

M2 NATURAL COMMUNITY CONSERVATION PLAN/HABITAT CONSERVATION PLAN – 2022 ANNUAL REPORT



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Acronyms and Definitions

ACOE – Army Corps of Engineers

Caltrans – California Department of Transportation

CDFW – California Department of Fish and Wildlife

CEs – Conservation Easements

CHSP – Chino Hills State Park

CNDDDB – California Natural Diversity Database

COI – Certificate of Inclusion

CSS – Coastal Sage Scrub

ECR – Environmental Commitment Report

EMP – Environmental Mitigation Program

EOC – Environmental Oversight Committee. The EOC is made up of two OCTA Board members and representatives from Caltrans, the Wildlife Agencies, ACOE, environmental groups, and the public. The EOC makes recommendations on the allocation of environmental freeway mitigation funds and monitors the execution of a master agreements between OCTA and state and federal resource agencies.

ESA – Endangered Species Act

FMP – Fire Management Plan

GLA – Glenn Lukos Associates

GSOB – Gold Spotted Oak Borer (beetle)

HCP – Habitat Conservation Plan

HMMP – Habitat Mitigation Monitoring Plan

I – Interstate

IA – Implementing Agreement

IRC – Irvine Ranch Conservancy

ISHB – Invasive shot hole borer

ISMP – Invasive Species Management Plan

M2 – The renewed Measure M (or Measure M2)

M2 NCCP/HCP – OCTA M2 Natural Communities Conservation Plan / Habitat Conservation Plan adopted on November 2017. Also referred as Plan.

NCCP – Natural Community Conservation Plan

NCCPA – Natural Community Conservation Plan Act

OC Parks – Orange County Parks

OCTA – Orange County Transportation Authority

RMP – Resource Management Plan

SCAG – Southern California Association of Governments

SR – State Route

UCI – University of California, Irvine

USFS – United States Forest Service

USFWS – U.S. Fish and Wildlife Service

Wildlife Agencies – the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS), collectively referred to as the Wildlife Agencies

Executive Summary

This is the fifth Annual Report for the Orange County Transportation Authority (OCTA) renewed Measure M (M2) Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP or Plan), covering all activities between January 1, 2022 and December 31, 2022. This report summarizes the tracking of impacts associated with covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities). It also provides an update of the status and activities on the OCTA Preserves, progress on the implementation of OCTA-funded restoration projects, and additional Plan administration and public outreach activities. This Annual Report has been prepared to comply with the state NCCP and federal HCP annual reporting requirements and will be submitted to the Wildlife Agencies, collectively referred to as the Wildlife Agencies, for review. Once the Annual Report has been finalized, it will be presented to the OCTA Environmental Oversight Committee (EOC) and will be available for public review.

Tracking Impacts from Covered Activities

OCTA keeps account of the Plan-to-date impacts on habitat types from all covered freeway improvement projects to ensure impacts stay within the caps established within the Plan. To date, a total of **9.2 acres of habitat impacts have been authorized relative to a cap of 141.0 acres**. In addition, OCTA uses a consistency determination checklist to evaluate how and when avoidance and minimization measures are implemented on covered freeway improvement projects. No projects had consistency determinations drafted, modified, or completed within the timeframe of this Annual Report. Other tracking requirements include:

- *Tracking for Covered Plant Species Policy* – OCTA tracks the credits for covered plant species protection (on Preserves) and restoration/enhancement (restoration projects) relative to allowable impacts. The Plan-to-date balance for each plant species is net positive (intermediate mariposa lily (*Calochortus weedii* var. *intermedius*, IML) [+933], many-stemmed dudleya (*Dudleya multicaulis*, MSD) [+57], southern tarplant (*Centromadia parryi* ssp. *australis*, ST) [+59,377]).
- *Tracking Impacts on Habitat Types Resulting from Covered Activities within Preserves* – The Plan establishes a cap that no more than 13 acres (approximately 1%) of the natural habitat within the OCTA Preserves will be impacted by Preserve management activities. To date, no measurable permanent impacts have been recorded on the Preserves.
- *Maintaining Rough Proportionality* – The Plan requires implementation of conservation measures roughly proportional in time and extent to impacts on natural communities and Covered Species. To date, four restoration projects, Big Bend, City Parcel, Bee Flat, and University of California, Irvine (UCI) Ecological Reserve have received sign-off from the Wildlife Agencies as meeting their success criteria and have achieved conservation credits that keeps the Plan ahead of allowable impacts.

OCTA Preserves

OCTA acquired seven properties resulting in the protection of 1,236¹ acres of natural habitat (see Figure 1). In all instances, the seven Preserves are located within priority conservation areas and immediately adjacent to other protected lands. These Preserves add to the protection of large blocks of natural open space in areas important for regional conservation. OCTA has completed Resource Management Plans (RMPs) for each Preserve that includes Preserve-specific goals and objectives and define an appropriate level of public access and trail use consistent with protection of biological resources. It is anticipated that Conservation Easements (CEs) will be established and recorded in the near future. Templates have been developed and are currently under review with CDFW legal counsel. Currently, each Preserve is being managed by OCTA. OCTA is considering potentially transitioning to a long-term Preserve Manager and is working to identify potential Preserve Managers.

OCTA has contracted the following consulting firms to support Preserve management:

- (1) Glenn Lukos Associates (GLA) to provide biological monitoring, oversee implementation of the approved invasive species management plans (ISMPs), assist with public outreach events, and general program needs including CE support.
- (2) RECON Environmental to support general Preserve stewardship including maintenance of access roads, tree trimming, and control of public access.
- (3) Wildland Res Mgt to complete Fire Management Plans (FMPs).
- (4) High Level Security Services (HLSS) to assist with patrol of the Preserves to help deter trespassing, vandalism and provide enforcement as needed.

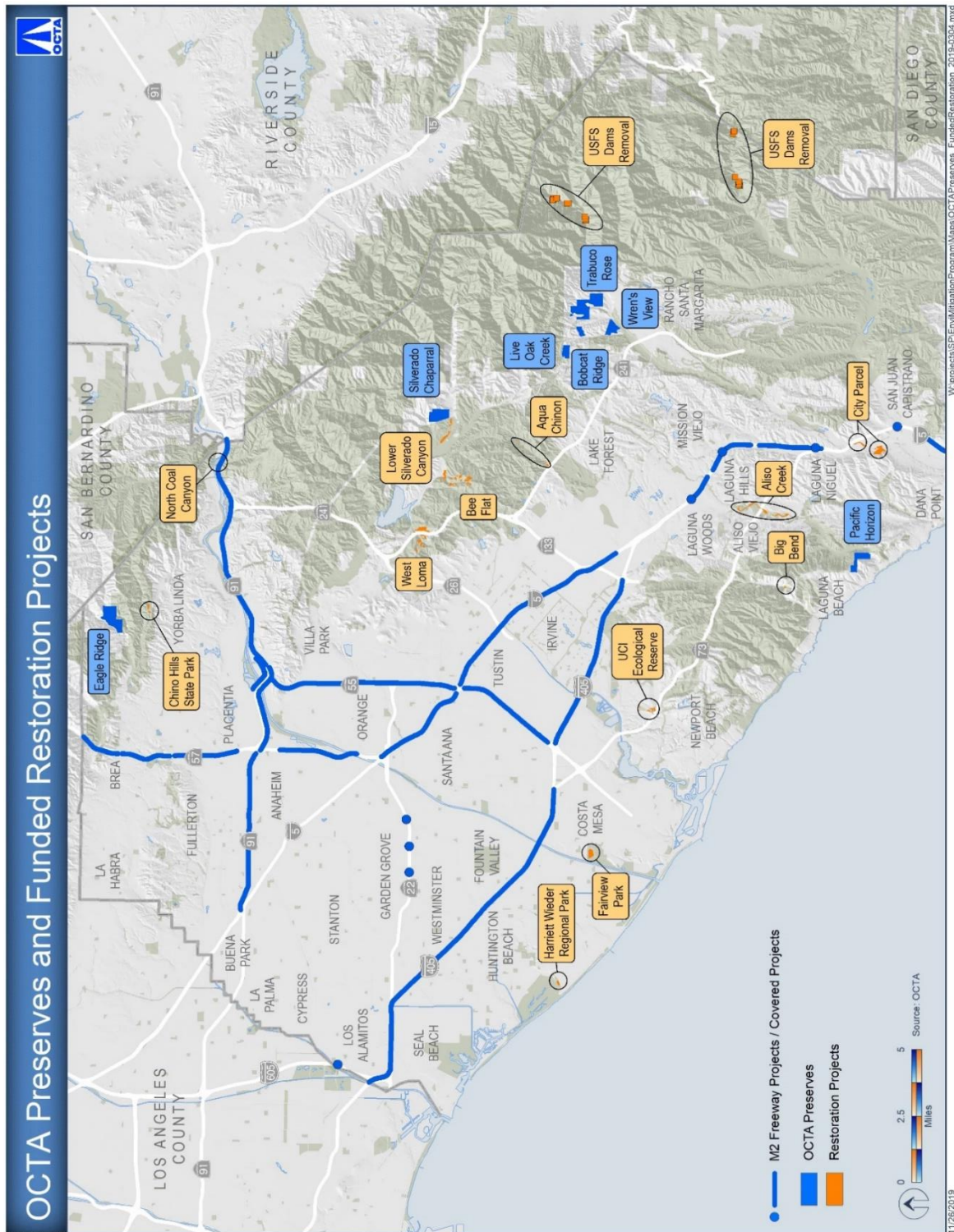
OCTA hosted numerous Preserve-specific outreach events to educate the public about property value, public access, and plans to continue this process in the near term as part of a managed access approach. Most notably, the Coastal fire impacted approximately 35 acres of the Pacific Horizon Preserve in May 2022. The burn area is being monitored closely for recreational impacts and invasive plant occurrences.

OCTA-Funded Restoration Projects

OCTA has approved funding for 12 restoration projects (including a dam removal project) that will result in over 350 acres of restored habitats and improvements to habitat functions for Covered Species. The restoration projects occur throughout the Plan Area in core habitat areas and within key habitat linkages and riparian corridors (see Figure 1). The restoration projects are on lands that are currently managed and will enhance habitat for Covered Species. OCTA is working with the restoration project sponsors to complete implementation and monitoring of the restoration activities. At completion, the restoration projects must meet their success criteria to achieve sign-off from the Wildlife Agencies. Each restoration project is at different stages of this process. Additionally, some of these restoration projects have been impacted in previous years by wildfires. To date, five of the 12 restoration projects have obtained sign-off.

¹ The acreage of natural habitat preserved is based on best available information used during the preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.

Figure 1 - OCTA M2 NCCP/HCP Preserves and Funded Restoration Projects



Additional Conditions for Coverage

As part of the Conservation Analysis (Chapter 6) in the Plan, there are two Covered Species, arroyo chub and MSD, noted for additional conditions for coverage which are above and beyond the acquisition of the OCTA Preserves and funding of restoration projects. In 2022, United States Forest Service (USFS) Dam Removal restoration project, funded by OCTA, was completed and approved. This restoration project satisfied the conditions for coverage of arroyo chub. For MSD, OCTA has taken steps to protect and enhance an existing population of MSD on the Pacific Horizon Preserve. In addition, OCTA is currently collaborating with the Wildlife Agencies to develop an acceptable restoration plan for many-stemmed dudleya on this Preserve to hopefully expand the existing population and meet the criteria needed to achieve coverage for this species. If this is determined to be infeasible, OCTA will fund a separate restoration project within Orange County.

Public Outreach

OCTA is committed to transparency in how the M2 funds have been and are being used to implement the Plan and the broader Environmental Mitigation Program (EMP). OCTA has conducted a variety of public outreach activities aimed at informing and engaging the public on the overall EMP as well as Preserve-specific issues and events. These have included public meetings during the preparation of the Preserve RMPs, maintaining a website with information and documents related to the program, and engaging in various outreach efforts. In 2022, OCTA participated in four EMP public outreach events and meetings and 11 Preserve-specific public outreach events.

Plan Funding

The primary source of funding for the Plan will derive from the M2 transportation sales tax designed to raise money to improve Orange County's transportation system. As part of the M2 sales tax initiative, at least five percent of the revenues from the freeway program will be set aside for the M2 EMP revenues. There are sufficient funds available through the M2 EMP to cover the implementation of the Plan. OCTA is currently in a 12 - 15 year process (target of fiscal year 2027/2028) to accumulate and establish, in perpetuity, an endowment that will provide a long-term funding source to cover ongoing Preserve management and monitoring, adaptive management, and responses to changed circumstances. The current M2 EMP revenue stream is used to cover Plan implementation and administration until the endowment is fully funded.

Plan Administration

OCTA is responsible for implementing the Plan and staffing an NCCP/HCP Administrator position. OCTA has designated Lesley Hill as the NCCP/HCP Administrator. Her role includes overseeing Preserve management and monitoring, coordinating with restoration project sponsors, serving as the primary point of contact with the Wildlife Agencies, ensuring avoidance and minimization measures are implemented pursuant to the Plan, tracking impacts and conservation, assisting with public outreach, and preparing this Annual Report.

The Plan outlines how modifications and minor/major amendments can be made to the Plan. At the recommendation of the Wildlife Agencies, OCTA will be working on a minor amendment to the Plan to document the Southern California Edison (SCE) utility poles and maintenance areas within various Preserves. OCTA staff has been coordinating with SCE staff and legal since 2020 and is awaiting SCE to provide specific pole and access information in order to determine impacts, as well as a compensation/restoration plan for the damage to the Preserve. The Coastal fire which burned the Pacific Horizon in May 2022 has delayed this coordination. Additional information will need to be obtained from SCE in order to move forward with an Amendment. No major amendments are proposed.

1.1 Background

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 Measure M2 (M2), a portion of the M2 freeway program revenues were set aside for the M2 EMP to provide funding for programmatic mitigation to offset impacts from the freeway projects in the 13 freeway segments covered by Measure M2. In 2017, Measure M2 was rebranded as OC Go. OCTA prepared a comprehensive NCCP/HCP or Plan as a mechanism to offset potential project-related effects on threatened and endangered species and their habitats. The Plan achieves higher-value conservation than what would be expected if conservation efforts were through project-by-project mitigation. The M2 NCCP/HCP is in exchange for a streamlined project review and permitting process for the M2 freeway program as a whole.

1.2 Introduction

The purpose of this document is to provide an update on the status of the Plan implementation activities that have occurred during the reporting period for this Annual Report. This Annual Report includes all Plan implementation undertaken in 2022. The information in this report will be used in compliance monitoring to determine if OCTA is properly implementing the M2 NCCP/HCP pursuant to relevant regulations and permit conditions. Annual tracking and reporting of the Plan implementation activities is required by Section 8.4 of the Plan; Section 10.1 of the Implementing Agreement (IA), dated November 2016; the Federal Fish and Wildlife 10(a)(1)(B) Permit No. TE32842C-0, dated June 19, 2017; and the NCCP Permit No. 2835-2017-001-05, dated June 19, 2017.

1.3 Compliance Matrix

To satisfy the terms and conditions of the state and federal take authorization, OCTA is required to fulfill the obligations outlined in the Plan and IA. Implementation tasks associated with these regulations are completed or ongoing, as described in Table 1-1. This table summarizes the compliance actions, identifies the Plan sections, briefly describes the compliance requirement, and summarizes the steps OCTA is currently taking. The compliance actions are described in greater detail later in this report.

Table 1-1. M2 NCCP/HCP Compliance Matrix

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
<i>Tracking Impacts</i>	5.8.1, 7.1	The NCCP/HCP Administrator will be responsible for collecting and maintaining information that tracks impacts on natural resources resulting from covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities) to ensure that the number of impacts that ultimately occur under the Plan stays below the amount of impacts estimated during Plan development.	OCTA has developed procedures and approaches to track project impacts to ensure they are consistent with the Plan. Impacts to date are well within and below the estimated allowable impacts.	Chapter 2
Freeway Improvement Projects	5.8.1.1	The NCCP/HCP Administrator will be responsible for tracking the status of covered freeway improvement projects.	OCTA maintains a table summarizing the status of the M2 freeway improvement projects. (Table 2-1)	2.1.1
Habitat Types	5.8.1.1, Appendix F	OCTA will record the acres of direct and temporary impacts to natural communities using detailed vegetation mapping completed as part of pre-construction field surveys. A crosswalk analysis will be conducted with the detailed vegetation mapping and aggregated into the major vegetation types using the Plan. Impacts on natural	OCTA has established methods to track the amount of habitat impacts from each covered freeway improvement project. The spreadsheet tracks the cumulative amount of habitat types relative to caps established under the M2 NCCP/HCP. (Table 2-2) To date, OCTA impacts are below the caps allowed.	2.1.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		communities from covered freeway improvement projects will be measured against caps on impacts on individual habitat types and overall habitat.		
Avoidance and Minimization Measures	5.8.1.1	Based on the project-specific biological surveys, OCTA will ensure covered freeway improvement projects include avoidance and minimization measures into project design per guidelines and criteria included in the Plan.	OCTA has developed a consistency determination checklist used to evaluate how and when avoidance and minimization measures are implemented on covered freeway improvement projects. These checklists are submitted to the Wildlife Agencies for review. Approval and measures are then included in the Certificate of Inclusion and the Environmental Commitment Record (ECR) for the project. (Table 2-3)	2.1.3
Covered Plant Species	5.6.2.2, 5.8.1.2	To ensure impacts on covered plant species are properly addressed, OCTA will implement a Covered Plant Species Policy that will involve the evaluation of impacts based on project-specific field surveys. The policy will also set forth mitigation of impacts using credits determined through field surveys of Preserves and actions taken to enhance, restore, and create	OCTA has established a ledger to track credits and debits for covered plant species (Table 2-4). To date, OCTA has demonstrated a high amount of plant credits. No debits have been applied for any of the Covered freeway projects.	2.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		<p>populations of covered plant species as part of OCTA funded restoration projects. This policy requires OCTA to maintain a ledger-type accounting system to track credits and debits.</p>		
<p>Preserve Management</p>	<p>5.8.1.3</p>	<p>The Plan establishes that no more than 13 acres (approximately 1%) of the natural habitat within the Preserves will be impacted by Preserve management activities. OCTA and Preserve Managers will track any activities resulting in more than 0.1 acre of new direct effects on natural habitat within the Preserves and record this information in a ledger that will be submitted to the Wildlife Agencies as part of the Plan’s Annual Report.</p>	<p>OCTA has established a process to track and monitor Preserve management activities that would result in permanent impacts of more than 0.1 acres. A ledger has been created. To date, SCE maintenance work has impacted 0.47 acres of the Pacific Horizon and Silverado Chaparral Preserves. Impacts were documented however coordination is ongoing and will determine if the impacts are permanent or temporary. This work is not covered by the Plan and will require separate mitigation from SCE. No other permanent impacts have been recorded on the Preserves.</p>	<p>2.3</p>
<p>Maintain Rough Proportionality</p>	<p>5.8.2</p>	<p>The Plan specifies that conservation measures must be implemented roughly proportional in time and extent to the impacts on habitat authorized under the Plan. Conservation measures are measured once CEs are</p>	<p>OCTA is tracking the progress of the implementation of conservation measures relative to impacts associated with Covered Activities. The Big Bend, City Parcel, Bee Flat, UCI Ecological Reserve</p>	<p>2.4</p>

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		recorded on Preserves and when restoration projects are signed off as meeting their success criteria (Table 2-6).	and USFS dam removal restoration projects have been signed off, and the habitat credits from these restoration projects are sufficient to be ahead of impacts to date. (Table 2-5)	
<i>Oversight of M2 Preserve Management and Monitoring</i>	5.4, 7.1, 7.2			Chapter 3
Acquisition	5.4	The acquisition of habitat Preserves was a key component of the Plan conservation strategy. Prior to the Plan being completed, OCTA selected and acquired seven Preserves with approximately 1,236 ^a acres of natural habitat. The locations of the Preserves across the Plan Area are shown in Figure 1. The selection of the Preserves, completed in coordination with the EOC and Wildlife Agencies, was designed to meet the biological goals and objectives of the Plan while also contributing to the collective goals of the existing regional network of protected areas within the Plan Area.	The collection of Preserves acquired by OCTA in the Trabuco Canyon area has created a substantial block of conservation in an area that did not previously exist as protected open space. The Preserves in Laguna Beach (Pacific Horizon), Brea (Eagle Ridge), and Silverado Canyon area (Silverado Chaparral) add to blocks of existing protected open space in Orange County. These Preserves provide for the protection of diverse habitats across the Plan Area.	3.1 and 3.2
Baseline Surveys	7.2.7.4	Baseline monitoring establishes conditions at a given point in time. It is a one-time event that characterizes	For each of the seven Preserves, OCTA contracted with Bonterra Psomas to complete baseline biological	2018 First Annual Report

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		the status of conserved resources, as well as threats and stressors, for planning or future comparisons.	surveys that included detailed vegetation mapping and focused surveys of Covered Species.	
Preparation of RMPs	7.2.4	An RMP will be developed for each Preserve that includes Preserve-specific goals and objectives relating to natural communities, Covered Species, and other ecosystem function(s), which demonstrate how the Preserve supports the overall goals and objectives of the OCTA NCCP/HCP.	OCTA has completed RMPs for all seven Preserves. Each RMP was reviewed and approved by the Wildlife Agencies. Draft RMPs were circulated for public review and OCTA held public workshops to obtain input. The Final RMPs are posted on the OCTA EMP website. The RMPs will be reviewed in 2024 and updated as necessary to prioritize management actions based on changing Preserve needs.	3.2
Recording of Conservation Easements (CEs)	7.2.4.1	CE's will be recorded for each Preserve that will provide a legal mechanism to ensure each Preserve is maintained and managed in perpetuity as a habitat Preserve. It was anticipated that CE's would be recorded within 2 years of permit issuance. As discussed with the Wildlife Agencies, OCTA has passed the 2 year commitment window and is actively coordinating with the Wildlife Agencies on the development of the CE's.	OCTA is currently working on the preparation of CE's and anticipates these will be finalized in the future. The CE for the Trabuco Rose Preserve is currently under review by CDFW's legal staff. Once approved, it is anticipated that this CE template will be used for the remaining 6 Preserves.	7.1

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
Identification of Preserve Manager	8.2.1.2	For each Preserve, a long-term Preserve Manager will be identified.	OCTA is currently serving as the Preserve Manager for each Preserve. OCTA has contracted with firms (RECON and GLA) to provide Preserve management and monitoring assistance. High Level Security Services (HLSS) as well as Orange County Sheriff are providing security services for OCTA. OCTA is researching long-term management options for the Preserves. The Wildlife Agencies will remain involved in this process to determine future land management disposition.	3.2
General Stewardship and Preserve Management	7.2.5	The M2 NCCP/HCP includes guidelines for management of Preserves. These guidelines are meant to describe the range of management activities that could be needed, depending on a variety of Preserve-specific conditions.	OCTA is currently serving as the Preserve Manager and is implementing the RMPs with the help of contracted firms (RECON, GLA and HLSS)	3.1, Appendix C and D
Public Access Policy and Enforcement	7.2.5.7, 7.2.5.8	The primary purpose of acquiring the Preserves was to meet the biological requirements of the NCCP/HCP; however, the Preserves provide additional benefits, such as opportunities for passive recreation. Passive recreational use in the	For each Preserve, a public access plan was developed within the RMPs which addressed recreation and allowable uses compatible with the biological goals and objectives of the Plan. The RMPs were reviewed and approved by the Wildlife	3.1, 6.1.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		Preserves will be managed to be consistent with the protection and enhancement of biological resources.	Agencies. OCTA conducts public hikes and equestrian rides at designated Preserves.	
Invasive Plant Species Control Plan and Implementation	7.2.5.1	The control of invasive nonnative plant species is one of the most important components of Preserve management because these species can aggressively out-compete native species, thereby reducing habitat quality within a Preserve.	ISMPs were completed and approved by the Wildlife Agencies for each Preserve. These Plans include detailed mapping for existing invasive species and prioritization for invasive species treatment actions. OCTA has continued the implementation of invasive species control based on the designated priorities. Preserve-wide invasive species mapping is anticipated to be updated in 2024.	3.2, Appendix C and D
Fire Management Plan and Fire Response	7.2.5.9	The Plan outlines the requirement for the preparation of a FMPs for each Preserve.	OCTA has contracted with Wildland Res Mgt to complete a FMP for each Preserve. Work began in 2018 and FMPs for all Preserves have been drafted. Due to staff changes, the FMPs are again under review by Orange County Fire Authority (OCFA), the City of Laguna Beach Fire Department and the City of Brea Fire Department. It is anticipated that the FMPs will be completed in 2023. The FMPs establish policies and approaches to maximize	3.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			protection of biological resources during fire suppression activities, to the degree feasible. In 2022, approximately 35 acres were impacted by the Coastal Fire at the Pacific Horizon Preserve. Monitoring of the burn area is a high priority for OCTA and OCTA will continue to ensure the area does not degrade in habitat value.	
Biological (Effectiveness) Monitoring	7.2.7.4 Table 7-1	Effectiveness monitoring assesses status and trends, as well as threats and stressors, and requires biological expertise. Effectiveness monitoring will be completed following the frequency and survey protocols listed in Table 7-1 of the M2 NCCP/HCP in perpetuity.	OCTA has been completing surveys for Covered Species and their habitat within the Preserves based on schedules set forth in the RMPs. In 2022, surveys for reptiles and covered plants were completed. OCTA coordinated with the Wildlife Agencies to develop a Visual Encounter Survey (VES) methodology which was applied to the Trabuco Rose and Silverado Chaparral Preserves. Surveys will continue in 2023.	3.2, Appendix C
Adaptive Management	7.2.7	The Plan sets forth expectations and outlines an approach for the Preserves to be managed using an adaptive management strategy. Adaptive management provides a strategy to	For each Preserve, OCTA has identified key issues for a focused adaptive management approach as part of the RMP development. These key issues are included as tasks	3.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		improve future management actions through monitoring to evaluate management effectiveness.	in the monitoring and management of the Preserves.	
Changed Circumstances	8.6.2	Changed Circumstances are defined as those events (flood, fire, drought, invasion by exotic species or disease, toxic spills, vandalism, encroachment, and other illegal human activity, and listing of non-Covered Species) that may affect a species or geographic area covered by this Plan that can reasonably be foreseen by OCTA and the Wildlife Agencies during planning and development of the Plan.	The Plan outlines how Changed Circumstances will be addressed should they occur. During the time period covered by this Annual Report, no events warranting a Changed Circumstance has occurred.	3.2
Bi-annual Meeting of Preserve Managers	7.1, 7.2.7.6	OCTA will host bi-annual meetings involving the Preserve Managers, Monitoring Biologists, the NCCP/HCP Administrator, and the Wildlife Agencies where implementation, policy, and technical issues of Preserve management will be addressed.	Because OCTA is functioning as the Preserve Manager at each of the Preserves, the bi-annual meetings have not been initiated. OCTA has been coordinating closely with the Wildlife Agencies on Preserve activity.	N/A
Regional Monitoring	7.2.2	OCTA is not responsible for conducting regional monitoring outside of the specific Preserves but will contribute monitoring data collected at OCTA Preserves in a format that can be	OCTA is continuing to coordinate and collaborate with other regional management and monitoring programs to stay abreast of regional monitoring issues. OCTA has shared monitoring	6.1.3

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		integrated with regional monitoring databases as appropriate.	results with other regional entities.	
<i>Tracking and Facilitation of M2 Restoration Project Implementation</i>	5.5, 7.1	A key component of the M2 NCCP/HCP conservation strategy was OCTA funding restoration projects throughout the Plan Area. OCTA has funded 12 restoration projects, totaling approximately 357 acres of restored habitats, and a dam removal project. The restoration projects will enhance habitat for Covered Species.	OCTA has been providing oversight of the Restoration Project sponsors to ensure the restoration projects meet the following criteria: (1) the restored habitat meets success criteria identified in final restoration plans approved by the Wildlife Agencies; (2) the restoration project area is conserved through a CE, deed restriction, or other mechanism approved by the Wildlife Agencies; and (3) the restoration site will be managed long-term in accordance with an existing management plan that defines the role for managing the biological values of the restoration project location.	4.1, 4.2
'Lessons learned' monitoring of restoration projects	7.3	As warranted and in consultation with the Wildlife Agencies, OCTA will conduct follow-up monitoring of restoration projects (approximately every 5 to 10 years) to evaluate the success of the restoration projects and apply 'lessons learned' to future restoration activities.	To be completed at a later date after restoration projects have been completed	To be presented in subsequent annual reports.

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
<i>Additional Conditions for Coverage</i>	6.5	As part of the Conservation Analysis (Chapter 6) in the M2 NCCP/HCP, there were two Covered Species, arroyo chub and MSD, noted for additional conditions for coverage above and beyond the acquisition of the seven OCTA Preserves and funding of restoration projects.	In 2022, OCTA met the condition of coverage for the arroyo chub. OCTA will continue to collaborate with the Wildlife Agencies to implement a restoration project focused on the MSD.	Chapter 5
Arroyo Chub	6.5	OCTA will implement a future restoration project focused on improving habitat conditions for arroyo chub.	In 2022, the USFS completed the Dam Removal restoration project which OCTA helped fund to provide conservation for arroyo chub. A total of 14 dams (plus additional dam remnants) were removed.	5.1.1, 4.2.12
Many-stemmed Dudleya	6.5	OCTA will protect, enhance, and/or establish a major population (i.e., 500 individuals) of MSD.	There is a known MSD population on the Pacific Horizon Preserve. OCTA is implementing ongoing Preserve management actions to improve habitat suitability and is in the process of developing a restoration plan to increase the population size. Implementation of this plan will commence once approved by the Wildlife Agencies.	5.1.2, 3.2.4
<i>Plan Funding</i>	8.3	Both the Natural Community Conservation Plan Act (NCCPA) and Endangered Species Act (ESA) require that a conservation plan approved	The primary source of funding for the Plan implementation is the M2 transportation sales tax initiative, which included at	Chapter 7

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		pursuant to the respective state or federal law must assure availability of adequate funding to implement the Plan’s conservation actions.	least 5% for the revenues for the EMP.	
Preserve Management	8.3.3	OCTA will establish an endowment to provide a secure and permanent funding source to cover the Preserve management (including adaptive management) cost in perpetuity.	OCTA is currently establishing an endowment to cover Preserve management (estimated period of 10-12 years). During this accumulation phase, funding for ongoing Preserve management is covered through the M2 sales tax revenue stream.	7.1, 7.2
Effectiveness Biological Monitoring	8.3.3	OCTA will establish an endowment to provide a secure and permanent funding source to cover the effectiveness biological monitoring on the Preserves in perpetuity.	OCTA is currently establishing an endowment to cover Preserve management (estimated period of 10-12 years). During this accumulation phase, funding for ongoing effectiveness monitoring is covered through the M2 sales tax revenue stream.	7.1, 7.2
Program Management	8.3.3	OCTA will establish an endowment to fund program management through the permit term.	OCTA will fund program management using the M2 revenue stream until 2041. Between 2041 and 2051 (end of permit term), OCTA will set aside a sub-fund to continue funding program management.	7.1, 7.2
Changed Circumstances	8.3.3	OCTA will establish an endowment to provide a secure and permanent	OCTA is currently establishing an endowment to cover Preserve	7.1, 7.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		funding source to cover the responses to Changed Circumstances on the Preserves in perpetuity.	management over an (estimated period of 10-12 years). During this accumulation phase, funding for Changed Circumstances is covered through the M2 sales tax revenue stream.	
<i>Plan Administration</i>				Chapter 8
NCCP/HCP Administrator	8.2.1.1	OCTA is responsible for implementing the M2 NCCP/HCP and staffing an NCCP/HCP Administrator position.	The NCCP/HCP is being implemented and administered by OCTA staff.	8.1
Minor Modifications	8.5.2	The Plan allows for minor modifications to the Plan, permits, and IA if the modifications are non-substantive and do not meet the threshold of a Minor and Major Amendment.	OCTA coordinated with the Wildlife Agencies to make a number of minor modifications up through 2018. No additional minor modifications have been necessary.	8.2
Minor or Major Amendments	8.5.3, 8.5.4	The Plan outlines circumstances in which Minor or Major Amendments to the Plan, permits, and IA could be proposed by OCTA and implemented in collaboration with the Wildlife Agencies.	A Minor Amendment is necessary to recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue and for which SCE provided restoration will be implemented to offset habitat impacts to maintain long term net habitat value within the Preserve.	8.3
Changed Circumstances	8.6.2	Changed Circumstances are defined as those events that may affect a species or geographic area covered by	No events meeting the criteria of a Changed Circumstance occurred	8.4

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		this Plan that can reasonably be foreseen by OCTA and the Wildlife Agencies during development of the Plan. Changed Circumstances for this Plan include the following reasonably foreseeable events: flood, fire, extended period of reduced precipitation, invasion by exotic species or disease, toxic spills, vandalism, encroachment, and other illegal human activity, and listing of non-Covered Species.	during the timeframe of this Annual Report.	
Annual Reporting				
Annual Report	8.4	OCTA will prepare an Annual Report summarizing activities over the reporting year (January 1 to December 31). Annual reporting will involve report submittal to the Wildlife Agencies by March 1 of each calendar year (or other date as agreed upon by OCTA and the Wildlife Agencies).	This is the fifth Annual Report and covers all activities in 2022.	
Public Meeting	8.4	A public meeting on the report will be held within 60 days of the report submittal or in conjunction with EOC meetings.	A public meeting will be held in 2023 to present the Annual Report, and this document will be posted on the OCTA EMP website.	
^a The acreage of natural habitat preserved is based on best available information using during the preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.				

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Chapter 2

Tracking Impacts from Covered Activities

The primary goal of the Plan is to obtain authorization for take of Covered Species under the NCCPA and ESA for the implementation of covered freeway improvement projects and other management and monitoring activities on Preserves (Covered Activities). This chapter provides tracking of impacts associated with Covered Activities to ensure implementation stays within the impact caps and procedures outlined in the Plan.

2.1 Covered Freeway Improvement Projects

2.1.1 Status of OCTA M2 Freeway Improvement Projects

Freeway improvement projects covered by this Plan are defined to include all habitat or ground-disturbing impacts resulting from the M2 transportation planning and project implementation process. There are 13 discrete proposed freeway project areas in which freeway segments have been identified for coverage under the Plan. These proposed projects are designed to reduce congestion, increase capacity, and improve traffic flow of Orange County's important transportation infrastructure. The freeway improvement projects are, in all instances, along existing freeways and will include lane additions, interchange improvements, and associated facility upgrades. These freeway improvement projects do not include the construction of new freeways.

Table 2-1 summarizes the current status of the OCTA M2 freeway improvement projects. As the planning and implementation of the OCTA M2 freeway improvement projects progresses, the grouping and organization of segments may be adjusted. The list of segments may be slightly different than the set of projects and segments included in the M2 NCCP/HCP.

Table 2-1. OCTA M2 Freeway Improvement Projects Status

Project	Location	2022 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Ongoing:					
Project B	I-5, I-405 to Yale Ave <i>Segment 1</i>	Design/Ad/Award	March 2026	September 2029	<ul style="list-style-type: none"> • NCCP/HCP Consistency Determination Checklist (Checklist) and Certificate of Inclusion (COI) complete • 1602 permit anticipated
	I-5, Yale Ave to SR-55 <i>Segment 2</i>	Design/Ad/Award	April 2026	September 2029	
Projects C and D^a	I-5, Oso Pkwy to Alicia/La Paz Rd Interchange <i>Segment 2</i>	Construction	April 2019	September 2024	<ul style="list-style-type: none"> • NCCP/HCP Checklist and COI complete • 1602 permits per segment
	I-5, Alicia Pkwy to El Toro Rd <i>Segment 3</i>	Construction	October 2020	October 2024	
	I-5, SR-73 to Oso Pkwy/Avery Pkwy Interchange <i>Segment 1</i>	Construction	January 2020	September 2024	
Project D	I-5, I-5/El Toro Interchange	ENV	TBD	No schedule past ENV	<ul style="list-style-type: none"> • NCCP/HCP checklist complete and COI pending • No 1602 permit anticipated
Project F	SR-55, I-405 to I-5 <i>Segment 1</i>	Construction	June 2022	February 2027	<ul style="list-style-type: none"> • No Covered Species • NCCP/HCP checklist and COI complete • 1602 permit obtained (all concrete impacts)
	SR-55, I-5 to SR-91 <i>Segment 2</i>	Design/Ad/Award	August 2026	September 2029	<ul style="list-style-type: none"> • NES(MI) complete • No Covered Species • NCCP/HCP checklist and COI pending

Project	Location	2022 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Project G	SR-57 (NB), Oranewood Ave to Katella Ave (Segment 1a)	Design/Ad/Award	July 2025	February 2028	• NCCP/HCP checklist and COI complete
	SR-57 (NB), Lambert to Tonner Canyon	ENV (Expected to begin – 2025)	No schedule past ENV	No schedule past ENV	• Pending
Project I	SR-91, SR-55 to Lakeview Ave <i>Segment 1</i>	Design/Ad/Award	April 2024	November 2027	• NCCP/HCP checklist and COI complete • Permit to be issued per segment
	SR-91, La Palma Ave to SR-55 <i>Segment 2</i>		June 2025	February 2029	
	SR-91, Acacia St to La Palma Ave <i>Segment 3</i>		November 2025	April 2029	
Project J	SR-91, SR-241 to Riverside County Line ^b	ENV (9/2007–10/2012)	TBD (contingent upon future widening in Riverside County)	No schedule past ENV	• Full build out not yet scheduled
Project K	I-405, SR-73 to I-605	Construction	On-going	February 2024	• All permits obtained
Project L	I-405, I-5 to SR-55	ENV (12/2014–late 2018)	No schedule past ENV	No schedule past ENV	• NCCP/HCP checklist and COI complete • 1602 permit anticipated
Project M	I-605, I-605/Katella Interchange	Design/Ad/Award	June 2024	February 2026	• NCCP/HCP checklist and COI complete • 1602 permit anticipated
Completed:					
Project A	I-5, SR-55 to SR-57	Completed		January 2021	

Project	Location	2022 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Project C	I-5, Vista Hermosa to PCH	Completed		July 2017	
Project D	I-5, I-5/Ortega Interchange	Completed		January 2016	
Project E	SR-22 Access Improvements	Completed		December 2014	
Project G	SR-57 (NB), Katella to Lincoln	Completed		April 2015	
	SR-57 (NB), Orangethorpe to Yorba Linda	Completed		November 2014	
	SR-57 (NB), Yorba Linda to Lambert	Completed		May 2014	
Project H	SR-91 (WB), I-5 to SR-57	Completed		June 2016	
Project I	SR-91 (WB), Tustin Interchange to SR-55	Completed		July 2016	
Project J	SR-91, SR-55 to SR-241	Completed		March 2013	
	SR-91 (EB), SR-241 to SR-71	Completed		January 2011	

^a Project C and portions of Project D were combined. This included Project C: (I-5, south of El Toro “Y” Area to Avenida Pico) and Project D: (I-5 between SR-73 and El Toro Road through Lake Forest, Laguna Hills, Laguna Niguel, Laguna Woods, Mission Viejo, and San Juan Capistrano)

^b This project extends to the I-15. The OCTA NCCP/HCP only covers those anticipated impacts within Orange County (to the County line).

I- = Interstate; SR- = State Route; ENV = Environmental; TBD = to be determined; PCH = Pacific Coast Highway; NB = northbound; WB = westbound; EB = eastbound

2.1.2 Tracking of Habitat Impacts from Covered Freeway Improvement Projects

OCTA has implemented a process to track habitat impacts resulting from covered freeway improvement projects that includes the following steps:

1. Biological field surveys are completed as part of project-specific environmental compliance (California Environmental Quality Act/National Environmental Policy Act). This involves vegetation mapping based on field surveys typically using detailed vegetation categories. The detailed vegetation categories are cross-walked to the broad habitat types addressed in the Plan.
2. Grasslands anticipated to be impacted by the freeway improvement projects in most cases are maintained and composed of nonnative grass species. Due to the largely compromised value of this habitat type, an additional assessment is made to determine if impacts on nonnative grassland should be counted against the Plan's allotted impact caps. If it can be shown that the nonnative grassland areas meet all of the following criteria, impacts on nonnative grassland will **not** be counted:
 - a) The nonnative grassland is within the median or interchanges (between on and off-ramps and the freeway or contained within clover leaves) OR within the narrow (i.e., less than 100-foot wide) strips between the freeway and adjacent development or within ornamental landscaping;
 - b) The nonnative grassland is regularly maintained; and
 - c) The nonnative grassland does not provide live-in habitat or is not located within a significant dispersal corridor for Covered Species.

This determination is made on a project-by-project basis using project-specific biological surveys that will be further assessed in collaboration with OCTA and the Wildlife Agencies. The final impact acreages will be included in the NCCP/HCP Annual Report and tracking spreadsheet.

3. For each individual freeway improvement project, OCTA completes a quantification of impacts (both permanent and temporary) on each habitat type by overlaying the impact footprint with vegetation mapping. Temporary impacts, which will require revegetation to previous conditions per restoration plans reviewed and approved by the Wildlife Agencies, are still included in this impact tracking because the impacts estimate in the Plan included both permanent and temporary impacts.

OCTA keeps an account of the Plan-to-date impacts on habitat types for all freeway improvement projects included under the Plan to ensure impacts stay within the caps listed in Table 5-7 of the Plan. Table 2-2 provides a program-to-date overview of habitat types impacted by OCTA M2 freeway improvement projects in comparison to caps established within the Plan. A detailed table of habitat impacts for each individual covered freeway project is included in Appendix A.

Table 2-2. OCTA M2 Freeway Improvement Project Program-to-Date Habitat Impact Tracking Sheet^a

Plan Vegetation Types	Plan Caps	Impacts (Program to Date)^b	Balance
Chaparral	5.0	-	5.0
Coniferous Forest	-	-	-
Grassland	108.1	6.460	101.7
Riparian	5.0	0.957	4.0
Scrub	10.0	1.705	8.3
Water	0.4	0.12	0.28
Wet Meadow/Marsh	2.5	-	2.5
Woodland	10.0	-	10.0
TOTALS	141.0	9.2	131.8

^a Values are in acres.

^b See Appendix A for summary of impacts from each individual covered freeway project.

2.1.3 Consistency Determinations for Covered Freeway Improvement Projects

OCTA has developed a consistency determination checklist to evaluate how and when avoidance and minimization measures and restoration of temporary impacts are implemented on covered freeway improvement projects. These consistency determinations are forwarded to the Wildlife Agencies for review and approval. The avoidance and minimization measures are then incorporated into the project-level ECR as well as the OCTA/California Department of Transportation (Caltrans) COI. The ECR is a document utilized to track a project's environmental commitments from design to post-construction. The COI enables OCTA to extend the incidental take authorization of Covered Species to Caltrans. Table 2-3 includes a summary of the consistency determinations that have been drafted, modified, or completed within the timeframe of this Annual Report.

Table 2-3. OCTA M2 Freeway Improvement Project Consistency Determinations

Project ID	Date of Biologist Review	Incorporated into ECR?	COI Signed?	Wildlife Agency Concurrence?	Restoration of Temporary Impacts Anticipated?
Project C EA 0K0200	5/30/18	Yes	Yes	Yes	Yes
Project B EA 0K6700	7/9/18	Yes	Yes	Yes	No
Project L EA 0K710K	1/29/18	Yes	Yes	Yes	Yes
Project M EA 0K8700	6/7/18	Yes	Yes	Yes	No
Project D EA 0M9800	12/10/19	Pending	Pending	Pending	No
Project F EA 0J3400	11/11/2019	N/A	N/A	Yes	No
Project G EA 0M9700	3/12/19	Yes	Yes	Yes	No
Project I EA 0K9800	3/28/19	Yes	Yes	Yes	Yes

2.2 Tracking for Covered Plant Species Policy

The OCTA M2 NCCP/HCP includes three plant species IML, MSD, ST on the Covered Species list. These covered plant species are narrow endemics that have highly restrictive habitat requirements, localized soil requirements, or other ecological factors that limit their distribution. To ensure any actual impacts on covered plant species are properly addressed, the M2 NCCP/HCP established the Covered Plant Species Policy (see Section 5.6.2.2 of the M2 NCCP/HCP). This policy requires the evaluation of impacts on the covered plant species be based on project-specific field surveys and sets forth a process to track mitigation of impacts using credits determined through field surveys of Preserves and actions taken to enhance, restore, and create populations of covered plant species as part of restoration projects funded by OCTA. OCTA has been implementing a process to maintain a ledger-type accounting system to track credits and debits.

2.2.1 Covered Plant Species Credits/Debits Ledger

The NCCP/HCP requires that focused plant surveys for the Covered Species, IML and MSD are conducted every 3 to 5 years. These surveys were completed in spring 2022 by GLA. Rainfall was below the calculated average in 2022. Regardless of the multiyear shortage of rainfall, IML and MSD populations appeared to be generally stable and/or growing, with two exceptions (Pacific Horizon and Wren's View Preserves) as depicted in the table below. Focused plant surveys were conducted in accordance with the protocol specified in the RMP and in accordance to California Native Plant Society and CDFW survey guidelines. Data was collected during the appropriate blooming season for each species following multiple phenology checks, and detailed field notes were taken to document the surrounding environment. The results of the plant surveys compared to the baseline surveys are

summarized in the table below. More detailed information (including mapping) is available in Appendix C and is discussed in Chapter 3 of this report.

Table 2-4. 2022 Focused Plant Survey Data

Preserve	Baseline Data (IML)	2022 Data (IML)	Baseline Data (MSD)	2022 Data (MSD)
Trabuco Rose	69	578	0	0
Pacific Horizon	144	8	60	57
Bobcat Ridge	79	92	0	0
Silverado Chaparral	22	177	0	0
Wren's View	283	36	0	0
Live Oak Creek	2	42	0	0
TOTAL	597	933	60	57

OCTA has developed a process to track credits for covered plant species protection (on Preserves) and restoration/enhancement (restoration projects). Each covered activity must include an assessment of the potential for covered plant species to occur and complete focused surveys as appropriate. Table 2-4 provides a summary of the baseline survey compared to the 2022 focused Covered Plant surveys at the Preserves. Table 2-5 is the ledger of covered plant species credits (preserves and restoration projects) and debits. To date, no impacts to covered plant species have occurred from any M2 freeway projects.

Table 2-5. Covered Plant Species Credits and Debits Ledger ^a

Plant	Credits	Impacts^b	Debits^c	Balance	Project Element
Intermediate Mariposa Lily	578			+578	Trabuco Rose Preserve
	8			+586	Pacific Horizon Preserve
	92			+678	Bobcat Ridge Preserve
	177			+855	Silverado Chaparral Preserve
	36			+891	Wren’s View Preserve
	42			+933	Live Oak Creek Preserve
		0	0	+933	
Current Balance:				+933	
Many-stemmed Dudleya	57			+57	Pacific Horizon Preserve
		0	0	+57	
Current Balance:				+57	
Southern Tarplant	8,377			+8,377	Harriett Wieder Restoration Project
	51,000			+59,377	Fairview Park Restoration Project
		0	0	+59377	
Current Balance:				59,377	

^a Credits and debits measured in number of individual plants (Preserve numbers utilizing the latest 2022 Effectiveness Monitoring numbers).

^b Cumulative impacts cap is 500.

^c The amount of debits required is calculated using a 3:1 mitigation ratio.

2.2.1.1 Documents Referenced for Covered Plant Species Credits and Debits

Bolsa Chica Conservancy. 2018. *Harriett Wieder Regional Park Habitat Restoration Project: Southern Tarplant Survey 2018*.

Bolsa Chica Conservancy. 2018. *Harriett Wieder Regional Park Habitat Restoration Project: Southern Tarplant Survey 2019*.

Endemic Environmental Services. 2020. Fairview Park Riparian and Wetlands Mitigation Project. Submitted to the City of Costa Mesa. December.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. April.

2.3 Tracking Impacts on Habitat Types Resulting from Covered Activities within Preserves

The M2 NCCP/HCP establishes that no more than 13 acres (approximately 1%) of the natural habitat within the acquired Preserves will be impacted by Preserve management activities that will result in new permanent impacts on habitat. The 13 acres of anticipated impacts within the Preserves may be concentrated within a few of the Preserves or be spread evenly throughout each of the Preserves. Potential impacts include activities such as construction of new trails, access roads, recreation facilities, and maintenance structures. OCTA has been tracking any activities resulting in more than 0.1 acre of new direct effects on natural habitat within the Preserves and will record this information in a ledger to be included in this Annual Report.

OCTA will ensure that the overall cap across all Preserves is not exceeded. If degraded habitat and/or existing developed areas (e.g., roads and trails) within the Preserves are restored and converted to native habitat, OCTA will also be able to use credits from these activities, subject to review and approval by the Wildlife Agencies, to offset impacts within the Preserves. OCTA will track impacts and credits within the Preserves for each of the individual habitat types but will be held to a cap only for the overall amount of natural habitat impacted.

Habitat impacts due to SCE electrical pole maintenance at the Pacific Horizon Preserve were previously documented. This work was not coordinated with OCTA and was not included as a covered activity in the Plan. OCTA has been coordinating with SCE regarding these impacts. SCE may be removing some of these poles which would negate the need for access and maintenance in some locations. OCTA is waiting for additional information and a mitigation proposal from SCE to verify compensation needs. Once obtained, this mitigation proposal will be provided to OCTA and the Wildlife Agencies for their consideration. In addition, coordination is ongoing to develop a potential access agreement and easement that would apply to all OCTA Preserves in order to avoid these types of unanticipated impacts from occurring again. A minor amendment to document this change in the Plan will be needed.

No other impacts have been recorded on the Preserves in relation to Covered Activities. It is anticipated that as some of the trails are restored and invasive species are removed from disturbed areas that additional credits will be added (once approved by the Wildlife Agencies) to the 13 acres of allowable impacts.²

2.4 Maintaining Rough Proportionality

Under the NCCPA, conservation measures in an approved NCCP must be roughly proportional in time and extent to the impact on habitat or Covered Species authorized under the plan. Similarly, the USFWS HCP Policy Handbook provides that mitigation for project impacts should generally occur prior to or concurrent with the impacts.

²Page 4-9 of the NCCP/HCP states, "...acreage may be added to the 13-acre cap by OCTA if degraded habitat within the Preserves is restored and converted to native habitat and approved by the Wildlife Agencies."

Implementation of conservation measures roughly proportional in time and extent to impacts on natural communities and Covered Species will be measured as follows: (1) for habitat acquired, the date of recordation of a CE or other approved site protection mechanism and (2) for restoration projects, the date on which the restoration projects have met their success criteria. For the purposes of maintaining rough proportionality, OCTA will ensure that a minimum of a 2:1 mitigation ratio for direct impacts will be maintained for each vegetation community, except for grassland communities which will be maintained at a minimum of a 1:1 ratio. Thus, for each acre of chaparral, riparian vegetation, scrub, and woodland that is directly impacted, at least 2 acres will have been conserved or restored before the impacts take place. For each acre of grassland that is directly impacted, at least 1 acre will have been conserved or restored before the impacts take place. If OCTA has not conserved or restored enough grassland habitat acreage to offset grassland impacts, it can offset grassland impacts with “out-of-kind” habitat at a 2:1 ratio. Compliance with the requirement to maintain rough proportionality will be monitored by OCTA and will be reported on an annual basis as part of the Annual Report.

Because OCTA was able to accelerate the implementation of conservation actions (Preserve acquisitions and restoration projects) through the early action plan, it is expected that most or all the conservation actions under the Plan will be completed (i.e., CEs recorded for OCTA Preserves and restoration projects signed off as meeting their success criteria) within 10 years of permit issuance. This is prior to when a substantial percentage of the impacts from Covered Activities occur. To ensure that rough proportionality will be maintained during the first few years of the Plan, OCTA committed to either recording a CE for at least one Preserve or demonstrate that one or more restoration projects have received sign-off from the Wildlife Agencies by meeting their success criteria within 2 years of permit issuance. To date, five restoration projects (Big Bend, City Parcel, Bee Flat, UCI Ecological Reserve and the USFS dam removal project) have met their success criteria. The dam removal project activities were not measured in acreage, but satisfied OCTA’s remaining commitments for the arroyo chub. Although not included in the mitigation acreage accounting, this project was an important part of the OCTA conservation contributions.



USFS Dam Restoration Project – Dam 8 Before and after removal (photo courtesy of USFS)

Table 2-5 provides a ledger of the balance of credits achieved and habitat impacts as of December 31, 2022. Table 2-6 lists the conservation credits that have been achieved to date.

Table 2-5. Rough Proportionality of Impacts and Conservation Credits Ledger^a

Habitat Type	Habitat Impacts Permitted to Date ^b	Rough Proportionality Requirements ^c	Habitat Credits Achieved to Date ^d	In-Kind Habitat Balance ^e	Out-of-Kind Credits Used ^f	Current Balance
Chaparral	--	--	4.0	--	--	+ 4.0
Coniferous Forest	--	--	--	--	--	--
Grassland	6.5	6.5	35.4	+ 28.9	+ 6.5	+ 35.4
Riparian	1.0	2.0	13.1	+ 11.1	--	+ 11.1
Scrub	1.7	3.4	78.5	+ 75.1	- 13.0	+ 62.1
Water	0.12	0.24	0.4	+ 0.16	--	+ 0.16
Wet Meadow/Marsh	--	--	--	--	--	--
Woodland	--	--	17.8	--	--	+ 17.8

^a Values are in acres.

^b See Table 2-2.

^c Based on a 2:1 ratio for all habitats except grasslands, which is 1:1.

^d See Table 2-6.

^e Habitat credits minus rough proportionality requirements.

^f Negative balance of grassland habitat can be offset with a 2:1 use of “out-of-kind” credits from another habitat type.

Table 2-6. Conservation Credits Achieved to Date^a

Conservation Action	Total	Chaparral	Coniferous Forest	Grassland	Riparian	Scrub	Water	Wet Meadows/ Marsh	Woodland
Total Conservation Credits to Date:	139.2	4.0	--	35.4	13.1	78.5	0.4	--	17.8
Big Bend Restoration Project	3.7	--	--	--	0.5	3.2	--	--	--
City Parcel Restoration Project ^b	43.0	--	--	--	12.6	40.0	0.4	--	--
Bee Flat Restoration Project	84.0	4.0	--	35.4	--	26.8	--	--	17.8
UCI Ecological Reserve	8.5	--	--	--	--	8.5	--	--	--
USFS Dam Removal Project (removal of 14 Dams) – Arroyo Chub Coverage	--	--	--	--	--	--	--	--	--

- a Values are in acres.
- b A calculation of the amount of “open water” at the City Parcel Restoration Project was determined by the project sponsor (per email from Jordan Wills dated January 14, 2019), which was subtracted from the acreage of restored riparian habitat.

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3.1 Introduction

The acquisition of Preserve lands was a primary component of the M2 NCCP/HCP conservation strategy. The selection of the Preserves was designed to meet the biological goals and objectives of the Plan while also contributing to the collective goals of the existing regional network of protected areas within the Plan Area. OCTA has acquired seven properties as part of the M2 NCCP/HCP. The locations of the M2 Preserves are shown in Figure 1 and the acreage totals are listed in Table 3-1.

Table 3-1. OCTA Preserves

OCTA Preserves (year acquired)	Location	Total Acres ^a	Acres of Natural Habitat
Bobcat Ridge (2011)	Trabuco Canyon	48.0	47.9
Eagle Ridge (2011)	City of Brea	301.1	296.1
Live Oak Creek ^b (2011)	Trabuco Canyon	82.8	51.3
Pacific Horizon (2015)	City of Laguna Beach	151.9	148.3
Silverado Chaparral (2014)	Silverado Canyon	203.5	200.0
Trabuco Rose (2011)	Trabuco Canyon	395.7	380.4
Wren’s View (2011)	Trabuco Canyon	116.1	112.4
Totals		1,299.1	1,236.4

^a These acreages are based on best available information used during preparation of RMPs and may be slightly different from acreages reported in the M2 NCCP/HCP.

^b Live Oak Creek Preserve was purchased, in part, with funding provided by the National Fish and Wildlife Foundation. OCTA receives a percentage of the available credits based on the percentage of the total cost of acquiring and managing the Preserve contributed by OCTA (75.36%).

The section of this report provides a high-level summary of some of the notable biological monitoring and maintenance activities that occurred on the Preserves. Further details on the monitoring and maintenance can be found within Appendices C and D of this report. Chapter 3.2 of this report includes a summary of the effectiveness monitoring that occurred in 2022. The effectiveness monitoring included focused plant surveys (all Preserves), herpetology focused visual encounter surveys (VES) for both coast horned lizard (*Phrynosoma blainvillii*) and orangethroat whiptail (*Aspidoscelis hyperythra*) at Silverado Chaparral and Trabuco Rose Preserves, and a population and habitat assessment from the United States Geological Survey (USGS) for the southwestern pond turtle (*Actinemys pallida*; pond turtle) at the Eagle Ridge Preserve. In addition, on-going mammal monitoring through wildlife cameras occurred on the Bobcat Ridge, Pacific Horizon, Silverado Chaparral, and Trabuco Rose Preserves.

The following table provides a status of actions undertaken and coordinated across multiple OCTA Preserves, as directed by the OCTA RMPs. The table focuses on invasive species management, effectiveness monitoring, and adaptive management. Additional details pertaining to these actions are included in the related Preserve sections below.

Table 3-2. OCTA Preserve Wide Actions

Preserve	Invasive Species (Plants)³	Invasive Species (Pests)⁴	Effectiveness Monitoring⁵	Adaptive Management⁶
Bobcat Ridge	The ISMP identified low threats to Covered Species based on the low amount of invasive weeds.	No pests have been or were detected.	An increase of 13 IML were documented and no detections of MSD. Focused herpetology surveys will be conducted in 2023. Wildlife camera monitoring continued.	Focused monitoring and maintenance has been applied to the section of the Preserve impacted by the neighbor. Pursuant to the RMP, consider vegetation management around cactus patches to protect and/or improve cactus wren populations.
Eagle Ridge	The ISMP identified low threats to Covered Species based on the limited presence of Covered Species and low number of invasive weeds.	No pests were detected	To date, no Covered Plant species have been documented. USGS conducted SWPT surveys (2021) and that information was provided to OCTA (2022), confirming SWPT on the Preserve. Herpetology VESs will be conducted in 2023.	Cattle were successfully excluded from the Preserve and not present in 2022. If cattle remain excluded, creek restoration activities should be considered with perhaps grant funding. Creek recovery is being monitored with photo stations.
Live Oak Creek	Invasive species treatment to date has been limited to spot treating new detections. Invasive species are proposed to be treated in 2023 in accordance with the ISMP.	Gold spotted oak borer beetle (GSOB) was detected for the first time. One tree was identified for removal and multiple trees recommended for pesticide treatment in 2023.	An increase of 40 IML were documented and no detections of MSD. Focused herpetology surveys and wildlife camera monitoring will be conducted in 2023.	Consider vegetation management around cactus patches to protect and/or improve cactus wren population as identified within the RMP.
Pacific Horizon	OCTA began invasive species treatments in 2020. This work will continue for the next few years as outlined in the ISMP and will include the Coastal Fire burn area.	No pests were detected	A decrease of 136 IML and a decrease of 3 MSD were noted. The IML is being reassessed in 2023 as a section previously documented was inadvertently missed. Focused herpetology surveys will be conducted in 2023. Wildlife camera monitoring will continue.	OCTA will continue to monitor the response to Covered Plant species to trail use and closures. Active restoration is currently underway to support the existing MSD population.

Preserve	Invasive Species (Plants) ³	Invasive Species (Pests) ⁴	Effectiveness Monitoring ⁵	Adaptive Management ⁶
Silverado Chaparral	Invasives are limited to the edges of the trails and fire roads. The roads are treated every year. Treatment of the trails should be considered for 2023/2024.	No pests were detected	An increase of 155 IML were documented and no detections of MSD. Focused herpetology surveys documented coast horned lizard and orangethroat whiptail. Wildlife camera monitoring began in 2022 and will continue in 2023.	OCTA has been successful in limiting unauthorized access on this Preserve, which minimizes risks to the Covered Species. Consider vegetation management around cactus patches to protect and/or improve cactus wren population as identified within the RMP.
Trabuco Rose	Implementation of the ISMP Priority 1 and 2 areas is ongoing. Additional follow-up retreatments of select locations were completed in 2022.	Three trees were identified for removal due to GSOB infestation and multiple other trees were identified for pesticide treatment which will occur in 2023.	An increase of 509 IML were documented and no detections of MSD. Focused herpetology surveys documented orangethroat whiptail. Wildlife camera monitoring continued and documented a variety of mammals (frequent mountain lion).	Multiple trails were decommissioned and have been successfully revegetating. In addition the ISMP for this Preserve continues to be implemented, benefitting covered species. Consider monitoring the olive tree expansion and also vegetation control around cactus patches.
Wren’s View	Invasives are limited to the previously grazed areas and the fire roads. Treatment of these areas should be considered for 2023/2024.	No pests were detected	A decrease of 247 IML and no detections of MSD were noted. The previous areas noted for IML will be resurveyed in 2023 and maintenance activities will be heavily monitored to ensure impacts do not occur to covered plants. Focused herpetology surveys will be conducted in 2023. Wildlife cameras will also be reinstalled in 2023-2024.	Consider vegetation management around cactus patches to protect and/or improve cactus wren population as identified within the RMP.

³ Invasive Species Management Plans (ISMPs) were approved by the Wildlife Agencies in 2019. OCTA is implementing the ISMP based on identified priorities. The ISMPs will be reassessed in 2024 and may include the assignment of new priorities based on current conditions.

⁴ OCTA will continue to monitor and treat trees that are being impacted by the Invasive Shot Hole Borer (ISHB) as well as the GSOB beetles. The Preserves with oak trees were surveyed by the UC Agriculture and Natural Resources Cooperative Extension in 2022. No ISHB was detected.

⁵ Effectiveness Monitoring Schedule in included in Appendix B. Focused plant surveys for Covered Species were conducted in 2022 and numbers were compared to the baseline survey results for each Preserve.

⁶ Key issues are identified within each RMP for a focused adaptive management approach to address uncertainties of Preserve management.

3.2 Preserve Status

3.2.1 Bobcat Ridge Preserve

3.2.1.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Effectiveness monitoring included continued wildlife camera monitoring which again documented gray fox (*Urocyon cinereoargenteus*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*) and bobcat (*Lynx rufus*) in 2022. Previous cactus wren (*Campylorhynchus brunneicapillus*) focused surveys confirmed this species on the Preserve. Ongoing stewardship monitoring will include general inspections for the cactus wren and the coastal California gnatcatcher (*Polioptila californica californica*, CAGN). Although focused Covered Reptile VES were not conducted in 2022, orangethroat whiptail was documented again during stewardship monitoring. Covered reptile VES's are anticipated to occur at this Preserve in 2023.

GLA conducted focused surveys for IML and MSD in June 2022. A total of 92 IML (an increase of 13 compared to the baseline surveys) were mapped and no MSD were detected.

Unauthorized impacts of coastal sage scrub (CSS) were previously documented (2017 and 2020) as a result from the adjacent neighbor clearing a path along the southern border of the Preserve to access an adjacent area of their land. This also impacted the CDFW Trabuco Reserve. The neighbor did not obtain a permit from the County for this clearing and was ordered to restore the disturbance. OCTA and CDFW had previously coordinated with the neighbor and County regarding this enforcement issue. The County had contacted the homeowner but no repairs were conducted. This area was resurveyed for IML in 2022 and no IML were detected. It is presumed that the previously mapped six individuals were impacted by the neighbor's activities. The area has been monitored, weeded and staked with signage to hopefully decrease the chance of the neighbor impacting the Preserve again. If this area continues to remain undisturbed and typical rainfall conditions return, the site is expected to reestablish. IML surveys will be repeated in this area in 2023 to verify absence.

No new unauthorized trails or access were documented. The trail documented in the RMP exists and is being utilized for management on this Preserve. Patrols and monitoring will continue to document any unauthorized access.

Maintenance

Weeds were noted in the above-mentioned encroachment area. RECON field crews controlled non-native herbaceous vegetation with line trimmers along the trail at the southern boundary of the Preserve. Invasive plant species on this Preserve remain to be limited. It is anticipated that the ISMP will be updated in 2024 with current invasive species mapping and any new occurrences. The



University of California Cooperative Extension (UCCE) conducted invasive pest surveys on this Preserve and none were noted. Maintenance also included the repair to fence lines and the installation of new signage.

3.2.1.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Complete focused VES as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Continue to closely monitor unauthorized activities along the southern boundary.
- Continue monitoring covered mammal species and wildlife movement utilizing the installed wildlife camera location post.
- Implement the approved ISMP based on priorities outlined in the plan and to continue to monitor for stink net, which has been previously detected and removed adjacent to the Preserve boundary.
- Continue to monitor for invasive pests as they have been documented in Trabuco Canyon.
- Finalize the Bobcat Ridge Preserve FMP.

3.2.1.3 Related Documents and References

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2023. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023.

3.2.2 Eagle Ridge Preserve

3.2.2.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

In 2021, GLA biologists and USGS biologists on separate occasions detected pond turtles inside and outside the Preserve. In 2022, GLA biologists detected two pond turtles onsite within Soquel Canyon Creek. The USGS report (Southwestern Pond Turtle Population and Habitat Assessment, Southern California, Draft Final 2021, Appendix E) was finalized in April 2022. USGS biologists detected one adult pond turtle within Soquel Canyon Creek (within the Preserve) and several pond turtles offsite. The report further ranked the pond turtle habitat quality of Soquel Canyon Creek as marginal (poor, marginal, and high were the categories). The assessment including low scores (score of 1) for water depth, aquatic refugia, basking sites, canopy cover, terrestrial refugia, invasive species and water present. High scores (score of 3) were included for aquatic substrate, terrestrial habitat buffer, human access and roads. Hatchling habitat and aquatic vegetation were ranked as a medium score (score of 2).



Pond turtle at Eagle Ridge in 2022. Photo courtesy of GLA.

Additional effectiveness monitoring in 2022, included covered species focused plant surveys. To date, no IML or MSD have been documented on this Preserve. Camera monitoring for covered mammal species and wildlife movement previously documented bobcat, skunk, mule deer, and coyote. Since the wildlife cameras were not providing new data, camera monitoring was discontinued. OCTA plans on re-installing cameras in 2023-2024 for Covered Mammal tracking or detection of unauthorized cattle/people. The local community also documented mountain lion use in 2022. There were no signs of public access or cattle in 2022. Focused VES for coast horned lizard and orangethroat whiptail will be conducted in 2023.

Riparian habitat monitoring within Soquel Canyon Creek has documented impacts due to cattle trespass for years. In 2022, monitoring has shown that the cattle are now absent from the Preserve and the trails and riparian corridor are beginning to recover. Monitoring will continue to focus on the riparian corridor and note any new threats to pond turtle. If cattle remain off the Preserve, a grant funded restoration project focused on pond turtle to improve the above USGS low scoring categories should be considered. It is anticipated that many of these components may improve naturally as the site recovers from the cattle impacts. Photo monitoring of the riparian corridor began in 2022 and will continue for the next few years.

No new unauthorized trails or access were documented. The trails and roads documented in the RMP exist and are being utilized for management on this Preserve. Patrols and monitoring will continue to document any unauthorized access.

Maintenance

RECON replaced signs on the two gates in the Preserve. The names posted on the gates, at each of the Preserves (with gates), are intended to help in future coordination with maintenance and monitoring

crews, and security and emergency personnel. No issues with erosion or sedimentation were noted on the Preserve. No issues with trash or dumping were documented.

3.2.2.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Completed focused VES as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Continue annual camera monitoring using the established photo points along Carbon Canyon Creek to detect any changes in habitat condition.
- Re-install the wildlife cameras for Covered Mammal tracking.
- Continue monitoring for signs of cattle.
- Finalize the Eagle Ridge Preserve FMP.
- Update the ISMP in 2024 and prioritize invasive plant species treatments.
- Continue to monitor for invasive pests.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.2.3 Related Documents and References

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2023. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023.

United States Geological Survey (USGS). 2022. *Southwestern Pond Turtle Population and Habitat Assessment, Southern California*, Draft Final 2021. Prepared for the United States Fish and Wildlife Service and the San Bernardino Valley Municipal Water District. Draft Unpublished Data. April.

3.2.3 Live Oak Creek Preserve

3.2.3.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Effectiveness monitoring in 2022 included focused surveys for IML and MSD. A total of 42 IML were mapped, but no MSD were detected. This was an increase of 40 IML compared to the baseline surveys. No new detections of other Covered Species occurred the Preserve. Previous monitoring has documented orangethroat whiptail, bobcat, and cactus wren. Ongoing monitoring of the Preserve will continue to include general inspections for the cactus wren and the CAGN. Camera monitoring for covered mammal species and wildlife movement occurred from 2018 through 2019. The cameras were removed on an interim basis due to the level of effort and costs associated with maintenance, and the lack of new data being collected. While the cameras were installed, deer, coyote, bobcat, and gray fox were detected. Cameras will be re-installed in 2023-2024 for Preserve monitoring. GLA will implement focused VES for coast horned lizard and orangethroat whiptail this Preserve in 2023.

The UCCE performed GSOB surveys in 2022 and identified two infested coast live oak trees at Live Oak Creek, one of which was recommended for removal due to being a GSOB amplifier tree. This was the first time GSOB had been identified on this Preserve.

No new unauthorized trails or access were documented. The trails and roads documented in the RMP exist and are being utilized for management on this Preserve. Patrols and monitoring will continue to document any unauthorized access.

Maintenance

Implementation of the ISMP is set to begin in 2023. The focus will be on Priority 1 polygons to reduce the threat to IML. This includes removal of annual grasses and mustard that pose a higher threat to IML and treatment of disturbed lands where IML occurs along the road. The ISMP will also be reviewed for necessary updates in 2024.



Photo of the new gate installed. Photo courtesy of RECON.

Maintenance tasks performed by RECON included the annual vegetation thinning on the fire road and within the two fuel modification zones (identified within the RMP). Fallen oak tree branches that were blocking the entrance of the Preserve were pulled to the sides of the interior access roads avoiding the creek. Spanish broom was detected and treated. A new entry gate and sign were installed and the recontouring/regrading of the fire road occurred at several locations. RECON also removed barbed wire near the entrance of the Preserve and in areas it was no longer serving a purpose. Barbless wire/posts were installed to connect to the new gate and to delineate the boundary of the Preserve along Live Oak Canyon Road.

3.2.3.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- As recommended by UCCE, remove the individual GSOB amplifier tree and treat all recommended coast live oaks. Prune dead trees close to roads to reduce fire and road blockage risk. Continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations.
- Re-install the wildlife cameras for Covered Mammal tracking.
- Complete focused VES as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Implement the approved ISMP based on priorities outlined in the plan and continue to monitor for new invasive plant species for immediate removal within the Preserve.
- Continue to monitor areas of documented IML and suitable habitat along access roads and trails where maintenance routinely occurs, to ensure that any maintenance activities are not adversely affecting the IML populations at this Preserve.
- Finalize the Live Oak Creek Preserve FMP.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.3.3 Related Documents and References

BonTerra Consulting. 2013. *Draft Biological Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. December.

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2023. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023.

3.2.4 Pacific Horizon Preserve

3.2.4.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

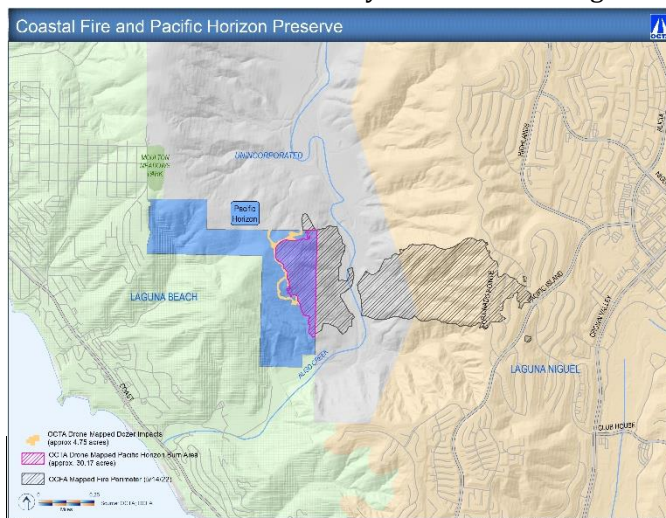
Covered Species previously observed on the Pacific Horizon Preserve include CAGN, MSD, and IML. No new detections of Covered Wildlife Species occurred on Pacific Horizon Preserve. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include coast horned lizard, orangethroat whiptail and bobcat. Monitoring of the Preserve will continue to include general inspections for the cactus wren and the CAGN. Two wildlife cameras were installed in 2022, but they are still being adjusted to best detect wildlife and have not yet captured Covered Species. Focused VES for coast horned lizard and orangethroat whiptail are scheduled to occur in 2023.

GLA conducted focused surveys for the OCTA Covered Species (IML and MSD) in spring of 2022. These surveys resulted in the documentation of 8 IML and 57 MSD. It should be noted that 144 individuals of IML were observed during baseline surveys in 2015; however, an area that previously contained a population of 114 IML was inadvertently not surveyed in 2022, which is anticipated to be the reason for the lower population count. This area will be surveyed in 2023 to rectify the data. Additionally, after reviewing the biological baseline report prepared by Bonterra, it is likely that the methodologies used during that survey resulted in an increased amount of IML being mapped. As it is noted in the Bonterra report, IML was mapped vegetatively and in fruit, neither of which is a reliable way of identifying this species.

OCTA has been working with GLA and the Wildlife Agencies in order to develop a restoration plan focused on MSD at this Preserve. The intention will be to salvage a small amount of seeds from the existing population and work with a native plant nursery (specializing in dudleya) to grow MSD at the nursery. Once the plants are large enough, they would be planted at the Preserve. The plan is in development and it is anticipated that seeds will be collected when the plants flower in 2023.

Coastal Fire

The Coastal Fire in the cities of Laguna Beach and Laguna Niguel (in Aliso Canyon) burned approximately 200 acres between May 11-17 2022. The fire burned twenty homes and damaged 11. The fire and associated suppression activities impacted approximately 35 acres of the 151-acre OCTA Pacific Horizon Preserve. The burn area is depicted in Exhibit 5B of the GLA Biological Monitoring Report (Appendix C). Habitats impacted include chaparral scrub, southern mixed chaparral, mixed sage. As part of the fire response, containment lines (bulldozer and hand crew) were placed across the Preserve. The OCFA repaired the containment lines which consisted of placing unburned cut vegetation and



debris over the lines as well as digging out water bars in the soil which help divert rainwater into the adjacent intact vegetation.

The impacted area was surveyed (utilizing a drone) for acreage verification by OCTA consultants. In compliance with the NCCP/HCP, an archaeological survey was also conducted over the burn area and no new historic sites were documented. The cause of the fire is still under investigation.

The burn area and fire break are being inspected nearly monthly to document the recovery of the burn area and report observations of unauthorized use. Monitoring includes assessing vegetative regrowth (native and non-native), unauthorized access, fencing and BMP integrity, and photographing the area from designated points. Unauthorized trespass and vandalism has been documented. Rain events created minimal erosion which was limited to rill and minor sheet erosion. Native vegetation regrowth is occurring. Management actions that have occurred include: (1) installation of erosion control; (2) transport of cut branches to aid in decommissioning of the trail; and (3) installation of barbed wire fencing and signage in three locations along the trail leading to the burned area. The newly placed barbed wire and signage that leads down to the burned area has been repaired multiple times. In addition, OCTA's private security company has been routinely patrolling the burn area and reinforcing unauthorized uses throughout the Preserve. GLA's Burn Area Monitoring Memo is included in Appendix C.

SCE

As previously reported, SCE impacted approximately 0.45 acre on the Preserve by cutting new access trails and clearing around utility poles. SCE's consultant, conducted maintenance within the impacted areas. Target invasive species and other non-invasive, non-native weeds were removed. OCTA staff is working with SCE and the Wildlife Agencies to resolve these unauthorized impacts and define the future access and easement for the related SCE infrastructure; however, the Coastal Fire has delayed progress with SCE. Once the placement of the poles and access routes are defined, a minor amendment will be necessary for the Plan to recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue and for which SCE provided restoration will be implemented to offset habitat impacts to maintain long term net habitat value within the Preserve.

Maintenance

Restoration efforts in the northern portion of the Preserve continue and the decommissioned trail has had no documented signs of impacts due to recreation. Invasive plant species are being treated in accordance with the ISMP and have included the retreatment of pampas grass (*Cortaderia selloana*) and artichoke thistle (*Cynara cardunculus*) in 2022. In addition, non-native grasses and other non-native species within the artichoke thistle control area was mowed to promote native grass growth. Multiple fence lines were repaired. A list of the maintenance activities that took place is included in Appendix D. Recommended maintenance actions in this area for 2023 include routine maintenance of the fence line, follow-up targeted spray of any invasive species regrowth or new occurrences upon detection. The Disturbed Lands Restoration Plan Second Annual Monitoring Report is also included in Attachment C (Appendix C).

3.2.4.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Continued implementation of the DLRP and monitoring to document unauthorized activities that could affect the MSD population. To meet NCCP/HCP Species Goals and Objectives, a restoration plan for MSD could be implemented at Pacific Horizon and coordination is on-going with Wildlife Agency staff. Seed collection is anticipated in 2023.
- Continue to monitor the burn area for invasive species and treat, as recommended by the Restoration Ecologist.
- Continue to implement the ISMP and DLRP based on priorities outlined in these plans. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Continue to check for new invasive species during routine biological monitoring.
- Continue to coordinate with SCE for Preserve access and easements.
- Complete focused VES as part effectiveness monitoring for reptiles, with the focus on orangethroat whiptail and coast horned lizard.
- Survey area that previously contained a population of IML but was inadvertently not surveyed in 2022.
- Continue to monitor wildlife using the trail cameras.
- Continue monitoring of unauthorized trail use, particularly in the northern portion of the Preserve and near known populations of MSD.
- Finalize the Pacific Horizon Preserve FMP.

3.2.4.3 Related Documents and References

Bonterra Psomas. 2015. *Baseline Biological Surveys Technical Report for the Aliso Canyon (Pacific Horizon) Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation in Orange County, California*. October.

Glenn Lukos Associates (GLA). 2022. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May.

RECON Environmental Services (RECON). 2022. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February.

3.2.5 Silverado Chaparral Preserve

3.2.5.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Effectiveness monitoring included focused surveys for covered plants and reptiles in 2022. Previous surveys have detected orangethroat whiptail, coast horned lizard, bobcat and IML on the Preserve. Mountain lion (*Puma concolor*) tracks were also previously noted. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN and MSD. GLA implemented a focused pilot survey for coast horned lizard and orangethroat whiptail at Trabuco Rose and Silverado Chaparral Preserves in 2022. The results of those surveys are attached within Appendix C. These surveys documented coast horned lizard (via multiple scat locations) as well as native ant colonies and numerous non-native ant colonies. Although orangethroat whiptail was not detected at Silverado Chaparral in 2022 during the focused surveys, it has been documented previously during past monitoring visits. Based on the 2022 survey results, in the near future it may be prudent to consider collaborating with our adjacent land managers [Orange County Parks (OC Parks) and Irvine Ranch Conservancy (IRC)] and/or an expert in invasive ant management to discuss the treatment of invasive ant colonies at Silverado Chaparral.



Overview of Silverado Chaparral Preserve. Photo courtesy of GLA.

GLA conducted focused surveys for IML and MSD. A total of 177 IML were mapped, compared to 22 that were documented during the baseline surveys. No MSD were detected. Catalina Mariposa Lily (*Calochortus catalinae*) was also documented during the surveys. In addition, GLA reviewed the areas in which SCE cleared vegetation and cut through fencing in 2021. None of the impacted areas previously or currently contain IML. As such, no impacts to IML occurred as a result of the SCE work at Silverado Chaparral.

Three wildlife cameras are currently installed on the Preserve and all cameras detected mountain lion. Bobcat was also detected on the cameras. Public access is not currently authorized at the Silverado Chaparral Preserve. Previous monitoring visits documented various issues related to trespassing, including cutting of vegetation and fence lines. Thanks to the efforts in 2022 of OCTA's private security (HLSS), a local frequent trespasser was caught and prosecuted. It seems this sent a valuable message throughout the community, as trespassing (including mountain biking) is no longer occurring. OCTA will consider implementing a managed public access approach for the Silverado Chaparral Preserve in coordination with the adjoining OC Parks lands in the future.

Maintenance

OCTA is prioritizing ISMP implementation based on threats to Covered Species. Implementation of invasive species control has not yet been scheduled as the occurrence of invasive species on this Preserve is not as high of a threat to Covered Species or as prevalent as the occurrence of invasive species at some of our other Preserves. This area will continue to be inspected during future monitoring visits.

Maintenance tasks performed at the Silverado Chaparral Preserve included the installation of a new entry gate and signage on the fire road located at the northeastern boundary of the Preserve. Fencing was also installed to connect to the gate. This also may have contributed to the reduction on vandalism and unauthorized recreation access on the Preserve. RECON's subcontractor also recontoured/regraded the fire road to address erosion. All erosion rills were repaired and water bars were installed to prevent future erosion. Repairs were also made to damaged fencing along the Preserve's eastern boundary. No issues with trash or dumping were documented.



New gate installed to help minimize illegal access at Silverado Chaparral Preserve. Photo courtesy of RECON.

3.2.5.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Continue monitoring cameras for tracking wildlife use and to capture images of any unauthorized access throughout the Preserve.
- Collaborate and discuss the concept of invasive ant treatment.
- Continue to coordinate with SCE for Preserve access and easements.
- Finalize the Silverado Chaparral Preserve FMP.

3.2.5.3 Related Documents and References

BonTerra Psomas. 2015. *Baseline Biological Surveys Technical Report for the MacPherson Property, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. September.

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2022. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023.

3.2.6 Trabuco Rose Preserve

3.2.6.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Biological baseline surveys for the Preserve were conducted in 2012. Focused surveys and stewardship monitoring conducted since that time have documented cactus wren, CAGN, orangethroat whiptail, bobcat, and IML. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include MSD and coast horned lizard. In addition, biological monitoring has documented nesting populations of cactus wren and extensive use by mountain lion.

Focused surveys for coast horned lizard and orangethroat whiptail were conducted in 2022. Orangethroat whiptail was detected at nine locations; however, coast horned lizard was not detected during the surveys. Although coast horned lizard was not detected during the focus surveys or during past monitoring efforts, active native harvester ant colonies and additional inactive native colonies were documented. The presence of harvester ants in conjunction with suitable habitat demonstrates that the Preserve has the potential to support coast horned lizard. However, non-native ant colonies were also documented within the Preserve. Focused surveys for IML and MSD resulted in the mapping of a total of 578 IML. The baseline surveys had documented 69 IML. No MSD were detected.

Wildlife cameras were present from 2013 through 2019 on the Preserve. Three cameras were re-installed in March 2021 (through 2022) to continue



Wildlife camera photo of a mountain lion. Photo courtesy of GLA.

tracking wildlife and trespass. Mountain lion, bobcat, mule deer, coyote, and gray fox have been routinely detected over the years, including in 2022. One of the cameras detected a mountain lion with two cubs. Infrequent and minimal trespass was detected in 2022, including people with dogs. Fortunately, no recent damage to the Preserve has been documented related to the trespass.

Implementation of the ISMP is ongoing. Initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species were treated in fall 2018, and follow-up treatments were conducted in 2019 through 2022, as necessary. In addition, vegetation that was growing on the fire roads and access roads was controlled with line trimmers and spot-sprayed with a glyphosate based herbicide. New locations of artichoke thistle and Italian thistle (*Silybum marianum*) were noted. Non-native grasses were also line trimmed within many of the Priority 1 treatment areas to encourage native grass growth and reduce the non-native grasses. Vegetation thinning was also performed within the RMP prescribed fuel modification zones on the Preserve.

The Trabuco Canyon area GSOB infestations and treatments are being overseen and implemented by OCFA who is partnering with multiple landowners as well as the UCCE. UCCE performed GSOB surveys in 2022 and identified 16 infested trees, four of which were recommended for removal due to being

GSOB amplifier trees. In addition, approximately 40 dead coast live oak trees were recommended for removal. However, consistent with the NCCP/HCP, these trees will remain in place with only the trees closest to the roads heavily pruned to reduce fire and public safety risk. These trees still provide value and act as snags for wildlife use. In addition, a stand of dead Eucalyptus trees were identified and recommended for removal due to fire risk.

Trail Restoration

Single track equestrian trails riddled the OCTA Trabuco Rose Preserve at the time of its purchase. In coordination with the Wildlife Agencies during the Conservation Plan development, it was determined to decommission most of these trails and only leave open the main access road and trails necessary to conduct biological monitoring and management of the Preserve. A total of 13 trails or trail segments were initially identified in the Preserve RMP for “passive restoration”, all of which were originally assessed in 2018, with annual monitoring occurring through 2022. To date, two trails have fully grown in. Most trails were passively restoring with natives, a combination of natives and non-native grasses, or had not changed since the previous monitoring (i.e., no weeds present warranting action) [Appendix C, Trabuco Rose Preserve Trail Monitoring Map and Photos]. Site preparation/weed abatement is recommended for one trail associated with a future oak tree restoration site, prior to restoration activities occurring. It is estimated that a total of 0.82 acre has been passively restored.

Maintenance

Maintenance activities on the Preserve included the repair of fencing, the replacement of a gate, and the repair of an additional gate. New Preserve signs were installed on each of the seven gates. RECON's subcontractor recontoured/regraded the interior fire roads following the rainy season to repair the erosion that had created ruts and rills. Erosion was fixed and water bars were installed to help prevent future erosion.

OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate) in 2021. The project consisted of installation of rock and filter fabric, which were the initial steps necessary to secure the area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. Phase 2 is currently being designed and will extend the rock and create a drop pool design before meeting up with Hickey Creek. The installation of native plants will also occur as part of Phase 2.



Invasive species removal at Trabuco Rose Preserve. Photo courtesy of RECON.

3.2.6.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Continue to monitor the Preserve and adjacent properties to document unauthorized access and activities/encroachments, including by OCTA's private security company, the Orange County Sheriff Department's mounted unit, and GLA's monitoring team.
- Continue to monitor the perimeter fencing to provide information on human usage.
- Continue to implement the ISMP recommendations. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Continue to check for new invasive species during routine biological monitoring.
- Continue to monitor passive trail restoration.
- Complete the design, obtain applicable permits, and continue the gully erosional repair project near the main gate.
- Continue to evaluate the status and threat and treat for ISHB and GSOB while partnering with UCCE.
- Finalize the Trabuco Rose Preserve FMP.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.6.3 Related Documents and References

BonTerra Consulting. 2013. *Draft Biological Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Irvine, CA. December.

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren's View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2023. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023.

3.2.7 Wren's View Preserve

3.2.7.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Biological baseline, stewardship and effectiveness monitoring has been occurring since 2012 (based on the Conservation Plan schedule). Covered Species observed include CAGN, orangethroat whiptail, mountain lion, bobcat, and IML. Numerous cactus wren territories were also detected during focused surveys in 2021. One CAGN pair nesting approximately 18 feet from the boundary but using the Preserve as territory was noted. Additional Covered Species with the potential to occur, but that have not been documented, on the Preserve include the coast horned lizard. Focused VES for coast horned lizard and orangethroat whiptail at the Wren's View Preserve is set to occur in 2023. The reptile surveys will generally follow the methodology implemented for the surveys performed in 2022 for the Trabuco Rose Preserve and the Silverado Chaparral Preserve.

Focused surveys for IML were conducted this past year. A total of 36 IML were mapped as opposed to the 283 individuals of IML that were observed during 2012 baseline surveys. GLA previously reported possible disturbance to no more than 10 IML resulting from maintenance between the main road going up to the gate. In addition, as previously mentioned, GLA believes it is likely that the methodologies used in the baseline mapping resulted in increased IML being mapped. Regardless, the population drop from over 200 IML in 2012 to 36 IML in 2022 is notable, and the population of this species at Wren's View should be closely monitored. As a result, in 2023 GLA will be re-surveying areas of previously documented IML along roads and fencing that were not documented in 2022 to determine the possibility of past maintenance activities impacting IML.

Wildlife cameras were previously installed on the Preserve. Through coordination with OCTA, GLA removed the wildlife cameras in October 2019, on an interim basis, due to the level of effort and costs associated with maintenance, checking cameras, and managing data combined with the lack of new data being collected. Cameras are recommended to be re-installed in 2023.

No new unauthorized trails or access were documented. The trails and roads documented in the RMP exist and are being utilized for management on this Preserve. Patrols and monitoring will continue to document any unauthorized access.



February docent hike at Wren's View Preserve.

OCTA is prioritizing the implementation of the ISMP's based on threats to Covered Species. Implementation of invasive species control has not yet been scheduled as the occurrence of invasive species on this Preserve are not as high of a threat to Covered Species or as prevalent as the occurrence at some of our other Preserves. This area will continue to be inspected during future monitoring visits. A reconnaissance of invasive species was conducted, and it was found that the preserve had generally the same conditions as mapped during ISMP preparation.

UCCE performed GSOB surveys in January 2022 and identified three coast live oaks infested with GSOB, two of which were removed in March 2022. Preventative treatments were applied to the

remaining infested tree and all larger oaks that were located within 300 feet of the three infested trees. Removals and treatments were performed by OCFA's contractor. Pre-construction nesting bird surveys were conducted prior to the tree removal.

No new trail cuts were observed; however, bike tracks were noted on the main access road. Trespassing through the property has been a common daytime and nighttime occurrence, in part due to the location of the former home site to the northeast of the Preserve. An increase in trespassing was previously documented by the OCTA private security company and warnings were issued. The site will continue to be monitored to document unauthorized access and activities, including by OCTA's private security company, OC Sheriff officers, and GLA's monitoring team. As part of GLA's efforts, the biological monitors will periodically check any evidence of habitat disturbance within the Preserve due to human activity.

Maintenance

RECON replaced signage on the four gates. Maintenance crews also removed concrete and other man-made debris that was illegally dumped. Erosion was identified along the access road to the main gate. Removal of interior barbed wire fencing and chain link fencing has been identified as a priority. This work began after nesting season in 2022 but was delayed due to inclement weather. It is anticipated that fencing removal will continue in 2023.



Fence line repair crews at Wren's View.

3.2.7.2 Planned Actions for 2023

Planned actions and priorities for 2023 include:

- Complete focused VES for coast horned lizard and orangethroat whiptail.
- Re-survey areas of previously documented IML along roads and fencing.
- Re-install cameras for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.
- Assess and possibly treat invasive plants identified in the ISMP on Priority 1 areas.
- Continue monitoring for unauthorized trail use.
- Conduct docent lead field trips as part of managed public access program, as allowable.
- Implement recommendations for GSOB and ISHB infestation and continue to evaluate the status and threat of these pests.
- Continue to remove interior barbed wire and chain link fencing.
- Finalize the Wren's View Preserve FMP.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.7.3 Related Documents and References

BonTerra Consulting. 2013. *Baseline Biological Surveys Technical Report for the South County Properties, Measure M2 Freeway Environmental Mitigation Program Acquisition Properties Evaluation*. Prepared for OCTA. December.

Glenn Lukos Associates (GLA). 2023. *Biological Monitoring Report for OCTA M2 Preserves – Trabuco Rose, Pacific Horizon, Bobcat Ridge, Silverado Chaparral, Wren’s View, Live Oak Creek, and Eagle Ridge*. Prepared for OCTA. May 2023.

RECON Environmental Services (RECON). 2023. *2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves*. Prepared for OCTA. February 2023

Chapter 4

OCTA-Funded Restoration Projects

4.1 Introduction

As part of its commitments to deliver more effective mitigation for the M2 freeway projects, OCTA allocated funds towards habitat restoration projects. Potential habitat restoration properties were evaluated based on biological and non-biological criteria, a process that included a prioritization process to select restoration programs that would be funded by OCTA. There were two separate rounds of funding for restoration, totaling over \$10 million. The restoration projects are being implemented by various cities, non-profit entities, and consultants within Orange County. Project sponsors are required to prepare annual monitoring reports to track progress towards meeting success criteria and updates on implementation status. Table 4-1 lists the OCTA-funded restoration projects with summaries of each project.

Table 4-1. OCTA-Funded Restoration Projects – Rounds 1 and 2

Round	Project	Sponsor	Description	Signed Off
1	Agua Chinon/ Bee Flat Canyon	IRC	90.1 acres of restoration consisting of chaparral, grassland, CSS, elderberry scrub, oak woodland, and riparian	√ (Bee Flat)
	Big Bend	Laguna Canyon Foundation	3.7 acres of restoration consisting of CSS and riparian woodland to enhance wildlife connectivity	√
	City Parcel	City of San Juan Capistrano	53 acres of restoration consisting of riparian and CSS within Trabuco Creek Wildlife Linkage	√
	Fairview Park	City of Costa Mesa	23 acres of restoration consisting of wetlands, grasslands, CSS, and riparian	
	UCI Ecological Preserve	Nature Reserve of Orange County	8.5 acres of restoration consisting of cactus scrub	√
2	Aliso Creek	Laguna Canyon Foundation	55 acres of restoration consisting of riparian and transitional habitat	
	Chino Hills State Park	Habitat Restoration Science/Chino Hills State Park	11.0 acres of cactus scrub restoration ⁷	
	Harriett Weider Regional Park	Bolsa Chica Conservancy	8.2 acres of restoration consisting of grassland, CSS, and riparian habitat	
	Lower Silverado Canyon	IRC	28.4 acres of restoration consisting of riparian and CSS habitat	

⁷ The original restoration design for this project included riparian and woodland habitats. An amendment was approved to focus this restoration effort on cactus scrub restoration.

Round	Project	Sponsor	Description	Signed Off
	North Coal Canyon	RECON Environmental Inc./Chino Hills State Park	5.5 acres of restoration consisting of CSS habitat within a key wildlife connectivity linkage area	
	West Loma	IRC	62.47 acres of restoration consisting of grassland, CSS, and riparian habitat	
2016	USFS Dam Removal	U.S. Forest Service	Removal of 14 dams along San Juan Creek to improve hydrologic functions	√

4.2 Restoration Project Status

4.2.1 Agua Chinon/Bee Flat Canyon

Action	Agua Chinon/Bee Flat Canyon Status
Sponsor	IRC
OCTA Funding	\$1,497,160
Location	Irvine
Acreage	90.1 acres
General Habitat Types	Chaparral, CSS, coast live oak/sycamore, oak woodland, native grassland, riparian
Restoration Design Plans	Approved in 2010 ⁸
Restoration Installation	Implementation began in 2011 and is ongoing.
Restoration Monitoring of Success Criteria	Bee Flat project area (84 acres) was signed off in 2020. Due to 2020 wildfires additional management and monitoring will be required for the Agua Chinon (6.1 acres) restoration project.
Land Protection Mechanism	Lands are deed restricted for open space and conservation purposes as the result of the transfer of land from the Irvine Company to the County of Orange. Lands still under the Irvine Company are subject to an Irrevocable Offer of Dedication to the City of Irvine (Preservation Area R).
Long-Term Management of Restoration Site	The project area is owned in fee by the County of Orange, with portions of Agua Chinon owned by the Irvine Company. The Orange County Parks Department and the Irvine Company are responsible for their long-term stewardship subject to the terms and conditions of the Central-Coastal NCCP/HCP.
General Comments / Concerns	Bee Flat project area complete and approved. Agua Chinon on track to meet sign off soon.

⁸ The USFWS and CDFW approved the restoration plan framework for this project in 2010. A more detailed plan was drafted and approved by USFWS and CDFW in 2011. To also obtain mitigation credit from the ACOE, the restoration plan for the Agua Chinon sub-watershed was developed further into a Habitat Mitigation Monitoring Plan to comply with the Environmental Protection Agency 2008 Final Mitigation Rule.

4.2.1.1 Project Summary

The Agua Chinon/Bee Flat Canyon restoration project is being completed by IRC and includes restoration of 90.1 acres of natural habitat in the San Diego Creek watershed, within the sub-watersheds of Agua Chinon and Bee Flat Canyon. The sites include disturbed CSS, grassland, and chaparral, as well as woodland and riparian habitat. The OCTA-funded restoration project will add to the other ongoing restoration projects in the same watershed that are being funded by other entities. The project site is within the Central-Coastal NCCP/HCP Central Reserve system, but the restoration proposed for this project is above and beyond the requirements of the Central-Coastal NCCP/HCP.

The long-term goal of the restoration is to facilitate habitat restoration and enhancement for the purpose of increasing landscape-scale ecosystem resilience and resistance to disturbance, primarily from catastrophic wildfire and invasive species. Sub-watershed-wide weed targets also will be controlled. The restoration success criteria include the reduction of nonnative cover of grasslands to native cover.

Bee Flat Update

The Wildlife Agencies agreed that the Bee Flat Canyon restoration project met the goals of the restoration plan, and the project was subsequently signed off on in 2020. No further contributions are required from OCTA for this project area as success criteria was satisfied. Subsequently, the entire OCTA funded project area burned in the 2020 Silverado and Bond wildfires. IRC continues to monitor the recovery of this area to evaluate its' resiliency. In 2022, it was noted that the Corral site had good oak survival post fire. The coastal sage planted in 2018 has become a healthy stand of white sage, sagebrush and gumplant. The needlegrass stand was re-invigorated by the fire and now includes various forbs.

Agua Chinon Update

The 2020 (Year 5) monitoring report documented that the Agua Chinon portion of the project met all success criteria. However, the site subsequently burned in the October 2020 Silverado Fire prior to receiving sign-off. In 2021, IRC began implementing a plan coordinated with OCTA, the Wildlife Agencies, and the ACOE for recovery of native vegetation. There were no modifications to the mitigation plan but the project timeline was extended to meet success criteria. This is expected to be in 2023/2024. The 2022 survey results show that the project is on a trajectory to meet success soon.

4.2.1.2 Related Documents and References

Irvine Ranch Conservancy. 2022. *Annual Status Report, January-December 2022: Renewed Measure M Freeway Mitigation and Resource Protection Program, Agua Chinon Wash.* Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

4.2.2 Big Bend

Action	Big Bend Status
Sponsor	Laguna Canyon Foundation
OCTA Funding	\$87,500
Location	Laguna Beach
Acreage	3.7 acres
General Habitat Types	CSS, riparian woodland
Restoration Design Plans	Approved in 2011
Restoration Installation	Implemented in 2011
Restoration Monitoring of Success Criteria	Monitoring was initiated in 2011 and 5 years of monitoring is complete. The project was signed off in 2017.
Land Protection Mechanism	A deed restriction was recorded in 2021 for the property to ensure long-term land use is consistent with the project's restoration and mitigation intent.
Long-Term Management of Restoration Site	The City of Laguna Beach owns the property and is obligated to manage it to perpetuate the benefits of the restoration project. It is anticipated that the project site will be incorporated into an Orange County Parks management agreement.
General Comments / Concerns	Project completed and approved

4.2.2.1 Project Summary

The Big Bend restoration project is located in the City of Laguna Beach. Since its purchase by the City the site has been used as an informal trailhead to access the 20,000-acre South Coast Wilderness System. The project site was degraded by invasive species and human activity. The City of Laguna Beach worked with the Laguna Canyon Foundation (LCF) to preserve more than 250 acres adjacent to the proposed restoration area, which is now under City ownership and managed by OC Parks. This restoration site, however, is not part of the Central-Coastal NCCP/HCP Coastal Reserve.

The project restored 3.2 acres of disturbed CSS and approximately 0.5 acres of riparian habitat to benefit local species and increase the wildlife corridor's local and regional effectiveness. Restoration included the removal of invasive nonnative species and debris, the planting of native species, and the maintenance/improvement of flood conveyance patterns across the site to enhance water quality for this important coastal watershed (the San Juan watershed). The project achieved the success criteria in January 2017. The deed restriction for the site was recorded in March 2021. All required commitments for the project have been satisfied.

4.2.2.2 Related Documents and References

Laguna Canyon Foundation. 2015. *2014 Annual Status Report: Big Bend Habitat Restoration, 3.7 Acres*. Laguna Beach, CA. Report dated January 31, 2015.

4.2.3 City Parcel

Action	City Parcel Status
Sponsor	City of San Juan Capistrano
OCTA Funding	\$1,500,000
Location	City of San Juan Capistrano (within Trabuco Creek Wildlife Linkage)
Acreage	53 acres
General Habitat Types	Riparian corridor, CSS, oak woodland, native grassland
Restoration Design Plans	Approved in 2011
Restoration Installation	Implemented in 2011
Restoration Monitoring of Success Criteria	Monitoring initiated in 2011 and 5 years of monitoring complete. The project was signed off as of October 2018.
Land Protection Mechanism	The City of San Juan Capistrano recorded a Declaration of Covenants and Restrictions in the fall of 2013 to ensure long-term land use is consistent with the project's restoration and habitat management intent.
Long-Term Management of Restoration Site	The City of San Juan Capistrano owns and manages the entire property of this restoration site as part of the Northwest Open Space.
General Comments / Concerns	Project completed and approved

4.2.3.1 Project Summary

The City Parcel (2C Ranch Trabuco Canyon) is located within the San Juan Creek (Trabuco Creek) watershed in the City of San Juan Capistrano. This project restored 13 acres of riparian and 40 acres of CSS habitats. The set success criteria was achieved in October 2018.

Restoration included the removal and control of invasive nonnative plants across the entire restoration area, followed by the planting of native riparian and upland species. This has established a more diverse habitat structure that is conducive to supporting an array of native plants and wildlife. California Natural Diversity Database (CNDDDB) occurrence records for CAGN, least Bell's vireo, and southwestern willow flycatcher intersect with the restoration site. The project site is not within the Orange County Southern Subregion HCP but is within the Plan Area of the Central-Coastal NCCP/HCP Coastal Habitat Reserve) and the City's designated Northwest Open Space. The restoration performed exceeds what was required in this area under the Central/Coastal NCCP/HCP. This open space area provides an important connection between these two landscape-level planning areas. This project restored a gap linking CAGN habitat and improved a corridor between the Coastal and Central NCCP/HCP areas.

The project sponsor successfully recorded a restricted covenant of the restored area in 2013. All required commitments for the project have been satisfied. The recorded restricted covenant ensured the protection of the site. The City inquired with OCTA (2021) about access across the restored area for an adjacent development. The restricted covenant was upheld, and OCTA understands the City is no longer looking to amend the document or impact the OCTA restored areas. OCTA has since provided letters to the City regarding the housing element update, requesting that the City continue to recognize and avoid the restoration area when considering future adjacent land uses.

This project was awarded the 2022 Southern California Association of Governments (SCAG) Sustainability Award for the Green Region Initiative: Resource Conservation & Climate Action

category. The Awards Program was held at the annual Regional Conference & General Assembly, in May 2022. This was another opportunity to showcase the effectiveness of the OCTA M2 NCCP/HCP and related partnerships with local governments.

4.2.3.2 Related Documents and References

Sevrens, Gail K. 2018. Response to Request for Sign-off on the 2C Ranch/Trabuco Creek Restoration Project included in the Orange County Transportation Authority NCCP/HCP. Received by Lesley Hill, October 9, 2018. (Sign Off Letter)

Phu, Dan. 2022. Amended and Adopted Housing Element Update Comment Letter, August 17, 2022

4.2.4 Fairview Park

Action	Fairview Park Status
Sponsor	City of Costa Mesa
OCTA Funding	\$2,000,000
Location	Costa Mesa
Acreage	23 acres
General Habitat Types	Wetlands, native grassland, CSS, willow scrub, oak woodland
Restoration Design Plans	Approved in 2010
Restoration Installation	Implemented in 2011
Restoration Monitoring of Success Criteria	Monitoring initiated in 2012 and 10 years of monitoring is complete.
Land Protection Mechanism	A land protection document still needs to be recorded for the project area.
Long-Term Management of Restoration Site	The City of Costa Mesa will maintain the restored wetlands and riparian habitat project site in perpetuity. Improvements and restoration are guided by the Fairview Park Master Plan approved by the Costa Mesa City Council in 1998.
General Comments / Concerns	Project is deficient of approximately 10 acres of committed mitigation for project area. Pending plan to make up deficiencies from City.

4.2.4.1 Project Summary

The City of Costa Mesa proposed to restore 23 acres of native grassland, CSS, wet meadow/marsh, and riparian habitats within the northwest portion of this public park. The purpose was to create native habitat for riparian birds and animals by increasing native plant diversity within 10 feet of the constructed wetlands and stream channels. The project includes the creation of wetland ponds and a water delivery irrigation system to establish and support the native habitat. This restoration site is within the Santa Ana River watershed. The project site is within the Plan Area of the Central-Coastal NCCP/HCP but is not part of the Reserve. Occurrences of CAGN, least Bell's vireo, California least tern and pond turtle have been observed at the restoration site. In addition, successful revegetation efforts for southern tarplant have been implemented at the restoration site. The 2022 report documented that the OCTA restoration area currently supports 13.53 acres of restored habitat and will require additional restoration efforts for the CSS and grasslands. Extensive coordination with the City of Costa Mesa staff has occurred over the last several years pertaining to clarification on the project's status and planting areas. The main outstanding concern is the approximate 10 acreage deficit.

The City is working on the following tasks and will provide updates to OCTA and the Wildlife Agencies:

- Cross checking current vegetation and trails map against original OCTA project restoration map.
 - Include updated figure with acreages of habitat types currently present on site for comparison to original restoration plan.
 - On-site quantification of vegetation disturbed by current maintenance work to the ponds.

OCTA is awaiting a proposal from the City on how the acreage deficiency will be corrected. The City has discussed and is looking into other areas within the park where restoration could occur.

4.2.4.2 Related Documents and References

City of Costa Mesa. 2010. *City of Costa Mesa Fairview Park Wetlands and Riparian Habitat Project Restoration Plan*. Costa Mesa, CA. Report dated November 3, 2010.

Endemic Environmental Services. 2023. *Fairview Park Riparian and Wetlands Mitigation Project: Annual Report 2022*. Costa Mesa, CA.

4.2.5 UCI Ecological Reserve

Action	UCI Ecological Reserve Status
Sponsor	Nature Reserve of Orange County (Natural Communities Coalition)
OCTA Funding	\$325,000
Location	Irvine
Acreage	8.5 acres
General Habitat Types	Cactus scrub
Restoration Design Plans	Approved in 2010
Restoration Installation	Implemented in 2011
Restoration Monitoring of Success Criteria	Monitoring initiated in 2012 and 8 years of monitoring is complete. The project was signed off in 2021.
Land Protection Mechanism	The Preserve is designated for conservation and habitat management by UCI long-range development plan and pursuant to the Central-Coastal NCCP/HCP.
Long-Term Management of Restoration Site	The Preserve is managed by the UC Irvine Office of Natural Resources, for the School of Biological Science.
General Comments / Concerns	Project complete and approved

4.2.5.1 Project Summary

The Natural Communities Coalition was responsible for the planning and implementation (completed in November 2011) of the restoration and enhancement of 8.5 acres of cactus scrub in a mosaic of native grassland at the UCI Ecological Preserve, located in the San Joaquin Hills. The goal of the project was to increase breeding habitat for CAGN and cactus wren. Even at the early stages of establishment, both cactus wrens and CAGN were observed using the restoration area. The project site is within the Central-Coastal NCCP/HCP Coastal Reserve, but the proposed restoration is above and beyond the requirements of the Central-Coastal NCCP/HCP.

Specific goals and objectives of the restoration project included reducing average invasive plant cover to less than 10 percent, planting large salvaged prickly pear and cactus pads throughout, and planting native shrub, perennial grass seeds, and forb seeds throughout the cactus plantings. Monitoring was conducted in June 2021 which documented that the performance standards had been met. The restored habitat has also been observed to support foraging of CAGN and cactus wren, including nesting activity by both species. As a result, the Wildlife Agencies concurred that the goals of the restoration effort had been achieved.

4.2.5.2 Related Documents and References

Natural Communities Coalition. 2021. *Measure M Cactus Scrub Restoration for the University of California Irvine 2020 Performance Monitoring Results - Email*. Irvine, CA. Email from Danny Fry, dated February 4, 2021.

U.S. Fish and Wildlife Service. 2021. *Measure M Cactus Scrub Restoration Project at UCI Ecological Preserve - Email*. Carlsbad, CA. Email from Will Miller, dated December 2, 2021. [Sign-off Email]

4.2.6 Aliso Creek

Action	Aliso Creek Status
Sponsor	Laguna Canyon Foundation
OCTA Funding	\$1,105,000
Location	Aliso Viejo
Acreage	55 acres
General Habitat Types	Riparian and transitional habitats
Restoration Design Plans	Approved in 2014 ⁹
Restoration Installation	Implemented in 2015
Restoration Monitoring of Success Criteria	Monitoring initiated in 2015 and 8 years of monitoring is complete.
Land Protection Mechanism	The County of Orange is currently drafting a restrictive covenant that will cover the entire 55-acre restoration project area.
Long-Term Management of Restoration Site	Orange County Parks owns and manages this land as part of Aliso and Wood Canyons Wilderness Park, in conjunction with the Aliso and Wood Canyon RMP.
General Comments / Concerns	Project is on track to meet sign off soon.

4.2.6.1 Project Summary

The LCF is in the process of restoring 55 acres of riparian habitat along Aliso Creek, in the City of Laguna Niguel. The project includes removing nonnative invasive plants and planting riparian and transitional upland habitats. This project complements other restoration projects in the same watershed funded by other entities. The site is in the Aliso Creek watershed and within the boundaries of the Aliso and Wood Canyons Wilderness Park, but outside of the Central-Coastal NCCP/HCP Reserve boundaries.

The restoration of riparian and transitional habitat along Aliso Creek benefits Covered Species such as least Bell's vireo, southwestern willow flycatcher, pond turtle, coastal California gnatcatcher and bobcat which have all been recorded within the restoration site. During year 8 (2022) of the project, LCF staff and contractors coordinated and implemented various restoration activities including targeted invasive control work and site wide weed abatement through both mechanical and chemical means. Additionally, annual photo-monitoring and continued wildlife surveys were carried out to help gauge project progress and to inform management decisions. Continuing the implementation of a new, Geographic Information System based vegetation mapping protocol, LCF field teams worked to prioritize treatment areas and effectively control the resulting flush of non-native vegetation from the replenished seed bank this year.

In May 2022 a small wildfire ignited in a section of intact mulefat scrub and willow habitat within Aliso and Wood Canyons Wilderness Park adjacent to the OCTA Aliso Creek Mitigation Site. The total

⁹ The USFWS and CDFW approved the restoration plan for this project in 2014. To also obtain mitigation credit from the ACOE, the restoration plan was developed further into a Habitat Mitigation Monitoring Plan (HMMP) to comply with the Environmental Protection Agency 2008 Final Mitigation Rule. Implementation began while the HMMP was being developed with the ACOE.

fire impact was estimated to be 3,700 square feet. A similar fire occurred in 2021. Monthly site visits were conducted within these areas to monitor and conduct targeted weed control.

4.2.6.2 Related Documents and References

Laguna Canyon Foundation. 2023. *Aliso Creek Habitat Mitigation and Monitoring Plan for Year 8 (2022) of Project Implementation, Aliso and Wood Canyons Wilderness Park*. Aliso Viejo, CA. Report dated February 1, 2023.

4.2.7 Chino Hills State Park

Action	Chino Hills State Park Status
Sponsor	Habitat Restoration Sciences/Dudek (Chino Hills State Park approval)
OCTA Funding	\$193,000
Location	Yorba Linda
Acreage	11 acres
General Habitat Types	Cactus scrub
Restoration Design Plans	Approved in 2017 and revised in 2019
Restoration Installation	Implemented in 2020
Restoration Monitoring of Success Criteria	Monitoring initiated in 2020 and 3 years of monitoring is complete.
Land Protection Mechanism	The property is owned in fee title and is permanently conserved by the California Department of Parks and Recreation.
Long-Term Management of Restoration Site	The park is managed according to the Chino Hills State Park General Plan (California Department of Parks and Recreation 1999).
General Comments / Concerns	The project has been slow to establish and is currently exhibiting low native cover. In response, container plants were installed in 2022.

4.2.7.1 Project Summary

Chino Hills State Park (CHSP) is composed of 14,102 acres in the hills of Santa Ana Canyon, with portions of the park found in Orange, Riverside, and San Bernardino Counties. The park straddles the north end of the Santa Ana Mountains and the southeast portion of the Puente-Chino Hills, which together form the northern end of the Peninsular Ranges in Southern California. The restoration site is outside the Central-Coastal NCCP/HCP Plan Area.

The original CHSP restoration project was located in another area of the park and proposed to enhance 21 acres of riparian, woodland, and cactus scrub habitats. It was later determined that a more intensive cactus scrub restoration project within CHSP would provide better ecological benefits. This project change was coordinated with and approved by the Wildlife Agencies. The resulting project is an intensive restoration of 11 acres of cactus scrub within CHSP on the slope overlooking Yorba Linda, east of the junction of Southridge Trail and Diemer Trail. The 11-acre cactus scrub restoration project will help return this area to its previous condition and benefit the OCTA M2 Covered Species CAGN and cactus wren.

Installation was deemed complete in February 2020, therefore commencing the five-year maintenance and monitoring program. Overall, the site has been slow to establish with multiple years of lower than average rainfall and a difficult non-native seed bank. Maintenance activities consisted of weed control, irrigation maintenance, remedial container plant installation, and minor trash removal. Maintenance was performed on a quarterly basis with tasks conducted based on recommendations provided by the monitoring biologist.

4.2.7.2 Related Documents and References

Dudek. 2023. *Year 3 Long-Term Maintenance and Monitoring Period Annual Report for Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park*. Chino Hills, CA. Report dated February 27, 2023.

4.2.8 Harriet Wieder Regional Park

Action	Harriet Wieder Regional Park Status
Sponsor	Bolsa Chica Conservancy
OCTA Funding	\$475,000
Location	Huntington Beach
Acreage	9.65 acres
General Habitat Types	CSS and grassland mixed ecotone and riparian
Restoration Design Plans	Approved in 2017 (trail mapping approved in 2018)
Restoration Installation	Implemented in 2016
Restoration Monitoring of Success Criteria	Monitoring initiated in 2016 and 6 years of monitoring is complete.
Land Protection Mechanism	The County of Orange executed a restrictive covenant in 2020 to protect this site in perpetuity.
Long-Term Management of Restoration Site	The Bolsa Chica Conservancy, in partnership with Orange County Parks, will be the long-term management entity.
General Comments / Concerns	Some of the restoration areas have struggled due to limitations in culturally sensitive areas. The 2023 rains should help the areas recover.

4.2.8.1 Project Summary

The Bolsa Chica Conservancy restoration project comprises 9.65 acres of a CSS and grassland mixed ecotone and riparian habitat in the Santa Ana watershed. This plan exceeded the NCCP/HCP committed acreage of 8.2 acres. The project area may attract least Bell's vireo, cactus wren, CAGN and burrowing owl. Harriett Wieder Regional Park is to be established as a mixed-use passive park, with sections restored to native habitat.

The Harriett Wieder Regional Park Restoration Project (sponsored by the Bolsa Chica Conservancy) was approved for funding in 2012. The original footprint occurred on County lands as well as private lands. To simplify the project, the Bolsa Chica Conservancy shifted the project area to County lands only. This shift also enabled the project to increase from 8.2 to 9.65 acres. The habitat types to be restored remain the same for the project (native grassland, CSS, and riparian). This project modification was approved by the Wildlife Agencies and the EOC.

The Bolsa Chica Conservancy was able to begin implementation (i.e., seed collection, plant propagation, installation of temporary irrigation, and seeding and plantings in some areas) of this project in 2016 while working out the details of the final success criteria and trail alignments with the Wildlife Agencies and OC Parks. Monthly bird surveys have documented Blue-Gray and CAGN foraging in the restoration area. Surveys also show that over 4,400 individuals of southern tarplant occur within the restoration area. The project has measured positive native plant growth, cover and spread over five growth seasons, three of which were severe drought years, including the last two. The project area continues to experience vandalism and recreation related impacts (paramotors, bikes and vehicles). In addition, planting limitations within the culturally-sensitive areas have resulted in very slow growth.

4.2.8.2 Related Documents and References

Bolsa Chica Conservancy. 2023. *Harriett Wieder Regional Park Habitat Restoration Project Annual Report December 2022*. Huntington Beach, CA. 2023

4.2.9 Lower Silverado Canyon

Action	Lower Silverado Canyon Status
Sponsor	IRC
OCTA Funding	\$1,414,435
Location	County of Orange
Acreage	28.4 acres
General Habitat Types	Riparian
Restoration Design Plans	Approved in 2014
Restoration Installation	Implemented in 2014
Restoration Monitoring of Success Criteria	Monitoring initiated in 2014 and 8 years of monitoring is complete.
Land Protection Mechanism	The project site is subject to, and protected by, the permanent SilMod CE Deed recorded in 2002 in favor of The Nature Conservancy. In addition, the lands are deed restricted for open space and conservation purposes under the wilderness park designation as the result of the transfer of land from the Irvine Company to the County of Orange.
Long-Term Management of Restoration Site	The project site is owned in fee by the County of Orange and OC Parks is responsible for its long-term stewardship. IRC works under contract to the County of Orange under the supervision of OC Parks to manage this area and has existing formal permission to conduct restoration projects here. Broad management of the site, consistent with the terms of the CE Deed, is guided by the Resource Plan for the 2009 SilMod CE Property. The Integrated Adaptive Management Framework for the North Irvine Ranch Wildlands (Noss 2011) is the umbrella management framework that applies to all management units in the North Irvine Ranch regardless of ownership or mechanism of land protection.
General Comments / Concerns	Project on track for sign off in spring 2023.

4.2.9.1 Project Summary

The IRC has implemented both active and passive restoration of 20.6 acres of riparian habitat and 7.8 acres of CSS along Silverado Creek, a tributary to Santiago Creek (total of 28.4 acres). The project location is within the Santa Ana watershed. The degraded habitat that has been restored lies within a landscape mosaic containing patches of intact habitat. Restoring degraded patches within the mosaic has improved continuity to further benefit habitat quality of both restored and intact components. The project site is within the plan area for the Central-Coastal NCCP/HCP, but it is not currently part of the Reserve. However, the land will remain as conserved open space due to the recordation of CEs dedicated to The Nature Conservancy.

The Lower Silverado Canyon restoration project is now in its ninth year of active management. Following the site visit in April 2022, agency staff requested additional management of non-native annual grasses on-site. The April-June 2022 quarterly report outlined a management plan to control non-native annual grasses. This intensive weed control strategy is expected to further enhance this site by effectively controlling the grasses and allowing for native recruitment to supplement the already high native shrub cover at the site.

Despite the persistence of non-native annual grasses at the site, native shrub cover has remained high. Favorable rain conditions during the 2022/2023 growing season, along with increased weed control efforts, should keep the site on a trajectory to self-sustainability. Following weed treatments, qualitative monitoring assessments will occur in April 2023 and will include photo monitoring and rapid assessments of vegetation cover. Upon completion of the plan and successful control of annual grasses, the project will be eligible for sign-off.

4.2.9.2 Related Documents and References

Irvine Ranch Conservancy. 2022. *October – December 2022 Quarterly Report: Summary or Restoration Activities under Agreement No C-3-1774, Between OCTA and IRC for the Measure M2 Environmental Mitigation Program, Lower Silverado Canyon*. Irvine, CA.

4.2.10 North Coal Canyon

Action	North Coal Canyon Status
Sponsor	RECON Environmental Inc. (Chino Hills State Park approval)
OCTA Funding	\$247,500
Location	Yorba Linda
Acreage	5.5 acres
General Habitat Types	Riversidean alluvial fan, CSS
Restoration Design Plans	Approved in 2015 and revised in 2019
Restoration Installation	Implemented in 2019
Restoration Monitoring of Success Criteria	Monitoring initiated in 2020 and three years of monitoring is complete.
Land Protection Mechanism	The property is owned in fee title and is permanently conserved by the California Department of Parks and Recreation.
Long-Term Management of Restoration Site	The park is managed according to the Chino Hills State Park General Plan (California Department of Parks and Recreation 1999).
General Comments / Concerns	Site has met or exceeded three of the five performance standards and is on track to meeting final performance standards.

4.2.10.1 Project Summary

The North Coal Canyon property is owned by California State Parks and is within Chino Hills State Park. This property is a vital link between the surrounding Puente-Chino Hills to the north and the Cleveland National Forest and the Santa Ana Mountains on the south. The proposed restoration project will enhance and restore 5.5 acres of CSS/Riversidian alluvial fan sage scrub on the north side of SR-91. The project is expected to improve wildlife movement by making habitat north of SR-91 more attractive to wildlife and will complete the restoration of the entire Coal Canyon parcel by connecting three other restoration projects being funded by other entities. This bio-corridor is the only remaining link that allows dispersal of wildlife between CHSP and the more diverse Santa Ana Mountains. Coal Canyon provides habitat for the movement of OCTA M2 Covered Species such as mountain lion and bobcat and provides high quality habitat for CAGN as well as foraging habitat for the least Bell's vireo.

The North Coal Canyon Restoration Project has a proposed five-year maintenance period. Site preparation work began in 2019, with Year 3 of maintenance completed in 2022. Supplemental irrigation was discontinued as of October 2021. Weed control was only required once during 2022 using a combination of methods.

Based on the annual quantitative assessment, the site has met or exceeded three of the five performance standards, including non-native species cover, invasive species cover, and overall native species richness. The average native species cover was 70 percent, with the performance standard being greater than 70 percent. It is anticipated that the cover will increase over the next year.

Qualitative monitoring will continue to be conducted throughout Year 4. Quantitative monitoring will be conducted again in 2023 to determine whether the site is on track to meeting final performance standards. Upcoming maintenance visits will focus on weed control to limit competition and to create a site that will remain functional beyond the five-year maintenance and monitoring period.

4.2.10.2 Related Documents and References

RECON Environmental, Inc. 2022. *2022 Summary Letter for Coastal Sage Scrub Restoration at North Coal Canyon, Chino Hills State Park (RECON Number 9342)*. San Diego, CA.

4.2.11 West Loma

Action	West Loma Status
Sponsor	IRC
OCTA Funding	\$1,322,800
Location	County of Orange
Acreage	62.47 acres
General Habitat Types	Scrub, riparian
Restoration Design Plans	Approved in 2013
Restoration Installation	Implemented in 2013
Restoration Monitoring of Success Criteria	Monitoring initiated in 2013 and 9 years of monitoring is complete.
Land Protection Mechanism	A portion of the land is under CE held by The Nature Conservancy, and the other portion is deed restricted exclusively for open space by the County of Orange and is dedicated as part of the reserve lands in the Central-Coastal NCCP/HCP.
Long-Term Management of Restoration Site	OC Parks is responsible for long-term stewardship subject to the terms and conditions of the Orange County Central-Coastal NCCP/HCP and the East Orange CE, as well as the management plans developed under these agreements.
General Comments / Concerns	In late 2020, two fires impacted the West Loma sub-watershed. A total of 27.3 acres were impacted and requires remedial actions for an additional two years.

4.2.11.1 Project Summary

IRC has restored 62.47 acres of grassland, CSS, and riparian habitat at the West Loma site. The restoration site is in the Santa Ana watershed. The degraded habitat that has been restored lies within a landscape mosaic containing patches of intact habitat. Restoring degraded patches within the mosaic has improved contiguity to further benefit habitat quality of both restored and intact components. The original restoration project design included realignment of fencing along the 241 Toll Road to improve wildlife movement, but it was determined this was not feasible (see Section 8.2.1). In place of realigning fencing, this project also included the placement of plantings and wildlife cameras at the SR-91 Coal Canyon undercrossing and culvert. The plantings were installed to help entice more wildlife to utilize the existing potential crossing structures (freeway underpass and culvert). Cameras were installed to document wildlife movement through these structures. This project also capitalizes on a large-scale restoration project that is currently taking place within the same watershed. The project site intersects with CNDDDB occurrence records for MSD, orangethroat whiptail, and CAGN. A portion of the project site is within the Central-Coastal NCCP/HCP Reserve, but the restoration is above and beyond the requirements of the Central-Coastal NCCP/HCP.

This project is now in its ninth year of active management. Baseline surveys and site preparation began in 2014. Seeding and planting operations began in 2014 and continued through 2019. Targeted invasive plant control began in 2014 and has continued each year. Based on quantitative monitoring results and qualitative observations of the site, restoration at West Loma is progressing well and the project should be ready for sign off in 2023. Bird surveys documented 12 observations of least Bells'

vireo (including four nests), two CAGN locations (including one male displaying territorial behavior indicating that nesting was likely to occur), and two cactus wren locations (including one nest).

The wildlife monitoring camera program at Coal Canyon was initiated in January 2017. Eight Bushnell trail cameras and one vehicle counter were in operation from January 2022 until July 2022 when four cameras were stolen. One camera was replaced and the cameras were positioned to maximize coverage for wildlife crossings. One vehicle counter was in operation for the entire year. In 2022, camera traps at Coal Canyon caught multiple bobcats, coyotes, mule deer, gray fox, opossum, racoon, striped skunks, and one mountain lion (undercrossing). Human activity decreased from 2021 through 2022, although daily human activity in the undercrossing continues to be prevalent. The vehicle counter tracked a large decrease in activity compared to last year.

4.2.11.2 Related Documents and References

Irvine Ranch Conservancy. 2022. *Annual Status Report, January-December 2022: Renewed Measure M Freeway Mitigation and Resource Protection Program, West Loma Subwatershed*. Agreement No. C-3-1775 between OCTA and IRC. Irvine, CA.

4.2.12 USFS Dam Removal

Action	USFS Dam Removal Status
Sponsor	USFS (Trabuco District)
OCTA Funding	\$185,000
Location	San Juan Creek
Acreage	Removal of 14 dams (acreage not measured)
General Habitat Types	Creek bed and riparian to benefit arroyo chub
Restoration Design Plans	Approved in 2016
Restoration Installation	Dam removal began in 2018 and all 14 dams have now been removed.
Restoration Monitoring of Success Criteria	Monitoring initiated in 2018. USFS biologist monitored the stream recovery for 3 years after dam removal.
Land Protection Mechanism	Project within the USFS protected lands. No other mechanisms are needed.
Long-Term Management of Restoration Site	To be completed by the USFS.
General Comments / Concerns	Project complete and approved.

4.2.12.1 Project Summary

The purpose of the Trabuco District Dam Removal Project was to enhance aquatic organism passage and stream habitat in Silverado, Holy Jim, Trabuco, and Upper San Juan Creeks. Removing human-made dams in these creeks is essential to supporting native aquatic species (i.e. Arroyo Chub) and providing suitable habitat for potential re-establishment of extirpated species including southern California steelhead trout. These dams presented partial or complete barriers to native fish and other aquatic organisms, especially during periods of low flow. The dam removal work will implement, in part, recovery plan goals for southern steelhead. Removal of fish passage barriers is one of the highest priority action items for the San Juan and Trabuco Creek watershed. A total of 81 dams were targeted for removal.

With the funding from OCTA, the USFS was able to remove the original targeted/committed 14 dams from San Juan Creek, plus additional dams and dam remnants in San Juan Creek, Trabuco Creek, and in Holy Jim Creek. The third year of monitoring of the project was completed in 2022. In each work area, there has been considerable re-shaping and re-establishment of a more natural stream channel. Although steelhead do not currently have access to the Forest portion of San Juan Creek due to downstream barriers, Arroyo Chub moved upstream to dam 12 as of spring 2019; they were previously confined downstream of dam 1 at San Juan Creek.

4.2.12.2 Related Documents and References

Cleveland National Forest, Trabuco Ranger District. *Trabuco Dam Removal Project – 2022 Progress Report, 2022. Collection Agreement number 18-CO-11050200-009*

Chapter 5

Additional Conditions for Coverage

5.1 Introduction

As part of the Conservation Analysis (Chapter 6) in the M2 NCCP/HCP, there were two Covered Species (arroyo chub and MSD) noted for additional conditions for coverage, above and beyond the acquisition of the seven OCTA Preserves and funding of restoration projects.

5.1.1 Arroyo Chub

The conservation actions included in the M2 NCCP/HCP provided a positive, but marginal benefit for conservation of arroyo chub. To provide for a level of conservation required for coverage of arroyo chub under the NCCP, OCTA in partnership with the USFS completed a restoration project focused on improving habitat conditions for arroyo chub.

OCTA supported the USFS Dam Removal restoration project to provide conservation for arroyo chub required under the M2 NCCP/HCP (see Section 4.2.12, USFS Dam Removal). The project was approved and restoration activities occurred in 2018 through 2020, with final monitoring completed in 2022. The OCTA funding contributions resulted in the removal of the original 14 dams committed. As well as the removal of an additional 17 small dams (and dam remnants). Therefore, OCTA has satisfied its conservation action obligations for the arroyo chub and no further actions are required.

5.1.2 Many-stemmed Dudleya

OCTA will protect, enhance, and/or establish a major population (i.e., 500 individuals) of MSD to ensure that the M2 NCCP/HCP provides conservation and management for MSD. This threshold can be accomplished through the protection, enhancement, and/or establishment of MSD populations at multiple locations or at a single location. During the 2022 focused Covered Species surveys of the Preserves, four occurrences with 57 individuals were identified on the Pacific Horizon Preserve. Ongoing Preserve management may improve habitat suitability (e.g., reduction of invasive species) that results in the expansion of the existing population on Pacific Horizon Preserve. The Plan stipulated that a minimum of 500 individuals be identified on the Pacific Horizon Preserve in order to meet this objective. After years of monitoring, the current population size does not appear it will meet this objective. In compliance with the Plan, OCTA is collaborating with the Wildlife Agencies on a restoration project designed to establish or expand a population of MSD. This restoration plan will be implemented once approved by the Wildlife Agencies. Due to the high precipitation in 2022 (and 2023) a small amount of seeds from the existing population will be collected and propagated at a nursery for future planting at the Preserve.

The following actions have been taken at the Pacific Horizon Preserve to improve conditions for MSD:

- The Pacific Horizon Preserve ISMP specifically identifies actions to protect and enhance disturbed habitat in the proximity of the MSD population at the Pacific Horizon Preserve. Beginning in 2020, invasive species and bike jumps were removed, fencing and signage were installed, salvaged cactus pads (*Opuntia littoralis*) were planted along the decommissioned trail and in areas where

iceplant had died back (after being treated) and several habitat restoration signs were installed to educate the public regarding the sensitivity of the area. Wildlife cameras were also placed in 2022. This area continues to be monitored and maintained. General monitoring in 2022 showed that the restoration area is recovering and is not being impacted by recreation.

- Biological monitoring was conducted to coincide with the blooming periods of the covered plant species, specifically MSD. GLA detected approximately 80 additional dudleya individuals (GLA 2019). Bringing the total number of individuals on this Preserve to 180 (GLA 2020). Only 57 dudleya were documented during the focused surveys in 2022. Surveys will be repeated in 2023, as the conditions will be more favorable for the emergence of this species.

6.1 Public Outreach Overview

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 EMP to provide funding for programmatic mitigation to offset impacts from the freeway projects in the 13 freeway segments covered by Measure M2. OCTA has been committed to transparency in how the M2 funds have been and are being used to implement the EMP. OCTA has conducted a variety of public outreach activities aimed at informing and engaging the public on the overall EMP as well as Preserve-specific issues and events, such as:

- **Hold Public Meetings** – OCTA held public meetings during the preparation of the NCCP/HCP and the RMPs. OCTA will hold an annual public meeting to present this Annual Report. In addition, the regularly scheduled EOC meetings are open to the public and Preserve-specific issues are addressed at these meetings.
- **Maintain Website** – OCTA currently maintains the OC Go (M2) Environment Mitigation Program (EMP) website that includes Preserve-specific information, copies of the RMPs for download, and information on Preserve hiking and riding tours: <https://octa.net/projects/programs/oc-go-measure-m/environmental-programs/environmental-mitigation-program/> In addition, in 2022 OCTA posted a virtual hike video of the Trabuco Rose Preserve and created an animated video to communicate the importance of our managed access program for the Preserves.
- **Develop Outreach and Volunteer Programs** – OCTA has been working to develop a volunteer program that addresses education and management needs. OCTA is encouraging trail user groups to participate in “self-monitoring and policing” programs.

6.1.1 EMP Public Outreach Events and Meetings

Table 6-1 includes a list of events, workshops, and public meetings that OCTA has had to address the actions of the EMP and solicit public input.

Table 6-1. EMP Public Outreach Events 2022

Date	Location	Stated Purpose
1/28/22	SCAG Coordination	OCTA presented to SCAG Council an overview of the OCTA EMP.
5/5/2022	SCAG Regional Conference and General Assembly	An overview was provided of the EMP funded San Juan Capistrano (2C Ranch) restoration project. OCTA received the SCAG Green Region Initiative Award.
5/10/2022	University of California, Irvine	Presentation of the EMP to the UCI Environmental Law and Policy class
6/14/2022	OCTA	EMP Update to the Taxpayer Oversight Committee

6.1.2 Preserve-Specific Public Outreach Events

Each Preserve RMP identifies and outlines the need for public outreach and education as critical components to ensure successful management and public support of the Preserves. A public that is informed of the Preserve’s biological values, goals, and activity restrictions is more likely to respect and follow Preserve guidelines. Table 6-2 includes a list of events, riding, and hiking tours held to address Preserve-specific issues.

Table 6-2. Preserve-Specific Public Outreach Events 2022

Date	Location	Stated Purpose
1/22/2022	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour to educate the public about the property restoration and access
2/19/2022	Wren’s View Preserve	Wilderness Preserve Hiking Tour to educate the public about property value and access
4/2/2022	Wren’s View Preserve	Wilderness Preserve Hiking Tour – see above
5/21/2022	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour – see above
5/21/2022	Wren’s View Preserve	Wilderness Preserve Hiking Tour – see above
7/16/2022	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour – see above
7/23/2022	Pacific Horizon Preserve	Wilderness Preserve Hiking Tour – see above
9/17/2022	Wren’s View Preserve	Wilderness Preserve Hiking Tour - see above
9/18/2022	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour – see above
11/5/2022	Pacific Horizon Preserve	Wilderness Preserve Hiking Tour – see above
11/19/2022	Trabuco Rose Preserve	Wilderness Preserve Equestrian – see above

6.1.3 Regional Coordination and Collaboration

The NCCP/HCP Administrator is responsible for coordinating with other regional management and monitoring programs to stay abreast of regional monitoring issues. Table 6-3 summarizes collaboration efforts, meetings, and activities undertaken by the OCTA staff during the timeframe of this Annual Report.

Table 6-3. Collaboration with Regional Management and Monitoring Programs 2022

Date	Group	Stated Purpose
1/27, 7/28 and 11/17/22	County of Orange Area Safety Task Force (COAST)	A working group of (more than 35 organizations) decision makers and executives for fire departments, public utilities, transportation agencies, natural resource management agencies, landowners, non-profit groups, and other community members to jointly identify problems and propose solutions for wildfire prevention, and to work together to implement them.
1/27/22	Orange County Invasive Tree Pests Group	A group of scientists/ professionals that share information pertaining to invasive tree pests including the GSOB and the Polyphagous Shot Hole Borer (PSHB).
1/28/22	SCAG Coordination	OCTA presented to SCAG Council an overview of the OCTA EMP.

Date	Group	Stated Purpose
3/14/22	Cleveland National Forest Coordination	OCTA attended a meeting spearheaded by the Cleveland National Forest Service to discuss sustainable recreation and resource partnerships in Orange County watersheds.
4/21/22	County of Orange Environmental Programs Coordination	OCTA and the County of Orange Public Works Department meet to discuss updates on the EMP, OCTA water quality and sustainability, and climate resiliency programs.
6/8/22	California HCP Coalition Annual Meeting	A coalition of entities working on or have an approved HCP to share program updates, funding opportunities, and challenges.
6/28, 9/8 and 9/27/22	Preserve Management Coordination	OCTA coordinated with local land managers (including the Southwest Resource Management Association, Rancho Mission Viejo, and the Transportation Corridor Agency) to understand capabilities and different management models being applied

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7.1 Summary of Endowment Process

OCTA has the responsibility to ensure the Preserves are protected and meet the NCCP/HCP commitments. OCTA is currently evaluating different management models to determine which option may work for the long-term management of the Preserves. As these Preserves have been managed by OCTA for over a decade, OCTA is also exploring the option of retaining some of the long-term management responsibilities. Collaboration with the Wildlife Agencies and the EOC will be an important determining factor for the long-term management model. OCTA is also working on the long-term protection documents for the Preserves while continuing to establish the endowment. During this intermediate time period (10-15 years after completion of the NCCP/HCP), OCTA is responsible for performing land management and maintaining the biological value of the Preserves, consistent with the RMPs and Conservation Plan. M2 funds are used to sustain the management activities during this time period.

Based on preliminary estimates of management and monitoring costs, OCTA established a \$34.5 million endowment target in the OCTA NCCP/HCP. In order to account for interest rates and management fees, a target of \$46.2 million was set to fund the long-term management of the Preserves. This was authorized by the OCTA Board of Directors in October 2014. Staff collaborated with the EOC, the Finance and Administration Committee, the Board, and other mitigation landowners to develop a set of comprehensive land management strategies. This approach enabled OCTA to determine financial recommendations for the establishment of the endowment that are efficient, have the potential to maximize economies of scale and determine the selection process for the endowment fund manager. The guiding principles, long-term funding strategy, and potential expenditure options list were approved by the Board in May 2015.

Throughout the endowment funding period, the EMP funds will have specified allocations. Approximately \$3 million will be deposited in the endowment on an annual basis for up to 10 to 12 years, during which OCTA must also pay for the interim land management from the existing Measure M revenue source. The existing Measure M revenues will also be used for other expenditures, such as habitat restoration projects. The annual deposits are estimated to earn approximately \$11.7 million in investment returns, net of fund management fees over the duration of the establishment period.

The long-term management cost is a significant factor that will impact the target endowment amount. Additionally, it is possible the long-term land manager may also manage the endowment that is tied to the Preserve, or the Preserve manager and the endowment manager may be separate entities. Therefore, the funding of the endowment consists of two phases:

1. The endowment funding phase, expected to be a 10- to 12-year period.
2. After the endowment has been established, determination of whether the endowment is managed by a single or multiple entities.

The EFM has several responsibilities:

- Manage the funds OCTA deposits in trust for the benefit of the Preserves.

- Accrue investment earnings over the establishment period.
- Work with OCTA to establish permanent endowment(s) to fund the management of the Preserves in perpetuity.
- Annually prepare and update a funding plan that describes annual deposits made by OCTA, historical and forecasted investment earnings, fees charged, target endowment value, and completion schedule.
- Provide quarterly and annual reports on the status of the endowment.
- Deliver updates periodically to OCTA and its designated committees.

In 2016, OCTA completed a selection process and contracted with the California Community Foundation, based in Los Angeles, California, to manage the endowment to fund the EMP.

7.2 Current Status of Endowment Funding

Pursuant to the responsibilities of the EFM, CCF releases a quarterly comprehensive report that includes the composition of the Endowment Pool and the performance is reviewed for consistency with endowment objectives. It is then presented to the Board. Staff will continue to oversee and provide endowment updates to the Finance and Administration Committee and EOC on a regular basis. As of September 30, 2022, the balance was \$21,276,964 which is below the fiscal year (FY) 2022-23 target of \$24,015,673. Current projections indicate that OCTA still remains on track to meet the endowment target of \$46.2 million in FY 2027-28; however, the performance of the endowment fund may affect this time frame. To date, OCTA has made seven endowment deposits.

The final endowment funding requirements will be based on a Property Analysis Report (PAR) or PAR-like analysis that will be completed by OCTA within the next year or two. This analysis will itemize and define the long-term obligations at each Preserve using Preserve-specific information developed for the Preserve RMPs. It is expected that additional years of interim habitat management will provide a database and sounder basis for estimating the cost of long-term management. The final endowment funding level will be based upon actual negotiated long-term management contracts for each individual Preserve. OCTA will coordinate with the Wildlife Agencies and obtain the Wildlife Agencies' review and approval of the PAR analysis and determination of the permanent endowment funding requirements.

8.1 NCCP/HCP Administrator

OCTA is responsible for implementing the M2 NCCP/HCP and staffing an NCCP/HCP Administrator position. The NCCP/HCP Administrator's role is to oversee and coordinate Plan implementation. The NCCP/HCP Administrator communicates regularly with the Preserve contractors and consultants regarding the status of Preserve stewardship; the progress on conservation action implementation, monitoring, and management; and new or ongoing issues to be addressed. The NCCP/HCP Administrator is the primary point of contact for the Wildlife Agencies and for preparing the Annual Report demonstrating NCCP/HCP compliance.

OCTA has designated the following individual as the NCCP/HCP Administrator:

Lesley Hill
(714) 560-5759
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8.2 Minor Modifications to Plan, Permits, and Implementing Agreement

The Plan allows for minor modifications to the Plan, permits, and IA if the modifications are non-substantive and do not meet the threshold of a Minor and Major Amendment. The following actions are noted as minor modifications to the Plan that have occurred and were included in the First OCTA Annual Report (2018). Details for each of these modifications were provided and approved by the Wildlife Agencies. Minor modifications to the Plan to date have included the following:

- West Loma Wildlife Crossing Component
- USFS Dam Removal Project
- Eagle Ridge (Hayashi) Preserve Boundary Modification
- Chino Hills State Park and North Coal Canyon Restoration Project Modification

No new minor modifications were needed in 2022.

8.3 Minor or Major Amendments to the Plan

After documenting impacts caused by SCE maintenance at the Pacific Horizon Preserve, the Wildlife Agencies have recommended that the Plan be modified via a Minor Amendment to recognize the SCE powerline as an existing use, for which operation and maintenance will be permitted to continue. Additional minor SCE maintenance impacts have occurred at Silverado Chaparral. The May 2022 Coastal Fire at the Pacific Horizon Preserve has delayed the coordination with SCE. OCTA is now

waiting for SCE to confirm if any of the existing power poles will be relocated and what the related permanent impacts would be for the remaining power poles. Once this information is obtained, OCTA (via SCE) will provide compensation to offset the habitat impacts to maintain long term net habitat value within the Preserve. OCTA will work with staff from the Wildlife Agencies to obtain approval on the compensation as well as documenting this Minor Amendment in the Plan. There are no Major Amendments required at this time.

8.4 Changed Circumstances

No events meeting the criteria of a Changed Circumstance occurred during the timeframe of this Annual Report.

Chapter 9 References

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Appendix A
Covered Freeway Improvement Projects
Habitat Tracking Ledger

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Table A-1. Covered Freeway Projects Habitat Impact Tracking Ledger^a

Project ID	Segment	Checklist Date	Total	Chaparral	Coniferous Forest	Grassland	Riparian	Scrub	Water	Wet Meadows/ Marsh	Woodland
Totals to Date:			9.242	--	--	6.460	0.957	1.705	0.12	--	--
Project C EA 0K0200	C1	5/30/18	0.722	--	--	--	0.717	0.015	--	--	--
Project B EA 0K6700	B	7/26/18	0.00	--	--	--	--	--	--	--	--
Project L EA 0K710K	L1	1/29/18	6.810	--	--	6.46	0.25	--	0.10	--	--
Project M EA 0K8700	M	6/7/18	0.00	--	--	--	--	--	--	--	--
Project D 0M9800	D	12/10/19	0.00	--	--	--	--	--	--	--	--
Project F 0J3400	F1	11/11/19	0.00	--	--	--	--	--	--	--	--
Project G 0M9700	G1a	3/12/19	0.02	--	--	--	--	--	0.02	--	--
Project I 0K9800	I	3/28/19	1.69	--	--	--	--	1.69	--	--	--

^a Values are in acres. Includes both permanent and temporary impacts.

Table A-2. Summary of Applicable Avoidance and Minimization Measures and Status of Restoration Activities for Temporary Impacts from Covered Freeway Projects

Project ID	Applicable Avoidance and Minimization Measures	Restoration for Temporary Impact Areas Status
Project C EA 0K0200	Sections 5.6.1, 5.6.2.1, 5.6.2.2, 5.6.2.3, 5.6.3, 5.6.4 and 5.6.5	As described in the NES, temporary impacts (staging, access, storage) will be contained outside of riparian/suitable habitat to the maximum extent practicable. All temporary impact areas adjacent to native habitats [i.e. CSS, riparian (Oso Creek and Aliso Creek)] will be replanted with native plant species and approved by the Wildlife agencies. A plant establishment period of at least 3 years will be established. This will include the removal of litter and trash, weeding, water application, irrigation repair, replacement of plant material that dies, and other activities required to ensure the long-term survival of plant material to satisfy M2 HCP/NCCP obligations and permit conditions. Permittee shall restore all temporary impacts on site at a 1:1 ratio immediately following construction completion or, with written approval from CDFW, at the beginning of the next growing season.
Project B EA 0K6700	Sections 5.6.1, 5.6.2.1, 5.6.3, 5.6.4 and 5.6.5	As described in the NES, areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. Restoration plans will be prepared during final design and included in the Plans, Specifications, and Estimates (PS&E) package. The revegetation plan will be prepared consistent with the California Department of Transportation (Caltrans) landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies. A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project L EA 0K710K	Sections 5.6.1, 5.6.2.1, 5.6.2.3 and 5.6.3.	As described in the NES, construction will be implemented to minimize temporary impacts (intended to benefit Roosting Bats NES Section 5.6.3). In addition, as stated in the NES areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. For freeway construction projects, revegetation plans will be part of the project design following Caltrans' landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies. A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project M EA 0K8700	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.
Project I EA 0K9800	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	As included in the NES areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation

Project ID	Applicable Avoidance and Minimization Measures	Restoration for Temporary Impact Areas Status
		characteristics and/or return to previous conditions. For freeway construction projects, revegetation plans will be part of the project design following Caltrans’ landscape architecture guidelines and requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies. A temporary restoration plan will be developed as part of the design and construction phase of the project.
Project G EA 0M9700	Sections 5.6.1, 5.6.2.1, 5.6.3 and 5.6.4.	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.
Project F 0J3400	Not Applicable	No natural habitat is found within the project area. Thus, no restoration of temporary impacts is needed.

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Appendix B

Annual Schedule for Effectiveness Monitoring

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Table B-1. Annual Schedule for Effectiveness Monitoring on OCTA Preserves

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							BL ST W	PE																						
Effectiveness Monitoring:																														
Rare Plants	3 to 5 years	<i>BE LT W</i>			<i>PS</i>							BE LP ST W			BE LP ST W							BE LP ST W				BE LP ST W				BE LP ST W
Reptiles	4 years	<i>BE LT W</i>			<i>PS</i>							ST	BE ¹⁰ LP W				BE LP ST W				BE LP ST W				BE LP ST W					
Birds	4 years	<i>BE LT W</i>			<i>PS</i>		BL PT W				BL PS T W				BE LP ST W				BE LP ST W			BE LP ST W				BE LP ST W				
Mammals ^a	4 years	<i>BE LT W</i>			<i>P</i>		<i>S</i>	P	E	BL ST W		BP ST	BE LP S W	EL W	T		BE LP ST W				BE LP ST W				BE LP ST W					BE LP ST W

¹⁰ Effectiveness monitoring for pond turtle was conducted in 2021.

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
Natural Communities Quantitative ^b	4 years					BL W	BL W	BL W	BL W	BL W				BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W				BE LP ST W
Natural Communities Comprehensive	10 years	<i>BE LT W</i>			<i>PS</i>									BE LP ST W									BE LP ST W							

Red Italics = Baseline Survey

^a Mammal monitoring is completed with wildlife cameras and is an on-going monitoring activity. Every 4 years an analysis of the data is completed to interpret mammal monitoring data.

^b Methodologies to complete quantitative monitoring of natural communities are currently being reviewed with the other regional conservation entities and the Wildlife Agencies. A pilot program has been initiated at other OCTA Preserves. An agreed upon monitoring will be applied to the Preserves going forward once methodologies are finalized.

Key:

Letter ID	OCTA Preserve	Location
B	Bobcat Ridge (formerly Hafen)	Trabuco Canyon
E	Eagle Ridge (formerly Hayashi)	City of Brea
L	Live Oak Creek (formerly Saddle Creek South)	Trabuco Canyon
P	Pacific Horizon (formerly Aliso Canyon)	City of Laguna Beach
S	Silverado Chaparral (formerly MacPherson)	Silverado Canyon
T	Trabuco Rose (formerly Ferber Ranch)	Trabuco Canyon
W	Wren’s View (formerly O’Neill Oaks)	Trabuco Canyon

Appendix C
Biological Monitoring Report for OCTA M2 Preserves:
Trabuco Rose, Pacific Horizon, Bobcat Ridge,
Silverado Chaparral, Wren’s View,
Live Oak Creek, and Eagle Ridge
May 2023

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BIOLOGICAL MONITORING REPORT

FOR

**OCTA M2 PRESERVES:
TRABUCO ROSE, PACIFIC HORIZON, BOBCAT RIDGE, SILVERADO CHAPARRAL,
WREN'S VIEW, LIVE OAK CREEK, AND EAGLE RIDGE**



May 16, 2023

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1. Location Map
2. Monitoring Photos
3. OCTA Covered Species Maps
4. Photo Location Maps
5. Trails and Maintenance Maps

APPENDICES –

Appendix A	Trabuco Rose Preserve USACE/SWRCB Annual Monitoring Form (GLA)
Appendix B	Summary of Monthly Qualitative Monitoring of Burn Area Recovery Resulting from the Coastal Fire at Pacific Horizon Preserve in the City of Laguna Beach, Orange County, California – First Year 2022 (GLA)
Appendix C	Results of Visual Encounter Surveys for Terrestrial Reptiles for Trabuco Rose and Silverado Chaparral Preserves, Orange County, California, March 2022 (GLA)
Appendix D	Second Annual Monitoring Report for Disturbed Lands within Pacific Horizon Preserve Restoration, Laguna Beach, Orange County, California, 2023 (GLA)
Appendix E	Trabuco Rose Preserve Trail Monitoring Map and Photos - Year 2022 (GLA)
Appendix F	Fifth Qualitative Monitoring Associated with the Road Encroachment Area at OCTA’s Bobcat Ridge Preserve, Located in Trabuco Canyon, Orange County, California, September 2022 (GLA)
Appendix G	Survey and Monitoring of Invasive Shothole Borers and Goldspotted Oak Borer in Orange County Report (University of California Cooperative Extension, 2022)

**OCTA M2 PRESERVES:
TRABUCO ROSE, PACIFIC HORIZON, BOBCAT RIDGE,
SILVERADO CHAPARRAL, WREN'S VIEW,
LIVE OAK CREEK, AND EAGLE RIDGE
BIOLOGICAL MONITORING REPORT**

I. BACKGROUND

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 (Covered Species) and their habitats in a comprehensive manner. A key component of the Plan conservation strategy has included the identification and acquisition of habitat Preserves to offset habitat impacts.

OCTA has acquired seven properties as part of the M2 EMP; this report includes the following seven Preserves¹: Trabuco Rose (previously known as Ferber Ranch; purchased in 2011), Pacific Horizon (previously known as Aliso Canyon; purchased in 2015), Silverado Chaparral (previously known as MacPherson; purchased in 2013), Bobcat Ridge (previously known as Hafen; purchased in 2011), Wren's View (previously known as O'Neill Oaks; purchased in 2011), Live Oak Creek (previously known as Saddle Creek South; purchased in 2011), and Eagle Ridge (previously known as Hayashi; purchased in 2011). Currently the Preserves are being managed by OCTA, but a long-term Preserve Manager is anticipated to be in place within the next three to five years. The Preserve Manager is responsible for the implementation of management and monitoring tasks as outlined in each Preserve's Resource Management Plan (RMP) (OCTA 2017 – Trabuco Rose, Silverado Chaparral, Bobcat Ridge, Wren's View, and Live Oak Creek; OCTA 2018 – Pacific Horizon and Eagle Ridge). The purpose of this report is to document interim biological monitoring activities conducted by Glenn Lukos Associates (GLA) from January 1, 2022 through December 31, 2022 and provide management recommendations at the Preserves.

In addition, a total of 1.75 acres of waters of the U.S., of which 0.14 acre consists of wetlands, within Trabuco Rose Preserve is compensatory mitigation for the U.S. Army Corps of Engineers (USACE) and California State Water Resources Control Board (SWRCB) in the form of preservation. While monitoring and reporting for the entire Preserve is related to the USACE/SWRCB mitigation sites since these are surrounding buffer areas, a USACE/SWRCB Annual Monitoring Form is attached as Appendix A to provide the USACE/SWRCB with the information they require regarding tasks within the Trabuco Rose RMP that are specific to their mitigation areas.

¹ The OCTA Preserves were officially renamed through a public voting process in February 2018.

II. SITE INFORMATION

A. Responsible Parties for Biological Monitoring

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B. Landscape Setting

Trabuco Rose Preserve

The 399-acre Trabuco Rose Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon [Exhibit 1 – Location Map] and is accessed from Trabuco Oaks Road and Rose Canyon Road. Trabuco Oaks Road becomes Hickey Canyon Road near the OCTA property line. The Preserve is located immediately adjacent to the CDFW-managed Trabuco Canyon Reserve to the west and near other open space lands, including the Cleveland National Forest to the north, Trabuco Creek and O'Neill Regional Park to the south, and the Joplin Youth Center to the east, which is maintained predominately as open space.

The Preserve is located on the southwestern flank of the Santa Ana Mountains in the headwaters of Trabuco Creek and features rolling terrain with elevations ranging from 1,120–1,650 feet above mean sea level (AMSL). The site consists of several north to northeast trending ridges that are bisected by similarly trending valleys. Slopes are moderate to steep, with local small cliffs. Hickey Creek drains the western side of the Preserve.

Pacific Horizon Preserve

The 150-acre Pacific Horizon Preserve is located east of Pacific Coast Highway in the City of Laguna Beach in Orange County. The northwestern edge of the property is adjacent to residential development along Barracuda Way and Loretta Drive, while the southeastern edge of the property is adjacent to The Ranch at Laguna Beach (The Ranch). The northern and eastern boundaries abut open space in Aliso and Wood Canyons Wilderness Park.

Topography on the property is hilly, with the main ridgeline running through the middle of the property and canyons draining steep slopes to either side. Elevations range from approximately 40 feet AMSL at the southeastern edge of the property to 840 feet AMSL at the northwestern edge. Two unnamed blue-line streams occur in the northwestern portion of the property, with smaller drainage features present in the canyon bottoms.

Bobcat Ridge Preserve

The 48-acre Bobcat Ridge Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane. Surrounding land uses include California Department of Fish and Wildlife's (CDFW's) Trabuco Canyon Reserve, Cleveland National Forest, O'Neill Regional Park, and areas of low density, rural residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,190 to 1,450 AMSL. Two ephemeral drainages that flow in a westerly direction are located in the western half of this property. A larger ephemeral drainage is located along the eastern boundary of the property and appears on the USGS quadrangle as a blueline stream; several small ephemeral drainages flow into this drainage from within the property limits.

Silverado Chaparral Preserve

The 204-acre Silverado Chaparral Preserve is located in unincorporated Orange County, east of the cities of Orange and Irvine. Baker Canyon Road is to the north, Ladd Canyon Road is to the east, Silverado Canyon Road is to the south, and Black Star Canyon Road is to the west. The Preserve is accessed from Black Star Helo Pad Road and Hall Canyon Road in the northwest portion of the site. Both of these roads are dirt roads off of Baker Canyon Road. The property is within the Cleveland National Forest administrative boundary and Cleveland National Forest land holdings are to the north and east of the Preserve. The western edge of the Preserve is immediately adjacent to County of Orange open space managed by the Irvine Ranch Conservancy. Low density rural residential development occurs along Silverado Canyon Road south of the property, and a recreational vehicle (RV) park occurs to the north along Baker Canyon Road.

Topography on the Preserve is hilly, with the main ridgelines oriented in a northeast to southwest direction. Elevations range from approximately 1,135 to 1,678 feet AMSL. No blueline streams occur on the Preserve, but multiple drainage features are present in the canyon bottoms, which flow into Santiago Creek.

Wren's View Preserve

The 119-acre Wren's View Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, and is accessed from Trabuco Oaks Drive, Live Oak Canyon Road, and Trabuco Canyon Road. Live Oak Canyon Road becomes Trabuco Canyon Road south of the Preserve's southern boundary. Surrounding land uses include the O'Neill Regional Park, miscellaneous agriculture, and areas of low density, rural and medium density residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 950 to 1,250 feet AMSL. Three ephemeral drainages that flow in a westerly direction are located in the western half of the Preserve and several small, southeast-flowing ephemeral drainages occur along the southeastern boundary of the Preserve.

Live Oak Creek Preserve

The 84-acre Live Oak Creek Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon and is accessed from Live Oak Canyon Road approximately 0.3 mile from its intersection with El Toro Road/Santiago Canyon Road. Surrounding and nearby land uses include the Saddle Creek North Preserve, Cleveland National Forest, Live Oak Plaza Conservation Area, miscellaneous agricultural and commercial, St. Michael's Preparatory School, and areas of low density, rural residential development.

The Preserve is located on the southwestern flank of the Santa Ana Mountains and consists of predominantly rolling terrain with elevations ranging from 1,160 to 1,600 feet AMSL. Two principal ephemeral drainages that flow in a westerly direction occur on the property: one adjacent to Live Oak Canyon Road and the other in the center of the property.

Eagle Ridge Preserve

The 301-acre Eagle Ridge Preserve is located within a large block of undeveloped land in northeastern Orange County. Specifically, the Preserve is located in the Chino Hills southeast of Carbon Canyon Road (State Route [SR] 142) 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.

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 AMSL. A blueline stream in Soquel Canyon crosses the eastern corner of the property.

C. Covered Species and Sensitive Habitats

Trabuco Rose Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Trabuco Rose Preserve included coastal California gnatcatcher (*Polioptila californica californica*, CAGN), coastal cactus wren (*Campylorhynchus brunneicapillus*, CCW), orangethroat whiptail (*Aspidoscelis hyperythra beldingi*, OTW), bobcat (*Lynx rufus*, BC), and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*, IML). Ongoing biological monitoring has also documented nesting populations of CCW and extensive use by mountain lion (*Puma concolor*, ML). Focused surveys conducted by GLA in 2021 documented CCW and CAGN. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include many-stemmed dudleya (*Dudleya multicaulis*, MSD) and coast horned lizard (*Phrynosoma blainvillii*, CHL). The Preserve is almost entirely within U.S. Fish and Wildlife Service (USFWS) designated critical habitat for CAGN. While not a Covered Species, the Preserve is within USFWS designated critical habitat for the arroyo toad (*Anaxyrus californicus* [*Bufo microscaphus californicus*]).

The Preserve was identified as a priority conservation area because of the diversity of habitat types found on the property and its value for wildlife movement due to its adjacency to other large blocks of protected lands,

contributing to regional conservation, with the goal to enhance habitats that support Covered Species, including coastal sage scrub, cactus scrub, chaparral, grassland, riparian, wetlands, and woodland habitats. Notably, Trabuco Rose Preserve supports large areas of high-quality native grasslands, a unique habitat that has been diminished in this region due to farming/grazing practices and development.

Pacific Horizon Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2015 (Bonterra Psomas 2015). Covered Species observed on Pacific Horizon Preserve included CAGN, MSD, and IML. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CHL, OTW and BC. The Preserve is not located in an area proposed or designated as critical habitat. There is critical habitat for CAGN to the south and southeast of the Preserve.

The Pacific Horizon Preserve satisfies many of the property acquisition criteria that were utilized to evaluate potential alignment with the OCTA EMP program including being identified as a Priority Conservation Area (PCA); supporting Covered Species and associated natural communities; contributing to regional biological connectivity; and containing a diversity of high-quality habitat types, including chaparral, grassland, and coastal sage scrub.

Bobcat Ridge Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Bobcat Ridge Preserve included CCW and IML. In 2019, GLA documented OTW during biological monitoring. Focused surveys conducted by GLA in 2021 also documented CCW. BC was detected on wildlife cameras in 2021 and 2022. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN, ML, and CHL. The Preserve is almost entirely within USFWS designated critical habitat for the CAGN.

The Bobcat Ridge Preserve satisfies many of the property acquisition criteria that were 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 coastal sage scrub, ephemeral and intermittent streams supporting riparian woodland, wetlands, oak woodland, grassland, and cliff and rock.

Silverado Chaparral Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2014 (Bonterra Psomas 2015). Covered Species observed on Silverado Chaparral Preserve included OTW, coast horned lizard, and IML. OCTA and Orange County Parks staff confirmed ML tracks on the Preserve in 2016. GLA documented presence of BC during biological monitoring in 2019 and CCW during focused surveys in 2021. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN and MSD. While not a Covered Species, the Preserve is within USFWS designated critical habitat for the arroyo toad.

The Silverado Chaparral Preserve satisfies many of the property acquisition criteria that were 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 coastal sage scrub, chaparral, coast live oak woodland, riparian forest, and grassland.

Wren's View Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Wren's View Preserve included California gnatcatcher, OTW, ML, and IML. Ongoing biological monitoring has also documented presence of BC, while also confirming use by ML. GLA detected numerous CCW territories during focused surveys in 2021. GLA also detected one gnatcatcher pair nesting approximately 18 feet from the boundary but using the Preserve as territory. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CHL. The Preserve is within USFWS designated critical habitat for CAGN. While not a Covered Species, the Preserve is within USFWS designated critical habitat for the arroyo toad.

The Wren's View Preserve satisfies many of the property acquisition criteria that were 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 coastal sage scrub, oak woodland, chaparral, cliff, and rock.

Live Oak Creek Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Covered Species observed on Live Oak Creek Preserve included CCW and IML. GLA confirmed presence of BC and ML in 2019. GLA documented cactus wren during focused surveys and OTW during biological monitoring in 2021. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN and CHL. The Preserve is within USFWS designated critical habitat for CAGN.

The Live Oak Creek Preserve satisfies many of the property acquisition criteria that were 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 chaparral, coastal sage scrub, riparian woodland, oak woodland, and grassland.

Eagle Ridge Preserve

Bonterra Consulting conducted biological baseline surveys for the Preserve in 2012 (Bonterra 2013). Bonterra did not detect any Covered Species during baseline surveys; however, several species were noted by Bonterra as having a potential to occur, including western pond turtle (*Emys marmorata*). At the time of Bonterra's baseline surveys, pond turtles were known from Carbon Canyon Creek south of the Preserve but were not detected by Bonterra in Soquel Canyon within the Preserve. In 2021, GLA biologists and U.S. Geological Survey (USGS) biologists on separate occasions detected pond turtles inside and outside the Preserve. GLA biologists also detected two pond turtles onsite within Soquel Canyon Creek on June 7, 2022. GLA noted BC at the Preserve in 2019 through wildlife camera detections. During focused surveys in 2021, GLA detected one least Bell vireo (*Vireo bellii pusillus*) on the very western edge of the property, which is

also using the contiguous willow habitat beyond the property. Additional Covered Species with the potential to occur include CHL, OTW, and CAGN, though many of these species have a limited potential for occurrence. The local community has also documented use by ML. The Preserve is not located in an area proposed or designated as critical habitat. There is critical habitat for CAGN to the southwest of the Preserve.

The Preserve was identified as a priority conservation area because of the diversity of habitat types found on the property and its value for contributing to regional biological connectivity, with the goal to enhance habitats that support Covered Species, including oak woodland, chaparral, grassland, and riparian.

III. MONITORING ACTIVITIES

Monitoring activities focus on the overall condition of the Preserves and threats and stressors to the Preserves' wildlife and habitat. This includes mapping and recording invasive plant and wildlife species, unauthorized trail cutting, encroachments by adjacent property owners, areas of erosion and/or sedimentation, and monitoring trail conditions. Monitors also review the Preserve for maintenance needs including examining fence lines and gates, checking for missing or damaged signage, reporting fallen trees, and documenting trash and illegal dumping, as necessary. Detections of OCTA M2 Covered Species and/or sensitive species are documented and reported to the CNDDDB. Exhibit 2 provides monitoring photographs, Exhibit 3 provides special status species mapping including OCTA Covered Species, Exhibit 4 provides locations of monitoring photographs and wildlife camera stations, as applicable, and Exhibit 5 provides trail mapping, new invasive species mapping, utility mapping, and maintenance/encroachment information.

A. Summary of Biological Monitoring Surveys

This report documents survey visits conducted by GLA biologists from January 1 through December 31, 2022, which were overseen by David Moskovitz, Lead GLA Biological Monitor. For any species detected incidentally, its location was recorded through Global Positioning System (GPS), as well as noting whether it was a new occurrence/location, or a likely confirmation of a previously noted occurrence.

Table 1 provides a summary list of survey dates, personnel, tasks completed, covered/sensitive species observed, action items, and recommendations to OCTA. The staff key for Table 1 is provided below:

GLA Staff Key

AB = Amy Black	JV = Joseph Vu
BL = Brinna Lee	KK = Kristin Kartunen
DS = David Smith	SA = Sheri Asgari
JA = Jeff Ahrens	SC = Stephanie Cashin
JF = Jason Fitzgibbon	VP = Velvet Park
JS = Jillian Stephens	WJ = Wanisa Jaikwang

Table 1. Summary of Survey Visits to the M2 Preserves

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Trabuco Rose Preserve						
5/10/22	Trails Monitoring; Corps Preservation Monitoring; Focused Reptile Pilot Survey #1	SA, SC, BL	Passive trails restoration monitoring and Corps annual monitoring and photos; check trespass signage and camera; check for unauthorized locks.	None	No unauthorized locks present.	None
5/24/22	PLANTS 1, HERP 1 ²	JA, DS, SC	Focused Plant Survey #1; Focused Reptile Pilot Survey #1; check cameras.	OTW, IML, coastal whiptail (CW)	IML locations mapped. Herp grids checked. Native and non-native ant colonies mapped.	Discuss ant species identification. Newly mapped location of artichoke thistle should be removed.
5/26/22	PLANTS 1	JF, WJ	Focused Plant Survey #1	IML	IML locations mapped.	Large polygon of mapped Italian thistle should be removed.
6/8/22	PLANTS 2	JF, BL	Focused Plant Survey #2	IML	IML locations mapped.	None
6/16/22	HERP 1	JA, SC	Focused Reptile Pilot Survey #1	OTW	Herp grids checked. Native and non-native ant colonies mapped.	None
6/21/22	Trespass/Camera Check	SC	Check trespass camera	OTW	Walked main drainage with Ryan McInnis (OCTA's private security company) from Joplin boundary to Parker property boundary to check for unauthorized wildlife cameras. None were detected. Pulled Camera M due to potential theft concern to place in nearby area.	None

² PLANTS 1, HERP 1 = Focused covered plant survey #1, focused covered CHL and OTW survey #1

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
7/5/22	HERP 1	SC, JA	Focused Reptile Pilot Survey #1	OTW, CW	Herp grids checked. Mapped many non-native ant colonies and many abandoned red harvester ant colonies.	None
9/14/22	Stewardship Monitoring	JS, WJ	Fence monitoring; general stewardship monitoring; conducted camera maintenance.	None	Two fence lines mapped for repair.	Repair fence lines.
9/14/22	HERP 2	SC, JA	Focused Reptile Pilot Survey #2; conducted camera maintenance.	OTW	n/a	None
10/5/22	HERP 2	SC, JA	Focused Reptile Pilot Survey #2	None	Herp grids checked. Native and non-native ant colonies inspected for activity.	None
10/7/22	HERP 2	SC, JA	Focused Reptile Pilot Survey #2	OTW; CW	Herp grids checked. Native and non-native ant colonies mapped.	None
Pacific Horizon Preserve						
5/24/22	Fire Review	SA, LH	Fire damage reconnaissance with Raquel Atik (RECON).	MSD (incidental observation of flowering MSD along trail) in/adjacent to previously mapped locations	Discussed immediate actions to deter mountain biking/hiking within the burn footprint on pre-existing trails and new dozer and hand-cut fire lines. RECON will place fencing and signage at top of trail above the burn area and use hand-crews to move loose soil and cut woody vegetation over the trail to obscure entry; discussed drone mapping of the burn area to occur soon as well as follow-up drone flights to keep track of any new bike trails and to monitor natural regeneration; discussed erosion control measures including straw wattle or jute netting installation, as well as moving native rocks (as available within the burn area) to aid in trail closure and erosion control.	RECON to install signage and fencing in the first week of June, and to install straw wattles for erosion control on closed trail; GLA to fly drone on June 1 for baseline post-fire mapping and coordinate follow-up future mapping with OCTA.

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
5/26/22	PLANTS 1	SC, BL	Focused Plant Survey #1	MSD and IML	Mapped MSD.	Discuss potential MSD population expansion.
5/31/22	PLANTS 2	SC, WJ	Focused Plant Survey #2	MSD and IML	No new detections of MSD. Mapped IML.	None
6/1/22	Drone Mapping of Burn Footprint	JS, KK	Conducted aerial mapping of burn footprint for monitoring purposes.	None	n/a	None
6/13/22	Wildlife Camera Install	JA	Installed two wildlife cameras.	None	n/a	None
6/30/22	Fire Review	JF	Fire exclusion fencing/unauthorized use monitoring.	None	Exclusion fencing remains in place around burned area, very limited signs of continued hike and bicycle recreation into and beyond the burn zone.	None
7/7/22	Fire Review/Docent Training	SC, SA, BL, AB	Fire exclusion fencing/unauthorized use monitoring, checked Camera A, and conducted docent training.	None	Exclusion fencing remains in place around burned area, some signs of continued hike and bicycle recreation into and beyond the burn zone.	None
7/23/22	OCTA Public Hike Event	BL, AB	Served as docents.	None	n/a	n/a
8/12, 9/13, 10/17, and 11/14	Fire Review	AB/BL	Fire exclusion fencing/unauthorized use monitoring.	None	See Burn Area Monitoring Memo attached as Appendix B.	See Burn Area Monitoring Memo attached as Appendix B.
9/22/22	Stewardship Monitoring	JS, SC, JA	General stewardship monitoring, conducted camera maintenance.	None	n/a	None
11/5/22	OCTA Public Hike Event	SA, AB	Served as docents.	None	n/a	n/a
Bobcat Ridge Preserve						
5/10/22	Encroachment Monitoring	SA, SC, BL	Encroachment monitoring; conducted camera maintenance; mapped new Preserve signs.	CCW, OTW	Encroachment looks similar to previous visit (November 2021).	None
6/8/22	PLANTS 1	JS, CW	Focused Plant Survey #1	IML	IML mapped.	None

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
10/13/22	Stewardship Monitoring	JS, WJ	General stewardship monitoring and fence monitoring.	None	Barbed wire fence along southern boundary is loose/down along the entire extent of this fence line. It is slightly outside the Preserve boundary and may not be on OCTA property, but it is a hazard to wildlife and should be removed as it is not serving any purpose.	Repairs or remove fence to prevent wildlife entanglement.
10/20/22	Camera Maintenance	SC	Conducted camera maintenance.	CCW	n/a	None
Silverado Chaparral Preserve						
5/18/22	HERPS 1	SC, JA	Focused Reptile Pilot Survey #1	CHL scat, granite spiny lizard, IML, and Catalina mariposa lily (<i>Calochortus catalinae</i> , CML)	Herp grids checked. Native ant colonies, CHL scat, and numerous non-native ant colonies mapped. Mapped IML and CML.	Discuss ant species identification.
6/6/22	PLANTS 1, HERPS 1	JA, JF	Focused Plant Survey #1; Focused Reptile Pilot Survey #1	IML and CHL scat	Herp grids checked. IML mapped. Ant colonies and multiple CHL scat mapped.	None
6/9/22	HERPS 2	SC, JA, CW	Focused Plant Survey #2; Focused Reptile Pilot Survey #2	CHL scat, IML, and CML	Herp grids checked. Native ant colonies, CHL scat, and numerous non-native ant colonies mapped. Mapped IML and CML.	None
6/14/22	Wildlife Camera Install	JA	Installed three wildlife cameras.	None	n/a	None
6/15/22	Invasive Plant Species Reconnaissance	SA, JS	Conducted invasive plant species reconnaissance.	None	Walked the main access road and loop trail. Noted more weeds (primarily mustard) on the lower westerly portion of the loop trail than previously mapped.	Include new weeds in Preserve mapping update.
9/28/22	Stewardship Monitoring	JS, JF	General stewardship monitoring and conducted camera maintenance.	None	n/a	None
9/30/22	HERPS 2	SC, JA	Focused Reptile Pilot Survey #2	None	Herp grids checked. Mapped native ant colonies and numerous non-native ant colonies.	None

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Wren's View Preserve						
3/22/22	Nesting Bird Survey	JA	Conducted nesting bird survey for removal of two dead oak trees (related to gold spotted oak borer).	None	No nests were detected.	Potential bat habitat exists - avoidance/minimization measures were provided to OCTA.
4/2/22	OCTA Public Hike Event	BL, WJ	Served as docent.	None	n/a	None
5/21/22	OCTA Public Hike Event	WJ, JF	Served as docent.	None	n/a	None
6/6/22	PLANTS 1	DS, JV	Focused Plant Survey #1	IML	IML mapped.	None
6/6/22	Invasive Plant Species Reconnaissance	SA	Conducted invasive plant species reconnaissance.	None	Noted generally same conditions as mapped in 2017.	Recommend twice per year weed abatement: 1st pass: mow and spray within 3 weeks in December/January; 2nd pass: mow weeds on roads in March/April. Remove tree tobacco from road and within 20-foot buffer of roads.
10/4/22	Stewardship Monitoring	JS, WJ	General stewardship monitoring and fence monitoring.	None	Previously noted downed fence lines/loose barbed wire still present.	Repair and/or remove fence to prevent wildlife entanglement.
Live Oak Creek Preserve						
5/3/22	Stewardship Monitoring, Check Flowering Status of CML	JS, JF	Mapped invasive species and trash/landscape dumping.	None	Many non-native species (primarily grasses and Italian thistle) were noted along the access road.	Maintain access road. Remove trash/landscape dumping.
6/8/22	PLANTS 1	JS, CW	Focused Plant Survey #1	IML, CML (capsules observed), and OTW	IML mapped. CML capsules observed.	None
10/13/22	Stewardship Monitoring	JS, WJ	General stewardship and fence monitoring.	None	n/a	None

Date of Visit	Purpose of Visit	GLA/OCTA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Eagle Ridge Preserve						
6/7/22	PLANTS 1	SC, JV	Focused Plant Survey #1	Southwestern pond turtle (on and offsite; two in pool onsite)	No IML or MSD detected. Scanned rocky outcrops on slopes; most slopes appeared unsuitable for both species. Did not see evidence of cows, horses, or humans in canyon bottom. East boundary was very overgrown, inferring that cows may no longer enter. Trails filling in and sometimes hard to pass. Scanned onsite pool and detected two southwestern pond turtles. The pool also extends further downstream this year. Scanned offsite pools and detected several southwestern pond turtles.	Maintain trails.
10/27/22	Biological Monitoring	SC, JA	Stewardship monitoring and established riparian photo locations.	CML	Cows appear to be excluded - no recent evidence of hooves or scat, and vegetation is filling in along existing trails. Mapped many healthy red harvester ant colonies, but no sign of CHL (scat). Argentine ants occur onsite. CML detected and mapped onsite.	None

B. Monitoring Results

i. Covered Wildlife Species

Per the RMPs, Effectiveness Monitoring is to be performed every four years by conducting focused visual encounter surveys (VES) for terrestrial reptiles. GLA implemented a focused pilot survey for CHL and OTW at Trabuco Rose and Silverado Chaparral Preserves in 2022. The results of those surveys are summarized below, under the respective Preserve section. A report detailing focused survey results is attached as Appendix C.

GLA will implement focused VES for CHL and OTW at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023. Consistent with the 2022 surveys, GLA biologists will take extra effort to photograph individuals to document identifying characteristics that distinguish OTW from the non-native Sonoran whiptail (*Aspidoscelis sonorae*, SW), including the dorsal stripe, orange throat of adult males, or blue tails of juveniles.

For all Preserves, GLA will continue to map incidental detections of Covered Wildlife Species through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. Previous and current detections of Covered Wildlife Species are depicted on Exhibit 3 – OCTA Covered Species Map.

Trabuco Rose

Focused surveys for CHL and OTW were conducted on May 24, June 16, July 5, September 14, October 5, and October 7, 2022. OTW was confirmed present at Trabuco Rose; however, CHL was not detected during the surveys. OTW was detected at nine locations at the Preserve. The identity of the observed individuals was confirmed as OTW through at least one distinguishing characteristic, including the presence of merging dorsal stripes, orange throat on adult males, or blue tail of juveniles, and when feasible individuals were photographed to document these characteristics. However, not all OTW were photographed given their skittish behavior and ability to dart under cover quickly. No SW individuals were detected during focused surveys.

Although CHL was not confirmed present at Trabuco Rose during the 2022 focused surveys, and the species has not been previously observed at the Preserve during past monitoring efforts, approximately 9 active native harvester ant colonies and additional inactive native colonies were documented within the Preserve. The ant colonies were detected along existing roads, trails, and in open canopy scrub/chaparral habitat. As harvester ants are a primary food source of CHL, the presence of harvester ants in conjunction with suitable habitat demonstrates that the Preserve has the potential to support CHL. However, non-native ant colonies were also documented within the Preserve, and as discussed below, the presence of non-native ants should be considered in the long-term management of the Preserve for CHL.

Three wildlife cameras were present on the Preserve throughout 2022. Consistent with previous years, the cameras detected ML and BC throughout the Preserve on numerous occasions. Camera J detected a ML with two cubs [Exhibit 4 - Photo Location Map].

Recommendations

Continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential

trends in population growth or decline. Continue usage of wildlife cameras to potentially detect Covered Mammals, provided the annual budget allows.

There are no recommendations for the 2023 monitoring year at the Trabuco Rose Preserve as it pertains to the covered reptile species. As noted above, the OTW was detected at the Preserve in 2022 and no actions are recommended for OTW until the next scheduled VES is to be conducted. Although CHL was not detected in 2022, the Preserve contains suitable habitat for CHL and multiple active colonies of harvester ants (primary CHL food source) were mapped. However, multiple colonies of invasive (Argentine) ants were also mapped, which would represent a threat to the native ant prey population if CHL were present. As presented in GLA's report documenting the results of reptile surveys for the Trabuco Rose Preserve and the Silverado Chaparral Preserve, GLA noted that OCTA should consider collaborating with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies at one or more preserves in the future, though not specifically in 2023. However, GLA recommends that any feasible treatments be focused on the Silverado Chaparral Preserve since that is the only preserve where CHL has been documented to date. GLA does not recommend any actions at Trabuco Rose for CHL until and if any treatment actions are demonstrated to be successful at Silverado Chaparral.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2022, which were completed. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. GLA also recommended the continued use of wildlife cameras, which was implemented in 2022.

Pacific Horizon

No new detections of Covered Wildlife Species occurred on Pacific Horizon Preserve. Two wildlife cameras were installed in 2022, but they are still being adjusted to best detect wildlife and they have not captured Covered Wildlife Species. The Preserve is likely utilized by BC, though none have been incidentally detected at the site during baselines studies or subsequent monitoring. However, the Preserve is not expected to be utilized by ML due to its location.

Recommendations

Implement effectiveness monitoring for CHL and OTW in 2023. Continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. Continue camera usage onsite to potentially detect Covered Mammals, adjusting camera location and positioning as directed by the Lead Biologist.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2023, which are scheduled. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. GLA also recommended installation of wildlife cameras, which was implemented in 2022.

Bobcat Ridge

OTW was detected during stewardship monitoring. No other new detections of Covered Wildlife Species occurred in 2022. One wildlife camera is currently installed on the Preserve, which detected BC in 2022. The Preserve is likely utilized by ML, but it has not been detected during baseline surveys/monitoring.

Recommendations

Implement effectiveness monitoring for CHL and OTW in 2023. Continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential trends in population growth or decline. Continue usage of wildlife camera to potentially detect Covered Mammals, provided the annual budget allows.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2023, which are scheduled. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. GLA also recommended the continued use of wildlife cameras, which was implemented in 2022.

Silverado Chaparral

Focused surveys for CHL and OTW were conducted on May 18, June 6, June 9, and September 30, 2022. OTW was not detected during the surveys. No CHL individuals were observed during the surveys, but CHL was confirmed present by the detection of scat clustered in eight locations at the Preserve. Two additional locations of CHL scat were detected immediately adjacent to the Preserve. CHL scat was detected in areas with open scrub, near existing trails, and often on ridgelines. At some locations, multiple detections of CHL scat were clustered in close proximity; therefore, the number of scat detections do not equal the number of CHL individuals present. Three of the CHL detections were near locations where CHL individuals were incidentally observed during past monitoring efforts. No SW individuals were detected during focused surveys.

Both native red harvester ants and non-native Argentine ants were detected at the Preserve. Approximately 20 native ant colonies were detected, often near where CHL scat was documented, with many inactive colonies also observed. In addition, many non-native ant colonies were also documented. The ant colonies were detected along existing roads, trails, and in open canopy scrub/chaparral habitat.

Although OTW was not detected at Silverado Chaparral in 2022 during the focused surveys, OTW was previously detected in one location at the Preserve during a past monitoring effort.

Three wildlife cameras are currently installed on the Preserve and all three cameras detected ML. BC was also detected via wildlife camera.

Recommendations

Continue to map incidental detections through ongoing biological monitoring, or otherwise note the absence of detections in areas where species were previously detected, in order to detect potential

trends in population growth or decline. Continue usage of wildlife cameras to potentially detect Covered Mammals in 2023.

There are no recommendations for the 2023 monitoring year at the Silverado Chaparral Preserve as it pertains to the OTW. Although the OTW was not detected at the Preserve in 2023, the species has been detected at the Preserve previously, and GLA has not documented any specific threats to the species that would warrant immediate attention. CHL was detected in multiple locations in 2022, as well as multiple active colonies of harvester ants. However, multiple colonies of invasive (Argentine) ants were also mapped, which represent a threat to the native ant prey population. As presented in GLA's report documenting the results of reptile surveys for the Trabuco Rose Preserve and the Silverado Chaparral Preserve, GLA noted that OCTA should consider collaborating with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies at Silverado Chaparral in the future, though not specifically in 2023.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2022, which were completed. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. GLA also recommended the continued use of wildlife cameras, which was implemented in 2022.

Wren's View

No new detections of Covered Wildlife Species occurred on Wren's View Preserve.

Recommendations

Implement effectiveness monitoring for CHL and OTW in 2023. Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2023, which are scheduled. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. It was recommended that as part of adaptive management strategies, wildlife cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property; however, no issues warranted that action.

Live Oak Creek

No new detections of Covered Wildlife Species occurred on Live Oak Creek.

Recommendations

Implement effectiveness monitoring for CHL and OTW in 2023. Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2023, which are scheduled. Mapping of incidental detections or noting absence of detections where species were previously detected is an ongoing task. It was recommended that as part of

adaptive management strategies, wildlife cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property; however, no issues warranted that action.

Eagle Ridge

GLA documented two southwestern pond turtle individuals onsite during stewardship monitoring. While one individual was previously identified, the confirmation of two individuals is new. No other new detections of Covered Wildlife Species occurred in 2022. Note that cattle have been removed from the Preserve.

Recommendations

Implement effectiveness monitoring for CHL and OTW in 2023. Continue to monitor pond turtle threats/stressors including cattle and human disturbance and invasive plant and wildlife species. Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended that Preserve-wide visual encounter surveys for CHL and OTW occur in 2023, which are scheduled. GLA also recommended continued monitoring pond turtle threats/stressors including cattle and human disturbance and invasive plant and wildlife species, which is being implemented on an ongoing basis. It was recommended that as part of adaptive management strategies, wildlife cameras may be reinstalled should an issue arise that warrants the usage of the cameras on the property; however, no issues warranted that action.

Covered Wildlife Species Recommendations Summary

For covered animal species, continue to implement effectiveness monitoring for the covered reptiles (OTW and CHL) in 2023 at the remaining Preserves (Pacific Horizon, Bobcat Ridge, Wren's View, Live Oak Creek, and Eagle Ridge). The reptile surveys are intended to generally follow the methodology implemented for the surveys performed in 2022 for the Trabuco Rose Preserve and the Silverado Chaparral Preserve. As noted above, colonies of invasive (Argentine) ants were mapped throughout out both Trabuco Rose and Silverado Chaparral in 2022 while performing the reptile surveys, which represent a threat to the native ant prey populations. OCTA should collaborate with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies at one or more preserves in the future, though not specifically in 2023. However, GLA recommends that any feasible treatments be initiated at the Silverado Chaparral Preserve since that is the only preserve where CHL has been documented to date. GLA does not recommend any actions at Trabuco Rose for CHL until and if any treatment actions are demonstrated to be successful at Silverado Chaparral.

Incidental detections of CAGN, cactus wren, and least Bell's vireo will be mapped during Preserve visits, including for focused reptile surveys and general biological monitoring. Incidental detections of the covered mammals (BC and ML) are unpredictable, and oftentimes rare. Monitoring of the mammals are best achieved through the ongoing use of wildlife cameras (as discussed below), supplemented by the detection of tracks and/or scat during general monitoring. As applicable, analyze data in order to detect potential trends in population growth or decline. At Eagle Ridge, continue to monitor pond turtle threats/stressors including cattle and human disturbance and invasive plant and wildlife species.

ii. Covered Plant Species

GLA conducted focused plant surveys for the Covered Species, IML and MSD, in spring of 2022 per the NCCP/HCP commitment to conduct focused surveys every 3 to 5 years based on rainfall, after the RMPs are finalized (2017-2018). During the 2022 rainy season, Orange County received 6.56 inches of rain (NOAA 2023) which was substantially below the calculated average of 10.70 inches for the county. However, regardless of the shortage of rainfall that year, IML and MSD populations appeared to be generally stable and/or growing, as is evident by the recorded number of individuals in 2022, with two exceptions (Pacific Horizon and Wren’s View Preserves) as described in more detail below. The recorded individuals all flowered and were detectable in 2022, despite the below average rainfall. Focused plant surveys were conducted in accordance with the protocol specified in Section 4.1.1 of the RMP, in addition to California Native Plant Society and CDFW survey guidelines. Data was collected during the appropriate blooming season for each species following multiple phenology checks, and detailed field notes were taken to document the surrounding environment such as vegetation composition, nonnative plants, and potential threats. The results of the plant surveys are summarized in Table 2 below and depicted on Exhibit 3 – OCTA Covered Species Map.

Table 2. 2022 Focused Plant Survey Data

Preserve	Baseline Data (IML)	2022 Data (IML)	Baseline Data (MSD)	2022 Data (MSD)
Trabuco Rose	69	578	0	0
Pacific Horizon	144	8	60	57
Bobcat Ridge	79	92	0	0
Silverado Chaparral	22	177	0	0
Wren’s View	283	36	0	0
Live Oak Creek	2	42	0	0
TOTAL	597	933	60	57

Trabuco Rose

GLA conducted focused surveys for IML and MSD on May 25-26 and June 8, 2022. A total of 578 IML were mapped. No MSD were detected.

Recommendations

Although no impacts are expected, monitoring should continue to include areas of documented IML and suitable habitat along access roads where maintenance routinely occurs, to ensure that any maintenance activities are not adversely affecting the IML populations at this Preserve. In addition, ground disturbing activities near documented IML should be avoided to prevent damaging the perennial bulbs; however, if ground disturbing maintenance is required, it is recommended that a biological monitor be onsite to monitor the activity and alert the crew when working in proximity to the bulbs.

Previous Recommendations

GLA previously recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed. GLA also recommended monitoring to include areas of documented mariposa lily and suitable habitat along access roads where maintenance occurs, to confirm that the

maintenance activities are not adversely affecting mariposa lily populations. This was also completed, and no impacts occurred.

Pacific Horizon

GLA conducted focused surveys for IML and MSD on May 25-26, 2022. A total of 8 IML and 57 MSD were mapped. It should be noted that 144 individuals of IML were observed during baseline surveys in 2015; however, an area that previously contained a population of 114 IML was inadvertently not surveyed in 2022, which is anticipated to be the reason for the lower population count. This area will be surveyed in 2023 to rectify the data. Additionally, after reviewing the biological baseline report prepared by Bonterra, it is likely that their methodologies resulted in increased IML being mapped, as it is noted in their report that IML was mapped vegetatively and in fruit, neither of which is a reliable way of identifying this species.

In addition, GLA reviewed the SCE impact areas in which vegetation was cleared for utility pole maintenance, as well as the boundary of the Coastal Fire which burned approximately 30 acres of the Preserve on February 10, 2022. None of the impacted vegetation from each of these disturbances contained IML or MSD. As such, no impacts to IML or MSD occurred as a result of the SCE impacts or Coastal Fire.

Recommendations

As noted above, GLA will update the 2022 survey results for IML to include an area that was previously missed. Based on the results of this survey, recommendations may be provided to OCTA for IML.

In addition, the RMP states that a minimum of 500 MSD individuals should be maintained or established at a new location within the OCTA Preserves. Pacific Horizon is the only Preserve in which MSD has been observed, with 127 individuals being observed in 2019 and 57 in 2022. As such, a restoration plan has been developed for MSD to meet the minimum goal of 500 individuals. The Wildlife Agencies have reviewed the draft plan and OCTA/GLA are in the process of responding to comments.

Previous Recommendations

GLA previously recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed. GLA also recommended continued implementation of the Disturbed Lands Restoration Plan (DLRP) to protect Covered Plant species, which is ongoing. The report detailing DLRP monitoring results is attached as Appendix D.

Bobcat Ridge

GLA conducted focused surveys for IML on June 8, 2022. A total of 92 IML were mapped. No MSD were detected.

In addition, GLA reviewed the disturbance footprint of the encroachment area from the adjacent residence, in which vegetation was cleared in 2017 and 2020. A total of 6 IML were impacted from these disturbances, as the perennial individuals were mapped by Bonterra during baseline surveys in 2015, and the IML individuals did not reoccur in the impacted area in 2022. As such, it is presumed that the 6 IML individuals were impacted as a result of the encroachment disturbance.

Recommendations

No additional impacts are expected within this Preserve; however, biological monitoring should continue to document unexpected disturbances and to ensure the IML population at Bobcat Ridge is maintained.

Previous Recommendations

GLA previously recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed. As part of adaptive management strategies, GLA previously recommended that the monitoring of known populations of IML include additional focus on the area of disturbance along the southern boundary to determine the potential extent of impact due to the disturbance, which was completed during focused surveys in 2022 as described above.

Silverado Chaparral

GLA conducted focused surveys for IML and MSD on June 6, 2022. A total of 177 IML were mapped. No MSD were detected. GLA also reviewed the impact areas in which vegetation was cleared for fencing installation and SCE maintenance during 2021. None of the impacted vegetation contained IML. As such, no impacts to IML occurred as a result of the disturbances at Silverado Chaparral.

Recommendations

Although no impacts are expected, monitoring should continue to include areas of documented IML and suitable habitat along access roads and trails where maintenance routinely occurs, to confirm that any maintenance activities are not adversely affecting IML populations. In addition, ground disturbing activities near documented IML should be avoided to prevent damaging the perennial bulbs; however, if ground disturbing maintenance is required, it is recommended that a biological monitor be onsite to monitor the activity and alert the crew when working in proximity to the bulbs.

Previous Recommendations

GLA recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed.

Wren's View

GLA conducted focused surveys for IML on June 6, 2022. A total of 36 IML were mapped. It should be noted that 283 individuals of IML were observed during baseline surveys in 2012. GLA previously reported disturbance to no more than ten IML as a result of maintenance of the main road going up to the gate. In addition, after reviewing the biological baseline report prepared by Bonterra, it is likely that their methodologies resulted in increased IML being mapped, as it is noted in their report that IML was mapped vegetatively and in fruit, neither of which is a reliable way of identifying this species. Regardless, the population drop from over 200 IML in 2012 to 36 IML in 2022 is notable, and the population of this species at Wren's View should be closely monitored. As a result, GLA will be re-surveying areas of previously documented IML along roads and fencing that were not documented in 2022 to determine the possibility of past maintenance activities impacting IML.

Recommendations

Due to many IML individuals growing near roads and fences within this Preserve, if maintenance is necessary when IML is present, biological monitors should be scheduled to flag the plants so they may be easily avoided during work activities and consider biological monitoring. In addition, ground disturbing activities near documented IML should be avoided to prevent damaging the perennial

bulbs; however, if ground disturbing maintenance is required, it is recommended that a biological monitor be onsite to monitor the activity and alert the crew when working in proximity to the bulbs.

Previous Recommendations

GLA recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed. As part of adaptive management strategies, GLA recommended that if road maintenance is necessary when IML is present, biological monitors should be onsite to flag the plants and to consider monitoring the work. No maintenance work requiring a biological monitor was conducted in 2022.

Live Oak Creek

GLA conducted focused surveys for IML on June 8, 2022. A total of 42 IML were mapped. No MSD were detected.

Recommendations

Although no impacts are expected, monitoring should continue to include areas of documented IML and suitable habitat along access roads and trails where maintenance routinely occurs, to ensure that any maintenance activities are not adversely affecting the IML populations at this Preserve. In addition, ground disturbing activities near documented IML should be avoided to prevent damaging the perennial bulbs; however, if ground disturbing maintenance is required, it is recommended that a biological monitor be onsite to monitor the activity and alert the crew when working in proximity to the bulbs.

The RMP states that potential threats and stressors to IML on this Preserve include competition from nonnative plant species. To protect IML, begin implementation of the ISMP in 2023. Focus on Priority 1 polygons in the ISMP to reduce the threat to IML. This includes removal of annual grasses and mustard that pose a higher threat to IML and treatment of disturbed lands where IML occurs along the road, which is directly outcompeted by the invasive grasses and forbs.

Previous Recommendations

GLA recommended that Preserve-wide focused covered plant surveys occur in 2022, which were completed.

Eagle Ridge

GLA conducted focused surveys for IML and MSD on June 7, 2022. Biologists scanned rocky outcrops on slopes and most appeared unsuitable for both species. No covered plant species have been detected at the property.

Recommendations

GLA does not anticipate detecting Covered Plant species at this Preserve and does not recommend future implementation of effectiveness monitoring for Covered Plants.

Previous Recommendations

GLA previously recommended that any incidental detections of Covered Plant species be mapped during biological monitoring visits, rather than effectiveness monitoring due to lack of detections and several years of biological monitoring. Regardless, effectiveness monitoring was implemented, and no Covered Plant species were detected.

Covered Plant Species Discussion/Recommendations

The NCCP/HCP includes the requirement that OCTA protect and monitor the locations of IML detected during baseline surveys in 2015, totaling 597, and any future locations found. With the exception of Pacific Horizon and Wren's View, which will be further studied as described above during the blooming period in 2023, all Preserves contained higher populations of IML than 2015, and the overall number of 933 greatly exceeded the 2015 baseline total. It is also important to acknowledge that trends in both IML and MSD populations cannot be analyzed at this time, as only two years of focused plant surveys have been performed, during the baseline data collection and again in 2022.

GLA recommends that incidental detections of new locations continue to be obtained during general biological monitoring, and monitors should continue to check areas of documented locations and suitable habitat to confirm that road maintenance activities or unauthorized activities are not adversely affecting populations.

As part of adaptive management strategies, GLA recommends increasing monitoring efforts for IML and MSD when average or above average rainfall occurs. To protect IML at Live Oak Creek, begin implementation of the ISMP. At Pacific Horizon, GLA recommends the continued implementation of the DLRP and monitoring to document unauthorized activities that could affect the MSD population. To meet NCCP/HCP Species Goals and Objectives, a restoration plan for MSD should be implemented at Pacific Horizon.

iii. Non-Covered Sensitive Wildlife Species

GLA did not detect any new non-covered sensitive wildlife species while performing biological monitoring in 2022.

Recommendations/Previous Recommendations

GLA has no recommendations pertaining to the non-covered sensitive wildlife species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as is applicable based on the species detected. This is an ongoing task.

iv. Non-Covered Sensitive Plant Species

CML was a new species detection at Silverado Chaparral. GLA did not map any other new non-covered sensitive plant species while performing biological monitoring in 2022.

Recommendations/Previous Recommendations

GLA has no recommendations pertaining to the non-covered sensitive plant species, other than that the detection of non-covered sensitive species will be documented during ongoing biological monitoring, and the locations of species will be added to the GIS database as applicable based on the species detected. Additionally, any threats and stressors to mapped locations of non-covered sensitive plant species will be documented and any recommendations made to OCTA. This is an ongoing task.

v. Wildlife Cameras

Trabuco Rose

Wildlife cameras were present from 2013 through 2019 on the Preserve. Three cameras were re-installed in March 2021 to continue tracking wildlife and trespass [Exhibit 4 – Photo Location Map]. ML, BC, mule deer, coyote, and gray fox have been routinely detected over the years, including in 2022. Occasional trespass was detected in 2022, including people with dogs. Multiple domestic cats were also detected.

Recommendations/Previous Recommendations

As the trespass is infrequent and people are walking on existing roads and not cutting vegetation or vandalizing trees, fencing, signage, or gates, no additional management actions are recommended at this time; however, the perimeter fencing will continue to be monitored annually and wildlife cameras will remain onsite to provide information on human usage. Implementation of these recommendations is ongoing.

Pacific Horizon

Two wildlife cameras were installed on June 13, 2022, for tracking wildlife use and abundance throughout the Preserve and for noting unauthorized activities as a secondary benefit. Due to public access being allowed on the Preserve, additional security measures were installed including lock boxes and compacted rocks. Camera A is located in the northern portion of the Preserve near the main trail; Camera B is located in the “artichoke field” area [Exhibit 4 – Photo Location Map]. Camera A is being adjusted to better capture wildlife, as it was determined to be aimed slightly too high to capture fox and possibly BC. However, heavy mountain biking usage was documented, which is not allowed on the Preserve. Additionally, 1 - 5 hikers with dogs per day were documented. Camera B is also being adjusted as vegetation is too close to the camera resulting in over triggering. One person with a dog and one mule deer were captured.

Recommendations

Although dogs are allowed on the Preserve on authorized trails, due to the high amount of dog usage, consider public outreach to the community (this could entail signage and/or the distribution of flyers) to help communicate why allowing dogs on the Preserve is detrimental to the habitat and covered species, and to reinforce the importance of staying on authorized trails. This should also be reinforced during the public hike events.

Additionally, GLA will lower the height of Camera A so it is more conducive to detecting wildlife, and reposition Camera B to avoid over triggering. The timing of photos and number of photos will also be reduced on both cameras to lengthen battery life and avoid overduplication.

Previous Recommendations

GLA previously recommending installing wildlife cameras on the Preserve pursuant to the Coastal Development Permit (CDP), which was completed in 2022.

Bobcat Ridge

GLA established two wildlife camera stations (A and B) on the Preserve in July 2019. Both cameras were located in the southern portion of the site near the Encroachment Area (described below and in previous reports), which is an ideal location for wildlife access as well as monitoring unauthorized activities. GLA removed Camera A in 2021 as that location had become overgrown with vegetation and was capturing essentially the same data as Camera B, which is nearby. In 2022, Camera B detected BC on two occasions,

as well as deer, fox, and coyote. Only one incident of unauthorized access was detected, consisting of a dog.

Recommendations/Previous Recommendations

GLA recommends the continued use of wildlife cameras at the Preserve for tracking wildlife use, as well as for the secondary benefit of noting unauthorized activities due to the previous encroachment activities in the southern portion of the site. This has been an ongoing task since 2019.

Silverado Chaparral

Two wildlife cameras were installed for a short time in 2019. One camera was documented as stolen by GLA biologists within one month of installation and the remaining wildlife camera was removed a few months later due to the theft risk as well as reducing the effort through the winter months to save funding for spring monitoring. While the cameras were installed, deer and BC were detected. In addition, the cameras detected unauthorized people on the Preserve including mountain bikers, hikers, and dogs. Three cameras were re-installed on June 14, 2022. All three cameras are detecting an abundance of wildlife with ML, BC, deer, gray fox, and coyote frequently documented. No unauthorized access was recorded.

Recommendations

GLA recommends the continued use of wildlife cameras at the Preserve through 2023 for tracking wildlife use, as well as for the secondary benefit of noting unauthorized activities.

Previous Recommendations

GLA previously recommended re-installing the cameras for tracking wildlife use and to capture images of unauthorized access throughout the Preserve and recommended increased security for the cameras such as cemented poles and lock boxes. As noted above, the cameras were reinstalled in 2022 and increased security measures were included consisting of lock boxes and compacted rocks.

Wren's View

Three wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in October 2019 on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, ML, BC, deer, coyote, and gray fox were detected. In addition, the cameras detected unauthorized people on the Preserve, including hikers and mountain bikers.

Recommendations

Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA recommended to discontinue the use through 2022 unless an issue arose that warrants the usage of the cameras on the property, to use funding resources toward other monitoring activities.

Live Oak Creek

Two wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in November 2019 on an interim basis due to the level of effort and costs

associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, BC, deer, coyote, and gray fox were detected. In addition, the cameras detected unauthorized people on the Preserve.

Recommendations

Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA recommended to discontinue the use through 2022 unless an issue arose that warrants the usage of the cameras on the property, to use funding resources toward other monitoring activities.

Eagle Ridge

Three wildlife cameras were installed on the Preserve in 2018. Through coordination with OCTA, GLA removed the wildlife cameras in October 2019 on an interim basis due to the level of effort and costs associated with maintenance, checking the cameras, and managing the data combined with the lack of new data being collected. While the cameras were installed, BC, deer, and coyote were detected. In addition, the cameras detected cattle using the property, as well as occasional occurrences of trespassing (mountain biking and hiking).

Recommendations

Since the wildlife cameras have not been installed on the property since 2019, re-install cameras in 2023-2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA recommended to discontinue the use through 2022 unless an issue arose that warrants the usage of the cameras on the property, to use funding resources toward other monitoring activities.

Wildlife Cameras Discussion/Recommendations

Wildlife cameras are a valuable tool in tracking wildlife use and abundance throughout the Preserves and provide a potential secondary benefit of documenting unauthorized human uses. Specific recommendations for each Preserve regarding wildlife cameras are provided above. Where cameras are present, as part of adaptive management strategies, photographs should be reviewed regularly to determine whether cameras should be moved to provide better or additional data.

vi. Invasive Species

OCTA contracts with RECON to perform maintenance activities on the Preserves. A brief summary of invasive species maintenance activities is provided below under each Preserve section, as applicable. For additional details, refer to RECON's 2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves, attached to the NCCP/HCP Annual Report.

Trabuco Rose

Implementation of the Invasive Species Management Plan (ISMP) is ongoing. RECON conducted initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species in fall 2018, which

included artichoke thistle/cardoon (*Cynara cardunculus*), pampas grass (*Cortaderia selloana*) and salt cedar (*Tamarix* spp.). RECON conducted follow-up treatments in 2019 through 2022, as necessary. In 2023, only areas of artichoke thistle required follow-up treatments, and non-native grasses and other herbaceous non-native species within the artichoke thistle control area were mowed. In addition, vegetation that was growing on the fire roads and access roads was controlled with line trimmers and spot-sprayed with a glyphosate-based herbicide. GLA incidentally mapped new locations of artichoke thistle and Italian thistle (*Silybum marianum*) and provided the locations to OCTA for treatment.

Recommendations

Continue to implement the ISMP, including monitoring areas that have been treated. Remove the newly mapped locations of artichoke thistle and Italian thistle. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA recommended continued implementation of the ISMP, including monitoring areas that have been treated, and mapping incidental detections of invasive species, which was conducted in 2022. GLA also recommended removal of newly mapped African flag plant (*Chasmanthe floribunda*) and Bermuda grass (*Cynodon dactylon*), which were removed.

Pacific Horizon

Approximately 30 acres of the Preserve along the eastern boundary burned during the May 2022 Coastal Fire, with another 5 acres cleared to create a fire break. The burn area and fire break are being inspected routinely for invasive species. Artichoke thistle has been detected sprouting in the burn area and will be treated in early 2023.

Implementation of the DLRP and ISMP is ongoing. RECON conducted several maintenance visits in 2022 to treat artichoke thistle and pampas grass regrowth and mowed non-native grasses and other herbaceous non-native species within the artichoke thistle control area. Retreatment of hottentot fig (*Carpobrotus edulis*) in 2022 was not necessary. Native seed was hand broadcasted at the entrance to the artichoke thistle control area, and in bare areas along the northern decommissioned trail. GLA conducted annual monitoring associated with implementation of the DLRP. The report detailing monitoring results is attached as Appendix D.

Recommendations

Continue to monitor the burn area for invasive species and treat, as recommended by the Restoration Ecologist. Continue to implement the ISMP and DLRP based on priorities outlined in these plans. This includes specifically targeting artichoke thistle and pampas grass in January – March 2023 and ongoing throughout the year, as needed. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously recommended that OCTA continue to implement the approved ISMP and DLRP based on priorities outlined in the plans. This included specifically targeting artichoke thistle, pampas grass, and hottentot fig in January – March 2022, as needed. These recommendations were implemented by OCTA.

Bobcat Ridge

GLA prepared an ISMP, which has been approved by the Wildlife Agencies. GLA monitors noted weeds in the encroachment area. In July, RECON field crews controlled non-native herbaceous vegetation with line trimmers along the trail at the southern boundary of the Preserve.

Recommendations

Recommend hand weeding in the encroachment area. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Implement ISMP based on priorities outlined in the plan and continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously recommended implementation of the ISMP based on priorities outlined in the plan and to continue to check for new invasive species during routine biological monitoring. The ISMP has not yet been prioritized due to limited presence of invasive species; GLA checked for new invasive species during routine biological monitoring and did not detect any.

Silverado Chaparral

GLA prepared an ISMP, which has been approved by the Wildlife Agencies. GLA monitors noted more weeds (primarily mustard) on the lower westerly portion of the loop trail than previously mapped.

Recommendations

Update ISMP in 2024 with current invasive species mapping and map any new occurrences. Implement ISMP based on priorities outlined in the plan and continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously mapped one Spanish broom (*Spartium junceum*) in the southwestern corner of the Preserve which was recommended by removal; this work was conducted by RECON in 2022. As part of adaptive management strategies, GLA recommended inspection of this area for Spanish broom during future monitoring visits, which was conducted. GLA recommended implementation of the ISMP based on priorities outlined in the plan and to continue to check for new invasive species during routine biological monitoring. Invasive species treatment will be reassessed after the ISMP updates in 2024. GLA checked for new invasive species during routine biological monitoring as noted above.

Wren's View

GLA prepared an ISMP, which has been approved by the Wildlife Agencies. GLA conducted a reconnaissance of invasive species and noted generally the same conditions as mapped during ISMP preparation.

Recommendations

Recommend twice per year weed abatement - first pass: mow and spray within 3 weeks in December/January; second pass: mow weeds on roads and in March/April. Remove tree tobacco (*Nicotiana glauca*) from the road and within 20-foot buffer of roads. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Implement ISMP based on priorities

outlined in the plan and continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously recommended implementation of the ISMP based on priorities outlined in the plan and to continue to check for new invasive species during routine biological monitoring. Invasive species treatment will be reassessed after the ISMP updates in 2024. GLA checked for new invasive species during routine biological monitoring and did not detect any.

Live Oak Creek

GLA prepared an ISMP, which has been approved by the Wildlife Agencies. RECON controlled Spanish broom by cutting and removing aboveground biomass and painting stumps with herbicide. Vegetation that was growing on the fire road was controlled with line trimmers.

Recommendations

As noted above, GLA recommends beginning implementation of the ISMP in 2023 to reduce the threat to IML, focusing on Priority 1 polygons. This includes removal of annual grasses and mustard that pose a higher threat to IML and treatment of disturbed lands with IML along the road, which is directly outcompeted by the invasive grasses and forbs. Update ISMP in 2024 with current invasive species mapping and any new occurrences. Continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously recommended implementation of the ISMP based on priorities outlined in the plan and to continue to check for new invasive species during routine biological monitoring. The ISMP is being prioritized in 2023. Spanish broom was detected in 2022 and subsequently removed by RECON.

Eagle Ridge

GLA prepared an ISMP, which has been approved by the Wildlife Agencies. Cattle were removed from the Preserve in early 2022, an important note since implementing the ISMP was not recommended until the cattle were excluded.

Recommendations

Update ISMP in 2024 with current invasive species mapping and any new occurrences. Implement ISMP based on priorities outlined in the plan and continue to check for new invasive species during routine biological monitoring.

Previous Recommendations

GLA previously recommended implementation of the ISMP based on priorities outlined in the plan once the cattle are removed from the property and to continue to check for new invasive species during routine biological monitoring. The cattle were removed from the property in 2022; no new invasive species were detected. Invasive species treatment will be reassessed after the ISMP updates in 2024.

vii. Invasive Animal Species

GLA did not observe any animal species within the Preserves that would be classified as invasive. All of the Preserves have the potential to support the brown-headed cowbird, which is a nest parasite. GLA will note the presence of the brown-headed cowbird, as detected, and will provide future recommendations to address the cowbird, if applicable.

Recommendations/Previous Recommendations

As with the previous years' reports, it should be noted that an invasive lizard (SW) has been detected within Orange County that looks very similar to the OTW. Although SW has not yet been observed near any of the OCTA Preserves, the occurrence of SW regionally raises concerns that the species could inhabit one or more of the OCTA Preserves. In addition, due to the similarity in physical characteristics between the two species, misidentification is possible. GLA biologists took extra effort during focused surveys in 2022 at Trabuco Rose and Silverado Chaparral to photograph individuals to document identifying characteristics that distinguish OTW from SW, including the dorsal stripe, orange throat of adult males, or blue tails of juveniles. No SW individuals were detected. GLA will utilize the same approach during focused surveys in 2023 at the remaining five preserves.

viii. Land Use/Adjacent Land Use/Trails/Access Roads

The RMPs indicate that public education and involvement are critical components for ensuring successful management and public support of the Preserves. GLA recommends that the public use restrictions be reinforced as frequently as necessary, including during public outreach events, as applicable. Additional methods should be continued as identified in the RMP, including the encouragement of two-way communication with adjacent residents to collect and disseminate Preserve information.

The RMP notes that through regular patrols by the Preserve Manager and staff, enforcement of public access guidelines falls into two categories of offenses: minor and major infractions. Enforcement of minor infractions such as hiking on closed trails and bringing dogs into the Preserve would consist of discussing the infraction with the offending party and a warning process. Major infractions may require coordination between the Preserve Manager and law enforcement.

For additional details regarding maintenance activities described below, refer to RECON's 2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves, attached to the NCCP/HCP Annual Report.

Trabuco Rose

OCTA-sponsored docent hikes are allowed on the Preserve; however, open public access is not allowed. Occasional trespass was detected in 2022, including people with dogs. Multiple domestic cats were also detected.

A total of 13 trails or trail segments were initially identified in the Preserve RMP for "passive restoration", all of which were originally assessed in 2018, with annual monitoring also occurring in 2019 and 2021-22. As of the 2022 monitoring, two trails had fully grown in, most trails were passively restoring with natives or combination of natives and non-native grasses or had not changed since the previous monitoring (i.e., no weeds present warranting action) [Appendix E - Trabuco Rose Preserve Trail Monitoring Map and Photos]. Site preparation/weed abatement is recommended for one trail that is associated with a future oak tree

restoration site prior to restoration activities occurring. GLA estimates that a total of 0.82 acre has been passively restored.

RECON controlled vegetation that was growing on the fire roads and access roads with line trimmers and spot-sprayed with a glyphosate-based herbicide.

GLA did not observe any new unauthorized activities in the Preserve as a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment. RECON completed fuel modification work around the neighboring houses within the appropriate limits in March and May 2022.

Recommendations

- As the trespass is infrequent and people are walking on existing roads and not cutting vegetation or vandalizing trees, fencing, signage, or gates, no additional management actions are recommended at this time; however, the perimeter fencing will continue to be monitored annually and wildlife cameras will remain onsite to provide information on human usage.
- Continue to monitor the Preserve and adjacent properties to document unauthorized access and activities/encroachments, including by OCTA's private security company, the Orange County Sheriff Department's mounted unit, and GLA's monitoring team.
- Continue to reinforce public use restrictions during public outreach events, as applicable.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment/irrigation runoff.
- Continue to monitor passive trail restoration.

Previous Recommendations

Previous recommendations were the same as current recommendations discussed above. All are being implemented on an ongoing basis.

Pacific Horizon

As noted above, approximately 30 acres of the Preserve along the eastern boundary burned in May 2022, with an additional 5 acres that were cleared to create a fire break (dozer line). GLA flew a drone aerial in June 2022 to establish the baseline after the burn and is conducting nearly monthly monitoring visits to document the recovery of the burn area and report observations of unauthorized use. Qualitative monitoring includes assessing native vegetative regrowth, non-native vegetative growth, signs of unauthorized access (i.e., vandalism, litter, bike tracks, new trails), fencing integrity, BMP integrity, and photographing the burn area from designated photograph points. In addition to monthly site visits, GLA biologists also monitor rainfall data and compile events of extreme weather on a monthly basis.

Observations have included reoccurring fence cutting/vandalism for mountain bike passage, unauthorized trail usage including direct observation of cyclists entering the burn area, OCTA sign vandalism, unauthorized minor trash, and uprooted/tampered with *Dudleya* (non-sensitive) along the dozer line (which was replanted by the biological monitor). Minimal erosion from fall rain events was limited to rill erosion and minor sheet erosion. Erosion control wattles appear intact and untouched. Native vegetation regrowth is occurring. GLA's Burn Area Monitoring Memo is attached as Appendix B.

Much focus has been put on monitoring and managing the burn area. Management actions that occurred immediately after the fire (May – June 2022), included directing RECON field crew to perform: (1) installation of biodegradable straw wattles in burned areas for erosion control; (2) transport of cut branches onto the foot trail to aid in decommissioning of the trail; and (3) installation of barbed wire fencing and signage in three locations along the trail leading to the burned area. Additionally, the unauthorized trails in this area were actively decommissioned by placing cut vegetation (cut by Orange County Fire Authority (OCFA) during containment activities) over the trails [Exhibit 5 – Trails, Utility, and Maintenance Map]. In September 2022, RECON field crew repaired damaged barbed wire fencing and signage that leads down to the burned area. In December 2022, signage, referencing the penal code for trespassing, was added at the entrance of the decommissioned trail leading down to the burned area, to deter public access. OCTA's private security company has been routinely patrolling the burn area and reinforcing unauthorized uses throughout the Preserve.

In the non-burn areas, mountain biking and hiking are ongoing at the Pacific Horizon Preserve, which are authorized activities; however, usage is occurring in unauthorized areas.

Implementation of the DLRP is ongoing to deter usage on the decommissioned trail in the northern portion of the Preserve and remove invasive plant species in accordance with the ISMP. In 2022, RECON field crew performed: (1) installation of wooden stakes along western perimeter of Preserve to delineate OCTA lands; (2) tightened fence line along the northern perimeter of the Preserve; (3) herbicide-treated artichoke thistle plants and pampas grass regrowth within their respective control areas using glyphosate-based herbicide; (4) mowed non-native grasses and other herbaceous non-native species within the artichoke thistle control area (5) repaired damaged fence near the decommissioned trail and in the area where Southern California Edison (SCE) had created an unauthorized trail; and (6) raked in seed along the decommissioned trail and the artichoke thistle treatment area. (7) assisted GLA wildlife biologist, Jeff Ahrens, with installation of posts and wildlife cameras in two separate locations. Recommended maintenance actions in the trail disturbance area for 2023 include routine maintenance of the fence line and follow-up targeted spray of any invasive species regrowth or new occurrences upon detection. Recommended maintenance actions in the invasive species removal areas for 2023 include routine follow-up targeted spray of any regrowth of treated artichoke thistle and Pampas grass, new seedlings, and new occurrences of any invasive species during the winter and spring months. The DLRP Second Annual Monitoring Report is attached as Appendix D.

On March 30 and 31, 2022, SCE's consultant, AECOM, conducted the fourth and final maintenance event within the SCE temporary encroachment area [Exhibit 5 – Trails, Maintenance, and Utility Map]. Target invasive species were removed from the entire 0.20-acre disturbance area. Other non-invasive, non-native weeds were removed as time permitted. Weed control consisted of both herbicide and manual methods.

As previously documented, in 2021, SCE impacted approximately 0.45 acre on the Preserve by cutting new access trails and clearing around utility poles. OCTA staff is working with SCE and the Wildlife Agencies to resolve these unauthorized impacts; however, the Coastal Fire has delayed progress with SCE.

GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment.

GLA assisted with two public outreach events held by OCTA in 2022.

Recommendations

- Continue implementing the DLRP and monthly monitoring of the burn area and associated decommissioned trails to document the recovery of the areas and report observations of unauthorized use. This includes adaptive management activities such as repairing fencing and signage, placing new fencing and signage, placing woody native cuttings within trail areas to be closed and restored to break down and visually obscure trails, placing straw waddles, and reseeding areas.
- Continue routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to reinforce public use restrictions during public outreach events.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment/irrigation runoff.
- Continue to leave wildlife cameras in place to provide the secondary benefit of documenting unauthorized activities.
- Continue to monitor the SCE encroachment to ensure restoration success.

Previous Recommendations

- Continued implementation of the DLRP, including adaptive management activities such as repairing fencing and signage, placing new fencing and signage, placing woody native cuttings within trail areas to be closed and restored to break down and visually obscure trails, placing straw waddles, and reseeding areas.
- Continued inspections by biological monitors for any evidence of habitat disturbance within the Preserve due to human activity and monitoring of adjacent properties for signs of encroachment/irrigation runoff.
- Continued implementation of the RMP using methods to support additional compliance with the RMP restrictions and enforcement actions as detailed above, such as reinforcing public use restrictions during public outreach events.
- Install wildlife cameras to better understand level of public access.
- Continued monitoring of the SCE encroachment to ensure restoration success.

OCTA implemented all previous recommendations in 2022.

Bobcat Ridge

Public access is not authorized at the Bobcat Ridge Preserve. GLA did not observe any new trail cuts and only documented one dog on the Preserve via wildlife camera.

GLA continues to monitor the encroachment area from the adjacent residence at the southern boundary of the Preserve, in which vegetation was cleared in 2017 and 2020. The Fifth Year Monitoring Report (attached as Appendix F) indicated that the encroachment area continues to fill in passively on a trajectory toward recovery. If this area continues to remain undisturbed and typical rainfall conditions return, the site is expected to reestablish.

GLA did not observe any unauthorized activities in the Preserve as a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment.

Recommendations

- Continue routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment.
- Continue to monitor the encroachment areas in the spring when vegetation is actively growing to determine native and nonnative species development and provide timely site recommendations. Weed abatement during the winter and spring months is recommended to aid in successful recovery of the entire Encroachment Area.
- Continue to leave wildlife camera in place to provide the secondary benefit of documenting unauthorized activities.

Previous Recommendations

Previous recommendations were the same as current recommendations discussed above. All are being implemented on an ongoing basis.

Silverado Chaparral

Public access is not currently authorized at the Silverado Chaparral Preserve. No evidence of mountain biking was present, which has historically been an issue resulting in new trail cutting and fencing/signage vandalism. Bike trails were not evident, and no new issues with fencing and signage were observed. Additionally, mountain biking was not detected on any of the three wildlife cameras; however, a few hikers were observed.

GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment.

Recommendations

- Continue routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment.
- Continue to leave wildlife cameras in place to provide the secondary benefit of documenting unauthorized activities.

Previous Recommendations

- Continued routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and by GLA's monitoring team to monitor and report on unauthorized uses.
- Continued inspections by biological monitors for any evidence of habitat disturbance within the Preserve due to human activity and monitoring of adjacent properties for signs of encroachment/irrigation runoff.
- Continued implementation of the RMP using methods to support additional compliance with the RMP restrictions and enforcement actions as detailed above.
- Install wildlife cameras to better understand level of public access.

OCTA implemented all previous recommendations in 2022. One mountain bike offender was prosecuted for trespass and was sentenced to one year of informal probation, pay a fine and affiliated court fees of \$370, and pay \$1,331.20 restitution (fencing and related labor fees in direct relation to the damage caused by the offender) to OCTA. The offender is also required to stay 50 yards away from the Preserve. Evidence of mountain bike usage (e.g., trail cutting, bike tracks, cut fencing) has declined significantly as a result of management actions.

Wren's View

OCTA-sponsored docent hikes are allowed on the Preserve; however, open public access is not allowed. GLA did not observe unauthorized access or activities during biological monitoring. GLA assisted with three public hikes in 2022 at Wren's View.

GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment.

Recommendations

- Continue routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment.
- Continue to reinforce public use restrictions during public outreach events.

Previous Recommendations

Previous recommendations were the same as current recommendations discussed above. All are being implemented on an ongoing basis.

Live Oak Creek

Public access is not currently authorized at the Live Oak Creek Preserve. GLA did not observe unauthorized access or activities during biological monitoring, other than a small amount of landscape debris that was dumped near the Preserve boundary.

GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment. RECON completed fuel modification work around the neighboring houses within the approved limits in May 2022.

Recommendations

- Continue routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment/irrigation runoff.
- Remove landscape debris.

Previous Recommendations

- Continued routine patrols by OCTA's private security company to reinforce unauthorized access and activities, and by GLA's monitoring team to monitor and report on unauthorized uses.
- Continued inspections by biological monitors for any evidence of habitat disturbance within the Preserve due to human activity and monitoring of adjacent properties for signs of encroachment/irrigation runoff.

OCTA implemented all previous recommendations in 2022.

Eagle Ridge

Public access is not currently authorized at the Eagle Ridge Preserve. GLA did not observe unauthorized access or activities during biological monitoring. The Preserve was previously impacted by unauthorized grazing; however, the cattle were removed in early 2022 and no evidence of cattle was observed by GLA monitors during stewardship monitoring. In addition, vegetation is filling in along existing trails and the eastern boundary area where cattle were previously entering is now overgrown. A total of eight permanent camera stations were established to monitor vegetation condition along Soquel Creek [Exhibit 4 – Photo Location Map and Exhibit 2 – Photographs 1 through 8].

GLA did not observe any unauthorized activities in the Preserve a result of adjacent land uses, including vegetation encroachments, excessive irrigation runoff from adjacent property owners, or other types of encroachment. RECON controlled vegetation growing on the ridge road/access road using line trimmers.

Recommendations

- Continue routine monitoring by GLA's team to monitor and report on unauthorized uses.
- Continue to have biological monitors inspect the Preserve for any evidence of habitat disturbance due to human activity and monitor adjacent properties for signs of encroachment. Biological monitors should also periodically check the perimeter fencing for signs of encroachment.
- Continue annual camera monitoring using the established photo points along Carbon Canyon Creek to detect any changes in vegetation condition.
- Continue monitoring for signs of cattle.

Previous Recommendations

- Continued routine monitoring by GLA's team to monitor and report on unauthorized uses.
- Continued inspections by biological monitors for any evidence of habitat disturbance within the Preserve due to human activity and monitoring of adjacent properties for signs of encroachment and continued perimeter fence monitoring.
- Implement vegetation monitoring using permanent photo stations (recommended by USFWS).
- Remove cattle from Preserve.

OCTA implemented all previous recommendations in 2022. It is noteworthy that OCTA was able to have the cattle removed from the Preserve, and that vegetation monitoring using permanent photo stations was implemented as recommended by USFWS.

Land Use/Adjacent Land Use/Trails/Access Roads Recommendations Summary

The Preserves will continue to be monitored to document unauthorized access and activities by GLA's monitoring team. Where present, perimeter fencing will be checked periodically. As part of adaptive management strategies, the frequency of this monitoring will be adjusted as needed based on information collected during other monitoring visits, such as presence of trash, new trails, or vegetation encroachments. Also, as part of adaptive management strategies, signage, fencing, placement of cactus, or other means may be recommended in areas where unauthorized access is occurring to help deter the public from entering the Preserve or sensitive areas (if public access is allowed).

ix. General Maintenance – Fencing/Gates/Signage/Erosion/Sedimentation/Trash

For additional details regarding maintenance activities described below, refer to RECON's 2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves, attached to the NCCP/HCP Annual Report.

Trabuco Rose

A total of three fences were repaired by RECON. In addition, a gate was replaced at the intersection of Rose Canyon Road and Hickey Spur Trail, and the Rose Main Gate was repaired. New Preserve signs were installed on each of the seven gates with the following names: Trabuco Oaks Gate, Trabuco Docent Gate, Trabuco North Gate, Hickey Spur Gate, Rose Creek Gate, Rose Hill Top Gate, and Rose Main Gate. The names posted on the gates, at each of the Preserves with gates, are intended to help in future coordination with maintenance and monitoring crews, and security and emergency personnel. RECON's subcontractor recontoured/regraded the interior fire roads following the rainy season to repair the erosion that had created ruts and rills. Erosion was fixed and water bars were installed to prevent future erosion.

OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate). The project consisted of installation of 325 cubic yards of ½ ton rock and 65 cubic yards of 1-ton rock and filter fabric, which were the initial steps necessary to secure area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. No issues with trash or dumping were documented.

Recommendations

The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA previously recommended that the biological monitor check for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. This monitoring was implemented, and repairs were made as documented above.

Pacific Horizon

Monitoring at Pacific Horizon Preserve is frequent, as noted under the burn monitoring discussion, and maintenance needs are documented quickly by GLA, OCTA, RECON, and/or OCTA's private security company. OCTA prioritizes maintenance activities at Pacific Horizon since access is allowed and due to the sensitivity of the burn area.

In 2022, RECON installed new wooden stakes, spray painted blue, to delineate the OCTA western boundary, making a clear boundary between city of Laguna Beach property and OCTA-owned lands. Crews also tightened the fence line along the northern edge of the Preserve. As noted above, crews implemented measures within the burn area to deter public from entering the area and to actively decommission the unauthorized trails, including installation of fencing and signage along the unauthorized trails. Repairs were made to the new fencing shortly after installation. In addition, crews installed a new fence line and signage at the entry point of an SCE unauthorized trail (discussed above). Repairs were also made to this fencing shortly after installation, as well as fencing located at the northern boundary of the Preserve. There are no gates on the Preserve.

Recommendations

The biological monitor should continue to monitor for fencing and signage repair needs, paying special attention to the burn area. Continue to monitor for erosion/sedimentation and trash. These items should be remedied as needed. As previously noted, continue to reinforce public use restrictions during public outreach events and continue to implement the RMP using methods to support additional compliance with the RMP restrictions and enforcement actions as detailed above.

Previous Recommendations

GLA previously recommended that the section of missing fence line in the eastern portion of the Preserve near an SCE pole be repaired. GLA previously recommended that the biological monitor check for fencing and signage repair needs, as well as for erosion/sedimentation and trash. It was also recommended that the southern Preserve boundary with The Ranch be monitored for unauthorized activities, including maintenance crews associated with the golf course.

OCTA implemented all previous recommendations in 2022. As part of adaptive management, OCTA started having their private security company patrol the Preserve due to previous unauthorized activities and due to the sensitivity of the burn area.

Bobcat Ridge

GLA documented fence lines in need of repair in the southern portion of the Preserve. New signage was installed along the encroachment areas and damaged signs were repaired by RECON. No erosion/sedimentation issues were documented. No issues with trash or dumping were documented.

Recommendations

Repair damaged fences. The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA previously recommended that the biological monitor check for fencing and signage repair needs, as well as for erosion/sedimentation and trash. This monitoring was implemented, and signage repairs were made as documented above.

Silverado Chaparral

RECON's subcontractor installed a new entry gate and sign with the name Silverado Chaparral Gate on the fire road located at the northeastern boundary of the Preserve. Fencing was installed to connect to the gate. RECON's subcontractor also recontoured/regraded the fire roads to address erosion. All erosion rills were repaired, and water bars were installed to prevent future erosion. RECON conducted repairs to damaged fencing along the Preserve's eastern boundary. No issues with trash or dumping were documented.

Recommendations

The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA previously recommended that the biological monitor check for fencing, signage, and gate repair needs, as well as for erosion/sedimentation and trash. This monitoring was implemented, and repairs were made as documented above.

Wren's View

No issues with gates were observed. RECON replaced signage on the four gates with the following names: Wren's View Gate, Wren's Docent Gate, Wren's North Gate, and Wren's West Gate. RECON's maintenance crews removed concrete and other man-made debris that was illegally dumped. Erosion is present along the access road to the main gate [Exhibit 5 – Trails, Utility, and Maintenance Map].

Recommendations

Erosion along the access road to the main gate should be repaired. The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA has previously recommended that OCTA repair or remove the mapped downed internal chain link fence to avoid wildlife entanglement, as well as the internal barbed-wire fencing that does not appear to have a present function and that could pose a risk to wildlife, especially areas where the fencing is damaged/downed. Some work on fencing removal began in 2022; however, inclement weather delayed the crews. In addition, invasive species removal and burn monitoring was prioritized. GLA has also noted a segment of pre-existing chain link fencing along the southern border of the Preserve which could be replaced with smooth wire fencing to facilitate wildlife movement. GLA has previously recommended coordination with the landowner of the parcel to the west, Transportation Corridor Agencies (TCA), to determine appropriate fencing needs and

improvements to promote wildlife movement between the two properties. The TCA is working on a site plan that will require approval from the Wildlife Agencies. Until a public access plan is determined, OCTA will hold off on modifying the existing fencing.

Live Oak Creek

RECON subcontractors installed a new entry gate and sign with the name Live Oak Creek Gate and recontoured/regraded the fire roads as there were several locations that had become severely damaged following the winter rainstorms and were not passable with vehicles. All erosion rills were fixed, and water bars were installed to prevent future erosion. RECON removed barbed wire near the entrance of the Preserve and in areas it was no longer serving a purpose. Barbless wire and posts were installed to connect to the new gate and to delineate the boundary of the Preserve along Live Oak Canyon Road. GLA monitors documented a small amount of landscaping debris on Live Oak Creek, near the property boundary.

Recommendations

The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA previously recommended that the biological monitor check for fencing, signage, and gate repair needs, as well as for erosion/sedimentation and trash. This monitoring was implemented, and repairs were made.

In addition, GLA recommended that OCTA coordinate with the landowner at 19071 Live Oak Canyon Road regarding the section of fencing identified in the RMP that may be altering the natural function of the waterway. It was also recommended that OCTA remove internal fencing mapped by GLA. These tasks have yet to be completed.

Eagle Ridge

No issues with fencing or gates were observed. RECON replaced signs on the two gates in the Preserve with the names Eagle Ridge Gate and Soquel Canyon Gate. No issues with erosion or sedimentation were noted on the Preserve. No issues with trash or dumping were documented.

Recommendations

The biological monitor should continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash. These items should be remedied as needed.

Previous Recommendations

GLA previously recommended that the biological monitor check for fencing, signage, and gate repair needs, as well as for erosion/sedimentation and trash. This monitoring was implemented; signage was replaced.

General Maintenance Discussion/Recommendations

Maintenance should be performed as needed and as applicable to fencing, gates, and roads/trails at each of the Preserves, including checking for slacked wire that may pose an entanglement threat to wildlife. Remnant

barbed wire fencing should be removed, as recommended. GLA will identify future maintenance concerns as part of ongoing monitoring.

Trail/road erosion should be repaired and/or controlled, as needed. GLA will continue to monitor the Preserves for erosion effects and will report any issues to OCTA. As part of adaptive management strategies, GLA recommends conducting Preserve monitoring visits after heavy rainfall events to inspect for erosion and sedimentation.

x. Trees

The Trabuco Canyon area goldspotted oak borer (GSOB) infestations and treatments are being overseen and implemented by OCFA who is partnering with multiple landowners as well as the University of California Cooperative Extension (UCCE) and the California Department of Food and Agriculture. Through this coordination, all adjacent landowners and land managers are working closely to ensure that all known GSOB areas are documented and treated. In addition, OCTA is a member of the Emerging Tree Pests of Orange County Task Force in which data and recommendations are shared with multiple land managers throughout Orange County on a quarterly basis.

In 2022, UCCE performed on the ground surveys for trees infested with invasive shothole borer (ISHB) and/or GSOB at Wren's View, Live Oak Creek, Bobcat Ridge, Trabuco Rose, and Silverado Chaparral Preserves, maintained a monitoring program for ISHB and/or GSOB in selected areas, and provided their expertise to advise OCFA, OCFA contractors, and OCTA regarding the biology and management of these pests.

GSOB was identified within Wren's View, Trabuco Rose, and Live Oak Creek Preserves, as described in further detail below.

No active ISHB holes were identified at any of the OCTA Preserves but has been previously identified at Trabuco Rose and Wren's View Preserves, as well as in proximity to Bobcat Ridge and Live Oak Creek Preserves. Continued monitoring is recommended to ensure ISHB does not become an issue within these Preserves.

UCCE's report is attached as Appendix G.

Trabuco Rose

UCCE performed GSOB surveys in 2022 and identified 16 infested trees, four of which were recommended for removal due to being GSOB amplifier trees with >25 exit holes. In addition, approximately 40 dead coast live oak trees and a stand of dead Eucalyptus trees were identified and considered for removal due to fire risk; however, consistent with the NCCP/HCP, the dead oak trees will remain in place. Dead trees close to roads were recommended to be heavily pruned to reduce fire and road blockage risk, but still maintain snags for wildlife use.

Tree maintenance performed by RECON included removing fallen branches that were blocking fire/access roads. In accordance with the RMP, all tree material is left on the Preserves and placed outside of access roads/trails and waterways.

Recommendations

As recommended by UCCE, remove the four GSOB amplifier trees. As a preventative measure, treat all coast live oaks with a DBH >8 inches that are located within 300 feet of the 16 infested trees, which includes 191 trees at Trabuco Rose. As recommended, heavily prune dead trees close to roads to reduce fire and road blockage risk. Removals of trees and limbs are recommended to be completed as early as possible (ideally before May) and treatments are recommended to be applied during the first weeks of May, just prior to the start of GSOB flight season. Continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations.

Continue to perform as-needed maintenance to trim and/or clear fallen branches/trees from fire/access roads.

Previous Recommendations

It was previously recommended that OCTA maintain an active ISHB monitoring program that focuses on the mapped riparian tree species, treating as necessary. It was also recommended that as-needed maintenance continue to trim and/or clear fallen branches/trees from fire/access roads. Both recommendations were implemented by OCTA in 2022.

Pacific Horizon

The only trees onsite are non-native species, Canary Island pine (*Pinus canariensis*) and eucalyptus.

Recommendations

Remove as prioritized in the ISMP and/or as directed by the GLA team's arborist and in coordination with OCTA.

Previous Recommendations

No specific recommendations have been made to OCTA regarding trees at Pacific Horizon Preserve.

Bobcat Ridge - Trees

UCCE performed GSOB surveys in 2022 and did not find any sign of infested trees. One dead coast live oak tree was identified and considered for removal due to fire risk; however, consistent with the NCCP/HCP, will remain in place.

Recommendations

Continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations.

Previous Recommendations

It was previously recommended that OCTA maintain an active ISHB monitoring program, which is ongoing.

Silverado Chaparral

UCCE performed GSOB surveys in 2022 and did not find any sign of infested trees.

No sign and/or symptom of ISHB has been observed on Silverado Chaparral; onsite trees primarily consist of coast live oak.

Recommendations

Continue to monitor for GSOB, treating as necessary following arborist recommendations.

Wren's View

UCCE performed GSOB surveys in January 2022 and identified three coast live oaks infested with GSOB, two of which were removed in March 2022. Preventative treatments were applied to the remaining infested tree and all oaks with a DBH >8 inches that were located within 300 feet of the three infested trees. Removals and treatments were performed by OCFA's contractor. GLA conducted a pre-construction nesting bird survey prior to tree removal.

Recommendations

Continue to monitor for GSOB and ISHB, treating as necessary.

Previous Recommendations

It was previously recommended that OCTA maintain an active ISHB monitoring program that focuses on the mapped riparian tree species, treating as necessary. This is ongoing.

Live Oak Creek

UCCE performed GSOB surveys in 2022 and identified two infested coast live oak trees at Live Oak Creek, one of which was recommended for removal due to being a GSOB amplifier tree with >25 exit holes. In addition, 17 dead coast live oak trees were identified and considered for removal due to fire risk; however, consistent with the NCCP/HCP, all will remain in place.

RECON removed fallen oak tree branches that were blocking the entrance of the Preserve. All branches were left within the Preserve, removed from the roads, and not placed into any waterways.

Recommendations

As recommended by UCCE, remove the individual GSOB amplifier tree. As a preventative measure, treat all coast live oaks with a DBH >8 inches that are located within 300 feet of the two infested trees, which includes two trees. As recommended, heavily prune dead trees close to roads to reduce fire and road blockage risk. Removals of trees and limbs are recommended to be completed as early as possible (ideally before May) and treatments are recommended to be applied during the first weeks of May, just prior to the start of GSOB flight season. Continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations.

Continue to perform as-needed maintenance to trim and/or clear fallen branches/trees from fire/access roads.

Previous Recommendations

It was previously recommended that OCTA maintain an active ISHB monitoring program, which is ongoing.

Eagle Ridge

No issues with trees were observed.

Recommendations

None.

Previous Recommendations

It was previously recommended that OCTA discuss proper pruning methods with maintenance contractor, which was conducted.

Trees Discussion/Recommendations

Trees within the Preserves should continue to be monitored for signs of infestation. GLA will continue to coordinate with OCTA regarding GSOB and ISHB and will consult with the arborist as needed for recommendations to monitor trees within the Preserves, and to track/control any documented infestations.

OCTA should also continue to perform as-needed maintenance to trim and/or clear fallen branches/trees from fire/access roads.

C. GIS Data

Included in this report submittal to OCTA is the comprehensive GIS dataset for the Preserves, which contains all biological monitoring data collected to date for the Preserves by any contractor, updated as appropriate.

D. CNDDDB Submittals

GLA will submit CNDDDB records for sensitive species detected during biological monitoring, including new detections of covered species.



Eagle Ridge

Silverado Chaparral

Pacific Horizon

Exhibit 1 Location Map

OCTA Preserves

OCTA Preserve

Inset Map
Not to Scale

Live Oak
Creek

Trabuco
Rose

Bobcat
Ridge

Wren's
View



1 inch = 3 miles



Photograph 1: View from Permanent Photo Station #1. Photo taken February 1, 2023.



Photograph 2: View from Permanent Photo Station #1. Photo taken September 26, 2013.



Photograph 3: View from Permanent Photo Station #2. Photo taken February 1, 2023.



Photograph 4: View from Permanent Photo Station #2. Photo taken September 26, 2013.

Exhibit 2A, Sheet 1 - Site Photos

OCTA - Trabuco Rose Preserve





Photograph 5: View from Permanent Photo Station #3. Photo taken February 1, 2023.



Photograph 6: View from Permanent Photo Station #3. Photo taken September 26, 2013.



Photograph 7: View from Permanent Photo Station #4. Photo taken February 1, 2023.



Photograph 8: View from Permanent Photo Station #4. Photo taken September 26, 2013.

Exhibit 2A, Sheet 2 - Site Photos

OCTA - Trabuco Rose Preserve





Photograph 9: View from Permanent Photo Station #5. Photo taken February 1, 2023.



Photograph 10: View from Permanent Photo Station #5. Photo taken September 26, 2013.



Photograph 11: Depicting area in need of fence repair. Photo taken September 14, 2022.



Photograph 12: Depicting area in need of fence repair. Photo taken September 14, 2022.

Exhibit 2A, Sheet 3 - Site Photos

OCTA - Trabuco Rose Preserve





Photograph 13: Mountain lion with GPS collar captured on Camera J. Photo taken September 1, 2022.



Photograph 14 Mountain lion with GPS collar captured on Camera E_F. Photo taken May 8, 2022.



Photograph 15: Mule deer captured on Camera J. Photo taken August 20, 2022.



Photograph 16: Bobcat captured on Camera M. Photo taken March 13, 2022.

Exhibit 2A, Sheet 4 - Site Photos

OCTA - Trabuco Rose Preserve





Photograph 1: Depicting Preserve signage and fencing. Photo taken September 22, 2022.



Photograph 2: Depicting treated artichoke thistle field. Photo taken September 22, 2022.



Photograph 3: Depicting location of installed wildlife camera A. Photo taken June 13, 2022.



Photograph 4: Depicting location of installed wildlife camera B. Photo taken June 13, 2022.

Exhibit 2B - Site Photos

OCTA - Pacific Horizon Preserve





Photograph 1: View of Bobcat Ridge Preserve in the foreground, facing east. Photo taken May 10, 2022.



Photograph 2: View of Bobcat Ridge Preserve, facing north. Photo taken May 10, 2022.



Photograph 3: Depicting area in need of fence repair. Photo taken October 13, 2022.



Photograph 4: Depicting area in need of fence repair. Photo taken October 13, 2022.

Exhibit 2C - Site Photos

OCTA - Bobcat Ridge Preserve





Photograph 1: Overview of Silverado Chaparral Preserve facing east. Photo taken May 18, 2022.



Photograph 2: View of installed wildlife camera A. Photo taken June 14, 2022.



Photograph 3: View of installed wildlife camera B. Photo taken June 14, 2022.



Photograph 4: View of installed wildlife camera C. Photo taken June 14, 2022.

Exhibit 2D - Site Photos

OCTA - Silverado Chaparral Preserve





Photograph 1: View of GSOB-infected dead tree that was removed. Photo taken March 22, 2022.



Photograph 2: View of erosion along main access road. Photo taken March 22, 2022.



Photograph 3: View of Wren's View Preserve facing north. Also depicting area in need of chain link fence removal. Photo taken October 4, 2022.



Photograph 4: Depicting area in need of fence repair. Photo taken October 4, 2022.

Exhibit 2E - Site Photos

OCTA - Wren's View Preserve





Photograph 1: View of Live Oak Creek Preserve facing north. Photo taken October 13, 2022.



Photograph 2: Depicting preserve fencing recommended for maintenance and cactus habitat. Photo taken October 13, 2022.



Photograph 3: Depicting landscaping debris from adjacent neighbor. Photo taken May 3, 2022.



Photograph 4: View of Live Oak Creek Preserve facing north. Photo taken May 3, 2022.

Exhibit 2F - Site Photos

OCTA - Live Oak Creek Preserve





Photograph 1: Permanent vegetation monitoring station. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 27, 2022.



Photograph 2: Permanent vegetation monitoring station. Cow trail has filled in with vegetation since removal of cows. Photo taken October 27, 2022.



Photograph 3: Permanent vegetation monitoring station. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 7, 2022.



Photograph 4: Permanent vegetation monitoring station. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 27, 2022.

Exhibit 2G, Sheet 1 - Site Photos



Photograph 5: Permanent vegetation monitoring station facing east. Cow trail has filled in with native vegetation (salt grass) since removal of cows. No damage to riparian vegetation. Photo taken October 27, 2022.



Photograph 6: Permanent vegetation monitoring station facing northeast. Depicts willows surrounding southwestern pond turtle pool. No evidence of cows present. Photo taken October 27, 2022.



Photograph 7: Permanent vegetation monitoring station facing northeast. No evidence of cows present. Photo taken October 7, 2022.



Photograph 8: Permanent vegetation monitoring station facing north. No evidence of cows present. Photo taken October 27, 2022.

Exhibit 2G, Sheet 2 - Site Photos

OCTA - Eagle Ridge Preserve





Photograph 9: Depicting Eagle Ridge Preserve signage. Photo taken October 27, 2022.



Photograph 10: View of southwestern pond turtle in onsite pool. Photo taken June 7, 2022.



Photograph 11: View of Baja California tree frog in onsite pool. Photo taken June 7, 2022.

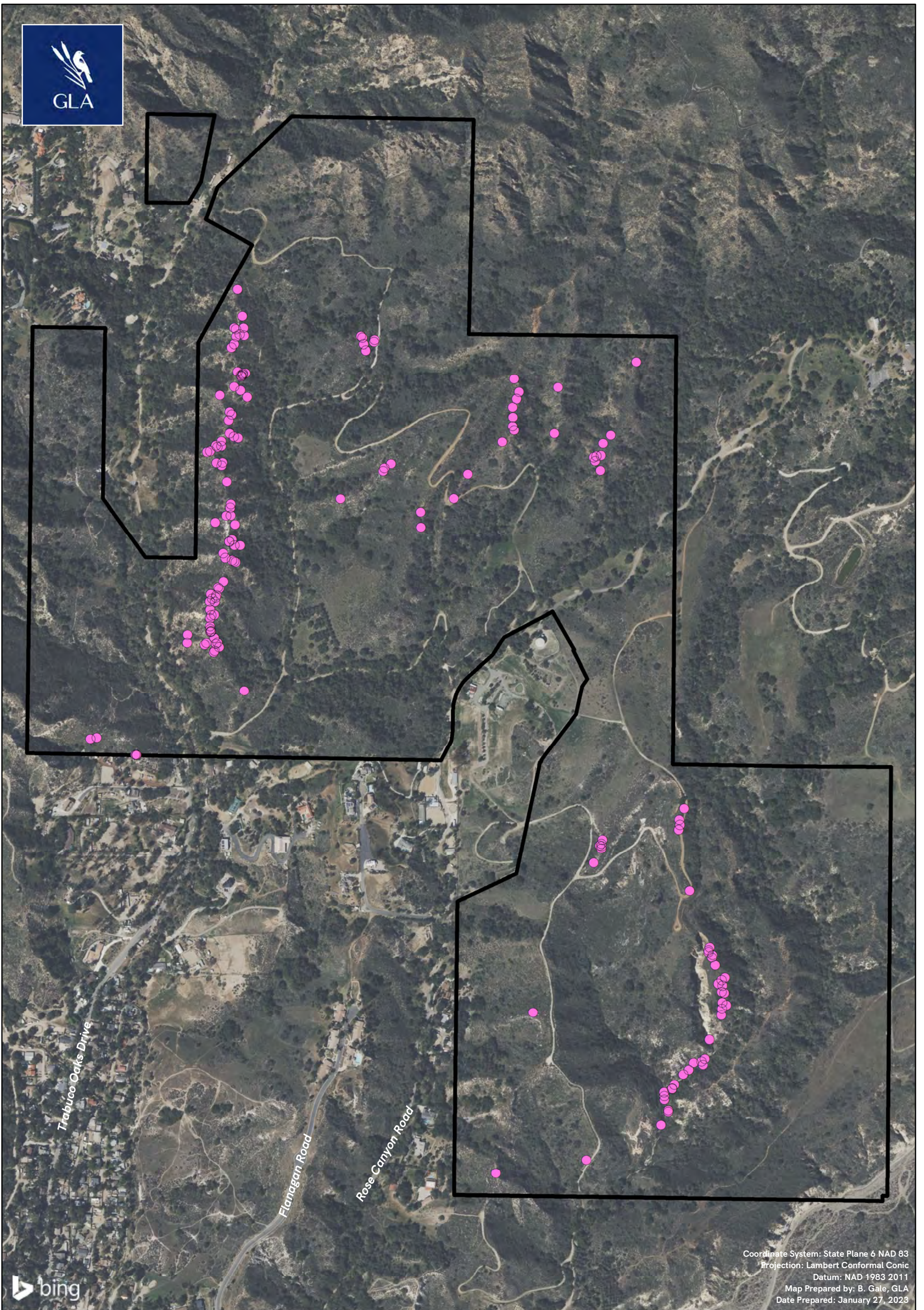


Photograph 12: View of dried-up onsite pool. Photo taken October 27, 2022.

Exhibit 2G, Sheet 3 - Site Photos

OCTA - Eagle Ridge Preserve





**Exhibit 3A - OCTA Covered/
Sensitive Plant Species Map**

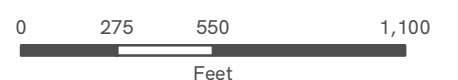
Trabuco Rose Preserve

Trabuco Rose Preserve

**2022 Focused Plant Survey/
Effectiveness Monitoring**

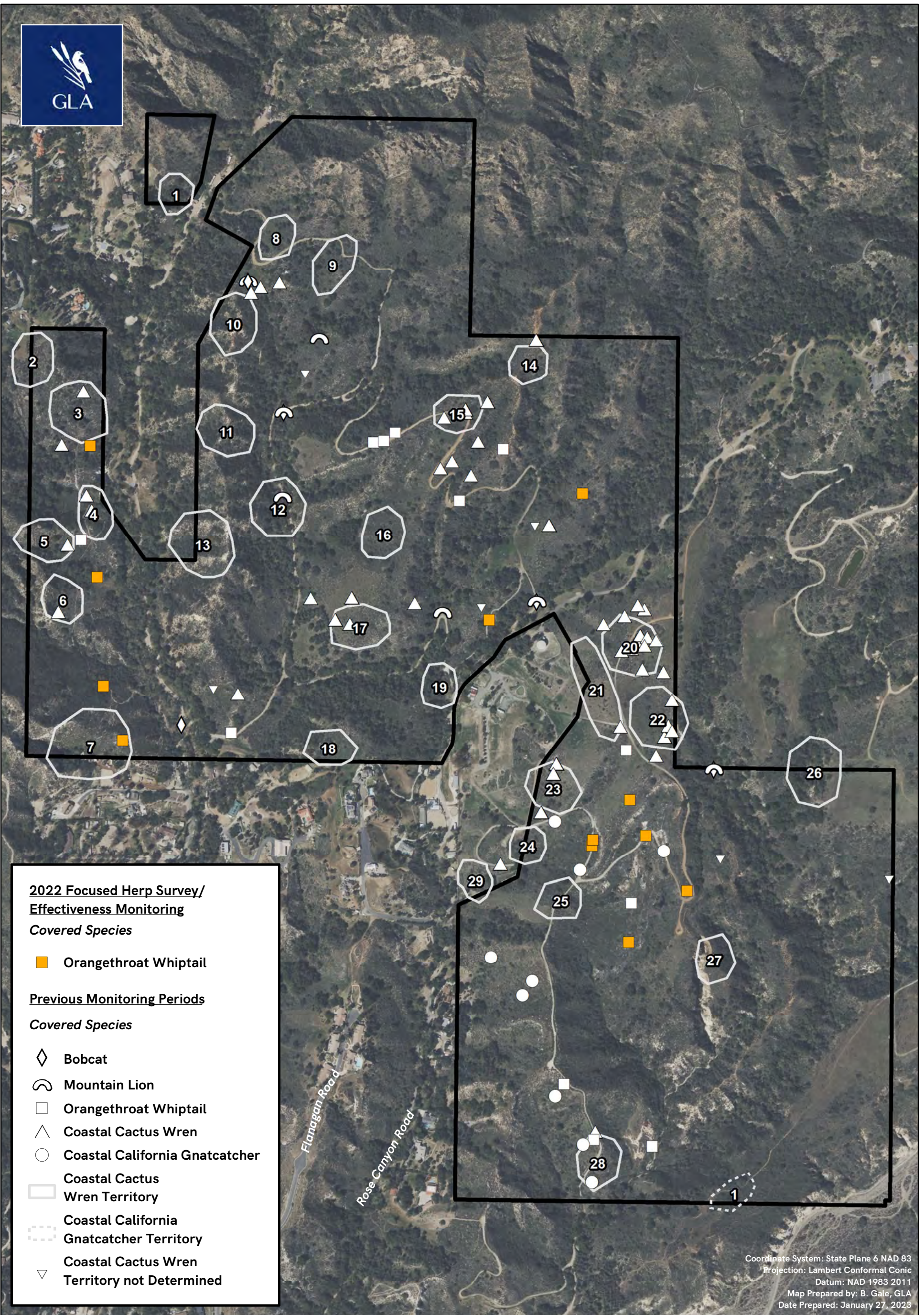
Covered Species

Intermediate Mariposa Lily



1 inch = 550 feet

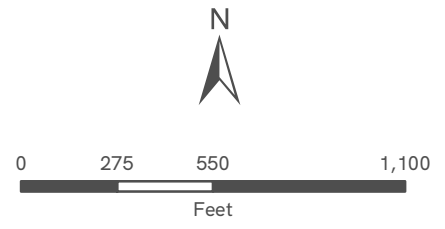
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**Exhibit 3B - OCTA Covered/
Sensitive Animal Species Map**

Trabuco Rose Preserve

Trabuco Rose Preserve



1 inch = 550 feet

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\MonitoringGIS\2022\1184-X_OCTA_Animals2022_TrabucoRose.mxd



Balboa Avenue

Barracuda Drive

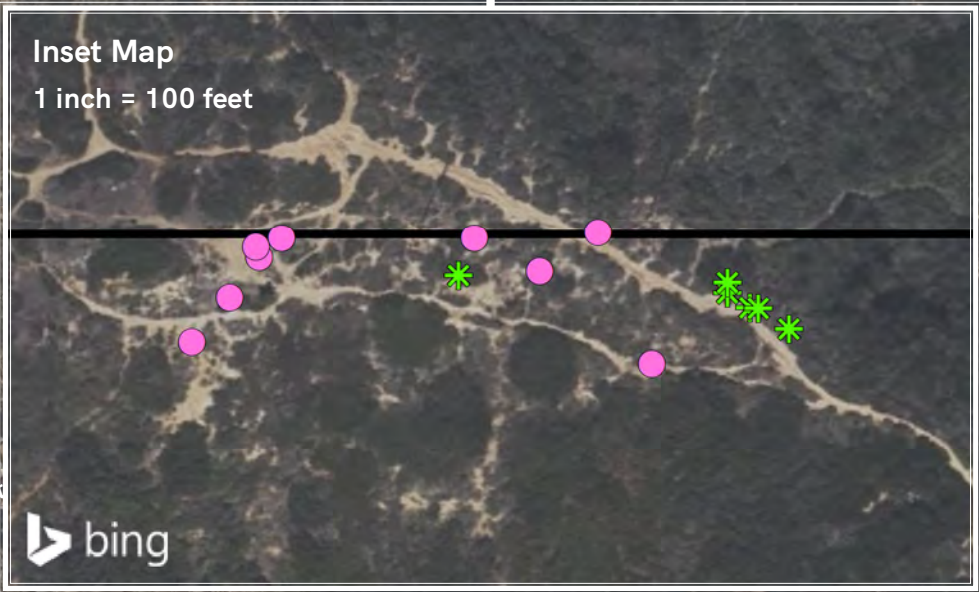
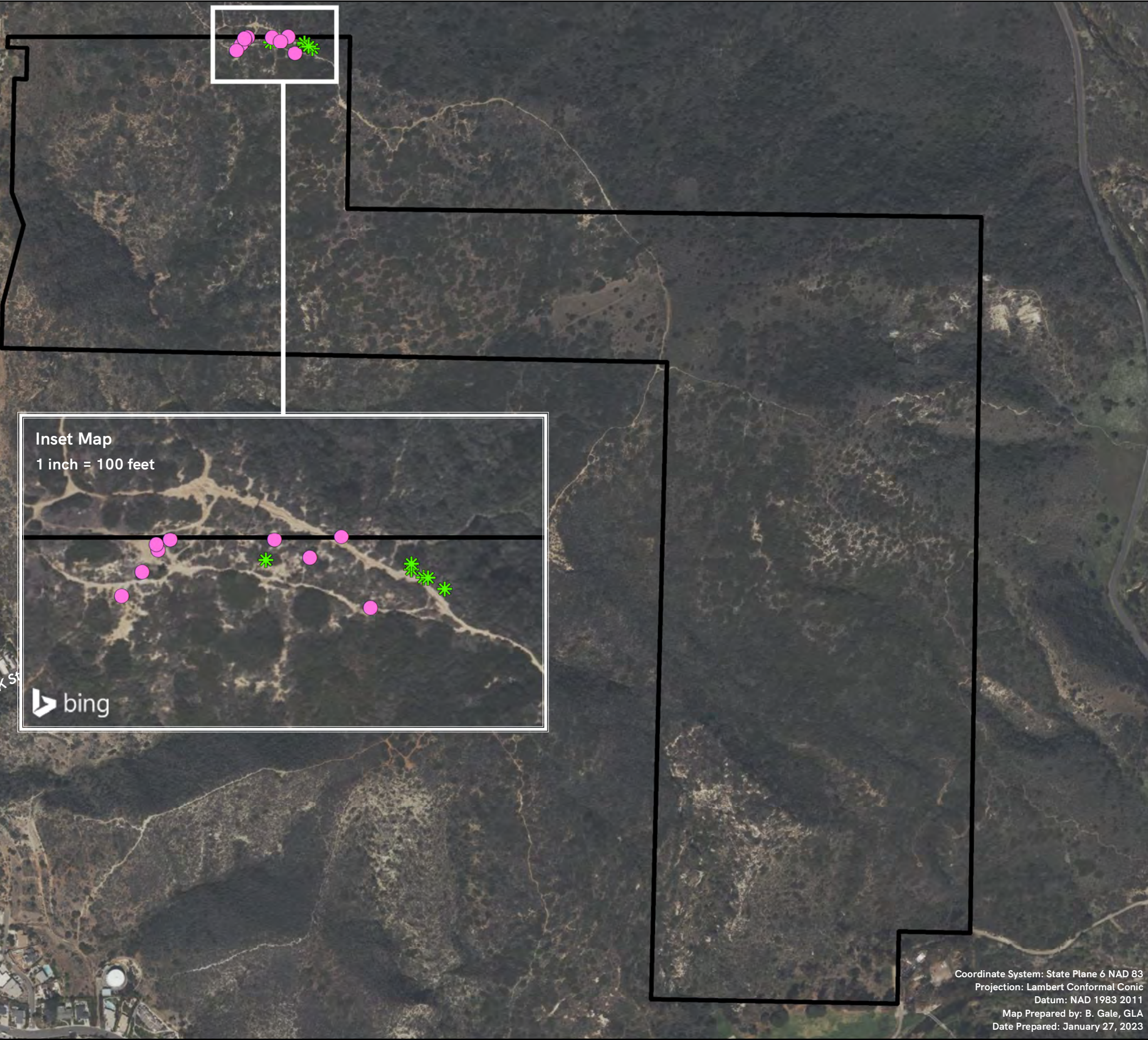


Exhibit 3C - OCTA Covered/ Sensitive Plant Species Map

Pacific Horizon Preserve

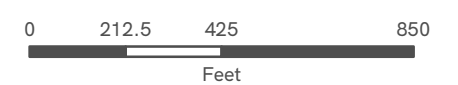
Pacific Horizon Preserve

2022 Focused Plant Survey/ Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily

Many-stemmed Dudleya



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 27, 2023

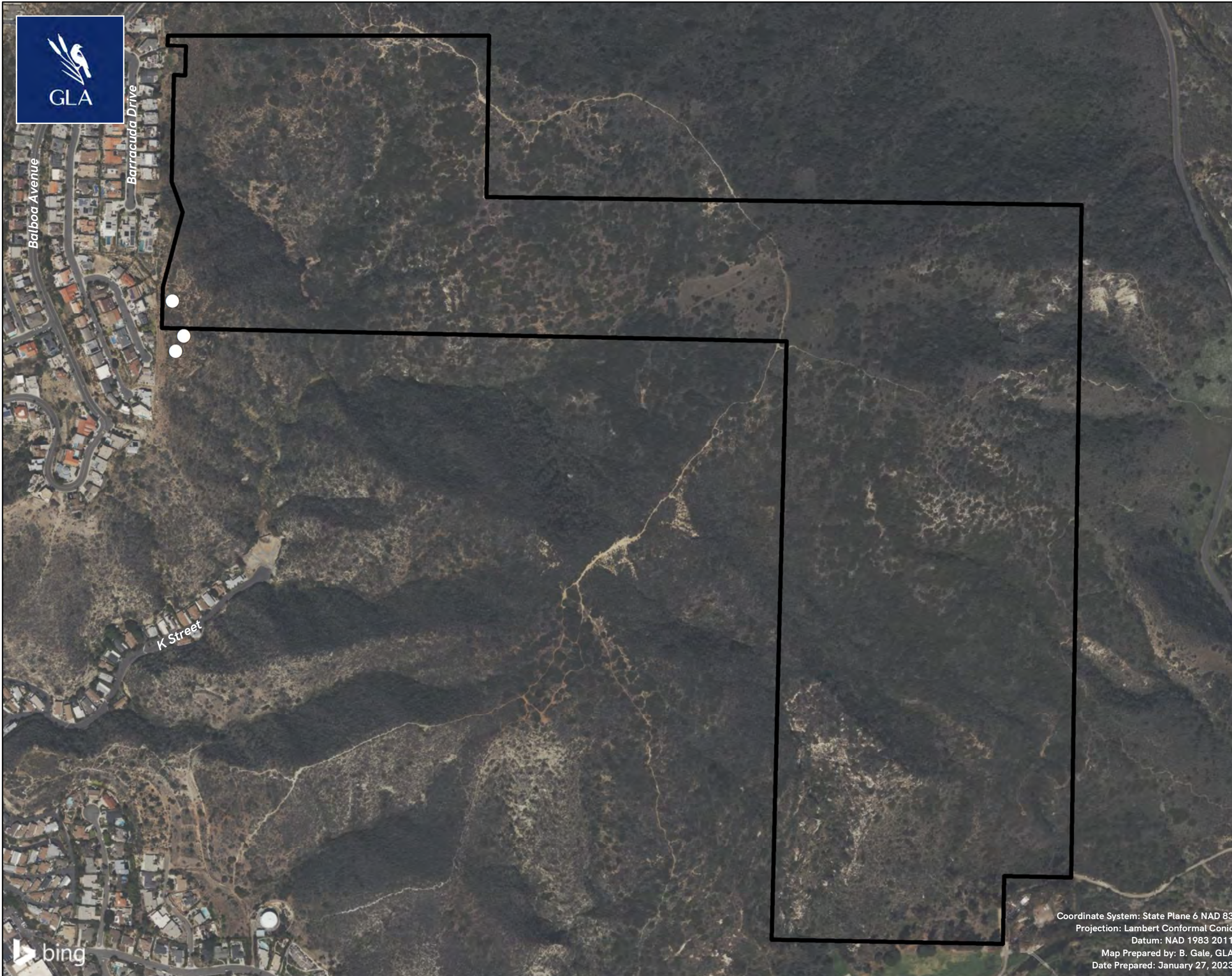


Exhibit 3D - OCTA Covered/ Sensitive Animal Species Map

Pacific Horizon Preserve

 Pacific Horizon Preserve

Previous Monitoring Periods

Covered Species

 Coastal California Gnatcatcher



1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 27, 2023

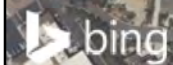
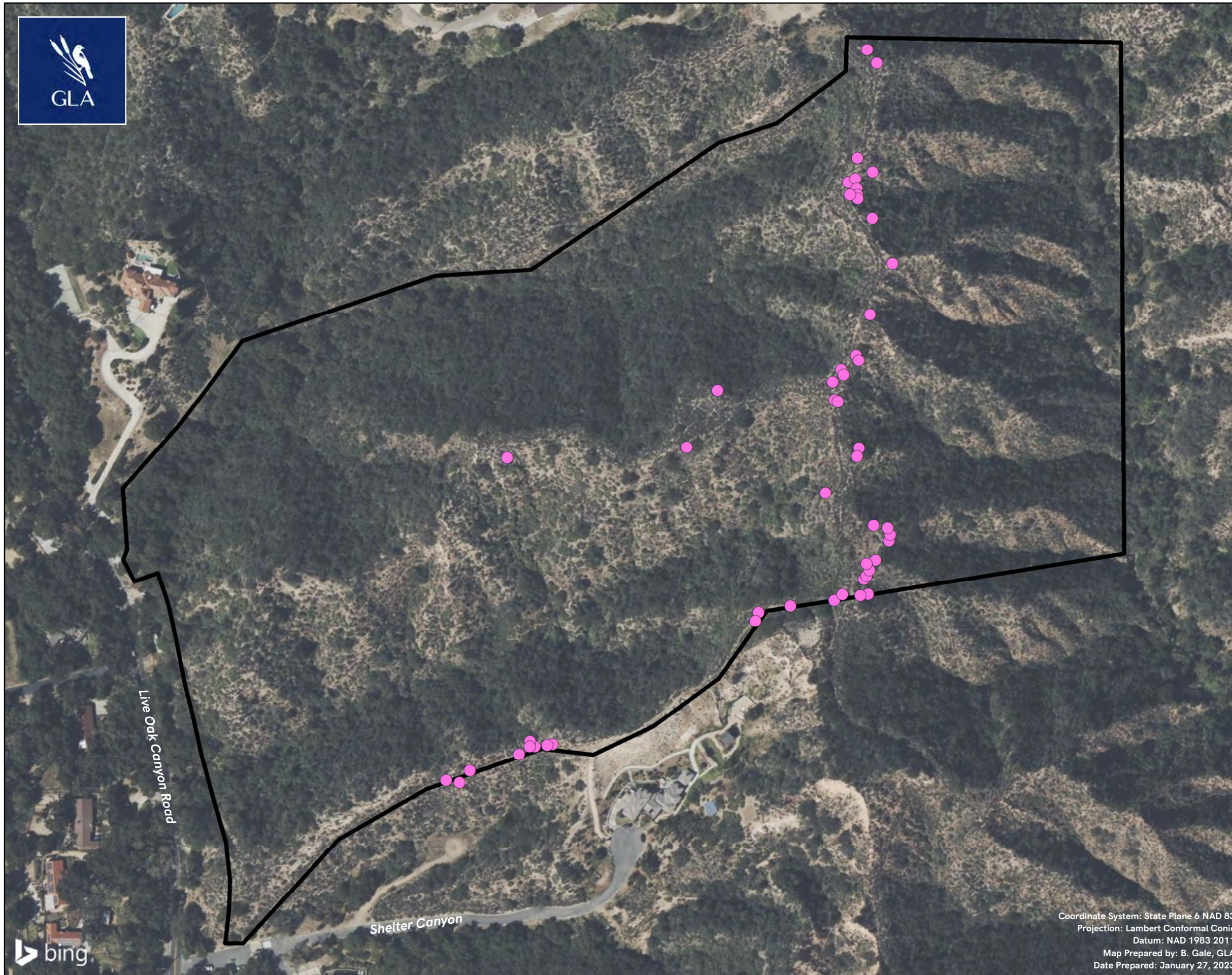




Exhibit 3E - OCTA Covered/ Sensitive Plant Species Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

2022 Focused Plant Survey/
Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: January 27, 2023

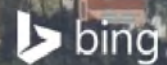




Exhibit 3F - OCTA Covered/ Sensitive Animal Species Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

Current Monitoring Period

Covered Species

Orangethroat Whiptail

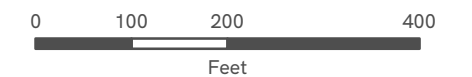
Previous Monitoring Periods

Covered Species

Orangethroat Whiptail

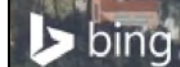
Coastal Cactus Wren

Coastal Cactus Wren Territory



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: January 23, 2023





Baker Canyon Road

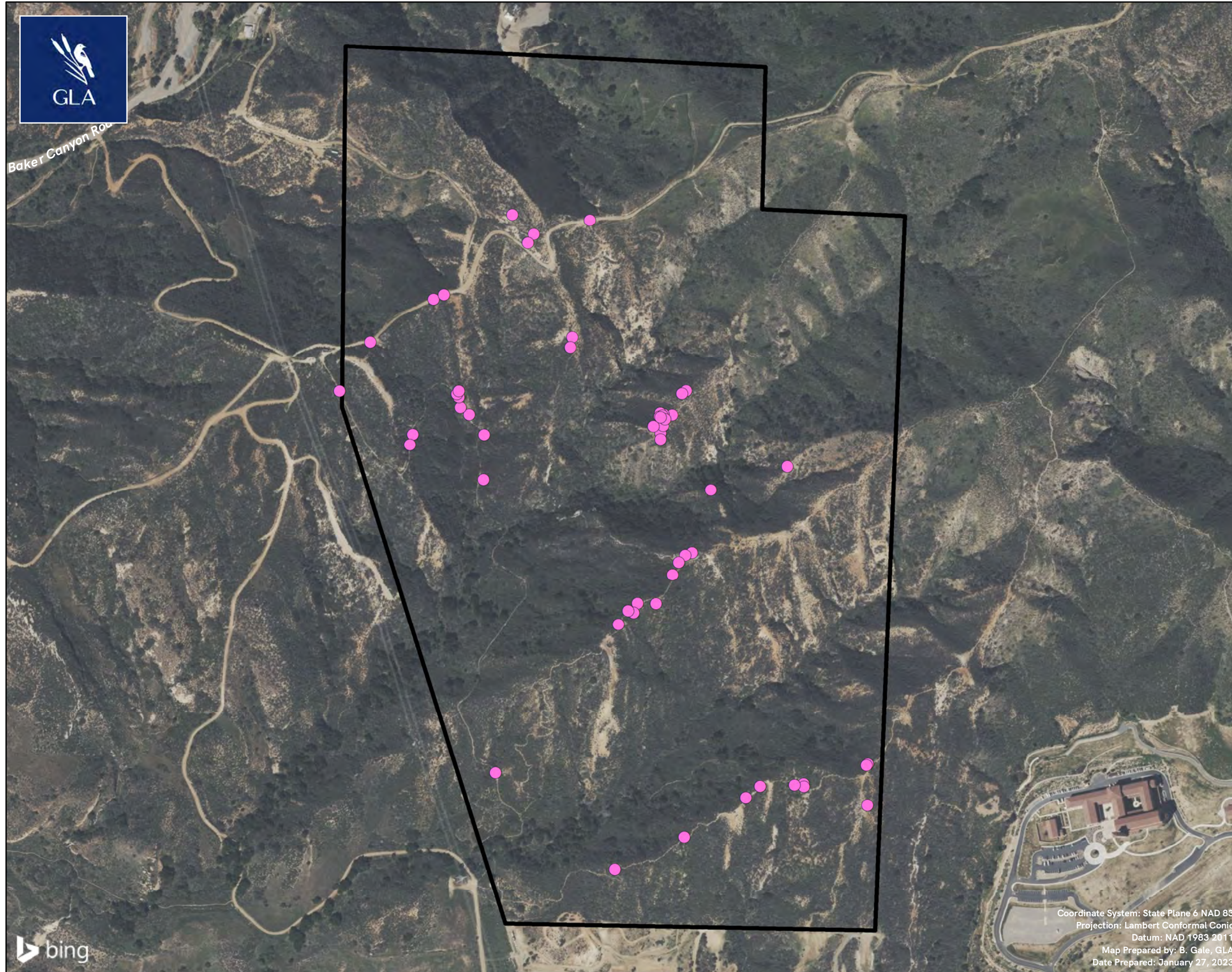


Exhibit 3G - OCTA Covered/ Sensitive Plant Species Map

Silverado Chaparral Preserve

Silverado Chaparral Preserve

2022 Focused Plant Survey/
Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 27, 2023





Baker Canyon Road

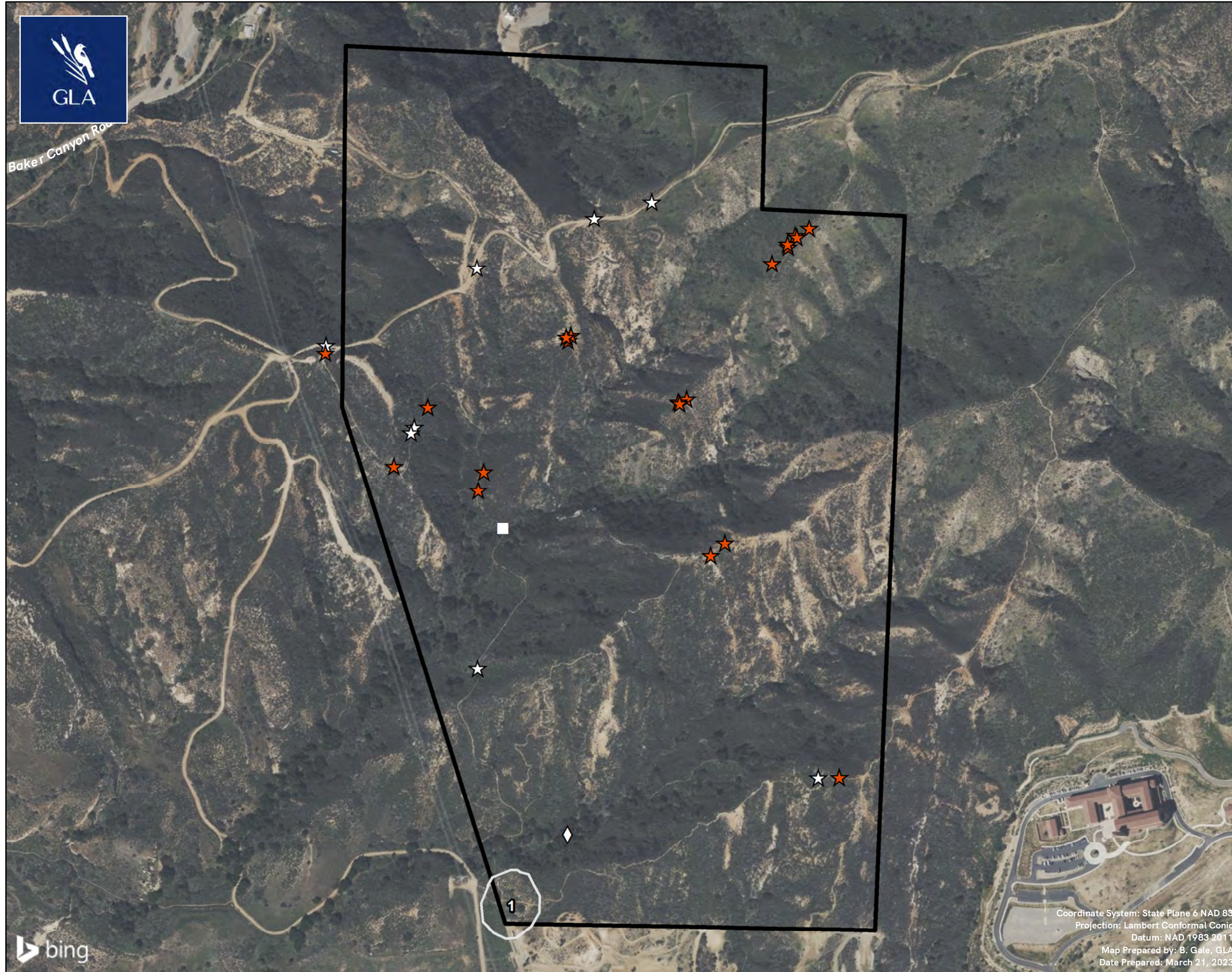


Exhibit 3H - OCTA Covered/ Sensitive Animal Species Map

Silverado Chaparral Preserve

Silverado Chaparral Preserve

2022 Focused Herp Survey/ Effectiveness Monitoring

Covered Species

Coast Horned Lizard Scat

Previous Monitoring Periods

Covered Species

Bobcat

Orangethroat Whiptail

Coast Horned Lizard

Coastal Cactus Wren Territory



1 inch = 450 feet

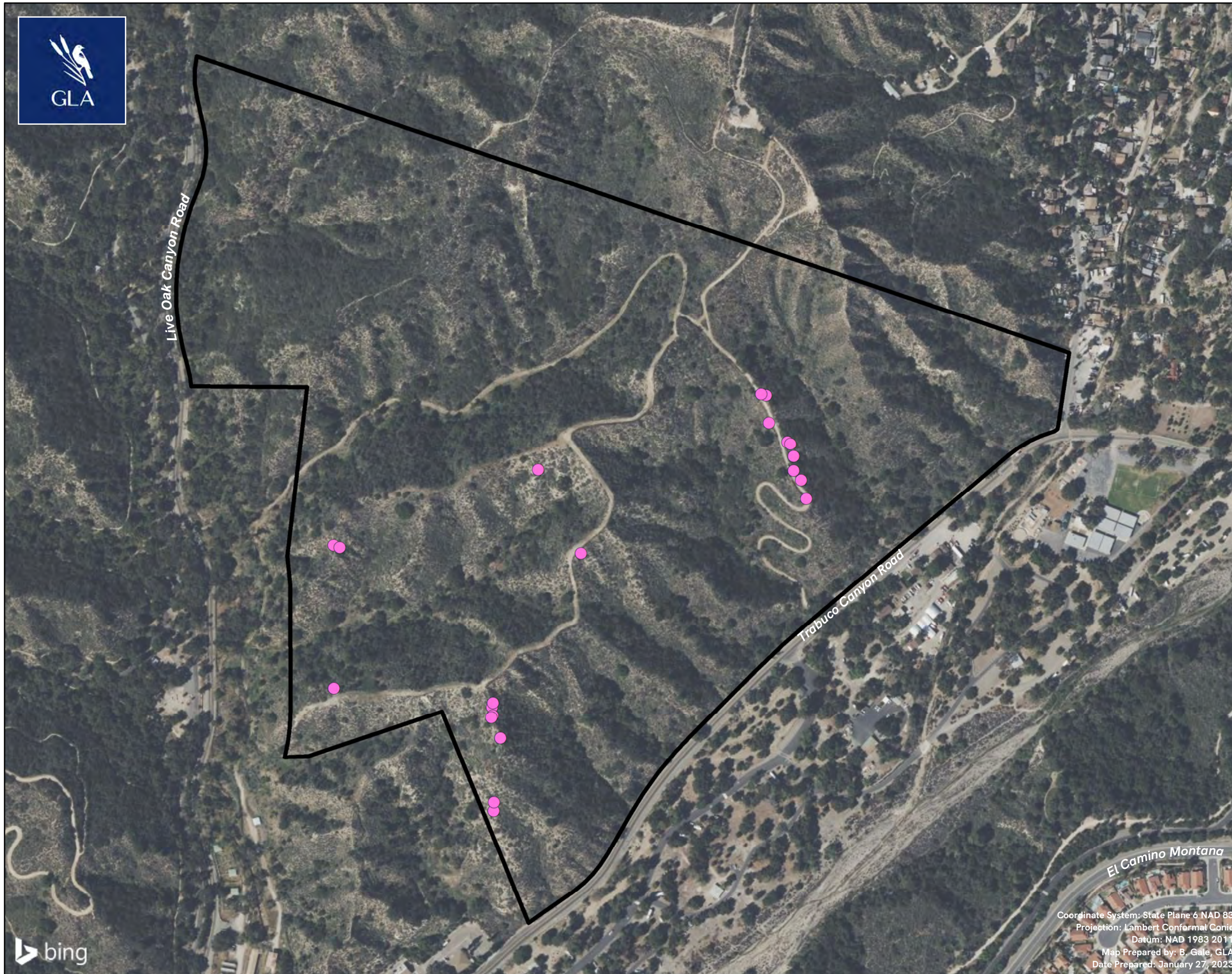
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 21, 2023





Exhibit 3I - OCTA Covered/ Sensitive Plant Species Map

Wren's View Preserve

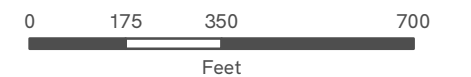


Wren's View Preserve

2022 Focused Plant Survey/
Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily



1 inch = 350 feet



Exhibit 3J - OCTA Covered/ Sensitive Animal Species Map

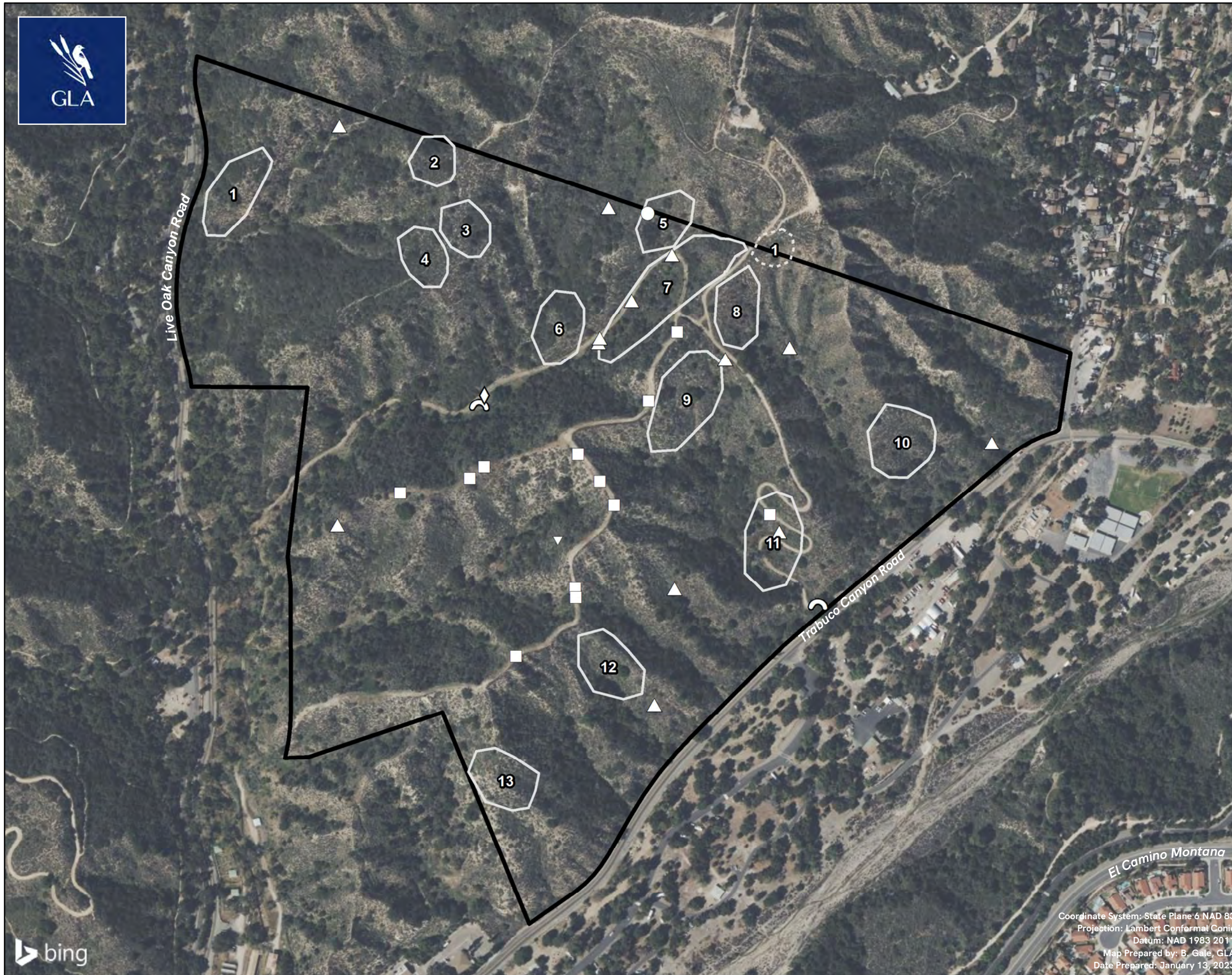
Wren's View Preserve

Wren's View Preserve

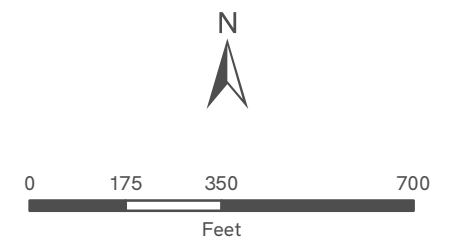
Previous Monitoring Periods

Covered Species

- Bobcat
- Coastal California Gnatcatcher
- Mountain Lion
- Orangethroat Whiptail
- Coastal Cactus Wren
- Coastal Cactus Wren Territory
- Coastal California Gnatcatcher Territory
- Coastal Cactus Wren Territory not Determined



Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: January 13, 2023



1 inch = 350 feet

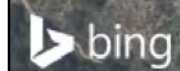




Exhibit 3K - OCTA Covered/ Sensitive Plant Species Map

Live Oak Creek Preserve



Live Oak Creek Preserve

2022 Focused Plant Survey/
Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 27, 2023

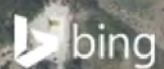




Exhibit 3L - OCTA Covered/ Sensitive Animal Species Map

Live Oak Creek Preserve



Live Oak Creek Preserve

Current Monitoring Period

Covered Species

Orangethroat Whiptail

Previous Monitoring Periods

Covered Species

Bobcat

Orangethroat Whiptail

Coastal Cactus Wren

Coastal Cactus Wren Territory



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 12, 2023

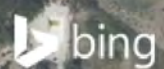
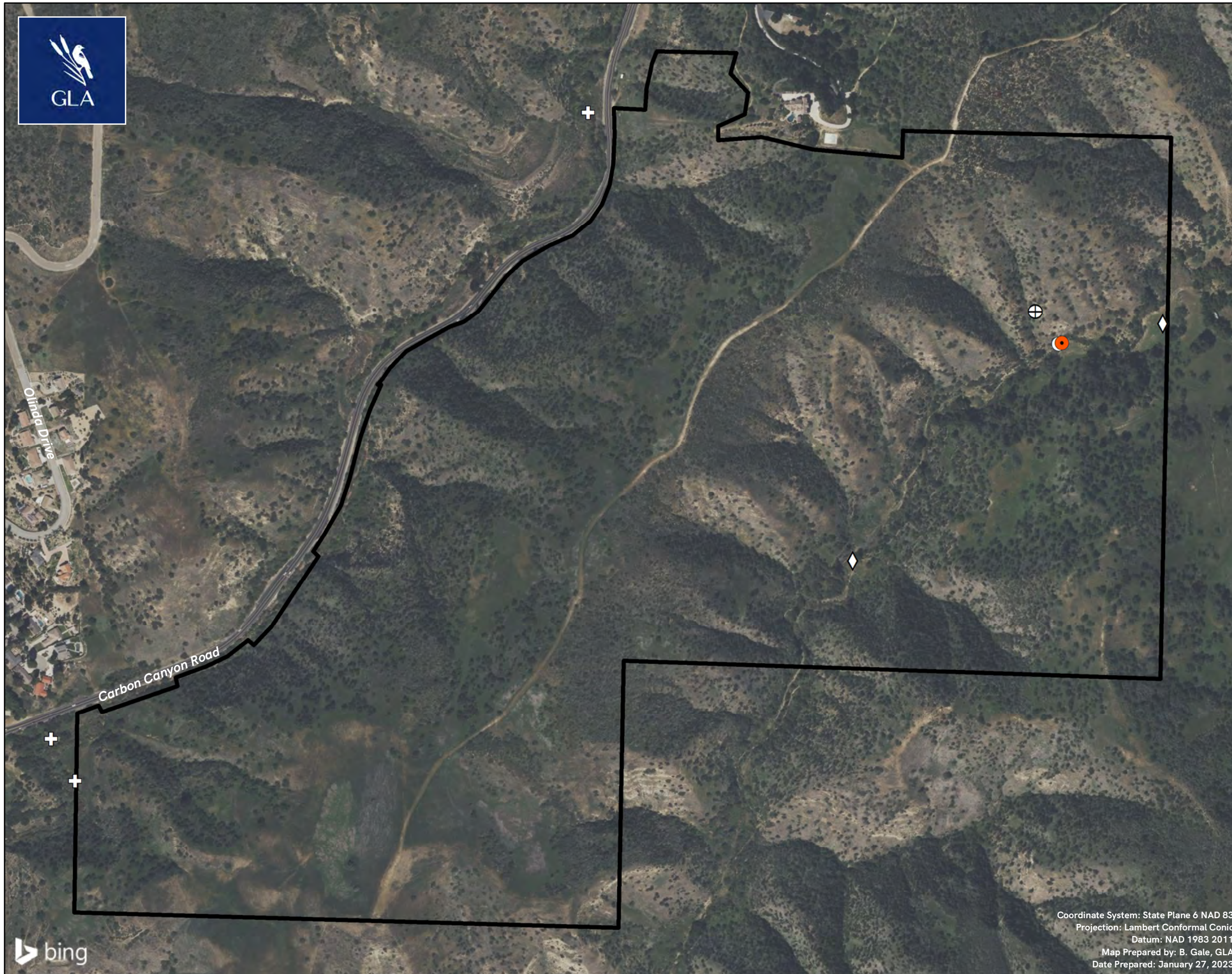




Exhibit 3M - OCTA Covered/ Sensitive Animal Species Map

Eagle Ridge Preserve



Eagle Ridge Preserve

Current Monitoring Period

Covered Species

Two Western Pond Turtle Individuals

Previous Monitoring Periods

Covered Species

Bobcat

Golden Eagle

Least Bell's Vireo

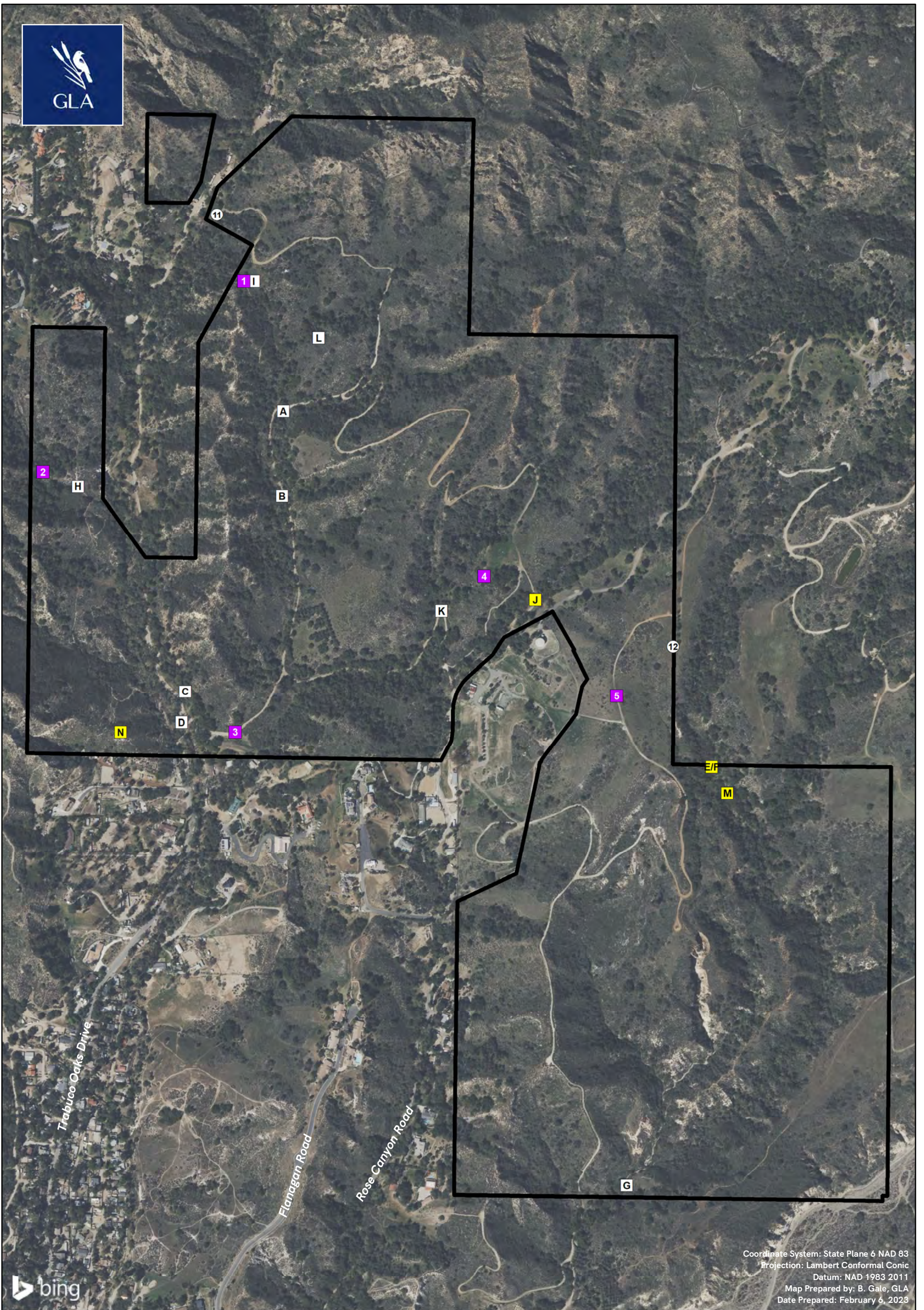
Western Pond Turtle



1 inch = 475 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 27, 2023










Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: February 6, 2023

Exhibit 4A
Photo Locations Map

Trabuco Rose Preserve

-  **Trabuco Rose Preserve**
-  **Wildlife Camera Station**
-  **Wildlife Camera Station Inactive in 2022**
-  **Permanent Photo Station**
-  **Photo Location**



1 inch = 550 feet

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\PhotoLocationsGIS\2022\1184-X_OCTA_Photos_TrabucoRose.mxd

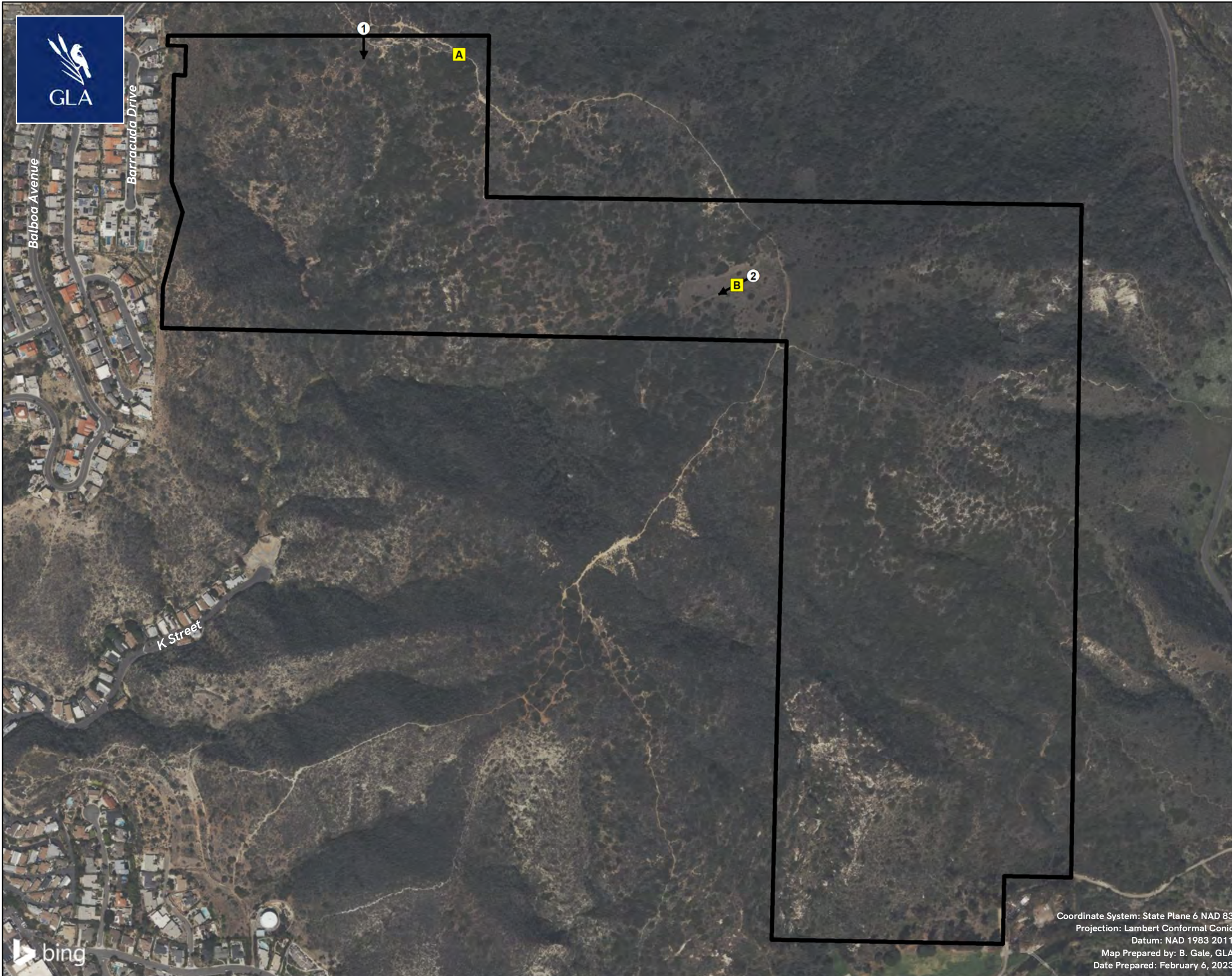





Exhibit 4B Photo Locations Map

Pacific Horizon Preserve

-  Pacific Horizon Preserve
-  Wildlife Camera Station
-  Photo Location



1 inch = 425 feet



Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 6, 2023

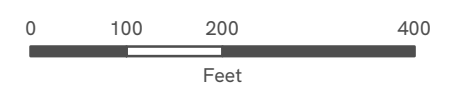


Exhibit 4C Photo Locations Map

Bobcat Ridge Preserve



-  Bobcat Ridge Preserve
-  Photo Location



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: February 8, 2023



Baker Canyon Road



Exhibit 4D Photo Locations Map

Silverado Chaparral Preserve

-  Silverado Chaparral Preserve
-  Active Wildlife Camera Station
-  Previous Wildlife Camera Station
-  Photo Location



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 7, 2023



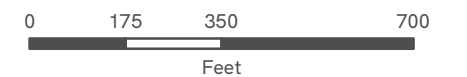


Exhibit 4E Photo Locations Map

Wren's View Preserve



-  Wren's View Preserve
-  Wildlife Camera Station Inactive in 2022
-  Photo Location



1 inch = 350 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: March 6, 2023






Exhibit 4F Photo Locations Map

Live Oak Creek Preserve



-  Live Oak Creek Preserve
-  Wildlife Camera Station Inactive in 2022
-  Photo Location



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 8, 2023

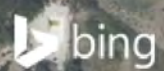
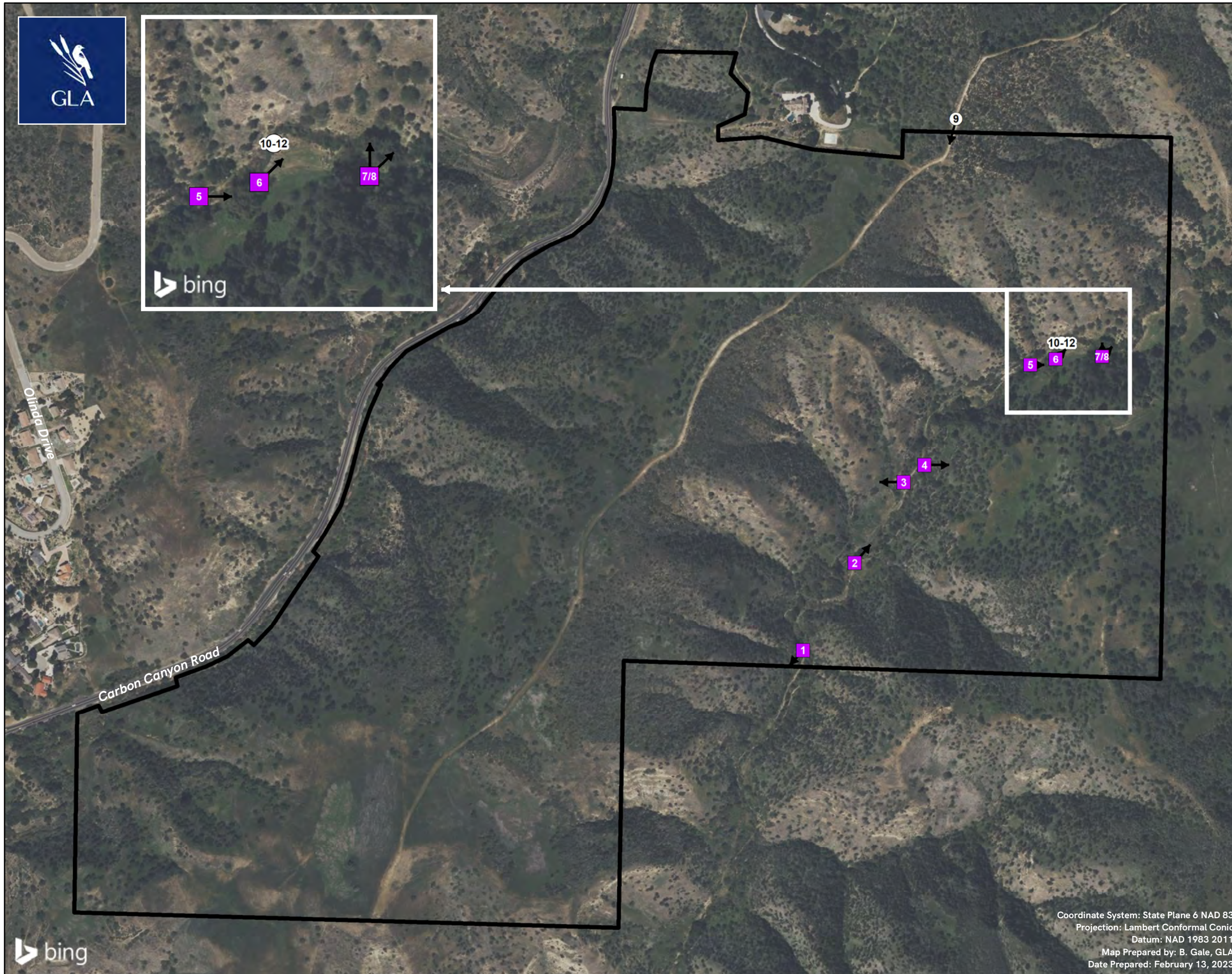




Exhibit 4G Photo Locations Map

Eagle Ridge Preserve



Eagle Ridge Preserve

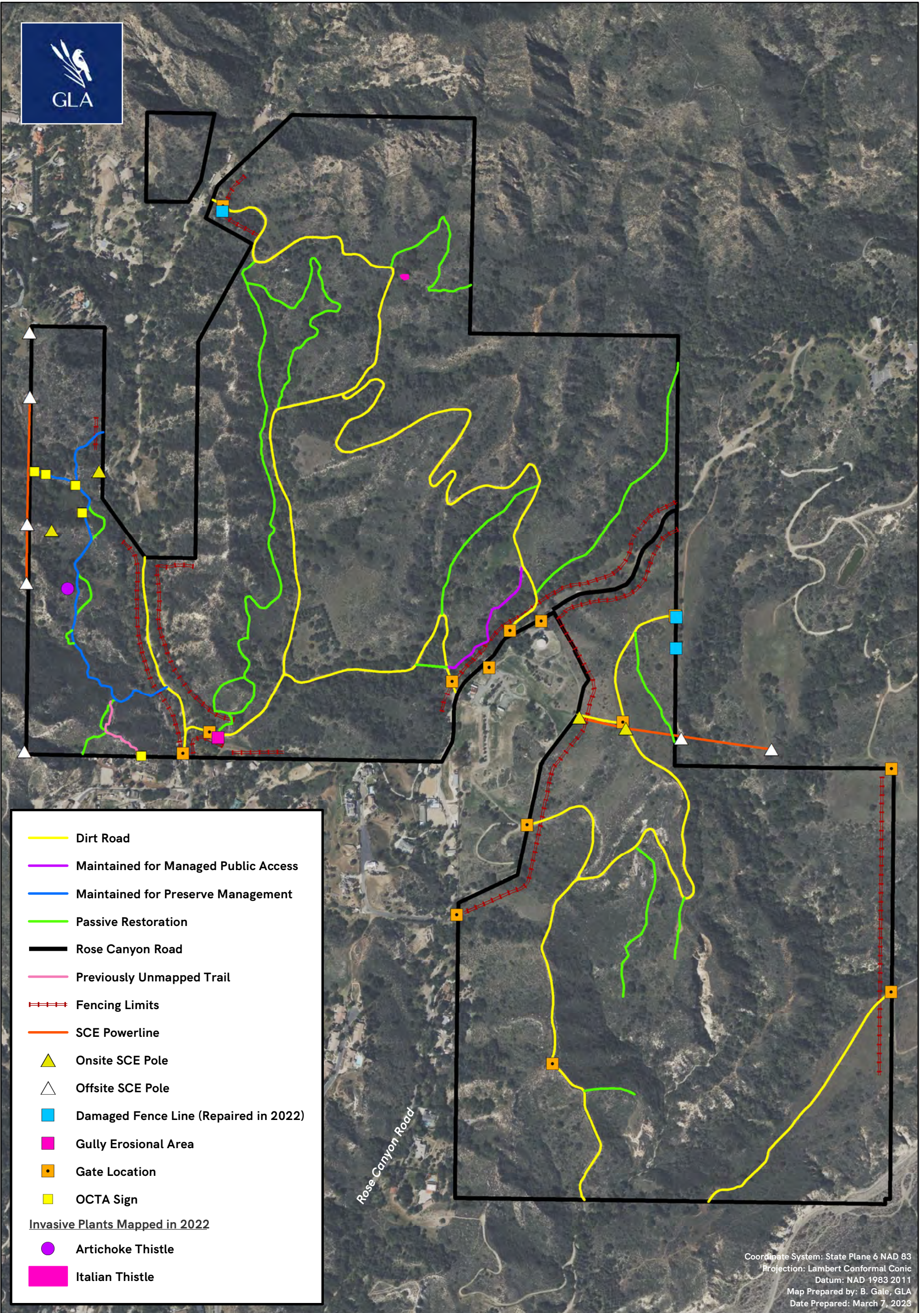
Permanent Photo Station

Photo Location



1 inch = 475 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: February 13, 2023



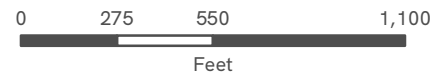
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Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: March 7, 2023

**Exhibit 5A - Trails, Utility,
and Maintenance Map**

Trabuco Rose Preserve

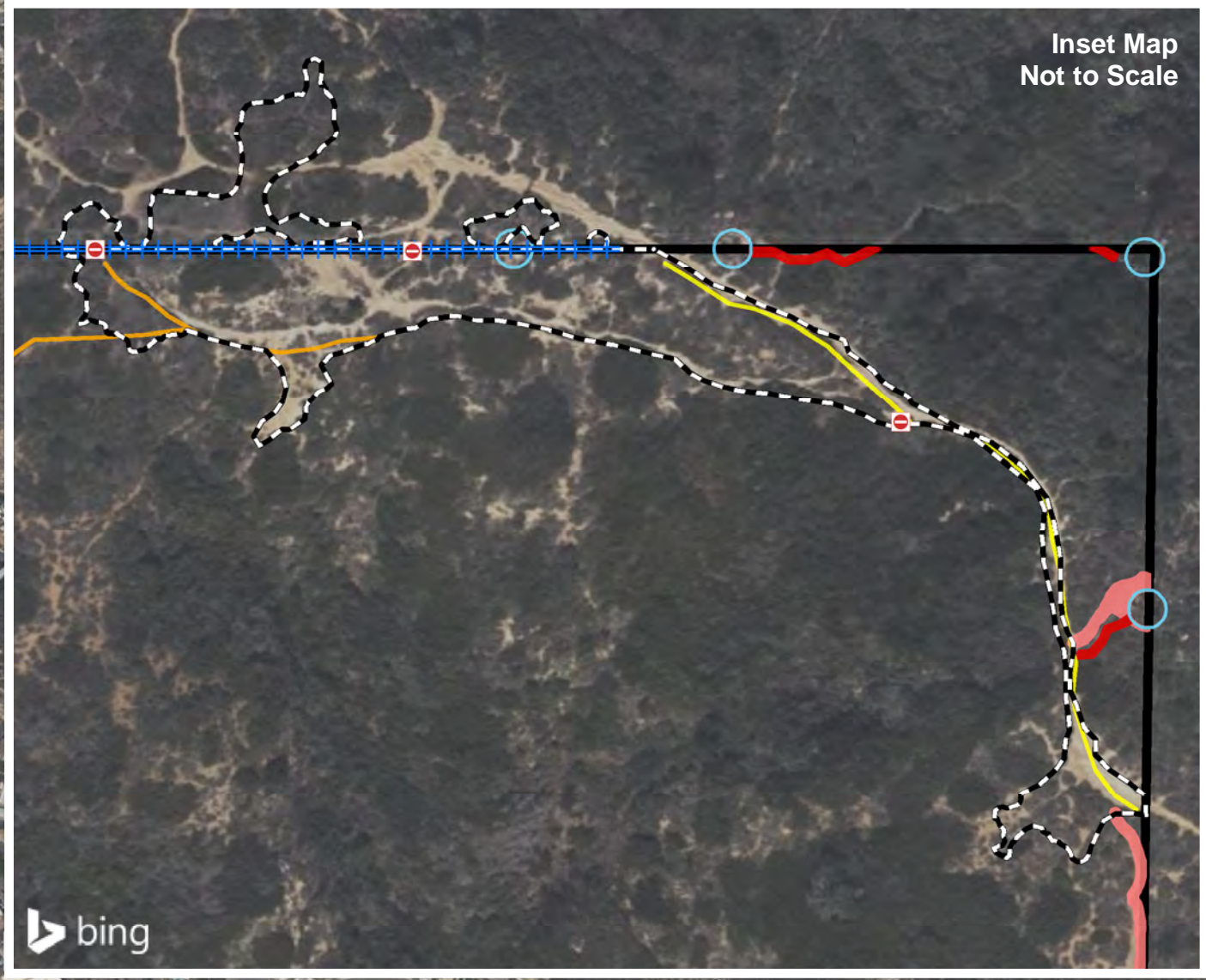
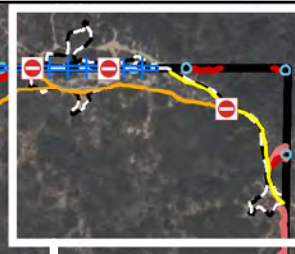
Trabuco Rose Preserve



1 inch = 550 feet



Balboa Avenue
Barracuda Drive



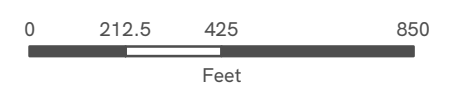
Inset Map
Not to Scale

Exhibit 5B - Trails, Utility, and Maintenance Map

Pacific Horizon Preserve

- Pacific Horizon Preserve
- Disturbed Lands Restoration Work Area
- Burn Area - 30.17 ac.
- Dozer Impacts - 4.75 ac.
- Foot Trails Open for Recreational Use*
- Foot Trails Decommissioned in 2021
- Unauthorized Trails Decommissioned in 2022
- Fence Line
- "Do Not Enter" Restoration in Progress Sign
- SCE 2020 Temporary Impacts Maintained and Monitored by SCE from 2020-2023 - 0.20 ac.
- SCE-Created Linear Impacts (Trails) To Be Permanent and Mitigated - 0.28 ac.
- SCE Pole - Permanent Work Area To Be Permanent and Mitigated - 0.17 ac.

**Pursuant to the OCTA managed public access program*



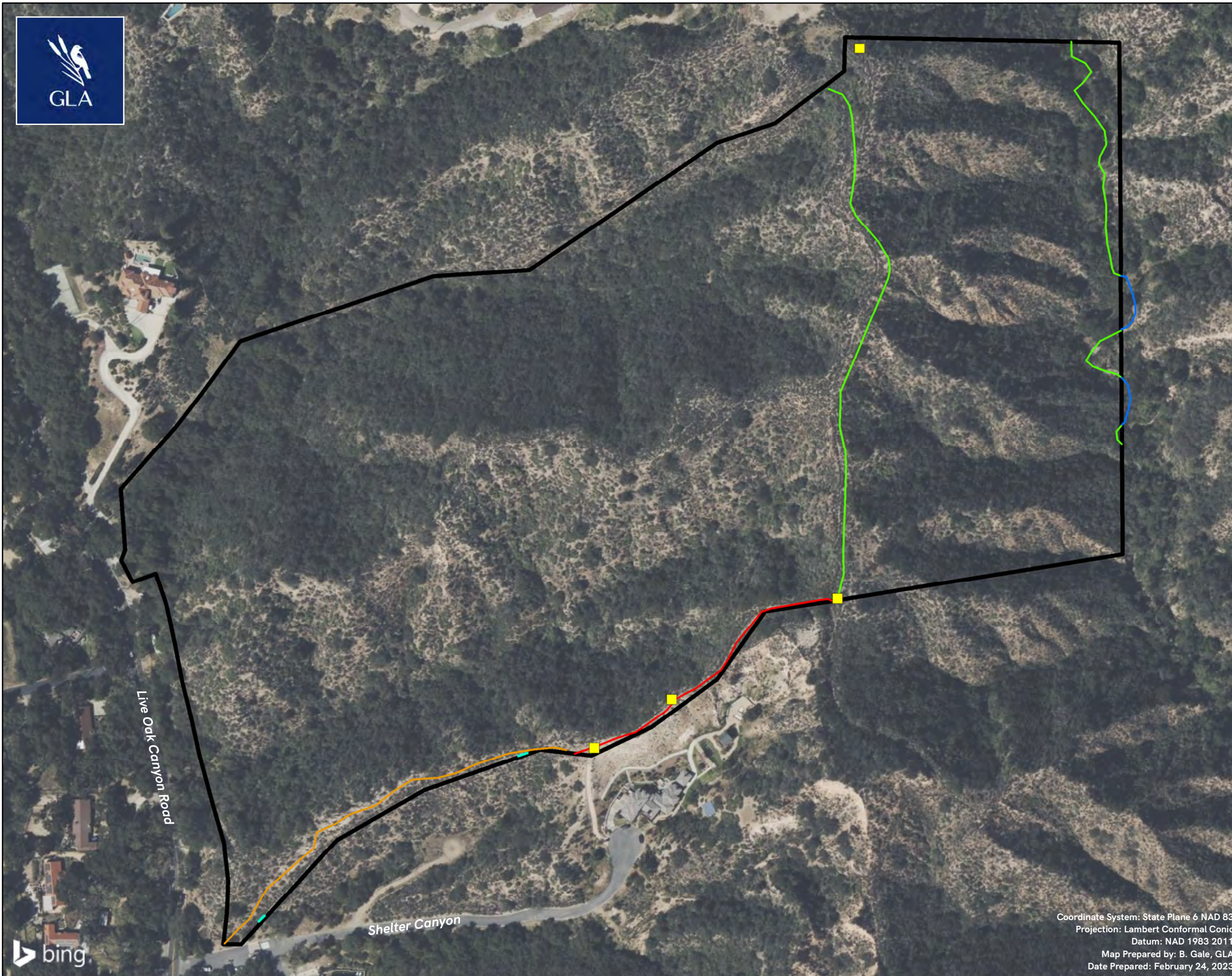
1 inch = 425 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: March 7, 2023

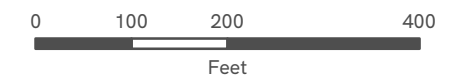


Exhibit 5C Trails and Maintenance Map

Bobcat Ridge Preserve

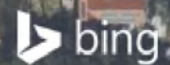


-  Bobcat Ridge Preserve
-  Foot Trails Maintained for Preserve Management
-  Foot Trails (Decommissioned)
-  Unauthorized Trail
-  Offsite Trail
-  Fence Line Needs Repair
-  OCTA Sign



1 inch = 200 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 24, 2023





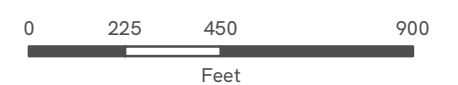
Baker Canyon Rd

Fence cut for passage (2021)

Exhibit 5D - Trails, Utility, and Maintenance Map

Silverado Chaparral Preserve

- Silverado Chaparral Preserve
- Foot Trails and Dirt Roads Maintained for Preserve Management
- Foot Trails and Dirt Roads for Recreational Use*
- Foot Trails (Decommissioned)
- Unauthorized Trail Documented in 2018
- Unauthorized Trail Documented in 2021
- Unauthorized Utility Trail Documented in 2021
- Fence
- Gate with OCTA Sign and Fencing on Either Side on Gate Installed in 2022
- OCTA Sign and Fence
- OCTA Sign Replaced and Fence Repaired in 2022
- 2 OCTA Signs
- OCTA Sign
- Onsite SCE Pole
- Offsite SCE Pole



1 inch = 450 feet

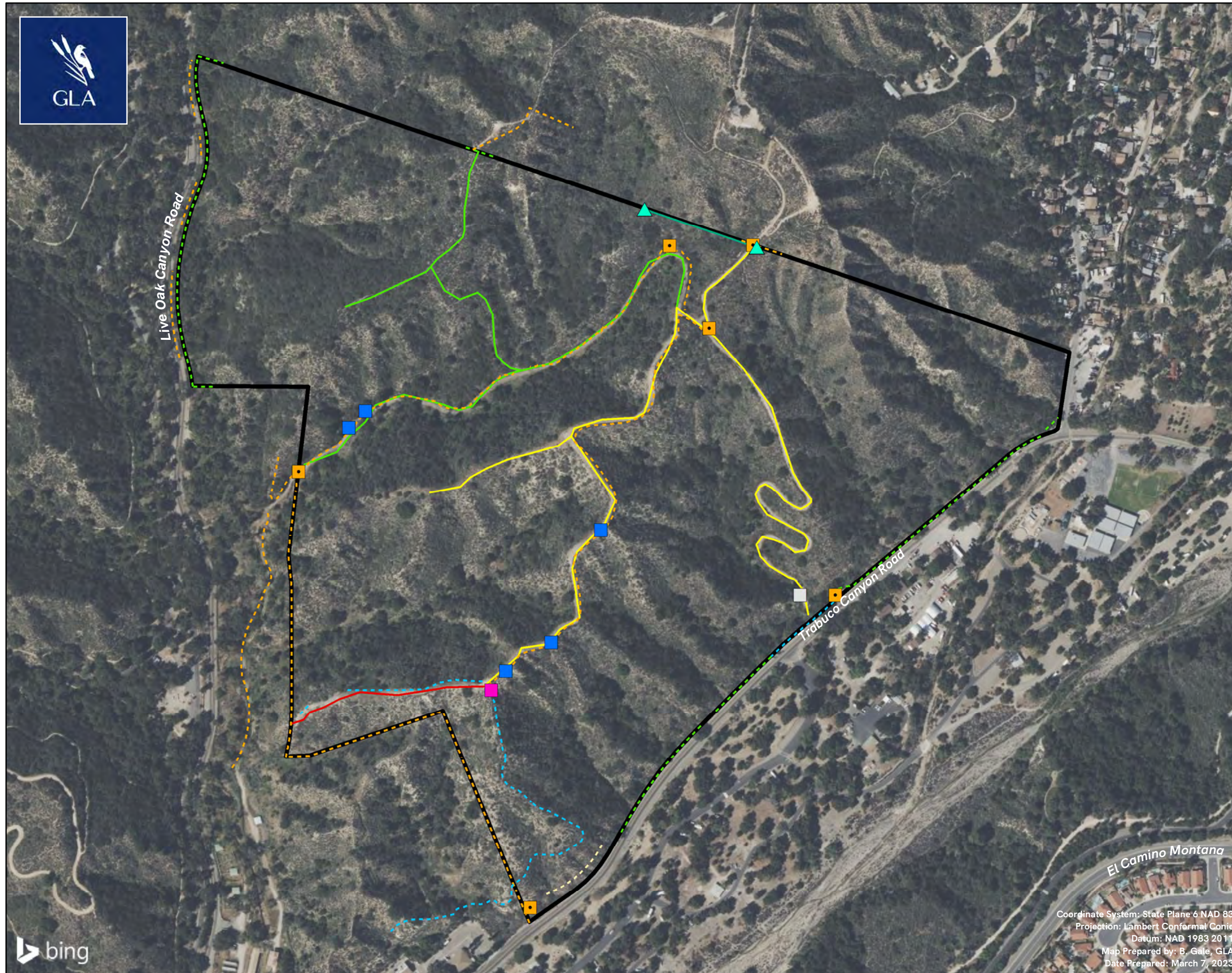
Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: March 7, 2023





Exhibit 5E - Trails, Utility, and Maintenance Map

Wren's View Preserve



- Wren's View Preserve
- Foot Trails and Dirt Roads Maintained for Preserve Management
- Dirt Roads Proposed for Recreational Use*
- Unauthorized Trail
- Barbed Wire Fence
- Barbed Wire Fence (Downed)
- Barbless Wire Fence
- Chainlink Fence
- AT&T Powerline
- Onsite AT&T Pole
- Damaged Barbed Wire Fence
- Downed Chainlink Fence
- Concrete Debris Illegally Dumped (Removed in July 2022)
- Gate Location



1 inch = 350 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: March 7, 2023

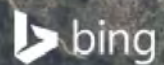




Exhibit 5F - Trails, Utility, and Maintenance Map

Live Oak Creek Preserve



- Live Oak Creek Preserve
- Dirt Roads Maintained for Preserve Management
- Foot Trails Maintained for Preserve Management
- Foot Trails Decommissioned
- SCE Powerline
- Offsite SCE Pole
- Gate
- Landscape Debris
- Loose Fence Line



1 inch = 225 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 24, 2023

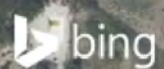
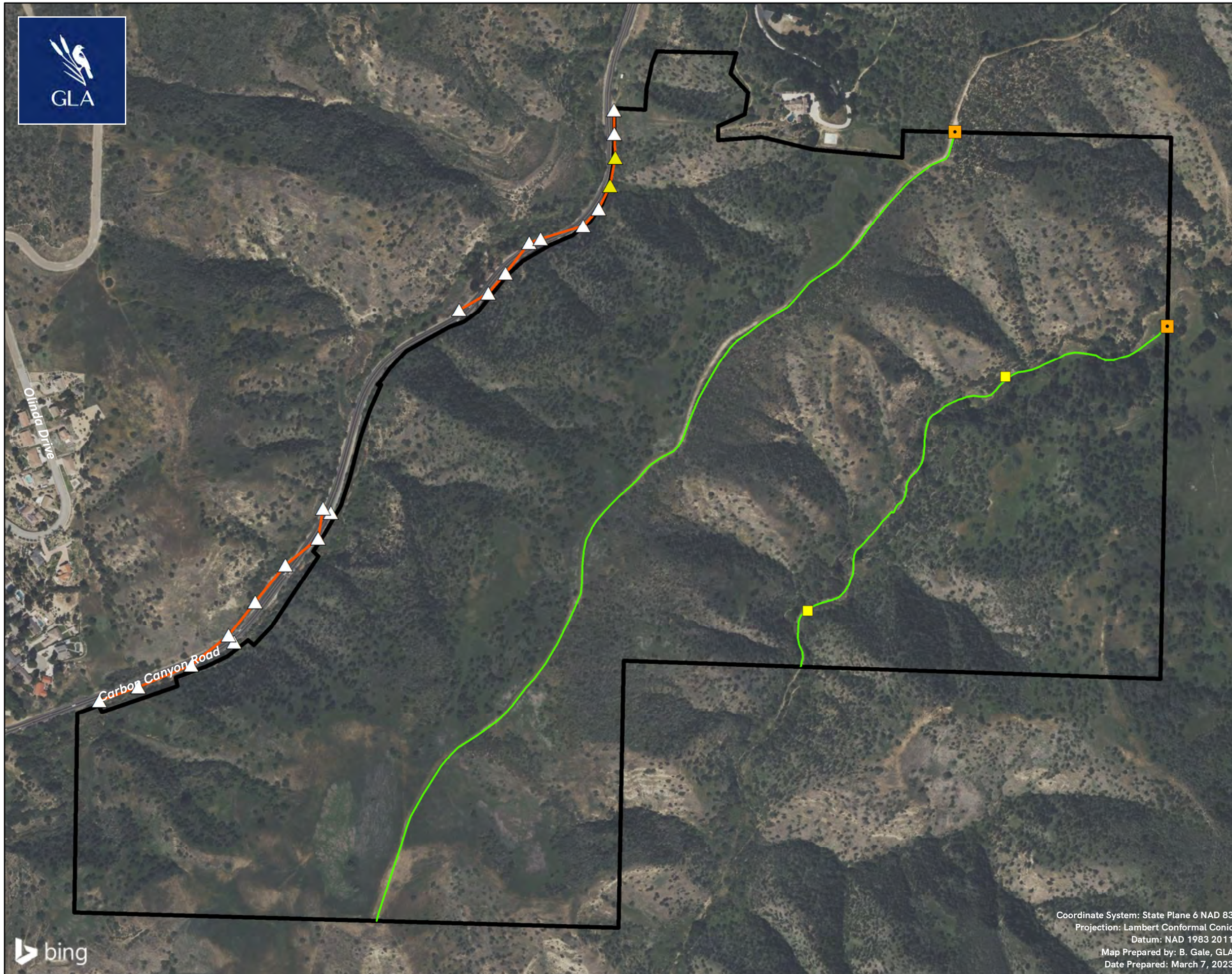











Exhibit 5G - Trails, Utility, and Maintenance Map

Eagle Ridge Preserve



-  Eagle Ridge Preserve
-  Foot Trails and Dirt Roads Maintained for Preserve Management
-  SCE Powerline
-  Onsite SCE Pole
-  Offsite SCE Pole
-  Gate Location
-  OCTA Sign



1 inch = 475 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: March 7, 2023



TRABUCO ROSE PRESERVE USACE/SWRCB ANNUAL MONITORING FORM

A total of 1.75 acres of waters of the U.S., of which 0.14 acre consists of wetlands, within Trabuco Rose Preserve is compensatory mitigation for U.S. Army Corps of Engineers (USACE) and California State Water Resources Control Board (SWRCB) in the form of preservation (Exhibit 1). While monitoring and reporting for the entire Preserve is related to the USACE/SWRCB mitigation sites since these are surrounding buffer areas, this appendix provides the USACE/SWRCB with the information they require regarding tasks within the Trabuco Rose RMP that are specific to their mitigation areas. The tasks also apply to a 50-foot buffer from these preserved waters of the U.S./waters of the State to ensure the sustainability of the USACE/SWRCB mitigation site. This form constitutes the third annual monitoring of the USACE/SWRCB mitigation areas.

A. Biological Resources

Element A.1 – Waters of the U.S., including wetlands

- I. *Task: At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, invasive species, and erosion or aggradation will be noted, evaluated and mapped during a site examination in the spring. Notes to be made will include observations of species encountered, general water quality (i.e., turbidity, pollutants such as oil sheen), general extent and condition of non-wetland waters of the U.S., and any occurrences of erosion or aggradation, and weed/non-native species invasion.*

Monitoring Summary: GLA conducted an annual walk-through survey to qualitatively monitor the general condition of preserved waters of the U.S. on May 10, 2022. Preserved waters of the U.S. are depicted on Exhibit 1. Reference photographs were taken from the established locations and are attached as Exhibit 2. A map depicting photograph locations is attached as Exhibit 1.

See below for a summary of the monitoring results:

Drainage 1/Site Photo 1 – Drainage 1 consists of an ephemeral tributary in a steep canyon. No water was present during the monitoring. The drainage is mostly vegetated, primarily with dense California sagebrush scrub/cactus and some coast live oak woodland. No invasive species, erosion, or aggradation was observed. The drainage is in good condition and does not appear to have changed in extent since the baseline mapping. No actions are recommended to maintain the current condition.

Drainage 2/Site Photos 2, 3, 5, 6, and 7 – The upper ephemeral tributaries associated with Drainage 2 (photographs 2, 3, and 7) are within steep canyons and are mostly vegetated. No water was present during the monitoring. Vegetation includes California sagebrush scrub, coast live oak woodland, laurel sumac-lemonade berry chaparral, and California buckwheat scrub. No invasive perennial species were noted within the upper tributaries of Drainage 2. Limited non-native brome

grasses were observed along the road edge but do not form large patches nor were they encroaching within the drainage. No erosion or aggradation was noted. Overall, the upper tributaries associated with Drainage 2 are in good condition and do not appear to have changed in extent since the baseline mapping. No actions are recommended to maintain the current condition.

The lower portion of Drainage 2 (photograph 6) is a lower gradient ephemeral stream segment in the valley floor and is mostly vegetated. No water was present during the monitoring. Vegetation includes arroyo willow thickets, mulefat (*Baccharis salicifolia*), coast live oak woodland, poison oak (*Toxicodendron diversilobum*), olive (*Olea europaea*), and Eucalyptus. No invasive perennial species were noted within the upper tributaries of Drainage 2; however, Italian thistle (*Carduus pycnocephalus*) and non-native brome grasses were present along the roadside buffer. Continued road maintenance and targeted thistle removal is recommended along this portion of Drainage 2. No erosion or aggradation was noted. Overall, the lower portion of Drainage 2 is in good condition and does not appear to have changed in extent since the baseline mapping. Other than removal of Italian thistle/routine road maintenance, no actions are recommended to maintain the current condition.

The wetland (photograph 5) at the southernmost point of USACE/SWRCB mitigation associated with Drainage 2 was dry during the May 10, 2022 monitoring. Vegetation consisted of arroyo willow thickets, mulefat, Western ragweed (*Ambrosia psilostachya*), and California mugwort (*Artemisia douglasiana*). Non-native species consisted of annual brome grasses; however, since these are common annual non-native grasses and are not impeding the wetland function, removal is not recommended at this time. No erosion or aggradation was noted. The wetland does not appear to have changed in extent since the baseline mapping. No actions are recommended to maintain the current condition.

Drainage 3/Site Photo 4 – Drainage 3 is a large drainage complex consisting of steep canyon ephemeral tributaries. No water was present during the monitoring. Vegetation includes California sagebrush scrub, coast live oak woodland, laurel sumac-lemonade berry chaparral, California buckwheat scrub, scrub oak chaparral, chamise chaparral, and needle grass grassland. Some areas are naturally erosive but are not actively eroding. No invasive species or aggradation was noted. Overall, the drainage is in good condition and does not appear to have changed in extent since the baseline mapping. No actions are recommended to maintain the current condition.

- II. *Task: Hydrology and erosion control activities within preserved waters of the U.S. shall be coordinated with Regulatory Agencies. The Preserve Manager will inspect preserved waters of the U.S. immediately after a heavy rainstorm to identify problems with erosion and sedimentation. Where erosion or sedimentation is identified, the Preserve Manager will coordinate with the USACE to implement 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.*

Monitoring Summary: In 2021, OCTA completed Phase 1 of the gully area project to stabilize the erosion adjacent to the access road east of the main gate (near the secondary gate). The project consisted of installation of 325 cubic yards of ½ ton rock and 65 cubic yards of 1-ton rock and filter fabric, which were the initial steps necessary to secure area. GLA continues to monitor this area and is assisting OCTA in securing regulatory permits to complete Phase 2. No active erosion or sedimentation was identified within preserved waters of the U.S.

- III. *Task: CRAM will be updated using the existing baseline scores. This will be completed every 5 or 10 years depending on qualitative changes observed through the annual monitoring efforts. If no changes are clearly recorded in the overall habitats, species occurrences or erosional conditions on roads and trails, a CRAM can be updated every 10 years. If a large natural event occurs such as a fire or flood, CRAM should be completed at the next five year interval to assess changes to the system and help guide adaptive management, restoration, and enhancement activities.*

Status: Monitoring was initiated in 2019; the site will be assessed for the need for CRAM monitoring in 2024.

- IV. *Task: During each annual site visit, record general areas of persistent or problematic trash and trespass. Record type, location, and management mitigation recommendations to avoid, minimize, or rectify a trash, trespass, and/or potential fire hazard impact.*

Monitoring Summary: No trash was observed in preserved waters of the U.S. No signs of fire hazards within preserved waters of the U.S. were identified. Trespass on the Preserve was very minimal in 2022, and no issues with trespass were documented. Additionally, no trespass was documented in or near USACE/SWRCB mitigation areas.

- V. *Task: Reference photograph locations and a photo location map will be established. Site photographs depicting existing site conditions and documenting management activities will be taken from the reference sites.*

Monitoring Summary: Reference photograph locations and a photo location map [Exhibit 1] were established in 2019. Updated photos were taken from the reference locations in 2022 [Exhibit 2].

Element A.2 - Threatened/Endangered Animal Species Minimization

- I. *Task: Avian Species: CAGN – Management activities during the breeding season¹ that have the potential to destroy active nests (e.g., spraying or pulling vegetation off existing roads or trails within coastal sage scrub) or disrupt nesting activities (e.g., weed whipping along roads and trails adjacent to coastal sage scrub) will be conducted under the oversight² of a monitoring biologist³ who will ensure that nesting activities for gnatcatcher nests are not disrupted and that no nests are destroyed. In addition, a specific nesting bird policy for Preserve management (Appendix D of the RMP) has been approved by the Wildlife Agencies. This policy conforms to existing regulations and procedures for protection of nesting birds.*

¹ The breeding season for gnatcatcher is February 15 through August 31.

² "Oversight" includes, but is not limited to, the following activities, which will be conducted as necessary to ensure that no nests are destroyed and that nesting activities of listed species are not disrupted: training personnel on vegetation to be avoided and removed; flagging specific areas to be avoided; training personnel on avoidance and minimization measures; regularly inspecting work activities; and providing direct supervision of management activities when necessary.

³ The monitoring biologist will be familiar with the listed species that potentially occur in the affected habitat (i.e., gnatcatcher) and its breeding behavior.

As normal operating practice, routine management activities are conducted during the non-breeding season. Since no activities are anticipated to occur during the nesting season for any of the listed species, no funding specific to this task is allocated. The USACE mitigation sites were specifically located in areas that are not anticipated to be subject to emergency work. In the unlikely event that work is necessary, the contingency fund (i.e., 15% contingency added to the annual task total) would be used.

Monitoring Summary: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON Restoration Biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans (RMPs).

Element A.3 - Invasive Species

- I. *Initial Task: A Restoration Ecologist shall prepare an invasive species management plan (see RMP Section 3.2) for the Preserve and include preserved waters of the U.S. in the plan to target the above species. The invasive species management plan must be approved prior to recordation of the conservation easement.*

Status: The USACE approved the invasive species management plan on January 18, 2018. Implementation is ongoing.

- II. *Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment of potential or observed weed invasions, primarily in or around the waters of the U.S. Additional actions to control invasive species will be evaluated and prioritized on an annual basis, as necessary, to ensure that any new growth of invasive plant species is treated and not permitted to become large masses that degrade the functions and services provided by any of the conserved habitats.⁴*

Monitoring Summary: GLA conducted an annual walk-through survey to qualitatively monitor for weed invasions and invasive species within or adjacent to preserved waters of the U.S. on May 10, 2022. In general, the USACE/SWRCB mitigation sites currently appear to be very stable with established native habitat present; however, roads adjacent to the mitigation sites should continue to be maintained to prevent encroachment of non-native grasses. Additionally, annual non-native grasses were abundant within the wetland; however, since these are common annual weeds and

⁴ Monitor and maintain control over target invasive plant species that threaten native plant communities within the USACE mitigation site, including cardoon (*Cynara cardunculus*), giant reed (*Arundo donax*), Mexican fan palm (*Washingtonia robusta*), pampas grass (*Cortaderia selloana*), shortpod mustard (*Hirschfeldia incana*), tree tobacco (*Nicotiana glauca*), salt cedar (*Tamarix ramosissima*), and wild oats (*Avena fatua* and *A. barbata*). These species are targeted due to their level of invasiveness within onsite habitats, rated as "high" or "moderate" by the California Invasive Plant Council (Cal-IPC). Monitor other potential infestations of invasive insects and other pathogens that can threaten native habitat within preserved waters of the U.S. The site will be monitored on an annual basis to ensure that the property maintains its biological functions and conservation value and does not degrade due to invasive plant species, trespassing, or illegal dumping.

are not impeding the wetland function, removal is not recommended at this time. No other issues or recommendations were made regarding weed invasions.

- III. Task: Each year's annual walk-through survey (or a supplemental survey) will include an assessment of potential infestations of invasive insects and other pathogens that can threaten native habitat within preserved waters of the U.S. 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, Regulatory Agencies, and the Wildlife Agencies on any appropriate control actions.*

Monitoring Summary: University of California Cooperative Extension (UCCE) performed on the ground surveys for trees infested with invasive shot hole borer (*Euwallacea fornicatus*; ISHB) and goldspotted oak borer (*Agrilus auroguttatus*; GSOB) within the USACE/SWRCB mitigation areas and 50-foot buffer. No active ISHB holes were identified. One coast live oak near the outer edge of the Corps 50-foot buffer was infested with GSOB [Exhibit 1]. Due to the amount of GSOB exit holes, UCCE has recommended that this tree be removed from the Preserve and all surrounding trees within 300 feet and a diameter at breast height greater than 8 inches to be treated with insecticide. No other invasive insects and pathogens were found. A report detailing the results of the tree survey is attached to the Annual Monitoring Report as Appendix G.

B. Security, Safety, and Public Access

Element B.1 - Trash and Trespass Monitoring, Enforcement, and Repair

- I. Task: Approved trails, roads, and recreational activities (see Section 3.1.3 of RMP, "Ferber Ranch Public Access Plan") shall be located outside of preserved waters of the U.S. 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.*

Monitoring Summary: No trails, roads, and recreational activities were located within preserved waters of the U.S. The Preserve Manager enforced public access guidelines and ensured that only permitted recreation and general access activities occurred within the Preserve.

- II. Task: As needed, and at least once yearly collect and remove all observed trash and repair and rectify vandalism and trespass impacts within the USACE mitigation site.*

Monitoring Summary: The USACE mitigation sites were monitored for trash, and none was observed. Trespass on the Preserve was very minimal in 2022, and no issues with trespass were documented. Additionally, no trespass was documented in or near USACE/SWRCB mitigation areas.

C. Infrastructure and Facilities⁵

Element C.1 - Signs, Fences, and Gates

- I. *Initial Task:* Develop a Fire Management Plan (FMP) that establishes policies and approaches to maximize protection of biological resources and preserved waters of the U.S. during fire suppression activities, to the degree feasible. Post-fire response shall be consistent with Section 3.5.3 of the RMP, "Post-Fire Response".

Status: In consultation with the local fire authority, OCTA is preparing fire management plans (FMPs) for each OCTA Preserve. The goal of this effort will be to develop FMPs that are easily implementable, establishes a framework for long-term benefits and protection, and guides decision-makers via policies and guidelines. The FMPs will address all stages of fire management: prevention, vegetation management, suppression, and post-fire responses and will help OCTA make decisions regarding fire management that also reflect conservation and stewardship responsibilities. The Trabuco Rose Preserve FMP has been drafted through coordination with Orange County Fire Authority. It is anticipated that the Trabuco Rose plan will be signed in 2023.

- II. *Task:* During each annual site visit, record condition of signs, fences, and gates. Record location, type, and recommendations to implement fence and/or gate repair or replacement, if applicable.

Monitoring Summary: Preserve fencing, gates, and signs are monitored on a regular basis throughout the year. A total of three fences were repaired by RECON. In addition, a gate was replaced at the intersection of Rose Canyon Road and Hickey Spur Trail, and the Rose Main Gate was repaired. New Preserve signs were installed on each of the seven gates with the following names: Trabuco Oaks Gate, Trabuco Docent Gate, Trabuco North Gate, Hickey Spur Gate, Rose Creek Gate, Rose Hill Top Gate, and Rose Main Gate. The names posted on the gates, at each of the Preserves with gates, are intended to help in future coordination with maintenance and monitoring crews, and security and emergency personnel. No fencing, gates, or signs are currently in need of repair.

- III. *Task:* Maintain fences and gates as necessary by replacing posts, wire, and/or gates. Replace signs, fences and/or gates, as necessary. Signage or fencing will be located at potential access points to deter unapproved access to preserved waters of the U.S. (see Section 3.7.4, "Signage" of the RMP).

Monitoring Summary: Please see above regarding maintenance tasks that occurred in 2022. No unapproved access to preserved waters of the U.S. was documented.

⁵ Signs, fences, and gates are not within the mitigation area, but are being utilized to control trespass into the mitigation site at other access points on the property. Fence and gate maintenance and repair frequency will be dependent on trespass and access control issues. There is no existing infrastructure within the USACE mitigation site that may require repairs such as culverts, riprap, and or gabion structures.

D. Cultural Resources

Element D.1 - Management of Cultural Resources

- I. *Task: Preserve Manager will follow directives set forth in the 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. These include: monitoring by a qualified archaeologist for any ground-disturbing activities within 100 feet of culturally sensitive areas; and if significant portions of the Preserve are ever burned by a wildfire, sensitive areas will be resurveyed for archaeological resources.*

Status: No management activities with the potential to affect cultural resources were conducted.

J. Reporting and Administration

Element E.1 – Program Management

- I. *Task: Coordinate long-term management activities with land manager staff and/or third-party contractors conducting work on the Preserve (i.e., biologists, habitat restoration ecologists, and/or maintenance contractors).*

Status: The Preserve Manager (OCTA) coordinated long-term management activities as-necessary with the entities described above. Specifically, OCTA coordinated biological monitoring and habitat restoration activities with GLA as described in this Annual Report, while maintenance activities were coordinated with RECON.

- II. *Task: Coordinate as needed with the fire department, police department, utility and easement holders, and/or adjacent land owners regarding encroachment issues, transients, or illegal activities, access, or other reasons, as needed.*

Status: No encroachment issues, transients, or illegal activities, access, etc., were documented in USACE/SWRCB mitigation areas on the Preserve and as such, this coordination was not necessary.

Element E.2 – Conservation Easement Enforcement

- I. *Task: This task will be carried out by OCTA or a third-party easement holder and consists of review of the conservation easement and one annual inspection to assess the condition of native and non-native plant species coverage; erosion and sedimentation; hydrology and water quality; signage, fencing, and gates; trespassing/vandalism; general site condition; and will identify remedial measures necessary to maintain site compliance, as applicable. The inspection results and*

completion of general and habitat maintenance activities described above, corrective actions (if any), and prohibited activities (if any) will be discussed in annual reports (described below).

Status: Although the conservation easement has not been recorded, biological monitoring is ongoing and OCTA management is quick to respond to any documented issues. The Preserve is in very good condition and each of the items in this task has been addressed in this monitoring form.

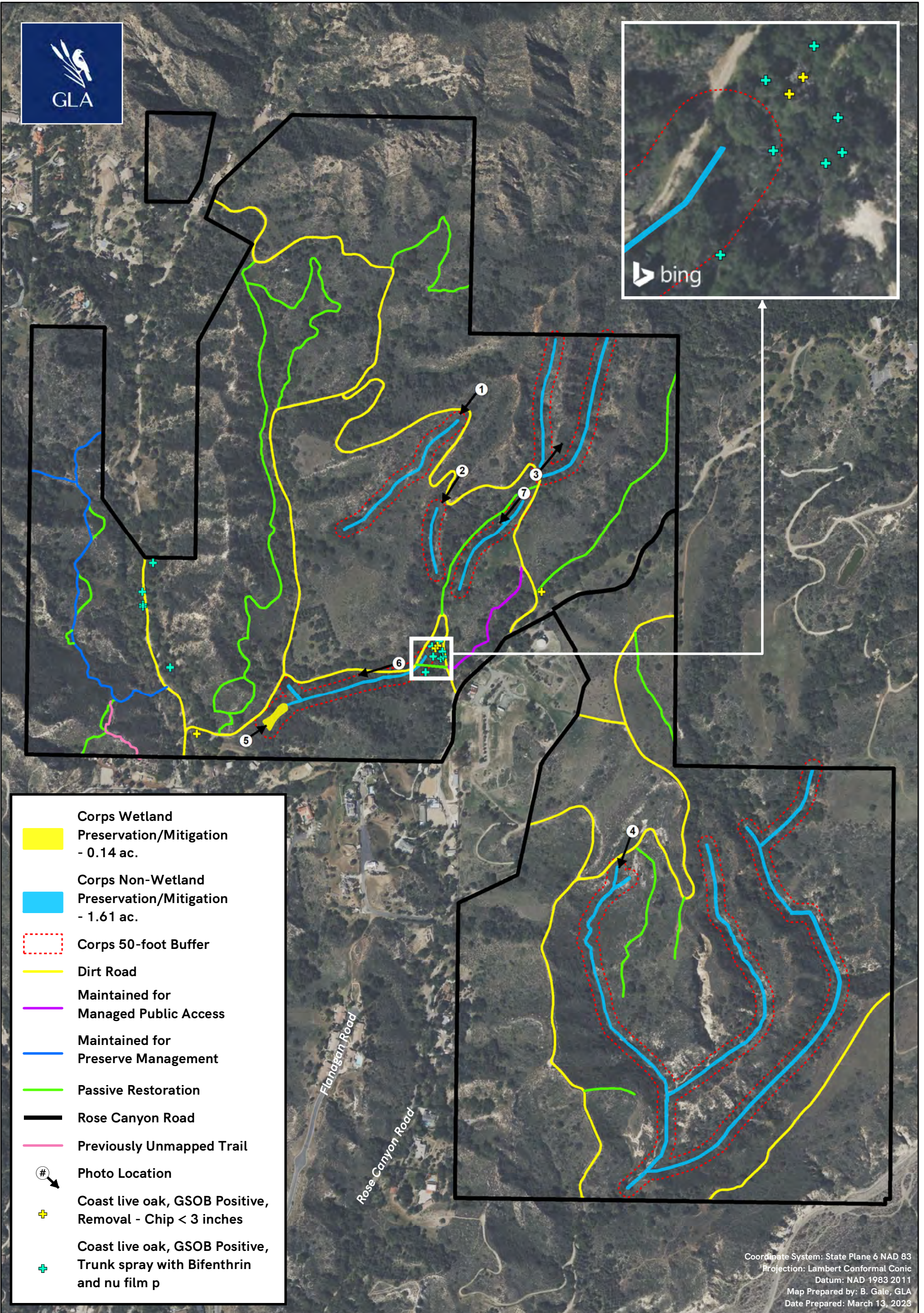
Element E.3 – Annual Report

- I. *Task: Prepare a summary of general USACE mitigation site conditions/monitoring results and management activities for inclusion in the M2 NCCP/HCP Annual Progress Report, which will be submitted per the RMP.*

Monitoring Summary: GLA biologists conducted monitoring of the USACE/SWRCB mitigation site and adjacent buffer areas on the Trabuco Rose Preserve on May 10, 2022. Overall, the Preserve is in good condition. Waters of the U.S. are in stable condition regarding erosion/aggradation and native vegetation communities and composition. No major issues with invasive species or weed invasions were noted. Invasive pest monitoring is ongoing. One coast live oak near the outer edge of the Corps 50-foot buffer was infested with GSOB and was recommended for treatment with insecticide. No water quality issues were observed. Preserve fencing, gates, and signs are monitored on a regular basis throughout the year. No signs, fencing, or gates are currently in need of repair or replacement. The USACE/SWRCB mitigation and buffer areas were monitored for trash, and none was observed. Although there is occasional trespass documented on the Preserve, none has been documented in or near USACE/SWRCB mitigation areas. Roads adjacent to USACE/SWRCB mitigation areas should continue to be maintained to prevent the spread of invasive annual weeds and grasses. No other recommendations were necessary.

- II. *Task: Make recommendations with regard to (1) any habitat enhancement or restoration measures deemed to be warranted, (2) any problems that need near term attention (e.g., weed removal, fence repair, erosion or aggradation control), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.*

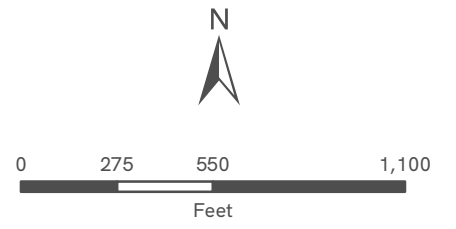
Monitoring Summary: One coast live oak near the outer edge of the Corps 50-foot buffer was infested with GSOB and was recommended for treatment with insecticide. Monitoring for invasive pests will continue. No habitat enhancement or restoration measures are warranted, other than the recommended road maintenance to prevent the spread of invasive weeds and grasses. All maintenance needs are documented frequently and fixed quickly. No changes in the monitoring or management program are warranted based on 2022 monitoring results.



**Exhibit 1 - USACE/SWRCB
Preservation/Photo Location Map**

Trabuco Rose Preserve

Trabuco Rose Preserve



1 inch = 550 feet

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Photograph 1: Drainage 1 facing southwest. Photo dated May 10, 2022.



Photograph 2: Drainage 2 facing southwest. Photo dated May 10, 2022.



Photograph 3: Drainage 2 facing northeast. Photo dated May 10, 2022.



Photograph 4: Drainage 3 facing southwest. Photo dated May 10, 2022.



GLENN LUKOS ASSOCIATES
Exhibit 2

TRABUCO ROSE PRESERVE
Site Photographs



Photograph 5: Drainage 2 facing northeast. Photo dated May 10, 2022.



Photograph 6: Drainage 2 facing southwest. Photo dated May 10, 2022.



Photograph 7: Drainage 2 facing south. Photo dated May 10, 2022.



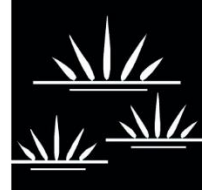
GLENN LUKOS ASSOCIATES
Exhibit 2

TRABUCO ROSE PRESERVE
Site Photographs

MEMORANDUM

GLENN LUKOS ASSOCIATES

Regulatory Services



PROJECT NUMBER: 1184-02MONI

TO: Lesley Hill, Orange County Transportation Authority

FROM: Amy Black and Brinna Lee, Glenn Lukos Associates

DATE: January 9, 2023

SUBJECT: Summary of Monthly Qualitative Monitoring of Burn Area Recovery Resulting from the Coastal Fire at Pacific Horizon Preserve in the City of Laguna Beach, Orange County, California – First Year 2022

On May 11th, 2022, the Coastal Fire burned 200 acres in Orange County, California, of which approximately 30.17 acres occurred within Pacific Horizon Preserve (Preserve), a property owned by Orange County Transportation Authority (OCTA). The Preserve is one of seven of OCTA's properties associated with their Measure M2 Environmental Mitigation Program. The 151-acre Preserve is located in the southeast portion of the City of Laguna Beach, adjacent to Aliso and Wood Canyons Wilderness Park and Moulton Meadows Park.

The purpose of this memorandum is to document the recovery of the burn area at Pacific Horizon and report observations of unauthorized use. OCTA and Glenn Lukos Associates (GLA) mapped the burn area and dozer lines, totaling 30.17 acres and 4.75 acres, respectively (Exhibit 1). The burn area was comprised of coastal sage scrub habitat and scrub oak chaparral composed predominantly of toyon (*Heteromeles arbutifolia*), lemonade berry (*Rhus integrifolia*), and California sagebrush (*Artemisia californica*). GLA conducted monthly site visits in 2022 on August 12, September 13, October 17, and November 14 to review the status of the burn area passively recovering since the Coastal Fire was completely contained on May 17th, 2022.

Monthly qualitative monitoring includes assessing native vegetative regrowth, non-native vegetative growth, signs of unauthorized access (i.e., vandalism, litter, bike tracks, new trails), and fencing integrity. Additionally, monitoring biologists photographed the recovering burn area and instances of vandalism on the trail leading to the area from designated photograph points. These photograph point locations and a drone aerial map of the assessed burn area are shown as Exhibit 1. Selected photographs documenting conditions at each monitoring site as observed during each monthly assessment are attached as Exhibit 2. In addition to monthly site visits, GLA biologists also monitor rainfall data and compile events of extreme weather on a monthly basis. Rainfall data was provided by the Laguna Niguel Park Station in the Aliso Creek Watershed via OC PublicWorks. A summary of this data is provided as Appendix A.

Following is a summary of conditions observed during the monthly monitoring events of 2022. Site assessments were conducted by field biologists Amy Black and Brinna Lee.

I. **Monitoring Visit 1 – August 12, 2022**

A. Vegetation Summary

i. Native Regrowth: Sparse individuals of sticky monkey-flower (*Mimulus aurantiacus*) were observed in flower. Approximately 4 inches of regrowth was observed at the base of burned lemonade berry shrubs. Aside from these two species, the burn area appeared barren. No other regrowth was documented aside from the two species noted.

Along the dozer lines, the condition was similar to the burned area with little to no native vegetation present.

ii. Non-Native Growth: No non-native species were observed at the time of monitoring in the burn area or along the dozer lines.

B. Unauthorized Use Summary

i. Trespassing, Vandalism, Etc.: Trash was observed along the edge of the burn area as broken bottles and torn fabric. No signs of hiker or cyclist trespass were observed at the time of this monitoring visit. Erosion control straw wattles were still in place with no signs of tampering.

C. Climate Summary

i. Rainfall Summary: During the July to August monitoring period, 0.04 inches of total rainfall were received from rain events on July 31 and August 1, 2022.

ii. Extreme Weather Summary: No extreme weather events were observed during the July to August monitoring period.

II. **Monitoring Visit 2 – September 13, 2022**

A. Vegetation Summary

i. Native Regrowth: Sticky monkey-flower was observed at about 5 inches in height and dried flowers. Approximately 5 to 7 inches of regrowth was observed at the base of burned lemonade berry shrubs throughout the burn area. Giant wildrye seedlings (*Elymus condensatus*) were observed in the northwestern portion of the burn area. These seedlings were approximately 2 to 3 inches in height.

Along the dozer lines, the condition was similar to previous month with little to no native vegetation present.

- ii. *Non-Native Growth*: No non-native species were observed at the time of monitoring in the burn area or along the dozer lines.

B. Unauthorized Use Summary

- i. *Trespassing, Vandalism, Etc.*: No additional trash was observed at the site during monitoring visit. Adjacent vegetation was trampled, creating gaps of approximately 1 to 2 feet in width that circumvent the fence lines. Bike tracks were observed at each fence line, with the tracks deviating towards the dozer lines at the third fence. Signage at the third fence line was bent out of shape. Erosion control wattles appeared intact and untouched.

C. Climate Summary

- i. *Rainfall Summary*: During the August to September monitoring period, 0.16 inches of total rainfall were received from a rain event on September 9 and 10, 2022.
- ii. *Extreme Weather Summary*: A heatwave was recorded between September 2 and September 10, with a high of 100.8°F on September 4.

III. **Monitoring Visit 3 – October 17, 2022**

A. Vegetation Summary

- i. *Native Regrowth*: Sticky monkey-flower was still observed at 5 inches in height; however, the individuals were now growing in width and new recruits were observed as associated with the sticky monkey-flower. At the time of monitoring, the new recruits were too small for field identification. Approximately 8 to 10 inches of regrowth was observed at the base of burned lemonade berry shrubs throughout the burn area. Giant wildrye seedlings were observed in the northwestern portion of the burn area. These seedlings were approximately 5 inches in height.

Along the dozer lines, agave (*Agave* sp.) was observed and appeared to be uprooted by cycling activity. The agave was re-planted in the same location and woody debris was placed around it to deter further disturbance.

- ii. *Non-Native Growth*: No non-native species were observed at the time of monitoring in the burn area or along the dozer lines.

B. Unauthorized Use Summary

- i. *Trespassing, Vandalism, Etc.*: Observed trash at the site during the monitoring visit included plastic bottles, empty chip bags, and cigarette butts. These items were removed from the site by the biological monitor. Although the fences to deter entry were extended, vegetation was trampled again, creating gaps of 6 to 8 inches to circumvent the fence lines. Bike tracks were

observed at each fence line, with the tracks deviating towards the dozer lines at the third fence. The bike tracks were observed along the southern edge of the burn area, traveling easterly. Signage at the third fence line was replaced and appeared intact at the time of the visit. Erosion control wattles appeared intact and untouched.

As the monitor was leaving the site around 3:30 PM, a cyclist was observed riding towards and entering the burn area.

C. Climate Summary

- i. *Rainfall Summary*: During the September to October monitoring period, 0.4 inches of total rainfall were received. One rain event from September 9 through September 10 produced 0.16 inches of rain. A second rain event from October 12 through October 16 produced 0.24 inches of rain.
- ii. *Extreme Weather Summary*: No extreme weather events were observed during the September to October monitoring period.

IV. **Monitoring Visit 04 – November 15, 2022**

A. Vegetation Summary

- i. *Native Regrowth*: Laurel sumac (*Malosma laurina*) and lemonade berry were observed successfully resprouting from many burned parent plants. New resprouts ranged from 5 to 10 inches tall. Sticky monkey-flower, California buckwheat (*Eriogonum fasciculatum*), coastal sagebrush (*Artemisia californica*), and bluedicks (*Dichelostemma capitatum*) were observed in the western portion of the burn area. Giant wildrye seedlings were observed in the northwestern portion of the burn area. Many seedlings germinated following the recent rain event; however, they are currently too small to identify.
- ii. *Non-Native Growth*: No non-native species were observed at the time of monitoring in the burn area or along the dozer lines.

B. Unauthorized Use Summary

- i. *Trespassing, Vandalism, etc.*: Minimal trash was observed on-site; a few broken glass bottles were noted in the area between photo points 5 and 6. Although the fences to deter entry were extended, vegetation was trampled, creating gaps around 8 inches to circumvent the first fence. Stakes from the second fence were removed and bent back to render it useless. This fence should be repaired as soon as possible. The third fence is intact and shows no signs of vandalism, but there are signs of trespass in the form of a manmade trail to the north of the fence. Bike tracks were observed at each fence line, with the tracks deviating towards the dozer lines at the third fence. The bike tracks were observed along the southern edge of the burn area, traveling easterly. Erosion control wattles appeared intact and untouched.

C. Climate Summary

- i. *Rainfall Summary:* During the October to November 2022 monitoring period, a total of 1.93 inches of rainfall were recorded. A small rain event on November 2 produced 0.24 inches of rain and a larger rain event from November 7 through November 9 produced 1.69 inches of rain.

Erosion from these rain events was minimal and was limited to rill erosion and minor sheet erosion.

- ii. *Extreme Weather Summary:* No extreme weather events were observed during the October to November monitoring period.

2022 Recovery Summary

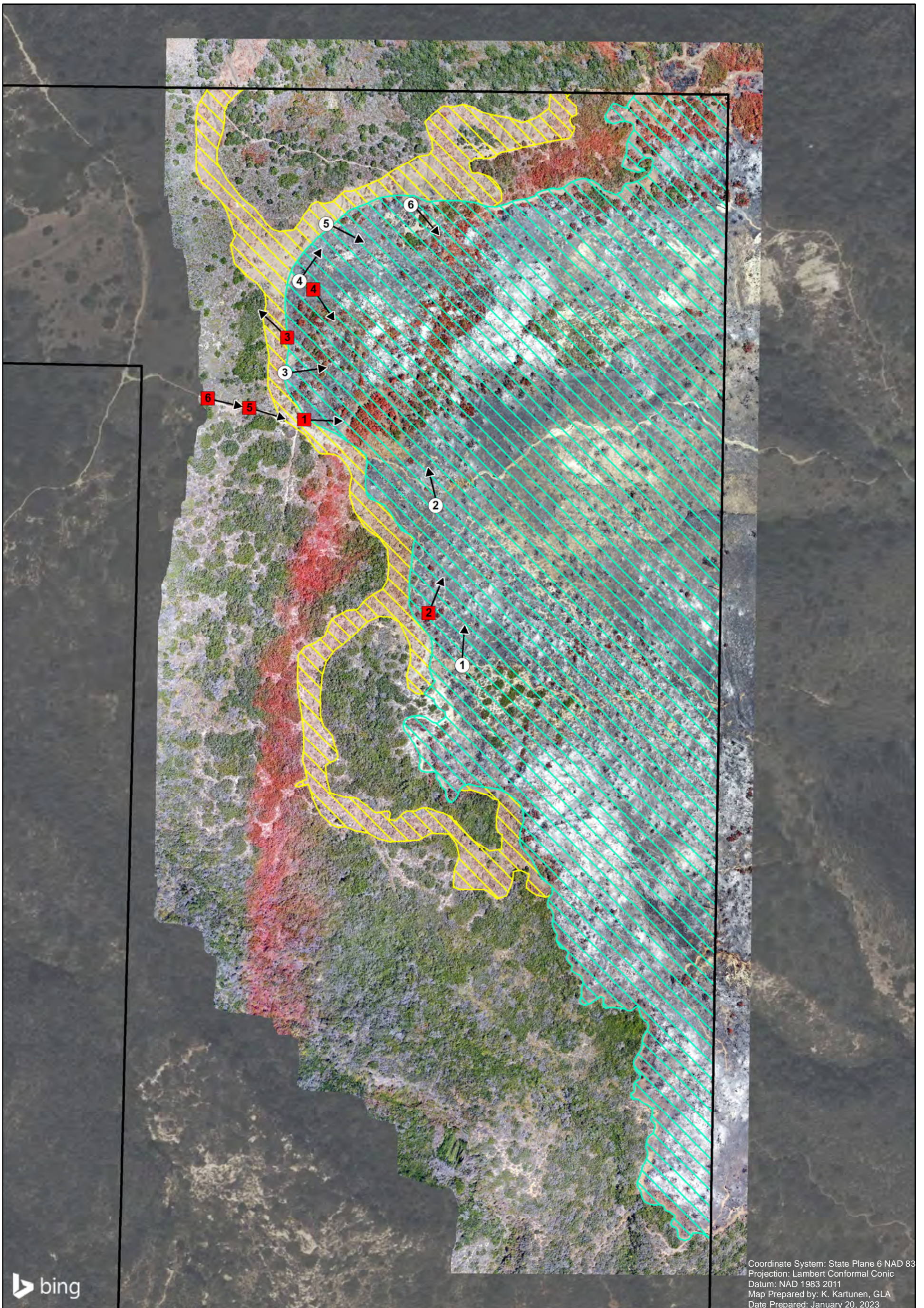
The burn area is showing signs of regeneration and regrowth in native herbaceous and shrub species. This was especially apparent in the November monitoring visit as more diverse native seedlings were observed and identified in the field. It is expected that as the wet season progresses, native seedlings will continue to germinate and establish. Non-native regrowth was not observed during these monitoring visits; however, with continued trespassing and unauthorized biking on the site, non-native species establishment is possible, particularly in the dozer line areas that incurred disturbance by equipment in addition to the fire impacts. Recommendations for the 2023 year include continued monitoring of the burn area with additional focus on dozer lines in the upcoming growing season and continued protection of the site from unauthorized entry.






The first monthly monitoring event for the first quarter of 2023 is scheduled for late January or early February, weather permitting. If there are any questions or concerns regarding this report, please contact Amy or Brinna at ablack@wetlandpermitting.com or blee@wetlandpermitting.com, or call our office at (949) 837-0404.

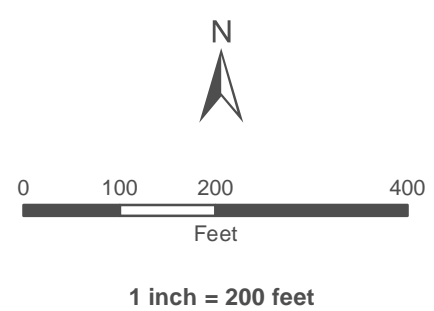
APPENDIX A

Aliso Creek Watershed Rainfall Data Summary
(Courtesy of Laguna Niguel Park Station)

2022 Monitoring Events	Total Rainfall (inches)
August	0.04
September	0.16
October	0.40
November	1.93



-  Pacific Horizon Preserve Boundary
-  Burn Area - 30.17 ac.
-  Dozer Impacts - 4.75 ac.
-  Permanent Photo Location Points
-  Burn Monitoring Photo Location Points



PACIFIC HORIZON PRESERVE
 Coastal Fire and Photo Location Map


GLENN LUKOS ASSOCIATES 

Exhibit 1



Photograph Location 1: The above photographs were taken facing north approximately one month apart. Much of the remaining woody debris are remnants of mature lemonade berry (*Rhus integrifolia*). Shown in the photographs above is burned lemonade berry and possible California sagebrush (*Artemisia californica*).



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 1

PACIFIC HORIZON PRESERVE

Permanent Photo Location Points



Photograph Location 2: The above photographs were taken facing north approximately one month apart. Given the steep topography and lack of ground cover, straw wattles were installed as erosion control measures, as shown above. Vegetation regrowth is gradual and observable at the base of some native shrubs, including lemonade berry and laurel sumac (*Malosma laurina*).



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 2

PACIFIC HORIZON PRESERVE

Permanent Photo Location Points



Photograph Location 3: The above photographs were taken facing east approximately one month apart. Regrowth of burned lemonade berry is seen in the center of the photograph. Monitors observed between 3 to 5 inches of regrowth from August 12th to November 14th, 2022. In the background is coastal sage scrub habitat that was not burned by the Coastal Fire. California sagebrush, laurel sumac, and lemonade berry were observed in that general area.



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 3

PACIFIC HORIZON PRESERVE

Permanent Photo Location Points

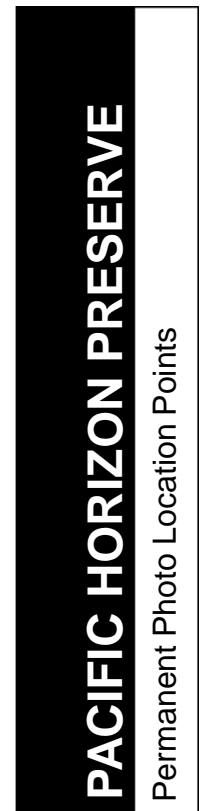


Photograph Location 4: The above photographs were taken facing northeast approximately one month apart. Burned lemonade berry is observed again with green regrowth at the base. During this monitoring period, recovering lemonade berry foliage appeared healthy with no signs of disease, infestation, or herbivory activity. In the background, California buckwheat (*Eriogonum fasciculatum*) is visible. Further in the background is the start of the northern dozer line. Future monitoring visits will monitor the dozer lines for non-native and native vegetation germination.



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 4





Photograph Location 5: The above photographs were taken facing southeast approximately one month apart. In the background, distant slopes affected by the Coastal Fire are visible and serves to compare the progress of recovery for the monitored burn area on the preserve. Recovery of herbaceous vegetation has also been slow; however, some regrowth can be seen (left of photo). Species identity will be clarified by monitors on the next monitoring site visit.



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 5

PACIFIC HORIZON PRESERVE

Permanent Photo Location Points



Photograph Location 6: The above photographs were taken facing southeast approximately one month apart. Surviving coastal sage scrub habitat can be observed in the background, right. At the center of the photo is a healthy lemonade berry shrub. Given the relatively flat slope of this area, it is expected that herbaceous recruitment will be facilitated here by adjacent nurse plants.



GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 6

PACIFIC HORIZON PRESERVE

Permanent Photo Location Points



Photograph 1: Taken from location 1, facing east, on August 12th, 2022. After the Coastal Fire in May 2022, much of the monitored area was left bare, apart from woody debris from lemonade berry (*Rhus integrifolia*).



Photograph 2: Taken from location 2, facing northeast, on August 12th, 2022. Little to no vegetative regrowth was observed during the first monitoring visit.



GLENN LUKOS ASSOCIATES

Exhibit 2B – Page 1

PACIFIC HORIZON PRESERVE

Burn Monitoring Photos



August 12, 2022

Photograph 3: Taken from location 3, facing northwest, on August 12th, 2022. The instances of observed native regrowth were limited to the northwestern edge of the burn area. Shown in the photograph above is sticky monkey-flower (*Diplacus aurantiacus*), laurel sumac (*Malosma laurina*), and California sagebrush (*Artemisa californica*).



September 13, 2022

Photograph 4: Taken from location 4, facing southeast, on September 13th, 2022. Regrowth is observed at the base of lemonade berry. Foliage on this individual appeared green and healthy with no signs of disease, infestation, or herbivory activity.



GLENN LUKOS ASSOCIATES

Exhibit 2B – Page 2

PACIFIC HORIZON PRESERVE

Burn Monitoring Photos



Photograph 5: Taken from location 5, facing east, on September 13th, 2022. This was a documented incidence of vandalism of signage placed to deter unauthorized access to the burn area. The sign was replaced by the next monitoring visit in October and fencing was reinforced.



Photograph 6: Taken from location 6, facing east, on September 13th, 2022. Shown in the photograph above are tracks produced by bike tires. These tracks were observed from the trail fork further east and occur along the dozer lines and southern edge of the burn area despite installment of fences to deter unauthorized access.



**OCTA M2 PRESERVES
BIOLOGICAL MONITORING PROGRAM**

2022 TERRESTRIAL REPTILE SURVEY REPORT

For the

TRABUCO ROSE AND SILVERADO CHAPARRAL PRESERVES

Prepared For:

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April 20, 2023

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Exhibit 4	Site Photographs

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Appendix A	VES Methodology
Appendix B	2022 Terrestrial Reptile Survey Data

1.0 INTRODUCTION

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. In addition, OCTA worked with the regulatory and resource agencies to develop a comprehensive permitting program to address impacts to aquatic resources. A key component of the Plan and aquatic resources permitting conservation strategy has included the identification and acquisition of habitat preserves to offset habitat impacts.

OCTA acquired seven properties (preserves) as part of the M2 EMP: Trabuco Rose, Wren's View, Bobcat Ridge, Live Oak Creek, Silverado Chaparral, Pacific Horizon, and Eagle Ridge [Exhibit 1 – Location Map]. A separate Resource Management Plan (RMP) was developed for each preserve that identifies preserve-specific management objectives and actions to ensure the long-term viability of natural communities and Covered Species (including Covered Reptiles) by protecting, managing, and enhancing populations and suitable habitat on the Preserve. Biological monitoring is intended to determine status, threats, and population trends of Covered Species and their habitats within each preserve. The RMPs describe several types of monitoring, including Effectiveness Monitoring, with the stated purpose of assessing status, trends, and threats to biological resources. Effectiveness Monitoring is to be conducted by the Monitoring Biologist(s) in perpetuity, according to the frequencies and protocols identified in Table 4-1 of each RMP.

The Plan identified two Covered Reptiles to be addressed for each preserve, including the coast horned lizard (*Phrynosoma blainvillii*, CHL) and the orangethroat whiptail (*Aspidoscelis hyperythra*, OTW). Both species typically utilize similar habitats of scrub and chaparral with open canopy and often sandy soils; therefore, surveys for these species have been combined. CHL are well camouflaged but may be observed under shrubs and in open habitat patches in close proximity to their primary food source, red harvester ants (*Pogonomyrmex californicus*). OTW are active daytime ground foragers and may be observed hunting within leaf litter below shrubs.

Per the RMPs, Effectiveness Monitoring is to be performed every four years by conducting focused visual encounter surveys (VES) for terrestrial reptiles. The RMPs state the VES should be conducted during the peak activity period for the species, following a time-constrained search methodology, with an equal effort (staff hours) to be expended in each search area. Considerations when utilizing the VES method include that it is useful to assess species richness (i.e., general presence), including the number of individuals detected, but is not suitable to determine population densities within each preserve. Additionally, the VES method is effectively used to identify target species in areas with similar habitat or easily identified microhabitats, like logs or rocky outcrops. If habitats within search areas are not similar, this may introduce bias during the search effort. To obtain consistent data, the RMPs note that it is important to define

the length of time, search intensity, and search pattern prior to beginning the survey. The methodology developed to perform the VES is described in Section 2.0 below.

The Effectiveness Monitoring protocols/methods summarized in the RMPs reference Corn and Bury (1990) as an example of a time-constrained survey methodology. However, the Corn and Bury study involved forest communities with microhabitats for species requiring a specific survey methodology that does not apply well to the OCTA preserves. Given the steep topography and dense vegetation that present access challenges and result in reduced areas of suitable habitat within searchable areas, the Corn and Bury methodology could introduce bias in the search efforts. Furthermore, the difference in the target species and their microhabitats requires a different search effort altogether, i.e., surveys that are less focused on microhabitats such as fallen trees and other debris in the Corn and Bury study. As such, GLA coordinated with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), collectively known as the wildlife agencies, to develop a modified VES methodology for Effectiveness Monitoring of terrestrial reptiles at the preserves. The general methodology (included as Appendix A) was developed using other applicable methodologies, including Crump and Scott (1994) and the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Biological Monitoring Program, as well as recommendations from USFWS and CDFW.

This report documents the results of VES conducted for two of the OCTA M2 Preserves, Silverado Chaparral and Trabuco Rose [Exhibit 1 – Location Map], with the purpose of testing the developed VES methodology at these preserves in advance of applying the methodology at all of the preserves. These two preserves were selected for the pilot study because at least one of the target species have been previously detected at each preserve, including CHL at Silverado Chaparral and OTW at both Silverado Chaparral and Trabuco Rose. Conclusions based on the findings would help refine the methodology, if needed, and be applied to Effectiveness Monitoring for the remaining preserves. The application of the survey to the remaining preserves is discussed below in Section 4.0.

Silverado Chaparral Preserve

The Silverado Chaparral Preserve is a 204-acre property where both covered reptile species have previously been documented. The Preserve, located within the Cleveland National Forest administrative boundary, is undeveloped and primarily surrounded by undeveloped open space with similar habitat and topography. Elevation ranges between 1,135 and 1,678 feet above mean sea level (AMSL). Topography consists of three main ridgelines, oriented northeast to southwest, with two smaller ridgelines in the north-central area of the Preserve, all of which are flanked by steep slopes. The Preserve supports native habitats including scrub, chaparral, grassland, riparian, and oak woodland. Chaparral within the property is often impenetrable especially on north-facing slopes. Scrub within the Preserve is mostly limited to the northeastern portion of the Preserve, also located on steep slopes. Grassland is patchily distributed and generally limited to edges of existing roads and trails. Oak woodland and riparian are associated with very narrow canyon floors.

Silverado Chaparral has one unpaved road in the northern portion that splits toward the northeastern and northwestern boundaries. Narrow trails, primarily used for Stewardship Monitoring access, are located on two steep ridgelines in the southern half of the property and connect to a narrow trail that loops to the northwest and connects with the road. In the north-central portion of the preserve, three former recreation trails extend from the unpaved road along smaller spur ridges and continue down steep slopes to the narrow canyon floors. Passive restoration has allowed vegetation to encroach and narrow these former recreation trails, which continue to be used by game. Vegetation along the ridgeline trails consists primarily of chaparral habitat; however, due to the dry, exposed conditions, the vegetation cover is relatively open and there are some open patches with sandy soil associated with eroding sandstone outcrops. Vegetation on the narrow trail that loops up to the road consists of dense chaparral that occurs on steep slopes. Given the topography and vegetation density, suitable open scrub and chaparral patches is often limited to ridgelines and habitat adjacent to the existing trails.

Trabuco Rose Preserve

The Trabuco Rose Preserve is a 399-acre property where one covered species, the OTW, has previously been documented. The Preserve is primarily undeveloped and located in the southwestern portion of the Santa Ana Mountains within the Trabuco Creek watershed. Elevation ranges between 1,120 and 1,650 feet AMSL. Topography consists of several northern and northeastern trending ridgelines with moderate to steep slopes. The Preserve supports native habitats including scrub, chaparral, grassland, riparian, and oak woodland; a small eucalyptus grove is also present. Chaparral within the property is often impenetrable and associated with steep slopes. Scrub within the Preserve is dense, including many large monocultures of prickly pear cactus scattered throughout the Preserve. Grassland is patchily distributed. Oak woodland, riparian, and the eucalyptus grove are associated with canyon floors.

Roads and trails in the Preserve include two maintained trails and an unpaved road that branches and meanders through the property. Similar to Silverado Chaparral, several former recreational trails have been subject to passive restoration that has allowed vegetation to encroach and narrow trails. Some former trails that descended into canyons have been fully obscured by dense chaparral, while some former ridgelines trails continue to serve as game trails. Given the topography and few trails, access to suitable scrub and chaparral patches is difficult at Trabuco Rose.

2.0 METHODOLOGY

GLA biologists Jeff Ahrens and Stephanie Cashin conducted focused terrestrial reptile surveys at two OCTA preserves between May 15 and October 7, 2022. Surveys were conducted to test the proposed VES method developed in coordination with wildlife agencies. The proposed VES methodology is attached as Appendix A.

Per the methodology, each preserve was framed with 250 m by 250 m grid cells and independently numbered. As was anticipated, given the varied topography, accessibility, and patchy distribution of suitable coastal sage scrub and chaparral habitats, the grids cells were

determined to be too large to survey with the time-constrained approach; therefore, each larger cell was divided into four 125 m by 125 m quadrant cells (“quad-cells”). The baseline vegetation map was overlaid with the survey grid to identify suitable habitat areas [Exhibit 2 – Vegetation Map]. Although the two target species can be found in a variety of habitats, they are commonly found in coastal sage scrub with a mix of open sandy areas and dense patches for refuge. As mentioned above, Silverado Chaparral supports mature, dense vegetation often on steep slopes with narrow canyon floors and along several game trails, primarily on narrow ridgelines. Similarly, Trabuco Rose supports dense vegetation on steep slopes with some existing dirt roads and two maintained trails. Suitable habitat was surveyed where accessible, as a function of the topography and vegetation density. The majority of each preserve was not surveyed due to access limitations, including steep slopes and dense shrub canopies. A total of 24 quad-cells were at least partially surveyed at Silverado Chaparral, representing approximately 90 acres of the 204-acre Preserve. A total of 36 quad-cells were at least partially surveyed at Trabuco Rose, representing approximately 130 acres of the 399-acre Preserve.

Two biologists independently searched for target species during typical peak activity by slowly meandering through appropriate habitat within each quad-cell. While walking through each sampling area, the surveyors carefully scanned basking sites and ant mounds with binoculars. Existing cover objects (branches or wood pieces) were lifted by hand for inspection when encountered and replaced to original position to prevent damaging refugia. All target species were recorded using handheld submeter GPS units, including the number detected, estimated age class, and prey items (if applicable). Appendix B summarizes species data per quad-cell. Target species incidentally detected outside of a sampling area were also recorded. As feasible, target species were photographed. To confirm OTW identification versus the non-native Sonoran whiptail (*Aspidoscelis sonora*, SW), extra effort was taken to photograph individuals to document identifying characteristics that would distinguish OTW from SW, including the dorsal stripe, orange throat of adult males, or blue tails of juveniles. Survey time per quad-cell averaged 30 minutes (15 minutes for two biologists) but sometimes increased to 50 minutes depending on habitat conditions, presence of target species, and presence of ant colonies that required mapping. General environmental conditions were recorded at the beginning of each survey visit (temperature, cloud cover, recent precipitation, wind speed, etc.). Table 2-1 summarizes terrestrial reptile survey weather conditions.

Table 2-1. Summary of Survey Weather Conditions

OCTA Preserve	Date	Time	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)	Survey Biologist
Silverado Chaparral	5/18/2022	0720-1500	53-73	2-3	0	JA, SC
Silverado Chaparral	6/6/2022	0700-1200	57-75	2-4	75	JA, SC
Silverado Chaparral	6/9/2022	0800-1415	59-82	2-5	0	JA, SC
Silverado Chaparral	9/30/2022	0950-1300	60-78	2-3	0	JA, SC
Trabuco Rose	5/24/2022	0715-1400	70-80	2-3	0	JA, SC
Trabuco Rose	6/16/2022	0730-1245	65-80	2-5	0	JA, SC
Trabuco Rose	7/5/2022	0800-1310	63-88	2-4	0	JA, SC
Trabuco Rose	9/14/2022	0630-1515	63-79	2-3	0	JA, SC
Trabuco Rose	10/5/2022	0900-1310	64-75	2-3	50	JA, SC
Trabuco Rose	10/7/2022	0800-1500	63-83	2-4	0	JA, SC

JA: Jeff Ahrens; SC: Stephanie Cashin

The presence of preferred food prey, including red harvester ants and termites, may aid in detection of target species and indicate potential habitat suitability; therefore, ant colonies detected within survey quad-cells were recorded with GPS. Red harvester ant colony foraging activity was recording during the survey visit. Other ant species, including non-native Argentine ants (*Linepithema humile*) were also recording within survey quad-cells. Non-native ant species are a threat to the target species, especially to horned lizards, as non-native ants can outcompete native ants and do not offer suitable nutrition for horned lizards.

Per the general methodology, coverboards were recommended for use within the survey areas, including the installation of one board in each survey cell. Coverboards can potentially aid in the detection of other reptile species occurring within survey cells that are not active during the day and add to detected species richness within the preserves. To maximize the benefit of coverboards to be utilized as refugia, the board should be placed at least a month prior to surveys. Coverboard inspection would not be included in the VES time constraint. Coverboards were not deployed during the 2022 pilot surveys because of insufficient time to allow for board settling between survey cell selection and the beginning of surveys. Coverboards may be installed at least a month prior to future terrestrial reptile surveys.

3.0 RESULTS

GLA biologists detected six reptile (lizard) species between the Silverado Chaparral and Trabuco Rose preserves, including the CHL, OTW, coastal whiptail (*Aspidoscelis tigris stejnegeri*, CW), great basin fence lizard (*Sceloporus occidentalis longipes*, GBF), side-blotched lizard (*Uta stansburiana*, SBL) and granite spiny lizard (*Sceloporus orcutti*, GSL), although all six species were not observed at each preserve. Furthermore, some of the detections were not made while conducting the time-constrained surveys within the cells, but instead were incidental observations while walking through one cell to access another. Of the six species observed, three

(CHL, GBF, GSL) were detected at Silverado Chaparral and four (OTW, CW, GBF, SBL) were detected at Trabuco Rose. Table 3-1 summarizes species detected at the two preserves. Appendix B provides the detailed survey data for each preserve, including which grid cells were surveyed and the species detected in each cell.

Table 3-1. Summary of 2022 Terrestrial Reptile Detection

OCTA Preserve	CHL	OTW	CW	GBF	SBL	GSL
Silverado Chaparral	X	-	-	X	-	X
Trabuco Rose	-	X	X	X	X	-

CHL = coast horned lizard, OTW = orangethroat whiptail, CW = coastal whiptail, GBF = Great Basin fence lizard, SBL = side-blotched lizard, GSL = granite spiny lizard

Of the target covered species, the presence of CHL was confirmed at Silverado Chaparral, but CHL was not detected at Trabuco Rose. Conversely, OTW was detected at Trabuco Rose but was not observed at Silverado Chaparral, although OTW has in the past been detected at Silverado Chaparral and is discussed further in Section 4.0 below. Exhibit 3 (Terrestrial Reptile Survey 2022 Map) depicts the location of covered reptiles detected at each preserve. Representative photographs are depicted on Exhibit 4.

Silverado Chaparral Preserve

As noted above, OTW was not detected during the surveys. CHL individuals were not observed during the surveys, but CHL was confirmed present by the detection of scat [Exhibit 4, photos 11 and 12] clustered in eight areas within eight quad-cells [Exhibit 3A]. Two additional locations of CHL scat were detected immediately adjacent to the preserve. CHL scat was detected in areas with open scrub, near existing trails, and often on ridgelines. At some locations, multiple detections of CHL scat were clustered in close proximity; therefore, the number of scat detections do not equal the number of CHL individuals present. Three of the CHL detections were near locations where CHL individuals were incidentally observed during past monitoring efforts.

Both native red harvester ants and non-native Argentine ants were detected at the Preserve. Approximately 20 native ant colonies were detected [Exhibit 3A], often near where CHL scat was documented, with many inactive colonies also observed. In addition, many non-native ant colonies were also documented. The ant colonies were detected along existing roads, trails, and in open canopy scrub/chaparral habitat.

Although OTW was not detected at Silverado Chaparral in 2022 during the focused surveys, OTW was previously detected in one location at the Preserve during a past monitoring effort, and the location is provided on Exhibit 3A.

Trabuco Rose Preserve

As noted above, OTW was confirmed present at Trabuco Rose; however, CHL was not detected during the surveys. OTW was detected within nine quad-cells [Exhibit 3B]. The identity of the observed individuals was confirmed as OTW through at least one distinguishing characteristic, including the presence of merging dorsal stripes, orange throat on adult males, or blue tail of juveniles, and when feasible individuals were photographed to document these characteristics [Exhibit 4, photos 27 and 28]. However, not all OTW were photographed given their skittish behavior and ability to dart under cover quickly.

Although CHL was not confirmed present at Trabuco Rose during the 2022 focused surveys, and the species has not been previously observed at the Preserve during past monitoring efforts, approximately 9 active native ant colonies and at least 20 inactive native colonies were documented within surveyed quad-cells at the Preserve [Exhibit 3B]. The ant colonies were detected along existing roads, trails, and in open canopy scrub/chaparral habitat. As harvester ants are a primary food source of CHL, the presence of harvester ants in conjunction with suitable habitat demonstrates that the Preserve has the potential to support CHL. Additionally, many non-native ant colonies were also detected within surveyed quad-cells, which as mentioned is a threat to CHL. Further recommendations are detailed below.

4.0 DISCUSSION AND RECOMMENDATIONS

The purpose of this section is to discuss the results of the 2022 focused surveys in the context of recommendations for future surveys at the Silverado Chaparral Preserve and Trabuco Rose Preserve, and the application of the survey methodology to the other OCTA M2 preserves. In addition, this section provides management recommendations for the covered reptile species, particularly CHL.

4.1 Survey Methodology

Through the pilot implementation of the survey methodology developed by GLA in coordination with USFWS and CDFW, GLA noted some elements of the methodology that were useful in performing the VES but recognized limitations of the methodology and noted other components that should be modified in the further application to the preserves. Organizing each preserve into a grid system with a time-constrained survey approach provided a consistent framework for applying the surveys to all preserves and for repeating surveys in the future. Establishing uniform grid cells with alphanumeric indicators allowed for straightforward data collecting and tracking. However, as was discussed in developing the methodology, utilizing cells that were too large would make it difficult to adequately survey each cell in an appropriate timeframe. Due to topography and unsuitable or dense vegetation, the larger cells often encompassed large portions of unsuitable survey area. To address this issue, the survey grids were divided into the smaller 125 m by 125 m quad-cells for the 2022 surveys. The smaller quad-cells usually supported more suitable survey habitat; however, there were still instances where a majority of a quad-cell was not surveyable, such that the time allocated per quad-cell would be focused on a much smaller area compared with more accessible quad-cells where the same amount of time was allocated to

a much larger area. For example, quad-cells on ridgelines often were not oriented in the most efficient direction. As such, consideration should be made to either further reduce the cell size in order to provide more uniform coverage from cell to cell, or to re-position the cells to account for habitat suitability.

Based on the larger 250 m by 250 m survey cells described in the VES methodology, the search time to be allotted to each cell per biologist was anticipated to be 40 to 60 minutes. As described above in Section 2.0, for the 2022 focused surveys the survey time allotted to each 125 m by 125 m quad-cell was reduced to 15 minutes for each of the two biologists. The reduced time was sufficient for the general survey for each cell; however, additional time was needed when performing tasks beyond simply scanning for reptiles, including mapping ant colonies at both preserves and attempting to photograph OTW (at Trabuco Rose) to support identification. The additional time spent on these tasks was not included in the 15-minute allocation to survey each cell. Furthermore, this additional time should be factored into the planning of future surveys when determining the total amount of time needed to survey any one preserve.

The Corn and Bury study referenced in this report, which was the focus of the RMPs in developing the VES methodology, involved microhabitats in a forest setting where target species were detected in and under natural cover objects such as logs and other debris. With the target species of the OCTA surveys (CHL and OTW), the surveys were conducted primarily within open habitats with little to no natural cover objects. As such, detections were generally limited to observing individuals in plain view moving through their broader habitat, and therefore the detections were subject to a degree of chance similar to incidental observations made during past monitoring visits and other surveys not specific to the reptiles. In developing the VES methodology, the use of cover boards was suggested as a means to potentially increase species richness data for all reptiles with the potential to occur at the preserves. However, cover boards would not be expected to increase the detection of the target covered species (CHL and OTW), and since the focus of the VES is to detect the covered species as a part of Effectiveness Monitoring, GLA does not recommend the use of covered boards specifically in performing the VES. Cover boards may have value with the general collection of data as a part of future Stewardship Monitoring, and so the use of cover boards should be considered in that context but not as a part of future VES studies.

4.2 Coast Horned Lizard

As noted above, the presence of CHL was confirmed at the Silverado Chaparral Preserve based on the detection of scat in multiple locations throughout the Preserve. CHL was not detected at the Trabuco Rose Preserve, but based on the limitations of the VES methodology, the lack of detection should not be interpreted as absence. Given the presence of suitable habitat and harvester ant colonies, CHL has a potential to occur at Trabuco Rose. However, given that CHL has not been previously documented at Trabuco Rose during prior monitoring efforts and surveys for other resources, CHL (if present) might occur at lower densities compared with Silverado Chaparral. Because of the limitations with the VES methodology in detecting CHL individuals, OCTA should consider the use of more intensive sampling methods for detection of CHL, such as pitfall traps or targeted focused surveys without time constraints as a part of separate studies not associated with Effectiveness Monitoring.

Although active harvester ant colonies were documented at both the Silverado Chaparral Preserve and the Trabuco Rose Preserve, GLA biologists also documented many harvester ant colonies in suitable habitat areas that appeared to be abandoned. As the harvester ant is a primary food source for CHL, native harvester colonies should continue to be monitored as part of ongoing Effectiveness Monitoring or Targeted Monitoring. Additionally, non-native Argentine ants were detected throughout both preserves including on roads, trails, and within native scrub areas. Argentine ants are a known pest and are understood to be a “super colony” that ranges throughout southern California. The “super colony” description has been applied to this species as it is genetically similar throughout California; therefore, individual colonies are cooperative with each other. This cooperation has added to the invasiveness of Argentine ants which makes control of this pest difficult for land managers. OCTA should consider coordinating with USFWS, CDFW, and experts in integrated pest management specific to invasive ants (e.g., University of California Agriculture and Natural Resources) to discuss the feasibility of treating Argentine ants, to potentially address concerns of declining food sources for CHL. Silverado Chaparral would be a logical start of potential efforts since it is currently the only OCTA preserve where CHL has been confirmed present.

In providing survey methodology recommendations, the USFWS and CDFW suggested the future capture of CHL to collect genetic material for U.S. Geological Survey (USGS) study. If USFWS/CDFW still desires the collection of genetic material, GLA recommends coordination with the USGS Western Ecological Research Center to inquire if the USGS horned lizard genetic study is ongoing and whether CHL samples from OCTA preserves are desirable for inclusion in the study. Coordination would include discussing CHL handling which may include capture and tissue sample collection (per USGS protocol) or capture and transport of individuals with GPS coordinates for USGS processing, subject to CDFW approval.

4.3 Orangethroat Whiptail

As noted above, OTW was observed at nine locations at the Trabuco Rose Preserve, and although OTW was not detected at Silverado Chaparral in 2022, the species has been detected at the Preserve during previous biological surveys and monitoring visits. GLA does not have any specific recommendations pertaining to OTW for future surveys except to apply the VES methodology as described in this report.

5.0 REFERENCES

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Eagle Ridge

Silverado Chaparral

Pacific Horizon

Exhibit 1 Location Map

OCTA Preserves

OCTA Preserve

2022 Terrestrial Reptile
Surveyed Preserves

Inset Map
Not to Scale

Live Oak
Creek

Bobcat
Ridge

Wren's
View

Trabuco
Rose



1 inch = 3 miles



Baker Canyon Rd

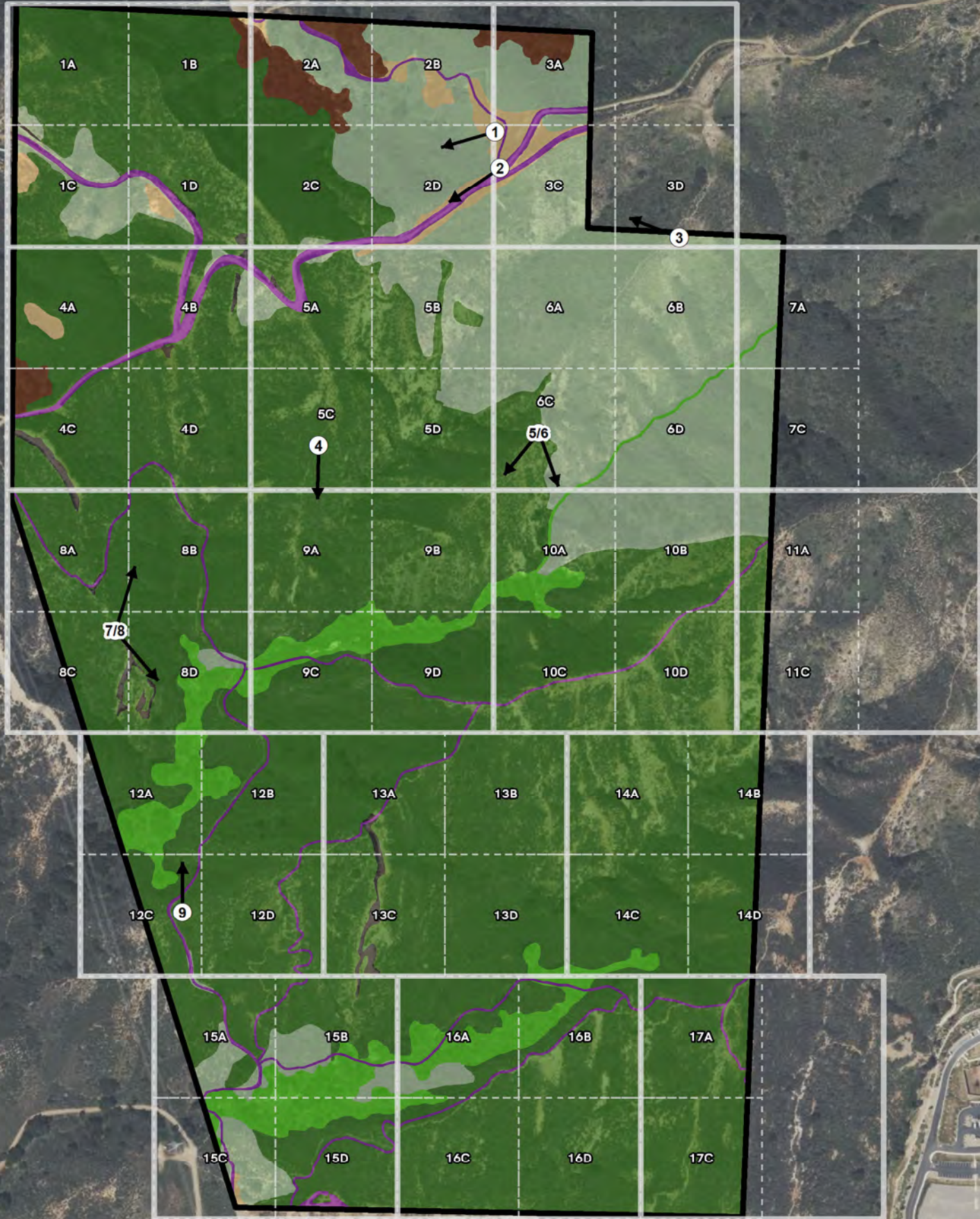


Exhibit 2A Vegetation Map

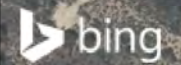
Silverado Chaparral Preserve

- Silverado Chaparral Preserve
 - Grid Cell
 - Quadrant Cell
 - Photo Location
- Vegetation Community**
- Chaparral
 - Grassland
 - Riparian
 - Scrub
 - Woodland
 - Developed/Non-Native
 - Barren



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 27, 2023



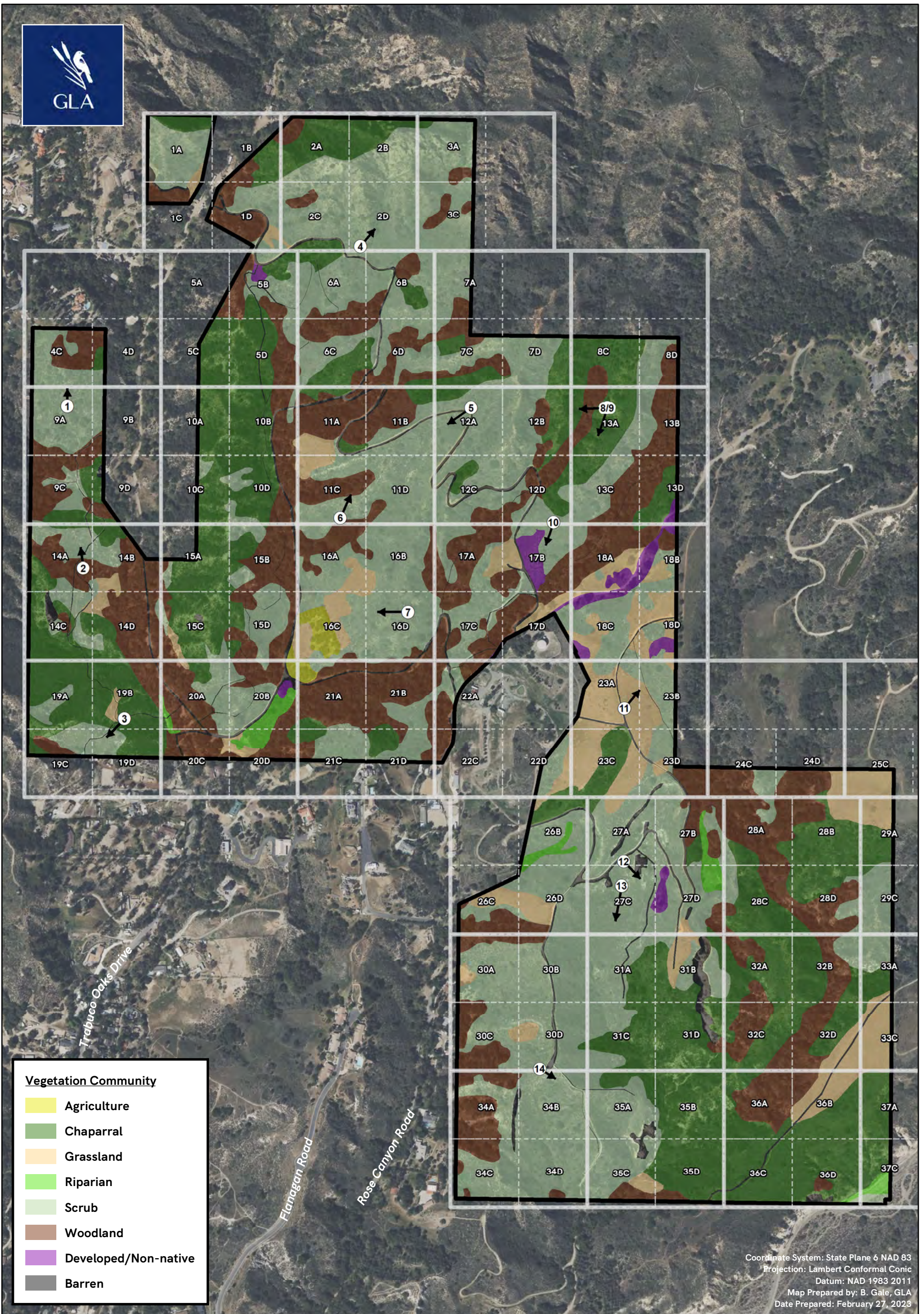
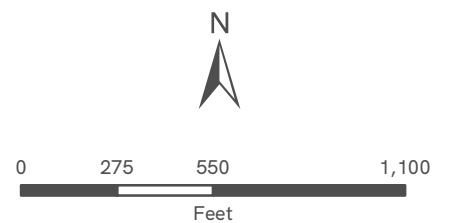


Exhibit 2B
Vegetation Map

Trabuco Rose Preserve

- Trabuco Rose Preserve
- Grid Cell
- Quadrant Cell
- Photo Location



X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\1184-X_OCTA_Veg_TrabucoRose.mxd

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 27, 2023



Baker Canyon Rd

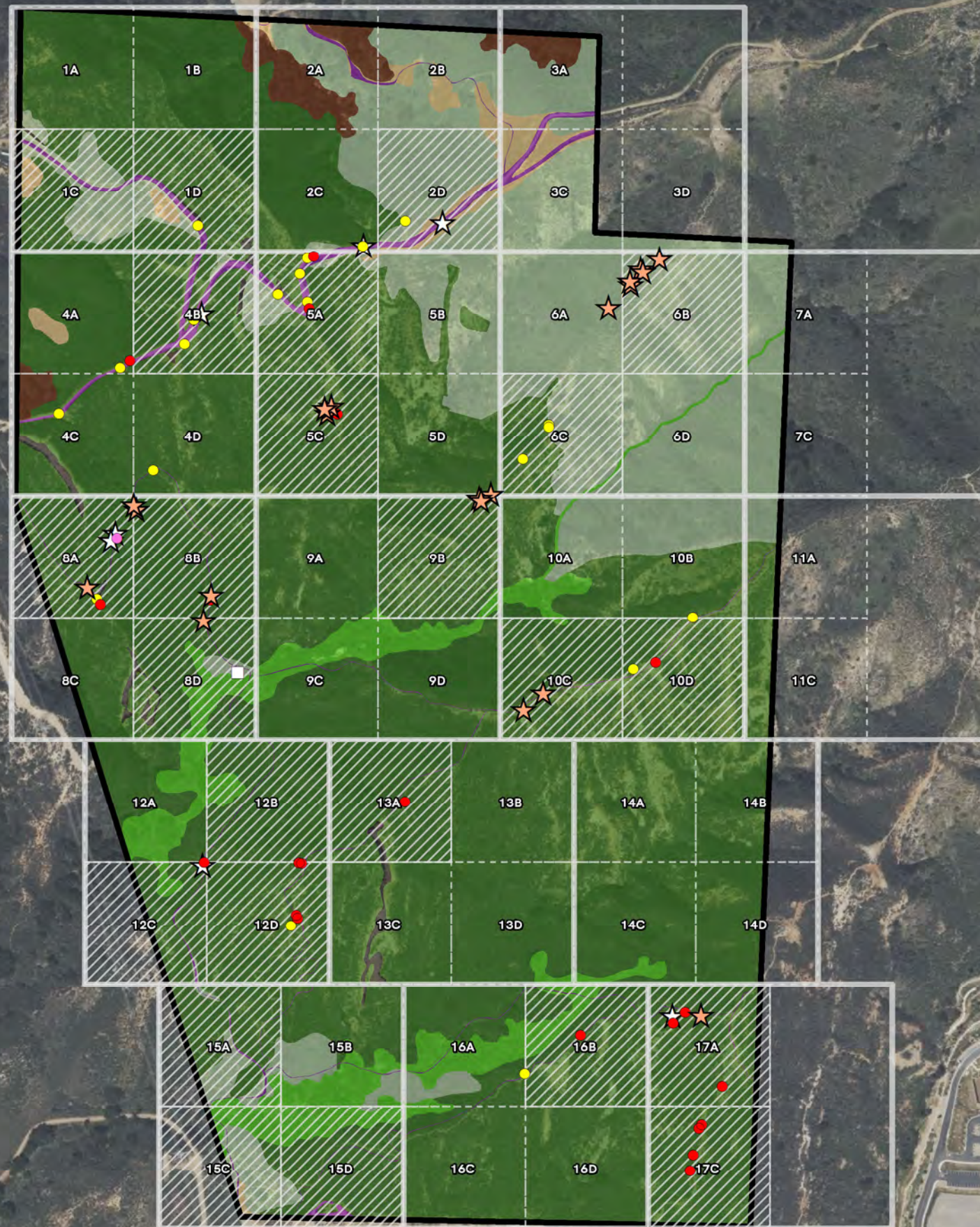


Exhibit 3A Terrestrial Reptile Survey 2022

Silverado Chaparral Preserve

- Silverado Chaparral Preserve
- Grid Cell
- Quadrant Cell
- Surveyed Quadrant Cell

Current Monitoring Period

- Coast Horned Lizard (Scat)
- Native Red Harvester (Active)
- Native Red Harvester (Not Active)
- Other Ant Species

Previous Monitoring Periods

- Orangethroat Whiptail
- Coast Horned Lizard

Vegetation Community

- Chaparral
- Grassland
- Riparian
- Scrub
- Woodland
- Developed/Non-Native
- Barren



1 inch = 450 feet

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 27, 2023



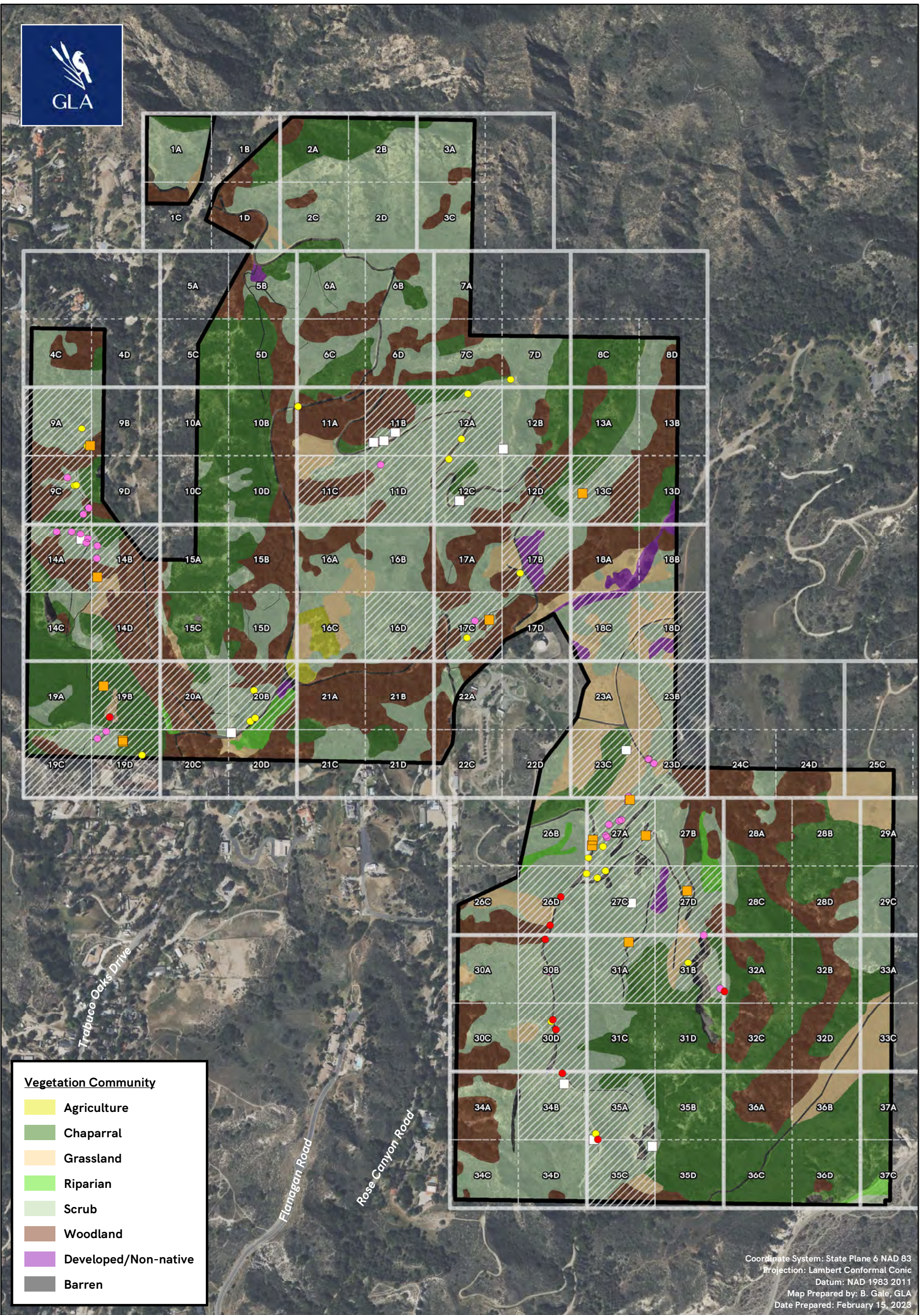


Exhibit 3B - Terrestrial Reptile Survey 2022

Trabuco Rose Preserve

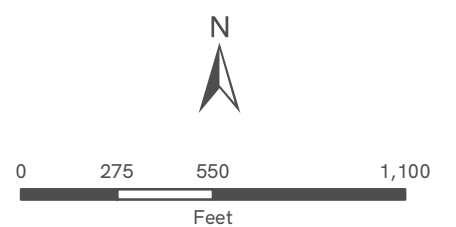
- Trabuco Rose Preserve
- Grid Cell
- Quadrant Cell
- Surveyed Quadrant Cell

Current Monitoring Period

- Orangethroat Whiptail
- Native Red Harvester (Active)
- Native Red Harvester (Not Active)
- Other Ant Species

Previous Monitoring Periods

- Orangethroat Whiptail



Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: NAD 1983 2011
 Map Prepared by: B. Gale, GLA
 Date Prepared: February 15, 2023



Photograph 1: Silverado Chaparral Photo 1, depicting dense mature scrub habitat on slope, facing west.



Photograph 2: Silverado Chaparral Photo 2, depicting scrub and grassland habitats on slopes adjacent to road, facing southwest.



Photograph 3: Silverado Chaparral Photo 3, depicting scrub habitat on steep slopes, facing west.



Photograph 4: Silverado Chaparral Photo 4, depicting dense mature chaparral habitat on canyon slopes, facing south.

Exhibit 4 - Site Photos – Silverado Chaparral

OCTA Terrestrial Reptile Survey 2022





Photograph 5: Silverado Chaparral Photo 5, depicting ridge trail with surrounding scrub habitat, facing southwest.



Photograph 6: Silverado Chaparral Photo 6, depicting dense chaparral habitat on distant steep slope, standing on ridge trail in Photo 5, facing south.



Photograph 7: Silverado Chaparral Photo 7, depicting dense chaparral habitat on steep slopes, facing north.



Photograph 8: Silverado Chaparral Photo 8, depicting dense chaparral habitat on distant slopes, with narrow trail visible near center, facing southeast.

Exhibit 4 - Site Photos – Silverado Chaparral

OCTA Terrestrial Reptile Survey 2022





Photograph 9: Silverado Chaparral Photo 9, depicting dense chaparral on distant steep slopes, dense riparian habitat across center, and dense scrub at right, facing north.



Photograph 10: Silverado Chaparral, depicting typical narrow trails with dense vegetation adjacent.



Photograph 11: Silverado chaparral, depicting horned lizard scat, breaking open revealing red harvester ant prey.



Photograph 12: Silverado Chaparral, depicting an additional horned lizard scat.

Exhibit 4 - Site Photos – Silverado Chaparral

OCTA Terrestrial Reptile Survey 2022





Photograph 13: Trabuco Rose Photo 1, depicting dense cactus scrub on slope, facing north.



Photograph 14: Trabuco Rose Photo 2, depicting open scrub adjacent to trail, facing north.



Photograph 15: Trabuco Rose Photo 3, depicting mixed grassland and scrub adjacent to trail, facing southwest.



Photograph 16: : Trabuco Rose Photo 4, depicting dense scrub and chaparral on steep canyon slopes, facing northeast.

Exhibit 4 - Site Photos – Trabuco Rose

OCTA Terrestrial Reptile Survey 2022





Photograph 17: Trabuco Rose Photo 5, depicting dense coastal and cactus scrub on steep slopes, facing south.



Photograph 18: Trabuco Rose Photo 6, depicting dense scrub on steep slopes, facing approximately north.



Photograph 19: Trabuco Rose Photo 7, depicting dense coastal and cactus scrub on gentle slope with grassland adjacent, facing west.



Photograph 20: Trabuco Rose Photo 8, depicting dense cactus scrub on steep canyon slopes, facing west.

Exhibit 4 - Site Photos – Trabuco Rose

OCTA Terrestrial Reptile Survey 2022





Photograph 21: Trabuco Rose Photo 9, depicting dense chaparral on steep narrow ridge and slopes, at same location as Trabuco Rose Photo 8, facing south.



Photograph 22: Trabuco Rose Photo 10, depicting dense scrub on gentle slope, facing approximately south.



Photograph 23: Trabuco Rose Photo 11, depicting dense coastal and cactus scrub on gentle slope, facing approximately northeast.

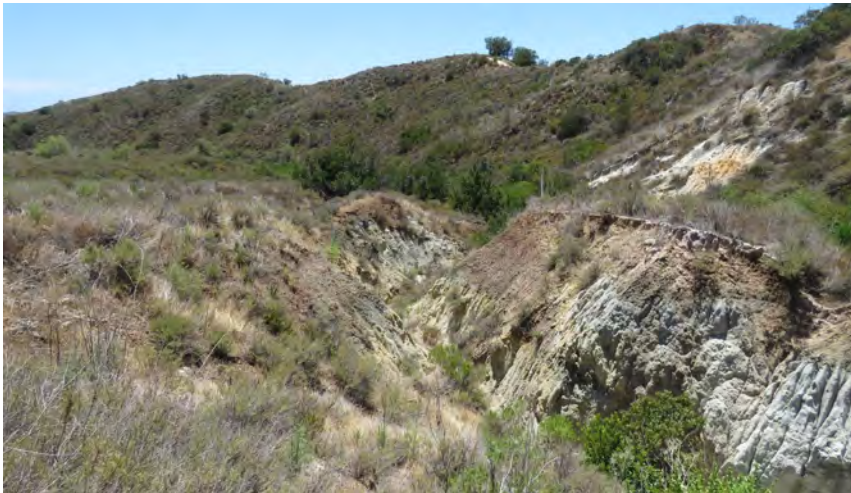


Photograph 24: Trabuco Rose Photo 12, depicting open scrub on gentle slope, facing approximately southeast.

Exhibit 4 - Site Photos – Trabuco Rose

OCTA Terrestrial Reptile Survey 2022





Photograph 25: Trabuco Rose Photo 13, depicting dense scrub adjacent to narrow drainage with dense vegetation on steep slopes in distance.



Photograph 26: Trabuco Rose Photo 14, depicting dirt road with adjacent chaparral covered slopes.



Photograph 27: Trabuco Rose, depicting adult male orangethroat whiptail (*Aspedoscelis hyperythra*) basking.



Photograph 28 : Trabuco Rose, depicting orangethroat whiptail back with merging dorsal stripes near base of tail.

Exhibit 4 - Site Photos – Trabuco Rose

OCTA Terrestrial Reptile Survey 2022



APPENDIX A

Visual Encounter Survey Methodology for Terrestrial Reptiles OCTA M2 Preserves

INTRODUCTION

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. In addition, OCTA worked with the regulatory and resource agencies to develop a comprehensive permitting program to address impacts to aquatic resources. A key component of the Plan and aquatic resources permitting conservation strategy has included the identification and acquisition of habitat preserves to offset habitat impacts.

OCTA acquired seven properties (preserves) as part of the M2 EMP, including the following: Trabuco Rose, Wren's View, Bobcat Ridge, Live Oak Creek, Silverado Chaparral, Pacific Horizon and Eagle Ridge [Exhibit 1 – Preserve Location Map]. A separate Resource Management Plan (RMP) was developed for each preserve that identifies preserve-specific management objectives and actions to ensure the long-term viability of natural communities and Covered Species (including Covered Reptiles) by protecting, managing, and enhancing populations and suitable habitat on the Preserve. Biological monitoring is intended to determine status, threats, and population trends of Covered Species and their habitats within each preserve. The RMPs describe several types of monitoring, including Effectiveness Monitoring, with the stated purpose of assessing status, trends, and threats to biological resources. Effectiveness Monitoring is to be conducted by the Monitoring Biologist(s) in perpetuity, according to the frequencies and protocols identified in Table 4-1 of each RMP.

The Plan addressed two Covered Reptiles to be addressed for each preserve, including the Blainville's horned lizard (*Phrynosoma blainvillii*, PHBL) and the orangethroat whiptail (*Aspidoscelis hyperythra beldingi*, ASHY). Per the RMPs, Effectiveness Monitoring is to be performed every four years by conducting focused visual encounter surveys (VES) for terrestrial reptiles during the peak activity period for the species, following a time-constrained search methodology, with an equal effort (staff hours) to be expended in each search area. The VES method is useful to assess species richness (i.e., general presence), including the number of individuals detected, but is not suitable to determine population densities within each preserve. The VES method is effectively used to identify target species in areas with similar habitat or easily identified microhabitats, like logs or rocky outcrops. If habitats within search areas are not similar, this may introduce bias during the search effort. It is important to define

the length of time, search intensity, and search pattern prior to beginning the survey. This document described the methodology for performing VES at each of the preserves to satisfy the requirements for Effectiveness Monitoring.

METHODS

As noted above, the RMPs state that the Effectiveness Monitoring surveys shall employ a time constrained VES method, conducted during the peak activity period for the target species. The RMP specifically references Corn and Bury (1990) for the time-constrained search methodology; however, this methodology is of limited applicability to the OCTA preserve surveys. As such, through conversations with the U.S. Fish and Wildlife Service (the Service), other applicable methodologies for reference include Crump and Scott (1994), the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Biological Monitoring Program, as well as other Service recommendations.

The VES will be conducted within areas of suitable habitat at each preserve provided there is reasonable accessibility. Each preserve will be divided into a grid of sampling areas (cells) with dimensions that are standardized across all preserves. For example, the MSHCP Biological Monitoring Program utilized 250 m × 250 m sampling areas. However, given the factors associated with one or more of the preserves (size, shape, topographic complexity and accessibility), 250 m x 250 m cells may be too large to effectively survey the preserves using the time-constrained method. Pre-survey fieldwork will be performed to determine if smaller sampling areas are more appropriate. Regardless, the size of the sampling area cells will be standardized across all preserves. Furthermore, each preserve will be covered with a net of grid cells, with each cell assigned a unique alphanumeric code, such that each cell that is sampled will be documented using its unique code for both data reporting and future survey replication.

Although the two target species can be found in a variety of habitats, they are commonly found in coastal sage scrub with a mix of open sandy areas and dense patches for refuge. The baseline vegetation mapping for each preserve will be used to guide which portions of each preserve (i.e., which cells) will be surveyed.

The presence of preferred food prey may also aid in detection of these target species including native harvester ants and termites, which will be noted during the surveys as an additional indication of potential suitability. Non-native ant species will also be noted, as these are a threat to the target species, especially to horned lizards, as non-native ants can outcompete native ants and do not offer suitable nutrition for horned lizards.

All appropriate and accessible habitats for target species shall be searched within each sampling area during times of peak activity. Two passes are proposed for each preserve, including one between late March and early June and one between July and September. Two biologists will independently search and record data within each sampling area by slowly walking through appropriate habitat, and not following a pre-determined path. A standardized

search time will be implemented for each sampled cell across all preserves. Pre-survey fieldwork will be performed to determine an appropriate survey time in minutes based on those cells with the greatest amount of suitable habitat to search. The search time for each cell is anticipated to be about 40 to 60 minutes, but the exact standardized time will be determined based on the pre-survey fieldwork. While walking, the surveyors will carefully scan basking sites and ant mounds with binoculars. Rock outcrops will be inspected as feasible using flashlights and mirrors. Natural cover objects (logs and rocks) can be lifted for inspection; however, they should not be destroyed and shall be replaced where found to prevent damaging the refugia.

All target species shall be recorded in GIS, including the number detected, estimated age class, adjacent plants or bare ground, and prey items (if applicable). Target species detected outside of a sampling area will also be recorded. Non-target reptile species will be recorded for the first detection per sampling area. As feasible, the biologists will photograph all target species detected, including especially orangethroat whiptails, since there is interest to rule out the non-native Sonoran whiptail. Both native and non-native ant mounds will be recorded in GIS with photographs of each species. General environmental conditions will be recorded at the beginning of each survey (temperature, sky cover, recent rain, wind, etc.). Additionally, one coverboard will be installed in each cell to be searched in advance of the VES and will be checked during the surveys, i.e., if there are 15 cells within a given preserve to be sampled, then there will be 15 coverboard used at that preserve.

The VES methods could incorporate coordination with the U.S. Geological Survey (USGS) Western Ecological Research Center to determine feasibility of assisting with ongoing horned lizard genetic studies, which could include capture and tissue sample collection (per USGS protocol) or capture and transport individuals with GIS coordinates for USGS processing, subject to California Department of Fish and Wildlife (CDFW) approval.

At the completion of the VES for a particular year, a report will be prepared to document the results of the surveys and to provide any management recommendations, including recommendations for supplemental (target) surveys, invasive ant treatments, etc.

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- Crump, M.L. and N.J. Scott, Jr.. 1993. Visual Encounter Surveys *in* Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians. Heyer, W.R., M.A. Donnelly, R.W. McDiarmid, L.C. Hayek and M.S. Foster (eds). Smithsonian Institution Press, Washington, USA.

Western Riverside County MSHCP Biological Monitoring Program Terrestrial Reptile 2017
Survey Protocol, available from the Biological Monitoring Program.

p:1184-02b.reptile VES methodology.docx

APPENDIX B

Appendix B - 2022 Terrestrial Reptile Survey Data

SilveradoChaparral							
GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
1	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0
2	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	0	0	0	0	0	0
3	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
4	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
5	a	0	0	0	1 A	0	0
	b	-	-	-	-	-	-
	c	S	0	0	0	0	0
	d	-	-	-	-	-	-
6	a	-	-	-	-	-	-
	b	S	0	0	0	0	0
	c	0	0	0	0	0	0
	d	-	-	-	-	-	-
7	a	-	-	-	-	-	-
	c	-	-	-	I	-	-
8	a	S	0	0	1 A	0	0
	b	S	0	0	0	0	0
	c	-	-	-	-	-	-
	d	S	0	0	0	0	0
9	a	-	-	-	-	-	I
	b	S	0	0	0	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
10	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	S	0	0	0	0	0
	d	0	0	0	0	0	0
11	a	-	-	-	-	-	-
	c	-	-	-	-	-	-

SilveradoChaparral							
GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
12	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0
13	a	0	0	0	0	0	0
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
14	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
15	a	0	0	0	0	0	0
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0
16	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
17	a	S	0	0	0	0	0
	c	0	0	0	0	0	0

- Not surveyed

A Adult

J Juvenile

U Unknown

S Scat

0 Absent

I Incidental

CHL coast horned lizard

OTW orangethroat whiptail

CW coast whiptail

GBF great basin fence lizard

SBL side-blotched lizard

GSL granite spiny lizard

Appendix B - 2022 Terrestrial Reptile Survey Results

Trabuco Rose							
GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
1	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
2	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
3	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
4	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
5	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
6	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
7	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
8	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
9	a	0	2 A	0	1 U	0	0
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	-	-	-	-	-	-
10	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
11	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0
12	a	0	0	0	0	0	0
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0

Trabuco Rose

GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
13	a	-	-	-	-	I	-
	b	-	-	-	-	-	-
	c	0	1 A	0	0	0	0
	d	-	-	-	-	-	-
14	a	0	0	0	0	0	0
	b	0	1 A	0	0	0	0
	c	-	-	-	-	-	-
	d	0	0	0	0	0	0
15	a	-	-	I	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
16	a	-	-	-	I	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	0	0	0	0	0	0
17	a	-	-	-	-	-	-
	b	0	0	0	1 A	0	0
	c	0	1 A	0	0	0	0
	d	-	-	-	-	-	-
18	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0
19	a	-	-	-	-	-	-
	b	0	1 A	0	1 A	0	0
	c	0	0	0	0	0	0
	d	0	1 J	0	0	0	0
20	a	0	0	0	1 A	0	0
	b	0	0	0	0	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
21	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
22	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	I	-	-
23	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	0	0	0	0	0	0
	d	0	0	0	0	0	0

Trabuco Rose

GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
24	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
25	c	-	-	-	-	-	-
26	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	0	0	0	0	0	0
27	a	0	1 J	0	0	1 A	0
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	0	1 U	0	0	0	0
28	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
29	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
30	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	-	-	-	-	-	-
	d	0	0	0	0	0	0
31	a	0	1 A	0	0	0	0
	b	0	0	0	1 A	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
32	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
33	a	-	-	-	-	-	-
	c	-	-	-	-	-	-
34	a	-	-	-	-	-	-
	b	0	0	0	0	0	0
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-
35	a	0	0	0	0	0	0
	b	-	-	-	-	-	-
	c	0	0	0	0	0	0
	d	-	-	-	-	-	-
36	a	-	-	-	-	-	-
	b	-	-	-	-	-	-
	c	-	-	-	-	-	-
	d	-	-	-	-	-	-

Trabuco Rose							
GRID CELL	QUAD CELL	CHL	OTW	CW	GBF	SBL	GSL
37	a	-	-	-	-	-	-
	c	-	-	-	-	-	-

- Not surveyed

A Adult

J Juvenile

U Unknown

S Scat

0 Absent

I Incidental

CHL coast horned lizard

OTW orangethroat whiptail

CW coast whiptail

GBF great basin fence lizard

SBL side-blotched lizard

GSL granite spiny lizard

SECOND ANNUAL MONITORING REPORT
FOR
DISTURBED LANDS WITHIN PACIFIC HORIZON PRESERVE RESTORATION
PACIFIC HORIZON PRESERVE
CITY OF LAGUNA BEACH, ORANGE COUNTY, CALIFORNIA

DECEMBER 23, 2022

Prepared for:

Orange County Transportation Authority (OCTA)
550 South Main Street
Orange, California 92868
Contact: Lesley L. Hill
Telephone: (714) 560-5759

Prepared by:

Glenn Lukos Associates, Inc.
1940 E Deere Avenue, Suite 250
Santa Ana, California 92705
Contact: Lexi Kessans/Sheri Asgari
Telephone: (949) 837-0404
Fax (949) 837-5834

California Coastal Commission Coastal Development Permit No. 5-19-0580

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PACIFIC HORIZON PRESERVE DISTURBED LANDS RESTORATION SECOND ANNUAL MONITORING REPORT

I. PROJECT INFORMATION

A. Project Name

Disturbed Lands within Pacific Horizon Preserve Restoration

B. Applicant

Orange County Transportation Authority
550 South Main Street
Orange, California 92868
Contact: Lesley L. Hill
Telephone: (714) 560-5759

C. Project Consultant

Glenn Lukos Associates, Inc.
1940 E. Deere Avenue, Suite 250
Santa Ana, California 92705
Contacts: Lexi Kessans/Sheri Asgari
Telephone: (949) 837-0404

D. Permit File Number

Coastal Development Permit (CDP) No. 5-19-0580

II. RESTORATION SITE INFORMATION

A. Restoration Site Location

Pacific Horizon Preserve is a 150-acre preserve located east of Pacific Coast Highway in the City of Laguna Beach in Orange County. The Preserve is situated between Aliso and Wood Canyons Wilderness Park (AWCWP) along the northern and eastern boundaries, City of Laguna Beach (City) open space and Hobo Ridge conservation lands to the south/southwest, The Ranch at Laguna Beach (The Ranch) to the south, and residential development along the northwest boundary. A network of existing trails extends from Moulton Meadows Park and the AWCWP "Moulton Meadows Linkage Trail" converging together near the northern boundary of the Preserve before continuing back on to the AWCWP [Exhibit 1].

B. Restoration Goals and Objectives

The goal of restoration within the Pacific Horizon Preserve is to decommission an unauthorized hiking trail that is threatening a population of many-stemmed dudleya (*Dudleya multicaulis*), passively restoring other disturbed areas in the vicinity of the trail which support intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) and coastal sage scrub (CSS) habitat, and the initiation of invasive plant species removal in accordance with the *Restoration Plan for Disturbed Lands within Pacific Horizon Preserve* (Restoration Plan) dated August 2019, *Invasive Species Management Plan for OCTA M2 Preserves – Pacific Horizon Preserve* (ISMP) dated December 2018, and Special Condition 2 of the CDP.

The decommissioned trail has been subject to ongoing disturbance, mainly through unauthorized trail modifications that have been created by individuals for popular mountain bike use. These modifications have included establishment of trails through native and/or sensitive habitat, and the movement and piling of soil to create berms and mounds for bicycle jumps. As such, the targeted areas for restoration include the unauthorized trails, bicycle jumps, soil mounds, and erosional cuts. Along with these targeted areas, the restoration concurrently focuses on removing high priority invasive plant species found along the northern boundary of the site on both the Preserve and County Parks side. Target invasive plant species include artichoke thistle (*Cynara carunculus*), fountain grass (*Pennisetum setceum*), iceplant (*Carpobrotus edulis*), Pampas grass (*Cortaderia selloana*), and sweet fennel (*Foeniculum vulgare*). The location of restoration areas and mapped invasive species is depicted on Exhibit 2.

C. Restoration Implementation

Activities required to implement restoration include fence repair, installation of signage and camera locations, trail contouring/hand-repair of bike jumps, erosion control, soil decompaction, invasive species removal, regular maintenance (weed abatement, fence/sign repair, follow-up herbicide treatment, etc.), and monitoring.

The initial implementation of restoration occurred on February 2, 2021 and included treatment of artichoke thistle using a Glyphosate-based herbicide; treatment of iceplant on OCTA property using a Glyphosate-based herbicide; fence line repairs along the northern boundary of the Preserve; signage installation; covering decommissioned trail with cut vegetation/debris; and salvage of coastal prickly pear cactus (*Opuntia littoralis*) from adjacent onsite sources to be planted in the restored trail areas [Exhibit 2]. Initial treatment of iceplant on County of Orange property occurred on March 2, 2021.

III. MAINTENANCE

Maintenance consisted primarily of weed abatement via manual methods or targeted herbicide application, maintaining erosion control materials such as straw wattles, and repairing fencing and signage, as needed. Herbicide use occurred only in areas where native species would not be affected. All maintenance is carried out under the Project Biologist's guidance and supervision.

Following the initial treatments in February 2021 as described above, regular follow-up treatment has occurred.

The table below provides the dates of all restoration activities in 2022.

Pacific Horizon Restoration Activity Log	
Date	Activity
2/28, 3/1-3/2/2022	RECON field crew performed ¹ : (1) installation of wooden stakes along western perimeter of Preserve to delineate OCTA lands; (2) tightened fence line along the northern perimeter of the Preserve; (3) herbicide treated artichoke thistle plants and pampas grass regrowth within their respective control areas using glyphosate-based herbicide.
4/4/2022	RECON field crew performed herbicide treatment of pampas grass regrowth within the pampas grass removal area using glyphosate-based herbicide.
6/13/2022	RECON field crew assisted GLA wildlife biologist, Jeff Ahrens, with installation of posts and wildlife cameras in two separate locations. Afterwards, RECON field crew also performed herbicide treatment of artichoke thistle plants seen germinating within the artichoke thistle control area using glyphosate-based herbicide.
7/28/2022	RECON field crew repaired damaged fence near the decommissioned trail and in the area where SCE had created an unauthorized trail.
9/19-9/21/2022	RECON field crew mowed non-native grasses and other herbaceous non-native species within the artichoke thistle control area.
10/27/2022	GLA restoration ecologist, Wanisa Jaikwang, performs year two annual monitoring
12/14-12/15/2022	RECON field crew treated artichoke thistle regrowth in the artichoke thistle removal area.
12/19/2022	RECON field crew raked in seed along the decommissioned trail and the artichoke thistle treatment area.

IV. MONITORING RESULTS

The goal of the monitoring is to assess the effectiveness of the recommended restoration actions in trail disturbance areas and invasive species treatment areas, as well as allow for adaptive management strategies (such as active restoration) to be implemented in the future, if necessary. Per the Restoration Plan, all monitoring methods are potential tools to be selected by the best judgement of the Preserve Biologist and Preserve Manager.

Qualitative monitoring was conducted on a quarterly basis during the second year of the restoration program. Qualitative monitoring comprised visual assessment of the treatment areas to observe signs of regrowth, new disturbance, natural recruitment of native species, plant health, and any potential stressors to the areas under restoration. Site photographs taken two years post initial treatment are presented as Exhibit 3.

A. Trail Disturbance Restoration Areas

Qualitative observations indicate that the treatment of the iceplant on OCTA and County Parks property has been successful, effectively killing the treated iceplant – with minimal recent occurrences throughout all of the restoration areas. Within the trail restoration areas, treated Pampas grass, fountain grass, and sweet fennel have also been effectively eradicated. Minimal, but present, infill of native species in these areas has been observed in the second year of monitoring, with the most prominent native species including California

¹ All RECON field crew days were under the supervision of a qualified biologist.

buckwheat (*Eriogonum fasciculatum*), California bush sunflower (*Encelia californica*), California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), and deerweed (*Acmispon glaber*).

The trail decompaction areas show less unauthorized entry, with minimal to no bike and pedestrian disturbance. With that, the cactus pad plantings are surviving but due to very little rain, do not show signs of major new growth. Additionally, as previously mentioned, the trail restoration areas are showing some signs of natural recruitment from surrounding coastal sage scrub (CSS) ISMP habitat. As such, monitoring will continue to check for new growth of cactus and natural recruitment of CSS from adjacent areas.

Installed fencing along the northern boundary is intact and is being routinely monitored for tampering.

B. Invasive Species Removal Areas

Qualitative observations indicate that the targeted treatment of artichoke thistle and pampas grass using a glyphosate-based herbicide is effective. Natural recruitment of native species including coyote brush (*Baccharis pilularis*), sticky monkey flower (*Mimulus aurantiacus*), lemonadeberry, California sagebrush, and purple needlegrass (*Stipa pulchra*) was noted in the artichoke thistle control area. Natural recruitment is slowly establishing within this area, but as herbicide treatments become less frequent, it should allow for increased natural infill of the surrounding native species.

V. RECOMMENDATIONS

Per the Resource Management Plan (RMP) and ISMP, monitoring is ongoing in perpetuity, therefore maintenance during the next year will continue to focus on routine weed abatement, fence/sign repair, monitoring the status of the invasive plant species, and potential recontouring of the trail. Along with this, site monitors will take note on the establishment of the native plant communities within the restoration areas.

Third-year monitoring will continue on a quarterly basis, and a corresponding annual report will be submitted to the CCC by December 31, 2023.

A. Trail Disturbance Restoration Areas

Recommended maintenance actions in the next year include routine maintenance of the fence line and follow-up targeted spray of any invasive species regrowth or new occurrences upon detection.

B. Invasive Species Removal Areas

Recommended maintenance actions in the next year include routine follow-up targeted spray of any regrowth of treated artichoke thistle and Pampas grass, new seedlings, and new occurrences of any invasive species during the winter and spring months.

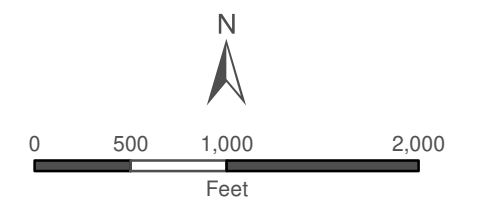
APPENDIX A

Persons Responsible for Conducting Second-Year Monitoring and Reporting

Name	Title	Company
Sheri Asgari	Senior Restoration Ecologist	Glenn Lukos Associates, Inc.
Lexi Kessans	Senior Regulatory Specialist	Glenn Lukos Associates, Inc.
Wanisa Jaikwang	Restoration Ecologist	Glenn Lukos Associates, Inc.



- Pacific Horizon Preserve
- Restoration Areas
- Existing Fence Repair
- AWCWP - Authorized Trails: Open Access
- AWCWP - SOCWA CTP Access Road/
Aliso Creek Trail: Managed Access

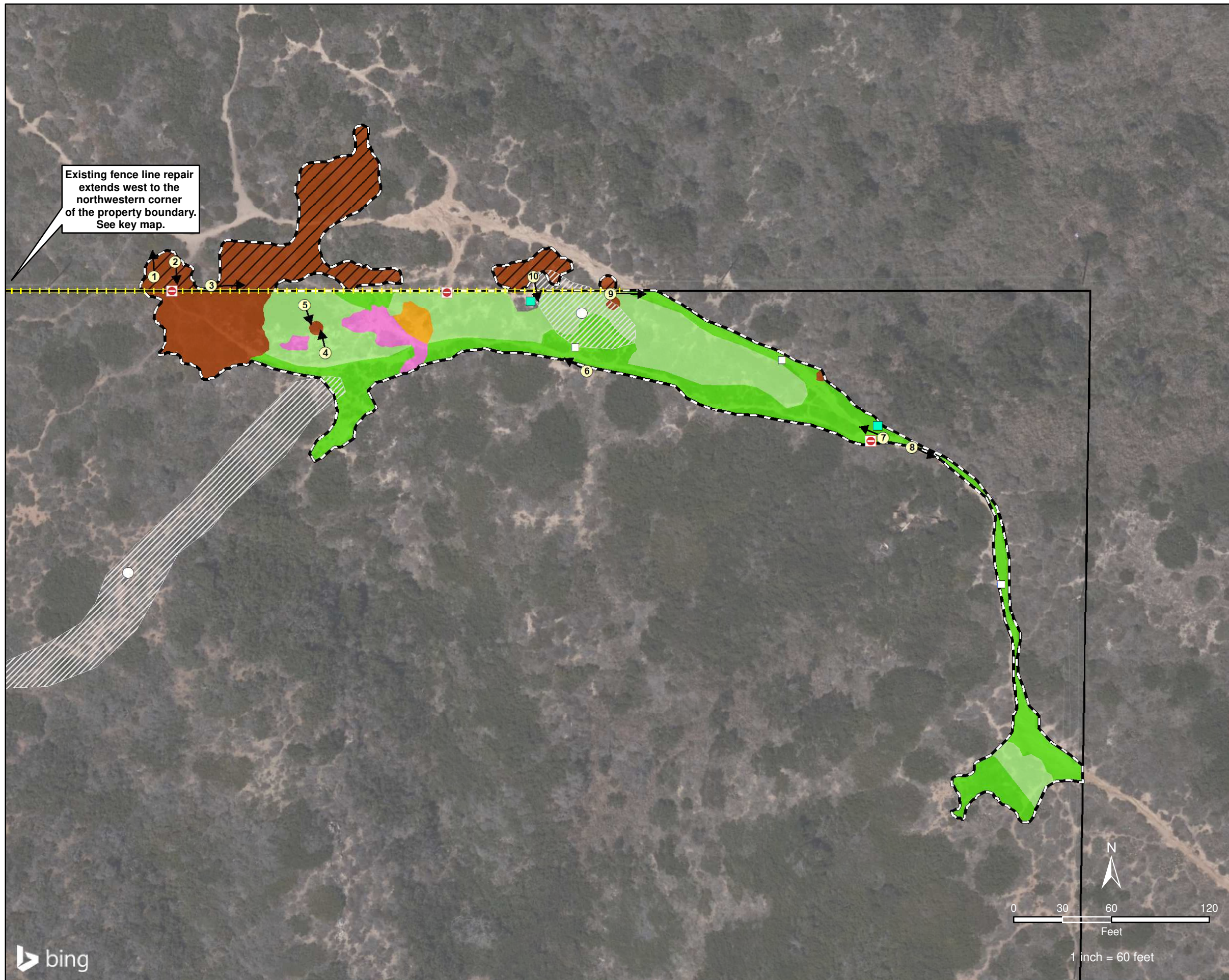


1 inch = 1,000 feet

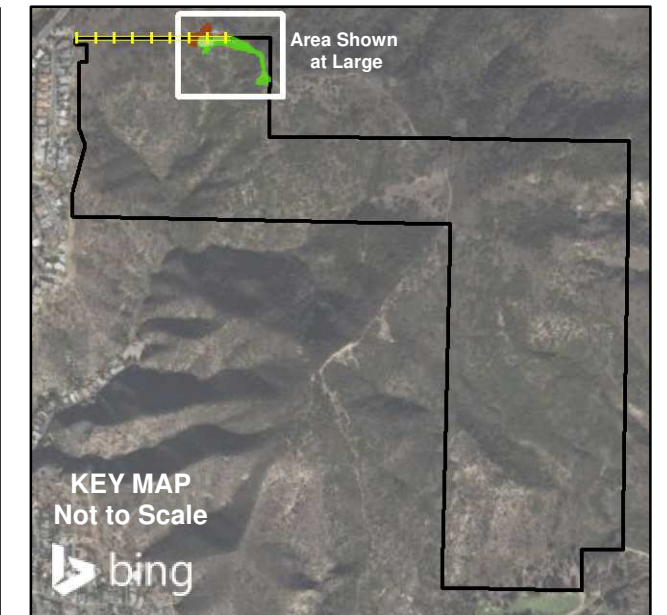
PACIFIC HORIZON PRESERVE
Vicinity Map

GLENN LUKOS ASSOCIATES





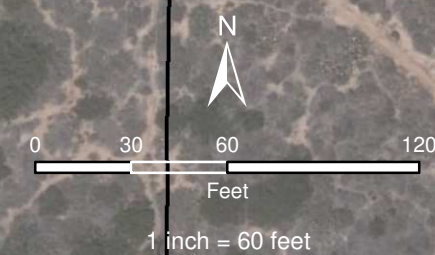
Existing fence line repair extends west to the northwestern corner of the property boundary. See key map.



- Pacific Horizon Preserve
- Disturbed Lands Restoration Work Area
- Existing Fence Repair
- Iceplant Removal Areas (County Property) - 0.13 ac.
- Iceplant Removal Areas - 0.07 ac.
- Fountain Grass Removal Areas - 0.02 ac.
- Pampas Grass Removal Areas - 0.01 ac.
- Passive Restoration - 0.22 ac.
- Active Restoration - 0.23 ac.
- "Do Not Enter/Restoration in Progress" Sign
- Approximate Location of Approved Camera Station
- Photo Location

Covered Species

- Intermediate Mariposa Lily
- Intermediate Mariposa Lily
- Many-stemmed Dudleya

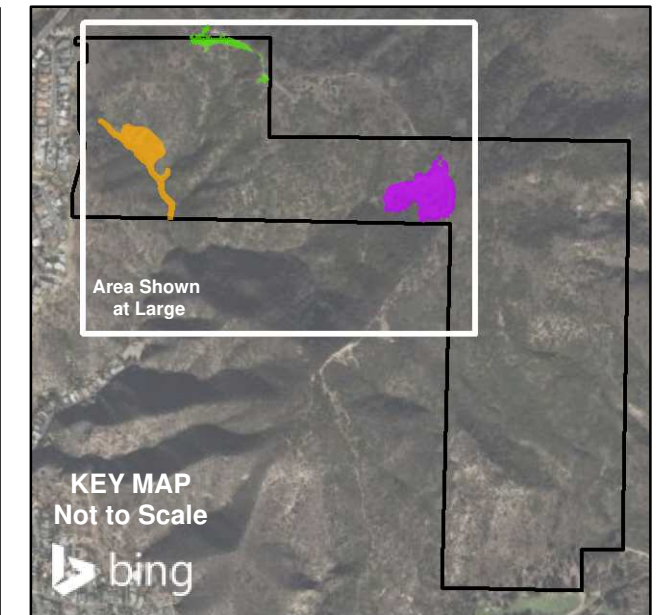
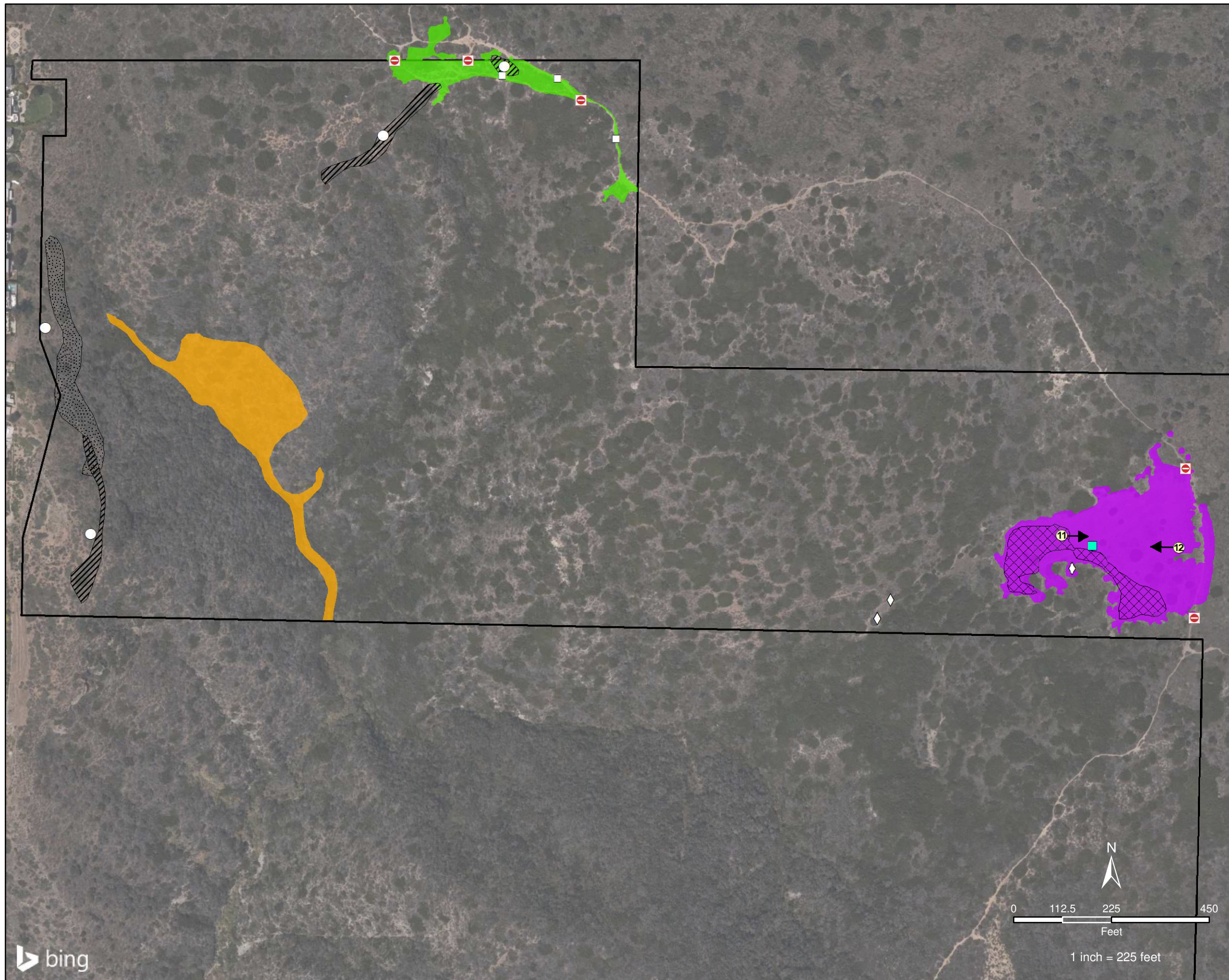

















PACIFIC HORIZON PRESERVE

Restoration and Photo Location Map

GLENN LUKOS ASSOCIATES





-  Pacific Horizon Preserve
-  Artichoke Thistle Removal Area - 2.34 ac.
-  Pampas Grass Removal Area - 1.42 ac.
-  Disturbed Lands Restoration Area
-  "Do Not Enter/Restoration in Progress" Sign
-  Approximate Location of Approved Camera Station
-  Photo Location
- Covered Species**
-  Intermediate Mariposa Lily
-  Intermediate Mariposa Lily
-  Many-stemmed Dudleya
- Non-Covered Sensitive Species**
-  Catalina Mariposa Lily
-  Crownbeard
-  Catalina Mariposa Lily
-  Crownbeard
-  Western Dichondra

PACIFIC HORIZON PRESERVE

Restoration and Photo Location Map

GLENN LUKOS ASSOCIATES

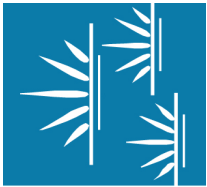




Photograph 1: View of treated iceplant located on County of Orange property. Disturbed area appears to be free of invasive, non-native plant species. California buckwheat, California bush sunflower, and deerweed observed to be growing on the County side. A California gnatcatcher was heard. Photo dated October 27, 2022



Photograph 2: View of decommissioned trail and previously repaired fencing and added signage. No signs of recent bike or pedestrian disturbance in the decommissioned area. Lower left-hand side views treated iceplant. Photo dated October 27, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 1

PACIFIC HORIZON PRESERVE

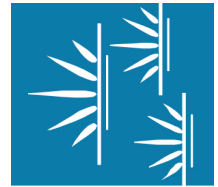
Year 2 Monitoring Site Photographs



Photograph 3: View of treated iceplant located on County property (left side) and treated iceplant on Preserve property (right side). Native vegetation appear relatively bare within the area but will likely grow along the wet season. Photo also depicts the previously repaired fenceline and added signage. Photo dated October 27, 2022.



Photograph 4: View of decompacted area. Area previously used as a bike jump; therefore, light erosion is present likely due to its history. Minimal signs of invasive, non-native species, with instead an emerging presence of coastal prickly pear. California buckwheat, deerweed, and lemonadeberry are the most-abundant native species in the surrounding disturbed area. Photo dated October 27, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 2

PACIFIC HORIZON PRESERVE

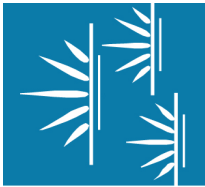
Year 2 Monitoring Site Photographs



Photograph 5: Elevated view of bare areas previously used as bike jump. Area has been treated with minimal signs of recurring iceplant. Native vegetation present include; California buckwheat, deerweed, lemonadeberry, and coastal prickly pear. Photograph depicts fruiting toyon tree in the background. Photo dated October 27, 2022.



Photograph 6: View of removed and recontoured bike berm. No signs of recent bike or pedestrian disturbance. Native vegetation observed to be establishing within the disturbed area include; California sagebrush, California buckwheat, coastal prickly pear, black sage, and lemonadeberry. Photo dated October 27, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 3

PACIFIC HORIZON PRESERVE

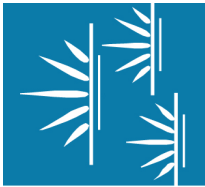
Year 2 Monitoring Site Photographs



Photograph 7: View of decommissioned trail (left side) and open recontoured trail (right side). Further contouring may be necessary for the open trail as erosion could encourage use as a bike jump. Photo dated October 27, 2022.



Photograph 8: View of recontoured area. Trail is currently open to the public. No invasive, non-native vegetation was observed in the vicinity. Photo dated October 27, 2022.





Photograph 9: View of removed barbed wire fence. Native vegetation appear to be establishing within the disturbed area, such as; deerweed, purple needlegrass, California sagebrush, lemonadeberry, and California buckwheat. Photo dated October 27, 2022.



Photograph 10: View of area approved for camera placement. No invasive, non-native vegetation was observed, with instead lemonadeberry, California buckwheat, California sagebrush, and costal prickly pear establishing within the disturbed area. Photo dated October 27, 2022.



GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 5

PACIFIC HORIZON PRESERVE

Year 2 Monitoring Site Photographs



Photograph 11: Lower view of treated artichoke thistle area. Artichoke thistle appears to be removed due to ongoing treatments. Photo dated October 27, 2022.



Photograph 12: Elevated view of treated artichoke thistle area. Artichoke thistle appears to be removed due to ongoing treatments. Minimal presence of Australian saltbush within the area, as well as native revegetation. Native plants present in the surrounding area, include; coyote bush, lemonadeberry, California sagebrush, and sticky monkeyflower. Photo dated October 27, 2022.



GLENN LUKOS ASSOCIATES

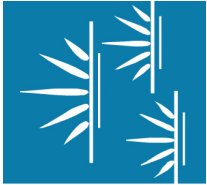
Exhibit 3 – Page 6

PACIFIC HORIZON PRESERVE

Year 2 Monitoring Site Photographs



Additional Photograph: View of fallen banded wire fence. Recommend removal or repair, as soon as possible, to prevent harm to wildlife and public. Photo dated October 27, 2022.



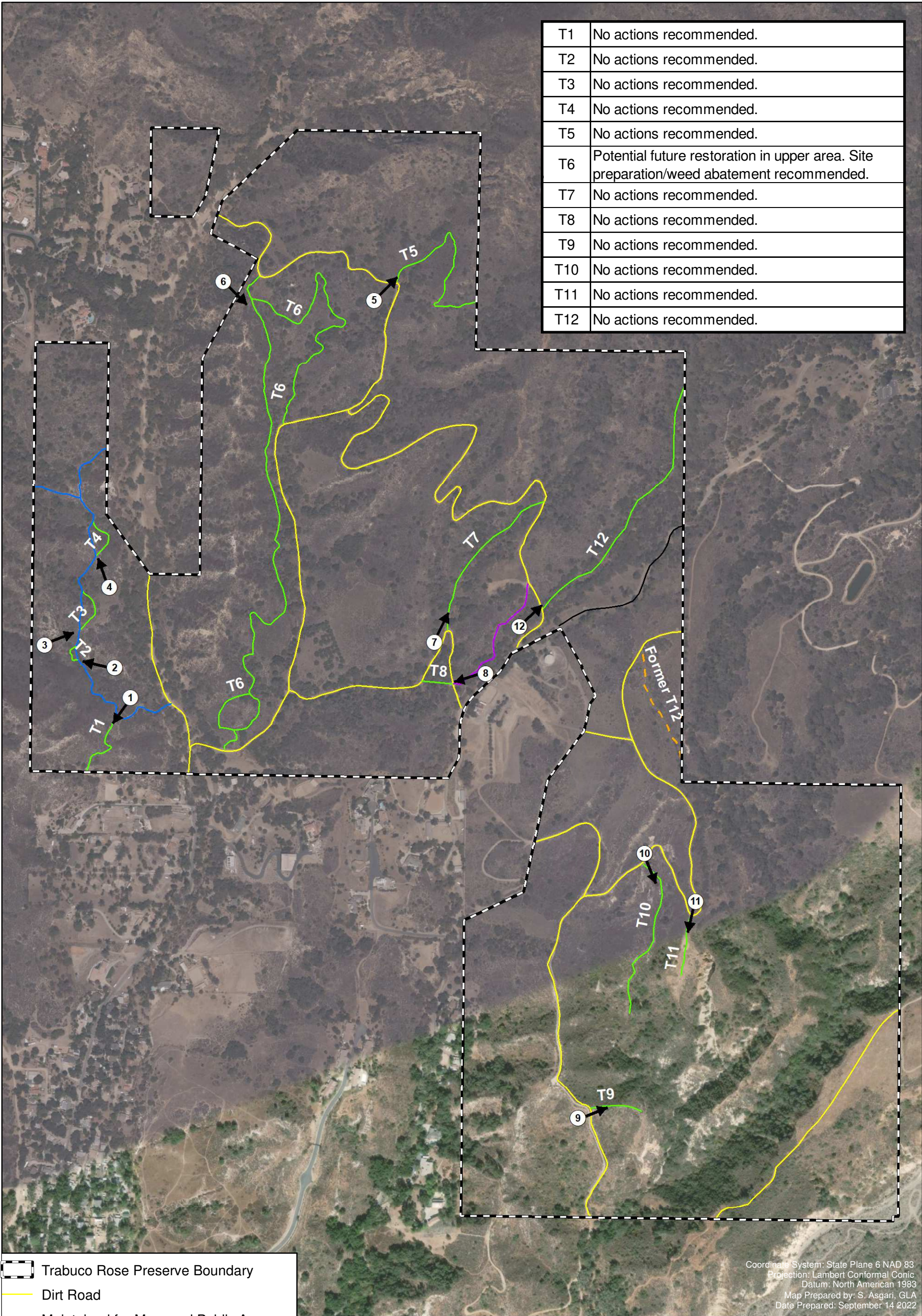
GLENN LUKOS ASSOCIATES

Exhibit 3 – Page 7

PACIFIC HORIZON PRESERVE

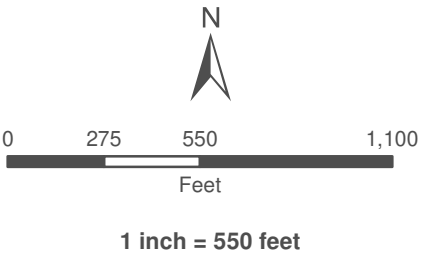
Year 2 Monitoring Site Photographs

T1	No actions recommended.
T2	No actions recommended.
T3	No actions recommended.
T4	No actions recommended.
T5	No actions recommended.
T6	Potential future restoration in upper area. Site preparation/weed abatement recommended.
T7	No actions recommended.
T8	No actions recommended.
T9	No actions recommended.
T10	No actions recommended.
T11	No actions recommended.
T12	No actions recommended.



- Trabuco Rose Preserve Boundary
- Dirt Road
- Maintained for Managed Public Access
- Maintained for Preserve Management
- Passive Restoration
- Rose Canyon Road
- Passively Restored Trail (Formerly T12)
- Photo Location*
**Approximate photo locations*

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Map Prepared by: S. Asgari, GLA
 Date Prepared: September 14 2022



TRABUCO ROSE PRESERVE

Trail Monitoring Map - Year 2022

GLENN LUKOS ASSOCIATES



Exhibit 1



Photograph 1: View of T1. Site conditions were generally consistent with the previous year. The area is slowly filling in despite lower precipitation for most of the year, with black sage (*Salvia mellifera*), needlegrass (*Stipa* sp.) and California sagebrush (*Artemisia californica*). No actions are recommended at this time.



Photograph 2: View of T2. The trail area is continuing to passively restore with native species including California sagebrush and black sage. No actions are recommended at this time.



Photograph 3: View of T3. This area indicated signs of solely wildlife use and is vegetated with non-native grasses (mainly wild oats and red brome) along with native grass species needlegrass. No actions recommended at this time.



Photograph 4: View of T4. The trail area is slowly passively regrowing with seedlings of native shrubs mixed among annual non-native grasses. The trail appears to be used by wildlife only. No actions recommended at this time.





Photograph 5: View of T5. This area has filled in with California sagebrush and black sage among other native plants. No actions are recommended.



Photograph 6: View of T6. The trail area is passively filling in with native shrubs including California buckwheat (*Eriogonum fasciculatum*), California sagebrush and black sage. The upper field above the trail continues to be occupied mainly by annual non-native grasses. Removal of annual weeds is recommended in this area to prepare the site for proposed oak tree restoration.



Photograph 7: View of T7. This trail area has passively restored. While there are non-native grasses present, this area appears to be in natural condition consistent with other drainages onsite. No actions are recommended.



Photograph 8: View of T8. This area is passively restoring and site conditions are generally consistent with the previous year. No actions are recommended.





Photograph 9: View of Trail 9. Conditions remain consistent with previous years. No active restoration is recommended. Continue to monitor for invasive species.



Photograph 10: View of T10. Native shrubs are slow to fill in this site as wildlife frequently use trails through this area. Existing conditions are expected to persist. No active restoration is recommended at this time.



Photograph 11: View of upper portion of T11, Spur Trail and vehicular access road. The lower (southern) portion of the trail has closed in with native vegetation. No actions are recommended at this time. Continue to monitor for invasive species.



Photograph 12: View of T12. This area is a natural drainage course. No action is recommended.



MEMORANDUM

GLENN LUKOS ASSOCIATES

Regulatory Services



TO: Lesley Hill, OCTA

FROM: Sheri Asgari and Cynthia Arnold, GLA

DATE: September 12, 2022

SUBJECT: Fifth Quantitative Monitoring Associated with the Road Encroachment Area at OCTA's Bobcat Ridge Preserve, Located in Trabuco Canyon, Orange County, California

The purpose of this memorandum is to document the 2022 quantitative monitoring associated with the road encroachment area (Encroachment Area) at Bobcat Ridge Preserve, a property owned by Orange County Transportation Authority (OCTA). The Preserve is one of seven of OCTA's properties associated with their Measure M2 Environmental Mitigation Program. The 48-acre Preserve is located northwest of the City of Rancho Santa Margarita in Trabuco Canyon, immediately adjacent to the east side of Live Oak Canyon Road, north of its intersection with Shelter Canyon Road and is accessed from Live Oak Canyon Road, Shelter Canyon Road, and Hunky Dory Lane.

I. SUMMARY OF ENCROACHMENT HISTORY AND PREVIOUS MONITORING

In January 2017, OCTA was notified by California Department of Fish and Wildlife (CDFW) of a disturbance at the southern boundary of the Bobcat Ridge Preserve. The adjacent resident had cleared and graded a dirt road to provide access to an additional part of their property. OCTA and Glenn Lukos Associates (GLA) mapped the disturbance, herein referenced as "Encroachment Area", on February 2, 2017, which totaled approximately 0.135 acre (617 linear feet) of California sagebrush-California buckwheat scrub and scrub oak chaparral. Three individual intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) points and one intermediate mariposa lily point mapped as a population of three were located in the disturbance footprint.

GLA conducted additional site visits on August 18, 2017 and November 21, 2017 to review status of the Encroachment Area that had passively recovered since the initial disturbance. OCTA contacted the resident to discuss the property boundary location and sensitivity of the Preserve's resources.

GLA conducted the first quantitative monitoring of the recovery within the Encroachment Area on December 18, 2018. The second quantitative monitoring event occurred on May 2, 2019 and the third on May 26, 2020. Additional impacts to native vegetation were observed at the time of the third annual monitoring event within approximately 0.04 acre (175 linear feet) or

approximately 30-percent of the Encroachment Area. Due to this, the results of the quantitative monitoring of the overall Encroachment Area are being described in two categories: “Re-disturbed Area” and “Previously Disturbed Area” [Exhibit 1]. The fourth quantitative monitoring event occurred on May 3, 2021 with no additional disturbances noted.

On May 16, 2022, GLA biologists Stephanie Cashin, Sheri Asgari and Brinna Lee conducted the fifth quantitative monitoring and took photographs from the same position and orientation as photo location points established during the first quantitative monitoring event in 2018 along the road encroachment area [Exhibit 2 – Site Photographs]. Quantitative monitoring included walking the entire length of the Encroachment Area to document native habitat re-establishment, including percent cover and species recruitment.

Two wildlife cameras were established along the encroachment area in 2019 to document wildlife usage and unauthorized activities. Typical wildlife in this area include: coyote, bobcat, gray fox, and deer. The cameras have not picked up any unauthorized activities such as vehicle use, or additional disturbance of the access road during the current monitoring year.

II. OBSERVATIONS

A. Re-disturbed Area

The Re-disturbed Area is restoring passively with an increase in native plant coverage and a decrease in bare ground area as well as a decrease in non-native plant coverage, as compared to the previous year. The fifth quantitative monitoring indicates that this area consists of approximately 33-percent bare ground, approximately 60-percent native species coverage, and approximately 7-percent non-native species coverage. Compared to last year, both bare ground and non-native cover have decreased by half and have been replaced by herbaceous native plant cover which has tripled. This area is displaying signs of progression towards being restored albeit slowly due to the two disturbance events in 2017 and 2020 along with successive years of drought conditions. If the area continues to be left undisturbed while non-native plants are routinely removed, it is anticipated that the seedlings will grow along with natural recruitment from adjacent native habitat, to eventually revegetate this area.

Native species detected in the Re-disturbed Area include (listed in order of relative dominance): deerweed (*Acmispon glaber*), sand aster (*Corethrogyne filaginifolia*), California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), sapphire woollystar (*Eriastrum sapphirinum*), chaparral yucca (*Yucca whippleii*), owl’s clover (*Castilleja exserta*), yellow pincushion (*Chaenactis glabriuscula*), annual lupine (*Lupinus bicolor*), and coast prickly pear (*Opuntia littoralis*).

Non-native species coverage during the fifth quantitative monitoring has improved and is 9-percent lower than the previous year, with Crete weed (*Hedypnois rhagadioloides*), comprising 3-percent and red brome (*Bromus rubens*), comprising 2-percent of the area. Tocalote (*Centaurea*

melitensis) and redstem filaree (*Erodium cicutarium*) were also observed in this area at 1-percent each. The lower non-native coverage within this area than the previous year is most likely due to the larger native vegetation cover displacing the non-native species and lack of rainfall.

B. Previously Disturbed Area

Passive restoration is continuing to successfully revegetate the Previously Disturbed area through natural regeneration and growth of a diversity of native species. Native vegetation has increased by double the amount of non-native vegetation's increase from the previous year. Total native vegetative cover is approximately 84-percent, while non-native species contribute approximately 8-percent and 9-percent remains bare ground. Bare ground has decreased by more than double the amount from the previous year and has been replaced predominately by native vegetation along with some non-native species, which increased by 5-percent since the previous year.

Native plant species detected within the Previously Disturbed Area include (listed in order of relative dominance): black sage, deerweed, California sagebrush, California buckwheat, sand aster, stiffbranch bird's beak (*Cordylanthus rigidus*), dodder (*Cuscuta* sp.), sapphire woollystar, narrowleaf bedstraw (*Galium angustifolium*), coastal prickly pear, crested needlegrass, purple needlegrass (*Stipa pulchra*), and chaparral yucca. Shrub type plants have continued to establish and experienced the largest growth with black sage increasing by double its coverage in comparison to the previous year, followed by buckwheat and deerweed.

Non-native plant species detected within the Previously Disturbed Area (listed in order of relative dominance) include: ripgut brome (*Bromus diandrus*), red brome, Crete weed and wild oat (*Avena fatua*). Ripgut brome had the largest increase of the non-native species since the previous year.

III. DISCUSSION

The overall Encroachment Area continues to fill in passively on a trajectory toward recovery. As compared to last year's (fourth year) monitoring results, the Previously Disturbed Area showed a fairly significant increase in native plant cover from 72-percent to 84-percent, and a small increase in non-native cover from 3-percent to 8-percent. Bare ground had a significant decrease from 25-percent to 9-percent, indicating infill by vegetation (primarily native with some non-native).






Within the Re-disturbed area, approximately 33-percent is bare ground (a decrease by roughly half as compared to last year at 65-percent), with native cover at approximately 60-percent (a triple increase as compared to last year's 19-percent) and non-native cover at approximately 7-percent (a decrease by more than half of last year's 16-percent). If this area continues to remain undisturbed and a return to typical rainfall conditions, the site is expected to reestablish.

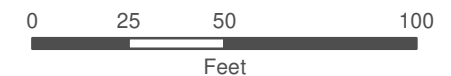
Weed abatement during the winter and spring months is recommended to aid in successful recovery of the entire Encroachment Area.

Monitoring of the Encroachment Area will continue as a part of the overall Preserve stewardship monitoring and recommendations will be provided, as needed.

Please contact Lexi Kessans at (949) 340-3942 with any questions.



-  Preserve Boundary
-  Previously Disturbed Area (2017)
-  Re-disturbed Area (2020)
-  Wildlife Camera Station
-  Photo Location



1 inch = 50 feet

Coordinate System: State Plane 6 NAD 83
 Projection: Lambert Conformal Conic
 Datum: North American 1983
 Map Prepared by: B. Gale, GLA
 Date Prepared: July 9, 2021

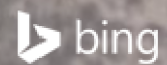
BOBCAT RIDGE PRESERVE

Encroachment Area Map

GLENN LUKOS ASSOCIATES



Exhibit 1





Photograph Location 1: View of the lowest section of the re-disturbed area on May 16, 2022. This area is slowly passively restoring with native seedlings filling in bare areas primarily with deerweed (*Acmispon glaber*), sand aster (*Corethrogyne filaginifolia*) and California buckwheat (*Eriogonum fasciculatum*). The restoration signage has been re-attached to its post.



Photograph Location 1: Same view from the previous year in May 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 1

**BOBCAT RIDGE PRESERVE
ROAD ENCROACHMENT**

Site Photographs – Year Five



Photograph Location 2: An overall decrease in non-native species and a slow increase in native plants is occurring within the re-disturbed areas with California sagebrush (*Artemisia californica*), deerweed, sand aster, California buckwheat and black sage (*Salvia mellifera*). Photo taken on May 16, 2022.



Photograph Location 2: View of the same location from the previous year in May 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 2

**BOBCAT RIDGE PRESERVE
ROAD ENCROACHMENT**
Site Photographs – Year Five



Photograph Location 3: View of the middle section of the disturbance area on May 16, 2022. Native vegetation in this area is continuing to grow and fill in bare areas with an increase primarily with black sage, California buckwheat, sand aster and California sagebrush.



Photograph Location 3: View of the same area from the previous year in May 2021.



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 3

**BOBCAT RIDGE PRESERVE
ROAD ENCROACHMENT**

Site Photographs – Year Five



Photograph Location 4: View of the upper section of the disturbance area on May 16, 2022. This area is continuing to grow in stature with deerweed and California buckwheat and increase in quantity of other native species including black sage, California sagebrush and chaparral yucca (*Yucca whippleii*). Some parasitic dodder (*Cuscuta* sp.) was observed and will be monitored for any significant disturbance to re-growth efforts.



Photograph Location 4: View of the upper section of disturbance area showing more bare area in the previous year (May 2021).



GLENN LUKOS ASSOCIATES

Exhibit 2 – Page 4

**BOBCAT RIDGE PRESERVE
ROAD ENCROACHMENT**

Site Photographs – Year Five



Photograph Location 5: View of uppermost section of the disturbance area on May 16, 2022. This area is continuing to fill in with healthy looking native vegetation including California sagebrush, black sage and deerweed. A small amount of non-native species, mainly ripgut brome (*Bromus diandrus*) was also observed in this area.



Photograph Location 5: Same view from the previous year in May 2021.



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Exhibit 2 – Page 5

**BOBCAT RIDGE PRESERVE
ROAD ENCROACHMENT**

Site Photographs – Year Five



University of California
Agriculture and Natural Resources

Cooperative Extension

Project Title:

Survey and monitoring of Invasive Shothole Borers and Goldspotted Oak Borer in Orange County

Project Leader:

Beatriz Nobua-Behrmann, Ph.D.
Urban Forestry and Natural Resources Advisor
University of California Cooperative Extension
UC Agriculture and Natural Resources
7601 Irvine Boulevard, Irvine, CA
benobua@ucanr.edu

Provided to:

Orange County Fire Authority
Ariana Ramos and Scott Hatch

Orange County Transportation Authority
Lesley Hill

Background:

The Goldspotted oak borer (GSOB) is an invasive beetle that is currently affecting Southern California oak trees, both in urban areas and natural oak woodlands. GSOB is native to southeastern Arizona and was likely introduced via infested firewood into Southern California. GSOB preferentially attacks and kills large diameter coast live oaks (*Quercus agrifolia*), California black oaks (*Q. kelloggii*), canyon live oak (*Q. chrysolepis*) and, on rare occasions, Engelmann oak (*Q. engelmannii*). Other oak species commonly planted in southern California may also be at risk.

Current strategies for management of GSOB include extensive monitoring, chemical treatment of low and moderately infested trees, and removal of heavily infested trees that are source of new infestations. Removals should always be followed by the correct disposal of the infested plant material to prevent the spread of these dangerous pests. More information about invasive shot hole borer and GSOB, including management practices and options for correct wood disposal can be found at www.gsob.org.

In 2019, Orange County Fire Authority (OCFA) acquired funding to identify GSOB infested trees within Orange County state responsibility area (SRA) lands and surrounding buffer zone, remove heavily infested trees, and dispose of the infested plant material. UCCE-Orange will be assisting OCFA in the fulfillment of this project.

Activities:

UCCE performed on the ground surveys of trees infested with ISHB and/or GSOB, maintained a monitoring program for ISHB and/or GSOB in selected areas, and provided their expertise to advise OCFA and other OCFA contractors regarding the biology and management of these pests. The report below is an account of significant technical support provided to OCFA regarding surveys on Orange County Transportation Authority (OCTA) Preserves.

During 2022, surveys for invasive pests were conducted by UCCE's trained staff, Christopher Burke and Gabriel Verduzco (both Research Associate II at UCANR under the supervision of Dr. Beatriz Nobua-Behrmann, Urban Forestry and Natural Resources Advisor) at multiple OCTA Preserves including Wren View, Live Oak Creek, Bobcat Ridge, Trabuco Rose, and Silverado Chaparral Preserves.

Wren View was surveyed in January 2022. We found three coast live oaks infested with GSOB (Figure 1), two of which were removed in March of 2022. Preventative treatments were applied to the remaining infested tree and all oaks with a DBH > 8 inches that were located within 300 feet of the three infested trees. Removals and treatments were performed by OCFA's contractor.

Live Oak Creek, Bobcat Ridge, Trabuco Rose, and Silverado Chaparral Preserves were surveyed between June and August. Only Trabuco Rose and Live Oak Creek Preserves had coast live oaks infested with GSOB. Live Oak Creek had two infested trees (Figure 2) and Trabuco Rose had sixteen infested trees (Figure 3). Four of the infested trees at Trabuco Rose and one at Live Oak Tree were marked for removal due to being heavily infested with GSOB (>25 exit holes). We also recommended that all coast live oaks with a DBH >8 inches that are located within 300 feet of any GSOB infested tree should be treated with a contact insecticide as a preventative measure. This includes 191 trees at Trabuco Rose and two trees at Live Oak Creek. No signs of GSOB infested trees were found at Bobcat Ridge or Silverado Chaparral Preserves. Many

non-infested dead trees were geotagged to be considered for removal due to fire risk: 45 trees at Trabuco Rose, 17 trees at Live Oak Creek and one tree at Bobcat Ridge.

After meeting and discussing management options with OCTA and OCFA, all GSOB treatments and all the removals of GSOB heavily infested trees at Trabuco Rose and Live Oak Creek Preserves have been approved by OCTA. Most non-infested dead trees will be left in place to stay consistent with the OCTA M2 Natural Community Conservation Plan/Habitat Conservation Plan. These dead trees do not pose a threat for GSOB or ISHB. There are several dead trees that are close to roads and pose a public safety and fire risk, as such, those trees will be heavily pruned to reduce these risks. Removals of GSOB infested trees and limbs are recommended to be completed as early as possible (ideally before May) and treatments are recommended to be applied during the first weeks of May, just prior to the start of GSOB flight season.

No ISHB was identified at any of the OCTA Preserves but has been identified in properties within proximity to Trabuco Rose, Wren View, Live Oak Creek, and Bobcat Ridge Preserve. Continued monitoring is recommended to ensure ISHB does not become an issue within these preserves.

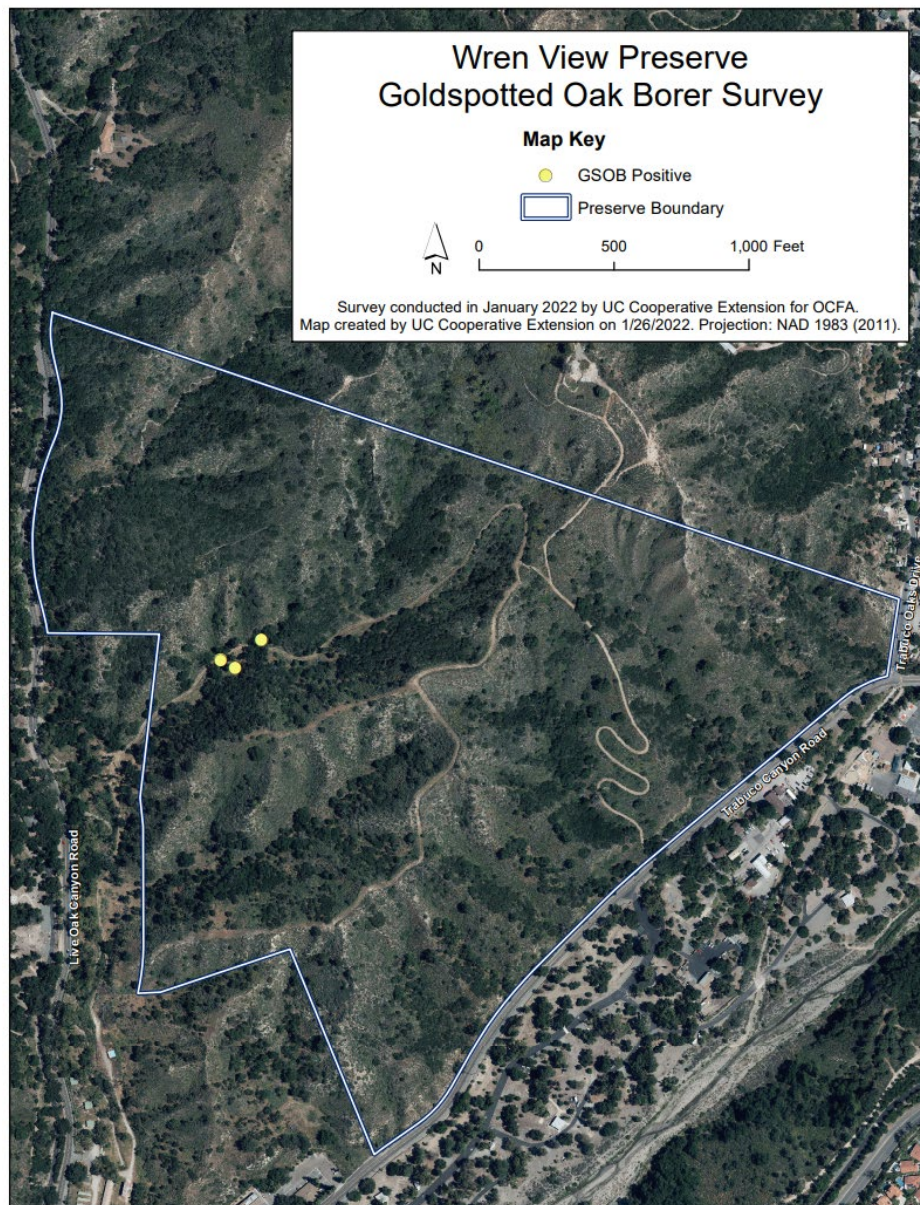


Figure 1. Goldspotted oak borer survey results for Wren View Preserve. Three trees in total were identified with GSOB, two trees were removed and one treated in March 2022.

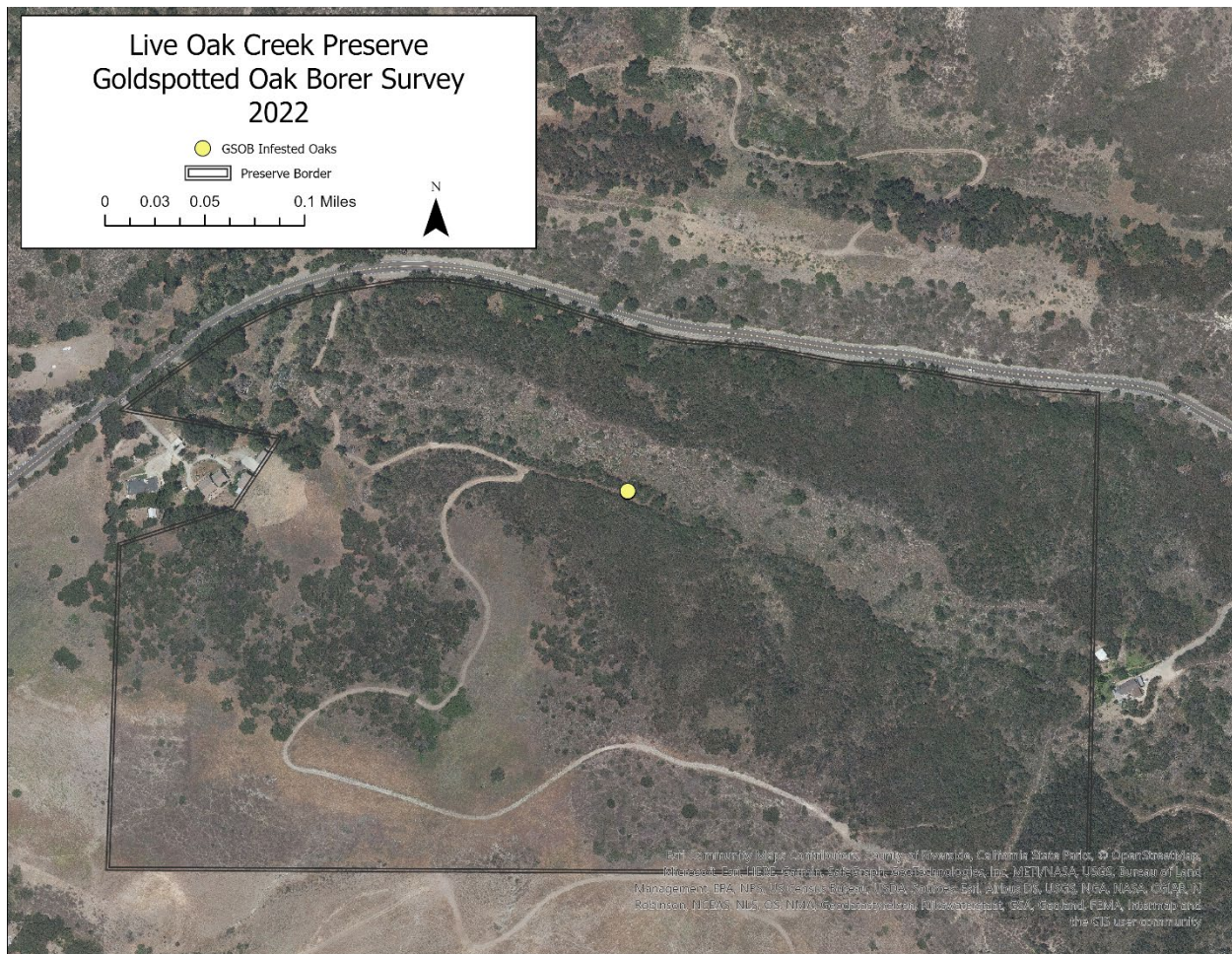


Figure 2. Goldspotted oak borer survey results for Live Oak Creek Preserve. One tree was positively identified as infested with GSOB. Surveys occurred from August 8th, 2022 – August 22nd, 2022.

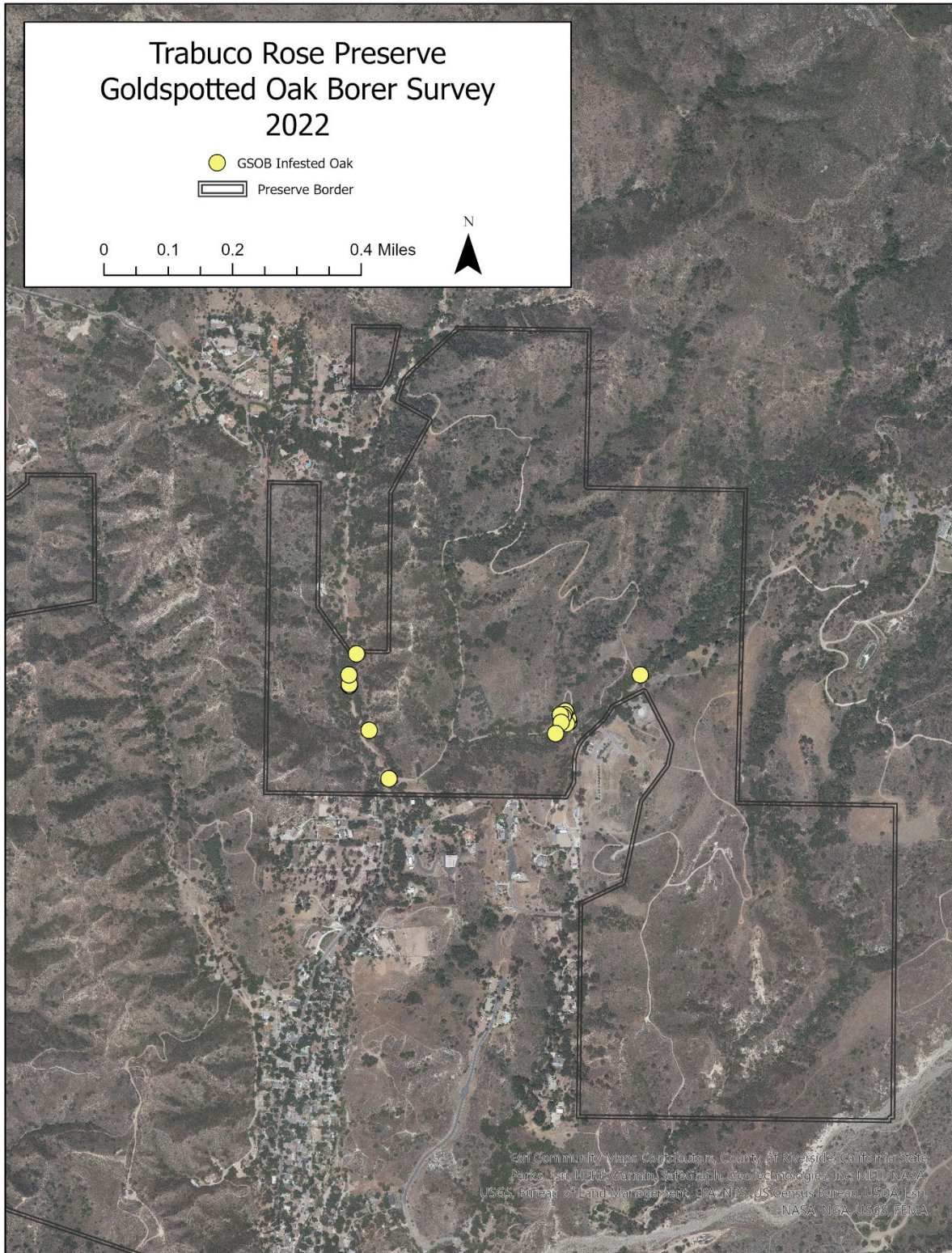


Figure 3. Goldspotted oak borer survey results for Trabuco Rose Preserve. Sixteen trees were positively identified as infested with GSOB. Surveys occurred from June 13th – July 11th, 2022

Appendix D

**2022 Summary Letter for Maintenance Activities
Performed on OCTA Preserves (RECON Number 9779)**

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An Employee-Owned Company

February 24, 2023

Ms. Lesley Hill
Environmental Mitigation Program
Orange County Transportation Authority
550 South Main Street
P.O. Box 14184
Orange, CA 92863-1584

Reference: 2022 Summary Letter for Maintenance Activities Performed on OCTA Preserves (RECON Number 9779)

Dear Ms. Hill:

This letter summarizes the maintenance activities that were performed in 2022 (January–December) on the Orange County Transportation Authority (OCTA) Preserves. During 2022, maintenance occurred at all seven preserves which include: Trabuco Rose, Wren’s View, Live Oak Creek, Bobcat Ridge, Silverado Chaparral, Pacific Horizon, and Eagle Ridge. All maintenance work tasks were performed by a RECON Environmental, Inc. (RECON) field crew with supervision/coordination from a RECON restoration biologist. The specific maintenance tasks and dates performed, for each preserve, are included below. Figures of each preserve where work was performed during 2022 have been included in Attachment 1, Figures 1 through 7. Additionally, photographs taken in 2022 of maintenance work at the preserves have been included in Attachment 2, Photographs 1 through 38.

Trabuco Rose Preserve

During 2022, maintenance tasks performed at the Trabuco Rose Preserve included the installation of a new gate, removal of fallen branches and debris, vegetation thinning and removal within two fuel modification zones, the recontouring of fire roads to fix the erosion, vegetation removal on fire roads and access roads, invasive plant treatments, repairs to damaged fence lines, mowing of non-native herbaceous vegetation within invasive plant treatment areas, the installation of new signs on all gates, and a repair to one of the gates on the preserve (Figures 1a and 1b).

In February 2022, subcontractor Aussie Industrial installed a new gate at the intersection of Rose Canyon Road and the Hickey Spur Trail (Photograph 1). The original gate was removed and disposed of at an off-site facility.

During March, RECON field crews cut up and removed large branches and debris, and line-trimmed non-native grasses along Trabuco Oaks Drive, near the main gate, and within the fuel modification zone adjacent to 20022 Trabuco Oaks Drive (see Figure 1a, Trabuco Rose A). All biomass was placed away from roads and drainages and spread out, so as to not create a fire hazard (Photographs 2 and 3).

In April, subcontractor Apex Contracting and Consulting Inc. (Apex) recontoured/regraded the interior fire roads (Photograph 4). Work was needed following the rainy season to repair the erosion that had created ruts and rills. Apex fixed the erosion and installed water bars to prevent water from eroding the roads in future years.

During May, RECON field crews returned to the preserve to remove and/or thin vegetation within two fuel modification zones on the preserve, which include the zones adjacent to 20022 Trabuco Oaks Drive (see Figure 1a, Trabuco Rose A, and Photograph 5), and 1 Windy Ridge Road (see Figure 1a, Trabuco Rose B, and Photograph 6).

Vegetation that was growing on the fire roads and access roads was also controlled with line trimmers and spot-sprayed with a glyphosate-based herbicide (Photograph 7).

In July it was discovered that a new unauthorized trail had been created near the former Joplin Youth Center, in the northern section of the preserve (see Figure 1a). Field crews installed new fencing in this area and also added signage. Additionally, another separate area of fencing was repaired along Rose Canyon Road.

RECON field crews removed fallen branches and biomass near the main electric gate and along Trabuco Oaks Drive in both August and September 2022. Field crews also started to mow non-native herbaceous vegetation within the artichoke thistle (*Cynara cardunculus*) control areas in late September and completed this work by early October (see Figure 1b; Photograph 8). Damaged fencing was also noted near the former Joplin Ranch at the northern section of the preserve and was repaired in October (Photograph 9).

At the end of October new preserve signs were posted on each of the six gates located throughout the property. The signs included the following names: Trabuco Oaks Gate, Trabuco Docent Gate, Trabuco North Gate, Hickey Spur Gate, Rose Creek Gate, Rose Hill Top Gate, and Rose Main Gate. The names posted on the gates, at each of the Preserves with gates, will help in future coordination with maintenance and monitoring crews, and security and emergency personnel. While on-site adding signs, it was noted that one of the gates (Rose Main Gate) was damaged and needed to be repaired. Subcontractor Aussie Industrial was on-site in early November to perform gate repairs.

The final maintenance task performed at Trabuco Rose Preserve during 2022 was at the end of December, where field crews spot-sprayed germinating artichoke thistle plants within the treatment areas that fall north of Rose Canyon Road. The areas included the following numbered areas: 13, 14, 15, 17, 24, 25, and 26 (see Figure 1b). The remaining artichoke thistle areas (south of Rose Canyon Road) will be treated in early 2023. A summary of all maintenance work completed at Trabuco Rose Preserve during 2022 is included in Table 1.

Table 1 Summary of Work Completed at Trabuco Rose Preserve (January–December 2022)	
Date	Task
February 8 and 9, 2022	Installation of a new gate at the intersection of Rose Canyon Road and Hickey Spur Trail, installed by subcontractor Aussie Industrial (see Figure 1a).
March 23, 24, and 25, 2022	Removed fallen debris, branches, and line-trimmed grasses within fuel modification zones near 20021 and 20022 Trabuco Oaks Drive, and along the shoulders of both sides of Trabuco Oaks Drive, (see Figure 1a).
April 11, 12, and 13, 2022	Subcontractor Apex Contracting and Consulting Inc. (Apex) recontoured/regraded fire roads to fix erosion rills and installed water bars to prevent water from eroding the roads in future years.
May 9, 10, and 11, 2022	Performed vegetation thinning and removal within fuel modification zone adjacent to 20022 Trabuco Oaks Drive (see Figure 1a, Trabuco Rose A); and fuel modification zone adjacent to 1 Windy Ridge Road (see Figure 1a, Trabuco Rose B).
May 16, 17, and 18, 2022	Removed vegetation on fire roads with line trimmers and in some sections used a glyphosate-based herbicide to control vegetation.
July 11, 2022	Repaired damaged fence along Rose Canyon Road, and installed new fencing in area near Joplin Ranch where a new unauthorized road/trail had been created, and added wilderness preserve signage.
August 30, 2022	Removed fallen oak tree branches along the easement road (Trabuco Oaks Drive) that had fallen into the road.

Table 1 Summary of Work Completed at Trabuco Rose Preserve (January–December 2022)	
Date	Task
September 26–30, 2022	Removed the pile of biomass near the main gate, and also in two additional areas along Trabuco Oaks Drive. Also fixed the damaged fence in one area at the northern portion of the preserve and began mowing non-native herbaceous vegetation within the artichoke thistle control areas.
October 3–6, 2022	Mowed non-native grasses and other non-native herbaceous vegetation within the artichoke thistle control areas, and repaired damaged fence in northern section of preserve near former Joplin Ranch.
October 31, 2022	Installed new signs on each of the seven gates at the preserve.
November 4, 2022	Subcontractor Aussie Industrial repaired the damaged upper gate off of Rose Canyon Road (see Figure 1a).
December 27–29, 2022	Spot-sprayed germinating artichoke thistle plants in all areas north of Rose Canyon Road; areas included the following numbered areas: 13, 14, 15, 17, 22, 23, 24, 25, and 26 (see Figure 1b).
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Wren’s View Preserve

Maintenance tasks performed at Wren’s View Preserve (Figure 2) were performed in July and October. The task performed in July included the removal of concrete and other man-made debris that was dumped at the preserve. All garbage was taken off the preserve and disposed of at an off-site facility. At the end of October new preserve signs were posted on each of the four gates located throughout the property. The signs included the following names: Wren’s View Gate, Wren’s Docent Gate, Wren’s North Gate, and Wren’s West Gate. A summary of the work completed at Wren’s View Preserve is included in Table 2.

Table 2 Summary of Work Completed at Wren’s View (January–December 2022)	
Date	Task
July 11, 2022	Removed garbage (pile of concrete) that was illegally dumped, and the garbage was disposed of at an off-site facility (see Figure 2).
October 31, 2022	Installed new signs on each of the four gates at the preserve.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Live Oak Creek Preserve

Maintenance tasks performed in 2022 at the Live Oak Creek Preserve (Figure 3) began in January with the removal of fallen oak tree branches that were blocking the entrance to the preserve. All vegetation remained on-site but was dispersed in different areas of the preserve, but not on the roads or waterways (Photograph 10). Also in January, a new gate was installed by subcontractor Aussie Industrial at the entrance to the preserve (Photograph 11). The original gate was removed and taken to be disposed of at an off-site facility.

In April, subcontractor Apex recontoured/regraded the fire roads on the preserve (Photograph 12). There were several locations that had become severely damaged following the winter rainstorms and were not passable with vehicles. Apex fixed all erosion rills on-site and installed water bars to prevent water from eroding the roads in future years.

During May, RECON field crews performed fuel modification work by thinning vegetation and/or removing vegetation around two properties: 19071 Live Oak Canyon Road (see Figure 3, Live Oak Creek A, and Photograph 13) and 19041 Lambrose Canyon Road (see Figure 3, Live Oak Creek B). Also in May, field crews removed barbed wire near the entrance of the preserve and in areas it was no longer serving a purpose. They then installed barbless wire and posts to connect to the new gate and to delineate the boundary of the preserve along Live Oak Canyon Road (Photograph 14). Vegetation was also controlled on the fire roads within the preserve using line trimmers.

A population of the non-native invasive species Spanish broom (*Spartium junceum*) was detected on the preserve, near the entrance, and was controlled in July. Field crews cut all biomass down to the ground and then painted the stumps of the plant with herbicide (Photograph 15). All Spanish broom biomass was then removed from the site and disposed of at an off-site facility.

At the end of October, a new sign was installed on the new gate with the name: Live Oak Creek Gate. A summary of the work completed at the Live Oak Creek Preserve is included in Table 3.

Table 3 Summary of Work Completed at Live Oak Creek Preserve (January–December 2022)	
Date	Task
January 10, 2022	Removed fallen oak tree branches that were blocking the entrance of the preserve. All branches were left within the preserve, removed from the roads, and not placed into any waterways.
January 12, 21, 22, and 24, 2022	Installation of a new gate at the entrance of Live Oak Creek Preserve, installed by subcontractor Aussie Industrial (see Figure 3).
January 25 and February 7, 2022	Removed stockpiled branches and logs from near the entrance to the preserve and redistributed throughout preserve. All branches were left within the preserve, removed from the roads, and not placed into any waterways.
April 20, 2022	Subcontractor Apex recontoured/regraded fire roads to fix erosion rills and installed water bars to prevent water from eroding the roads in future years.
May 9, 10, and 11, 2022	Thinned and removed vegetation within the fuel modification zones adjacent to 19071 Live Oak Canyon Road (see Figure 3) and 19041 Lambrose Canyon Road (see Figure 3).
May 16, 17, and 18, 2022	Removed original gate at entrance to the preserve and installed barbless wire fencing at the entrance, to connect to the new gate, and also along Live Oak Canyon Road. Also removed old barbed wire and posts that were no longer serving a purpose, and line trimmed vegetation growing on the fire roads.
July 12, 2022	Controlled Spanish broom population by cutting and removing aboveground biomass and painting stumps with herbicide. All biomass was removed from the site.
October 31, 2022	Installed a new sign on the entrance gate to the preserve.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Bobcat Ridge Preserve

Maintenance tasks were performed at Bobcat Ridge Preserve (Figure 4) in January and July 2022. In January, two new posts with preserve signs were installed along the unauthorized trail that is located along the southern boundary of the preserve (Photograph 16). When on-site, it was also noted that one sign was missing from a post and another sign was damaged. New signs were added to existing posts. In July, RECON field crews controlled non-native herbaceous vegetation with line trimmers along the trail at the southern boundary of the preserve (Photograph 17). A summary of the work completed at the Bobcat Ridge Preserve is included in Table 4.

Table 4 Summary of Work Completed at Bobcat Ridge Preserve (January–December 2022)	
Date	Task
January 24 and 25, 2022	Installed two new posts with wilderness signs along trail that borders the southern preserve boundary and added two new signs to existing posts; one sign was missing, and one sign was damaged (see Figure 4).
July 11, 2022	Used line trimmers to removed non-native vegetation growing along the southern boundary of the preserve.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Silverado Chaparral Preserve

The first maintenance task performed at the Silverado Chaparral Preserve (Figure 5) during 2022 occurred in April when subcontractor Apex recontoured/regraded the fire roads (Photograph 18). All erosion rills were repaired and water bars were installed to prevent water from eroding the roads in future years.

In early May, subcontractor Aussie Industrial installed a new gate on the fire road located at the northeastern boundary of the preserve (see Figure 5 and Photograph 19). This was the first time a gate had been installed at this location, to delineate the OCTA boundary line. In June, RECON field crews installed a new fence line to connect to the new gate (Photograph 20). They also made repairs to damaged fencing along the preserve’s eastern boundary (Photograph 21). Additional wire, posts, and signage was necessary during repair work. Also during this maintenance visit, they assisted GLA (monitoring contractor for OCTA Preserves) with the installation of three new posts for wildlife cameras.

At the end of October, a new sign was installed on the new gate with the name: Silverado Chaparral Gate. A summary of the work completed at the Silverado Chaparral Preserve is included in Table 5.

Table 5 Summary of Work Completed at Silverado Chaparral Preserve (January–December 2022)	
Date	Task
April 18, 2022	Subcontractor Apex recontoured/regraded fire roads to fix erosion rills and installed water bars to prevent water from eroding the roads in future years.
May 4, 5, and 6, 2022	Installation of a new gate at the eastern end of the fire road at the Silverado Chaparral Preserve, installed by subcontractor Aussie Industrial (see Figure 5).
June 14, 2022	Installed a new fence line on both sides of the new gate that was installed in the northeastern section of the preserve. Repaired damaged fence by installing more wire, posts, and signage in two separate locations along the preserve’s eastern boundary (see Figure 5), and assisted Jeff Ahrens (GLA Wildlife Biologist) with installing three new posts with wildlife cameras.
October 31, 2022	Installed a new sign on the newly installed gate on the preserve.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Pacific Horizon Preserve

Maintenance tasks for 2022 at the Pacific Horizon Preserve (Figure 6) began in late February/early March with the installation of new wooden stakes, spray painted blue, to delineate the OCTA western boundary (Photograph 22), which is accessed through a residential community off Barracuda Way within the city of Laguna Beach. The intention of the stakes was to mark a clear boundary line between the OCTA Preserve and the city and privately owned properties that border the Preserve. While on-site, RECON field crews also tightened the fence line along the northern edge of the preserve and retreated germinating artichoke thistle and pampas grass (*Cortaderia selloana*) plants within the control areas (see Figure 6 and Photograph 23).

A coastal wildfire broke out in the cities of Laguna Beach and Laguna Niguel (in the Aliso Canyon) and burned approximately 200 acres between May 11 through 17, 2022. The fire and associated suppression activities impacted approximately 35 acres of the 151-acre OCTA Pacific Horizon Preserve (Photographs 24 and 25). Once it was safe to enter the preserve, the damage was assessed, and maintenance tasks resumed. A RECON field crew installed fencing and signage along an unauthorized trail leading into the burned area. Fencing and signage was installed in three separate locations to deter the public from entering the area and to actively decommission the unauthorized trail (see Figure 6 and Photographs 26 and 27). Biodegradable fiber rolls were placed in the burned area and installed per manufacturers’ recommendations (Photograph 28). Following fiber roll installation, cut vegetation (cut by Orange County Fire Authority during containment activities) was placed over trails to aid in the decommissioning of trails used in this portion of the preserve (Photograph 29). By June, damage had already been made to the new fence lines and was repaired by field crews (Photograph 30).

Also in June, RECON assisted GLA with the installation of posts for wildlife cameras in two separate areas of the preserve. The field crew also installed a new fence line and signage at the entry point of a Southern California Edison (SCE) unauthorized trail that was created to access one of their towers. Following this work, the field crew spot-sprayed germinating artichoke thistle plants in the artichoke thistle control area. In late July, crews returned to the site to repair damaged fence located at the northern boundary of the preserve and also repaired damaged fence in the area where SCE created an unauthorized trail.

During September, non-native herbaceous vegetation was mowed within the artichoke thistle control area (Photograph 31). While on-site, the crew also repaired damaged fencing that runs across the decommissioned trail to block access to the burned area (Photograph 32).

On December 14 and 15, 2022, a RECON field crew returned to the preserve to treat germinating artichoke thistle plants in the control area (see Figure 6 and Photograph 33). The final maintenance tasks of the year (performed from December 19 to 23) included work in several areas of the preserve. The field crew first sprayed germinating artichoke thistle plants that were found in the burned area. Then they hand broadcasted and raked in native seed at the entrance to the artichoke thistle control area, and in bare areas along the northern decommissioned trail (Photographs 34 and 35). Species hand seeded included California sagebrush (*Artemisia californica*) (one pound at the entrance to the artichoke thistle control area, and 0.25 pound in open areas of the northern decommissioned trail); coyote brush (*Baccharis pilularis*) (0.25 pound at the entrance to the artichoke thistle control area); California poppy (*Eschscholzia californica*) (0.5 pound on slope where ice plant and bike jumps had been removed in 2021); and bush monkeyflower (*Mimulus aurantiacus*) (0.25 pound in open areas of northern decommissioned trail). All native seed was collected from coastal areas of Orange County to ensure genetic integrity of plant species is maintained on the preserve.

Following seeding, the field crew installed a new fence line and signage at the entrance to the artichoke thistle control area to deter the public from entering this area while native species are establishing (Photograph 36). The crew also moved cut vegetation and debris from the burned area to the upper portion of the decommissioned trail (Photograph 37). They also salvaged coast prickly pear (*Opuntia littoralis*) pads from nearby areas and planted them on the decommissioned trail. Signage, referencing the penal code for trespassing, was also added at the entrance of the decommissioned trail leading down to the burned area, to deter public access. A summary of the work completed at Pacific Horizon Preserve is included in Table 6.

Table 6 Summary of Work Completed at Pacific Horizon Preserve (January–December 2022)	
Date	Task
February 28–March 2, 2022	Installed new wooden stakes along the western edge of the preserve to delineate OCTA’s property; tightened the fence line along the northern edge of the preserve; and sprayed glyphosate-based herbicide on artichoke thistle and pampas grass regrowth within control areas (see Figure 6).
April 4, 2022	Spot-sprayed pampas grass regrowth with a glyphosate-based herbicide in the pampas grass control area (see Figure 6).
May 31–June 3, 2022	Installed biodegradable straw wattles in burned area for erosion control, moved cut branches over the foot trail to aid in decommissioning of the trail, and installed barbed wire fencing and signage (restoration in progress signs) in three locations along decommissioned trail leading down to the burned area (see Figure 6).
June 13, 2022	Assisted Jeff Ahrens (GLA Wildlife Biologist) with installing posts and wildlife cameras in two separate locations. Following camera installation, a new fence line and signage was installed at the entry point of an unauthorized trail created by SCE. Germinating artichoke thistle plants were also sprayed with a glyphosate-based herbicide within the artichoke thistle control area.
July 28, 2022	Repaired damaged fence near northern preserve boundary, and repaired fence that was installed across the entry point of an SCE unauthorized trail.
September 19–22, 2022	Mowed the non-native grasses and other herbaceous non-native species within the artichoke thistle control area. Also fixed the damaged fencing that leads down to the burned area; more posts, wire, and signs were added to deter unauthorized access.
December 14–15, 2022	Spot-sprayed germinating artichoke thistle plants with a glyphosate-based herbicide in artichoke thistle control area.

Table 6 Summary of Work Completed at Pacific Horizon Preserve (January–December 2022)	
Date	Task
December 19–23, 2022	Controlled artichoke thistle with herbicide, hand broadcasted native seed in open areas, decommissioned upper portion of trail leading to burned area, fixed damaged fence and posts, installed new signage, and installed new fence line along perimeter of artichoke thistle control area.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

Eagle Ridge Preserve

Maintenance work performed at the Eagle Ridge Preserve (Figure 7) in 2022 occurred in October. Vegetation growing on the ridge road/access road was controlled using line trimmers (Photograph 38). Also in October, new signs were added to the two gates located on the preserve. The names of the signs are Eagle Ridge Gate and Soquel Canyon Gate. Dates of the work performed at the Eagle Ridge Preserve are included below in Table 7.

Table 7 Summary of Work Completed at Eagle Ridge Preserve (January–December 2022)	
Date	Task
October 17–19, 2022	Line-trimmed vegetation growing on the access/ridge road, located on the top of the preserve (see Figure 7).
October 19, 2022	Installed new signs labeling the gates, one located on the ridge road and one located within Soquel Canyon.
NOTE: RECON field crews performed maintenance work, with direction and oversight conducted by a RECON restoration biologist. Prior to maintenance tasks (performed during bird breeding season), a biologist would check work areas for nesting birds, and proceed accordingly based on findings of surveys. All work was done consistent with the OCTA Resource Management Plans.	

If you have any questions regarding this letter, please contact me by email (ratik@reconenvironmental.com) or by phone (619-308-9333 ext. 178).

Sincerely,



Raquel Atik
 Restoration Project Manager

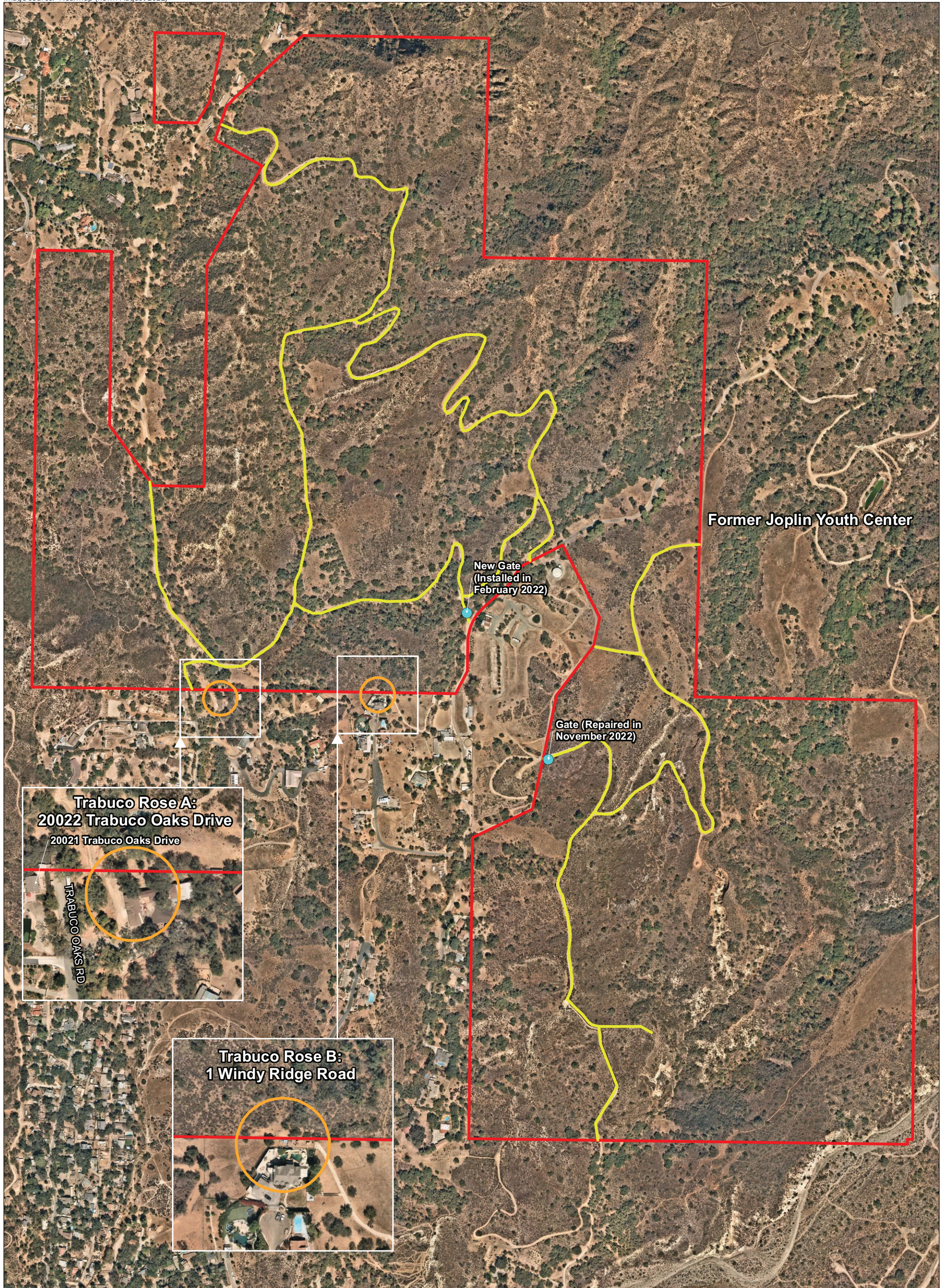
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Attachments

ATTACHMENTS

ATTACHMENT 1

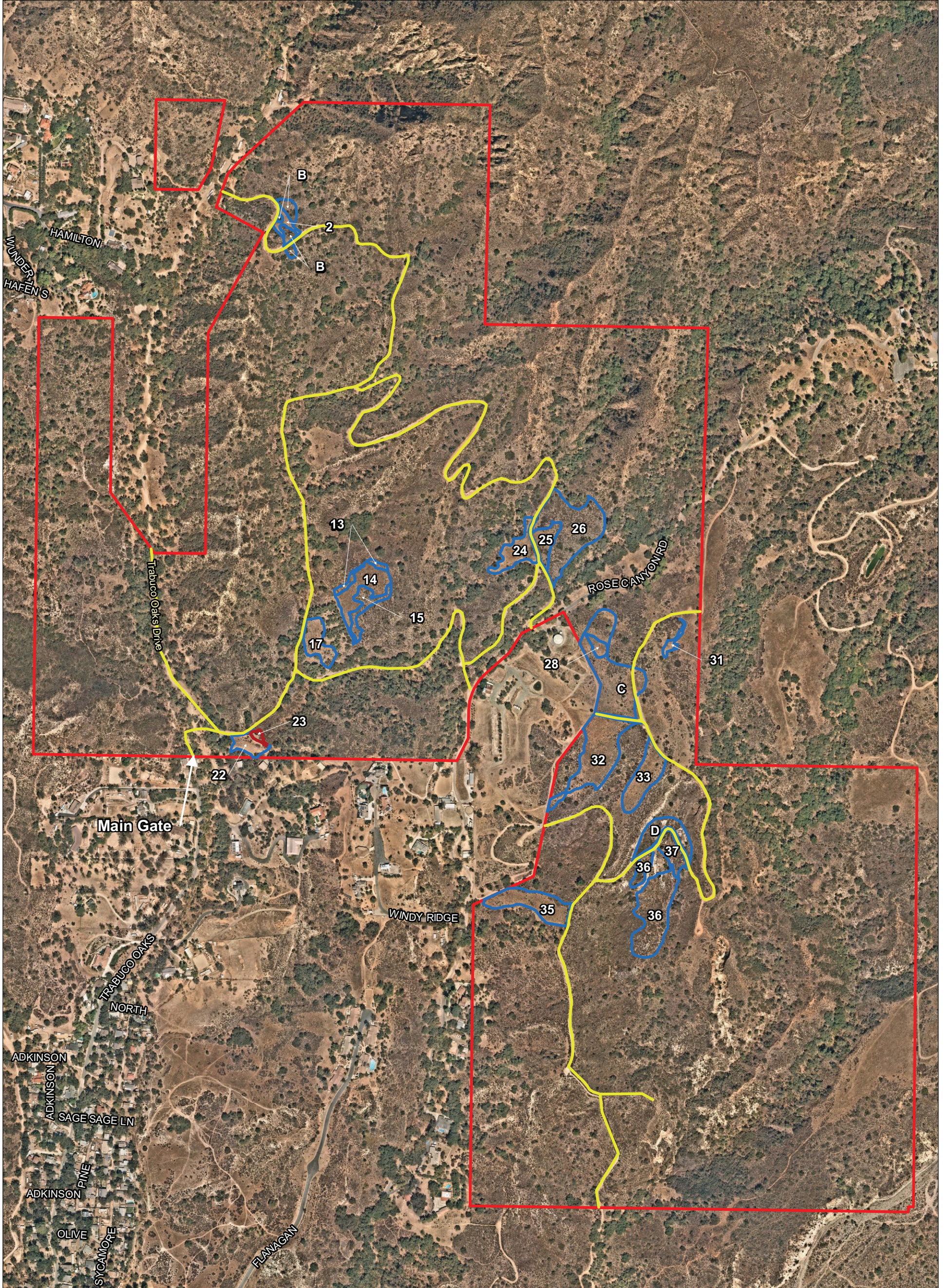
Figures 1 through 7



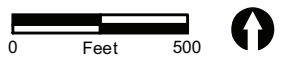
- Trabuco Rose
- Fire Road / Access Road
- 100' Buffer Around Habitable Structures
- Gate

Fuel Modification Zones
Trabuco Rose A
Trabuco Rose B

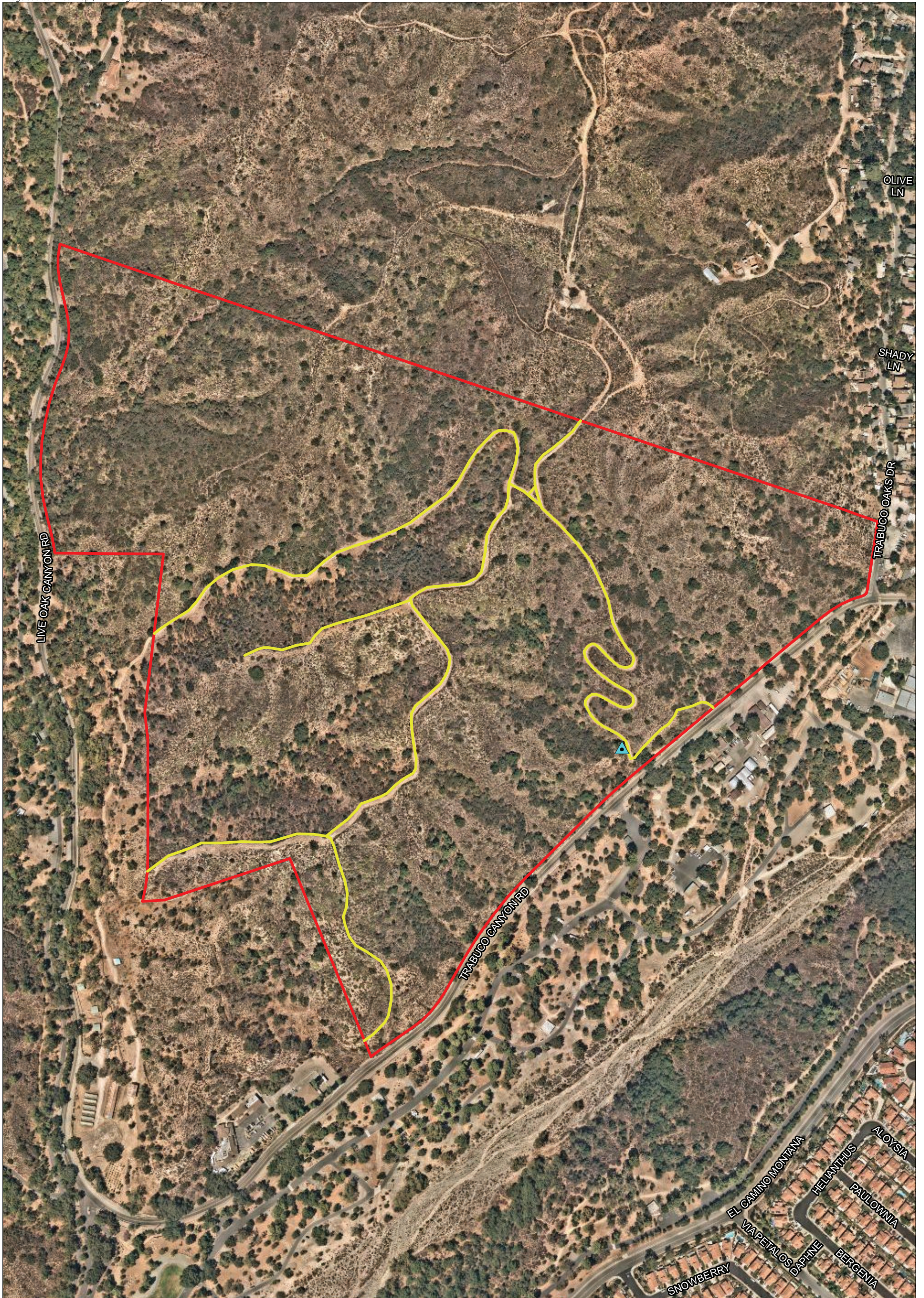




- Trabuco Rose
- Fire Road / Access Road
- Invasive Species Control Areas (Treated in 2022)
- Artichoke Thistle
- Tamarisk



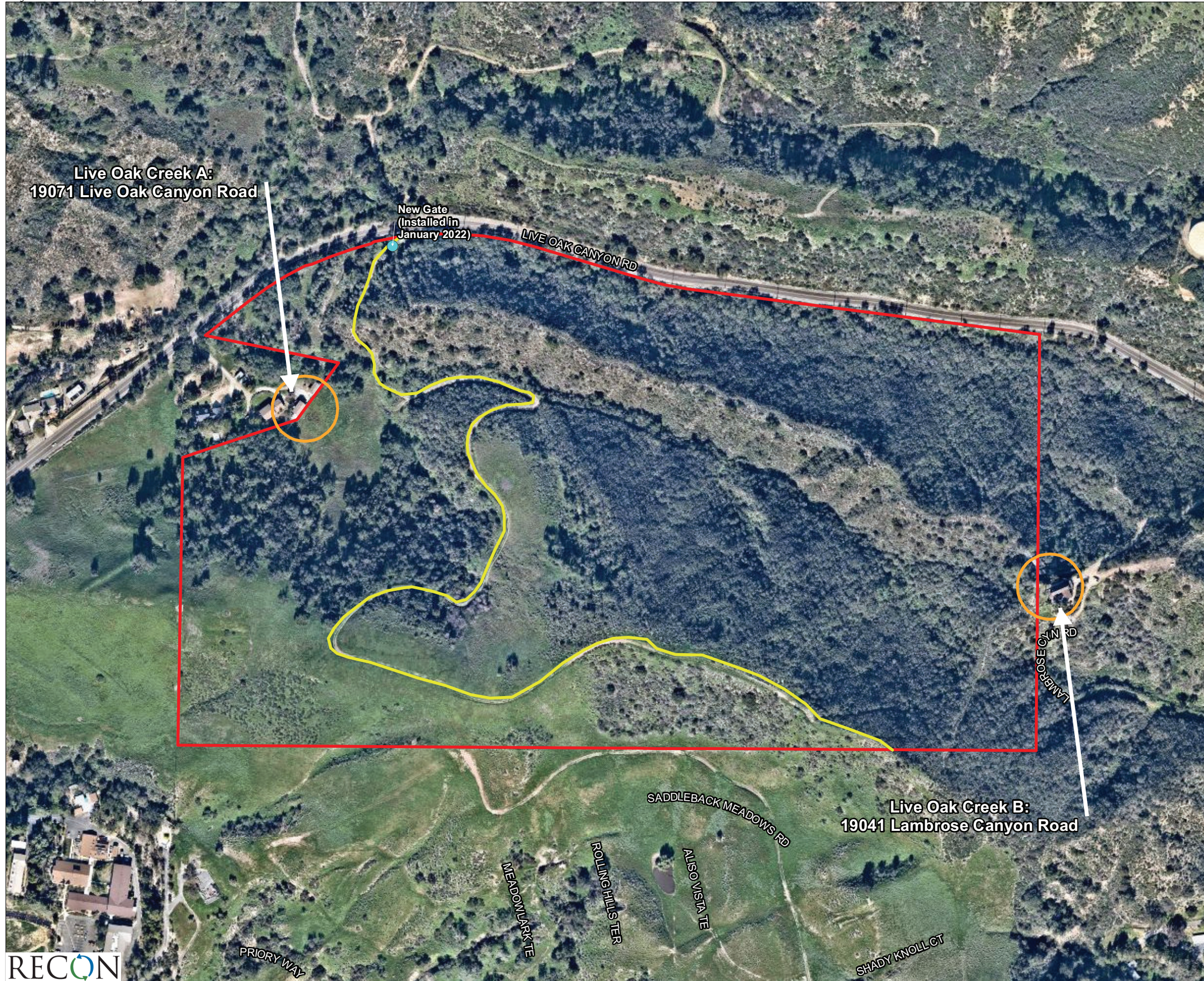
Note: Polygons with numbers were mapped by GLA and presented in the ISMP (2017); polygons with letters were mapped by RECON (2019)



- Wren's View Preserve Boundary
- Fire Road / Access Road
- ▲ Concrete Debris Illegally Dumped (Removed in July 2022)



FIGURE 2
Wren's View Preserve



- Live Oak Creek Preserve Boundary
 - 100' Buffer Around Habitable Structures
 - Fire Road / Access Road
 - Gate
- Fuel Modification Zones**
- Live Oak Creek A
 - Live Oak Creek B



FIGURE 3
Live Oak Creek Preserve



-  Bobcat Ridge Preserve Boundary
-  Preserve Signs

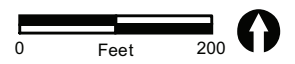
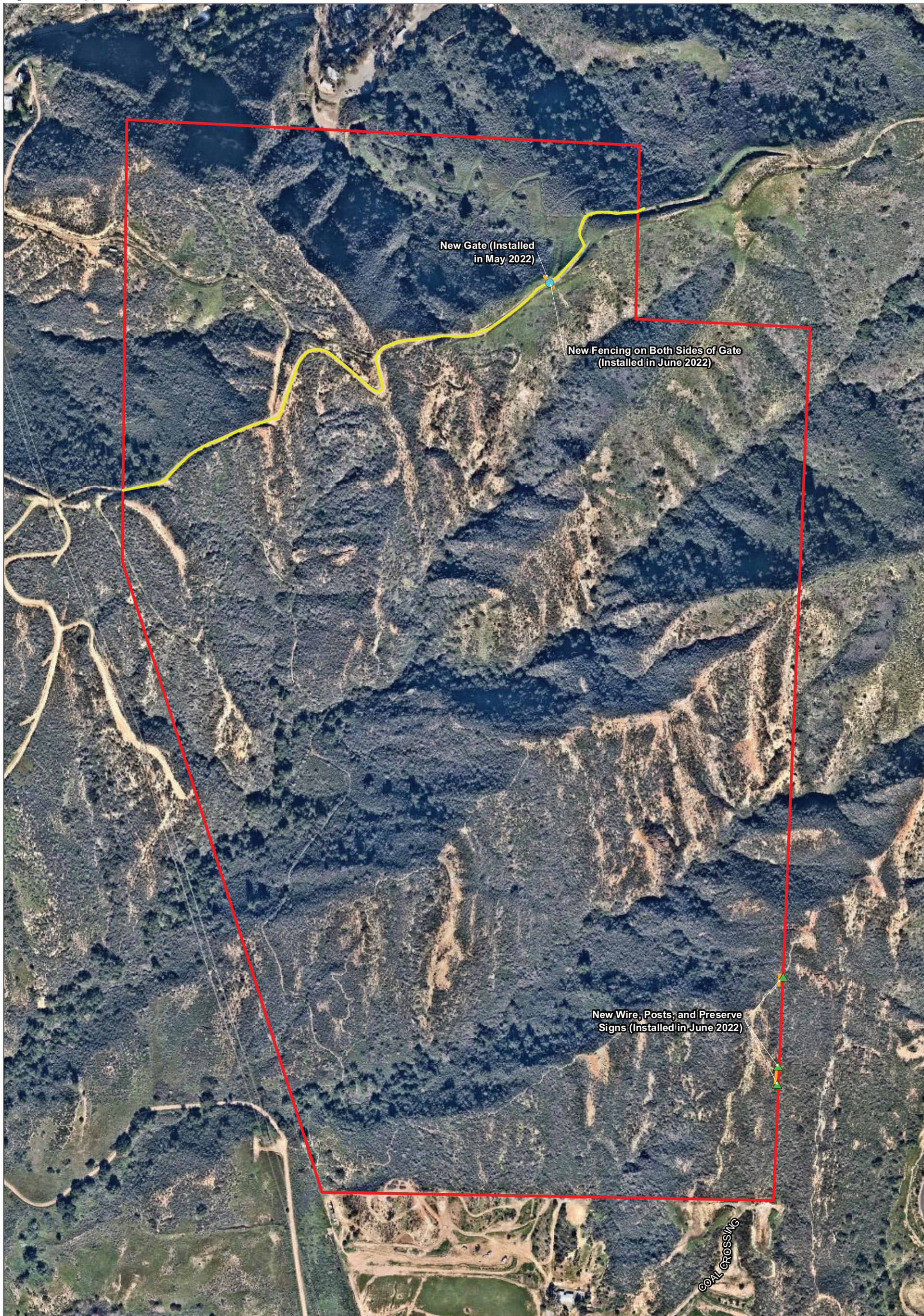





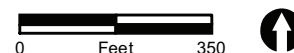
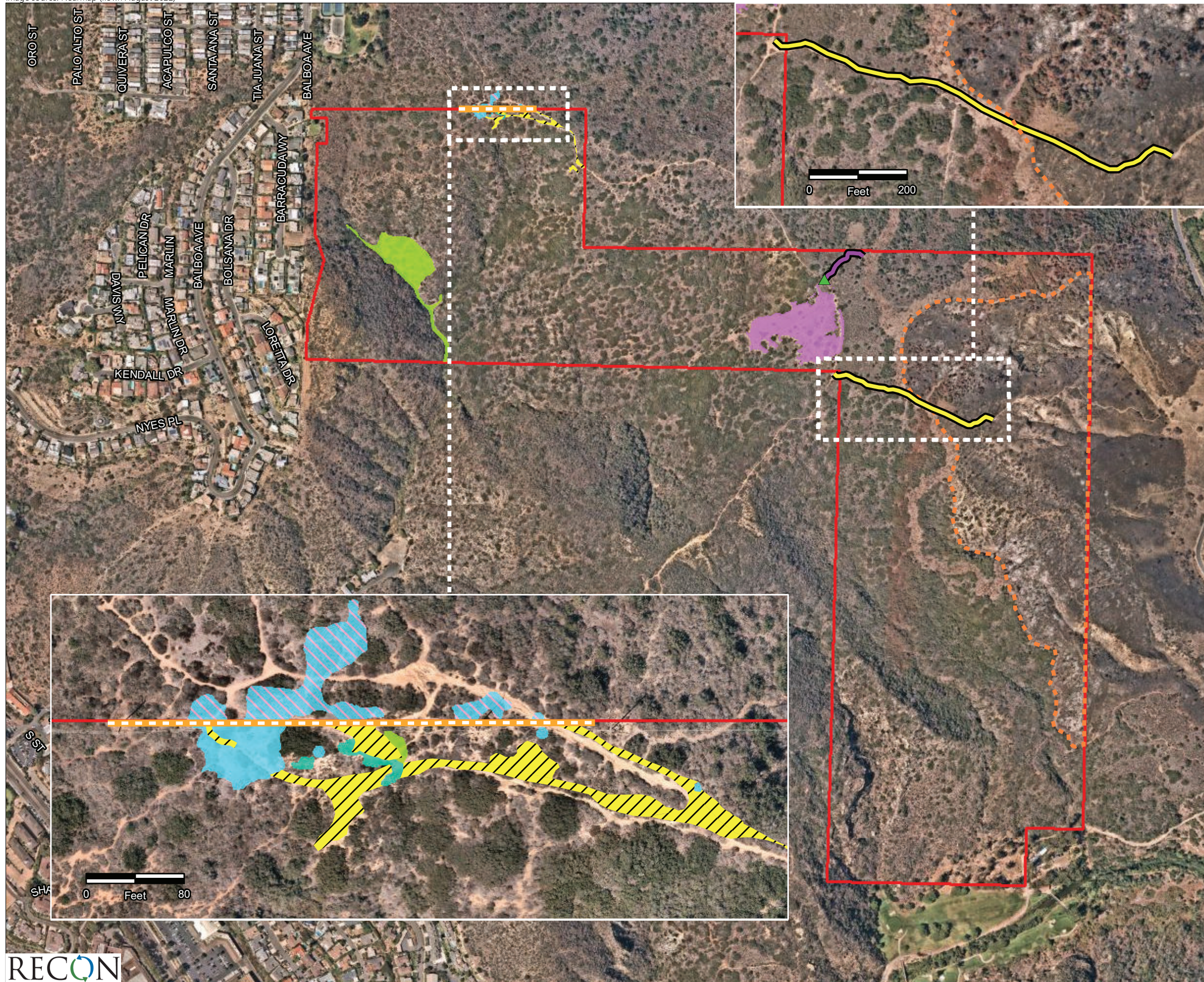


FIGURE 4
Bobcat Ridge Preserve



-  Silverado Chaparral Preserve Boundary
-  Fire Road
-  Fence
-  Gate
-  Sign





-  Pacific Horizon Preserve Boundary
-  Barbless Wire Fence (Repaired in 2021)
-  Decommissioned Trail (May 2022)
-  SCE Unauthorized Trail
-  Fencing/Signage (Installed June 2022)
-  Burned Area
-  Decommissioned Trail (October 2020)
- Invasive Species Control Areas**
-  Artichoke Thistle
-  Fountain Grass
-  Pampas Grass
-  Iceplant
-  Iceplant (County Lands)

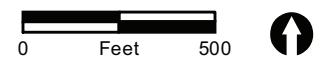
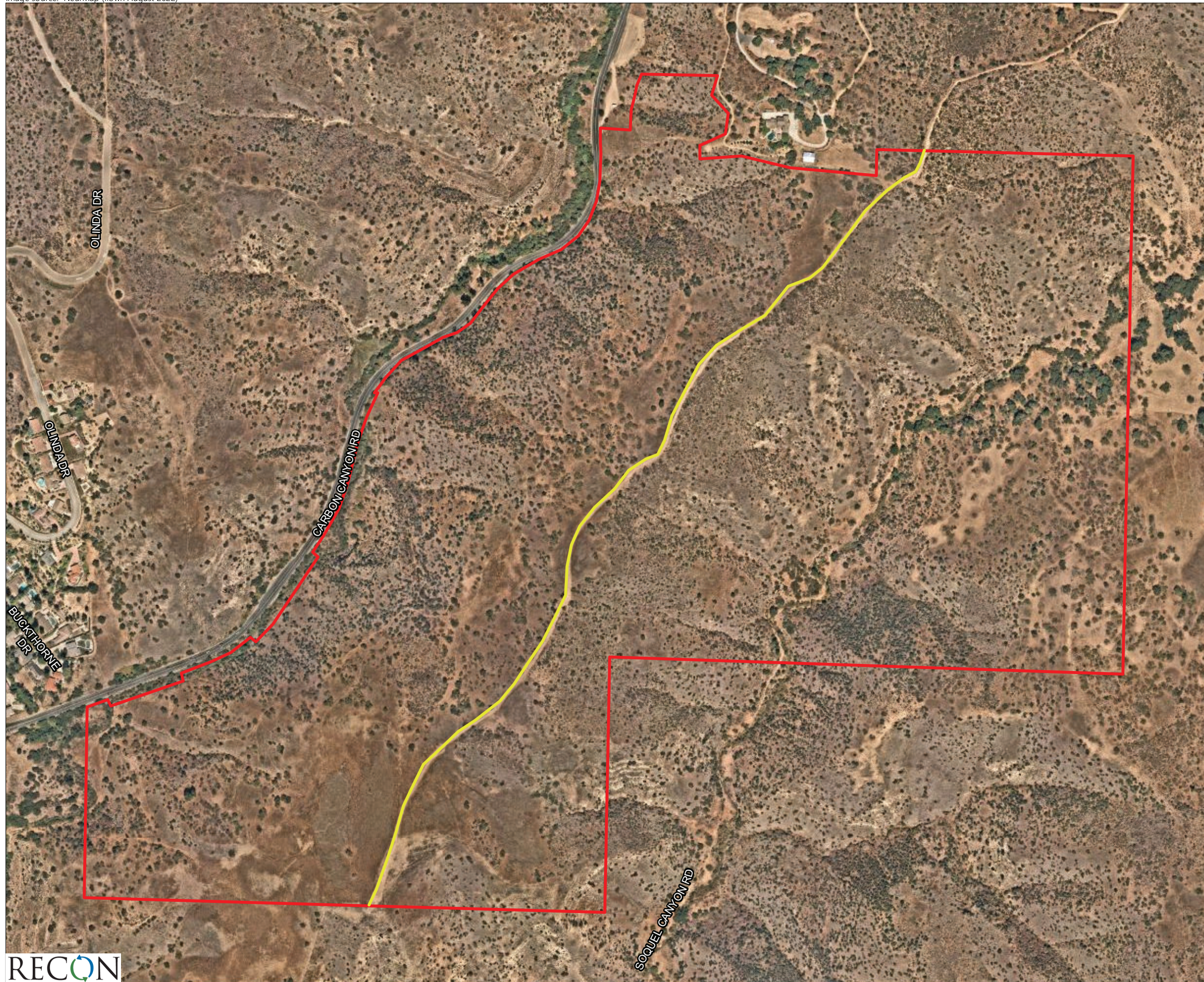




FIGURE 6
Pacific Horizon Preserve



-  Eagle Ridge Preserve Boundary
-  Fire Road / Access Road

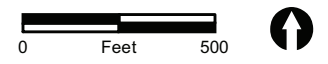


FIGURE 7
Eagle Ridge Preserve

ATTACHMENT 2

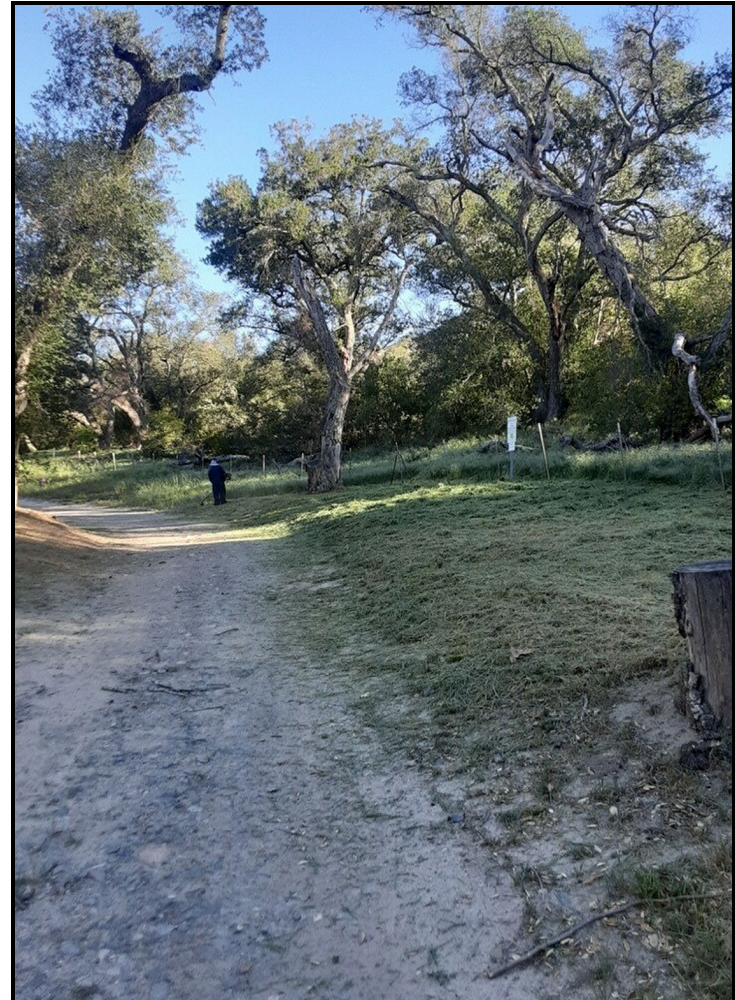
Photographs 1 through 38



PHOTOGRAPH 1
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PHOTOGRAPH 12
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PHOTOGRAPH 31

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PHOTOGRAPH 38
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Appendix E
Southwestern Pond Turtle Population and Habitat
Assessment, Southern California, Draft Final 2021,
United States Geological Survey



Southwestern Pond Turtle (*Actinemys pallida*) Population and Habitat Assessment, Southern California, Draft Final 2021



Southwestern Pond Turtle (*Actinemys pallida*) Population and Habitat Assessment, Southern California, Draft Final 2021

By: Katherine L. Baumberger¹, Adam R. Backlin¹, Andrew J. Louros¹, Tiffany A. May¹, Monique N. Wong¹, and Robert N. Fisher²

U.S. GEOLOGICAL SURVEY
WESTERN ECOLOGICAL RESEARCH CENTER

Data Summary

Prepared for:

U.S. Fish and Wildlife Service
San Bernardino Valley Municipal Water District

Research authorized by:

California Department of Fish and Wildlife
Scientific Collecting Permit (Entity) and MOU: SCP838

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These data are preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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INTRODUCTION

Until 2014 the western pond turtle was considered one species and referred to as *Actinemys (Emys) marmorata* (Spinks et al. 2014). Recently the species has undergone taxonomic revisions with different agencies using variations of the taxonomy for the southern clade, the U.S. Fish and Wildlife Service recognizes the southern group as *Actinemys marmorata pallida* and the California Department of Fish and Wildlife recognizes it as *Emys marmorata*. Following the taxonomic revision to recognize two distinct species we will refer to it as the southwestern pond turtle (*Actinemys pallida*; pond turtle) (Turtle Taxonomy Working Group 2021).

The southwestern pond turtle is the only native freshwater turtle in coastal California. Historically the range of the pond turtle extended from the central Coast Range of California south of San Francisco, into northern Baja California, Mexico. In southern California, dramatic declines have occurred due to habitat loss, altered hydrology, and the introduction of non-native species (Thomson et al. 2016). Bury et al. (2012) estimated the pond turtle had declined in 95% to 99% of its range by 2012. In the late 1980's, work by Brattstrom and Messer (1988) suggested that only a few viable populations of pond turtles remained in southern California based on observations at only 53 of 87 known historical locations. They also found that pond turtle populations at the remaining sites were small (1–5 individuals observed). Declines prompted this species to be a covered species under the Upper Santa Ana River Habitat Conservation Plan (HCP) (ICF 2020). Currently the pond turtle is a state species of special concern (CNDDDB 2022) and is under review for listing under the Endangered Species Act (U.S. Endangered Species Act [ESA 1973, as amended]) based on a 90-day finding issued in April 2015 (USFWS 2015).

The pond turtle is a habitat generalist and inhabits many types of water bodies ranging from permanent to intermittent and from freshwater to brackish environments (Holland 1991, 1994; Buskirk 2002). Specifically, pond turtles inhabit creeks, slow moving rivers, marshes, ponds, lakes, reservoirs, vernal pools, canals, and even sewage treatment plants (Ernst and Lovich 2009; Germano 2010; Stebbins and McGinnis 2012) and prefer habitats with slow flowing water with the presence of woody or rocky debris that provides emergent and underwater refugia (Reese 1996; Reese and Welsh 1998). Pond turtles are mostly aquatic but will travel to upland habitats to nest, over-winter, bask, and aestivate (Holland 1991; Reese 1996; Lovich and Meyer 2002; Rathbun et al. 2002). They have been known to travel as far as 500 m into the uplands (Reese and Welsh 1998; Hays et al. 1999) and linear home ranges have been recorded up to 4263.2 m (Goodman 1997; Goodman and Stewart 2000). It is possible that upland habitat is more important in the more arid southern portion of the pond turtle's range, where rivers and streams regularly dry as a result of drought and/or diversion or damming to support human water needs (e.g., drinking water, agriculture) (Purcell et al. 2017).

To document occupied areas in southern California, record demography of remaining pond turtle populations and assess suitable habitat, the U.S. Geological Survey (USGS) conducted pond turtle specific surveys throughout Los Angeles, Orange, western Riverside, and southwestern San Bernardino counties. These surveys included habitat suitability assessments to determine whether appropriate habitat existed at survey locations, as well as identifying threats from invasive species, especially the presence of non-native turtles. Pond turtles were also detected during surveys focused on other species, but no habitat assessment was done at those sites.

METHODS

The USGS conducted pond turtle specific surveys at 17 sites throughout southern California (Table 1, Figure 1). During the surveys a qualitative habitat assessment was conducted to rank potential pond turtle habitat suitability. Assessments included characteristics associated with the presence of pond turtles, including water feature type, estimates of water feature size and flow, presence of basking sites and upland nesting habitat, estimates of vegetation cover, general riparian species composition, upland habitat types, presence of non-native plant species, possible anthropogenic or natural disturbance of habitat, and presence of non-native aquatic species. Sites were categorized on the following general characteristics: 1) water permanency, 2) channel type, 3) presence of upland buffer, 4) water depth, 5) type of aquatic substrate, 6) presence of aquatic refugia, 7) presence of hatchling habitat, 8) presence of basking sites, 9) amount of canopy cover, 10) type and presence of terrestrial refugia, 11) availability of human access, 12) presence of invasive aquatic species, and 13) distance to the nearest paved road. Each characteristic was given a numeric value from 0 to 3 based on their contribution to habitat quality. Some characteristics were scored on presence (1) or absence (0), while some were weighted more heavily such as water depth and human access (Appendix 1). A total of 30 points were possible for each site. Based on the scoring, site quality was categorized into *high* (score of 26 or above, $\geq 85\%$ of the points), *moderate* (score 24 or 25 points, 80 – 84% of the points), *marginal* (score 21 or 23 points, 68 – 83% of the points), and *poor* (score of 20 or less, $\leq 67\%$ of the points) (USGS 2011).

At sites where trapping was possible, we deployed a combination of 30” diameter hoop single fingered-mouth funnel traps, 20” diameter hoop single fingered-mouth funnel traps, 30” oval traps, and minnow traps (used to target pond turtles) baited with mackerel. The number and type of traps deployed depended on the available water and differed by site (Table 1). At seven sites, traps were deployed for four days and three nights and were checked daily. Shorter trapping sessions were used at three sites where traps were set for one to three days to determine if pond turtles were present. All animals caught in the traps and any incidental animals observed outside of the traps were recorded.

We noodled for pond turtles concurrently with trapping or as the main survey method at several sites (Table 1). Noodling surveys consist of using our hands to feel along the bottom and sides of the creek or pond. This method works well in shallow water in relatively enclosed systems where there are not good escapes for the turtles. All animals observed during these efforts were recorded.

At Aliso Canyon and Soquel Canyon we employed bacon baiting to catch turtles. Pieces of bacon were tied to a weighted string so that the bacon floated in the water column. Once a pond turtle latched on to the bacon, it was pulled to shore and a net was placed underneath it to prevent its escape, much like fishing. This method worked well for the Aliso Canyon pond turtles where State Park employees have been bacon baiting for crayfish for years. We did not catch any turtles in Soquel Canyon using this method.

All captured pond turtles were weighed (g), measured (mm), sexed, and individually marked with PIT tags or marginal scute notches for mark/recapture analysis. The PIT tags allow for identification of unique individuals and are engineered to last the lifetime of an animal (Ferner

2007). Marginal scute notches were filed with a triangular file into the marginal shield using the Holland carapace code system (Holland 1994). Measurements included: maximum carapace length from the first marginal scute to the last (twelfth in most cases); minimum carapace length from the front notch to the back notch; maximum plastron length from the highest point on the right to the longest point on the right; minimum plastron length from the front notch to the back notch in the rear scute; maximum carapace width, bridge carapace width (taken at narrowest point where the carapace and plastron meet on the side of the turtle); maximum height taken parallel to the animal's body; and minimum height taken perpendicular to the animal's body. Other markings and injuries were also recorded. Pond turtles were classified as adults if their maximum carapace length was greater than 103 mm. A maximum of 15 tissue samples were collected for phylogenetic analysis per site, consisting of a small (approximately 5 mm) section of a pond turtle's tail.

Non-native species were removed on a site-by-site basis after evaluation of the number present and discussion with landowners. At sites with large numbers of non-native species (10 or more of one species caught on the first day), landowners typically decided that removing a small number of individuals would be inconsequential for the population, and no removal was conducted except as identified below for our plastics study. At sites where animals were removed, non-native frogs were sedated with benzocaine and then pithed. Non-native sliders (*Trachemys* spp.) were either taken to a veterinary office and euthanized or euthanized on site by a trained biologist and then taken to the Natural History Museum of Los Angeles County for a study analyzing the toxicology of plastics in turtles. The common snapping turtles (*Chelydra serpentina*) were taken to a veterinary office and euthanized, then donated to a veterinary college. Demographic data were taken for non-native turtles and frogs (age, sex, weight, and length), and tissue samples were taken from up to ten non-native turtles from each site.

To prevent the transfer of pathogens and invasive species (i.e., iridovirus, chytrid fungus (*Batrachochytrium dendrobatidis*), turtle ulcerative shell disease, New Zealand mud snails (*Potamopyrgus antipodarum*), zebra mussels (*Dreissena polymorpha*), and quagga mussels (*Dreissena bugensis*)) between study areas, all equipment was cleaned to remove mud and debris, then disinfected using a 6% bleach solution, then frozen for at least eight hours to kill any pathogens and invasive snails or mussels. All equipment used for tissue collection and PIT tagging was disinfected between individuals to avoid contamination.

RESULTS

Of the 17 sites surveyed for pond turtles in 2021, only one (West Fork San Gabriel River) was categorized as *high* in the habitat assessment, nine were categorized as *marginal*, and the remaining sites were categorized as *poor* habitat (Figure 2, Appendix 1). Water, human access, and invasive species were substantial factors influencing the placement of sites into categories. Seven of the sites were dry or had intermittent water, and the water available at five of the wet sites was shallow (0.5 – 1 m depth). The presence of invasive aquatic species offset the benefit of water availability. At nine of the wet sites, we detected more than one invasive aquatic species. Only four sites had restricted or limited human access, and ten of the sites were within 274 m of a paved road.

There were 158 pond turtle observations from 10 of the sites surveyed for pond turtles and six incidental sites for a total of 122 unique pond turtles captured in 2021 (Tables 3 and 5, Appendix 2). Some populations were surprisingly large including the 42 unique pond turtles caught in upper Carbon Canyon Creek. We detected non-native turtles at six of the sites and non-native frogs at five sites. The most common aquatic invasive species, the swamp crayfish (*Procambarus clarkii*) was detected at 11 sites. See Tables 3 – 5 for a summary of species detected at each site.

Aliso Canyon

The Aliso Canyon site included an approximately 6 km section of creek in Chino Hills State Park. Most of the creek was dry at the time we surveyed the site. We noodled and bacon baited the approximately 600 m of water available (Figure 3) on June 1 and August 16, 2021. The site had good canopy cover, a large terrestrial habitat buffer, and is far from paved roads. However, the lack of water and the presence of swamp crayfish contributed to a habitat assessment score of 22 points, categorized as *marginal*. We captured 16 unique pond turtles over two bacon baiting sessions, eight juveniles, and eight adults. All the adult pond turtles were female. Arroyo chub (*Gila orcutti*) were also observed.

Big Tujunga Creek (Lower)

Big Tujunga Creek is approximately 46.3 km long from its headwaters near Highway 2 in the Angeles National Forest to its wash above the Hansen Dam. On June 2, 2021, we noodled approximately 1.8 km of the creek within the National Forest Boundary where pond turtles had been detected in 2009 (Figure 4). The site was continuously wet with water over 1 m in depth, had a large terrestrial buffer, and good canopy cover. However, the lack of access restrictions, proximity to a paved road, and more than one invasive species contributed to a habitat assessment score of 22 points, categorized as *marginal*. No pond turtles were detected during our survey, but we detected several native fish species: arroyo chub, rainbow trout (*Oncorhynchus mykiss*), and speckled dace (*Rhinichthys osculus*). Non-native swamp crayfish and bullhead catfish (*Ameiurus* sp.) were also detected.

Big Tujunga Creek (Upper)

The upper section of Big Tujunga Creek is less visited than the lower section (Figure 4). On June 2, 2021, we noodled approximately 1.2 km of the upper section of the creek where pond turtles had been found in 2009. We found little water, and the water present was shallow; this and proximity to a paved road contributed to a habitat assessment score of 18 points, categorized as *poor*. We found four pond turtles in small ponds that were approximately 25 cm deep at their deepest point. One male pond turtle was a recapture from 2009. We observed many two-striped garter snakes (*Thamnophis hammondi*), most likely taking advantage of the rainbow trout fry and Baja California treefrog (*Pseudacris hypochondriaca*) tadpoles trapped in the shallow water.

Brea Creek

Brea Creek has been channelized for much of its run along the 57 freeway. We surveyed an approximately 840 m section of Brea Creek that runs through an oil field north of the town of Brea (Figure 5). On September 9, 2021, we set four minnow traps at the beginning and end of the site and noodled the middle. Between September 20 and September 22, 2021, we set 25 minnow traps along the length of the survey area. The site was wet for the length of our survey with many

deep pools. However, it had a small terrestrial buffer and a paved road within 50 m of the creek. These factors as well as the presence of several non-native species contributed to a habitat assessment score of 21 points, categorized as *marginal*. We caught 11 unique pond turtles. Of the seven adults, five were male and two were female. The four juvenile pond turtles confirm that recruitment is ongoing at the site. The other species observed at the site were non-native aquatics; swamp crayfish, goldfish (*Carassius auratus*), bullhead catfish, and mosquitofish (*Gambusia affinis*).

Carbon Canyon Creek (Lower)

The lower section of Carbon Canyon Creek is an approximately 2.5 km section of creek bed that runs west from Soquel Canyon through Chino Hills State Park (Figure 6). We conducted a visual survey of the creek bed on October 21, 2021. This section of creek was completely dry which resulted in a habitat assessment score of 15, categorized as *poor*. No aquatic species were observed during this survey.

Carbon Canyon Creek (Upper)

The upper section of Carbon Canyon Creek runs north of Soquel Canyon and is bordered by a mobile home park to the west and Carbon Canyon Creek Road to the north (Figure 6). Despite the large terrestrial buffer to the south, and the presence of several deep pools, the proximity to the road, as well as the intermittent water and our detection of more than one invasive aquatic species contributed to a habitat assessment score of 19, categorized as *poor*. We noodled approximately 900 m of this site on August 19, 2021. On September 15, 2021, we set seven minnow traps in the deepest pools and checked them September 16, 2021. We captured 42 unique pond turtles in one night of trapping. Fourteen of the 21 adult turtles captured were males. The 21 juvenile pond turtles, including at least one neonate confirm that recruitment is ongoing at the site. We also detected swamp crayfish, green sunfish (*Lepomis cyanellus*), bluegill sunfish (*Lepomis macrochirus*), and mosquitofish at the site.

Chileno Canyon

Chileno Canyon contains a tributary to the West Fork San Gabriel River in the San Gabriel Mountains National Monument (Figure 7). We conducted a noodling survey on the lower section of the creek for approximately 775 m on July 2, 2021. The site received a habitat assessment of 23, categorized as *marginal*, mostly because of the lack of water at the site, and the water present being shallow. No pond turtles were detected, but Baja California treefrogs were observed.

Chino Creek

Chino Creek runs through the city of Chino parallel to Highway 71 (Figure 8). It is cemented and channelized for much of its length. We set 21, 20" traps, and 14 minnow traps along approximately 950 m of Chino Creek next to the El Prado Golf Course and under Euclid Avenue from August 23 to August 26, 2021. This site had extensive canopy cover but lacked a large terrestrial habitat buffer, was within 50 m of a paved road, and had no access restrictions. These factors as well as the detection of aquatic invasive species led to a habitat assessment score of 17, categorized as *poor*. No pond turtles were detected. Several non-native turtles were captured, including 13 sliders and three common snapping turtles (*Chelydra serpentina*). Swamp crayfish, green sunfish, common carp (*Cyprinus carpio*), bullhead catfish, and channel catfish (*Ictalurus punctatus*) were detected in the creek.

Cole Creek

Cole Creek is an intermittent stream running north from the Santa Rosa Plateau Ecological Reserve (Figure 9). This site has a large terrestrial buffer (>500 m), is not within 500 m of a paved road, and no non-native aquatic species were detected. However, only 133 m of the 1.5 km surveyed were wet. Because of the lack of water, the habitat assessment score was 23, categorized as *marginal*. We conducted a noodling survey on September 29, 2021. No turtles were detected during this survey. On October 13, 2021, we placed four minnow traps in the wet section overnight. We captured two pond turtles, one adult female and a juvenile.

Hole Creek

Hole Creek is an urban stream bisected by Jurupa Avenue before its confluence with the Santa Ana River in Riverside County (Figure 10). There was water throughout the 5 km creek bed, and a deep pond just south of Jurupa Avenue. However, there were no access restrictions at the site so we confined our trapping to a 200 m area where our traps could not be easily accessed. Because of the large number of people at the site, the lack of a terrestrial buffer, and the presence of more than one non-native aquatic species the habitat assessment score was 15, categorized as *poor*. We set six 20" traps and six minnow traps from July 19 to July 22, 2021. No pond turtles were captured. We removed one spiny softshell turtle (*Apalone spinifera*) and one African clawed frog (*Xenopus laevis*) from the site. We also detected American bullfrogs (*Lithobates catesbeianus*), swamp crayfish, green sunfish, bullhead catfish, and mosquitofish.

North of Nichols Road

This site was along Temescal Creek with pooled areas, and many partially submerged trees and aquatic vegetation throughout. Interstate 15 borders the site approximately 80 m to the east, there is a large undeveloped area to the west (Figure 11). We set 17, 20" traps, eight minnow traps, and five oval traps along an approximate 550 m of the creek from June 29 to July 2, 2021. There was no water north of the end of our survey area. The habitat assessment score of the site was 22 points, categorized as *marginal*. This score was based on the large terrestrial habitat buffer (<500 m) to the west, restricted access, and emergent and submergent vegetation. However, the proximity of the freeway, and the presence of more than one non-native aquatic species brought the score down. No pond turtles or non-native turtles were detected. Swamp crayfish, green sunfish, common carp, bullhead catfish, black crappie (*Pomoxis nigromaculatus*), and all age classes of mosquitofish were observed throughout the creek.

Prado Basin

Prado Basin is a large, created wetland made up of over 40 interconnected ponds and channels and managed by the Orange County Water District (OCWD) (Figure 12). The site was given a habitat assessment score of 21 points and categorized as *marginal* because of restricted human access, the presence of water and lack of paved roads within 400 m. However, there was an intermediate amount of canopy cover (25-74%), shallow water in the ponds (0.5-1 m in depth), and the presence of more than one non-native aquatic species, contributing to the lower score. We set 30, 20" traps, nine 30" traps, 14 minnow traps, and four oval traps throughout the site from July 12 to July 15, 2021. No pond turtles were detected during the trapping effort despite a siting by OCWD staff in July 2020. USGS captured and removed 19 sliders and two spiny softshell turtles. Bullfrogs, swamp crayfish, and inland silversides (*Menidia beryllina*) were among the non-native aquatic species detected during the trapping effort.

Rancho Jurupa Regional Park

The Rancho Jurupa Regional Park site consisted of three ponds (Figure 13). One of the ponds was surrounded by cattails, was deep (>1 m), and was not regularly visited by park goers. One pond was cement lined, deep (>1 m), and heavily visited by people fishing. The third pond was earth lined but was shallow (approximately 1 m at the deepest), and heavily visited by people fishing. Because of the heavy visitation, lack of a large terrestrial buffer, and presence of several non-native aquatic species, this site received a habitat assessment score of 15, categorized as *poor*. We set 14, 20" traps and five minnow traps throughout the three ponds from May 24 to May 27, 2021. We caught one adult male pond turtle in the earth lined pool. We also caught and removed 18 slider turtles. Bullfrogs, swamp crayfish, largemouth bass (*Micropterus salmoides*), and mosquitofish were also observed.

Soquel Canyon

Soquel Canyon creek runs west from San Bernardino County to Orange County (Figure 6). We surveyed a 2.6 km section from the confluence with Carbon Canyon Creek to the edge of Orange County Transportation Authority managed land, most of the survey was on Chino Hills State Park managed land. The creek was dry except for three small pools. The lack of water was the main factor in a habitat assessment score of 23, categorized as *marginal*. We noodled the three small pools on August 19, 2021. On September 15, 2021, we noodled and attempted bacon baiting at the three pools. We did not catch any turtles with the bacon. We did catch 20 unique pond turtles over the course of the noodling surveys. Four of the six adult turtles captured were female. We also caught four juvenile turtles that appeared to be young of this year. Mosquitofish were the only non-native aquatic species observed.

Sunnyslope Creek

Sunnyslope Creek was a meandering stream starting where a concrete channel turned into a natural stream bed; the stream ended in the Santa Ana River (Figure 14). We identified several deep (>1 m) pools along the length of the stream. The uplands surrounding the stream burned in October 2019, and the vegetation had not fully recovered. The site was given a habitat assessment score of 20 points and was categorized as *poor*. This score was based on the low water depth throughout much of the creek, the low canopy cover (between 25% and 74%), the presence of more than one non-native species, and moderate access by the public. The site did have ample aquatic vegetation and refugia. We set seven 20" traps, five minnow traps, and two oval traps from May 24 to May 27, 2021, in an approximately 1.7 km section of the creek. We noodled from the confluence with the Santa Ana River to an impassible wood fall (approximately 1.8 km) on May 26, 2021. We captured four adult pond turtles, two males and two females in the traps. We captured and removed two adult sliders, and two adult bullfrogs. Several other non-native aquatic species were detected including swamp crayfish, green sunfish, catfish, and mosquitofish.

Tequesquite Confluence Pool

This site comprised a cement lined channel that then became dirt lined and drained into the Santa Ana River (Figure 15). The site had a heavily vegetated overhead canopy, deep water, and aquatic vegetation. However, human visitation and more than one non-native aquatic species detected contributed to the habitat assessment score of 23 points; categorized as *marginal*. We set three 20" traps and two minnow traps in a 44 m section of the creek, right at the confluence

with the Santa Ana River between July 19 and July 22, 2021. We caught one adult female pond turtle. We also caught and removed two sliders, and one spiny softshell turtle. We caught another large spiny softshell turtle, but it escaped. Other non-native aquatic species caught were bullfrogs, bullhead catfish, and channel catfish.

West Fork San Gabriel River

The West Fork San Gabriel River runs east through the San Gabriel Wilderness for 31 km until its confluence with the San Gabriel River (Figure 7). The large terrestrial buffer, moderate human visitation, closure of the paved road, and lack of non-native aquatic species contributed to a habitat assessment score of 26, categorized as *high*. We noodled approximately 9.5 km of the river on July 2, 2021. We captured four pond turtles, three adult females and one adult male. We also observed Baja California treefrogs, California treefrogs (*Pseudacris cadaverina*), California newts (*Taricha torosa*), two-striped garter snakes, arroyo chub, and rainbow trout.

Incidental Observations

While conducting stream surveys focusing on other aquatic species throughout southern California, we incidentally observed pond turtles at six sites (Figures 16-19). During a day survey at Agua Blanca Creek, we caught and weighed two juvenile pond turtles. During a day survey at Castaic Creek, we caught three pond turtles, two adults and one juvenile, and collected one dead adult. During a day survey at Fish Canyon, we caught and processed one adult male pond turtle and one hatchling. During a day survey at Middle Piru Creek, we caught and processed one adult female pond turtle. During night surveys at San Francisquito Canyon, we caught one juvenile pond turtle, and observed one other. During day and night surveys at the Santa Rosa Plateau Ecological Reserve, we observed 23 juvenile and hatchling pond turtles.

CONSIDERATIONS

In 2021, pond turtles were found at 10 of the 17 sites surveyed specifically for the species. Three of those sites (Sunnyslope Creek, Rancho Jurupa Regional Park, and Tequesquite Confluence Pool) are within two kilometers of each other and could be considered one population. However, based on the USGS trapping efforts throughout the Santa Ana River watershed in 2020 and 2021, there was not a robust pond turtle population within the watershed. In 2020, we trapped 17 sites in the Santa Ana River watershed and only found pond turtles at Sunnyslope Creek (USGS unpublished data). In 2021, we re-trapped/noodled five of those sites and trapped three more. We captured pond turtles at four of those sites, but in relatively low numbers (1-16 pond turtles). The presence of non-native turtle species at six sites may have contributed to the low number of pond turtle captures. Sliders, in particular, have been found to negatively affect feeding and basking of native turtle species (Pearson et al. 2015; Lambert et al. 2019). Their presence in the traps may have discouraged any pond turtles at those sites from entering the traps. Notably, the sites with the largest number of pond turtle captures (Aliso Canyon, Carbon Canyon Creek Upper, and Soquel Canyon), had no observed non-native turtles. Lack of water may have contributed to the pond turtle capture numbers, at Aliso Canyon, Carbon Canyon Creek (Upper), Soquel Canyon, and Big Tujunga Creek (Upper) these turtles were confined to relatively small pools in an otherwise dry system. This was especially true at Soquel Canyon and Big Tujunga Creek (Upper). At Soquel Canyon, the pond turtles were only found in two small pools, one no more than 50 cm across and 10 cm deep (Figure 6). At Big Tujunga Creek (Upper), the pond turtles were found in small, shallow puddles in what was once a deep creek (Figure 4). As southern

California continues to experience severe drought (National Integrated Drought Information System, 2021), these sites may no longer be able to support pond turtles.

The urban environment throughout southern California may also play a role in the low numbers of pond turtles. Of the 17 pond turtle specific survey sites, five were within 50 m of a road, five were within 274 m of a road, and one was within 500 m. Roads and vehicles can have a detrimental effect on pond turtle populations, through road mortality, or limiting basking behavior (Nyhof and Trulio 2015; Nicholson et al. 2020).

As one of only two pond turtle populations found in the Santa Ana River watershed, further study could be conducted on the Sunnyslope Creek, Rancho Jurupa Regional Park, and Tequesquite Confluence Pool sites. These sites have more human visitation than the Aliso Canyon site; therefore, identifying and protecting pond turtle upland habitat and public education could limit disturbance to the pond turtle. Further trapping and noodling surveys could be conducted, at sites where pond turtles were incidentally observed to determine population viability as well as at sites that we were not able to visit this year.

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Table 1. Site list and southwestern pond turtle (*Actinemys pallida*) capture effort in southern California, 2021.

Site	Site Number	Survey Type	Start Date	End Date	Number of Traps	Total Trap Hours per Trap	Start Latitude ¹	Start Longitude ¹	End Latitude ¹	End Longitude ¹
Aliso Canyon	1	Noodling/Bacon Baiting ²	June 1, 2021	June 1, 2021	0	0	33.89899	-117.69705	33.90993	-117.70079
Aliso Canyon	1	Bacon Baiting	August 16, 2021	August 16, 2021	0	0	33.90170	-117.69857	33.91538	-117.70165
Big Tujunga Creek (Lower)	2	Noodling	June 2, 2021	June 2, 2021	0	0	34.29908	-118.26488	34.29294	-118.23633
Big Tujunga Creek (Upper)	3	Noodling	June 2, 2021	June 2, 2021	0	0	34.31001	-118.11560	34.30754	-118.07434
Brea Creek	4	Trapping/Noodling	September 9, 2021	September 9, 2021	4	3.5	33.94081	-117.88710	33.93920	-117.87906
Brea Creek	4	Trapping	September 20, 2021	September 22, 2021	25	46	33.94081	-117.88710	33.93920	-117.87906
Carbon Canyon Creek (Lower)	5	Noodling	October 21, 2021	October 21, 2021	0	0	33.91942	-117.82325	33.92364	-117.80218
Carbon Canyon Creek (Upper)	6	Noodling	August 19, 2021	August 19, 2021	0	0	33.92313	-117.80234	33.92857	-117.79839
Carbon Canyon Creek (Upper)	6	Trapping	September 15, 2021	September 16, 2021	7	25	33.92313	-117.80234	33.93197	-117.79599
Chileno Canyon	7	Noodling	July 2, 2021	July 2, 2021	0	0	34.24248	-117.95008	34.24795	-117.95060
Chino Creek	8	Trapping	August 23, 2021	August 26, 2021	35	68	33.94373	-117.65902	33.93969	-117.65064
Cole Canyon	9	Noodling	September 29, 2021	September 29, 2021	0	0	33.56228	-117.25279	33.54884	-117.25560
Cole Canyon	9	Trapping	October 13, 2021	October 14, 2021	4	30	33.55048	-117.25566	33.54987	-117.25549
Hole Creek	10	Trapping	July 19, 2021	July 22, 2021	12	70	33.96149	-117.46750	33.95777	-117.46370
North of Nichols Road	11	Trapping	June 29, 2021	July 2, 2021	30	71	33.71888	-117.36506	33.72230	-117.36921
Prado Basin	12	Trapping	July 12, 2021	July 15, 2021	57	69	33.92289	-117.61412	33.91036	-117.64360
Rancho Jurupa Regional Park	13	Trapping	May 24, 2021	May 27, 2021	19	70	33.98467	-117.41531	33.98162	-117.42012
Soquel Canyon	14	Noodling	August 19, 2021	August 19, 2021	0	0	33.92312	-117.80212	33.93406	-117.78299
Soquel Canyon	14	Noodling/Bacon Baiting	September 15, 2021	September 15, 2021	0	0	33.92172	-117.79925	33.93289	-117.78492
Sunnyslope Creek	15	Trapping/Noodling	May 24, 2021	May 27, 2021	14	70	33.97052	-117.43205	33.97638	-117.42627
Tequesquite Confluence Pool	16	Trapping	July 19, 2021	July 22, 2021	5	70	33.97686	-117.40653	33.97665	-117.40632
West Fork San Gabriel River	17	Noodling	July 2, 2021	July 2, 2021	0	0	34.24153	-117.86971	34.24421	-117.95316

¹ Coordinate data in WGS 84, representative coordinates for the site.

² Bacon baiting is fishing for turtles with lines baited with bacon.

Table 2. Site list of visual surveys where southwestern pond turtles (*Actinemys pallida*) were incidentally detected in southern California, 2021.

Site	Site Number	Survey Type	Survey Date	Start Latitude ¹	Start Longitude ¹	End Latitude ¹	End Longitude ¹
Agua Blanca Creek	18	Visual	June 18, 2021	34.53990	-118.76830	34.54142	-118.77193
Castaic Creek	19	Visual	May 17, 2021	34.61191	-118.66285	34.62886	-118.66442
Fish Canyon	20	Visual	May 13, 2021	34.61871	-118.63599	34.63333	-118.63734
Middle Piru Creek	21	Visual	June 18, 2021	34.53539	-118.75872	34.53742	-118.75991
San Francisquito Canyon	22	Visual	August 3, 2021	34.54634	-118.51340	34.55033	-118.50742
San Francisquito Canyon	22	Visual	August 4, 2021	34.54634	-118.51340	34.55033	-118.50742
Santa Rosa Plateau Ecological Reserve	23	Visual	February 4, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	February 6, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	February 14, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	March 6, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	August 11, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	September 2, 2021	33.52943	-117.28518	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	September 21, 2021	33.53986	-117.26389	33.52892	-117.28761
Santa Rosa Plateau Ecological Reserve	23	Visual	October 14, 2021	33.53986	-117.26389	33.52892	-117.28761

¹ Coordinate data in WGS 84, representative coordinates for the site.

Table 3. Native species detected during surveys for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

Site	Site Number	Southwestern Pond Turtle (<i>Actinemys pallida</i>) ¹	California Newt (<i>Taricha torosa</i>)	Baja California Treefrog (<i>Pseudacris hypochondriaca</i>)	California Treefrog (<i>Pseudacris cadaverina</i>)	Western Toad (<i>Anaxyrus boreas</i>)	Two-striped Garter Snake (<i>Thamnophis hammondi</i>)	Arroyo Chub (<i>Gila orcuttii</i>)	Rainbow Trout (<i>Oncorhynchus mykiss</i>)	Speckled Dace (<i>Rhinichthys osculus</i>)
Aliso Canyon	1	22	-	-	-	-	-	X	-	-
Big Tujunga Creek (Lower)	2	-	-	-	X	-	X	X	X	X
Big Tujunga Creek (Upper)	3	4	-	-	X	X	X	-	X	-
Brea Creek	4	13	-	-	-	-	-	-	-	-
Carbon Canyon Creek (Lower)	5	-	-	X	-	-	-	-	-	-
Carbon Canyon Creek (Upper)	6	44	-	X	-	-	X	-	-	-
Chileno Canyon	7	-	-	X	-	-	-	-	-	-
Chino Creek	8	-	-	-	-	-	-	-	-	-
Cole Canyon	9	2	-	X	X	-	X	-	-	-
Hole Creek	10	-	-	-	-	-	-	-	-	-
North of Nichols Road	11	-	-	-	-	-	-	-	-	-
Prado Basin	12	-	-	X	-	X	-	-	-	-
Rancho Jurupa Regional Park	13	1	-	X	-	-	-	-	-	-
Soquel Canyon	14	28	-	X	-	X	-	-	-	-
Sunnyslope Creek	15	4	-	X	-	X	-	-	-	-
Tequesquite Confluence Pool	16	1	-	-	-	-	-	-	-	-
West Fork San Gabriel River	17	4	X	X	X	-	X	X	X	-

¹ Numbers represent the total number of southwestern pond turtle captures and observations, not unique turtles.

Note: For all non-turtle species X indicates presence.

Table 4. Non-native species detected during surveys for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

Site	Site Number	Common Snapping Turtle (<i>Chelydra serpentina</i>)	Slider Turtle (<i>Trachemys scripta sp.</i>)	Spiny Softshell Turtle (<i>Apatone spinifera</i>)	African Clawed Frog (<i>Xenopus laevis</i>)	American Bullfrog (<i>Lithobates catesbeianus</i>)	Swamp Crayfish (<i>Procambarus clarkii</i>)	Black Crappie (<i>Pomoxis nigromaculatus</i>)	Bluegill (<i>Lepomis macrochirus</i>)	Bullhead Catfish (<i>Ameiurus sp.</i>)	Channel Catfish (<i>Ictalurus punctatus</i>)	Common Carp (<i>Cyprinus carpio</i>)	Goldfish (<i>Carassius auratus</i>)	Green Sunfish (<i>Lepomis cyanellus</i>)	Inland Silverside (<i>Menidia beryllina</i>)	Largemouth Bass (<i>Micropterus salmoides</i>)	Mosquitofish (<i>Gambusia affinis</i>)
Aliso Canyon	1	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Big Tujunga Creek (Lower)	2	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-
Big Tujunga Creek (Upper)	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brea Creek	4	-	-	-	-	-	X	-	-	X	-	-	X	-	-	-	X
Carbon Canyon Creek (Lower)	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Canyon Creek (Upper)	6	-	-	-	-	-	X	-	-	-	-	-	-	X	-	-	X
Chileno Canyon	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chino Creek	8	3	13	-	-	-	X	-	-	X	X	X	-	X	-	-	-
Cole Canyon	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hole Creek	10	-	-	1	X	X	X	-	-	X	-	-	-	X	-	-	X
North of Nichols Road	11	-	-	-	-	-	X	X	-	X	-	X	-	X	-	-	X
Prado Basin	12	-	19	2	-	X	X	X	X	X	-	X	-	X	X	X	-
Rancho Jurupa Regional Park	13	-	18	-	-	X	X	-	-	-	-	-	-	-	-	X	X
Soquel Canyon	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Sunnyslope Creek	15	-	2	-	-	X	X	-	-	X	-	-	-	X	-	-	X
Tequesquite Confluence Pool	16	-	2	2	-	X	-	-	-	X	X	-	-	-	-	-	-
West Fork San Gabriel River	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: For all non-turtle species X indicates presence.

Table 5. Species detected during visual surveys where southwestern pond turtles (*Actinemys pallida*) were incidentally detected in southern California, 2021.

Site	Site Number	Native															Non-Native
		Southwestern Pond Turtle (<i>Actinemys pallida</i>)	Baja California Treefrog (<i>Pseudacris hypochondriaca</i>)	California Red-legged Frog (<i>Rana draytonii</i>)	California Treefrog (<i>Pseudacris cadaverina</i>)	Western Toad (<i>Anaxyrus boreas</i>)	California Newt (<i>Taricha torosa</i>)	Arroyo Chub (<i>Gila orcuttii</i>)	Rainbow Trout (<i>Oncorhynchus mykiss</i>)	Three-spined Stickleback (<i>Gasterosteus aculeatus</i>)	California Kingsnake (<i>Lampropeltis californiae</i>)	California Striped Racer (<i>Coluber lateralis lateralis</i>)	Speckled Rattlesnake (<i>Crotalus mitchelli</i>)	Two-striped Garter Snake (<i>Thamnophis hammondi</i>)	Common Side-blotched Lizard (<i>Uta stansburiana</i>)	Western Fence Lizard (<i>Sceloporus occidentalis</i>)	Swamp Crayfish (<i>Procambarus clarkii</i>)
Agua Blanca Creek	18	2	-	-	-	-	-	X	X	-	-	-	-	X	-	-	-
Castaic Creek	19	4 ¹	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-
Fish Canyon ²	20	2	-	-	X	-	-	-	-	-	X	-	-	X	X	X	-
Middle Piru Creek ²	21	1	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
San Francisquito Canyon	22	3	X	X	-	X	-	X	-	X	-	X	-	-	-	-	X
Santa Rosa Plateau Ecological Reserve	23	23	X	X	-	X	X	-	-	-	-	-	X	X	-	X	-

¹ One of the Castaic Creek southwestern pond turtles was found dead.

² Only southwestern pond turtles from Fish Canyon and Middle Piru Creek were marked with PIT tags or marginal scute numbers.

Note: For all non-turtle species X indicates presence.

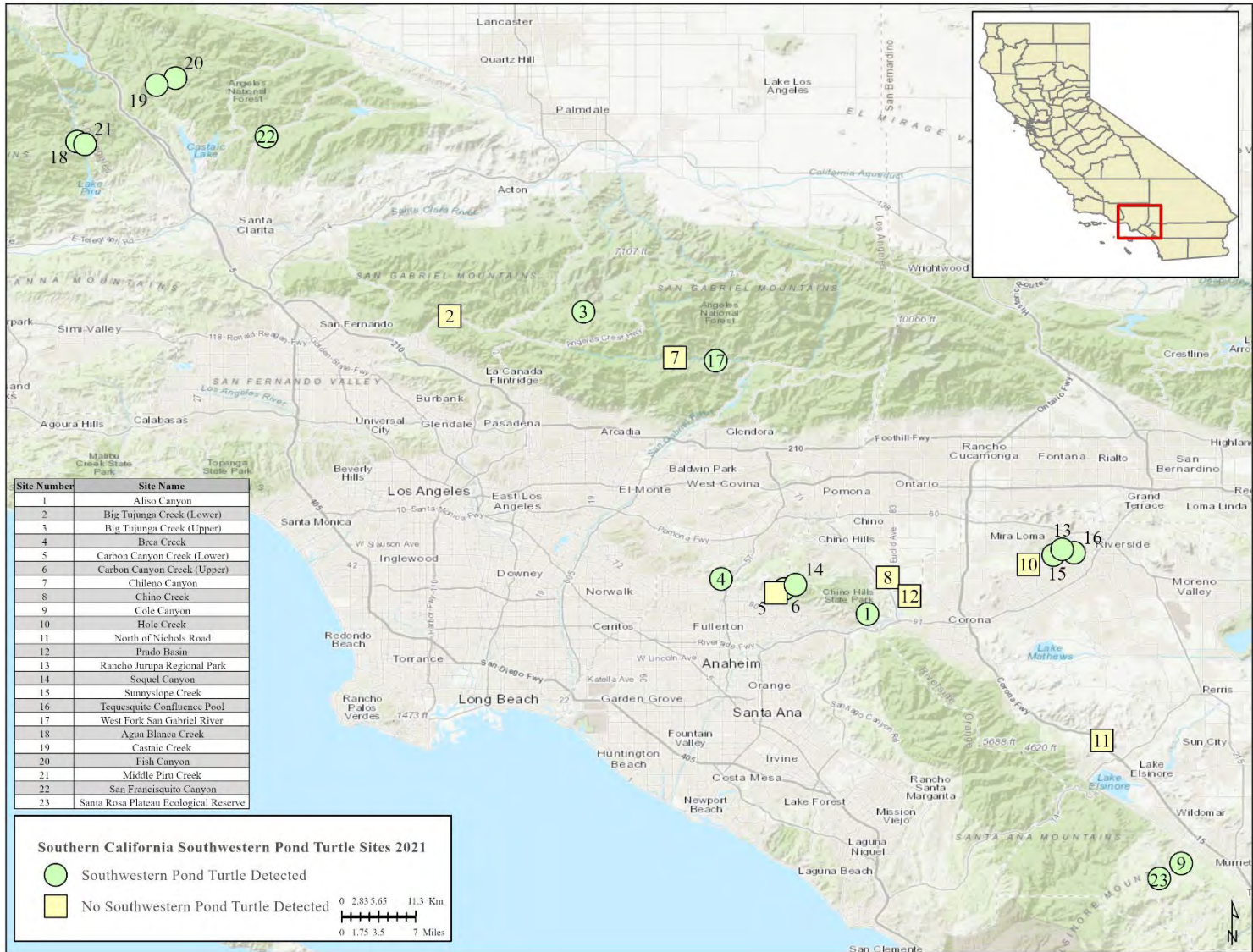


Figure 1. Overview of southwestern pond turtle (*Actinemys pallida*) trapping, noodling, bacon baiting and incidental sites in southern California, 2021.

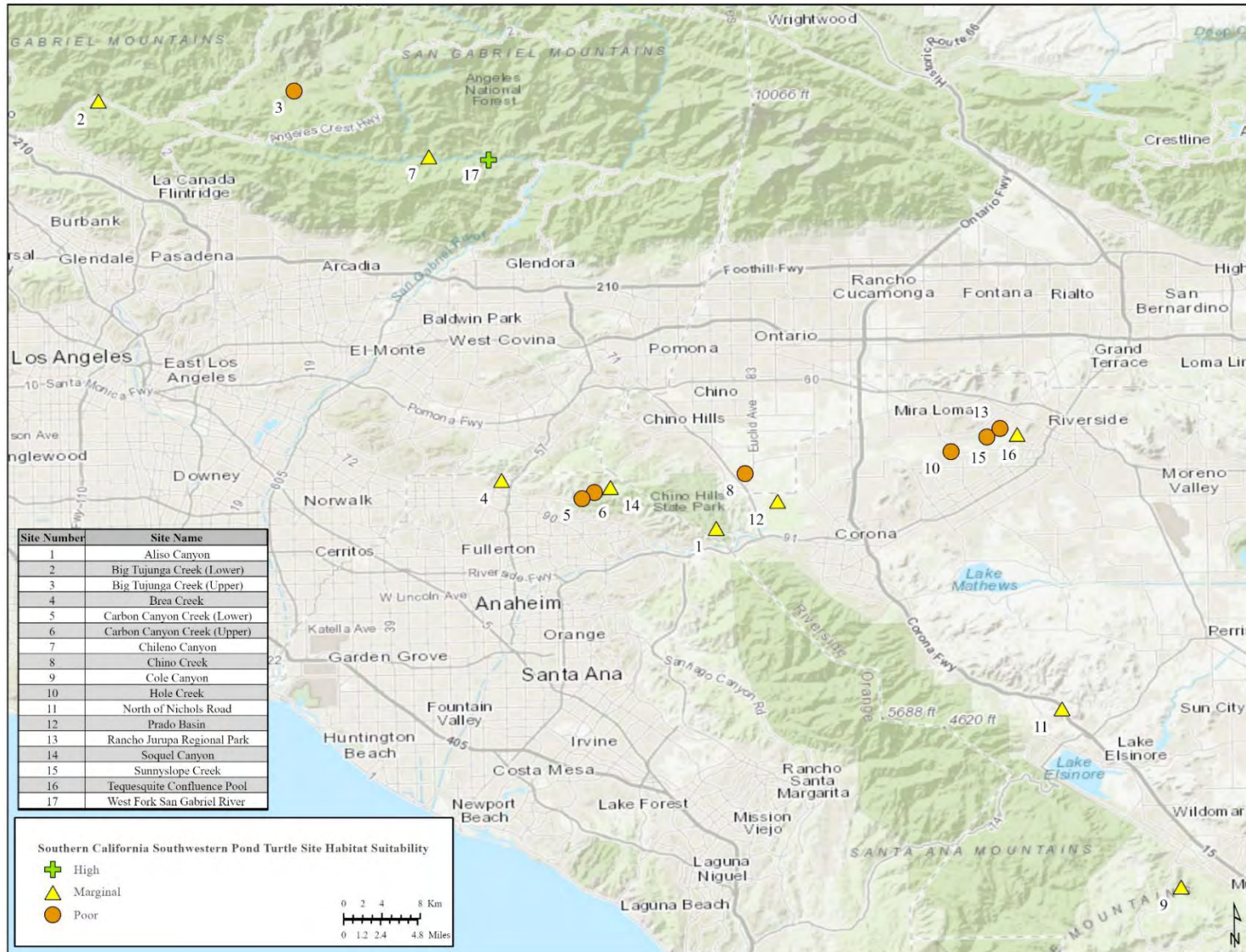


Figure 2. Habitat suitability assessment categories for southwestern pond turtle (*Actinemys pallida*) sites in southern California, 2021.

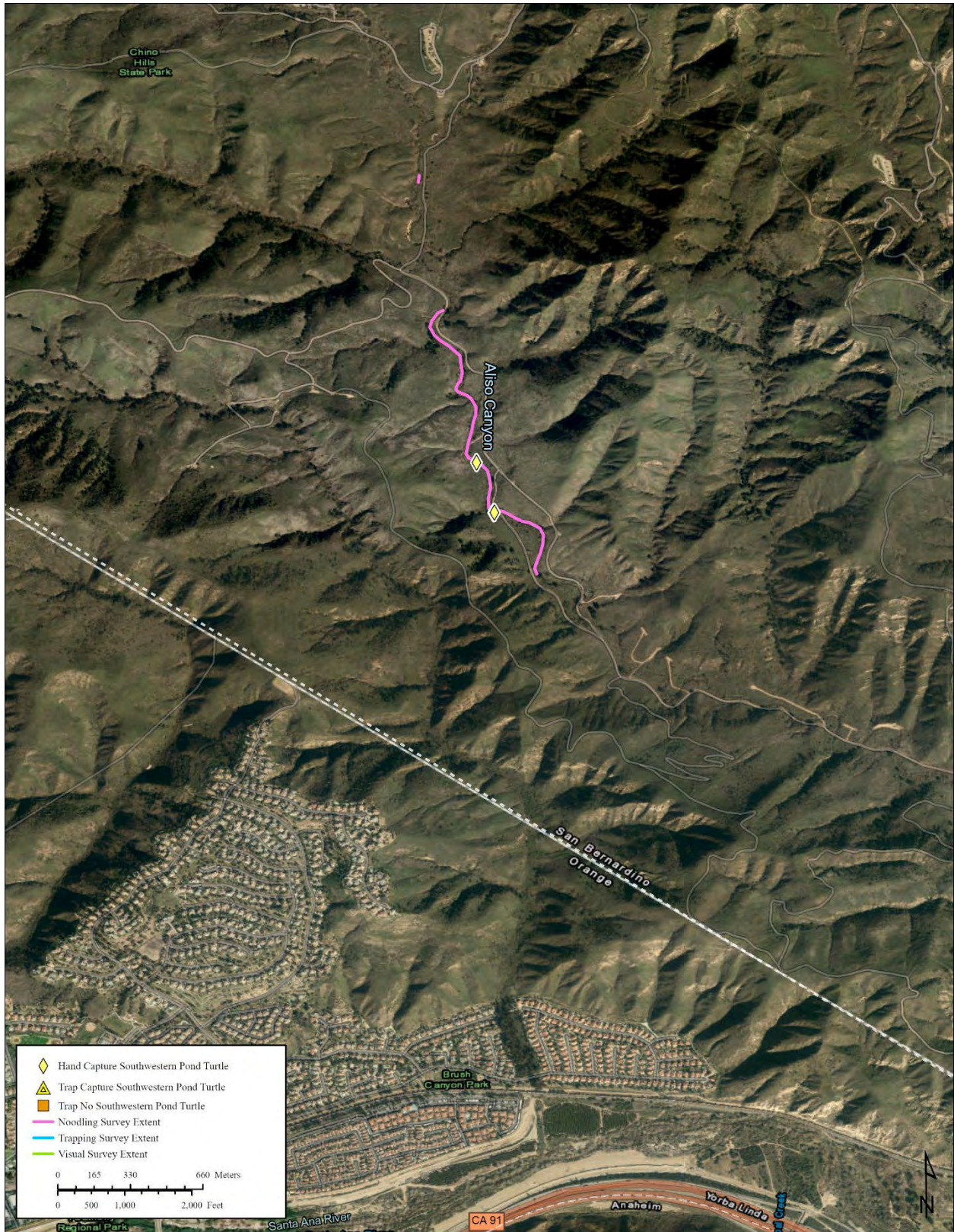


Figure 3. Aliso Canyon survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

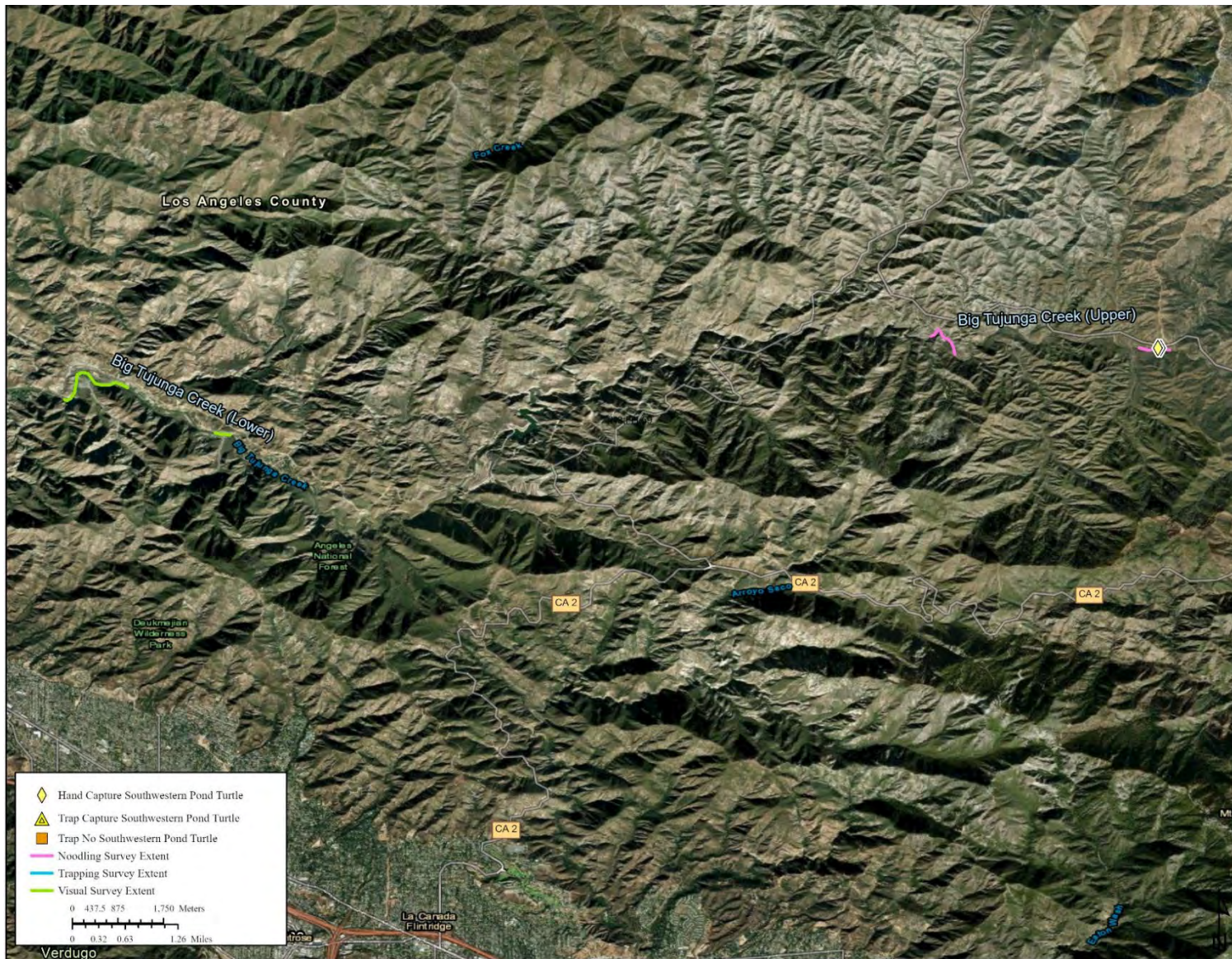


Figure 4. Big Tujunga Creek survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 5. Brea Creek survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

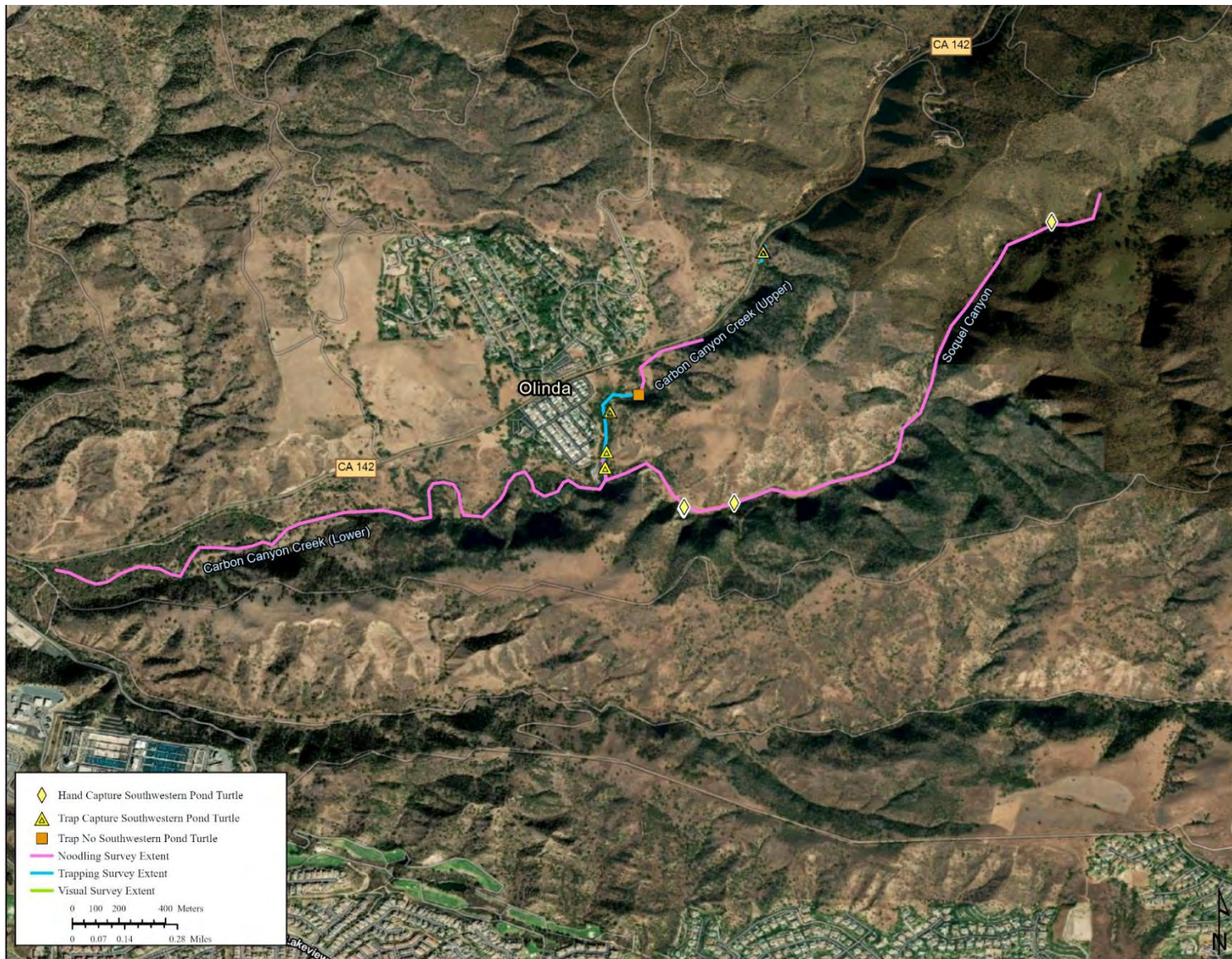


Figure 6. Carbon Canyon Creek and Sequel Canyon surveys for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

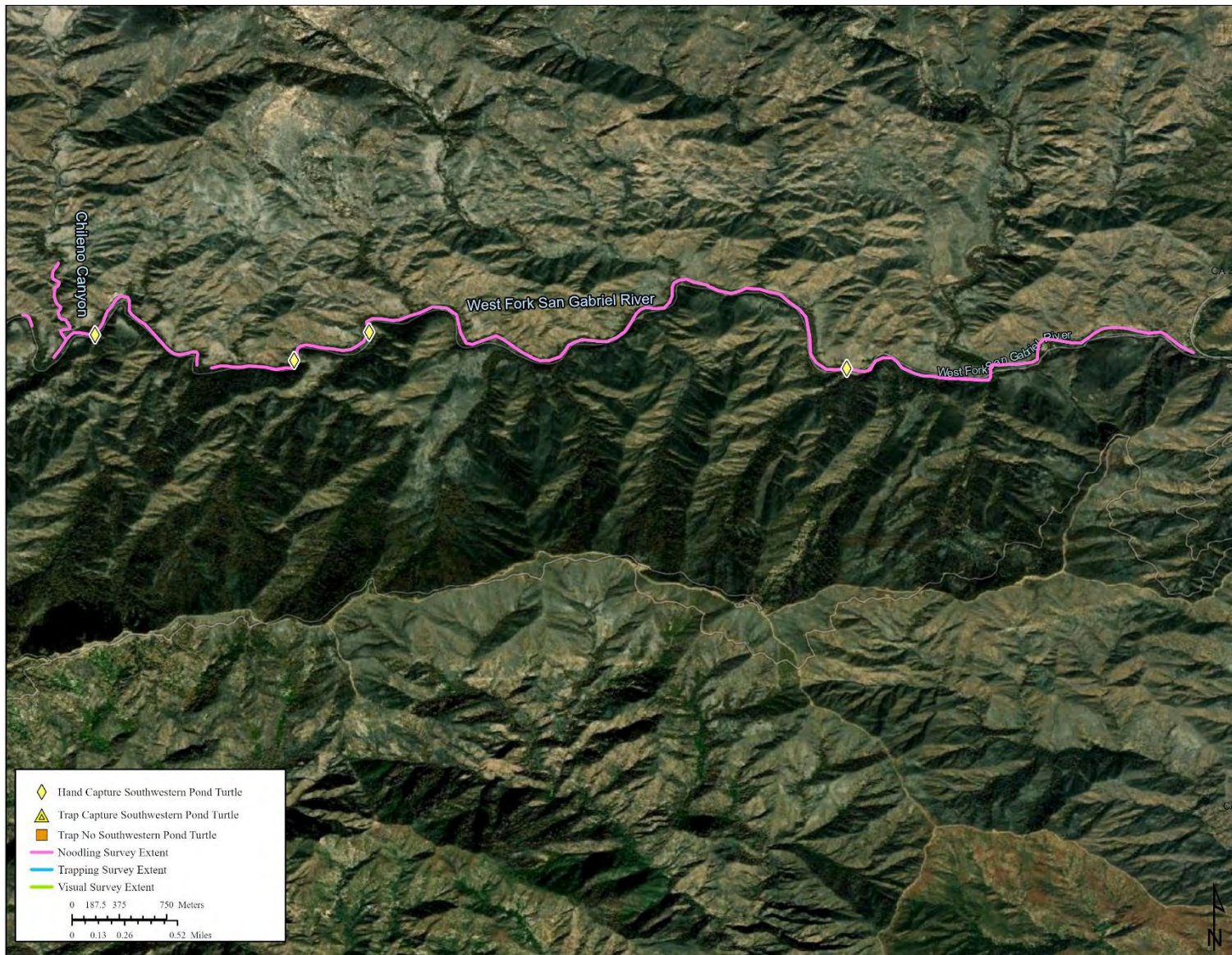


Figure 7. Chileno Canyon and West Fork San Gabriel River surveys for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

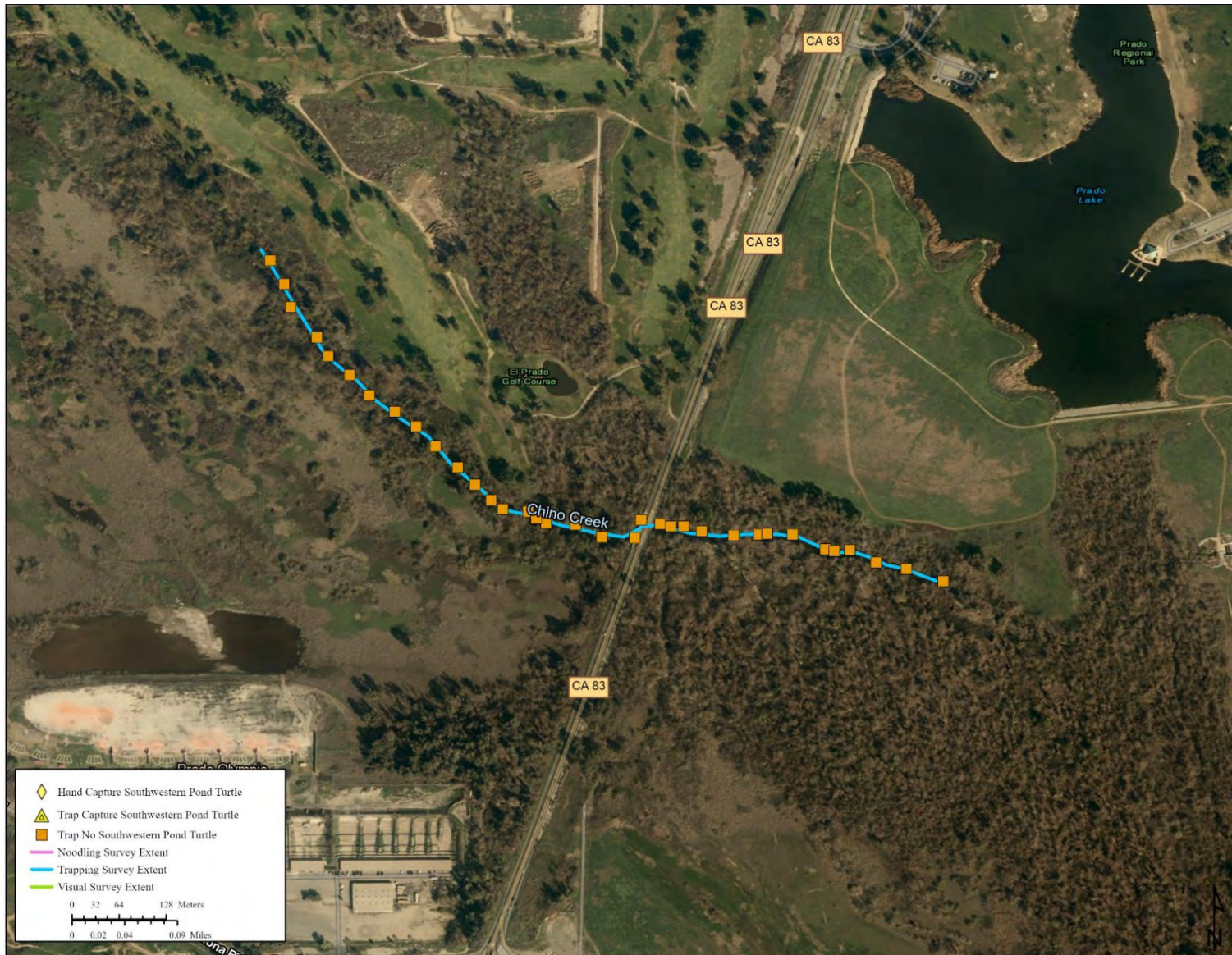


Figure 8. Chino Creek survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

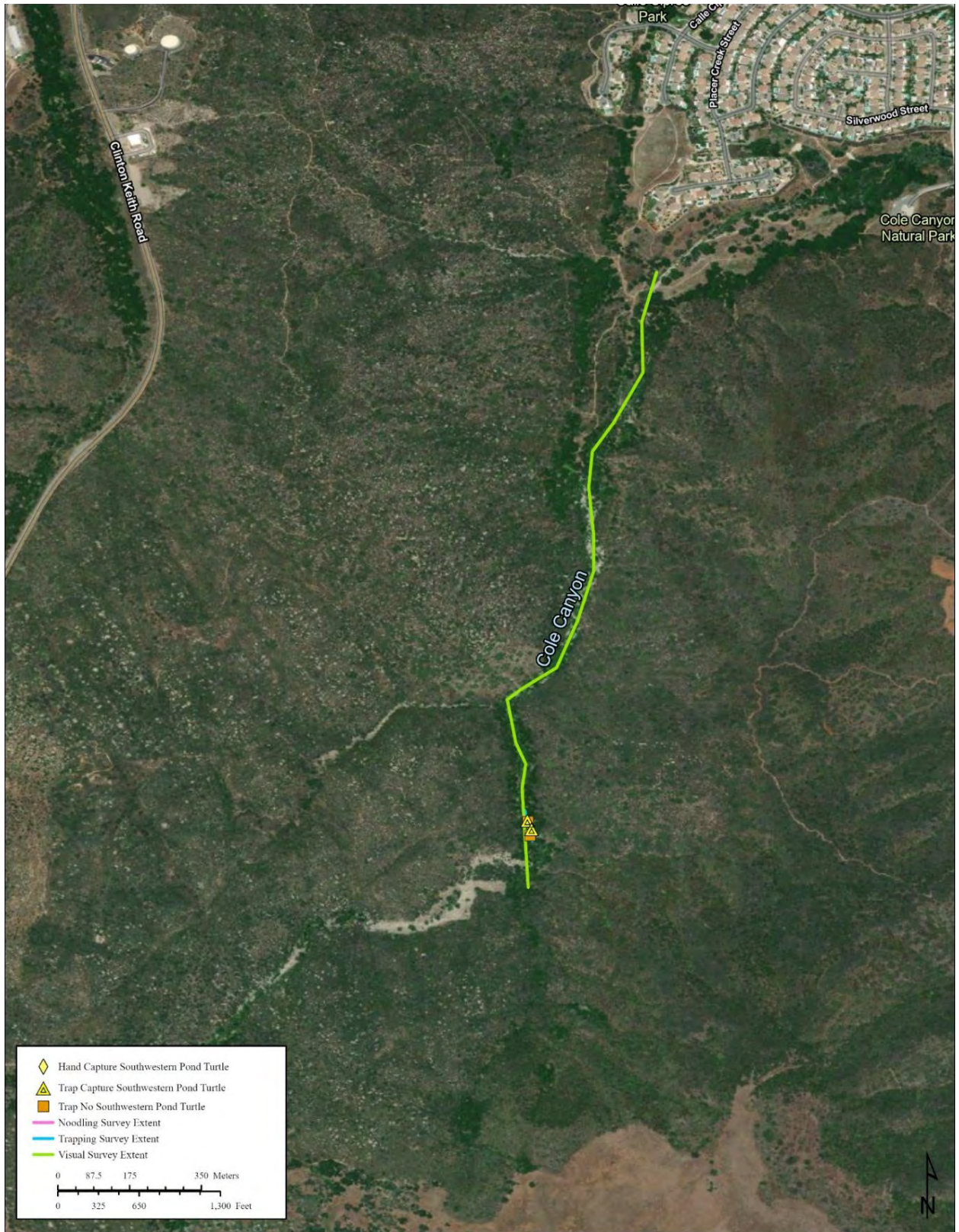


Figure 9. Cole Canyon survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

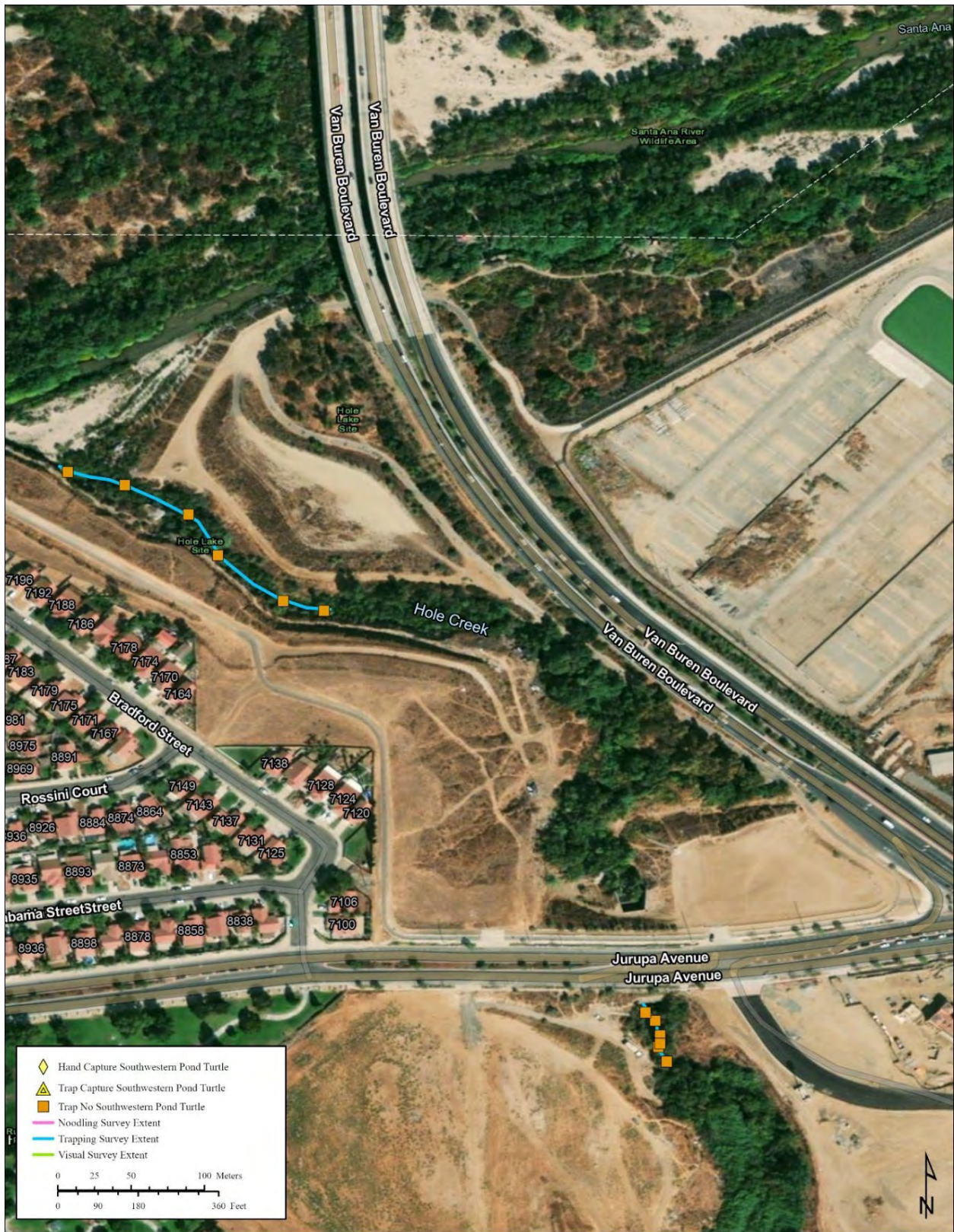


Figure 10. Hole Creek survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

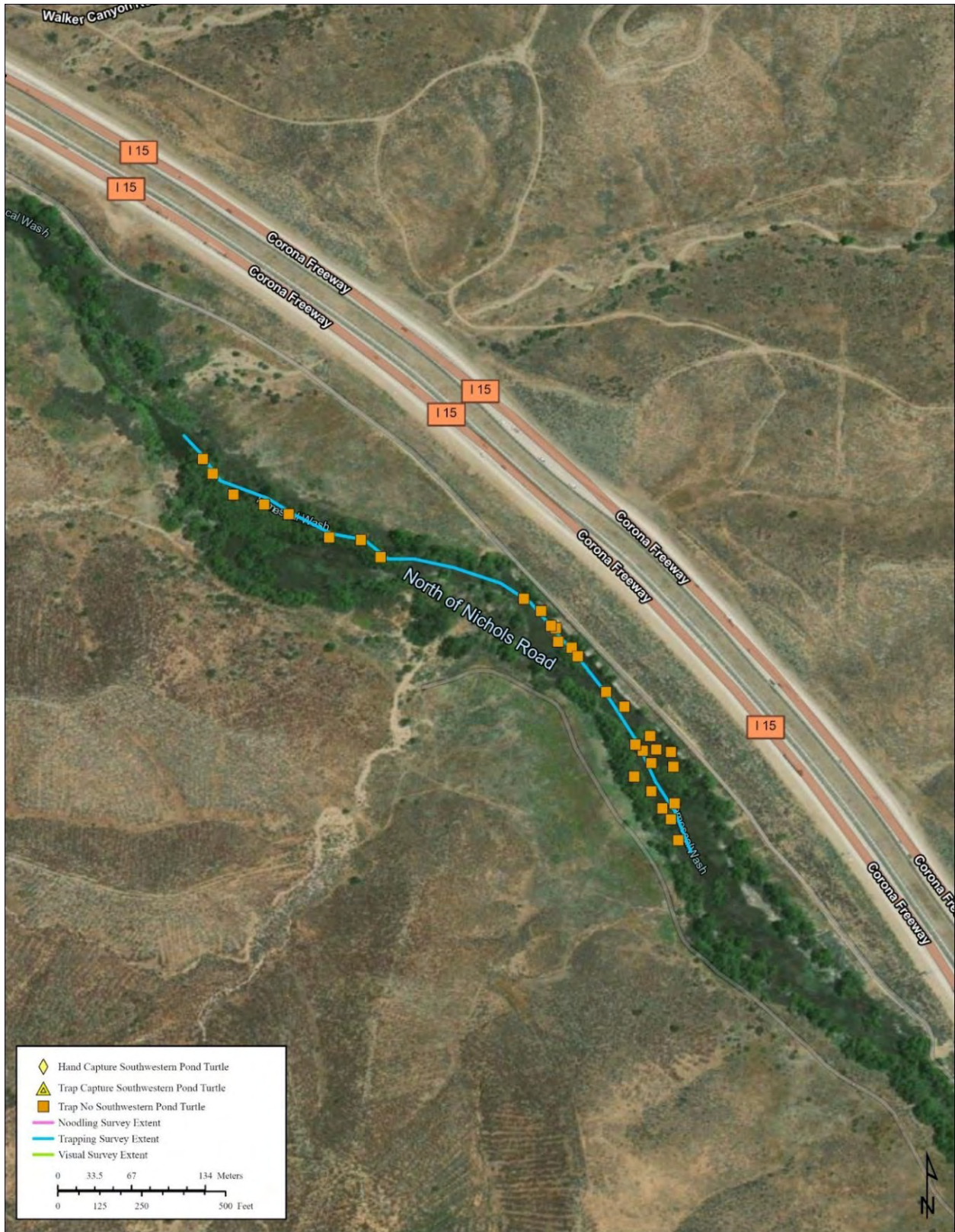


Figure 11. North of Nichols Road survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

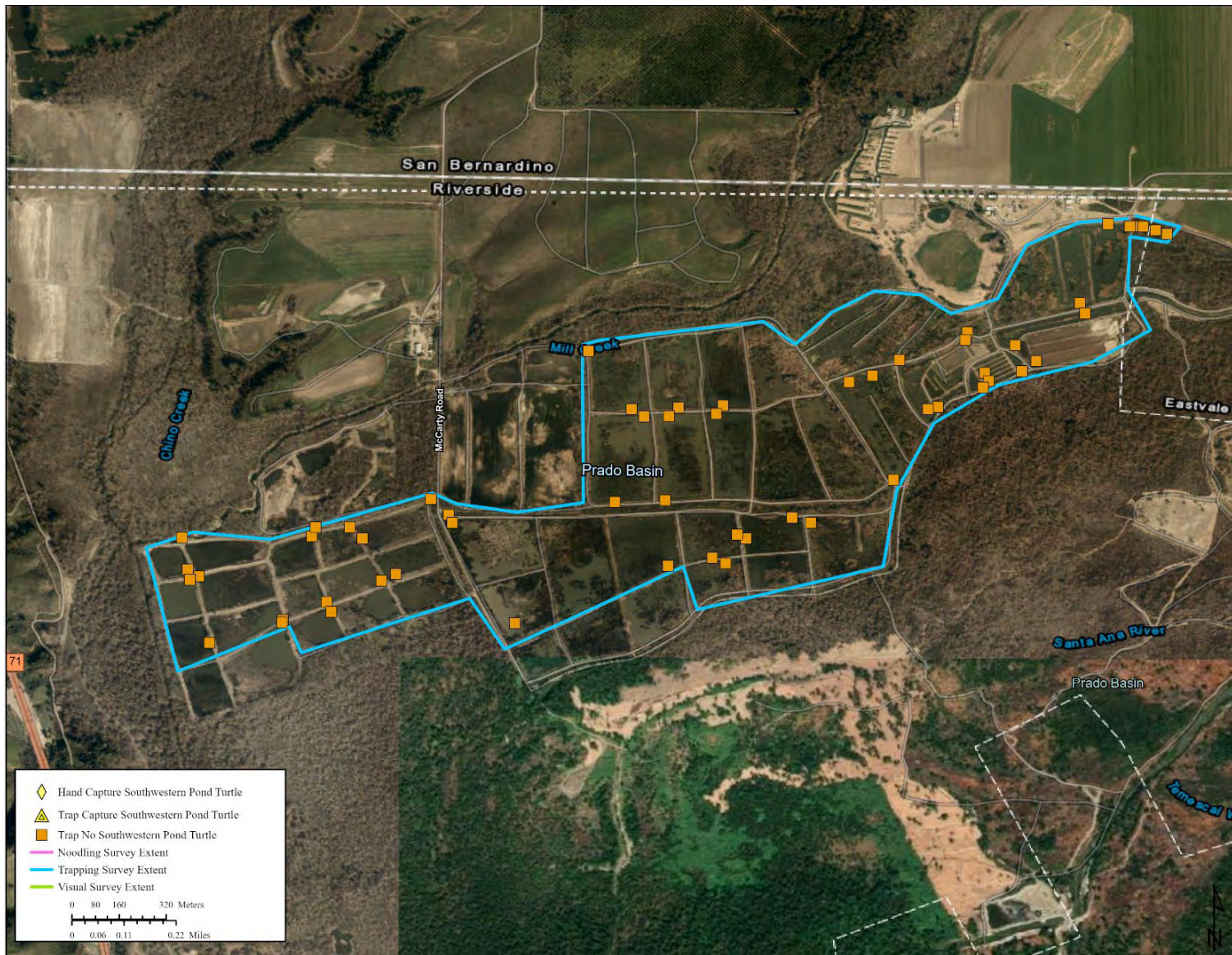


Figure 12. Prado Basin survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 13. Rancho Jurupa Regional Park survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 14. Sunnyslope Creek survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 15. Tequesquite Confluence Pool survey for the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 16. Agua Blanca Creek and Middle Piru Creek visual survey with incidental observations of the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

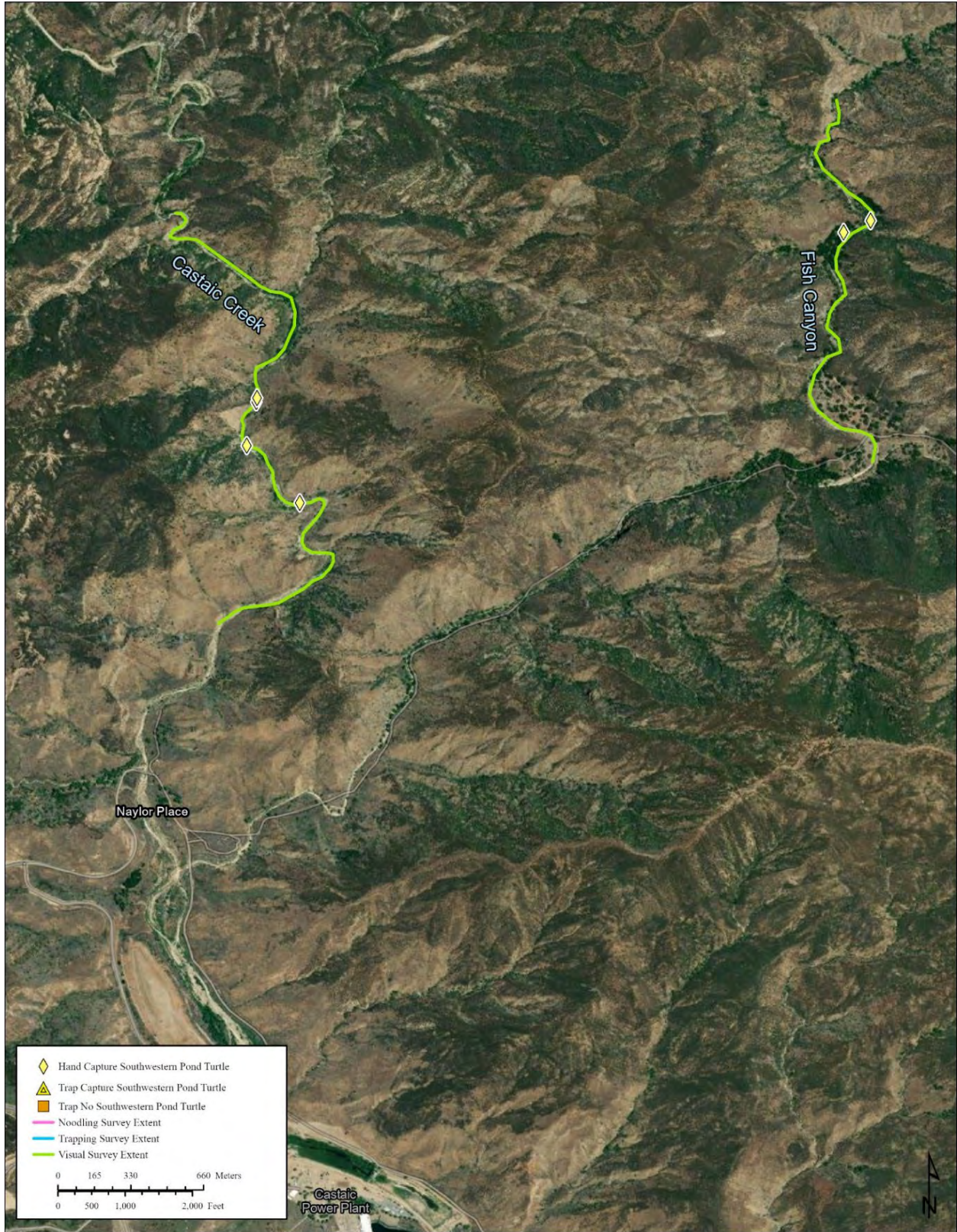


Figure 17. Castaic Creek and Fish Canyon visual survey with incidental observations of the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

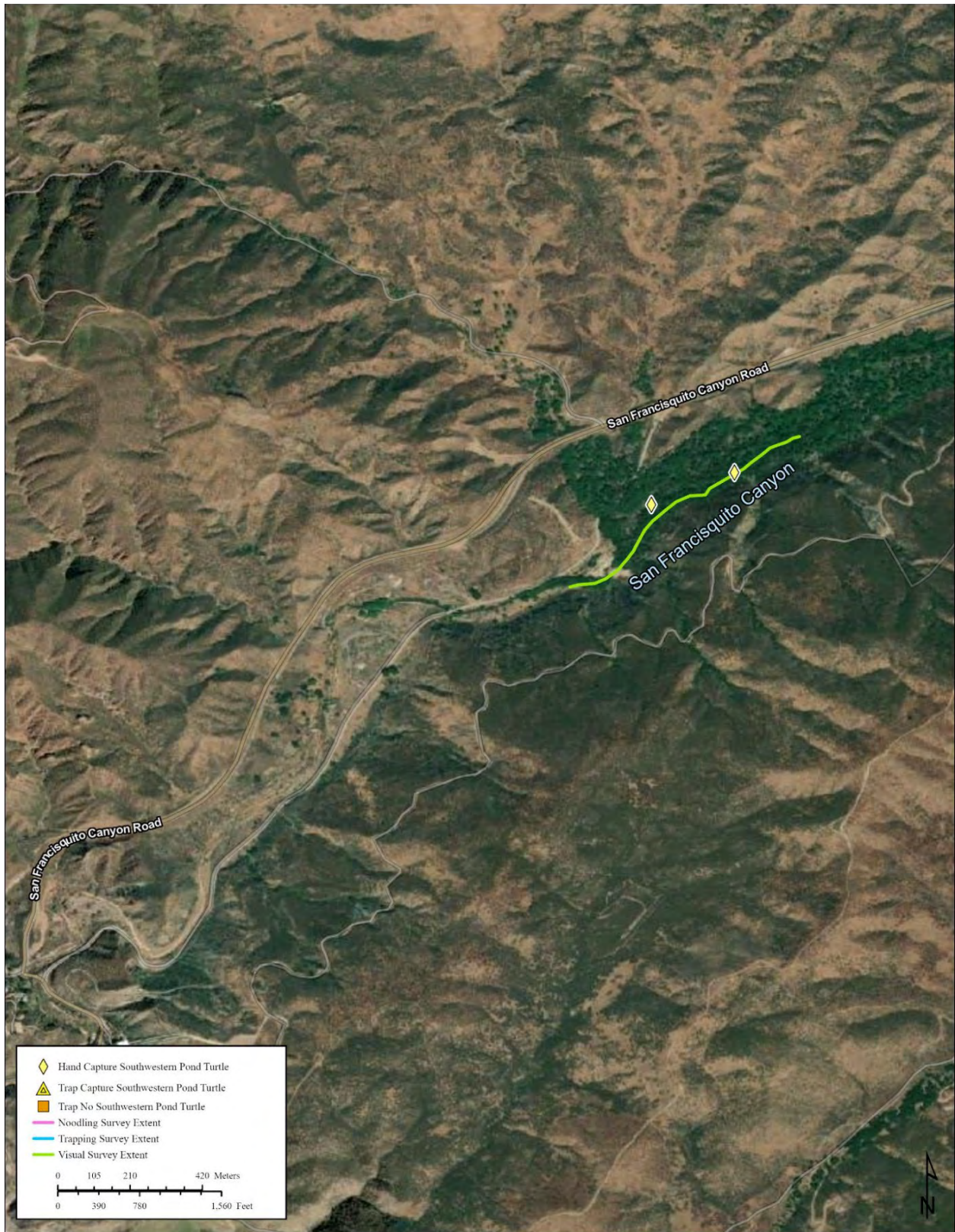


Figure 18. San Francisquito Canyon visual survey with incidental observations of the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.



Figure 19. Santa Rosa Plateau Ecological Reserve visual survey with incidental observations of the southwestern pond turtle (*Actinemys pallida*) in southern California, 2021.

Appendix 1A. Habitat suitability assessment results for southwestern pond turtle (*Actinemys pallida*) sites in southern California, 2021. (See descriptions for numerical scores in Appendix 1B).

Site Number	Site	Date Surveyed	Water Depth Score	Aquatic Substrate Score	Aquatic Refugia Score	Hatchling Habitat Score	Basking Sites Score	Terrestrial Habitat Buffer Score	Canopy Cover Score	Terrestrial Refugia Score	Human Access Score	Aquatic Vegetation Score	Invasive Species Score	Roads Score	Water Present Score	Total	Score	Habitat Category
1	Aliso Canyon	June 1, 2021	1	3	1	2	1	3	2	1	1	2	1	3	1	22	0.7333	Marginal
2	Big Tujunga Creek (Lower)	June 2, 2021	3	3	1	2	1	3	2	1	0	2	0	1	3	22	0.7333	Marginal
3	Big Tujunga Creek (Upper)	June 2, 2021	0	3	1	2	1	3	2	1	1	2	1	0	1	18	0.6	Poor
4	Brea Creek	September 9, 2021	3	3	1	1	1	3	2	1	1	2	0	0	3	21	0.7	Marginal
5	Carbon Canyon Creek (Lower)	October 27, 2021	0	3	0	1	1	3	1	1	1	0	3	1	0	15	0.5	Poor
6	Carbon Canyon Creek (Upper)	September 15, 2021	1	3	1	2	1	3	1	1	1	2	0	0	3	19	0.6333	Poor
7	Chileno Canyon	July 2, 2021	0	3	1	2	1	3	1	1	3	1	3	3	1	23	0.7667	Marginal
8	Chino Creek	August 23, 2021	3	3	1	0	1	1	2	1	0	2	0	0	3	17	0.5667	Poor
9	Cole Creek	October 13, 2021	1	3	1	2	1	3	1	1	1	2	3	3	1	23	0.7667	Marginal
10	Hole Creek	July 19, 2021	1	3	1	2	1	0	1	1	0	2	0	0	3	15	0.5	Poor
11	North of Nichols Road	June 29, 2021	1	3	1	2	1	3	1	1	3	2	0	1	3	22	0.7333	Marginal
12	Prado Basin	July 12, 2021	1	1	1	2	1	3	1	1	3	2	0	2	3	21	0.7	Marginal
13	Rancho Jurupa Regional Park	May 24, 2021	3	1	1	2	1	0	0	1	0	2	0	1	3	15	0.5	Poor
14	Soquel Canyon	August 19, 2021	1	3	1	2	1	3	1	1	3	2	1	3	1	23	0.7667	Marginal
15	Sunnyslope Creek	May 24, 2021	1	3	1	2	1	3	1	1	1	2	0	1	3	20	0.6667	Poor
16	Tequesquite Confluence Pool	July 19, 2021	3	3	1	1	1	3	2	1	0	2	0	3	3	23	0.7667	Marginal
17	West Fork San Gabriel River	July 2, 2021	1	3	1	2	1	3	2	1	1	2	3	3	3	26	0.8667	High

Appendix 1B. Southwestern pond turtle (*Actinemys pallida*) habitat suitability assessment descriptions for the numerical scores in Appendix 1A.

Description	Score
<u>Water Depth</u>	
> 1 m depth	3
0.5 - 1 m depth	1
< 0.5 m depth	0
<u>Aquatic Substrate</u>	
Natural watercourse	3
Earthen Channel	1
Concrete lined	0
<u>Aquatic Refugia</u>	
Present	1
Absent	0
<u>Hatchling Habitat</u>	
Gentle gradient with shallow water and refugia	2
Gentle gradient with shallow water or refugia	1
No gentle gradient	0
<u>Basking Sites</u>	
Present	1
Absent	0
<u>Terrestrial Habitat Buffer</u>	
> 500 m buffer	3
499-275 m buffer	2
274-51 m buffer	1
<50 m buffer	0
<u>Canopy Cover</u>	
>75%	2
<74% x >25%	1
<24%	0
<u>Terrestrial Refugia</u>	
Present	1
Absent	0
<u>Human Access</u>	
Remote, restricted or limited access	3
Moderate visitation	1
No access restrictions	0
<u>Aquatic Vegetation</u>	
Emergent and submergent aquatic vegetation is present	2
Emergent or submergent aquatic vegetation is present	1
No aquatic vegetation present	0
<u>Invasive Species</u>	
No invasives seen	3
One invasive species seen	1
More than one invasive species detected	0
<u>Roads</u>	
> 500 m buffer	3
499-275 m buffer	2
274-51 m buffer	1
<50 m buffer	0
<u>Water Present</u>	
100% wet	3
Sections of wet	1
Dry	0

Site Categories		
Points	Score	Habitat Category
>26	>85%	High
24-25	80-84%	Moderate
21-23	68-83%	Marginal
<20	<67%	Poor

Appendix 2. Southwestern pond turtle (*Actinemys pallida*) demography for southern California, 2021. Note: For the incidental capture sites, only pond turtles from Fish Canyon and Middle Piru Creek were marked with PIT tags or marginal scutes.

Site	PIT Tag/Marginal Scute Number	Age	Sex	Maximum Carapace Length (mm)	Maximum Weight (g)
Aliso Canyon	845295873	Juvenile	Unknown	67.7	51.0
Aliso Canyon	845296122	Juvenile	Female	86.2	111.0
Aliso Canyon	845296257	Adult	Female	124.3	314.0
Aliso Canyon	845296367	Juvenile	Unknown	72.2	58.0
Aliso Canyon	845296525	Juvenile	Unknown	52.9	24.0
Aliso Canyon	845296565	Juvenile	Unknown	72.9	62.0
Aliso Canyon	845296599	Adult	Female	122.1	287.0
Aliso Canyon	845296783	Adult	Female	150.0	490.0
Aliso Canyon	845528377	Juvenile	Female	91.0	118.0
Aliso Canyon	845530291	Adult	Female	141.2	529.0
Aliso Canyon	845531124	Adult	Female	133.0	443.0
Aliso Canyon	845531311	Juvenile	Male	91.0	103.0
Aliso Canyon	845531540	Juvenile	Unknown	84.5	105.0
Aliso Canyon	845532077	Adult	Female	106.0	197.0
Aliso Canyon	845533807	Adult	Female	107.4	182.0
Aliso Canyon	845534090	Adult	Male	129.0	327.0
Big Tujunga Creek	043273084	Adult	Male	125.3	246.0
Big Tujunga Creek	845527799	Adult	Female	121.8	252.0
Big Tujunga Creek	845532058	Adult	Male	107.9	158.0
Big Tujunga Creek	845534573	Adult	Female	121.6	246.0
Brea Creek	9	Juvenile	Unknown	60.5	75.0
Brea Creek	845296322	Adult	Male	146.1	504.0
Brea Creek	845526825	Adult	Male	152.0	527.1
Brea Creek	845528270	Adult	Female	147.5	463.9
Brea Creek	845529772	Juvenile	Unknown	68.2	50.0
Brea Creek	845530126	Adult	Male	150.0	500.3
Brea Creek	845530382	Adult	Female	118.0	233.5
Brea Creek	845533547	Adult	Male	121.3	231.0
Brea Creek	845533771	Adult	Male	139.0	332.9
Brea Creek	845535096	Juvenile	Unknown	71.9	62.9
Brea Creek	845535598	Juvenile	Unknown	83.9	80.6
Carbon Canyon Creek	101	Juvenile	Female	81.3	82.0
Carbon Canyon Creek	102	Adult	Male	111.8	182.0
Carbon Canyon Creek	103	Juvenile	Unknown	74.7	60.0
Carbon Canyon Creek	104	Juvenile	Unknown	58.0	20.0
Carbon Canyon Creek	105	Juvenile	Unknown	64.8	52.0
Carbon Canyon Creek	106	Juvenile	Unknown	86.6	96.0
Carbon Canyon Creek	107	Adult	Female	111.8	260.0
Carbon Canyon Creek	108	Juvenile	Female	101.5	146.0
Carbon Canyon Creek	109	Juvenile	Female	95.3	123.0
Carbon Canyon Creek	110	Juvenile	Female	79.0	72.0

Appendix 2. Southwestern pond turtle (*Actinemys pallida*) demography for southern California, 2021, *Continued*.

Site	PIT Tag/Marginal Scute Number	Age	Sex	Maximum Carapace Length (mm)	Maximum Weight (g)
Carbon Canyon Creek	120	Juvenile	Unknown	80.9	74.0
Carbon Canyon Creek	120	Juvenile	Unknown	71.5	55.0
Carbon Canyon Creek	130	Juvenile	Female	92.1	102.0
Carbon Canyon Creek	206	Juvenile	Unknown	66.5	51.0
Carbon Canyon Creek	845296006	Adult	Female	118.5	269.0
Carbon Canyon Creek	845296009	Adult	Male	118.0	256.0
Carbon Canyon Creek	845296301	Adult	Female	144.2	456.0
Carbon Canyon Creek	845527003	Juvenile	Male	97.5	143.0
Carbon Canyon Creek	845527112	Adult	Male	131.2	283.0
Carbon Canyon Creek	845527567	Adult	Male	120.0	243.0
Carbon Canyon Creek	845528005	Adult	Male	117.5	239.0
Carbon Canyon Creek	845528291	Juvenile	Female	92.0	113.0
Carbon Canyon Creek	845528297	Adult	Female	111.0	208.0
Carbon Canyon Creek	845528355	Juvenile	Female	89.3	106.0
Carbon Canyon Creek	845528383	Adult	Male	121.5	134.0
Carbon Canyon Creek	845528589	Adult	Male	122.7	268.0
Carbon Canyon Creek	845529314	Adult	Male	103.2	148.0
Carbon Canyon Creek	845529375	Adult	Male	120.2	244.0
Carbon Canyon Creek	845529591	Juvenile	Female	91.2	107.0
Carbon Canyon Creek	845529823	Adult	Male	125.7	245.0
Carbon Canyon Creek	845530604	Juvenile	Female	102.3	160.0
Carbon Canyon Creek	845530816	Juvenile	Unknown	95.9	132.0
Carbon Canyon Creek	845531072	Juvenile	Male	102.0	137.0
Carbon Canyon Creek	845532515	Adult	Female	123.4	290.0
Carbon Canyon Creek	845532547	Adult	Male	131.4	291.0
Carbon Canyon Creek	845532809	Juvenile	Unknown	86.9	96.0
Carbon Canyon Creek	845532894	Adult	Male	120.1	231.0
Carbon Canyon Creek	845533329	Adult	Female	134.8	399.0
Carbon Canyon Creek	845533368	Adult	Male	110.6	183.0
Carbon Canyon Creek	845534355	Adult	Male	117.4	234.0
Carbon Canyon Creek	845534537	Juvenile	Female	98.0	141.0
Carbon Canyon Creek	845535269	Adult	Female	121.4	263.0
Cole Canyon	845862304	Juvenile	Unknown	85.9	103.3
Cole Canyon	845863792	Adult	Female	122.0	261.1
Fish Canyon	1	Adult	Male	200.0	109.5
Fish Canyon	2	Hatchling	Unknown	31.6	6.8
Middle Piru Creek	605370520	Adult	Female	129.3	320.0
Rancho Jurupa Regional Park	845532093	Adult	Male	148.0	516.0
Soquel Canyon	1	Hatchling	Unknown	43.7	14.5
Soquel Canyon	7	Juvenile	Unknown	43.9	17.0
Soquel Canyon	8	Juvenile	Unknown	49.7	20.0

Appendix 2. Southwestern pond turtle (*Actinemys pallida*) demography for southern California, 2021, *Continued*.

Site	PIT Tag/Marginal Scute Number	Age	Sex	Maximum Carapace Length (mm)	Maximum Weight (g)
Soquel Canyon	9	Juvenile	Unknown	55.4	29.0
Soquel Canyon	10	Juvenile	Unknown	52.9	23.0
Soquel Canyon	20	Juvenile	Unknown	56.8	28.0
Soquel Canyon	30	Juvenile	Unknown	58.4	31.0
Soquel Canyon	40	Juvenile	Unknown	49.5	18.0
Soquel Canyon	50	Juvenile	Unknown	58.3	36.0
Soquel Canyon	841560630	Adult	Female	108.9	187.0
Soquel Canyon	842806854	Juvenile	Unknown	51.0	25.0
Soquel Canyon	845295876	Adult	Female	111.8	210.0
Soquel Canyon	845296278	Adult	Male	111.4	199.0
Soquel Canyon	845296540	Juvenile	Unknown	68.9	48.0
Soquel Canyon	845296574	Adult	Female	133.4	395.0
Soquel Canyon	845296575	Juvenile	Female	96.0	146.0
Soquel Canyon	845296581	Adult	Female	126.1	335.0
Soquel Canyon	845296592	Juvenile	Female	80.8	69.0
Soquel Canyon	845296616	Juvenile	Unknown	71.3	58.0
Soquel Canyon	845296786	Adult	Male	114.5	177.0
Sunnyslope Creek	845295895	Adult	Male	136.5	341.0
Sunnyslope Creek	845296125	Adult	Female	141.0	282.0
Sunnyslope Creek	845296841	Adult	Female	114.0	153.0
Sunnyslope Creek	845528006	Adult	Male	140.0	188.0
Tequesquite Confluence Pool	845527272	Adult	Female	176.0	777.0
West Fork San Gabriel River	605369878	Adult	Female	114.0	225.0
West Fork San Gabriel River	605527379	Adult	Female	146.0	480.0
West Fork San Gabriel River	605529567	Adult	Male	137.0	370.0
West Fork San Gabriel River	605532844	Adult	Female	144.0	–