sitta carolinensis	white-breasted nuthatch
TROGLODYTIDAE - WRENS	
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
POLIOPTILIDAE - GNATCATCHERS & GNATWRENS	
Polioptila caerulea	blue-gray gnatcatcher
SYLVIIDAE - SYLVIID WARBLERS	
Chamaea fasciata	wrentit
MIMIDAE - THRASHERS	
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
PTILOGONATIDAE - SILKY-FLYCATCHERS	
Phainopepla nitens	phainopepla
PARULIDAE - WARBLERS	
Oreothlypis celata [*Vermivora c.*]	orange-crowned warbler
Geothlypis trichas	common yellowthroat
Setophaga petechia [*Dendroica p.*]	yellow warbler
Icteria virens	yellow-breasted chat
EMBERIZIDAE - SPARROWS & JUNCOS	
Pipilo maculatus	spotted towhee
Melozone crissalis [*Pipilo c.*]	California towhee
Aimophila ruficeps	rufous-crowned sparrow
Passerella iliaca	fox sparrow
Melospiza melodia	song sparrow
CARDINALIDAE - CARDINALS & ALLIES	
Pheucticus melanocephalus	black-headed grosbeak
Passerina caerulea	blue grosbeak
Passerina amoena	lazuli bunting
ICTERIDAE - BLACKBIRDS	
Molothrus ater	brown-headed cowbird
Icterus cucullatus	hooded oriole
Icterus bullockii	Bullock's oriole
FRINGILLIDAE - FINCHES	
Carpodacus mexicanus	house finch
Spinus psaltria [*Carduelis p.*]	lesser goldfinch

WILDLIFE COMPENDIUM FOR THE HAYASHI SURVEY AREA

Species	
PASSERIDAE - OLD WORLD SPARROWS	
Passer domesticus *	house sparrow
MAMMALS	
***MAMMALIA* - MAMMALS**	
VESPERTILIONIDAE - VESPER BATS	
Myotis yumanensis	Yuma myotis
Lasiurus blossevillii	western red bat
Lasiurus cinereus	hoary bat
MOLOSSIDAE - FREE-TAILED BATS	
Tadarida brasiliensis	Brazilian free-tailed bat
LEPORIDAE - HARES & RABBITS	
Sylvilagus audubonii	desert cottontail
SCIURIDAE - SQUIRRELS	
Spermophilus beecheyi	California ground squirrel
GEOMYIDAE - POCKET GOPHERS	
Thomomys bottae	Botta's pocket gopher
CANIDAE - WOLVES & FOXES	
Canis latrans	coyote
CERVIDAE - DEER	
Odocoileus hemionus	mule deer
BOVIDAE - CATTLE, ANTELOPE, SHEEP, & GOATS	
Bos taurus *	domestic cattle
INVERTEBRATES	
***INSECTA* - INSECTS**	
PAPILIONIDAE - SWALLOWTAIL BUTTERFLIES	
Papilio rutulus	western tiger swallowtail
PIERIDAE - WHITES, SULFURS, & ORANGETIPS	
Pieris rapae *	mustard white
Pontia protodice	common (checkered) white
HESPERIIDAE - SKIPPERS	
Pyrgus communis	common checkered-skipper
LIBELLULIDAE - COMMON SKIMMERS	
Libellula saturata	flame skimmer
* introduced species	

Appendix C
Nesting Bird Policy for Preserve Management

Preserve Managers will implement a Nesting Birds Policy to conform to existing regulations and procedures for protection of nesting birds. Migratory native bird species are protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (50 CFR 10.13). Sections 3503, 3503.5, and 3513 of the California Fish and Game Code make it unlawful to: take, possess, or needlessly destroy the nest or eggs of any bird (3503); take, possess or destroy any birds in the orders of Falconiformes or Strigiformes (birds-of-prey) and the nest and eggs of any such bird (3503.5); and take or possess any migratory nongame bird, or any part thereof, as designated in the MBTA. Under State law, take means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (Fish and Game Code Section 86), and includes take of eggs and/or young resulting from disturbances that cause abandonment of active nests.

Proposed activities with the potential to impact nesting birds (including, but not limited to, vegetation removal and use of heavy construction equipment) should occur outside of the avian breeding season, which generally runs from March 1 to September 15 (as early as January 1 for some birds) to avoid disturbance to breeding birds or destruction of the nest or eggs. Depending on the avian species present, a qualified biologist may determine that a change in the breeding season dates is warranted.

If the Preserve Manager determines that avoidance of the avian breeding season is not feasible, at least two weeks prior to the initiation of project activities, a qualified biologist with experience in conducting breeding bird surveys will conduct weekly bird surveys to detect presence/absence of native bird species occurring in suitable nesting habitat that is to be directly or indirectly disturbed and (as access to adjacent areas allows) any other such habitat within an appropriate buffer distance of the disturbance area. Generally the buffer distance should be 300 feet (500 feet for raptors). If a narrow buffer distance is warranted, the Preserve Manager will have a qualified biologist identify the appropriate buffer distances for raptors and non-raptors and notify Wildlife Agencies. The surveys should continue on a weekly basis with the last survey being conducted no more than three days prior to the initiation of project activities. If a native or nesting bird species is found, the Preserve Manager will do one of the following to avoid and minimize impacts on native birds and the nest or eggs of any birds.

a. Implement default 300-foot minimum avoidance buffers for all birds and 500-foot minimum avoidance buffers for all raptor species. The breeding habitat/nest site will be fenced and/or flagged in all directions, and this area will not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.

b. If a narrower buffer distance is determined appropriate by the qualified biologist, the Preserve Manager will develop a project-specific Nesting Bird Management Plan. The site-specific nest protection plan will be developed collaboratively with Wildlife Agencies and submitted to the Wildlife Agencies, although the Wildlife Agencies will not be responsible for approving the narrower buffer distance and the Nesting Bird Management Plan. The Plan should include detailed methodologies and definitions to enable a qualified avian biologist to monitor and implement nest-specific buffers based on topography, vegetation, species, and individual bird

behavior. This Nesting Bird Management Plan will be supported by a Nest Log that tracks each nest and its outcome. The Nest Log will be submitted to the Wildlife Agencies at the end of each week.

c. The Preserve Manager may propose an alternative plan for avoidance and nesting birds for Wildlife Agencies' review and approval.

Flagging, stakes, and/or construction fencing should be used to demarcate the inside boundary of the buffer between the project activities and the nest. The personnel working for the Preserve Manager, including any contractors working on site, should be instructed on the sensitivity of the area. The Preserve Manager will document the results of the recommended protective measures described above to demonstrate compliance with applicable State and Federal laws pertaining to the protection of native birds.

The Biological Monitor will be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the project footprint (i.e., outside the demarcated buffer) and that the flagging/stakes/fencing is being maintained, and to minimize the likelihood that active nests are abandoned or fail due to project activities. The Biological Monitor will send weekly monitoring reports to the Preserve Manager during the grubbing and clearing of vegetation and will notify the Preserve Manager immediately if project activities take, possess, or needlessly destroy the nest or eggs of any bird as well as birds-of-prey and their nest or eggs. Within 48 hours of damage to an active nest or eggs or observed death or injury of birds protected under State law or the MBTA (which includes, but not is limited to, the birds on the Covered Species list), the Preserve Manager will notify the OCTA NCCP/HCP Administrator and Wildlife Agencies.