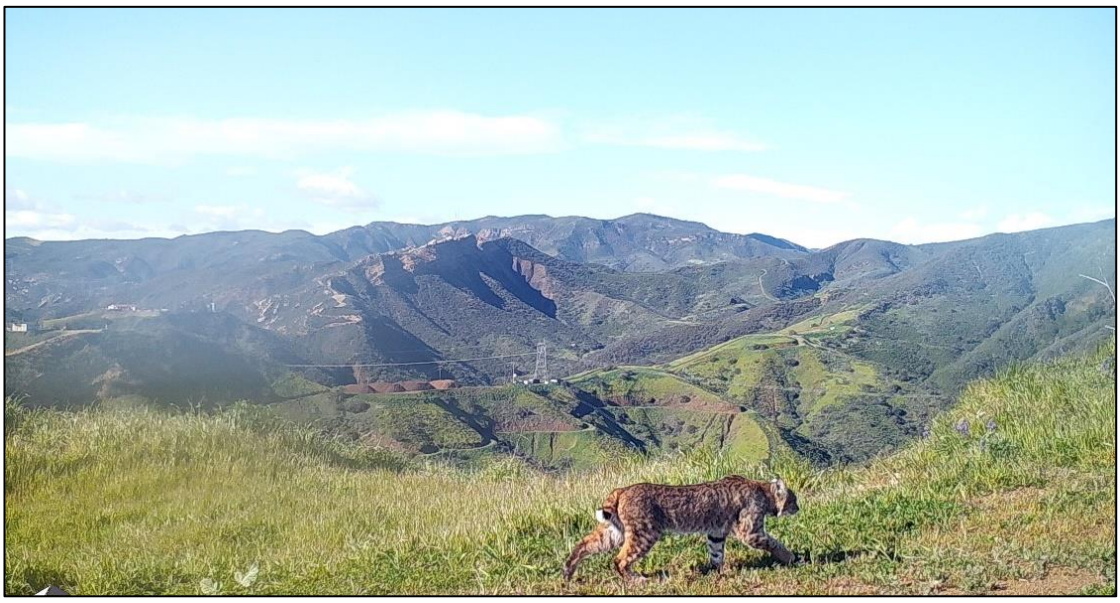
M2 Natural Community Conservation Plan/Habitat Conservation Plan – 2023 Annual Report



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Acronyms and Definitions

ACOE – Army Corps of Engineers

CAGN – Coastal California gnatcatcher

Caltrans – California Department of Transportation

CBB – Crotch's bumble bee

CCC - California Coastal Commission

CCW – Coastal cactus wren

CDFW – California Department of Fish and Wildlife

CEs – Conservation Easements

CHL – Coast horned lizard

CHSP – Chino Hills State Park

CNDDB – California Natural Diversity Database

COI – Certificate of Inclusion

CSS – Coastal sage scrub

DLRP – Disturbed lands restoration project (Pacific Horizon Preserve)

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

IML – Intermediate mariposa lily

IRC – Irvine Ranch Conservancy

ISHB – Invasive shot hole borer

ISMP – Invasive Species Management Plan

MSD – Many-stemmed dudleya

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 Go – M2 rebranded

OC Parks – Orange County Parks

OCTA – Orange County Transportation Authority

OTW – Orangethroat whiptail

RMP – Resource Management Plan

SCAG – Southern California Association of Governments

SCE – Southern California Edison

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 sixth 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, 2023 and December 31, 2023. 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 California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS), 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, seven restoration projects, Big Bend, City Parcel, Bee Flat, University of California, Irvine (UCI) Ecological Reserve, United States Forest Service (USFS) Dam Removal, Agua Chinon, and Lower Silverado Canyon 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 1,236[1] 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. An update to the RMPs is currently underway. OCTA will be coordinating the updated language with the Wildlife Agencies. 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. RECON will also be assisting with updating the RMPs.

(3) High Level Security Services (HLSS) to assist with patrol of the Preserves to help deter trespassing, vandalism and provide enforcement as needed.

(4) Guida Surveying Inc. to perform property surveying services.

Most notably, the Fire Management Plans (FMPs) were completed, focused monitoring efforts continued for the 2022 Coastal Fire burn area, and effectiveness monitoring continued for the covered reptile species for five of the seven Preserves. In addition, 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.

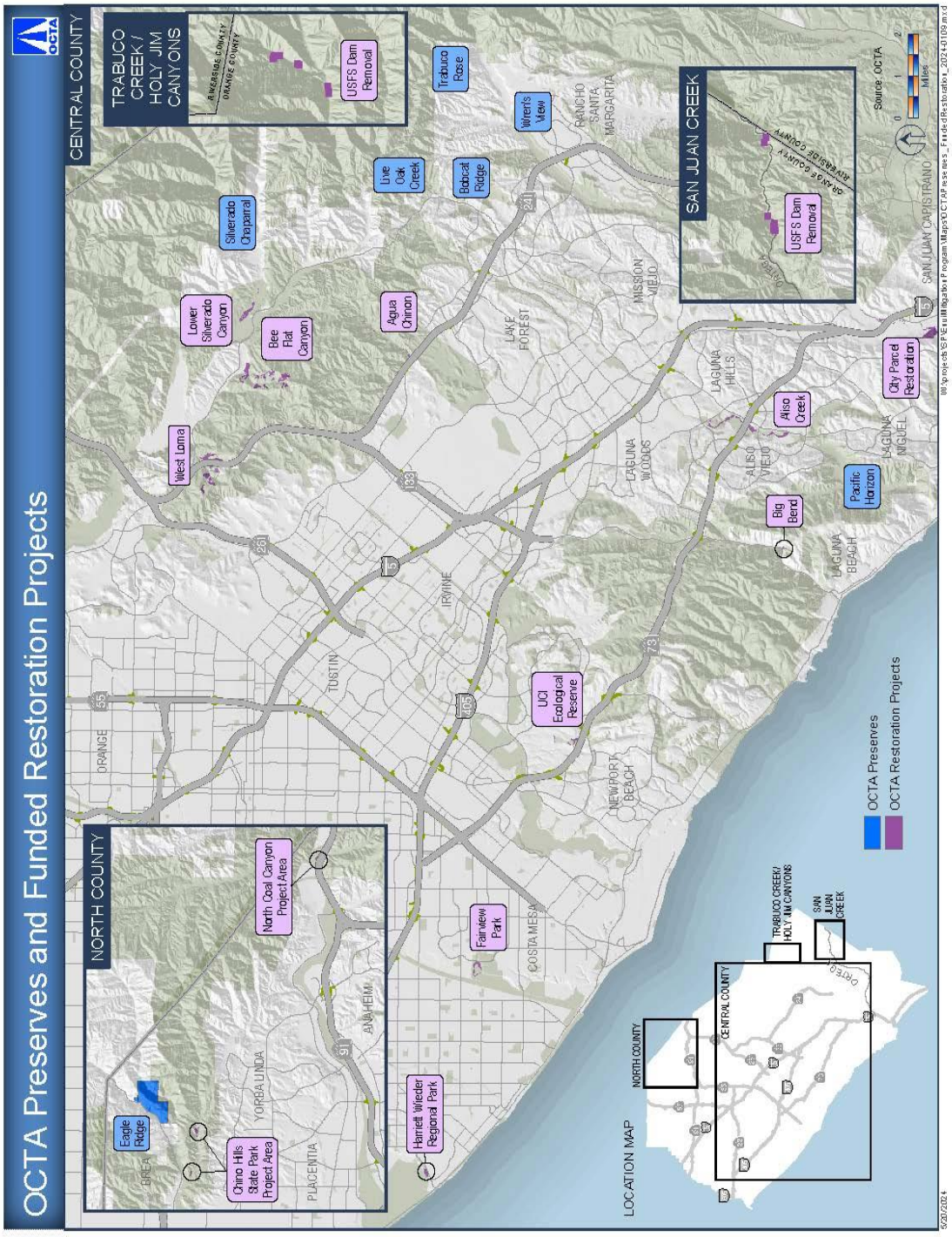
OCTA-Funded Restoration Projects

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

[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.

Wildlife Agencies. To date, seven of the 12 restoration projects have obtained sign-off. The remaining five restoration projects are at different stages of this process. Additionally, some of these restoration projects have been impacted in previous years by wildfires and some were delayed due to issues such as drought.

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 (*Gila orcutti*) 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, the 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 has been collaborating with the Wildlife Agencies to develop an acceptable restoration plan for MSD 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 2023, OCTA participated in one EMP public outreach event and 6 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, a minor amendment has been recommended 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. An access agreement and pole easements for each Preserve (except Bobcat Ridge) has been developed and is under final review by SCE legal. OCTA is waiting for SCE to obtain a coastal development permit that will define their on-going maintenance needs at the Pacific Horizon Preserve. Some of the poles at Pacific Horizon may be removed, resulting in less maintenance and less permanent impacts. The disposition of these poles will also be considered when factoring the compensation/restoration plan needs 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.

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Chapter 1
Background and Introduction

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.

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 2023. 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
Tracking Impacts	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
		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.		
Preserve Management	5.8.1.3	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.	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.	2.3
Maintain Rough Proportionality	5.8.2	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	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,	2.4

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).	USFS dam removal, Agua Chinon, and Lower Silverado Canyon, 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)	
Oversight of M2 Preserve Management and Monitoring	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-	For each of the seven Preserves, OCTA contracted with Bonterra Psomas to	2018 First Annual Report

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		time event that characterizes the status of conserved resources, as well as threats and stressors, for planning or future comparisons.	complete baseline biological 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. The Final RMPs are posted on the OCTA EMP website. The RMPs will be updated (beginning in 2024) 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 worked with the Wildlife Agencies and ACOE to develop CE templates. This first CE has been under review by CDFW's legal staff for over one year. Once approved, it is anticipated that this CE template will be used for the remaining six Preserves. In 2023, comprehensive surveys were conducted to verify property lines and to develop legal descriptions and depictions of the Preserves to help support the CE exhibits.	7.1
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	3.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			(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.	
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 Preserves will be managed to be consistent with the protection and enhancement of biological resources.	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 Agencies. OCTA conducts public hikes and equestrian rides at designated Preserves.	3.1, 6.1.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
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 currently being conducted.	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 FMPs for each Preserve.	OCTA contracted with Wildland Res Mgt and completed Preserve specific FMPs in 2023. The FMPs establish policies and approaches to maximize protection of biological resources during fire suppression activities, to the degree feasible and were approved by the applicable fire entities and the Wildlife Agencies. These FMPs will be incorporated into the revised Preserve RMP(s).	3.2
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	OCTA has been completing surveys for Covered Species and their habitat within the Preserves based on schedules set forth in the RMPs. In 2023, Visual Encounter Surveys (VES) for	3.2, Appendix C

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		survey protocols listed in Table 7-1 of the M2 NCCP/HCP in perpetuity.	reptiles continued for the remaining Preserves.	
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 improve future management actions through monitoring to evaluate management effectiveness.	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 in the monitoring and management of the Preserves.	3.2
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	Because OCTA is functioning as the Preserve Manager at each of the Preserves, the bi-annual meetings have not been initiated. Additional meetings in 2024 are anticipated to collaborate on	N/A

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		technical issues of Preserve management will be addressed.	the revisions to the Preserve RMPs. OCTA has been coordinating closely with the Wildlife Agencies on Preserve activity.	
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 integrated with regional monitoring databases as appropriate.	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 results with other regional entities.	6.1.3
Tracking and Facilitation of M2 Restoration Project Implementation	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	4.1, 4.2

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			the biological values of the restoration project location.	
'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.
Additional Conditions for Coverage	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. Actions are underway at the Pacific Horizon Preserve to help meet this condition.	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. This condition has now been met.	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	5.1.2, 3.2.4

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
			actions to improve habitat suitability and is coordinating with the Wildlife Agencies to help increase the population size.	
Plan Funding	8.3	Both the Natural Community Conservation Plan Act (NCCPA) and Endangered Species Act (ESA) require that a conservation plan approved pursuant to the respective state or federal law must assure availability of adequate funding to implement the Plan's conservation actions.	The primary source of funding for the Plan implementation is the M2 transportation sales tax initiative, which included at least 5% for the revenues for the EMP.	Chapter 7
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

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
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 funding source to cover the responses to Changed Circumstances on the Preserves in perpetuity.	OCTA is currently establishing an endowment to cover Preserve 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.	7.1, 7.2
Plan Administration				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	A Minor Amendment is necessary to recognize the SCE powerline as an existing use for which operation and	8.3

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		proposed by OCTA and implemented in collaboration with the Wildlife Agencies.	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.	
Changed Circumstances	8.6.2	Changed Circumstances are defined as those events that may affect a species or geographic area covered by 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.	No events meeting the criteria of a Changed Circumstance occurred during the timeframe of this Annual Report.	8.4
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	This is the sixth Annual Report and covers all activities in 2023.	

Compliance Action	Plan Section Reference	Description	Summary of OCTA Compliance	Annual Report Section Reference
		other date as agreed upon by OCTA and the Wildlife Agencies).		
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 2024 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	2023 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Ongoing:					
Project B	I-5, I-405 to Yale Ave *Segment 1*	Design/Ad/Award	March 2026	September 2029	• NCCP/HCP Consistency Determination Checklist (Checklist) and Certificate of Inclusion (COI) complete • 1602 permit anticipated
	I-5, Yale Ave to SR-55 *Segment 2*	Design/Ad/Award	April 2026	September 2029	
Projects C and D [a]	I-5, Oso Pkwy to Alicia/La Paz Rd Interchange *Segment 2*	Construction	April 2019	September 2024	• NCCP/HCP Checklist and COI complete • 1602 permits per segment
	I-5, Alicia Pkwy to El Toro Rd *Segment 3*	Construction	October 2020	November 2024	
	I-5, SR-73 to Oso Pkwy/Avery Pkwy Interchange *Segment 1*	Construction	January 2020	November 2024	
Project D	I-5, I-5/El Toro Interchange	ENV	TBD	No schedule past ENV	• NCCP/HCP checklist complete and COI pending • No 1602 permit anticipated
Project F	SR-55, I-405 to I-5 *Segment 1*	Construction	June 2022	February 2027	• No Covered Species • NCCP/HCP checklist and COI complete • 1602 permit obtained (all concrete impacts)
	SR-55, I-5 to SR-91 *Segment 2*	Design/Ad/Award	August 2026	October 2029	• NES(MI) complete • No Covered Species • NCCP/HCP checklist and COI pending

Project	Location	2023 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Project G	SR-57 (NB), Orangewood Ave to Katella Ave (Segment 1a)	Design/Ad/Award	December 2025	June 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 *Segment 1*	Design/Ad/Award	August 2024	March 2028	• NCCP/HCP checklist and COI complete • Permit to be issued per segment
	SR-91, La Palma Ave to SR-55 *Segment 2*		February 2026	January 2030	
	SR-91, Acacia St to La Palma Ave *Segment 3*		January 2026	June 2029	
Project J	SR-91, SR-241 to Riverside County Line [b]	ENV Eastbound Corridor Operations Project ENV began June 2023 and anticipated to be complete in mid-2025 (led by RCTC)	TBD (contingent upon future widening in Riverside County)	No schedule past ENV	• Full build out not yet scheduled
Project K	I-405, I-605 to SR-73	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	December 2024	July 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	2023 Phase	Expected Construction Start Date	Anticipated Completed Construction	NCCP/HCP Notes
Project C and D	I-5, Pico to Vista Hermosa Segment 1	Completed		August 2018	
Project C	I-5, Vista Hermosa to PCH	Completed		July 2017	
Project C	I-5, PCH to San Juan Creek Segment 3	Completed		July 2018	
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). GLA inadvertently missed a few polygons of IML in the 2022 survey at Pacific Horizon and surveyed those in 2023. The new mapping brought the numbers from 8 to 86 individuals which are reflected in the tables below. In addition, IML was also reevaluated in 2023 at Wren's View as numbers seemed to drop significantly from the baseline survey. The botanist incidentally recorded over 200 IML and believed the numbers were much higher. The Wren's View

2023 numbers are not incorporated into the table below as the survey was an effort to verify the concerning numbers and not considered an official focused survey. Focused plant surveys are anticipated to be repeated between 2026 – 2027, at which time the table below will be updated. 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. More detailed information (including mapping) is available in Appendix C and is discussed in Chapter 3 of this report.

Data was also updated from the 2023 Harriett Weider Regional Park restoration project. This past year the Bolsa Chica Conservancy conducted surveys for ST and documented a decrease in population this year from 4433 to 1857 individuals. It was speculated that the drop in population could be attributed to both a delay in growing season and lack of available space from being outpaced by earlier season plant species. In addition, two patches of ST were found in an area not previously seen (Bolsa Chica Conservancy, 2023).

Table 2-4. 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	86*	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	1,011	60	57

*2023 focused survey results at Pacific Horizon (areas missed in 2022) incorporated

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
	86			+664	Pacific Horizon Preserve
	92			+756	Bobcat Ridge Preserve
	177			+933	Silverado Chaparral Preserve
	36			+969	Wren's View Preserve
	42			+1011	Live Oak Creek Preserve
		0	0	+1011	
Current Balance:				**+1011**	
Many-stemmed Dudleya	57			+57	Pacific Horizon Preserve
		0	0	+57	
Current Balance:				**+57**	
Southern Tarplant	1,857			+1,857	Harriett Wieder Restoration Project
	51,000			+52,857	Fairview Park Restoration Project
		0	0	+52,857	
Current Balance:				**52,857**	

[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. 2023. *Harriett Wieder Regional Park Habitat Restoration Project: 2023 Annual Report*. Prepared for OCTA. 2024

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

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

Glenn Lukos Associates. 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 and Silverado Chaparral 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 the Wildlife Agencies for their consideration. A minor amendment to document this change in the Plan will be needed.

In 2023 OCTA and SCE legal finalized access agreement language which will be accompanied by an easement for the SCE poles on all the applicable Preserves. OCTA performed land surveys for the poles on/adjacent to the Preserves and provided documentation to SCE for review and approval. This was a necessary step to enable the recordation of legal easements. Once these documents are in place, it should help avoid and minimize future impacts to the Preserves.

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.

2.4 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.

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.

Lower Silverado restoration project "before".

Lower Silverado restoration project "after" (completed in 2023). Photos courtesy of Irvine Ranch Conservancy

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, seven restoration projects (Big Bend, City Parcel, Bee Flat, UCI Ecological Reserve, the USFS dam removal project, Agua Chinon and Lower Silverado Canyon) 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.

Table 2-5 provides a ledger of the balance of credits achieved and habitat impacts as of December 31, 2023. 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**	**36.0**	**90.2**	**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	--	--	--	--	--	--	--	--	--
Lower Silverado Canyon Restoration Project					20.8	7.7			
Agua Chinon Restoration Project					2.1	4.0			

[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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Chapter 3
OCTA Preserves

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 2023. The effectiveness monitoring included herpetology focused visual encounter surveys (VES) for both coast horned lizard (*Phrynosoma blainvillii,* CHL) and orangethroat whiptail (*Aspidoscelis hyperythra,* OTW) at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon and Wren's View Preserves. 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)[a]	Invasive Species (Pests)[b]	Effectiveness Monitoring[c]	Adaptive Management[d]
Bobcat Ridge	The ISMP identified low threats to Covered Species based on the low amount of invasive weeds.	To date, no pests have been detected.	Focused herpetology surveys documented OTW. Wildlife camera monitoring continued.	Focused monitoring and maintenance have 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 coastal cactus wren (*Campylorhynchus brunneicapillus,* CCW) 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. Western pond turtles (*Emys marmorata,* or pond turtle) have been documented on the Preserve in 2021/2022. Focused herpetology surveys were conducted but neither the OTW nor CHL were detected. Wildlife cameras will be reinstalled in 2024 to continue mammal monitoring.	After years of coordination and management actions, cattle remain absent from the Preserve. If cattle remain excluded, creek restoration activities should be considered with grant funding. Creek recovery is being monitored with photo stations.
Live Oak Creek	In accordance with the ISMP, a focused effort was made in 2023 to treat the polygons with artichoke thistle and tree tobacco. Spanish broom was also treated within the Preserve.	Gold spotted oak borer beetle (GSOB) was detected. One tree was heavily pruned and multiple trees were treated with pesticide in 2023.	Focused herpetology surveys documented OTW. Wildlife camera monitoring will be reinitiated in 2024.	Consider vegetation management around cactus patches to protect and/or improve CCW population as identified within the RMP.

Preserve	Invasive Species (Plants)[a]	Invasive Species (Pests)[b]	Effectiveness Monitoring[c]	Adaptive Management[d]
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	Sections missed in the 2022 focused plant survey effort were assessed in 2023. The IML numbers significantly increased after including these areas but are still lower than the baseline documentation. Focused herpetology surveys did not document CHL or OTW. Wildlife camera monitoring continued.	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.
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 occurred in 2022 and did not document CHL or OTW. Both species were previously documented during monitoring efforts. Wildlife camera monitoring continued 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 CCW 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 2023.	Four coast live oak trees were that tested positive for GSOB were chipped and multiple other trees were treated with insecticide.	Focused herpetology surveys documented OTW in 2022. Wildlife camera monitoring continued and documented a variety of mammals [frequent mountain lion (*Puma concolor*)].	In addition, the ISMP for this Preserve continues to be implemented, benefiting 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 notable decrease of IML were documented in 2022. However, monitoring observations in 2023 indicated the numbers are likely similar to the baseline documentation. Maintenance activities will continue to be heavily monitored to ensure impacts do not occur to covered plants. Focused herpetology surveys did not document CHL or OTW in 2023, however numerous previous incidental observations have occurred for OTW on this Preserve.	Consider vegetation management around cactus patches to protect and/or improve CCW population as identified within the RMP.

[a] 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.

[b] OCTA will continue to monitor and treat trees that are being impacted by the 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.

[c] 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.

[d] 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

Pursuant to the Resource Management Plans (RMPs), effectiveness monitoring was performed for both covered mammal and covered reptile species in 2023. Wildlife movement cameras (continuing from previous years) as well as visual encounter surveys (VES) were utilized for these surveys. The 2023 monitoring efforts again documented bobcat (*Lynx rufus*) as well as OTW. Cactus wren were also previously documented during focused surveys in 2021. In addition, IML have been documented and are being monitored on the Preserve. Coastal California gnatcatcher (*Polioptila californica californica*, CAGN), mountain lion and CHL have the potential to occur on the Preserve but have not been documented. Ongoing stewardship monitoring will include general inspections and documentation for all Covered Species with the potential to occur.

Coastal whiptail (*Aspidocelis tigris stejnegeri*) detected during the Covered Reptile VES in 2023. Photo courtesy of GLA.

Unauthorized impacts of coastal sage scrub (CSS) were previously documented 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. The area has been monitored, weeded, and staked with signage to hopefully decrease the chance of the neighbor impacting the Preserve again. Some of this area was inadvertently line trimmed in 2023 by RECON during trail maintenance. This area continues to remain relatively undisturbed. The site is on a trajectory for reestablishment. IML surveys in this area will remain a priority.

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. The University of California Cooperative Extension (UCCE) did not perform surveys on this Preserve this past year based on no detections the previous few years. OCTA will request that surveys for GSOB resume in 2024 by UCCE.

Maintenance

RECON field crews controlled non-native herbaceous vegetation with line trimmers along the trail at the Preserve. Invasive plant species remain limited. The ISMP is being updated in 2024 with current invasive species mapping and any new occurrences. Maintenance also included the repair to signage, fencing and the removal of old barbed wire fencing.

3.2.1.2 Planned Actions for 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Continue to closely monitor unauthorized activities along the southern boundary and coordinate with the neighbor to resolve the existing encroachments.
- Continue monitoring covered mammal species and wildlife movement utilizing the installed wildlife camera location post.
- Consider collaborating with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies (not specific to 2024).
- 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. Update the ISMP and prioritize invasive plant species treatments.
- Continue to monitor for invasive pests as they have been documented in Trabuco Canyon.

3.2.1.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

3.2.2 Eagle Ridge Preserve

3.2.2.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Previous monitoring efforts have documented western pond turtles inside and outside the Preserve. In 2023, GLA biologists detected them just offsite within Soquel Canyon Creek. Least Bell vireo (*Vireo bellii pusillus*) was also documented on the extreme western edge of the property; the vireo was also using 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 mountain lion. Collared lion data also showed use within the vicinity.

Focused herpetology surveys being conducted at Eagle Ridge in 2023. Photo courtesy of GLA.

Focused VES for CHL and OTW was conducted in 2023, however, neither species was detected during the surveys. To date, no IML or MSD have been documented on this Preserve. Due to their documented absence during multiple survey efforts, GLA does not recommend future implementation of effectiveness monitoring for Covered Plants. Camera monitoring for covered mammal species and wildlife movement previously documented bobcat, skunk, mule deer, and coyote. Covered Mammal tracking will resume in 2024. There were no signs of public access or cattle in 2023.

Habitat and specifically riparian habitat in Soquel Canyon Creek was heavily compromised for many decades due to cattle use. Cattle have now been out of the Preserve for over two years and the trails and riparian corridor are beginning to recover. 2023 observations indicated that regrowth of both native and non-native vegetation has increased significantly and often obscures the trail, which crosses the creek multiple times. GLA reported that some areas of the creek are more mesic than others and support riparian shrubs, while other portions (especially on the terraces above creek) support a mix of native and non-native upland species. Often, just beyond the creek bed, dense thickets of thistle and mustard surround the native species. Where the trail goes up onto the terraces, the native shrubs and trees are expanding but the open disturbed areas are full of tocalote and bromes. Creek monitoring will continue and any new threats to pond turtle will be noted. A grant funded pond turtle restoration project could be considered within the creek in the future. Photo monitoring to help document the riparian habitat recovery began in 2022 and will continue for the next couple of years. The ISMPs are being updated in 2024 along with treatment recommendations.

No new unauthorized trails or access were documented. The trails (although quite overgrown) 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.

GLA detected Crotch's bumble bee (*Bombus crotchii*, CBB) at Eagle Ridge, which is listed as a candidate species under the California Endangered Species Act (CESA). There is also a high potential for CBB to occur at all the other Preserves. Comprehensive vegetation mapping is occurring in 2024. Once that mapping is completed, OCTA and CDFW can discuss potential avoidance and minimization measures for any of the Preserve maintenance activities that might remove vegetation with the potential to support CBB.

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 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Continue 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 and for other pond turtle threats/stressors.
- Update the ISMP and prioritize invasive plant species treatments.
- Continue to monitor for invasive pests.
- Continue to coordinate with SCE for Preserve access and easements.
- Discuss measures with CDFW for future anticipated activities that might remove vegetation with the potential to support CBB.

3.2.2.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

3.2.3 Live Oak Creek Preserve

3.2.3.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Covered Species documented on Live Oak Creek include OTW, bobcat, mountain lion, CCW and IML. Focused VES monitoring documented OTW but not CHL in 2023. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN. The Preserve is within USFWS designated critical habitat for CAGN. Ongoing monitoring of the Preserve will continue to include general inspections for all Covered Species. In addition, wildlife movement cameras will be reinstalled in 2024.

The UCCE performed GSOB surveys and identified one infested coast live oak trees at Live Oak Creek, which was recommended for removal. The tree was removed in May 2023 and three additional trees were treated with insecticide as recommended.

Photo of orangethroat whiptail detected at Live Oak Creek in 2023. Photo courtesy of GLA.

In late 2023, OCTA surveyors documented an encroachment on the Preserve (approximately 683 square feet). The encroachment was a result of structure improvements made by the neighboring landowner to the east. An existing shed/building was improved with a deck and gravel pad, impacting the Preserve. OCTA is coordinating with the property owner and the County to resolve the encroachment issue. Patrols and monitoring will continue to document any unauthorized access.

Maintenance

Maintenance tasks performed by RECON included annual vegetation thinning on the fire road and within the two fuel modification zones (identified within the RMP). An oak tree limb that had fallen on the road was also removed after coordinating with local beehive relocation professionals to relocate a beehive within the limb. Targeted artichoke thistle, tree tobacco and Spanish broom control was also conducted on the Preserve. A new post and sign were also installed and the recontouring/regrading of the fire road occurred at several locations.

3.2.3.2 Planned Actions for 2024

Planned actions and priorities for 2024 include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Update the ISMP and prioritize invasive plant species treatments.
- Continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations.
- Re-install the wildlife cameras for Covered Mammal tracking.
- Continue to monitor areas of documented IML and suitable habitat along access roads and trails where maintenance occurs, to ensure that activities are not adversely affecting the populations.

- Continue to coordinate with SCE for Preserve access and easements.

3.2.3.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

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 this past year. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CHL, OTW and bobcat. Monitoring of the Preserve will continue to include general inspections for the CCW and the CAGN. Two wildlife cameras were installed in 2022 and maintained through 2023 but have not yet captured Covered Species. Focused VES for CHL and OTW were conducted but were not detected.

Intermediate Mariposa Lily at the Pacific Horizon Preserve. Photo courtesy of GLA.

GLA conducted focused surveys for IML in 2022; however, two areas of the Preserve containing suitable habitat for IML were missed during the 2022 survey effort. These areas were surveyed on June 22, 2023, and an additional 77 IML were mapped, bringing the total to 86. It should be noted that 144 individuals of IML were observed during baseline surveys in 2015; however, the biological baseline report prepared by Bonterra included methodologies that likely 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.

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 a result, OCTA and GLA have been collaborating with the Wildlife Agencies to develop a restoration plan to meet the NCCP/HCP minimum goal of 500 individuals. Seed and native soil was collected in August 2023, with an expected two-year nursery propagation period. Translocation into receiver sites within Pacific Horizon is expected to occur in fall 2025. A portion (approximately 25-percent) of the propagated MSD will be retained as "nursery stock" for future propagation and planting within the Pacific Horizon, and potentially other Preserves in the future.

Coastal Fire

The May 2022 Coastal Fire burned approximately 200 acres in the cities of Laguna Beach and Laguna Niguel (in Aliso Canyon). The fire and associated suppression activities impacted approximately 35 acres of the 151-acre Pacific Horizon Preserve. 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.

Great emphasis was placed on the monitoring of the burn area in 2023, with inspections and maintenance of invasive species (spot sprayed artichoke thistle, mustards, fennel, tree tobacco, and pampas grass). Monitoring continues and 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 have been an ongoing issue in relation to a group of mountain bikers. Due to this increased activity, OCTA's private security company has been routinely patrolling the burn area and reinforcing unauthorized uses throughout the Preserve. OCTA has also reached out to OC Parks staff to coordinate information and communicate the activity and concerns. Erosion from fall rain events was minor and limited to rill and minor sheet erosion. Erosion control wattles appeared intact and untouched. Adaptive management actions including placing (and replacing) cactus pads and woody debris to block unauthorized trails have helped to deter access.

In 2023, there was an overall increase in native plant cover and recruitment in the burn area and dozer lines. Dozer lines now exhibit increased native cover, with southern dozer lines being more distinctly vegetated than the northern lines. Following a summer weed abatement program, native seedlings occupied vacant patches. Non-native cover decreased by the end of 2023. Additional details regarding native vegetation regrowth and documented non-native/invasive species are included in GLA's 2023 Burn Area Monitoring Memo which is included in Attachment C.

SCE

As previously reported, SCE impacted approximately 0.45 acre on the Preserve by cutting new access trails and clearing around utility poles. In 2022 SCE's consultant, conducted invasive species and non-native weeds removal. Due to the unauthorized activity, the California Coastal Commission (CCC) required SCE to obtain a coastal development permit (CDP). A CDP application was submitted by SCE in April 2022, but deemed incomplete by CCC staff in May 2022. The Coastal Fire (May 2022) delayed progress on this pending CCC CDP and related mitigation requirements. As discussed in Section 2.3 of this report, once the placement of the poles and access routes are defined, a minor amendment will be necessary for the Plan. This amendment will recognize the SCE powerline as an existing use for which operation and maintenance will be permitted to continue and for which SCE will be required to provide restoration to offset habitat impacts to maintain long term net habitat value within the Preserve. In addition, in 2023 OCTA had professional surveys completed of all Preserves which included identification of utility poles. The results of these surveys are depicted in Appendix C, Exhibit 5. OCTA legal has finalized access agreement language (which includes avoidance and minimization measures and OCTA notification requirements) as well as easements for the poles and affiliated infrastructure and is awaiting SCE legal final approval and recordation.

Maintenance

Implementation of the Disturbed Lands Restoration Project (DLRP) in the northern portion of the Preserve and ISMP is ongoing. GLA conducted annual monitoring associated with implementation of the DLRP which is also included as an attachment to the GLA Bio Monitoring report. No major issues were reported within the DLRP and maintenance and monitoring will continue.

Fencing installed to help keep recreation on the designated trail. Photo courtesy of GLA.

RECON also spot-sprayed germinating invasive species including artichoke thistle, mustards, and fennel within the artichoke thistle control area in July 2023. This area was also fenced off and dethatched by cutting down all non-native vegetation and raking it into piles. Other native seed species were also collected to help with restoration efforts near the artichoke thistle area, DLRP and unauthorized access areas (strategically seeded).

3.2.4.2 Planned Actions for 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Update the ISMP and prioritize invasive plant species treatments.
- Continue to monitor wildlife using trail cameras.
- Continue implementation of the DLRP and monitoring to document unauthorized activities that could affect the MSD population. Continue to coordinate with Wildlife Agency staff on MSD restoration.
- Continue to monitor the burn area for invasive species and treat, as recommended by the Restoration Ecologist.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.4.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

3.2.5 Silverado Chaparral Preserve

3.2.5.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Covered Species observed on Silverado Chaparral Preserve included CCW, OTW, CHL, and IML. Wildlife cameras documented mountain lion and bobcat in 2023. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN and MSD.

Public access is not currently authorized at the Silverado Chaparral Preserve. Wildlife cameras documented minimal unauthorized recreational use. In addition, RECON conducted trail maintenance to enable access for the biological monitors, further demonstrating that the Preserve is not being accessed by the public. Previous enforcement actions taken by OCTA have been effective in securing this Preserve. 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.

Mule deer from Silverado Chaparral wildlife camera. Photo courtesy of GLA.

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.

Minor erosion repair was conducted and no issues with Preserve signs, fencing gates, trash or dumping were documented.

3.2.5.2 Planned Actions for 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Update the ISMP and prioritize invasive plant species treatments.
- Continue monitoring cameras for tracking wildlife use and to capture images of any unauthorized access throughout the Preserve.
- Continue to monitor for IML during maintenance activities.
- Collaborate and discuss the concept of invasive ant treatment.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.5.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

3.2.6 Trabuco Rose Preserve

3.2.6.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Covered Species observed on Trabuco Rose Preserve included CAGN, OTW, bobcat, and IML. Ongoing biological monitoring has also documented many nesting populations of CCW and extensive use by mountain lion. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include MSD and CHL. The Preserve is almost entirely within USFWS designated critical habitat for CAGN.

Wildlife camera photo of bobcat and kittens. Photo courtesy of GLA.

No new detections of Covered Wildlife Species occurred on Trabuco Rose Preserve. Three wildlife cameras were operated on the Preserve and detected mountain lion and bobcat throughout the Preserve on numerous occasions.

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 and oak tree health surveys in 2022 and recommended removal of four coast live oak trees that tested positive for GSOB. All four of these trees were removed and chipped to less than 3 inches by an OCFA contractor in April 2023. Additional dead trees were recommended for heavy pruning due to their location adjacent to roads as they posed a fire and safety risk. One of these trees was left (unpruned) due to nesting bird activity. Additionally, all coast live oaks with a DBH >8 inches located within 300 feet of the GSOB infested trees, were treated with insecticide as recommended. A stand of dead Eucalyptus trees that was recommended for removal due to fire risk was also removed in April. Pre-construction nesting bird surveys and monitoring activities were conducted by qualified OCTA and OCFA contracted biologists during tree removal activity.

GLA continues to monitor the erosional "gully" area and is assisting OCTA in securing regulatory permits to complete Phase II of the restoration project, which is anticipated to commence in 2024. Phase 2 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.

Maintenance

Implementation of the ISMP is ongoing. Initial treatment of the Priority 1 invasive species and some of the Priority 2 invasive species began in 2018, and follow-up treatments were conducted through 2023, as necessary. In 2023, RECON spot-sprayed germinating artichoke thistle and controlled castor bean, tamarisk, and mustards within the Preserve. In addition, weeding along fire and access roads occurred.

Maintenance activities on the Preserve included the repair of a fence that had been damaged by a fallen tree. Additionally, more fencing was installed, and some sections were repaired along the property line that borders the County owned Joplin Ranch property (now vacant). RECON also

installed snow fencing around the historical mining pit located in Rose Canyon to deter wildlife from falling into the pit and becoming trapped. RECON's subcontractor recontoured/regraded the interior fire roads following rain events to repair erosion that had created ruts and rills. No issues with trash or dumping were documented.

3.2.6.2 Planned Actions for 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Update the ISMP and prioritize invasive plant species treatments.
- Continue monitoring cameras for tracking wildlife use and to capture images of any unauthorized access throughout the Preserve.
- Continue to monitor for fencing, gate, and signage repair needs, as well as for erosion/sedimentation and trash.
- 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.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.6.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

3.2.7 Wren's View Preserve

3.2.7.1 Management and Monitoring Summary

Covered Species and Stewardship Monitoring

Covered Species documented to date include CAGN, CCW, OTW, mountain lion, bobcat and IML. GLA detected numerous CCW territories during focused surveys in 2021. A CAGN individual was once again documented during stewardship monitoring in 2023. 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. Focused surveys for CHL and OTW were conducted in 2023. Neither species was detected during that effort, but OTW have been documented over multiple years during stewardship monitoring.

GLA conducted focused surveys for IML in 2022; however, many of the historical IML along the road were not detected and so those areas were resurveyed in June 2023. A total of 211 IML were detected in locations where they were historically recorded but not detected in 2022. Note that a total of 283 individuals of IML were observed during baseline surveys in 2015; however, the biological baseline report included methodologies that likely resulted in increased IML being mapped. The entire Preserve was not resurveyed, and it is estimated that the overall count in 2023 was much higher than 211. Surveys will be repeated in 2026 or 2027.

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.

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.

Barbed wire removal at the Wren's View Preserve. Photo courtesy of RECON.

Monitors did not incidentally detect signs of GSOB or ISHB or note any other issues with trees. As previously reported, UCCE previously identified GSOB in coast live oaks which were removed and treated. OCTA will continue to coordinate with OCFA and UCCE to monitor and treat for GSOB and ISHB on the Preserves.

Maintenance

RECON removed over 4,000 linear feet of remnant barbed wire and chain link fencing. No issues with gates were observed. RECON's subcontractor also recontoured/regraded fire roads to fix erosion rills and installed water bars to prevent future erosion.

3.2.7.2 Planned Actions for 2024

Planned actions and priorities include:

- Conduct comprehensive vegetation mapping as an update to the baseline mapping.
- Update the ISMP and prioritize invasive plant species treatments.
- Re-install cameras for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.
- Continue to monitor and flag IML along the roads so they may be easily avoided during maintenance.
- 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.
- Continue to partner with UCCE and monitor and treat for GSOB and ISHB infestation.
- Continue to coordinate with SCE for Preserve access and easements.

3.2.7.3 Related Documents and References

Glenn Lukos Associates. 2024. *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. June 2024.

RECON Environmental Services (RECON). 2024. *2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves.* Prepared for OCTA. February 2024.

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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	√
	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[2]	
	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	√

[2] 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[3]
Restoration Installation	Implementation began in 2011
Restoration Monitoring of Success Criteria	Bee Flat project area (84 acres) was signed off in 2020. Wildfires in 2020 pushed the sign off of the Agua Chinon (6.1 acres) portion of the restoration project to 2023.
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	Project completed and approved.

[3] 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 was completed by IRC and included 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 was 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 were also controlled. The restoration success criteria included 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 the 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. Post fire assessments noted that the Corral site had good oak survival and the CSS and needlegrass stand were both recovering well[4].

Agua Chinon Update

The Agua Chinon restoration project was deemed complete and signed off by the Wildlife Agencies in 2023. The site burned in the 2020 Silverado Fire prior to receiving sign-off. In 2021, IRC began implementing a plan coordinated with OCTA, the Wildlife Agencies, and the Army Corps of Engineers (ACOE) for recovery of native vegetation. There were no modifications to the mitigation plan but the project timeline was extended to meet success criteria. Vegetation monitoring was conducted in spring 2023 and sign off was obtained.

4.2.1.2 Related Documents and References

Irvine Ranch Conservancy. 2023. *Year 9 Annual Status Report, January-December 2023: Renewed Measure M Freeway Mitigation and Resource Protection Program, Agua Chinon Riparian Corridor.* Agreement No. C-1-2384 between OCTA and IRC. Irvine, CA.

[4] Based on the IRC 2022 Year 8 Annual Status Report.

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 in 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 (CNDDB) 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

In 2011, OCTA awarded the City of Costa Mesa (City) funding to implement a 23-acre restoration project consisting of native grassland, CSS, wet meadow/marsh, and riparian habitats within the northwest portion of the City's Fairview Regional 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.

Approximately 13 acres of the proposed project have been implemented. Various project concerns have been discussed between the City, OCTA, and the Wildlife Agencies. The project is deficient of approximately 10 acres of the committed restoration habitat types. In addition, the City has yet to record a required conservation easement over the project area. Multiple meetings and discussions have occurred in 2023 to get this project back on track to meet all requirements. They City has been attending the OCTA EOC meetings and presenting updates on their progress. They are working towards getting new contracts in place to help identify and develop a restoration plan for a supplemental project to make up for the approximately 10-acre deficiency. The restoration plan will require approvals from OCTA as well as the Wildlife Agencies before implementation. Once approved, the City is hoping to begin implementation in fall 2024 and potentially continue through 2027-2032, depending on vegetation performance.

4.2.4.2 Related Documents and References

Dalton, K. (2024) Email to Lesley Hill, 4 April, 2024.

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 completed 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 CCW. Even at the early stages of establishment, both CCWs 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 CCW, 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[5]
Restoration Installation	Implemented in 2015
Restoration Monitoring of Success Criteria	Monitoring initiated in 2015 with 9 years of monitoring completed.
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 Laguna Canyon Foundation (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, CAGN and bobcat which have all been recorded within the restoration site. During year 9 (2023) 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. Cooler environmental temperatures aided in vegetation reestablishment, and above average precipitation levels throughout the growing season resulted in a relative increase of volunteer native seed germination and recruitment. In addition, pond turtle monitoring results demonstrated continued population stability and increased juvenile recruitment around the restoration sites.

[5] 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.

As a result of the global COVID-19 pandemic and resulting "stay at home" order that occurred during a critical phase of weed abatement efforts during 2020, non-native vegetation in some areas of the project flourished and, in some cases, set seed. Continuing the implementation of a GIS-based vegetation mapping protocol, LCF field teams worked to prioritize treatment areas and effectively control the resulting flush on non-native vegetation from the replenished seed bank this year with both manual and chemical removal.

A collection permit was obtained through OC Parks for pole cuttings of mulefat (*Baccharis salicifolia*) and willow species within the project area. 150 pole cuttings of mulefat and 150 pole cuttings of willow were collected and planted in January 2023 before nesting season started. The project is on track and depending on spring 2024 surveys, sign off may be requested in 2024/2025.

4.2.6.2 Related Documents and References

Laguna Canyon Foundation. 2024. *Aliso Creek Habitat Restoration OCTA Measure M2 Mitigation for Year 9 (2023) of Project Implementation, Aliso and Wood Canyons Wilderness Park.* Aliso Viejo, CA. Report dated February 1, 2024.

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 4 years of monitoring completed
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 CCW.

The site has been slow to establish, however it has shown significant signs of improvement in Year 4 with an estimated 27% native cover, up from 2% native cover in Year 3. One section of the site continues to exhibit low native germination and growth, bringing down the overall average for the remainder of the site. Native germination increased significantly across the site in Year 4. Above average rainfall and atypical summer rains increased native germination and establishment throughout the site in Year 4. Non-native cover was maintained low throughout the site with 3% non-native cover estimated during the quantitative monitoring visit. Although not perfectly on track to meet the final success criteria of 50% native cover, if the site continues to improve at the same rate as during Year 4 (increasing by 25% native cover), the final success criteria will be met. Soil testing is

anticipated for the underperforming area with potential soil amendment and seeding recommendations as necessary.

4.2.7.2 Related Documents and References

Dudek. 2024. *Year 4 Long-Term Maintenance and Monitoring Period Annual Report for Cactus Scrub Restoration, Northeast Preserve, Chino Hills State Park*. Chino Hills, CA. Report dated February 13, 2024.

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 2017 and 7 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, CCW, 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. A main challenge for this project was the limitation to only hand seed the culturally-sensitive sites (~3.5 acres). These areas have notably lower native cover. With unprecedented record rainfall after three years of drought, weeds returned to the project in force. Staff, interns and volunteers attempted to control increased weed growth through a combination of hand-pulling and chemical treatment, heavily focusing on priority species of mustards, wild radish, and yellow star-thistle. Surveys also show abundant populations[6] of southern tarplant occur within

[6] 1857 individuals of *Centromadia parryi ssp. australis* were mapped in 2023. A decrease perhaps due to a delayed growing season and lack of available space from being outpaced by earlier season plant species.

the restoration area. The installed cacti (prickly pear and coastal cholla) survivability has also been an issue, likely due to vandalism and poorly draining soil. The BCC is maintaining pots of cholla with plans to outplant a final attempt in plots with most success. Based on cacti performance to date, the BCC is not confident that conditions to support a healthy cactus population exists at this site. The project area also continues to experience vandalism and recreation related impacts (ATVs, cars and bikes).

4.2.8.2 Related Documents and References

Bolsa Chica Conservancy. 2024. *Harriett Wieder Regional Park Habitat Restoration Project Annual Report 2023.* Huntington Beach, CA. 2024

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 9 years of monitoring were completed. The project was signed off in 2023.
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 completed and approved.

4.2.9.1 Project Summary

The IRC implemented both active and passive restoration of 20.6 acres of riparian habitat (alluvial scrub, mulefat scrub, mulefat scrub/sycamore and mulefat scrub/willow riparian woodland) 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 Silverado Canyon which exists in the Santa Ana River 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.

Following the site visit in 2022, agency staff requested additional management of non-native annual grasses on-site and allow native forb recruitment to supplement the already high native shrub cover to improve prospects for long term self-sustainability in the event of future disturbance from flood or fire. An additional year of site management was performed to control non-native grasses and allow forb recruitment to supplement the already high native shrub cover. Based on the 2023 monitoring results and subsequent site visit, the Wildlife Agencies approved the project and concurred that the

Lower Silverado Restoration project met the goals of increasing the area and connectivity of native dominated plant communities, improving wildlife habitat diversity, and nearly completely eliminating other targeted invasive species from the site and vicinity.

4.2.9.2 Related Documents and References

Irvine Ranch Conservancy. 2023. *April – June 2023 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 four 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 performance standards. A site visit with the Wildlife Agencies suggested an additional year of treatment of non-native species. Sign

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 4 of maintenance completed in 2023. Supplemental irrigation was discontinued as of October 2021. Based on the 2023 monitoring results, the site has met or exceeded all performance standards. In addition, multiple pairs of CAGNs were visually observed in August 2023 during quantitative monitoring. However, a site visit was conducted with the Wildlife Agencies, at which time it was recommended to continue to treat the non-native species on site for an additional year. Maintenance will continue with the hope to obtain sign off in 2024.

4.2.10.2 Related Documents and References

RECON Environmental, Inc. 2023. *Final Report 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 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. This project is now in its tenth year of active management. Seeding and planting operations began in 2014 and continued through 2019. Targeted invasive plant control began in 2014 and has continued each year. This project also capitalizes on a large-scale restoration project that is currently taking place within the same watershed. The project site intersects with CNDDB occurrence records for MSD, OTW, 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.

Bird surveys in 2023 documented 22 nesting locations including 16 observations of least Bells' vireo (*Vireo bellii pusillus*) (including three nests), two CAGN locations (including two nests), and two CCW locations (including two nests). The 2023 Annual Status Report documented that all success criteria had been met. A site visit with the Wildlife Agencies is anticipated to occur to review the project conditions and hopefully obtain sign off in 2024.

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 in 2018 to help entice

more wildlife to utilize the existing potential crossing structures (freeway underpass and culvert). Cameras were installed in 2017 and continued into 2023 to document wildlife movement through these structures. A vehicle counter was in operation from 2018 until June 2023. Camera data were collected and summarized quarterly and presented in project reports. Camera traps at Coal Canyon caught multiple bobcats, coyotes, mule deer, gray fox, opossum, racoon, and striped skunks with activity decreasing in 2022 and 2023 (although data was only collected for half of 2023). One mountain lion was documented using the undercrossing in 2022. The vehicle counter tracked a similar amount of activity to 2022 (which saw a large decrease in activity compared to previous years).

4.2.11.2 Related Documents and References

Irvine Ranch Conservancy. 2023. *Annual Status Report, January-December 2023: 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*

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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. This area continues to be monitored and maintained. General monitoring in 2023 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.
- A restoration plan has been drafted to meet the minimum goal of 500 MSD individuals. MSD were mapped, flagged and seed was collected in August 2023, with an expected two-year nursery propagation period. Seed was collected along with native soil for propagation purposes to reduce translocation shock to the seedlings. Translocation into receiver sites within Pacific Horizon is expected to occur in fall 2025. A portion (approximately 25-percent) of the propagated MSD will be retained as "nursery stock" for future propagation and planting within Pacific Horizon, and potentially at Trabuco Rose Preserve, in coordination with the Wildlife Agencies.

Chapter 6
Public Outreach

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) EMP website that includes Preserve-specific information, copies of the RMPs for download, and information on Preserve hiking and riding tours: https://octa.net/programs-projects/programs/oc-go-measure-m/environmental-programs/environmental-mitigation-program/ In addition, in 2023 OCTA posted all of the fire management plans on the website.
- 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 2023

Date	Location	Stated Purpose
5/15/2023	University of California, Irvine	Presentation of the EMP to the UCI Environmental Law and Policy class

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
2/4/2023	Wren's View Preserve	Wilderness Preserve Hiking Tour to educate the public about property value and access
5/20/2023	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour to educate the public about the property value and access
7/15/2023	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour – see above
9/30/2023	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour - see above
11/4/2023	Wren's View Preserve	Wilderness Preserve Hiking Tour – see above
12/9/2023	Trabuco Rose Preserve	Wilderness Preserve Equestrian Tour – 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 2023

Date	Group	Stated Purpose
1/26, 3/23, 5/18, 7/12, 7/20, 9/28 and 11/30/23	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. These meetings also included focused discussions as part of a Roadside Ignition Prevention Subcommittee.
2/16 and 8/10/2023	OCTA, CDFW and USFWS	Interagency meeting to discuss status and upcoming tasks related to the EMP and specifically conservation plan.
4/6, 6/1, 10/5 and 12/7/2023	Orange County Emerging 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).
11/14/2023	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.
5/3 – 5/4/2023	California HCP Coalition Annual Meeting	A coalition of entities working on or have an approved HCP to share program updates, funding opportunities, and challenges.
5/30 and 7/12/2023	Preserve Management Coordination	OCTA coordinated with local land managers (Riverside Conservation Authority and Mountains and Rivers Conservancy) to understand capabilities and interest in the OCTA EMP.
5/18 and 11/9/2023	Caltrans	Statewide meeting to discuss advanced mitigation programs and the status of the Caltrans advanced mitigation program.

Date	Group	Stated Purpose
7/26 and 8/28/2023	SCAG	Greenprint Technical Advisory Committee meetings. Discussion and recommendations of the proposed Greenprint tool.

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Chapter 7
Plan Funding

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, 2023, the balance was $25,908,157 which is below the target of $27,207,203 for the first quarter of fiscal year (FY) 2023-24. 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 eight 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. 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.

Chapter 8
Plan Administration

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
lhill@octa.net

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 2023.

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 2022 Coastal Fire at the Pacific Horizon Preserve has delayed the coordination with SCE. In addition, SCE

communicated that they may relocate some of the poles which would affect related permanent impacts. The CCC have also required SCE to obtain a CDP for the work around the poles which requires a description of the proposed mitigation. 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 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 characteristics and/or return to previous conditions. For freeway construction projects, revegetation

Project ID	Applicable Avoidance and Minimization Measures	Restoration for Temporary Impact Areas Status
		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							B L S T W	P E																						
Effectiveness Monitoring:																														
Rare Plants	3 to 5 years	*B E L T W*			*P S*							B E L P S T W				B E L P S T W				B E L P S T W				B E L P S T W				B E L P S T W		
Reptiles	4 years	*B E L T W*			*P S*							S T	B E[7] L P W				B E L P S T W				B E L P S T W				B E L P S T W					
Birds	4 years	*B E L T W*			*P S*		B L P T W				B L P S T W				B E L P S T W				B E L P S T W				B E L P S T W				B E L P S T W			
Mammals [a]	4 years	*B E L T W*			*P*		*S*	P	E	B L S T W		B P S T	T B E P S	B E L P S T W	L T W			B E L P S T W				B E L P S T W			B E L P S T W					B E L P S T W

[7] 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					*B L W*	*B L W*	B L W	*B L W*	B L W				B E L P S T W				B E L P S T W				B E L P S T W				B E L P S T W				B E L P S T W
Natural Communities Comprehensive	10 years	*B E L T W*			*P S*									B E L P S T W									B E L P S T 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
June 2024

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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

June 2024

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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 Preserves[1]: 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). The Preserves are being managed by OCTA until the endowment is fully established. OCTA will collaborate with the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS) to identify potential long-term Preserve Managers. 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, 2023, through December 31, 2023, and provide management recommendations for 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

Preserve Manager: Orange County Transportation Authority
600 South Main Street, 9th Floor
Orange, California 92868
Contact: Lesley L. Hill
Telephone: (714) 560-5759

Report Preparer: Glenn Lukos Associates
1940 E Deere Avenue, Suite 250
Santa Ana, California 92705
Contact: Lexi Kessans/David Moskovitz
Telephone: (949) 837-0404

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 blueline 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*), 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*). 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 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 bobcat. 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. Focused surveys conducted by GLA in 2021 also documented CCW. GLA documented OTW during biological monitoring in 2019 and during focused surveys in 2023. Bobcat was detected on wildlife cameras in 2021, 2022, and 2023. Additional Covered Species with the potential to occur but that have not been documented on the Preserve include CAGN, mountain lion, 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, CHL, and IML. OCTA and Orange County Parks staff confirmed mountain lion tracks on the Preserve in 2016. Wildlife cameras documented mountain lion and bobcat in 2023. GLA also documented presence of bobcat 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 CAGN, OTW, mountain lion, and IML. Ongoing biological monitoring has also documented presence of bobcat, while also confirming use by mountain lion. GLA detected numerous CCW territories during focused surveys in 2021. During the 2021 focused surveys, GLA detected one CAGN pair nesting approximately 18 feet from the boundary but using the Preserve as territory. A CAGN individual was also documented during stewardship monitoring in the same area in 2023. 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 bobcat and mountain lion in 2019. GLA documented CCW during focused surveys in 2021. GLA observed OTW during biological monitoring in 2021 and focused surveys in 2023. 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 in 2022, and

offsite within Soquel Canyon Creek in 2023. GLA noted bobcat 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 extreme western edge of the property; the vireo was also using 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 mountain lion. 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 CNDDB. 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, 2023, 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	KK = Kristin Kartunen
BL = Brinna Lee	SC = Stephanie Cashin
DS = David Smith	VP = Velvet Park
JA = Jeff Ahrens	WJ = Wanisa Jaikwang
JS = Jillian Stephens	

Table 1. Summary of Survey Visits to the M2 Preserves

Date of Visit	Purpose of Visit	GLA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Trabuco Rose Preserve						
2/13/23	Stewardship Monitoring	JS, SC	Conducted general site monitoring; conducted camera maintenance; checked a ponded area for habitat potential; conducted nesting bird survey for Eucalyptus tree removal.	None	Rose entrance gate is difficult to open as it scrapes on the concrete platform and lock lever needs grease. Large ruts observed along Rose access road. Ponded area is likely not potential for fairy shrimp or spadefoot toad. Eucalyptus trees are currently not being utilized for raptor nesting.	Maintain Rose entrance gate and repair Rose access road erosion. Conduct an additional pre-construction nesting bird survey prior to Eucalyptus tree removal.
6/1/23	Corps Preservation Monitoring/Camera Maintenance	SC	Conducted Corps annual mitigation monitoring on Trabuco side; conducted camera maintenance.	None	It appears weeding has occurred along roads as recommended, but there are still some weeds near the Corps mitigation areas, i.e., Italian thistle and non-native grasses.	Weed whip along road, especially Italian thistle.
9/1/23	Corps Preservation Monitoring/Camera Maintenance	SC	Conducted Corps annual mitigation monitoring on Rose Canyon side; conducted camera maintenance.	None	Rose access road has high erosion at incline.	Repair Rose access road erosion as necessary.
11/8/23	General Biological Survey of Gully/Corps Conservation Easement Photos	JA, SC	Reviewed gully to update biological memo for Phase II permitting; took photos of Corps Conservation Easement area.	None	n/a	n/a
12/7/23	Stewardship Monitoring	DS, VP	Conducted general site/fence line monitoring.	None	Some fence lines are slack or need to be repaired. Signs are in good condition. Minor new erosion noted along Rose access road.	Repair fence lines. Repair Rose access road erosion as necessary.
Pacific Horizon Preserve						
2/17/23	Stewardship/Burn Area Monitoring	JS, BL	Conducted general site and burn area monitoring; checked for erosion;	None	Camera A and wildlife monitoring sign need to be replaced. No impacts occurred as a result of SCE emergency	Refer to Burn Recovery Report (Appendix B).

Date of Visit	Purpose of Visit	GLA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
			conducted camera maintenance; reviewed SCE emergency work area.		work. Refer to Burn Recovery Report (Appendix B) for detailed burn monitoring notes.	
4/12/23	Stewardship/Burn Area Monitoring	AB	Conducted general site and burn area monitoring; conducted camera maintenance.	None	Refer to Burn Recovery Report (Appendix B) for detailed burn monitoring notes.	Refer to Burn Recovery Report (Appendix B).
6/22/23	Stewardship/Burn Area Monitoring/IML Survey Update	JS, KK	Conducted general site and burn area monitoring, including drone flight; conducted camera maintenance; counted and mapped IML in 2 locations that were not surveyed during the 2022 census; MSD were mapped, counted, and flagged for seed collection for onsite restoration.	IML, MSD	Refer to Burn Recovery Report (Appendix B) for detailed burn monitoring notes.	Refer to Burn Recovery Report (Appendix B).
8/8/23	Effectiveness Monitoring	SC, JA	Reptile survey	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	None	Refer to VES Survey for details (Appendix C).
8/21/23	Effectiveness Monitoring	SC, JA	Reptile survey	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	None	Refer to VES Survey for details (Appendix C).
10/21/23	Burn Area Monitoring	AB	Conducted burn area monitoring.	None	Refer to Burn Recovery Report (Appendix B) for detailed burn monitoring notes.	Refer to Burn Recovery Report (Appendix B).
12/13/23	Stewardship/Burn Area Monitoring	AB	Conducted general site and burn area monitoring; conducted camera maintenance.	None	Refer to Burn Recovery Report (Appendix B) for detailed burn monitoring notes.	Refer to Burn Recovery Report (Appendix B).

Date of Visit	Purpose of Visit	GLA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Bobcat Ridge Preserve						
2/20/23	Stewardship Monitoring	JS, BL	Conducted general site monitoring; checked for erosion; conducted camera maintenance.	None	OCTA sign at Preserve entrance needs to be reattached to the pole. The loose barbed wire noted during previous visit has been removed. Weeds (grass, tocalote, mustard) documented within the encroachment area.	Reattach OCTA sign.
6/8/23	Effectiveness/ Stewardship Monitoring	SC, JA	Reptile survey; conducted camera maintenance.	CCW OTW/Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	OCTA sign at Preserve entrance needs to be reattached to the pole.	Reattach OCTA sign.
9/1/23	Effectiveness/ Stewardship Monitoring	SC, JA	Reptile survey; conducted encroachment monitoring; conducted camera maintenance.	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	Ridge trail and encroachment road have been maintained/weed whipped by RECON.	n/a
Silverado Chaparral Preserve						
2/15/23	Stewardship Monitoring	JS, WJ	Conducted general site monitoring; checked for erosion; conducted camera maintenance.	None	Erosion within and across access road observed in two locations. “Wildlife Monitoring” sign needs to be replaced at camera location A.	Repair access road erosion. Permanent, small metal signs for the wildlife cameras would require less maintenance.
8/2/23	Stewardship Monitoring	JS, DS	Conducted general site monitoring; conducted camera maintenance.	None	“Wildlife Monitoring” sign needs to be replaced at camera locations A and B. Foot trail for Preserve monitoring is extremely overgrown due to previous season’s heavy rain events.	Maintain foot trail for Preserve monitoring.
12/6/23	Stewardship Monitoring	DS, JA	Conducted general site monitoring; checked for erosion; conducted camera maintenance.	None	“Wildlife Monitoring” signs replaced at camera locations A and B. General trail maintenance has occurred as recommended.	n/a

Date of Visit	Purpose of Visit	GLA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
Wren's View Preserve						
2/13/23	Stewardship Monitoring	JS, SC	Conducted general site monitoring, checked for erosion.	CAGN, CCW	New erosion observed on road that descends into canyon bottom, barbed wire fence is falling over and leaning into road.	Fix or removing leaning fence from leaning, fix road erosion.
6/7/23	IML Survey Update	JS, VP	Conducted IML survey in areas that lacked IML in 2022 but historically had IML populations (primarily along road and ridges). Flagged IML along road to avoid impact in upcoming road maintenance.	IML	Trail runner observed during site visit.	n/a
9/14/23 and 9/15/23	Effectiveness Monitoring	SC, JA	Reptile survey	CCW Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	None	Refer to VES Survey for details (Appendix C).
10/3/23 and 10/4/23	Effectiveness Monitoring	SC, JA	Reptile survey	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	None	Refer to VES Survey for details (Appendix C).
Live Oak Creek Preserve						
2/20/23	Stewardship Monitoring	JS, BL	Conducted general site monitoring; checked for erosion.	None	Erosion noted in multiple locations on access road, weeds in the center of the access road are getting tall and require maintenance.	Maintain access road for erosion and weeds.
9/15/23	Effectiveness Monitoring	SC, JA	Reptile survey; reviewed potential neighbor encroachment on eastern boundary; assessed trail	OTW/Refer to VES Survey for any non-covered sensitive	OCTA surveyed the property in November 2023 and discovered encroachments into the Preserve.[2]. Further into the Preserve, monitors	Maintain foot trail allowed for Preserve management to better monitor neighbor boundary.

Date of Visit	Purpose of Visit	GLA Staff	Tasks Completed	Covered/Sensitive Species Observed	GLA Notes/Actions	Notes/Recommendations to OCTA
			condition throughout the Preserve.	reptiles observed (Appendix C)	discovered a hammock, shed roof, and remote camera stand. Sign near neighbor boundary was off post. Deep erosional ruts on access road noted.	Maintain access road for erosion. Refer to VES Survey for details (Appendix C).
10/4/2023	Effectiveness Monitoring	SC, JA	Reptile survey	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	None	Refer to VES Survey for details (Appendix C).
Eagle Ridge Preserve						
3/7/23	Stewardship Monitoring	JS, SC	Conducted general site monitoring; checked for erosion.	Western pond turtle (downstream and offsite, but within Soquel Canyon Creek)	Two slopes adjacent to the stream have slid/eroded into stream which has caused the western pond turtle pool to fill in and become uninhabitable (less than 1 ft deep and filled with silt/sand).	n/a – the sedimentation is a natural occurrence and is anticipated to wash out during future storm events.
6/14/23	Effectiveness Monitoring	SC, JA	Reptile survey	Crotch's bumble bee Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	The western pond turtle pool was checked. The sediment had been blown out by storm events and the pools had returned to their typical depths. Canyon bottom is very overgrown - no clear monitoring trail.	Maintain foot trail allowed for Preserve management for monitoring purposes. Refer to VES Survey for details (Appendix C).
11/7/23	Effectiveness Monitoring/Vegetation Monitoring	SC, JA	Reptile survey; conducted annual vegetation monitoring.	Refer to VES Survey for any non-covered sensitive reptiles observed (Appendix C)	The western pond turtle pool was checked and pools were still at their typical depths. Trail has been maintained for Preserve monitoring.	Refer to VES Survey for details (Appendix C).
12/15/23	Wildlife Camera Install	JA	Installed three wildlife cameras.	None	None	n/a

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 previously implemented focused VES for CHL and OTW at Trabuco Rose and Silverado Chaparral Preserves in 2022. GLA implemented focused VES for CHL and OTW at Bobcat Ridge, Eagle Ridge, Live Oak Creek, Pacific Horizon, and Wren's View Preserves in 2023. Additional effort was taken 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, and blue tails of juveniles. The results of the surveys are summarized below under the respective section for each of the Preserves surveyed in 2023. A report detailing focused survey results is attached as Appendix C.

In 2024, Effectiveness Monitoring for Covered Mammals will commence as required every four years in the RMP. The primary purpose of this monitoring is to determine wildlife movement and connectivity patterns for mountain lions and bobcats through the Preserves, and to make management recommendations as necessary. To date, monitoring has primarily been conducted using wildlife movement cameras and visual encounter surveys (identification observation of track or scat) to some extent. Additional cameras will be deployed for this monitoring and GLA will coordinate with local researchers for data.

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
No new detections of Covered Wildlife Species occurred on Trabuco Rose Preserve. Three wildlife cameras were operated on the Preserve throughout 2023, per recommendations provided in the 2022 Annual Report. Consistent with previous years, the cameras detected mountain lion and bobcat throughout the Preserve on numerous occasions, including a bobcat with three kittens on Camera N in 2023 [Exhibit 4 – Photo Location Map].

Recommendations
Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Trabuco Rose in 2024 for Covered Wildlife Species. Consider targeted sampling efforts for CHL and OTW, particularly if these species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Trabuco Rose but could be considered for future years. Otherwise, any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task.

Previous Recommendations
As part of the 2022 effectiveness monitoring, GLA noted multiple colonies of invasive (Argentine) ants, which would represent a threat to the native ant populations (prey for CHL, if CHL were present). GLA suggested that OCTA 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. If invasive ant management were to be feasible, GLA continues to recommend that OCTA pursue this as a management consideration.

Pacific Horizon

Focused surveys for CHL and OTW were conducted on August 24, September 8, and September 21, 2023, per recommendations provided in the 2022 Annual Report. Neither species was detected during the surveys. No new detections of Covered Wildlife Species occurred on Pacific Horizon Preserve. Two wildlife cameras were installed in 2022 and maintained through 2023, also per recommendations from the prior Annual Report, but they have not captured Covered Wildlife Species. The Preserve is likely utilized by bobcat, though none have been incidentally detected at the site during baseline studies or subsequent monitoring. However, the Preserve is not expected to be utilized by mountain lion due to its location.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Pacific Horizon in 2024 for Covered Wildlife Species. Consider targeted sampling efforts for CHL and OTW, particularly if these species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Pacific Horizon but could be considered for future years. Otherwise, any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task.

Previous Recommendations

As noted above, all previous recommendations for 2023 were implemented.

Bobcat Ridge

Focused surveys for CHL and OTW were conducted on June 8 and September 1, 2023, per recommendations provided in the 2022 Annual Report. OTW was confirmed present at Bobcat Ridge; however, CHL was not detected during the surveys. Both native red and black harvester ants and non-native Argentine ants were detected at this Preserve. One wildlife camera was maintained on the Preserve per recommendations from the prior Annual Report, which detected bobcat in 2023. The Preserve is likely utilized by mountain lion, but it has not been detected during baseline surveys/monitoring.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Bobcat Ridge in 2024 for Covered Wildlife Species. Consider targeted sampling efforts for CHL, particularly if the species is not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Bobcat Ridge but could be considered for future years. Otherwise, any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task.

Since multiple colonies of invasive (Argentine) ants were mapped, which would represent a threat to the native and prey population if CHL were present, OCTA should consider collaborating with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies at the Bobcat Ridge Preserve, though not specifically in 2024.

Previous Recommendations

As noted above, all previous recommendations for 2023 were implemented.

Silverado Chaparral

No new detections of Covered Wildlife Species occurred on Silverado Chaparral Preserve. Three wildlife cameras are currently installed on the Preserve, per recommendations provided in the 2022 Annual Report, and all three cameras detected mountain lion. Bobcat was also detected via wildlife camera on multiple occasions.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the ongoing use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Silverado Chaparral in 2024 for Covered Wildlife Species. Any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task. Consistent with prior recommendations, OCTA should consider targeted sampling efforts for CHL and OTW for better population information for both species, particularly if one or both species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Silverado Chaparral but could be considered for future years.

Previous Recommendations

As noted above, all previous recommendations for 2023 were implemented.

In the 2022 Annual Report, GLA noted that in the future, OCTA should consider collaborating with an expert in invasive ant management to determine the feasibility of treating invasive ant colonies, which are a threat to the CHL native ant prey population. If invasive ant management were to be feasible, GLA continues to recommend that OCTA pursue this as a management consideration.

Wren's View

Focused surveys for CHL and OTW were conducted on September 14-15, and October 3-4, 2023, per recommendations provided in the 2022 Annual Report. Neither species was detected during the surveys. Both native red harvester ants and non-native Argentine ants were detected at this Preserve. No new detections of Covered Wildlife Species occurred on Wren's View Preserve.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Wren's View in 2024 for Covered Wildlife Species. Any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task. Consistent with prior recommendations, OCTA should consider targeted sampling efforts for CHL and OTW for better population information for both species, particularly if one or both species are not detected during the next cycle of Effectiveness Monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Wren's View but could be considered for future years.

As with the mapping performed at Silverado Chaparral and Trabuco Rose in 2022, GLA mapped multiple colonies of invasive (Argentine) ants at Wren's View in 2023, which would represent a threat to the native ant populations (prey for CHL, if CHL were present). GLA suggests that OCTA 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, including Wren's View. If invasive ant management were to be feasible, GLA continues to recommend that OCTA pursue this as a management consideration, though not specifically as a recommendation for 2024.

Previous Recommendations

It was previously 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. Wildlife cameras will be reinstalled in 2024 for mountain lion and bobcat effectiveness monitoring.

Live Oak Creek

Focused surveys for CHL and OTW were conducted on September 15 and October 4, 2023, per recommendations provided in the 2022 Annual Report. OTW was confirmed present at Live Oak Creek; however, CHL was not detected during the surveys. No new detections of Covered Wildlife Species occurred on Live Oak Creek.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Otherwise, no other Effectiveness Monitoring (i.e., focused surveys) is recommended at Live Oak Creek in 2024 for Covered Wildlife Species. Any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task. Consistent with prior recommendations, OCTA should consider targeted sampling efforts for CHL and OTW for better population information for both species, particularly if one or both species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Live Oak Creek but could be considered for future years.

Previous Recommendations

It was previously 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. Wildlife cameras will be reinstalled in 2024 for mountain lion and bobcat effectiveness monitoring.

Eagle Ridge

Focused surveys for CHL and OTW were conducted on June 14 and November 7, 2023, per recommendations provided in the 2022 Annual Report; however, neither species was detected during the surveys. Both native red harvester ants and non-native Argentine ants were detected at this Preserve. No new detections of Covered Wildlife Species occurred on Eagle Ridge Preserve.

On March 7, 2023, GLA monitors noted that the cliff above the ponds where western pond turtle has been detected were sliding/eroding into the ponds and filling them with sand/sediment. The ponds, which were less than 1 ft deep, were determined to be too shallow to provide habitat for western pond turtles; however, monitors detected western pond turtles in a different location, downstream and outside of the boundary of the Preserve. Monitors checked the pools during monitoring visits on June 14 and November 7, 2023, and found that the sediment had been washed out by storm events and the pools had returned to their typical depths.

Recommendations

Implement effectiveness monitoring for mountain lion and bobcat in 2024 per the RMP, including the use of wildlife cameras. Continue to monitor pond turtle threats/stressors including sedimentation, cattle/human disturbance, and invasive plant and wildlife species. Any CHL and/or OTW detected incidentally during general Stewardship Monitoring will be noted as an ongoing task. Consistent with prior recommendations, OCTA should consider targeted sampling efforts for CHL and OTW for better population information for both species, particularly if one or both species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 for Eagle Ridge but could be considered for future years.

As with the mapping performed at Silverado Chaparral and Trabuco Rose in 2022, GLA mapped multiple colonies of invasive (Argentine) ants at Eagle Ridge in 2023, which would represent a threat to the native ant populations (prey for CHL, if CHL were present). GLA suggests that OCTA 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, including Eagle Ridge. If invasive ant management were to be feasible, GLA continues to recommend that OCTA pursue this as a management consideration, though not specifically as a recommendation for 2024.

Previous Recommendations

It was previously 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. Wildlife cameras were reinstalled in 2023 and will be operated throughout 2024 for mountain lion and bobcat effectiveness monitoring.

Covered Wildlife Species Recommendations Summary

For Covered Wildlife Species, implement effectiveness monitoring for the covered mammals (mountain lion and bobcat) in 2024 at all Preserves, including the use of wildlife cameras. Any Covered Wildlife Species incidentally during general Stewardship Monitoring will be noted as an ongoing task. Consistent with prior recommendations, OCTA should consider targeted sampling efforts for CHL and OTW for better population information for both species, particularly if one or both species are not detected during the next cycle of effective monitoring for the reptiles. However, the targeted efforts are not specifically recommended in 2024 but could be considered for future years.

As noted above, colonies of invasive (Argentine) ants were mapped at Eagle Ridge, Bobcat Ridge, and Wren's View in 2023 (Trabuco Rose and Silverado Chaparral in 2022) while performing the reptile surveys, which represent a threat to the native ant prey populations (prey for CHL). 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 in any specific year.

At Eagle Ridge, continue to monitor pond turtle threats/stressors including sedimentation, cattle/human disturbance, and invasive plant and wildlife species. As applicable, analyze Covered Wildlife Species data in order to detect potential trends in population growth or decline.

ii. Covered Plant Species

GLA conducted focused plant surveys for the Covered Species IML and MSD in spring of 2022. The results of the plant surveys were detailed in the 2022 Annual Report and are depicted on Exhibit 3 – OCTA Covered Species Map. In 2023, GLA surveyed areas of Pacific Horizon for IML that were missed in the 2022 survey, and re-surveyed areas of Wren's View where more abundant IML was anticipated based on previous surveys. Table 2 below has been updated to include the additional 2023 IML focused survey efforts at Pacific Horizon and Wren's View. Plant surveys are anticipated to be repeated in 2026 or 2027.

Table 2. 2022/2023 Focused Plant Survey Data – Pacific Horizon and Wren's View Preserves

Preserve	Baseline Data (IML)	2022/2023 Data (IML)
Pacific Horizon	144	86
Wren's View	283	211

Trabuco Rose

IML are present on the Preserve; no MSD have been detected. IML locations are depicted on Exhibit 3.

Recommendations/Previous Recommendations

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

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. All maintenance work is conducted with direction and oversight conducted by a RECON restoration biologist and these recommendations are being implemented by RECON.

Pacific Horizon

GLA conducted focused surveys for IML in 2022; however, two areas of the Preserve containing suitable habitat for IML were missed during the 2022 survey effort. These areas were surveyed on June 22, 2023, and an additional 77 IML were mapped, bringing the total to 86. It should be noted that 144 individuals of IML were observed during baseline surveys in 2015; however, the biological baseline report prepared by Bonterra included methodologies that likely 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.

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 drafted to meet the minimum goal of 500 individuals. Seed collection occurred in August 2023, with an expected two-year nursery propagation period. Seed was collected along with native soil for propagation purposes to reduce translocation shock to the seedlings at the time of planting. Translocation into receiver sites within

Pacific Horizon is expected to occur in fall 2025. A portion (approximately 25-percent) of the propagated MSD will be retained as "nursery stock" for future propagation and planting within Pacific Horizon, and potentially at Trabuco Rose Preserve, in coordination with the resource agencies.

Recommendations

Monitoring should continue to include areas of documented IML and MSD and suitable habitat along authorized and decommissioned trails to confirm that public access is not adversely affecting Covered Plant populations.

Previous Recommendations

GLA previously recommended that Preserve-wide focused covered plant surveys occur in 2022, and to update those surveys in 2023 to cover missed areas, all of which was 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

IML are present on the Preserve; no MSD have been detected. IML locations are depicted on Exhibit 3.

Recommendations/Previous Recommendations

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

Biological monitoring should continue to document unexpected disturbances and to ensure the IML population at Bobcat Ridge is maintained. 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 and documented in the 2022 Annual Monitoring Report.

Silverado Chaparral

IML are present on the Preserve; no MSD have been detected. IML locations are depicted on Exhibit 3.

Recommendations/Previous Recommendations

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

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. All maintenance work is conducted with direction and oversight conducted by a RECON restoration biologist and these recommendations are being implemented by RECON.

Wren's View

GLA conducted focused surveys for IML in 2022; however, many of the historical IML along the road were not detected and so those areas were resurveyed on June 7, 2023. A total of 211 IML were detected in locations where they were historically recorded but not detected in 2022. Note that a total of 283 individuals of IML were observed during baseline surveys in 2015; however, the biological baseline report prepared by Bonterra included methodologies that likely 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. Additionally, the entire site was not resurveyed, and it is estimated that the overall count in 2023 was much higher than 211.

Recommendations/Previous Recommendations

GLA recommended that Preserve-wide focused covered plant surveys occur in 2022, and to resurvey specific areas as detailed above, all of which were completed.

As part of adaptive management strategies, due to many IML individuals growing near roads and fences within this Preserve, biological monitors should be scheduled to flag the plants so they may be easily avoided during work activities if maintenance is necessary when IML is present. GLA was onsite on June 7, 2023, to flag IML locations prior to maintenance activities. 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. All maintenance work is conducted with direction and oversight conducted by a RECON restoration biologist and these recommendations are being implemented by RECON.

Live Oak Creek

IML are present on the Preserve; no MSD have been detected. IML locations are depicted on Exhibit 3.

Recommendations/ Previous Recommendations

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

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. All maintenance work is conducted with direction and oversight conducted by a RECON restoration biologist and these recommendations are being implemented by RECON.

The RMP states that potential threats and stressors to IML on this Preserve include competition from nonnative plant species. To protect IML, GLA recommended implementation of the ISMP in 2023. Focus on Priority 1 polygons in the ISMP to reduce the threat to IML. This includes removal of artichoke thistle, 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.

Eagle Ridge
Based on several years of biological monitoring and focused plant surveys in 2022, GLA does not anticipate detecting Covered Plant species at this Preserve and does not recommend future implementation of effectiveness monitoring for Covered Plants.

Recommendations/Previous Recommendations
GLA has no specific recommendations related to Covered Plant species at Eagle Ridge, which are not expected to occur; however, in the event of any incidental detections, those occurrences will be mapped.

Covered Plant Species Discussion/Recommendations
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, continue 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 IML or MSD populations. Continue to flag IML prior to maintenance activities at Wren's View and monitor the encroachment area at Bobcat Ridge. At all Preserves, continue to monitor areas near trails, roads, and fences to ensure any public access or maintenance activities are not impacting IML and MSD. To meet NCCP/HCP Species Goals and Objectives, the draft restoration plan for MSD should be finalized and implemented at Pacific Horizon.

iii. Non-Covered Sensitive Wildlife Species

GLA detected Crotch's bumble bee (*Bombus crotchii*, CBB*)* at Eagle Ridge, which is listed as a candidate species under the California Endangered Species Act (CESA). There is also a high potential for CBB to occur at all the other Preserves. During the 2023 reptile surveys, GLA detected the following non-covered sensitive reptiles at one or more of the Preserves: coast patch-nosed snake (*Salvadora hexalepis virgultea*) and red-diamond rattlesnake (*Crotalus ruber*).

Recommendations
OCTA should coordinate with CDFW prior to performing any activities, including maintenance, that might remove vegetation with the potential to support CBB. GLA will note any CBB detected incidentally during Stewardship Monitoring or other tasks of Effectiveness Monitoring.

Previous Recommendations
GLA had no previous 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

GLA did not map any new non-covered sensitive plant species while performing biological monitoring in 2023.

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 initially installed from 2013 through 2019 on the Preserve, and three cameras were re-installed in 2021 to continue tracking wildlife and trespass [Exhibit 4 – Photo Location Map]. Mountain lion, bobcat, mule deer, coyote, and gray fox have been routinely detected over the years, including in 2023. Skunk, cottontail, owl, and woodpecker were also detected in 2023, as was occasional trespass.

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. As previously indicated, wildlife cameras will be utilized through 2024 for mammal effectiveness monitoring.

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 mostly captured mountain bikers, hikers, and dogs. Mule deer and coyote were each captured a few times. Camera B captured mule deer and coyote more frequently as well as a moderate number of mountain bikers, hikers, and dogs.

Recommendations

Due to the high frequency of dog usage, consider public outreach to the community by partnering with other local government entities (i.e. city of Laguna Beach and OC Parks). 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.

Previous Recommendations

GLA previously recommending installing wildlife cameras on the Preserve, which was completed in 2022, as well as adjusting the positioning in 2023, which was also completed.

Bobcat Ridge

One wildlife camera station (B) was operated on the Preserve in 2023. Camera B was 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. In 2023, Camera B detected bobcat on multiple occasions, as well as deer, fox, and skunk. One dog unaccompanied by a human was detected multiple times.

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. As previously indicated, wildlife cameras will be utilized through 2024 for mammal effectiveness monitoring.

Silverado Chaparral

Two wildlife cameras were installed for a short time in 2019. GLA biologists documented that one camera was stolen by trespassers within one month of installation and the remaining wildlife camera was removed a few months later due to theft risk as well as to reduce the camera monitoring effort in the winter months to save funding for spring monitoring. While the cameras were installed, deer and bobcat were detected. In addition, the cameras detected unauthorized people on the Preserve including mountain bikers and hikers, some of whom were walking their dogs. Three cameras were re-installed on June 14, 2022. In 2023, the cameras detected an abundance of wildlife including mountain lion, bobcat, deer, gray fox, coyote, skunk, raccoon, woodrat, opossum, and a variety of birds and raptors. A single mountain biker was detected on Camera B, as were occasional hikers on Cameras A and B, including two people with a dog.

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. As previously indicated, wildlife cameras will be utilized through 2024 for mammal effectiveness monitoring.

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 previously installed on the Preserve from 2018-2019. While the cameras were installed, mountain lion, bobcat, deer, coyote, and gray fox were detected. In addition, the cameras detected unauthorized people on the Preserve, including hikers and mountain bikers.

Recommendations

Re-install cameras in 2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended to temporarily discontinue the use of cameras unless an issue arose that called for continued use of cameras, thereby allowing funding to be allocated toward other monitoring activities. This recommendation was implemented, and camera use was temporarily discontinued.

Live Oak Creek

Two wildlife cameras were previously installed on the Preserve from 2018-2019. While the cameras were installed, bobcat, deer, coyote, and gray fox were detected. In addition, the cameras infrequently detected unauthorized people on the Preserve.

Recommendations

Re-install cameras in 2024 for Covered Mammal tracking, as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended to temporarily discontinue the use of cameras unless an issue arose that called for continued use of cameras, thereby allowing funding to be allocated toward other monitoring activities. This recommendation was implemented, and camera use was temporarily discontinued.

Eagle Ridge

Three wildlife cameras were previously installed on the Preserve from 2018-2019. While the cameras were installed, bobcat, 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

Re-install cameras in 2024 for Covered Mammal tracking (this was completed in December 2023), as well as for the secondary benefit of detecting unauthorized people and activities.

Previous Recommendations

GLA previously recommended to temporarily discontinue the use of cameras unless an issue arose that called for continued use of cameras, thereby allowing funding to be allocated toward other monitoring activities. This recommendation was implemented, and camera use was temporarily discontinued.

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. Wildlife cameras will be installed on all Preserves in 2024 for Covered Mammal tracking. 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, following GLA's recommendations. A brief summary of invasive species maintenance activities is provided below under each

Preserve section, as applicable. For additional details, refer to RECON's 2024 Summary Letter for Maintenance Activities Performed on OCTA Preserves, attached to the NCCP/HCP Annual Report. 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 done was consistent with the RMPs.

Invasive Species Management Plans (ISMPs) for each Preserve are currently being updated per the RMPs.

Trabuco Rose

Implementation of the ISMP is ongoing. RECON conducted initial treatment of the Priority 1 invasive species and some 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 2023, as necessary. In 2023, RECON spot-sprayed germinating artichoke thistle and controlled castor bean, tamarisk, and mustards within the Preserve. In addition, GLA recommended weeding along fire and access roads, including Italian thistle (*Silybum marianum*) and non-grasses. In April, May, July, and October 2023, RECON conducted this work with line trimmers and/or by spot-spraying with a glyphosate-based herbicide.

Recommendations

Continue to implement the ISMP, including monitoring areas that have been treated. Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Continue to check for new invasive species during routine biological monitoring and remove, as-needed.

Previous Recommendations

GLA previously recommended continued implementation of the ISMP based on priorities outlined in the plans, including monitoring areas that have been treated, and mapping incidental detections of invasive species, which is ongoing. GLA previously and continues to recommend removal of new occurrences of invasive species, which is regularly conducted by RECON under the direction of OCTA.

Pacific Horizon

As previously reported, approximately 30 acres of the Preserve along the eastern boundary burned during the May 2022 Coastal Fire, with another 5 acres bulldozed to create a fire break. The burn area and fire break are inspected and maintained routinely for invasive species. RECON spot sprayed invasive species including artichoke thistle, mustards, fennel, tree tobacco, and pampas grass within the burn area in February, March, and July 2023. The Burn Monitoring Report is attached as Appendix B.

Implementation of the DLRP and ISMP is ongoing. RECON spot-sprayed germinating invasive species including artichoke thistle, mustards, and fennel within the artichoke thistle control area in July 2023. The artichoke thistle control area was dethatched by cutting down all non-native vegetation and raking it into piles. Additionally, MSD seed, native soil, and other native seed species were collected for future restoration work. 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, including monitoring areas that have been treated. Within the trail disturbance restoration areas, this includes follow up hand removal of annual grasses or new occurrences of non-native species upon detection. Within the invasive species removal areas, this includes follow-up targeted spray of any regrowth of treated artichoke thistle and Pampas grass, and new occurrences of any invasive species during the winter and spring months. Post-treatment, a combination of native purple needlegrass and annual non-native grasses (wild oat and brome species) as well as some native shrub species from adjacent hillsides are colonizing areas previously occupied by artichoke thistle. Continued management consisting of annual mowing or weed whipping in the winter months (December through February) is recommended to promote native grasses. It is also recommended that any mustard invading the artichoke thistle treatment areas be controlled though weed whipping prior to seed set. This will encourage native plant recruitment and coverage, while suppressing non-native species.

Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Continue to check for new invasive species during routine biological monitoring and remove, as-needed.

Previous Recommendations
GLA previously recommended continued implementation of the approved ISMP and DLRP based on priorities outlined in the plans, including monitoring areas that have been treated, and mapping incidental detections of invasive species, which is ongoing. GLA previously and continues to recommend removal of new occurrences of invasive species, which is regularly conducted by RECON under the direction of OCTA.

Bobcat Ridge
GLA monitors noted weeds in the encroachment area. In August, RECON controlled non-native herbaceous vegetation with line trimmers along the trail at the southern boundary of the Preserve.

Recommendations
Continue to monitor the encroachment area for natural recruitment and weeds. Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Implement ISMP based on priorities outlined in the plan and continue to check for new invasive species during routine biological monitoring and remove, as-needed.

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 priorities will be reassessed after the ISMP updates in 2024. GLA checked for new invasive species during routine biological monitoring and did not detect any.

Silverado Chaparral
GLA monitors did not detect any new invasive species occurrences. In July 2023, RECON line-trimmed and then applied herbicide to vegetation growing on the fire road.

Recommendations
Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Implement ISMP based on priorities outlined in the updated plan and continue to check for new invasive species during routine biological monitoring and remove, as-needed.

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 priorities will be reassessed after the ISMP updates in 2024. GLA checked for new invasive species during routine biological monitoring and did not detect any.

Wren's View
GLA monitors did not detect any new invasive species occurrences. In June and July 2023, RECON controlled vegetation growing on fire roads and adjacent to Trabuco Canyon Road by line-trimming and/or applying herbicide.

Recommendations
Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Implement ISMP based on priorities outlined in the updated plan and continue to check for new invasive species during routine biological monitoring and remove, as-needed.

An ongoing recommendation is to control weeds on roads by initial mowing in December/January, with follow-up spraying of regrowth, particularly of highly invasive species such as Bermuda grass.
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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 priorities 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 monitors did not detect any new invasive species occurrences. RECON controlled Spanish broom by cutting and removing aboveground biomass and painting stumps with herbicide. Artichoke thistle and tree tobacco were also cut down, with herbicide applied to remaining living parts. In August and November 2023, vegetation that was growing on the fire road was controlled with line trimmers.

Recommendations
Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Continue implementation of the ISMP in 2024 to reduce the threat to IML, focusing on Priority 1 polygons. This includes removal of artichoke thistle, 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. Continue to check for new invasive species during routine biological monitoring and remove, as-needed.

Previous Recommendations

GLA previously recommended continued implementation of the ISMP to reduce the threat to IML, focusing on Priority 1 polygons as described above and to continue to check for new invasive species during routine biological monitoring, which are ongoing tasks. Spanish broom was previously recommended for removal which was conducted.

Eagle Ridge

The Eagle Ridge ISMP has not been prioritized for implementation as cattle were recently removed from the Preserve and Covered Species are limited.

Recommendations

Update ISMP in 2024 with current invasive species mapping, any new occurrences, and re-prioritize treatment recommendations, as necessary. Implement ISMP based on priorities outlined in the updated plan and continue to check for new invasive species during routine biological monitoring and remove, as-needed.

Previous Recommendations

GLA previously recommended implementation of the ISMP based on priorities outlined in the plan once the cattle were removed from the property 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.

vii. Invasive Animal Species

GLA did not observe any animal species within the Preserves that would be classified as invasive.

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 to photograph individuals to document identifying characteristics that distinguish OTW from SW, including the dorsal stripe, orange throat of adult males, and blue tails of juveniles. No SW individuals were detected.

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.

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 2023 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 via wildlife cameras in 2023.

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, April, and October 2023.

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.

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

In addition, it was previously recommended to continue monitoring the 13 trails identified for passive restoration. These trails were originally assessed in 2018, with annual monitoring 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). An attachment depicting this monitoring map and photos was provided as Appendix E to the 2022 Annual Report. As noted in the 2022 Report, GLA estimates that a total of 0.82 acre has passively restored.

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 impacted to create a fire break (dozer line). GLA flew a drone aerial in June 2022 to establish the baseline after the burn and re-flew the aerial in June 2023. GLA is conducting routine 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 as well as taking photographs of maintenance needs and unauthorized access. GLA biologists also monitor rainfall data and compile events of extreme weather on a monthly basis.

Much focus has been put on monitoring and managing the burn area. In February, March, and July 2023, RECON spot-sprayed invasive species within the burn area including artichoke thistle, mustards, fennel, tree tobacco, and pampas grass. In July, RECON repaired damaged fencing and signage along the unauthorized bike trail that leads down to the burn area. OCTA's private security company has been routinely patrolling the burn area and reinforcing unauthorized uses throughout the Preserve.

Monitoring observations included reoccurring fence cutting/vandalism for mountain bike passage, unauthorized trail usage including direct observation of cyclists entering the burn area, OCTA sign vandalism, minor trash, and vegetation tampering to circumvent fence lines. Minimal erosion from fall rain events was limited to rill erosion and minor sheet erosion. Erosion control wattles appeared intact and untouched. Adaptive management actions including placing cactus pads and woody debris to block unauthorized trails have helped to deter access.

In 2023, there was an overall increase in native plant cover and recruitment in the burn area and dozer lines. Dozer lines now exhibit increased native cover, with southern dozer lines being more distinctly vegetated than the northern lines. Following a summer weed abatement program, native seedlings occupied vacant patches. Non-native cover decreased by the end of 2023. Additional details regarding native vegetation regrowth and documented non-native/invasive species are included in GLA's 2023 Burn Area Monitoring Memo attached as Appendix B.

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, restore the area with native plants, and remove invasive plant species. In 2023, RECON field crew performed the following tasks: (1) herbicide-treated artichoke thistle, mustards, and fennel regrowth within their respective control areas using glyphosate-based herbicide; (2) dethatched the artichoke thistle

control area by cutting down all non-native vegetation and raking into piles; (3) repaired damaged fencing, signage, and posts at the entrance to the unauthorized trail created by Southern California Edison (SCE) in 2021; and (4) collected MSD seed, native soil, and other native seed species for future restoration work.

Recommended maintenance actions in the trail disturbance area [see Exhibit 2 of Appendix D - DLRP Third Annual Monitoring Report] for 2024 include routine maintenance of the fence line and follow-up hand removal annual grasses or new occurrences of non-native species upon detection. Recommended maintenance actions in the invasive species removal areas for 2024 include routine follow-up targeted spray of any regrowth of treated artichoke thistle and pampas grass, and new occurrences of any invasive species during the winter and spring months. Post-treatment, the artichoke thistle area now hosts predominantly mixed non-native grasses; therefore, removal of these non-native plant species is recommended with supplemental hand broadcasting of native seed during the rainy season. This will encourage native plant recruitment and coverage, while offsetting non-native plant germination.

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 2023.

Recommendations

- Continue implementing the DLRP and 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; GLA's monitoring team should continue to monitor and report on unauthorized uses.
- Continue to implement 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.
- 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.

Previous Recommendations

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

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 (multiple times) unaccompanied by a human on the Preserve via wildlife camera.

GLA continues to qualitatively 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 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. A single mountain biker was detected on Camera B, as were occasional hikers, including two people with a dog. Overall, mountain biking evidence was minimal. No new trail cutting or fencing/signage vandalism were observed.

GLA documented that a trail approved for Preserve management used to access a wildlife camera and for general Preserve monitoring had become overgrown. RECON line trimmed a narrow trail to provide access.

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

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

In addition, GLA previously recommended implementation of the RMP using methods to support additional compliance with the RMP restrictions and enforcement actions. One mountain bike offender was prosecuted for trespass in 2022. Evidence of mountain bike usage (e.g., trail cutting, bike tracks, cut fencing) has declined significantly as a result of OCTA 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 one public hike in 2023 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, and trespassing was not observed on the Preserve. However, OCTA requested that GLA monitors review the Preserve's eastern boundary for a possible encroachment associated with the neighboring property. GLA biologists conducted a site visit on September 15, 2023, and observed the following items on OCTA property: hammock with stand, shed roof,

and small remote camera stand placed in the ground along the main trail. A downed OCTA sign was also observed near the potential encroachment. Photographs and corresponding locations of each of these observations were provided to OCTA. Monitors did not observe any new fuel mod areas or obvious trail clearing. In November 2023, OCTA confirmed via professional survey that approximately 683 square feet of the Preserve had been encumbered on with a shed like structure, deck and gravel pad. OCTA is coordinating with the property owner and to determine a resolution.

No other encroachments were observed on the Preserve. RECON removed the camera stand and repaired the OCTA sign. RECON also completed fuel modification work around the neighboring houses within the approved limits in April 2023.

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 hammock and stand and shed roof.
- Address encroachment issue associated with neighboring permanent structure.
- Consider installing a fence line, additional signage, and/or property markers along the surveyed boundary to prevent future encroachments.

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.

All previous recommendations are being implemented on an ongoing basis.

Eagle Ridge

Public access is not currently authorized at the Eagle Ridge Preserve. GLA did not observe unauthorized access or activities during biological monitoring. Monitors checked for signs of cattle and found no evidence.

Monitors took photos at the eight permanent camera stations that were established in 2022 after the removal of cattle from the Preserve to monitor vegetation condition along Soquel Creek [Exhibit 4 – Photo Location Map and Exhibit 2 – Photographs 1 through 8]. Monitors indicated that regrowth of both native and non-native vegetation has increased significantly and often obscures the trail, which crosses the creek multiple times. Some areas of the creek are more mesic than others and support riparian shrubs, while other portions (especially on the terraces above creek) support a mix of native and non-native upland species. In the more mesic areas the trail is obscured; mulefat, poison oak, and occasionally elderberry have closed in on the trail immediately adjacent to the creek. Often, just beyond the creek bed, dense thickets of bull and Italian thistle and mustard surround the native species. Where the trail goes up onto the terraces, the native shrubs and

trees are expanding but the open disturbed areas are full of tocalote and bromes. Due to an above-normal rain year, annual non-native species benefited and increased in cover during these above average years.

Vegetation is filling in without cattle present and passage is very difficult near the creek. While the cattle were damaging the creek bed and bank, they were also maintaining a passable trail. That trail is mostly gone, especially because the above-normal rain year has increased the annual non-native species cover. Portions of the creek that were frequently crossed by cattle, where the bed was trampled and muddy, now have more defined creek bed and bank. However, the canyon has not restored to a natural state. The majority of the canyon is classified as feral, due to the clear indication that this was a ranch and has not had cattle for a couple seasons. The upper road is also dominated by mustard thickets and non-native grasslands.

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. RECON controlled vegetation growing on the ridge road/access road using line trimmers and herbicide. In Soquel Canyon, RECON line-trimmed non-native vegetation to create a walking path/foot trail for Preserve monitoring.

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

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

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 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), or to delineate the property boundary to prevent encroachments.

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

A summary of RECON maintenance activities at the Preserves is provided below. For additional details, refer to RECON's 2023 Summary Letter for Maintenance Activities Performed on OCTA Preserves, attached to the NCCP/HCP Annual Report.

Trabuco Rose
RECON repaired a fence that had been damaged by a fallen tree. Additionally, more fencing was installed, and some sections were repaired along the property line that borders the former Joplin Ranch property. RECON also installed snow fencing around the historical mining pit located in Rose Canyon to deter wildlife from falling into the pit and becoming trapped. RECON's subcontractor recontoured/regraded the interior fire roads following rain events to repair erosion that had created ruts and rills.

GLA continues to monitor the erosional "gully" area and is assisting OCTA in securing regulatory permits to complete Phase II, which is anticipated to commence in fall 2024. 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. Monitoring and repairs are ongoing, as needed.

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 public access is allowed and due to the sensitivity of the burn area.

In July 2023, RECON repaired damaged fencing, signage, and posts at the entrance to the SCE unauthorized trail, and along the unauthorized bike trail that leads down to the burn area. 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 fencing/signage repairs and trash removal, as-needed, and for the biological monitor to 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 2023. As part of adaptive management, OCTA's private security company patrols the Preserve due to previous unauthorized activities and the sensitivity of the burn area.

Bobcat Ridge
GLA documented a downed OCTA Preserve sign on two occasions. No erosion/sedimentation issues were documented. No issues with trash or dumping were documented.

Recommendations
Repair downed sign. 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 signage repair and fencing repair/removal of old barbed wire fencing, which were completed. GLA previously recommended that the biological monitor check for fencing and signage repair needs, as well as for erosion/sedimentation and trash. Monitoring and repairs are ongoing, as needed.

Silverado Chaparral
Minor erosion was noted by GLA monitors; however, overall erosion is less severe since water bars were installed in 2022. No issues with Preserve signs, fencing, gates, 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. Monitoring and repairs are ongoing, as needed.

Wren's View
RECON removed 4,322 linear feet of barbed wire and chain link fencing that was previously recommended for removal. GLA had 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 did not appear to have a present function and that could pose a risk to wildlife, especially areas where the fencing was damaged/downed. No issues with gates were observed.

GLA monitors noted access road erosion. RECON's subcontractor recontoured/regraded fire roads to fix erosion rills and installed water bars to prevent future erosion [Exhibit 5 – Trails, Utility, and Maintenance Map].

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 erosion repair along the access (fire) road, which was conducted.

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. As of 2023, most of the fencing recommended for removal has been removed. One small section of downed barbed wire fencing along Trabuco Canyon Road in the southwestern portion of the Preserve and one section of chain link fencing, also in the southwestern portion of the Preserve, remains.

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. Accordingly, OCTA will wait to modify the existing fencing until approval of a public access plan with a component that allows wildlife movement.

Live Oak Creek

RECON's subcontractor recontoured/regraded the fire roads to fix erosion ruts and rills that had formed following the last rainy season. During a maintenance visit, RECON observed that a fallen oak tree branch along the shoulder of Live Oak Canyon Road supported a beehive. OCTA and RECON coordinated with a local beekeeper to save and extract the colony from the hive for relocation. RECON then removed the branch from the road shoulder and put vegetative debris back onto Preserve property. RECON also fixed a damaged fence, removed an unauthorized camera stand near the eastern boundary, and repaired an OCTA sign.

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. Monitoring and repairs are ongoing, as needed.

In addition, GLA previously 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. A new homeowner has removed this fencing. .

Eagle Ridge

No issues with fencing, gates, or signage were observed. 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, gate, and signage repair needs, as well as for erosion/sedimentation and trash. Monitoring and repairs are ongoing, as needed.

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

Goldspotted oak borer (GSOB) has been previously identified within Wren's View, Trabuco Rose, and Live Oak Creek Preserves. 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 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.

Invasive shot hole borer (ISHB) holes have 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.

Tree maintenance was also performed by RECON at specific Preserves, as summarized below.

Trabuco Rose
UCCE performed GSOB and oak tree health surveys in 2022 and recommended removal of four coast live oak trees that tested positive for GSOB. All four of these trees were removed and chipped to less than 3 inches by an OCFA contractor in April 2023. Additional dead trees were recommended for heavy pruning due to their location adjacent to roads as they posed a fire and safety risk. One of these trees was left due to nesting bird activity (bushtit). Additionally, all coast live oaks with a DBH >8 inches located within 300 feet of the GSOB infested trees, which included 191 trees, were treated with insecticide as recommended. A stand of dead Eucalyptus trees that was recommended for removal due to fire risk was also removed in April. Pre-construction nesting bird surveys and monitoring activities were conducted by qualified OCFA contracted biologists during tree removal activity.

Tree maintenance performed by RECON included removing fallen branches that were blocking fire/access roads and cutting back overhanging vegetation from fire roads. Additionally, a tree that had fallen on a property fence line was removed from the fence. In accordance with the RMP, all tree material is left on the Preserves and placed outside of access roads/trails and waterways.

Recommendations

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 and fence lines.

Previous Recommendations

It was previously recommended that OCTA remove the four GSOB amplifier trees and treat all coast live oaks with a DBH >8 inches located within 300 feet of the GSOB infested trees, which included 191 trees. It was also recommended to remove trees and limbs as early as possible (ideally before May) and treatments were recommended to be applied during the first weeks of May, just prior to the start of GSOB flight season. All recommendations were implemented except removal of one tree which was left due to nesting bird activity (bushtit).

It was previously recommended that OCTA continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations. It was also recommended that as-needed maintenance continue to trim and/or clear fallen branches/trees from fire/access roads. These tasks are ongoing.

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

Monitors did not incidentally detect signs of GSOB or ISHB or note any other issues with trees. As previously reported, UCCE performed GSOB surveys in 2022 and did not find any sign of infested trees.

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 GSOB/ISHB monitoring program, which is ongoing.

Silverado Chaparral
Monitors did not incidentally detect signs of GSOB or note any other issues with trees. As previously reported, 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.

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

Wren's View
Monitors did not incidentally detect signs of GSOB or ISHB or note any other issues with trees. As previously reported, in 2022, UCCE identified GSOB infestations in three coast live oaks on the Preserve. Recommended removals and treatments were performed by OCFA's contractor.

RECON removed large fallen oak tree branches from the fire road, cut up debris, and left onsite outside of waterways

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 GSOB/ISHB monitoring program, treating as necessary. This is ongoing.

Live Oak Creek
UCCE performed GSOB surveys in 2022 and recommended removal of one coast live oak GSOB tree exhibiting severe dieback. The tree was removed in May 2023. Additionally, all coast live oaks with a DBH >8 inches located within 300 feet of the GSOB infested trees, which included three trees, were treated with insecticide as recommended. Pre-construction nesting bird survey and monitoring activities were conducted by qualified OCFA contracted biologists during tree removal activity.

RECON removed a fallen oak tree branch from along the shoulder of Live Oak Canyon Road and put vegetative debris back onto Preserve property.

Recommendations
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 and fence lines.

Previous Recommendations

It was previously recommended that OCTA remove the one infested GSOB tree and treat all coast live oaks with a DBH >8 inches located within 300 feet of the GSOB infested trees. It was also recommended to remove trees and limbs as early as possible (ideally before May) and treatments were recommended to be applied during the first weeks of May, just prior to the start of GSOB flight season. All recommendations were implemented.

It was previously recommended that OCTA continue to monitor for GSOB and ISHB, treating as necessary following arborist recommendations. It was also recommended that as-needed maintenance continue to trim and/or clear fallen branches/trees from fire/access roads. These tasks are ongoing.

Eagle Ridge

No issues with trees were observed.

Recommendations

None.

Previous Recommendations

None.

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. CNDDB Submittals

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

Exhibit 1
Location Map

OCTA Preserves

OCTA Preserve

Eagle Ridge

Silverado Chaparral

Pacific Horizon

Inset Map
Not to Scale

Live Oak Creek

Bobcat Ridge

Trabuco Rose

Wren's View

N

0 1.5 3
Miles

1 inch = 3 miles

GLA

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

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

Photograph 3: View from Permanent Photo Station #2. Photo taken December 7, 2023.

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

Exhibit 2A, Sheet 1 - Site Photos

OCTA - Trabuco Rose Preserve

GLA

Photograph 5: View from Permanent Photo Station #3. Photo taken December 7, 2023.

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

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

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

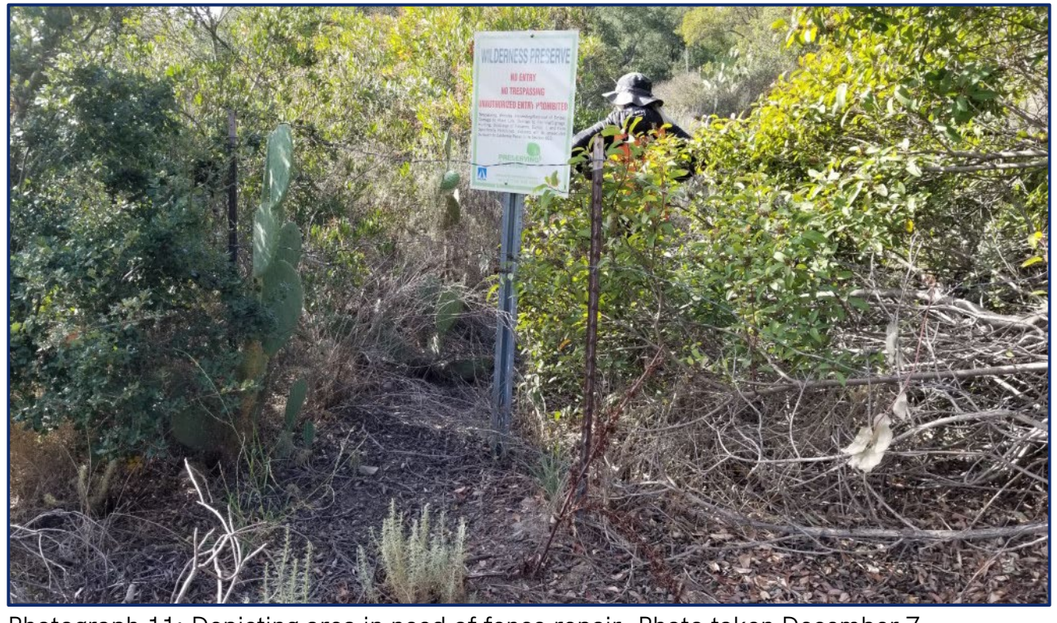
Exhibit 2A, Sheet 2 - Site Photos

OCTA - Trabuco Rose Preserve

GLA

Photograph 9: View from Permanent Photo Station #5. Photo taken December 7, 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 December 7, 2023.

Photograph 12: Depicting dead Eucalyptus trees that were later removed. Photo taken February 13, 2023.

Exhibit 2A, Sheet 3 - Site Photos

OCTA - Trabuco Rose Preserve

GLA

Photograph 13: Overview of Preserve facing east. Photo taken February 13, 2023

Photograph 14: Overview of Preserve facing south. Photo taken February 13, 2023.

Photograph 15: View of cactus growing on hillside facing northwest. Photo taken December 7, 2023.

Photograph 16: Area of ongoing road erosion. Photo taken February 13, 2023.

Exhibit 2A, Sheet 4 - Site Photos

OCTA - Trabuco Rose Preserve

GLA

Photograph 17: Mountain lion captured on Camera E_F_M. Photo taken October 15, 2023.

Photograph 18: Gray fox with prey captured on Camera J. Photo taken June 30, 2023.

Photograph 19: Mountain lion with GPS collar captured on Camera J. Photo taken February 24, 2023.

Photograph 20: Bobcats captured on Camera N. Photo taken May 31, 2023

Exhibit 2A, Sheet 5 - Site Photos

OCTA - Trabuco Rose Preserve

GLA

Photograph 1: Preserve overview facing south showing burn area in foreground. Photo taken February 17, 2023.

Photograph 2: Depicting repaired fence and newly installed signage to deter trespassers. Photo taken February 17, 2023.

Photograph 3: Depicting location of installed wildlife camera B with new signage required. Photo taken February 17, 2023.

Photograph 4: Preserve overview facing southwest. Photo taken February 17, 2023.

Exhibit 2B, Sheet 1 - Site Photos

OCTA – Pacific Horizon Preserve

GLA

Photograph 5: Depicting intermediate mariposa lily. Photo taken June 22, 2023.

Photograph 6: Depicting artichoke thistle field. Photo taken June 22, 2023.

Photograph 7: Depicting several flowering individuals of many-stemmed dudleya. Photo taken June 22, 2023.

Photograph 8: Depicting fence in need of repair. Photo taken June 22, 2023.

Exhibit 2B, Sheet 2 - Site Photos

OCTA – Pacific Horizon Preserve

GLA

Photograph 1: View of Bobcat Ridge Preserve in the foreground, facing southwest. Photo taken February 20, 2023.

Photograph 2: View of Bobcat Ridge Preserve, facing west. Photo taken February 20, 2023.

Photograph 3: Depicting signage in need of repair. Photo taken February 20, 2023.

Photograph 4: Depicting weedy invasive species growing within encroachment area. Photo taken February 20, 2023.

Exhibit 2C - Site Photos

OCTA – Bobcat Ridge Preserve

GLA

Photograph 1: Overview of Silverado Chaparral Preserve facing south. Photo taken February 15, 2023.

Photograph 2: Overview of Silverado Chaparral Preserve facing east. Photo taken February 15, 2023.

Photograph 3: Depicting erosion cutting across trail. Photo taken February 15, 2023.

Photograph 4: Depicting erosion cutting across trail. Photo taken February 15, 2023.

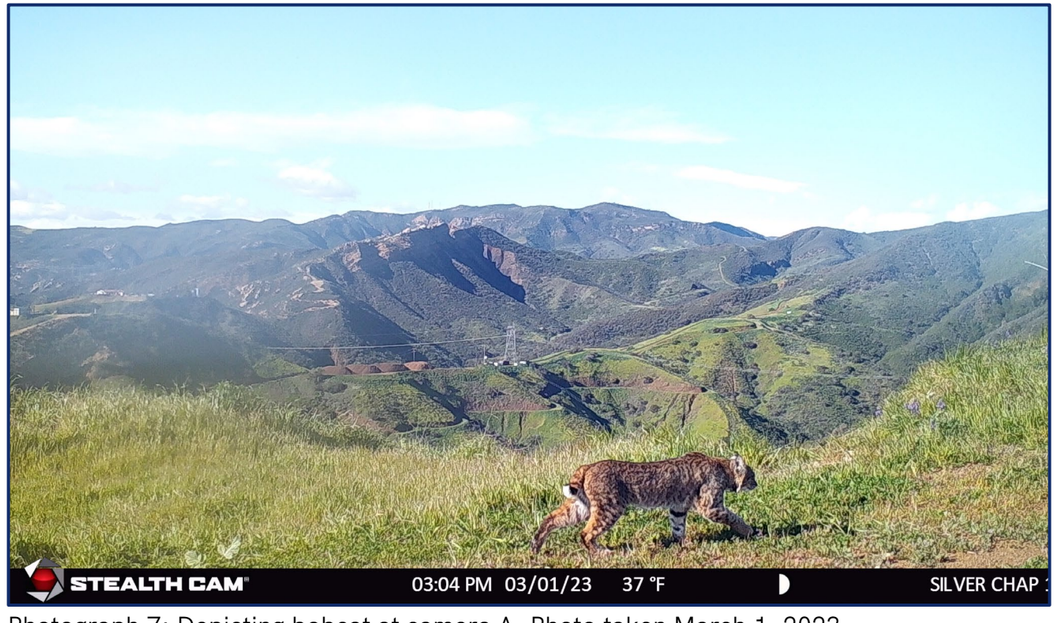
Exhibit 2D, Sheet 1 - Site Photos

OCTA - Silverado Chaparral Preserve

GLA

Photograph 5: Depicting deep erosion on main access road. Photo taken February 15, 2023.

Photograph 6: Depicting mountain lion with GPS collar at camera B. Photo taken February 28, 2023.



Photograph 7: Depicting bobcat at camera A. Photo taken March 1, 2023.

Photograph 8: Depicting mule deer at camera A. Photo taken June 14, 2023.

Exhibit 2D, Sheet 2 - Site Photos

OCTA - Silverado Chaparral Preserve

GLA

Photograph 1: Overview of Wren's View Preserve facing west. Photo taken February 13, 2023.

Photograph 2: Overview of Wren's View Preserve facing east at photo point 2. Photo taken February 13, 2023.

Photograph 3: Depicting barbed wire fence leaning into roadway. This fencing has now been removed. Photo taken February 13, 2023.

Photograph 4: Depicting minor erosion. Photo taken February 13, 2023.

Exhibit 2E, Sheet 1 - Site Photos

OCTA – Wren's View Preserve

GLA

Photograph 1: View of Live Oak Creek Preserve facing north. Photo taken February 20, 2023.

Photograph 2: View of Live Oak Creek Preserve facing east. Also depicting non-native grasses in access road. Photo taken February 20, 2023.

Photograph 3: Depicting deep erosion along main access road. Photo taken February 20, 2023.

Photograph 4: Depicting erosion along main access road. Photo taken February 20, 2023.

Exhibit 2F, Sheet 1 - Site Photos

OCTA - Live Oak Creek Preserve

GLA

Photograph 5: View of the hammock placed on OCTA property near unauthorized structure. Photo taken: September 15, 2023.

Photograph 6: View of the shed roof discarded on OCTA property near unauthorized structure. Photo taken: September 15, 2023.

Photograph 7: View of the remote camera stand placed on OCTA property. Photo taken: September 15, 2023.

Photograph 8: View of downed OCTA sign near unauthorized structure. Photo taken: September 15, 2023.

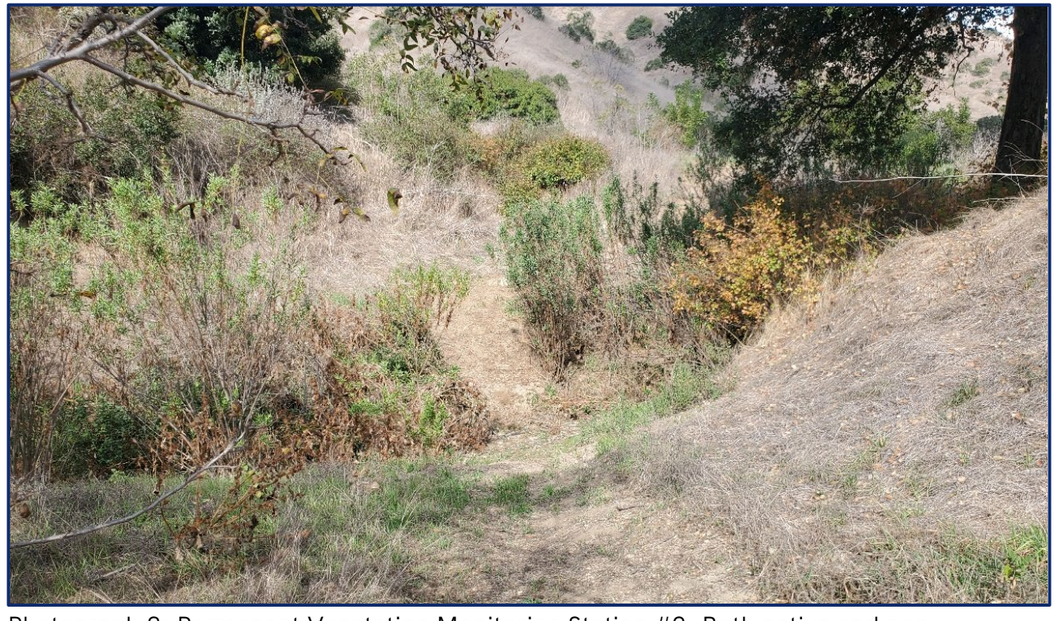
Exhibit 2F, Sheet 2 - Site Photos

OCTA - Live Oak Creek Preserve

GLA

Photograph 1: Permanent Vegetation Monitoring Station #1. Photo depicts further vegetative growth following removal of cows. Trail maintained for Preserve management is shown. Photo taken November 7, 2023

Photograph 2: Permanent Vegetation Monitoring Station #1. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 27, 2022.



Photograph 3: Permanent Vegetation Monitoring Station #2. Both native and non-native vegetation have expanded during the previous year. Trail maintained for Preserve management is shown. Photo taken November 7, 2023.

Photograph 4: Permanent Vegetation Monitoring Station #2. Cow trail has filled in with vegetation since removal of cows. Photo taken October 27, 2022.

Exhibit 2G, Sheet 1 - Site Photos

OCTA - Eagle Ridge Preserve

GLA

Photograph 5: Taken NEAR Permanent Vegetation Monitoring Station Location #3. Photo taken November 7, 2023.

Photograph 6: Permanent Vegetation Monitoring Station #3. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 7, 2022.

Photograph 7: Permanent Vegetation Monitoring Station #4. Trail maintained for Preserve management is shown. Photo taken November 7, 2023.

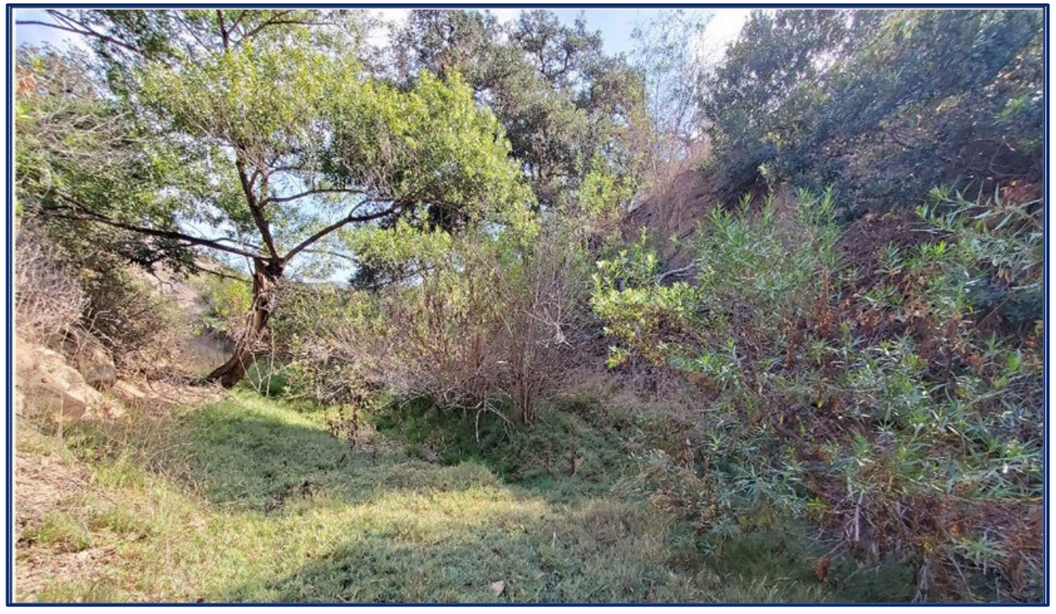
Photograph 8: Permanent Vegetation Monitoring Station #4. Cow trail has filled in with vegetation since removal of cows. No damage to riparian vegetation. Photo taken October 27, 2022.

Exhibit 2G, Sheet 2 - Site Photos

OCTA - Eagle Ridge Preserve

GLA

Photograph 9: Permanent Vegetation Monitoring Station #5 facing east. Photo taken November 7, 2023.



Photograph 10: Permanent Vegetation Monitoring Station #5 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 11: Permanent Vegetation Monitoring Station #6 facing northeast. Willows have put on additional vertical growth and the hillside on the background consists of primarily non-native annuals. Photo taken November 7, 2023.

Photograph 12: Permanent Vegetation Monitoring Station #6 facing northeast. Depicts willows surrounding southwestern pond turtle pool. No evidence of cows present. Photo taken October 27, 2022.

Exhibit 2G, Sheet 3 - Site Photos

OCTA - Eagle Ridge Preserve

GLA

Photograph 13: Permanent Vegetation Monitoring Station #7 facing northeast. Photo taken November 7, 2023.

Photograph 14: Permanent Vegetation Monitoring Station #7 facing northeast. No evidence of cows present. Photo taken October 7, 2022.

Photograph 15: Permanent Vegetation Monitoring Station #8 facing north. Photo taken November 7, 2023.

Photograph 16: Permanent Vegetation Monitoring Station #8 facing north. No evidence of cows present. Photo taken October 27, 2022.

Exhibit 2G, Sheet 4 - Site Photos

OCTA - Eagle Ridge Preserve

GLA

Photograph 17: Sign is in good condition, however the sandstone cliff just behind it has eroded following heavy rainfall last winter. No maintenance is necessary as this is a natural process. Photo taken March 7, 2023.

Photograph 18: Southwestern pond turtle pond shown filled in with sediment. Photo taken March 7, 2023.

Photograph 19: Overview of Preserve facing northeast. Photo taken March 7, 2023.

Photograph 20: Depicting recently installed camera 3 facing the potential southwestern turtle pond. Photo taken December 15, 2023.

Exhibit 2G, Sheet 5 - Site Photos

OCTA - Eagle Ridge Preserve

GLA

Trabuco Oaks Drive
Flanagan Road
Rose Canyon Road

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2024

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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

N

0 275 550

Feet

1 inch = 550 feet

GLA

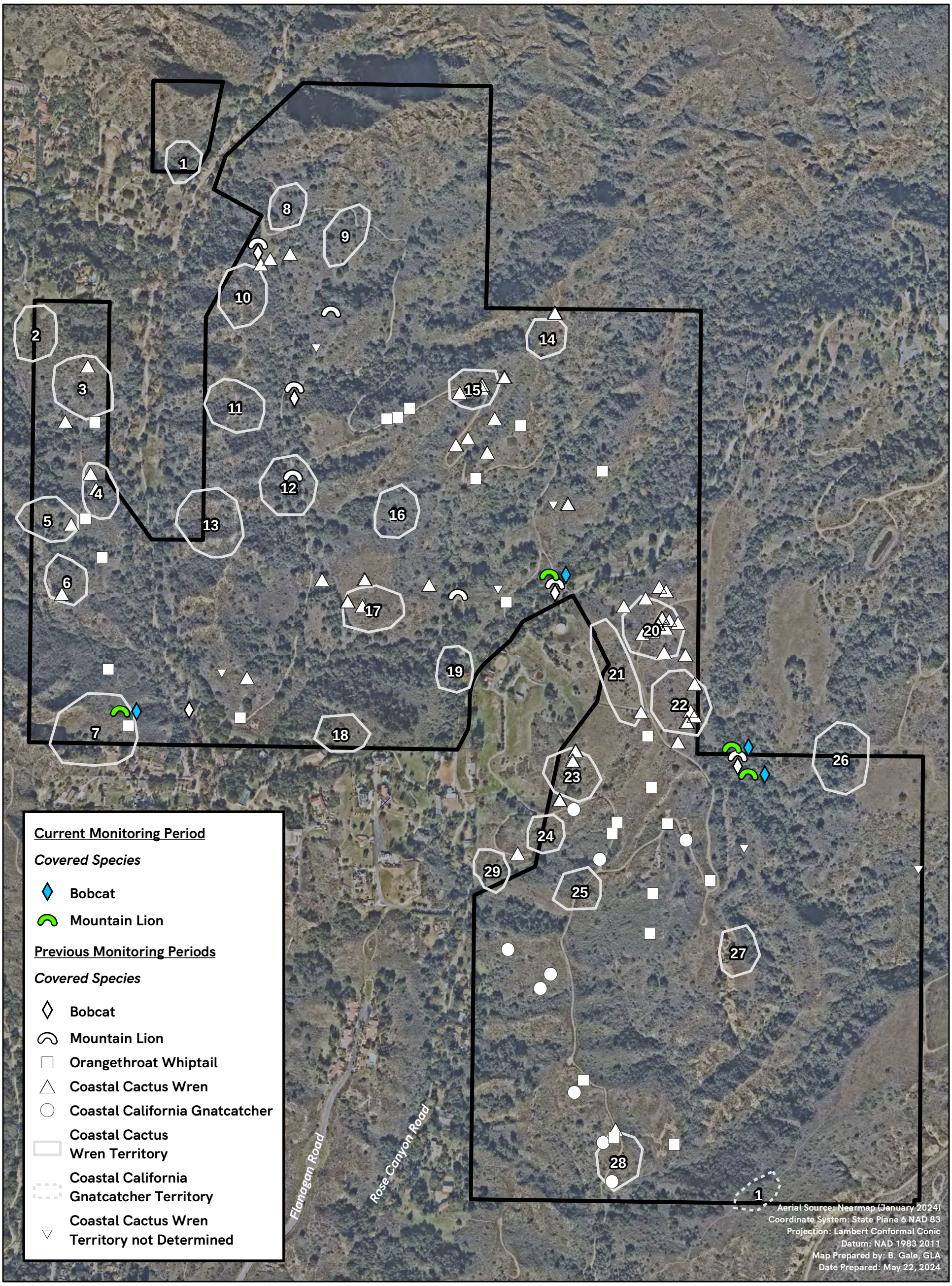

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Exhibit 3B - OCTA Covered/ Sensitive Animal Species Map

Trabuco Rose Preserve

Trabuco Rose Preserve

N

0 275 550

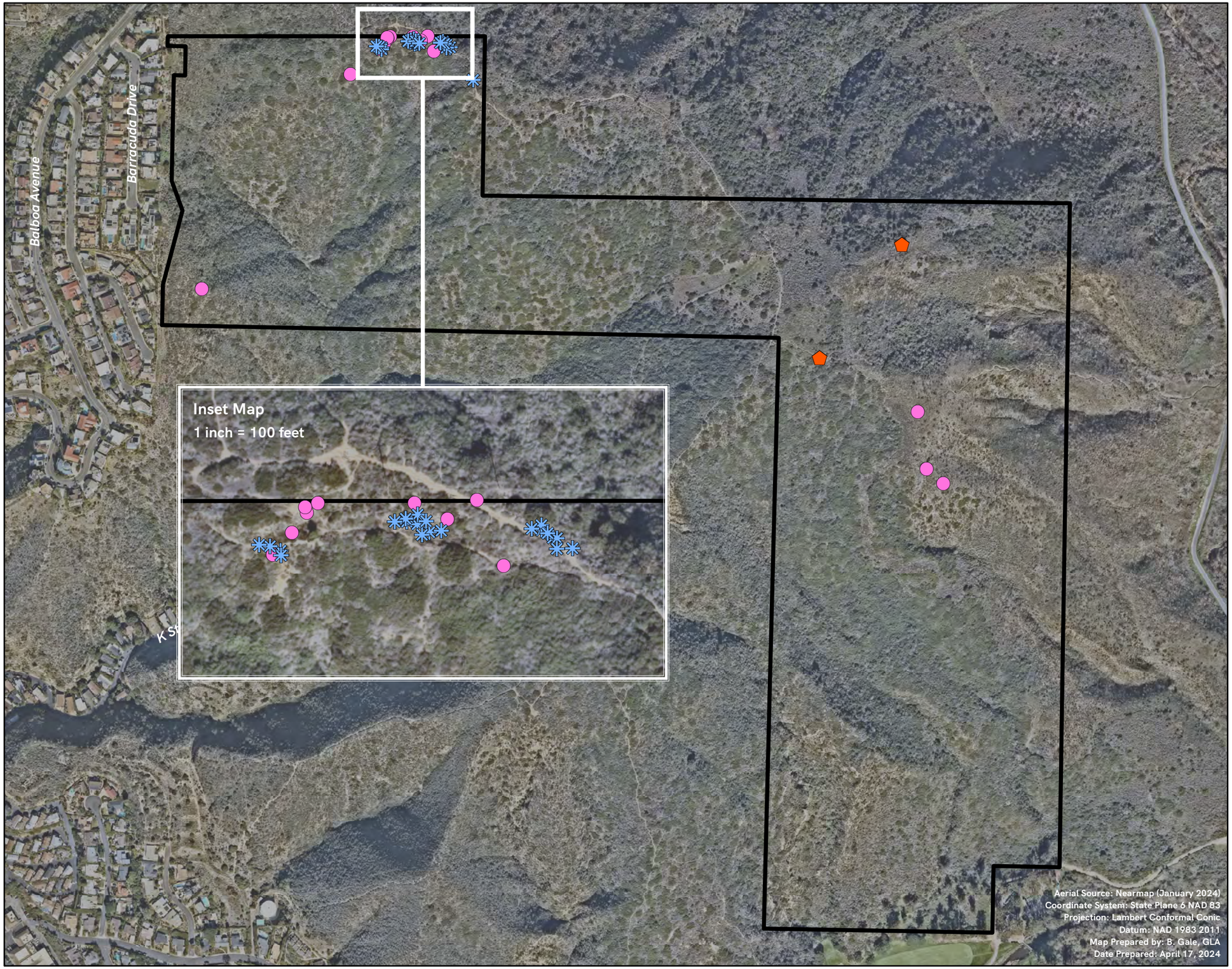
Feet

1 inch = 550 feet

GLA

Exhibit 3C - OCTA Covered/ Sensitive Plant Species Map

Pacific Horizon Preserve



Pacific Horizon Preserve

Current Monitoring Period (2022-2023)

Covered Species

- Intermediate Mariposa Lily
- Many-stemmed Dudleya

Non-Covered Species

- Catalina Mariposa Lily

N

0 212.5 425

Feet

1 inch = 425 feet

GLA

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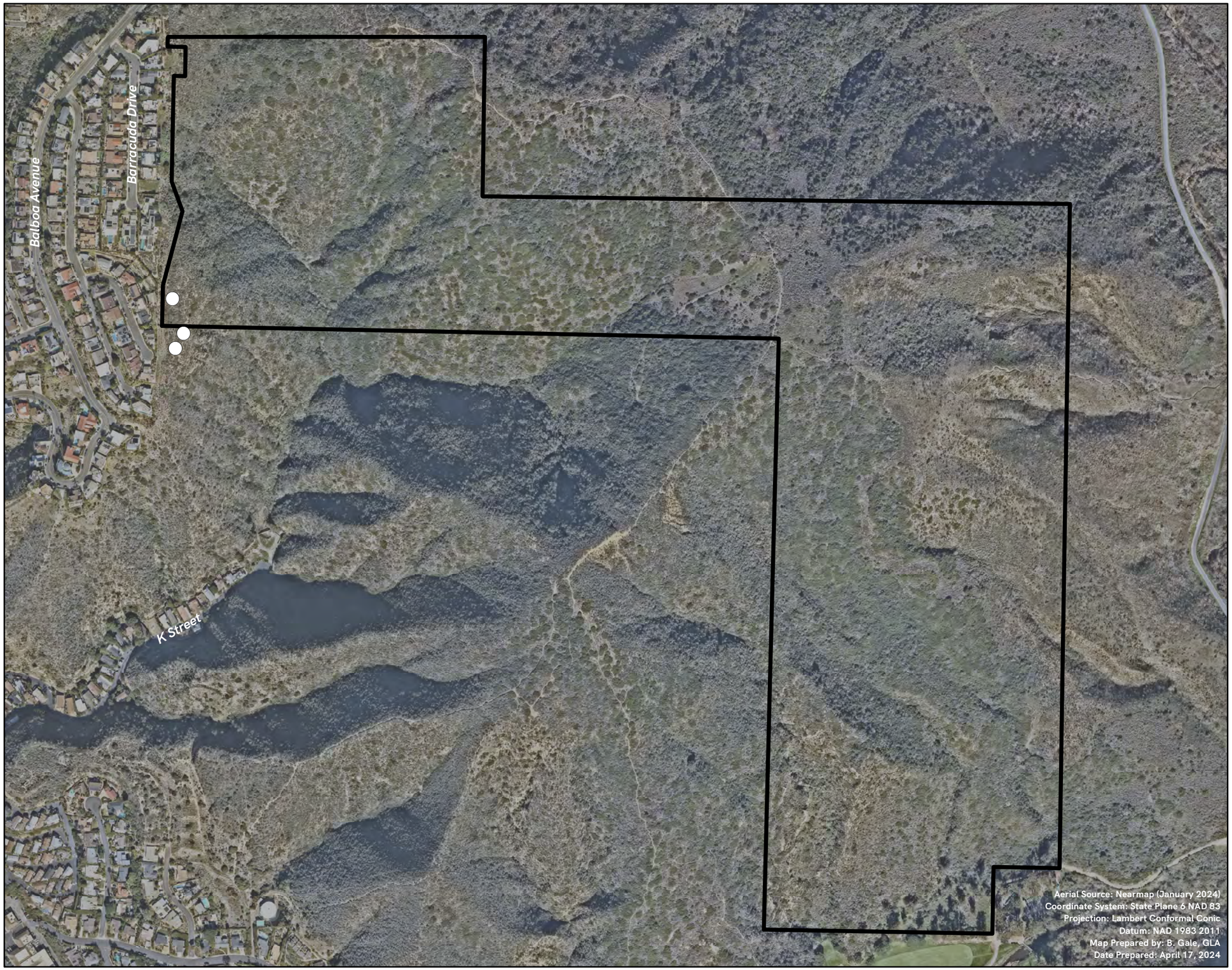
Exhibit 3D - OCTA Covered/ Sensitive Animal Species Map

Pacific Horizon Preserve



Pacific Horizon Preserve

Previous Monitoring Periods

Covered Species

Coastal California Gnatcatcher

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 212.5 425
Feet

1 inch = 425 feet

GLA

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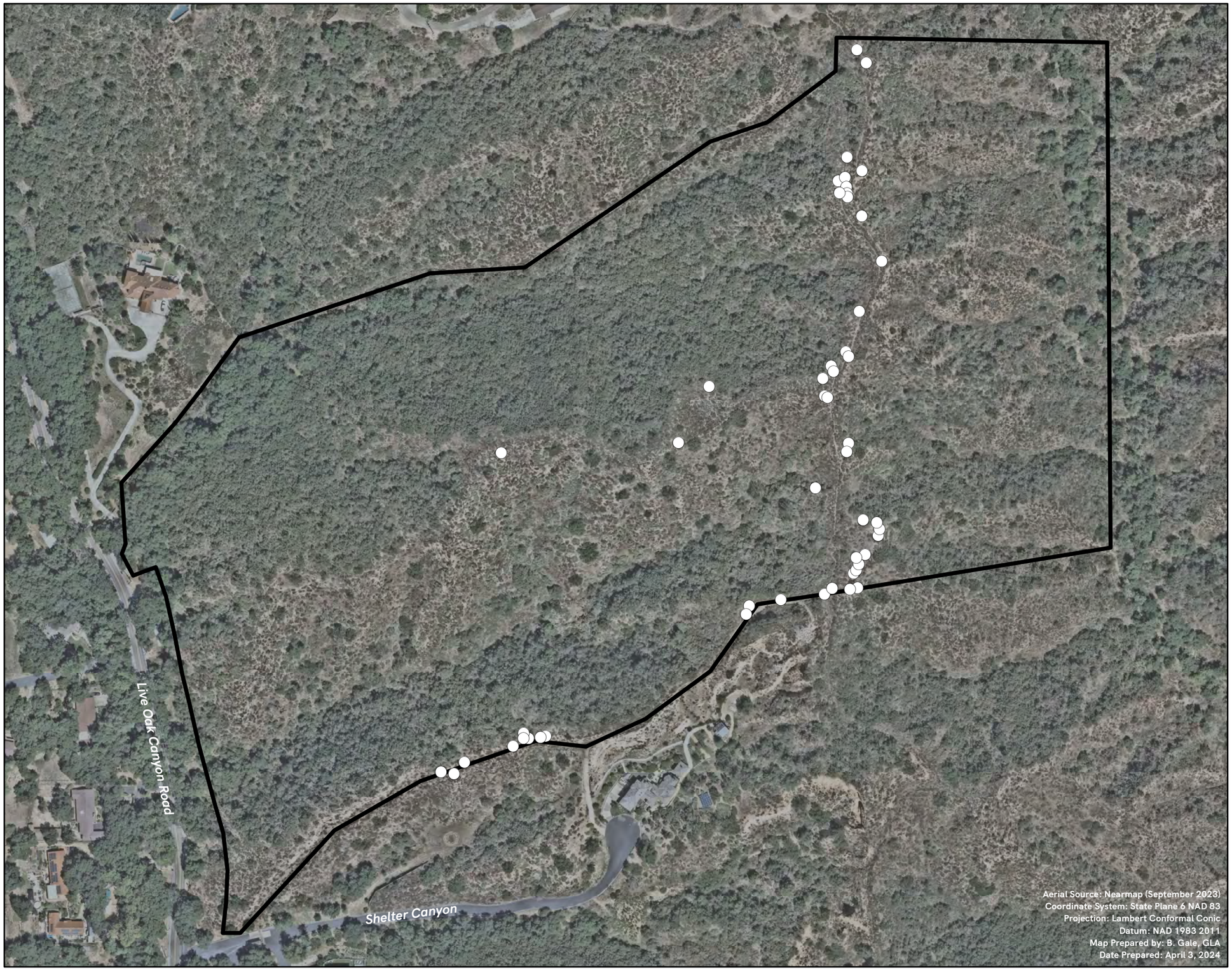
Exhibit 3E - OCTA Covered/ Sensitive Plant Species Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

2022 Focused Plant Survey/ Effectiveness Monitoring

Covered Species

- Intermediate Mariposa Lily

Aerial Source: Nearmap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2024

N

0 100 200
Feet

1 inch = 200 feet

GLA

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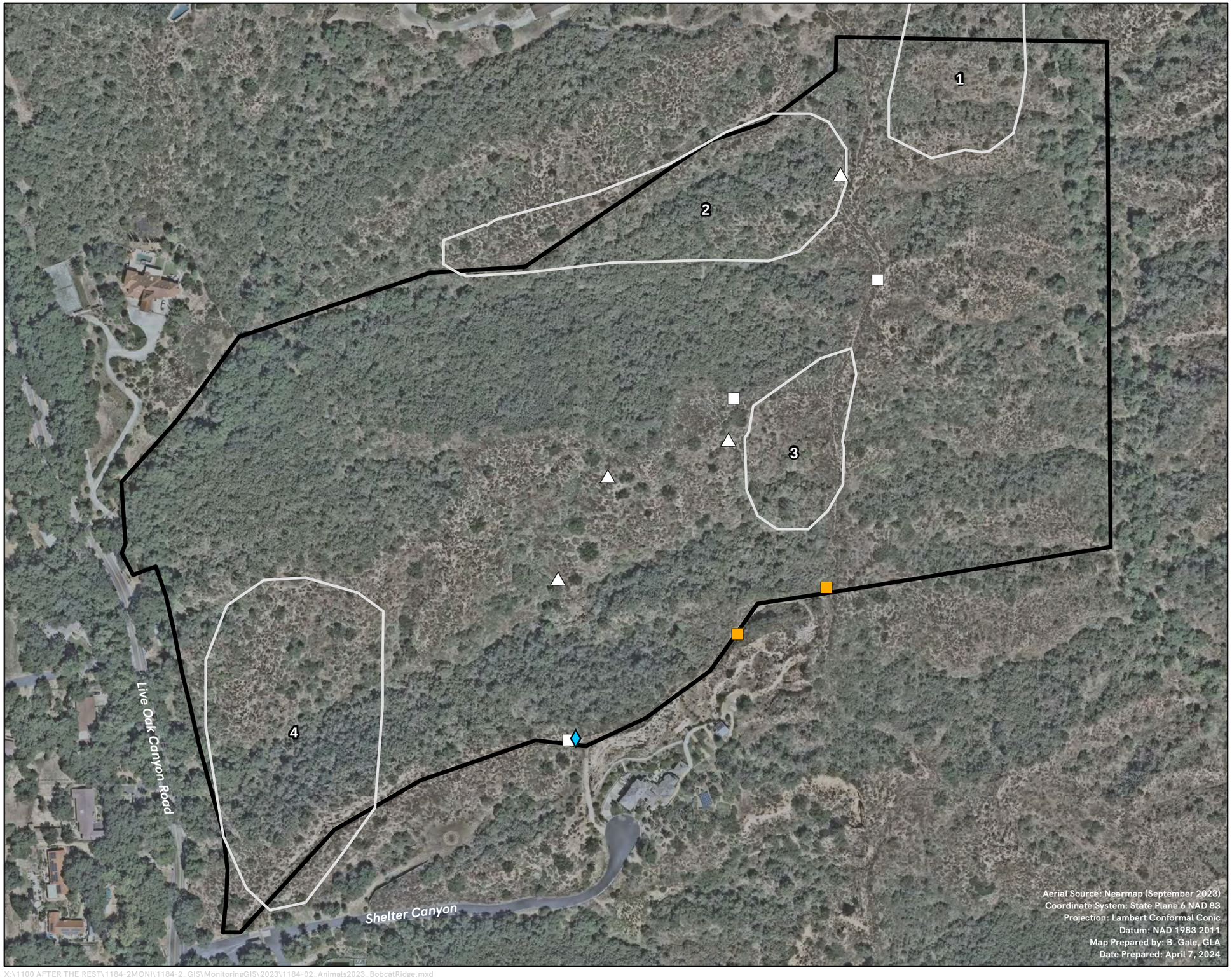
Exhibit 3F - OCTA Covered/ Sensitive Animal Species Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

Current Monitoring Period

Covered Species

Bobcat

Orangethroat Whiptail

Previous Monitoring Periods

Covered Species

Orangethroat Whiptail

Coastal Cactus Wren

Coastal Cactus Wren Territory

N

0 100 200

Feet

1 inch = 200 feet

Aerial Source: Nearmap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 7, 2024

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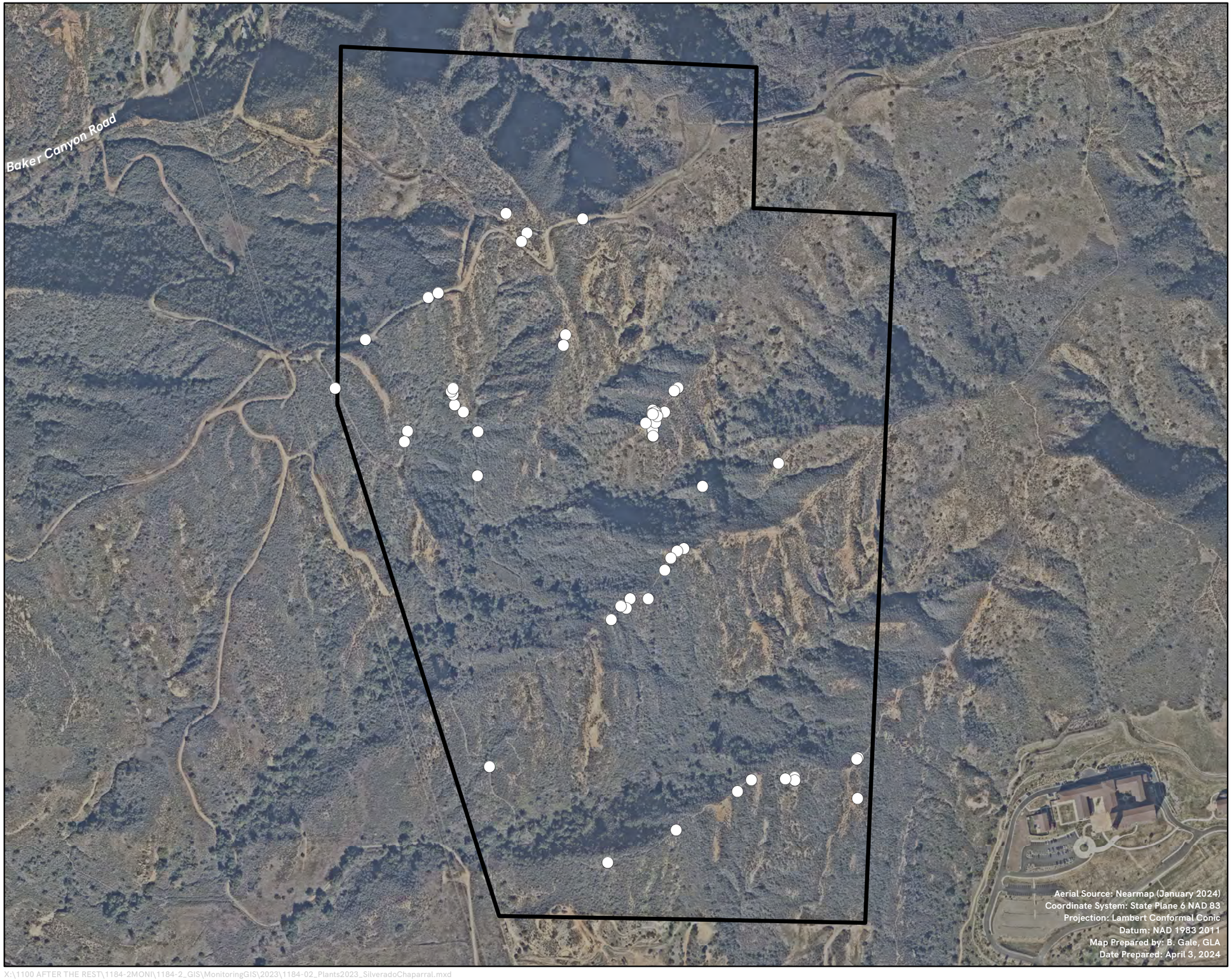

Exhibit 3G - OCTA Covered/ Sensitive Plant Species Map

Silverado Chaparral Preserve

Silverado Chaparral Preserve

2022 Focused Plant Survey/ Effectiveness Monitoring

Covered Species

Intermediate Mariposa Lily

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2024

N

0 225 450
Feet

1 inch = 450 feet

GLA

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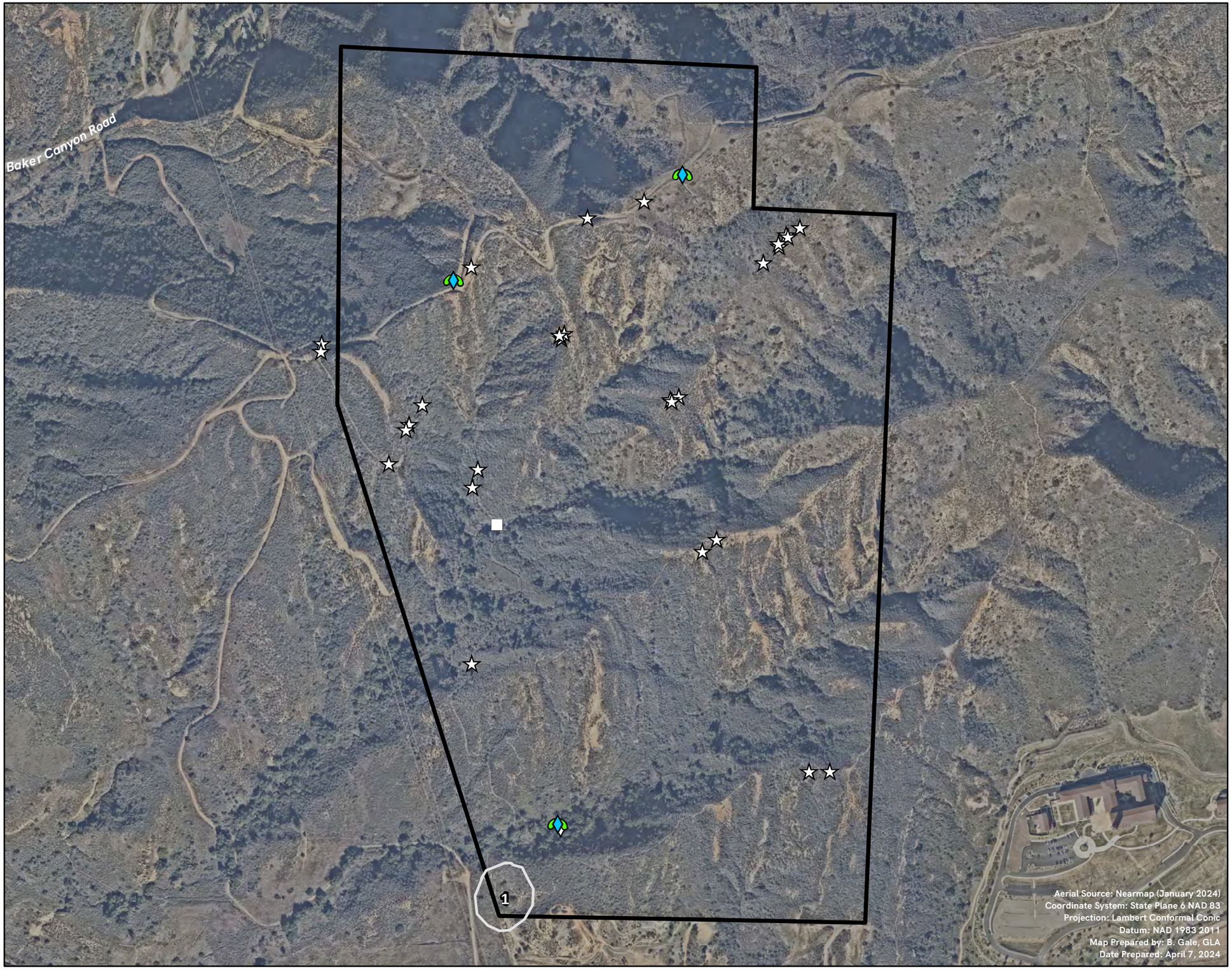
Exhibit 3H - OCTA Covered/ Sensitive Animal Species Map

Silverado Chaparral Preserve



Silverado Chaparral Preserve

Current Monitoring Period

Covered Species

- Bobcat
- Mountain Lion

Previous Monitoring Periods

Covered Species

- Bobcat
- Orangethroat Whiptail
- Coast Horned Lizard
- Coastal Cactus Wren Territory

N

0 225 450

Feet

1 inch = 450 feet

GLA

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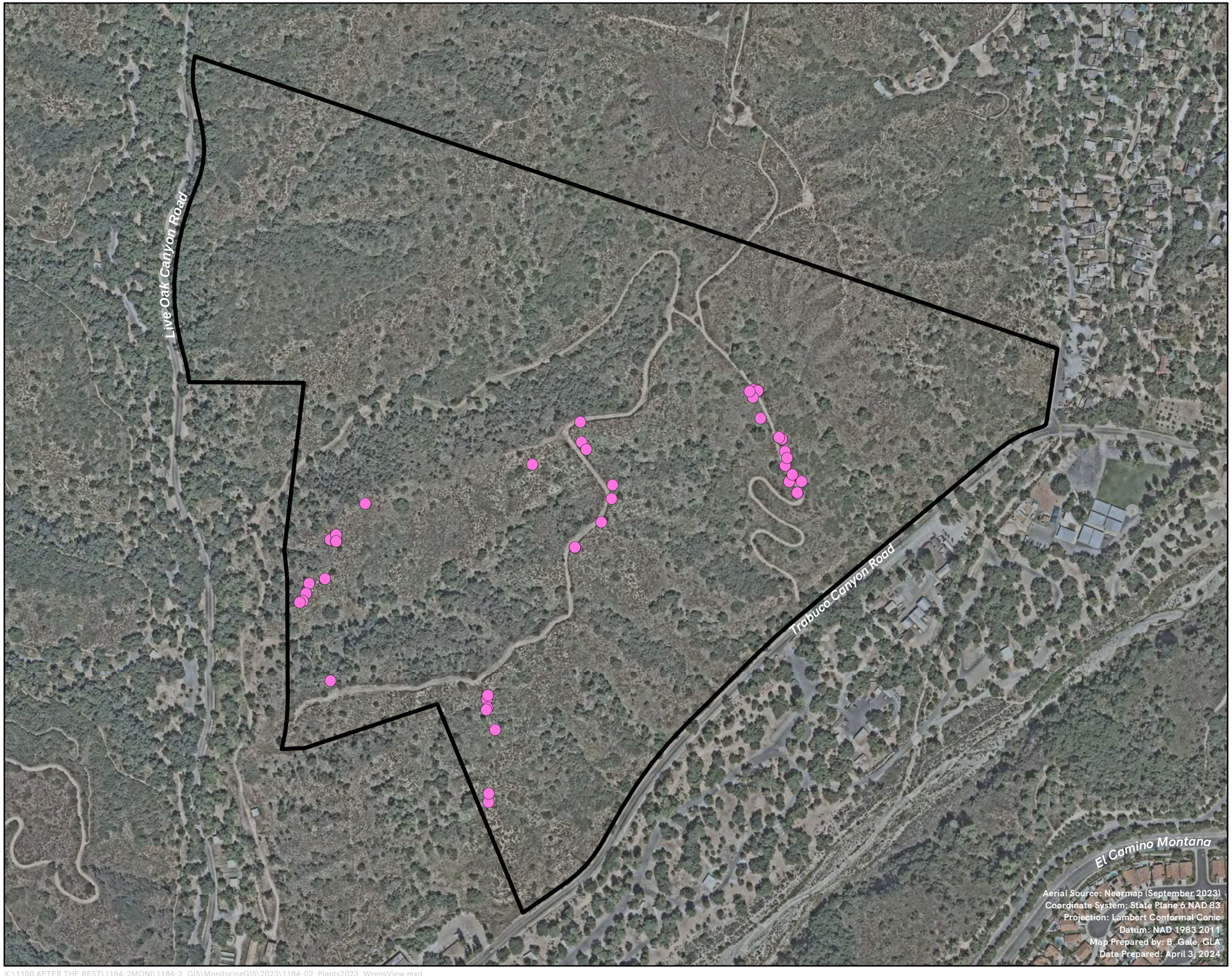
Exhibit 3I - OCTA Covered/ Sensitive Plant Species Map

Wren's View Preserve



Wren's View Preserve

Current Monitoring Period (2022-2023)

Covered Species

- **Intermediate Mariposa Lily**

N

0 175 350

Feet

1 inch = 350 feet

GLA

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Exhibit 3J - OCTA Covered/ Sensitive Animal Species Map

Wren's View Preserve

Live Oak Canyon Road

Trabuco Canyon Road

El Camino Montana

Wren's View Preserve

Current Monitoring Period

Covered Species

Coastal California Gnatcatcher

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

N

0 175 350

Feet

1 inch = 350 feet

Aerial Source: Neermap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2024

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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

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 3, 2024

N

0 112.5 225
Feet

1 inch = 225 feet

GLA

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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

Mountain Lion

Bobcat

Orangethroat Whiptail

Coastal Cactus Wren

Coastal Cactus Wren Territory

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: May 22, 2024

N

0 112.5 225
Feet

1 inch = 225 feet

GLA

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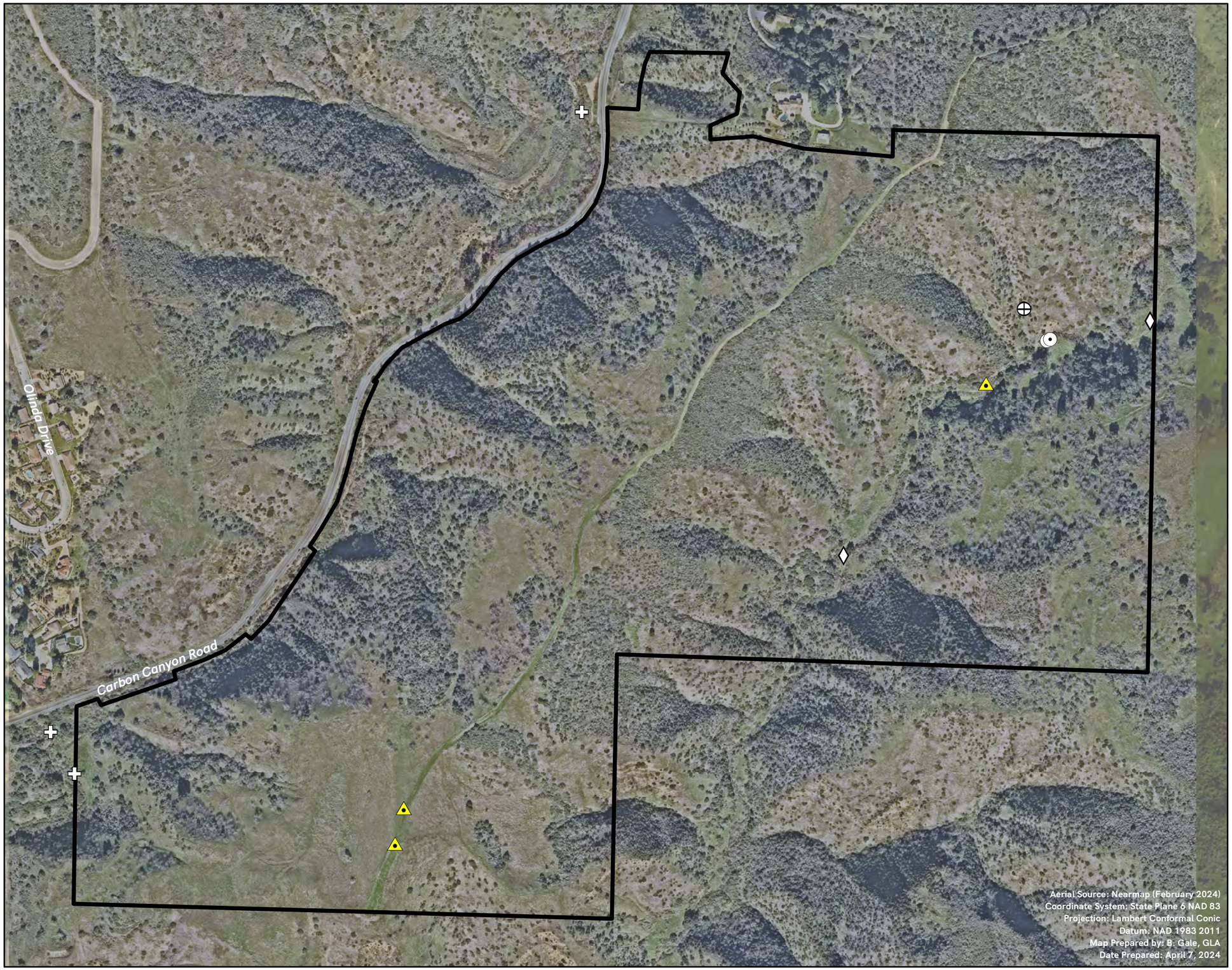
Exhibit 3M - OCTA Covered/ Sensitive Animal Species Map

Eagle Ridge Preserve



Eagle Ridge Preserve

Current Monitoring Period

Non-Covered Species

Crotch's Bumblebee

Previous Monitoring Periods

Covered Species

Bobcat

Least Bell's Vireo

Western Pond Turtle

Non-Covered Species

Golden Eagle

Aerial Source: Nearmap (February 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 7, 2024

N

0 237.5 475
Feet

1 inch = 475 feet

GLA

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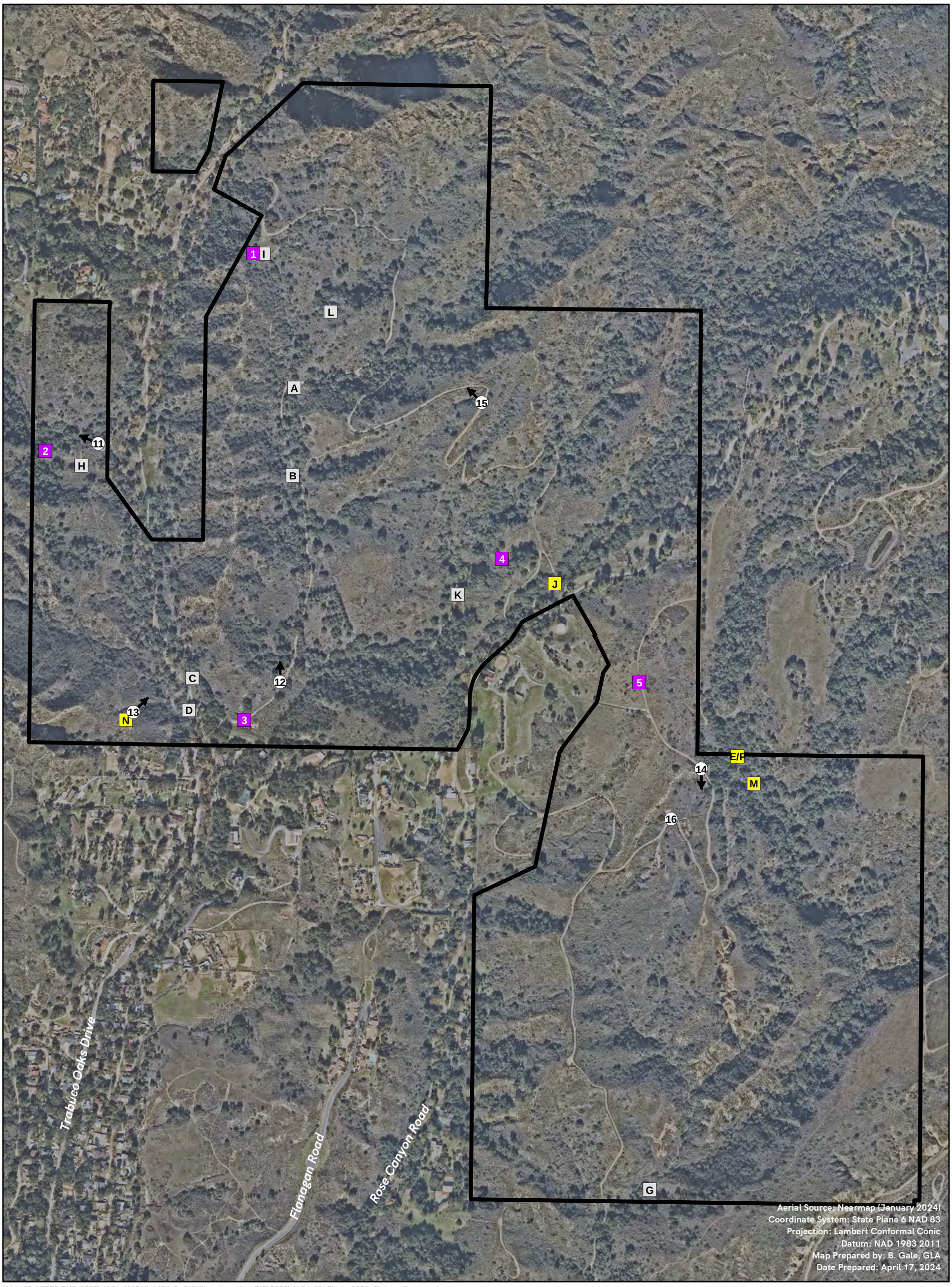


X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\PhotoLocationsGIS\2023\1184-02_Photos2023_TrabucoRose.mxd

Exhibit 4A
Photo Locations Map

Trabuco Rose Preserve

- Trabuco Rose Preserve
- Permanent Photo Station
- Wildlife Camera Station
- Previous Wildlife Camera Station
- Photo Location

N

0 275 550

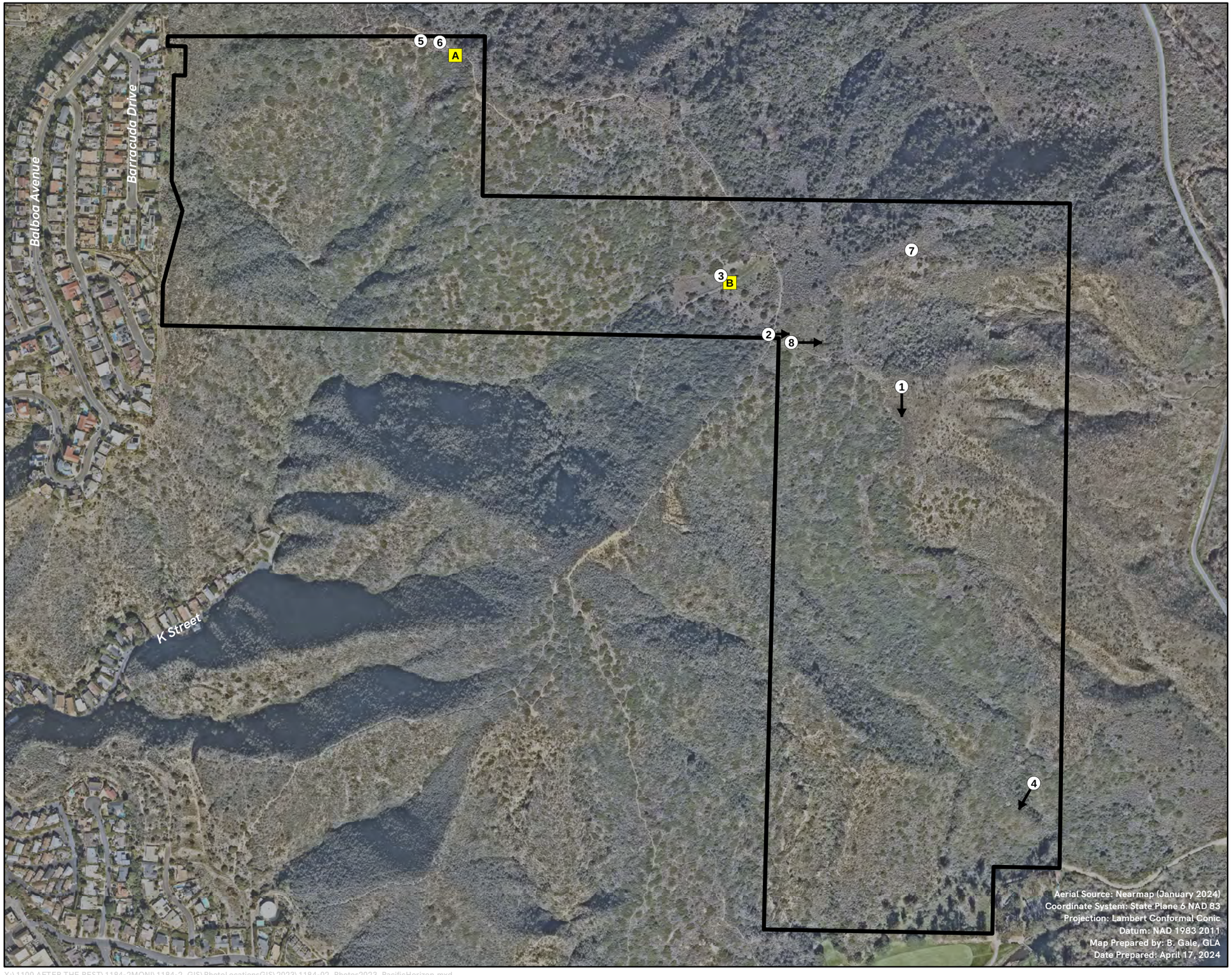
Feet

1 inch = 550 feet

GLA

Exhibit 4B
Photo Locations Map

Pacific Horizon Preserve



Pacific Horizon Preserve

Wildlife Camera Station

Photo Location

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 212.5 425
Feet

1 inch = 425 feet

GLA

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Exhibit 4C
Photo Locations Map

Bobcat Ridge Preserve

Bobcat Ridge Preserve

Wildlife Camera Station

Wildlife Camera Station Inactive in 2023

Photo Location

Aerial Source: Nearmap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 100 200
Feet

1 inch = 200 feet

GLA

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Exhibit 4D
Photo Locations Map

Silverado Chaparral Preserve

Silverado Chaparral Preserve

Wildlife Camera Station

Previous Wildlife Camera Station

Photo Location

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 225 450
Feet

1 inch = 450 feet

GLA

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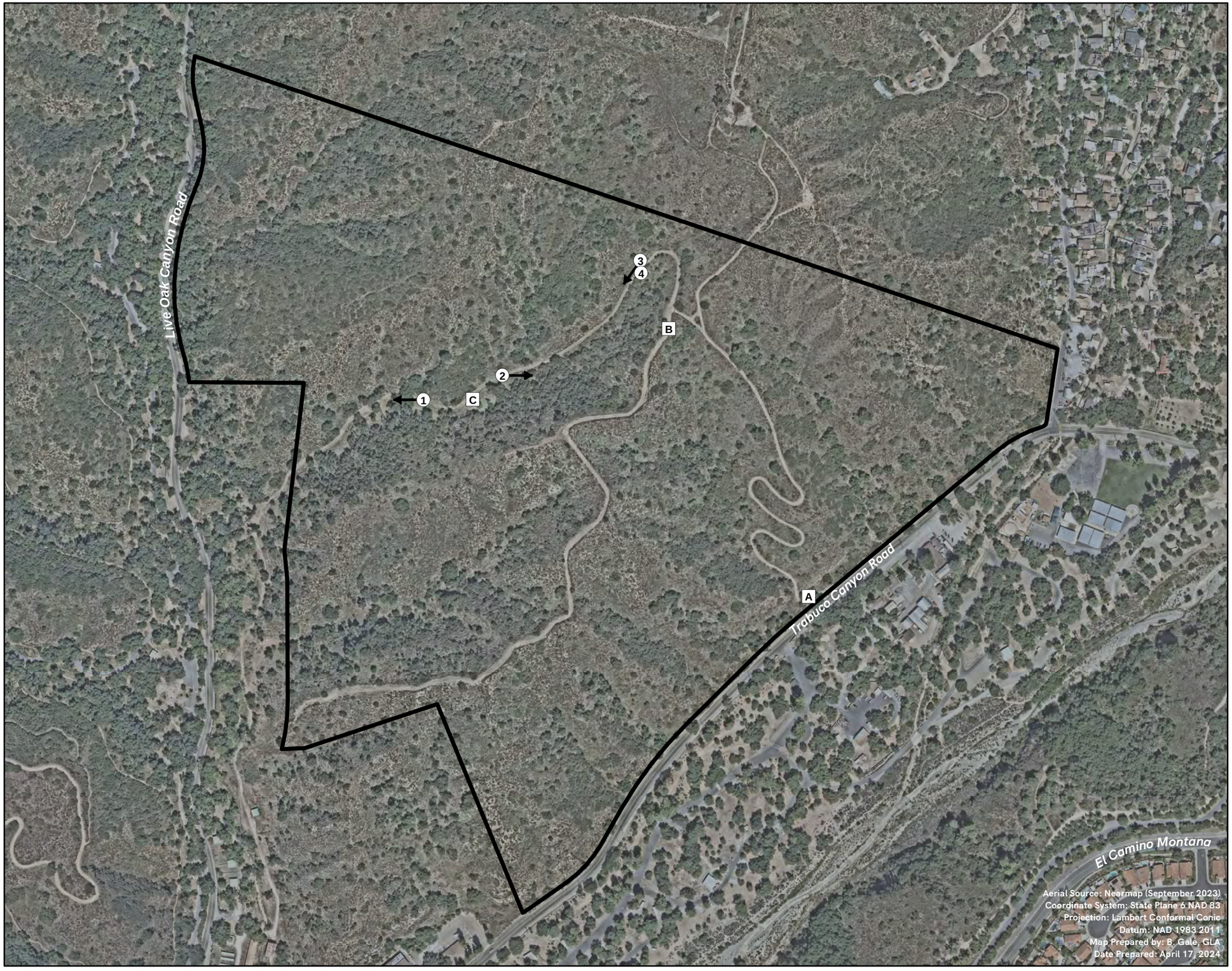
Exhibit 4E
Photo Locations Map

Wren's View Preserve



Wren's View Preserve

Wildlife Camera Station Inactive in 2023

Photo Location

N

0 175 350

Feet

1 inch = 350 feet

GLA

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Exhibit 4F
Photo Locations Map

Live Oak Creek Preserve

Live Oak Creek Preserve

Wildlife Camera Station Inactive in 2023

Photo Location

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 112.5 225
Feet

1 inch = 225 feet

GLA

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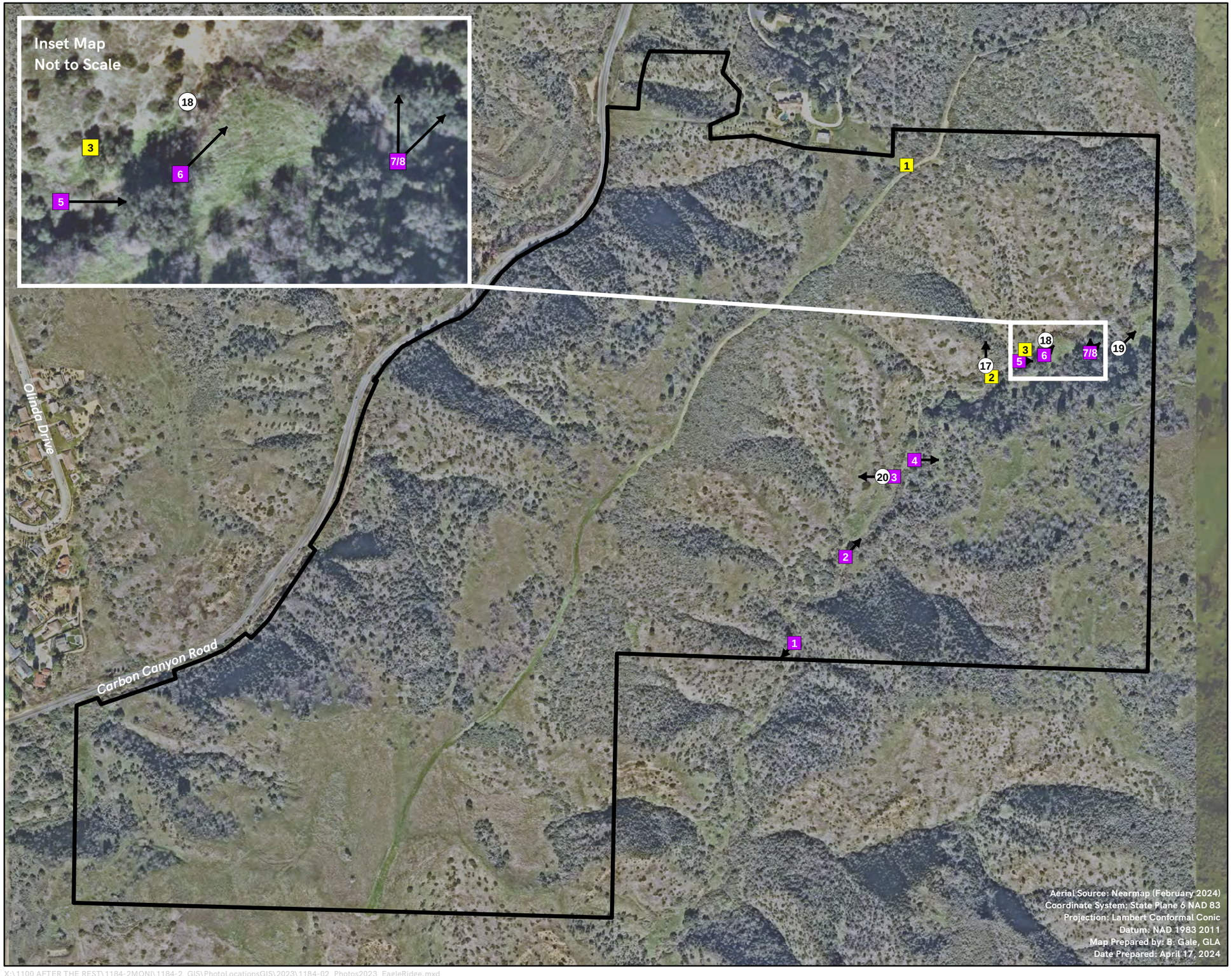
Exhibit 4G
Photo Locations Map

Eagle Ridge Preserve



Eagle Ridge Preserve

Permanent Photo Station

Wildlife Camera Station

Photo Location

Aerial Source: Nearmap (February 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 17, 2024

N

0 237.5 475
Feet

1 inch = 475 feet

GLA

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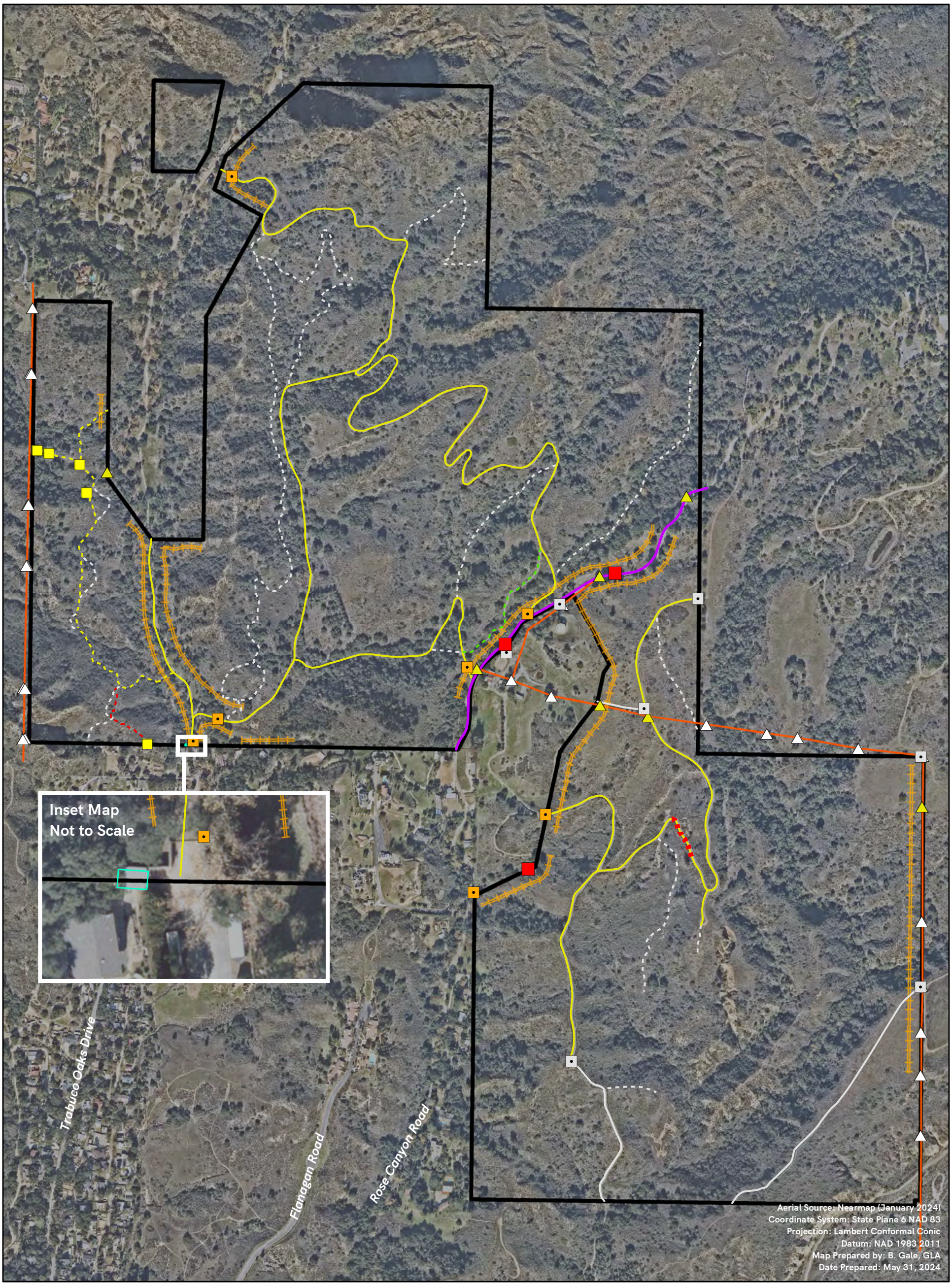


X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\TrailsGIS\2023\1184-02_TrailsUtilityMaint2023_TrabucoRose.mxd

Exhibit 5A - Trails, Utility, and Maintenance Map

Trabuco Rose Preserve

- Trabuco Rose Preserve
- Paved Road
- Dirt Road Maintained for Preserve Management
- Trail Maintained for Preserve Management
- Trail for Recreational Use*
- Dirt Road (Decommissioned)
- Trail (Decommissioned / Passive Restoration)
- Unauthorized Trail
- Fence
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole
- Pedestrian Access Gate
- Vehicle Access Gate
- OCTA Sign
- Ongoing Road Erosion
- Bottom of Fence Needs Repair
- Previously Existing Structure

N

0 275 550

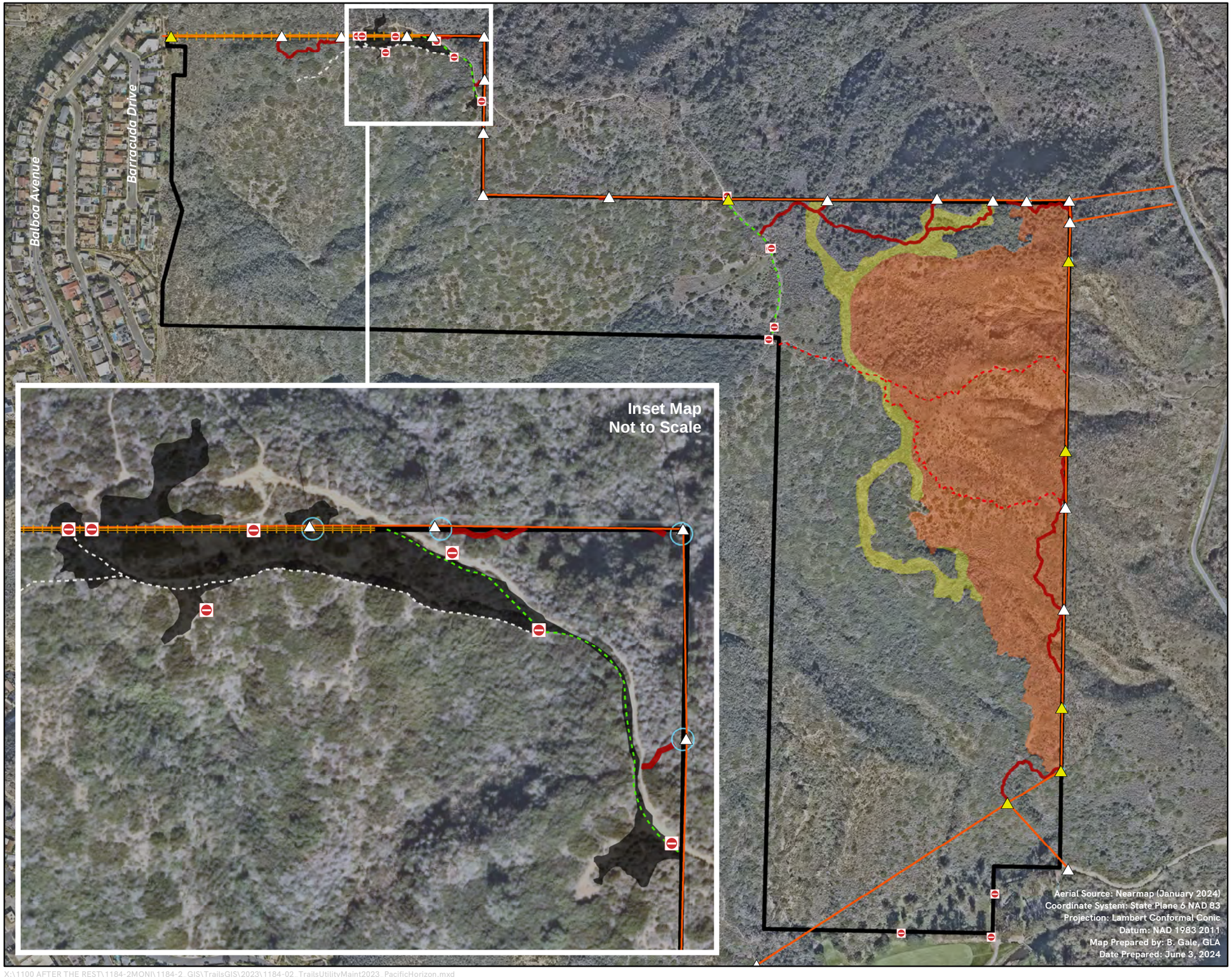
Feet

1 inch = 550 feet

GLA

Exhibit 5B - Trails, Utility, and Maintenance Map

Pacific Horizon Preserve



- Pacific Horizon Preserve
- Burn Area - 30.17 ac.
- Dozer Impacts - 4.75 ac.
- Disturbed Lands Restoration Work Area
- Trail for Recreational Use*
- Trail (Decommissioned / Passive Restoration)
- Unauthorized Trail
- Fence
- "Do Not Enter" Restoration in Progress Sign
- Unauthorized SCE-Created Linear Impacts (Trails) to access poles – 0.28 ac
- SCE Pole - Permanent Work Area to be Permanent and Mitigated - 0.17 ac.
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole

** Pursuant to the OCTA managed public access program.*

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: June 3, 2024

N

0 212.5 425
Feet

1 inch = 425 feet

GLA

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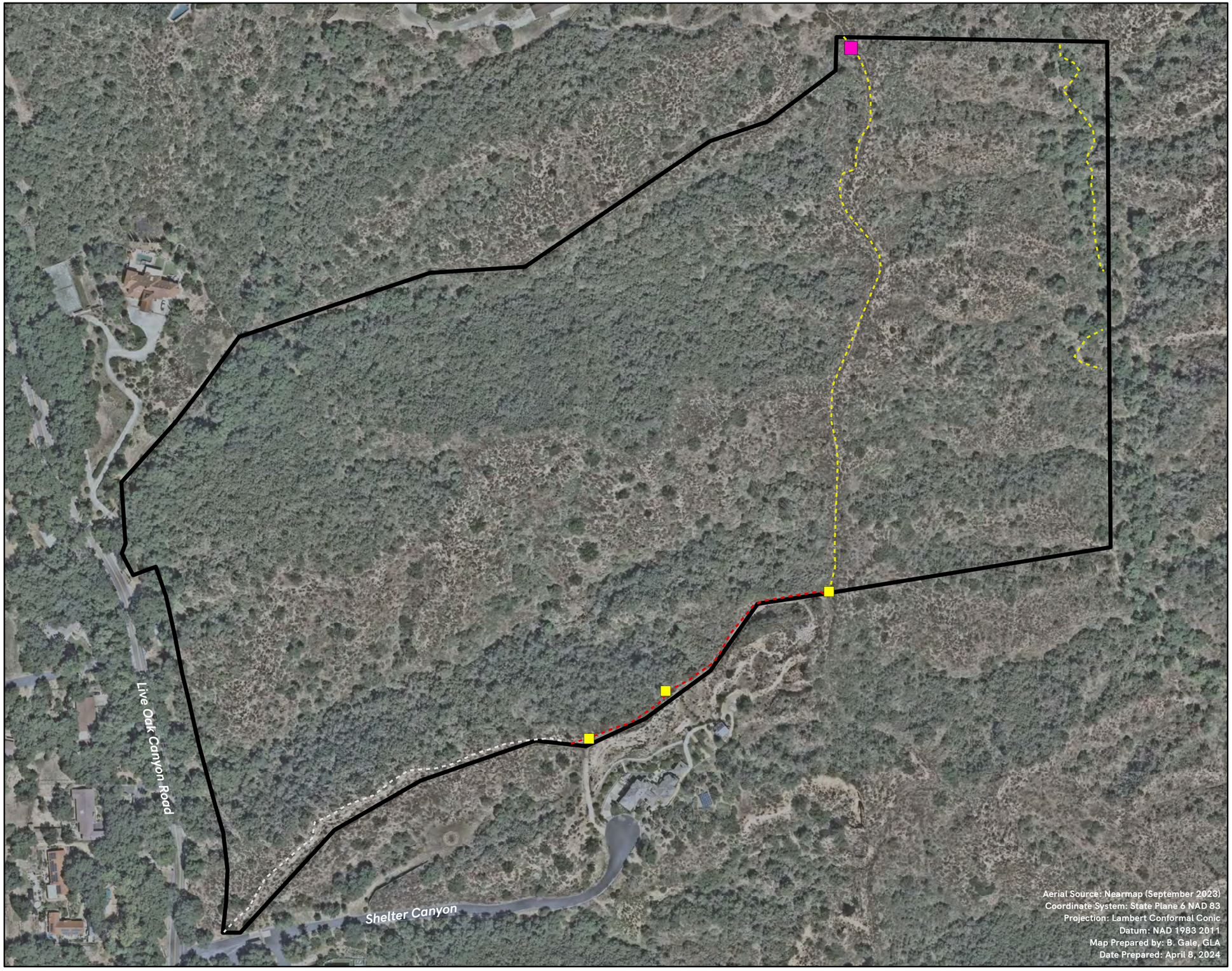
Exhibit 5C
Trails and Maintenance Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

Trail Maintained for Preserve Management

Trail (Decommissioned / Passive Restoration)

Unauthorized Trail

OCTA Sign

OCTA Sign - Routinely Found Off Post

Aerial Source: Nearmap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: April 8, 2024

N

0 100 200
Feet

1 inch = 200 feet

GLA

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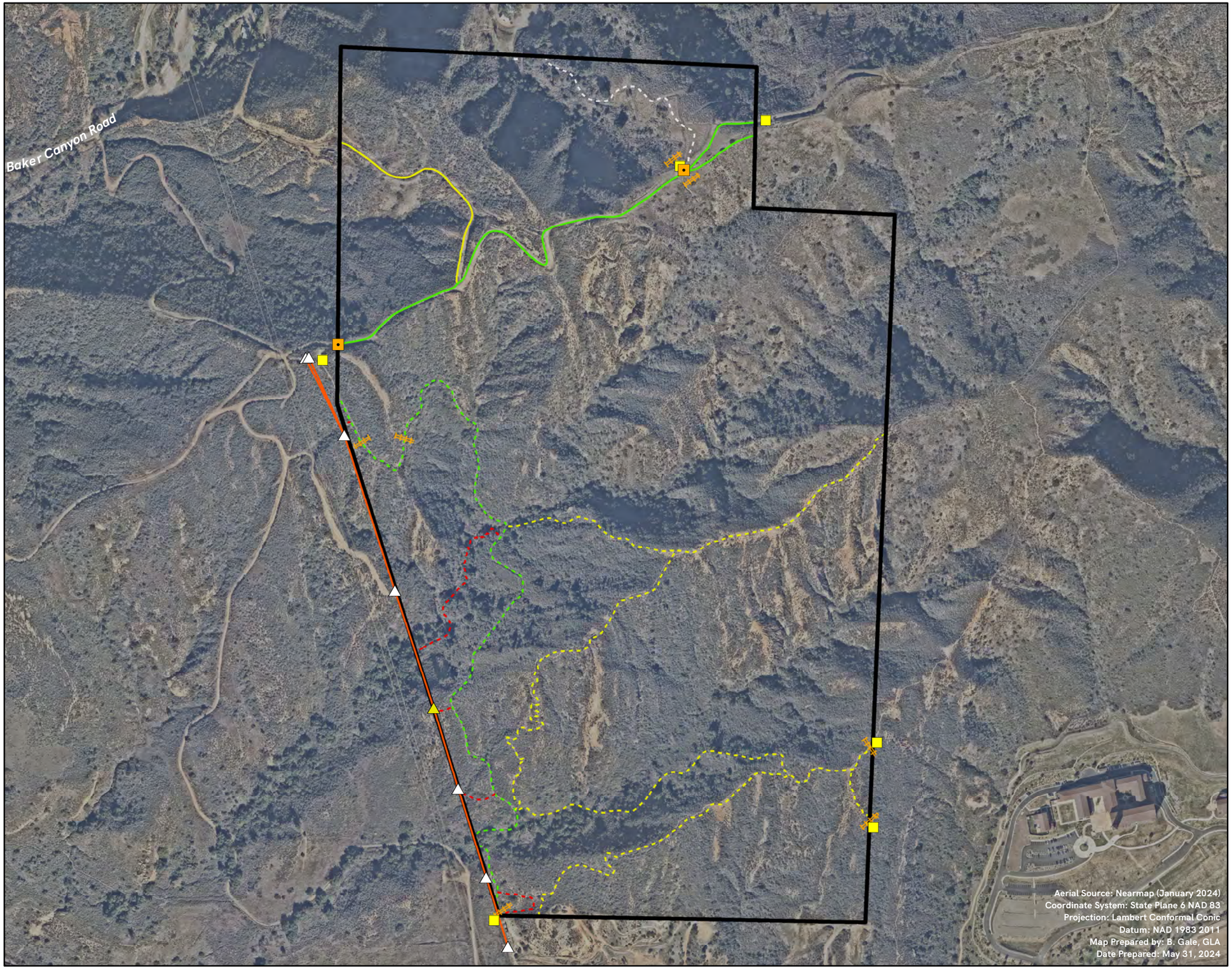
Exhibit 5D - Trails, Utility, and Maintenance Map

Silverado Chaparral Preserve



- Silverado Chaparral Preserve
- Dirt Road Maintained for Preserve Management
- Trail Maintained for Preserve Management
- Dirt Road for Recreational Use*
- Trail for Recreational Use*
- Trail (Decommissioned / Passive Restoration)
- Unauthorized Trail
- Fence
- Vehicle Access Gate
- OCTA Sign
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: May 31, 2024

N

0 225 450
Feet

1 inch = 450 feet

GLA

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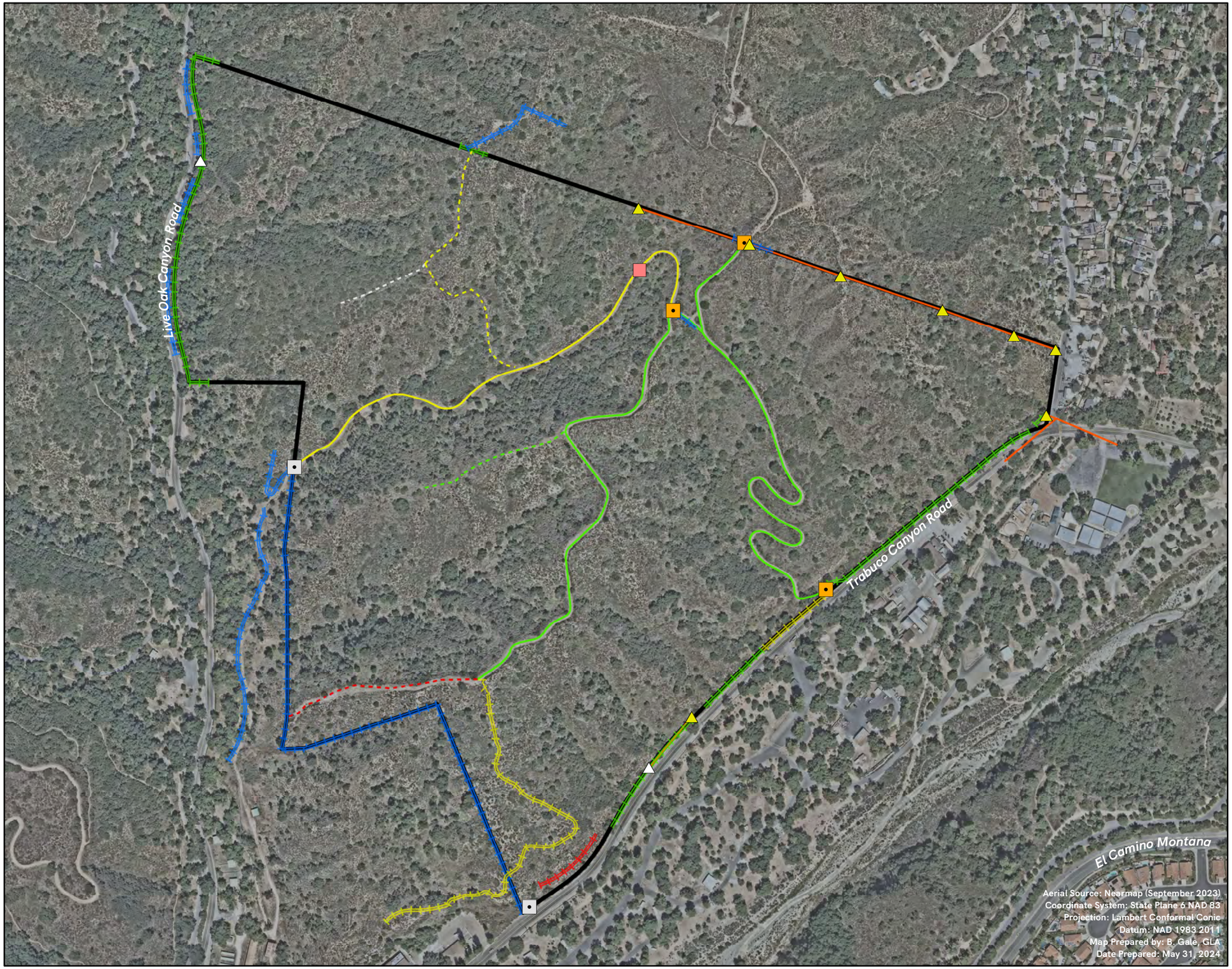
Exhibit 5E - Trails, Utility, and Maintenance Map

Wren's View Preserve



- Wren's View Preserve
- Dirt Road Maintained for Preserve Management
- Trail Maintained for Preserve Management
- Dirt Road for Recreational Use*
- Trail for Recreational Use*
- Trail (Decommissioned / Passive Restoration)
- Unauthorized Trail
- Barbed Wire Fence
- Barbed Wire Fence (Downed)
- Chainlink Fence
- Smooth Wire Fence
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole
- Pedestrian Access Gate
- Vehicle Access Gate
- Minor Road Erosion

N

0 175 350
Feet

1 inch = 350 feet

Aerial Source: Nearmap (September 2023)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: May 31, 2024

GLA

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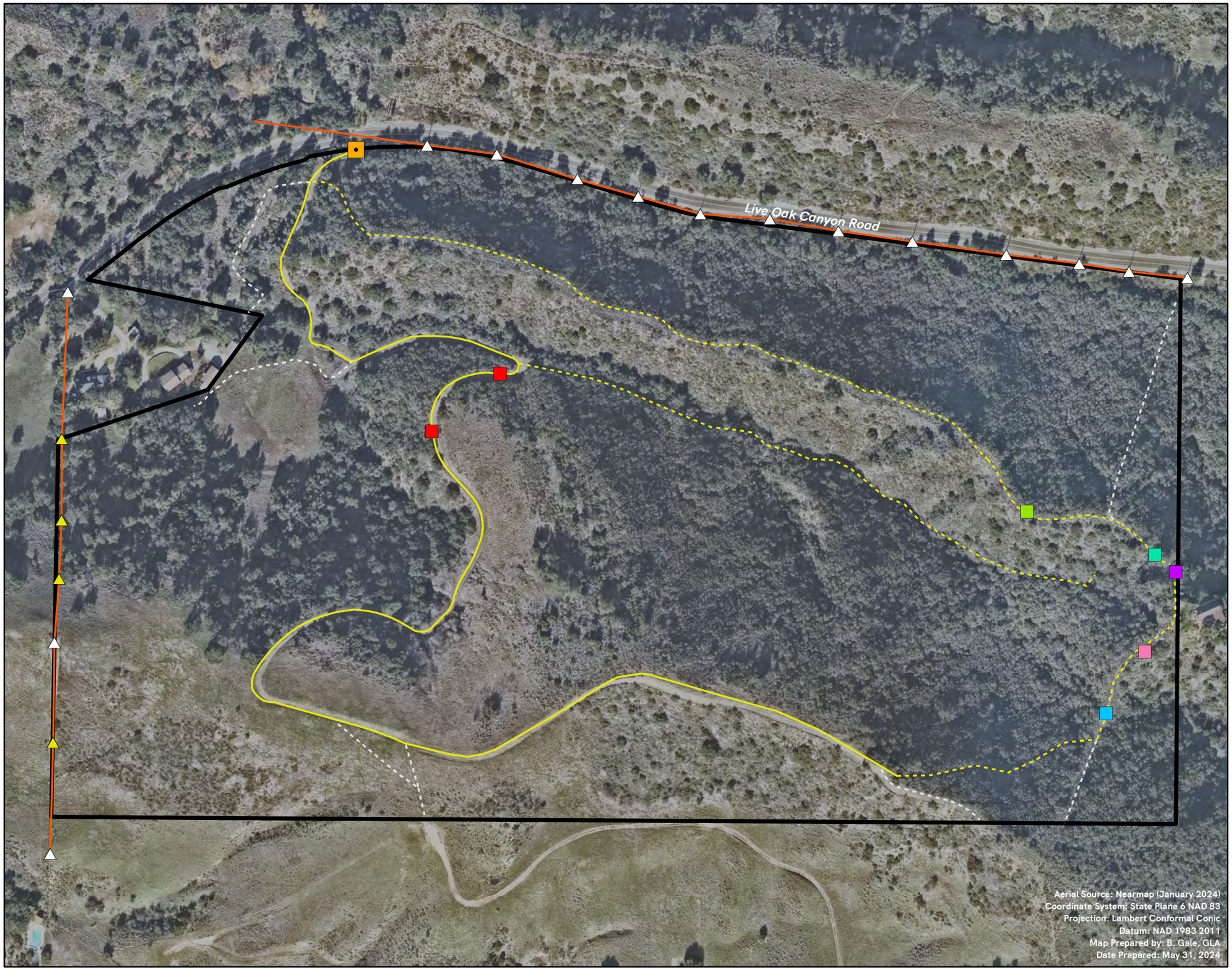
Exhibit 5F - Trails, Utility, and Maintenance Map

Live Oak Creek Preserve



- Live Oak Creek Preserve
- Dirt Road Maintained for Preserve Management
- Trail Maintained for Preserve Management
- Trail (Decommissioned / Passive Restoration)
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole
- Vehicle Access Gate
- Downed OCTA Sign
- Hammock Encroachment
- Ongoing Road Erosion
- Remote Camera Stand Encroachment
- Shed Roof Encroachment
- Unauthorized Structure

N

0 112.5 225
Feet

1 inch = 225 feet

GLA

Aerial Source: Nearmap (January 2024)
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: May 31, 2024

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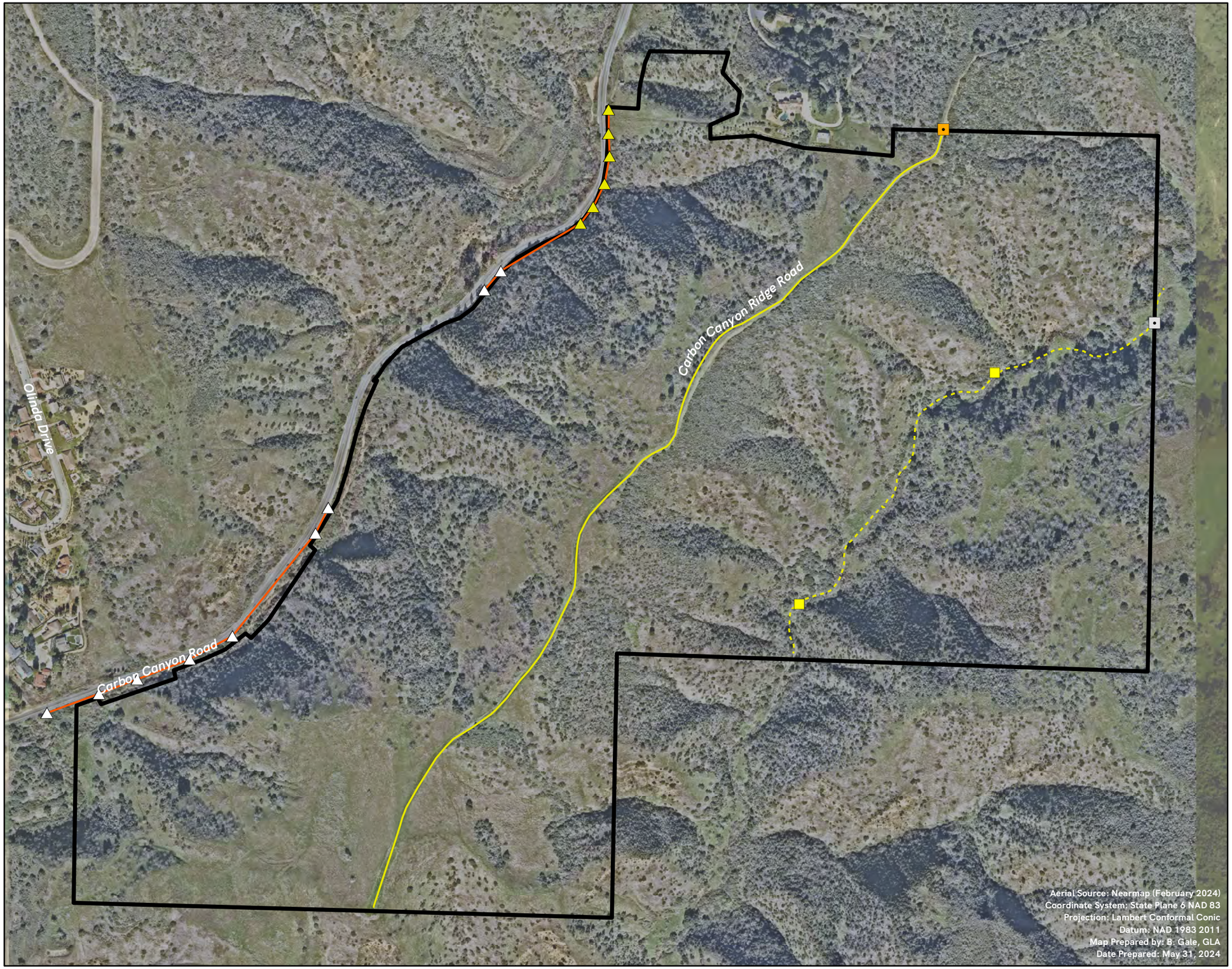
Exhibit 5G - Trails, Utility, and Maintenance Map

Eagle Ridge Preserve



- Eagle Ridge Preserve
- Dirt Road Maintained for Preserve Management
- Trail Maintained for Preserve Management
- Utility Powerline
- Onsite Utility Pole
- Offsite Utility Pole
- Pedestrian Gate
- Vehicle Access Gate
- OCTA Sign

N

0 237.5 475

Feet

1 inch = 475 feet

GLA

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APPENDIX A

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 fifth 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 June 12, 2023. A follow-up visit occurred on September 1, 2023 to monitor Drainage 3, which was not accessible during the previous site visit due to muddy access roads. 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 europa*), and Eucalyptus. No invasive perennial species were noted within the upper tributaries of Drainage 2; however, Italian thistle (*Carduus pycnocephalus*), Crete weed (*Hedypnois cretica*), and non-native brome grasses were present along the roadside buffer. Continued road maintenance and targeted thistle and Crete weed 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 non-native annuals/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 contained surface water during the June 12, 2023 monitoring as a large storm occurred approximately a month earlier and the 2022-2023 rain year measured more than 20 inches. 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: 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 2023, 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 2023 [Exhibit 2].

Element A.2 - Threatened/Endangered Animal Species Minimization

I. *Task: Avian Species: CAGN – Management activities during the breeding season[1] 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 oversight[2] of a monitoring biologist[3] 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 and Orange County Fire Authority (OCFA) field crews performed maintenance work, with direction and oversight conducted by OCTA-contracted biologists. 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 (ISMP) on January 18, 2018. Implementation is ongoing. Per the NCCP/HCP, the ISMP will be updated in 2024.

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 June 12, 2023 and September 1, 2023 (Drainage 3). 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 observed within the wetland; however, since these are common annual weeds, the extent has not changed since baseline surveys, and the weeds are not

[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.

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: In 2022, 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]. On June 21, 2023, this tree and all surrounding trees within 300 feet and a diameter at breast height greater than 8 inches were treated with insecticide. No other invasive insects and pathogens and were found. Monitoring will continue in 2024.

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 2023, and no issues with trespass were documented. Additionally, no trespass was documented in or near USACE/SWRCB mitigation areas.

C. Infrastructure and Facilities[5]

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 prepared fire management plans (FMPs) for each OCTA Preserve. The FMPs identify goals that are easily implementable, establish a framework for long-term benefits and protection, and guide decision-makers via policies and guidelines. The FMPs 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 was developed through coordination with Orange County Fire Authority and was 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. In December 2023, GLA monitors noted a few areas of fencing in need of minor repair. The locations were mapped and provided to OCTA in January 2024 and will be fixed by RECON soon. No 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 2023. No unapproved access to preserved waters of the U.S. was documented.

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*

[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, riprip, and or gabion structures.

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, RECON, and Chambers, while maintenance activities were coordinated with RECON and OCFA.

II. *Task*: *Coordinate as needed with the fire department, police department, utility and easement holders, and/or adjacent landowners 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 June 12 and September 1, 2023. 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 water quality issues were observed. No major issues with invasive species or weed invasions were noted. Preserve fencing, gates, and signs are monitored on a regular basis throughout the year. A few areas of minor fencing maintenance were recently reported and will be fixed soon. No signs 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. Invasive pest monitoring is ongoing. One coast live oak near the outer edge of the Corps 50-foot buffer was treated for GSOB using insecticide. All surrounding trees within 300 feet and a diameter at breast height greater than 8 inches were also treated with insecticide. No other invasive insects and pathogens and were found.

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: Monitoring for invasive pests should continue in 2024 and arborist recommendations should be implemented to control the GSOB population, as necessary. 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 2023 monitoring results.

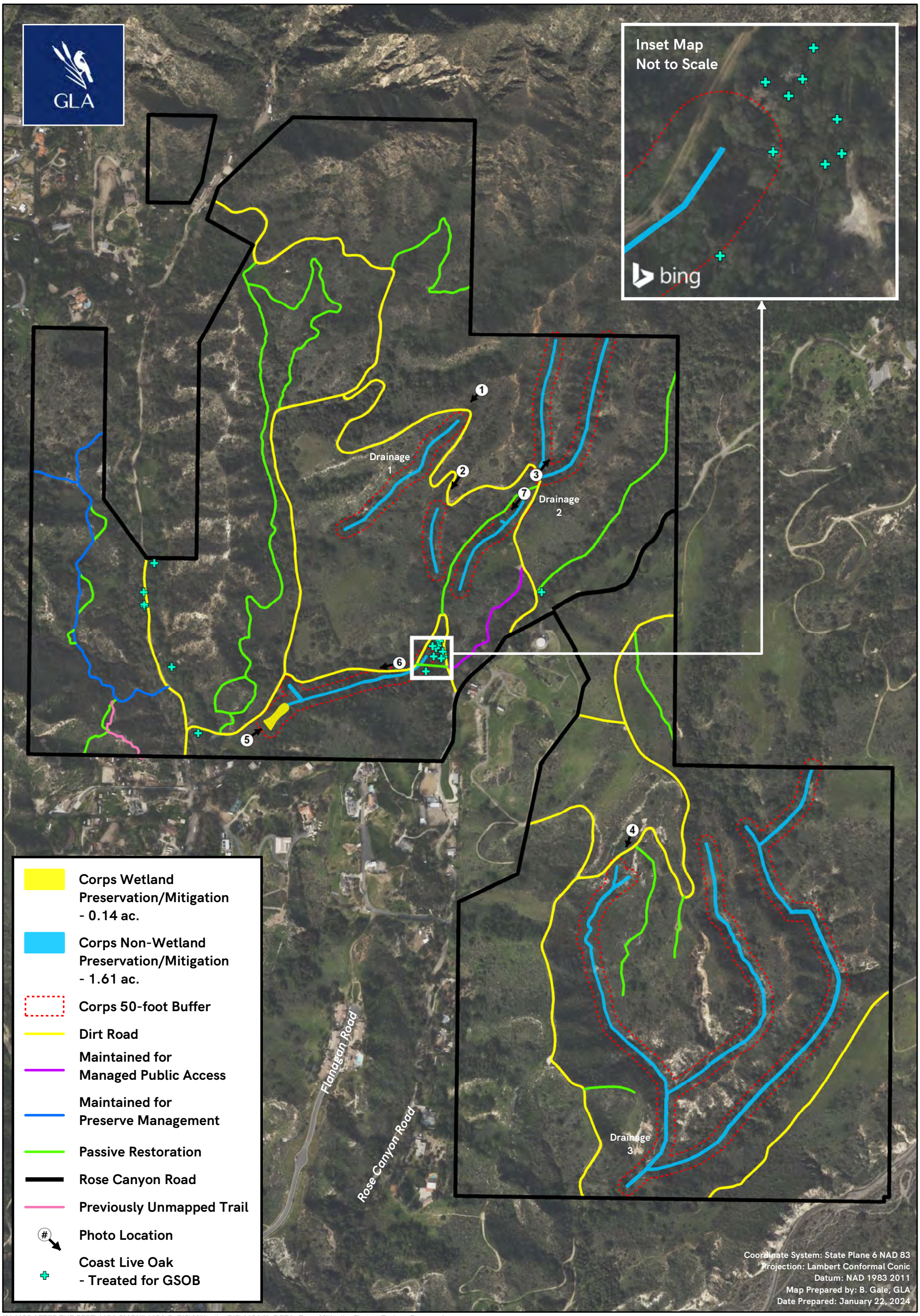

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Exhibit 1 - USACE/SWRCB Preservation/Photo Location Map

Trabuco Rose Preserve

Trabuco Rose Preserve

N

0 275 550 1,100

Feet

1 inch = 550 feet

Photograph 1: Drainage 1 facing southwest. Photo dated June 12, 2023.

Photograph 2: Drainage 2 facing southwest. Photo dated June 12, 2023.

Photograph 3: Drainage 2 facing northeast. Photo dated June 12, 2023.

Photograph 4: Drainage 3 facing southwest. Photo dated September 1, 2023.

Exhibit 2 - Site Photos

Trabuco Rose Preserve

Photograph 5: Drainage 2 facing northeast. Photo dated June 12, 2023.

Photograph 6: Drainage 2 facing southwest. Photo dated June 12, 2023.

Photograph 7: Drainage 2 facing south. Photo dated June 12, 2023.

Exhibit 2 - Site Photos

Trabuco Rose Preserve

GLA

APPENDIX B

MEMORANDUM

GLENN LUKOS ASSOCIATES

Regulatory Services

PROJECT NUMBER: 1184-02MONI

TO: Lesley Hill, Orange County Transportation Authority

FROM: Amy Black

CC: Lexi Kessans (GLA)
Sheri Asgari (GLA)

DATE: April 1, 2024

SUBJECT: Summary of Qualitative Monitoring of Burn Area Recovery Resulting from the Coastal Fire at Pacific Horizon Preserve in the City of Laguna Beach, Orange County, California – Second Year 2023

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 quarterly site visits in 2023 on February 17, April 12, June 22, October 21, and December 13 to review and document the passive recovery of the burn area affected by the Coastal Fire that was contained on May 17th, 2022.

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 photograph the recovering burn area and instances of vandalism on the trail leading to the area from designated photograph points. 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 Exhibits 2A-2C. Exhibit 3 compares drone aerials created in June 2022 and June 2023 as an overall assessment of burn recovery progression throughout the entire burn area. In addition to these site visits, GLA biologists 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 Public Works. A summary of this data is provided as Appendix A.

Following is a summary of conditions observed during the monitoring events of 2023. Site assessments were conducted by field biologists Amy Black, Brinna Lee, and Jillian Stephens.

I. Monitoring Visit 1 – February 17, 2023

A. Vegetation Summary

i. *Native Regrowth*: Lemonade berry (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*) resprouts continued to recover from the fire as indicated by significant crown sprouting. Many native species germinated within the burn area and dozer impact areas as a result of seasonal rain events including blue dicks (*Dipterostemon capitatus*), wild cucumber (*Marah macrocarpa*), California sagebrush (*Artemisia californica*), common cryptantha (*Cryptantha intermedia*), western blue-eyed grass (*Sisyrinchium bellum*), black sage (*Salvia mellifera*), giant wildrye (*Elymus condensatus*), Arroyo lupine (*Lupinus succulentus*), Island morning glory (*Calystegia macrostegia*), coastal lotus (*Acmispon maritimus*), chaparral mallow (*Malacothamnus fasciculatus*), bush sunflower (*Encelia californica*), deerweed (*Acmispon glaber*), California bluebell (*Phacelia minor*), and sticky monkey flower (*Diplacus aurantiacus*).

ii. *Non-Native Growth*: Invasive species including black mustard (*Brassica nigra*), artichoke thistle (*Cynara cardunculus*), sow thistle (*Sonchus oleraceus*), milk thistle (*Silybum marianum*), and yellow sweetclover (*Melilotus indicus*) were observed in the northwest dozer impact areas. Non-native grass, scarlet pimpernel (*Anagallis arvensis*), milk thistle, and Bermuda buttercup (*Oxalis pes-caprae*) were observed throughout the burn area. Patches of tree tobacco (*Nicotiana glauca*) were also observed throughout the burn area.

B. Unauthorized Use Summary

i. *Trespassing and Vandalism*: No signs of hiker or cyclist trespass were observed at the time of this monitoring visit. OCTA security staff were on site and preventing trespass. Erosion control straw wattles were still in place with no signs of tampering. Burn area access trail was planted with prickly pear (*Opuntia littoralis*) and covered with lemonade berry branches to deter trespass. All fences were intact with no signs of vandalism at the time of the February 2023 monitoring.

C. Climate Summary

i. *Rainfall Summary*: Laguna Niguel Park recorded 11.5 inches of rain from the last monitoring event on November 16, 2022 through February 17, 2023.

ii. *Extreme Weather Summary*: Above average rain events in December and January impacted the site; however, minimal erosion was observed.

II. Monitoring Visit 2 – April 12, 2023

A. Vegetation Summary

i. *Native Regrowth*: Many native annual forbs and emerging native shrubs were observed including California goosefoot (*Blitum californicum)*, bluewitch nightshade (*Solanum umbelliferum*), bushrue (*Cneoridium dumosum*), Catalina mariposa lily (*Calochortus catalinae*), splendid mariposa lily (*Calochortus splendens*), coast paintbrush (*Castilleja affinis*), common cryptantha, lanceleaf liveforever (*Dudleya lanceolata)*, fascicled tarweed (*Deinandra fasciculata)*, fuchsiaflower gooseberry (*Ribes speciosum*), California bedstraw (*Galium californicum*), toyon (*Heteromeles arbutifolia*), arroyo lupine, Nuttall's bedstraw (*Galium porrigens*), hairy lotus (*Acmispon strigosus)*, coastal lotus, deerweed, California buckwheat (*Eriogonum fasciculatum*), Parry's phacelia (*Phacelia parryi*), cottonbatting plant (*Pseudognaphalium stramineum*), western ponysfoot (*Dichondra occidentalis*), blue dicks (*Dipterostemon capitatus*), redberry buckthorn (*Rhamnus crocea*), lemonade berry, black sage (*Salvia mellifera*), California sagebrush, western blue-eyed grass, sleepy catchfly (*Silene antirrhina*), Texas toadflax (*Nuttallanthus taxanus*), false mermaidweed (*Floerkea proserpinacoides*), wild cucumber, and hedgenettle (*Stachys bullata*).

Native vegetation was observed along dozer lines. Southern lines filled primarily with arroyo lupine, Parry's phacelia, California sagebrush, and deerweed. On the northern slopes, giant wildrye, California sagebrush, lemonade berry, and black mustard were prevalent. Additionally, a cluster of Catalina mariposa lilies was identified and mapped along the northern dozer line.

ii. *Non-Native Growth*: The weed cover comprised common soft brome (*Bromus hordeaceus*), red brome (*Bromus madritensis* spp. *rubens*), black mustard, Carolina geranium (*Geranium carolinianum*), marsh parsley (*Cyclospermum leptophyllum*), and scarlet pimpernel.

B. Unauthorized Use Summary

i. *Trespassing and Vandalism*: During the site visit, minimal trash was observed. Exclusion fence lines remained intact with no signs of tampering or vandalism. The first fence line showed trampled vegetation, creating 1 to 2 feet gaps circumventing the fence lines. No bike tracks were observed. Erosion control wattles were intact at the time of the April 2023 monitoring.

C. Climate Summary

i. *Rainfall Summary*: Laguna Niguel Park recorded approximately 5.75 inches of total rainfall from the last monitoring event on February 17, 2023 through April 12, 2023.

ii. *Extreme Weather Summary*: No extreme weather events related to temperature were recorded between February 17 and April 12, 2023.

III. Monitoring Visit 3 – June 22, 2023

A. Vegetation Summary

i. *Native Regrowth*: Abundant native vegetation regrowth was evident on the site, providing dense coverage in the burn area. On the southern side, arroyo lupine, coastal lotus, and western ponysfoot dominated the herbaceous layer. On the northern side, giant wildrye, arroyo lupine, and wild cucumber were prominent. Giant wildrye reached shrub layer height, producing seedheads, while lemonade berry exhibited regrowth, with some individuals producing new growth. Lemonade berry seedlings were observed within a 10-foot radius around select individuals.

In addition to the burn area, dozer lines were assessed for native regrowth. However, regrowth in these sections was notably sparser, warranting consideration for remedial seeding to encourage native revegetation. Arroyo lupine and giant wildrye dominated the northern lines, while the southern lines recruited Parry's phacelia and California sagebrush.

Catalina mariposa lilies and intermediate mariposa lilies were observed within the burn monitoring area and mapped for future observation.

ii. *Non-Native Growth*: Numerous non-native species were noted in both the burn area and dozer lines. Recorded rainfall between the second and third monitoring visits facilitated the germination of both native and non-native species. Dozer lines were occupied by yellow sweetclover and field bindweed (*Convolvulus arvensis*). Across the burn area, non-native Italian thistle (*Carduus pycnocephalus*), artichoke thistle, red brome, dog fennel (*Eupatorium capillifolium*), and slender oats (*Avena* sp.) germinated and were the target of weed abatement efforts.

B. Unauthorized Use Summary

i. *Trespassing and Vandalism*: No observations of trash and litter were reported. The second fence line appeared damaged and defunct; repairs were recommended. Old bike tracks were observed at each fence line; however, with the cactus pads and woody debris blocking much of the access trail and considerable native growth, unauthorized entry appeared reduced. Erosion control wattles appeared intact and untouched.

C. Climate Summary

i. *Rainfall Summary*: Laguna Niguel Park recorded approximately 0.50 inches of rain from the previous monitoring event on April 12, 2023 through June 22, 2023.

ii. *Extreme Weather Summary*: No extreme weather events were recorded between April 12 and June 22, 2023.

IV. Monitoring Visit 4 – October 21, 2023

A. Vegetation Summary

i. *Native Regrowth*: Herbaceous cover and shrub foliation in the burn area continued to increase. Lemonade berry affected by the Coastal Fire exhibited modest canopy growth, with green regrowth at 4 and 5 feet in height. Predominant growth is observed at the shrub bases. Other shrub species like laurel sumac, California sagebrush, and bush sunflower occupy the herb layer at 2 to 3 feet tall. Giant wildrye emerged prolifically in the burn area and established on the northwestern edge.

Native herbaceous species varied across the site, with seasonal composition differences in the northern and southern edges. While the center exhibited sparse herbaceous cover, it showed a denser recovery of shrub species. The northern portion supported arroyo lupine, deerweed, and black sage. The southern part featured chaparral mallow, arroyo lupine, American black nightshade, and western ponysfoot.

ii. *Non-Native Growth*: Non-native cover decreased since the previous visit in June. Differences in commonly observed non-native species existed between the northern and southern regions of the burn area. In the northern region, black mustard and artichoke thistle dominated. The southern region was occupied by field bindweed, brome species (*Bromus* spp.), and artichoke thistle as the most common non-native species. Additionally, the dozer lines along the assessed burn area perimeter exhibited lower non-native cover.

B. Unauthorized Use Summary

i. *Trespassing and Vandalism:* There was little to no signs of vandalism and trespass in the burn area. The only fence line that appeared in need of repair was the second fence line; the same two posts on the left side of the fence are down. However, there were no signs of recent trespass throughout the trail leading to the fence line.

C. Climate Summary

i. *Rainfall Summary*: Laguna Niguel Park recorded approximately 2.41 inches of rain from the last monitoring event on June 22 to October 21, 2023. 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 recorded between June 23 and October 21.

V. Monitoring Visit 5 – December 13, 2023

A. Vegetation Summary

i. *Native Regrowth*: Dense native vegetation filled the burn area and dozer lines, with a shrub layer comprising California sagebrush, laurel sumac, giant wildrye, sticky monkeyflower, American black nightshade, bicolored cudweed (*Pseudognaphalium bioletti*), California everlasting (*Pseudognaphalium californicum*), and lemonade berry. In the dozer area, California sagebrush, giant wildrye, and black sage reached shrub height. The herb layers in both areas included California sagebrush, laurel sumac, sticky monkeyflower, American black nightshade, lemonade berry, black sage, poison oak (*Toxicodendron pubescens*), and chaparral mallow.

Assemblages of native shrubs were noted. Near Photopoint 3, laurel sumac and lemonade berry were dominant in the shrub layer, and American black nightshade, deerweed, and sticky monkeyflower in the herb layer. Between Photopoint 4 and Photopoint 8, a patch of black sage was surrounded by giant wildrye, while laurel sumac and lemonade berry scrub lined the western edge. The southernmost slope was dominated by California sagebrush, coyote brush (*Baccharis pilularis*), purple needlegrass (*Stipa pulchra*), black sage, laurel sumac, bicolored cudweed, and sticky monkeyflower.

Lemonade berry stump regrowth remained consistent.

ii. *Non-Native Growth*: Non-native cover has decreased due to ongoing weed abatement in the burn area. Identified non-native species in the burn area and dozer lines include milk thistle, artichoke thistle, non-native grasses, sow thistle, wall barley (*Hordeum murinum*), prickly lettuce (*Lactuca serriola*), yellow sweetclover, and horehound (*Marrubium vulgare*). Tree tobacco (*Nicotiana glauca*) stands and small Pampas grass (*Cortaderia selloana*) populations were observed in the central region of the burn scar and are the target of weed abatement.

B. Unauthorized Use Summary

i. *Trespassing and Vandalism:* During the monitoring visit, minimal signs of vandalism and trespass were noted. The second fence line required repair, specifically the two posts on its left side. The trail leading to the fence line remained obstructed by planted coastal prickly pear (*Opuntia littoralis*) and woody debris. Erosion control wattles were found to be intact and undisturbed.

C. Climate Summary

i. *Rainfall Summary*: Laguna Niguel Park recorded approximately 0.67 inches of rain from the last monitoring even on October 21 through December 13, 2023. Erosion from these rain events was minimal and limited to rill erosion and minor sheet erosion.

ii. *Extreme Weather Summary*: No extreme weather events occurred between October 22 and December 13, except for a recorded maximum temperature of 100 degrees Fahrenheit on November 4, 2023.

2023 Recovery Summary, Recommendations, and 2024 Scheduling

In 2023, there was an overall increase in native plant cover and recruitment in the burn area and dozer lines. Dozer lines now exhibit increased native cover, with southern dozer lines being more distinctly vegetated than the northern lines. Following a summer weed abatement program, native seedlings occupied vacant patches. Non-native cover decreased by the end of 2023.

Recommendations for 2024 include continued bimonthly monitoring, protection of the site from unauthorized entry, and ongoing weed abatement to further increase native vegetative cover. Weeding efforts are recommended to focus on removing prolific invasive species like Pampas grass.

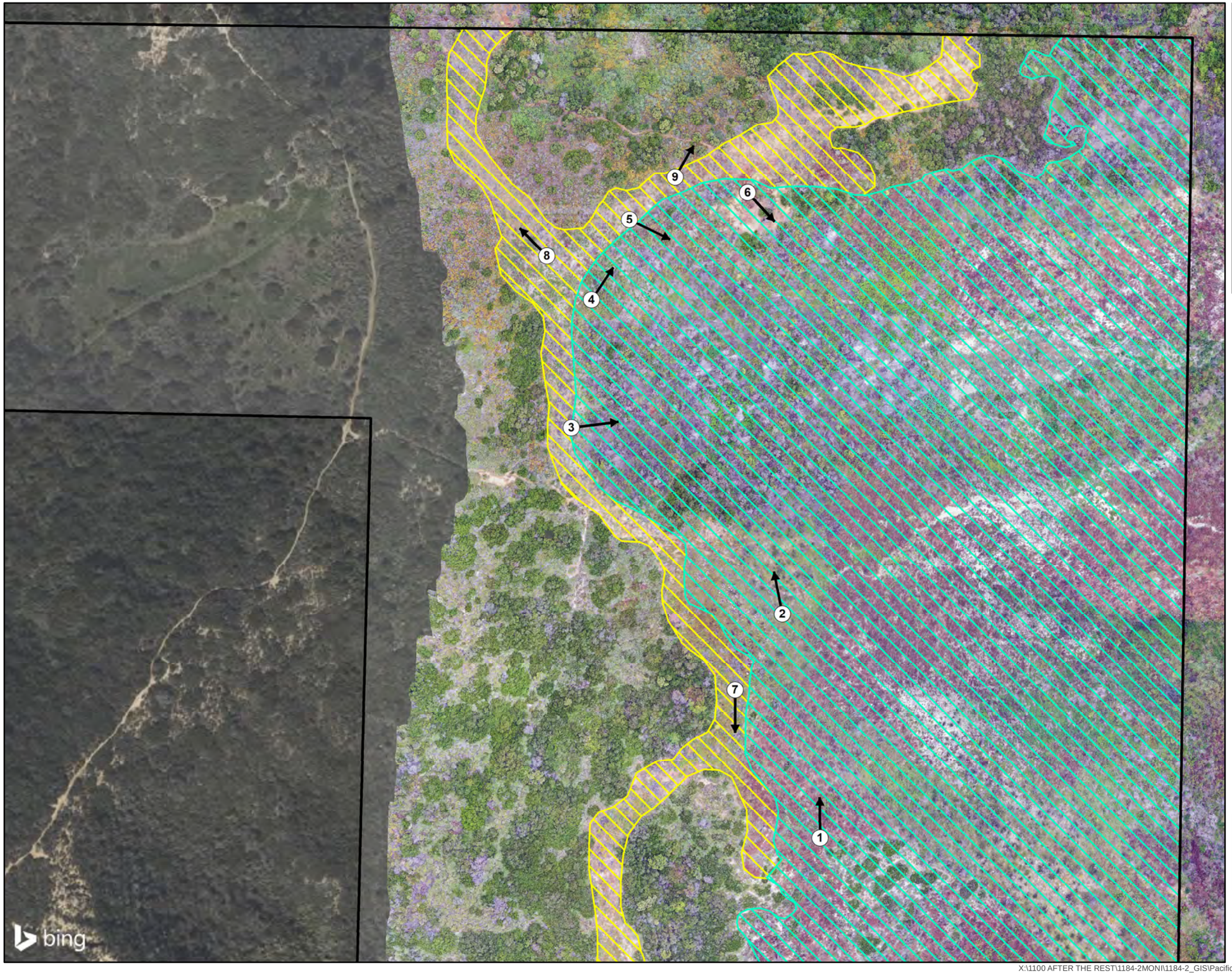
The first bimonthly monitoring event for the first quarter of 2024 is scheduled for January 11, 2024. If there are any questions or concerns regarding this report, please contact me at ablack@wetlandpermitting.com.

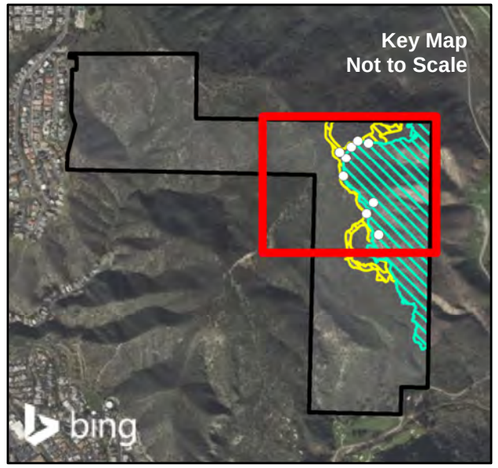
p: 1184-02b.monrpt

APPENDIX A

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

2023 Monitoring Events	Total Rainfall (inches)
January	5.91
February	0.40
March	5.76
April	0.00
May	0.47
June	0.00
July	0.00
August	2.29
September	0.08
October	0.08
November	0.59
December	1.50





Pacific Horizon Preserve Boundary

Burn Area - 30.17 ac.

Dozer Impacts - 4.75 ac.

(#) Permanent Photo Location Points

N

0 75 150 300

Feet

1 inch = 150 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 29, 2024

PACIFIC HORIZON PRESERVE

Coastal Fire and Photo Location Map (2023)

GLENN LUKOS ASSOCIATES

Exhibit 1

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Photograph Location 1: The above photographs were taken facing north approximately ten months apart. Lemonade berry (*Rhus integrifolia*) stump regrowth is still occurring and appears healthy. Chaparral mallow *(Malacothamnus fasciculatus)* is growing dominantly in this portion of the burn area.

GLENN LUKOS ASSOCIATES

PACIFIC HORIZON PRESERVE

First and Last Visit Comparison

Photograph Location 2: The above photographs were taken facing north approximately ten months apart. Given the steep topography and lack of ground cover, straw wattles were installed as erosion control measures, as shown above. Much of the straw wattles are covered in vegetation. In these photographs, native deerweed *(Acmispon glaber*), coastal lotus *(Acmispon maritimus),* and non-native field bindweed *(Convolvulus arvensis)* are growing over the straw wattle. More lemonade berry regrowth can be seen in the background of the December photograph.

GLENN LUKOS ASSOCIATES

Exhibit 2A – Page 2

PACIFIC HORIZON PRESERVE

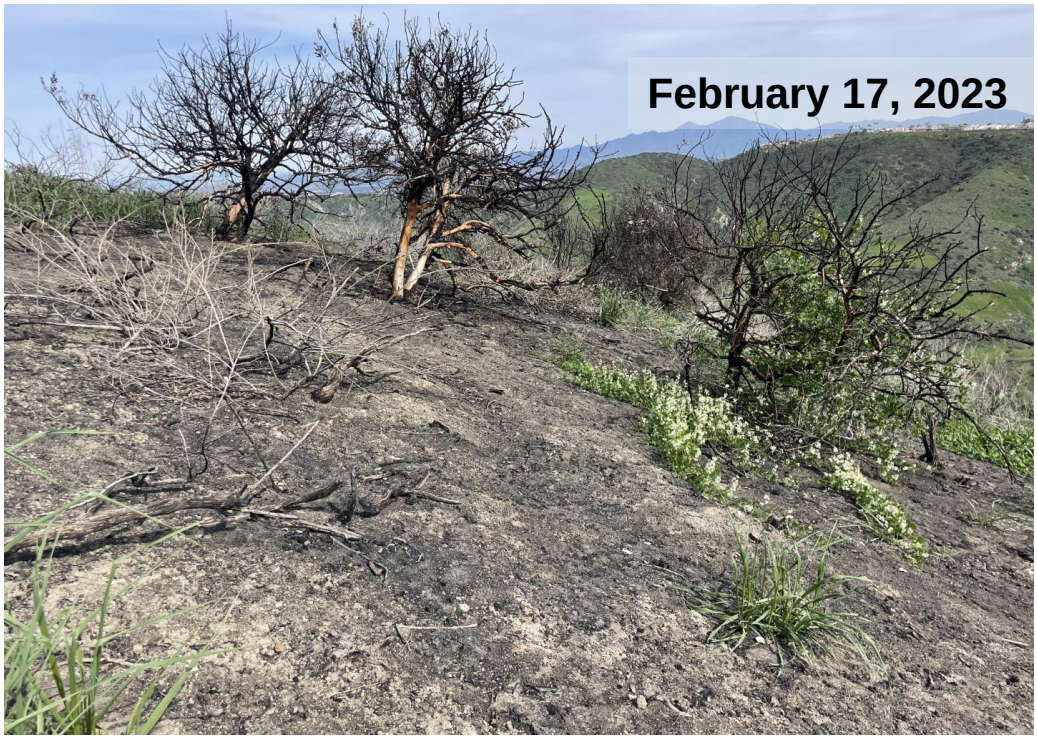
First and Last Visit Comparison

Photograph Location 3: The above photographs were taken facing east approximately ten months apart. Regrowth of burned lemonade berry is seen in the center of the photograph, especially in the December photograph. Some species making up the herbaceous layer include California sagebrush (*Artemisia californica*), lemonade berry, wild cucumber *(Marah macrocarpa),* and sticky monkey-flower *(Mimulus aurantiacus)*

GLENN LUKOS ASSOCIATES

PACIFIC HORIZON PRESERVE

First and Last Visit Comparison



Photograph Location 4: The above photographs were taken facing northeast approximately ten months apart. Giant wildrye *(Elymus condensatus)* grows predominantly in this portion of the site. To the left of the December photograph, lemonade berry is seen will a fuller canopy while the foreground of the same photograph depicts black sage *(Salvia mellifera),* lemonade berry, and California sagebrush in the herb and shrub layers.

PACIFIC HORIZON PRESERVE
First and Last Visit Comparison

Photograph Location 5: The above photographs were taken facing southeast approximately ten months 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. Non-native tree tobacco (*Nicotiana glauca*) was observed and will be addressed in future weed abatement events.

PACIFIC HORIZON PRESERVE

First and Last Visit Comparison

Photograph Location 6: The above photographs were taken facing southeast approximately ten months apart. Non-native milk thistle *(Silybum marianum)* can be observed in this photograph. Giant wildye continues to grow prolifically in this area.

PACIFIC HORIZON PRESERVE

First and Last Visit Comparison

Photograph Location 7: The above photographs were taken facing south approximately eight months apart. Depicted are representative photographs of the southern dozer line. The southern portion of the site is more dominant in chaparral mallow, as seen in the December photograph. During the spring months, arroyo lupine *(Lupinus succulentus)* is more prevalent.

PACIFIC HORIZON PRESERVE
First and Last Visit Comparison

Photograph Location 8: The above photographs were taken facing west approximately eight months apart. Depicted is the northwestern corner of the dozer lines at the northern confluence. Giant wildrye, arroyo lupine, California sagebrush, and deerweed (*Acmispon glaber)* are the dominant species in this area.

GLENN LUKOS ASSOCIATES

PACIFIC HORIZON PRESERVE

First and Last Visit Comparison

Photograph Location 9: The above photographs were taken facing northeast approximately eight months apart. This photolocation was moved easterly after the April visit to showcase more of the natural recruitment along this sloped dozer line. As shown in the December photograph, native vegetation layers are starting to develop. Topographic complexities also promote germination of native vegetation by catching seeds as they are dispersed downslope.

PACIFIC HORIZON PRESERVE
First and Last Visit Comparison

EXHIBIT 2B - BURN AREA RECOVERY PROGRESSION PHOTOGRAPHS

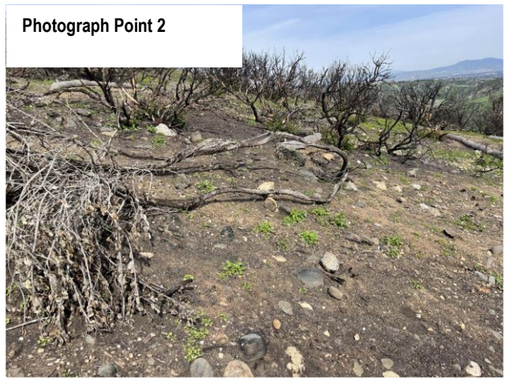
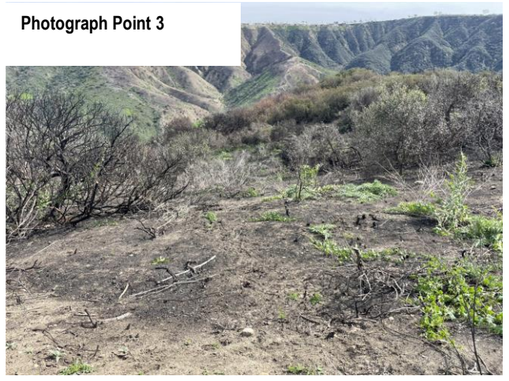
	February 17, 2023	April 12, 2023	June 22, 2023	October 21, 2023
Photograph Point 1				
Photograph Point 2				
Photograph Point 3				

EXHIBIT 2B - BURN AREA RECOVERY PROGRESSION PHOTOGRAPHS (cont.)

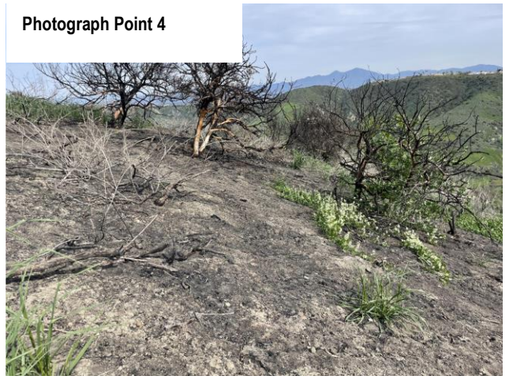
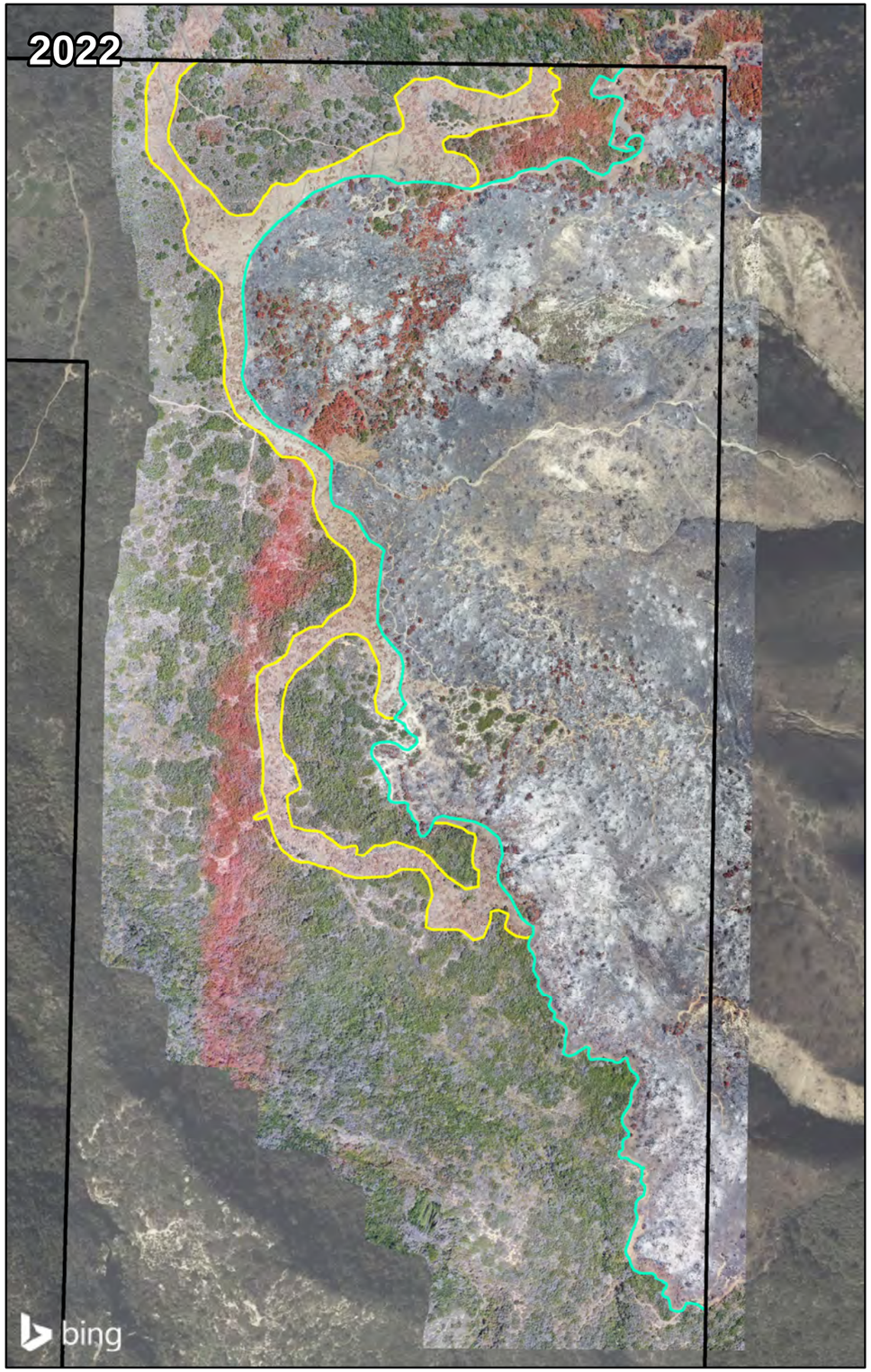
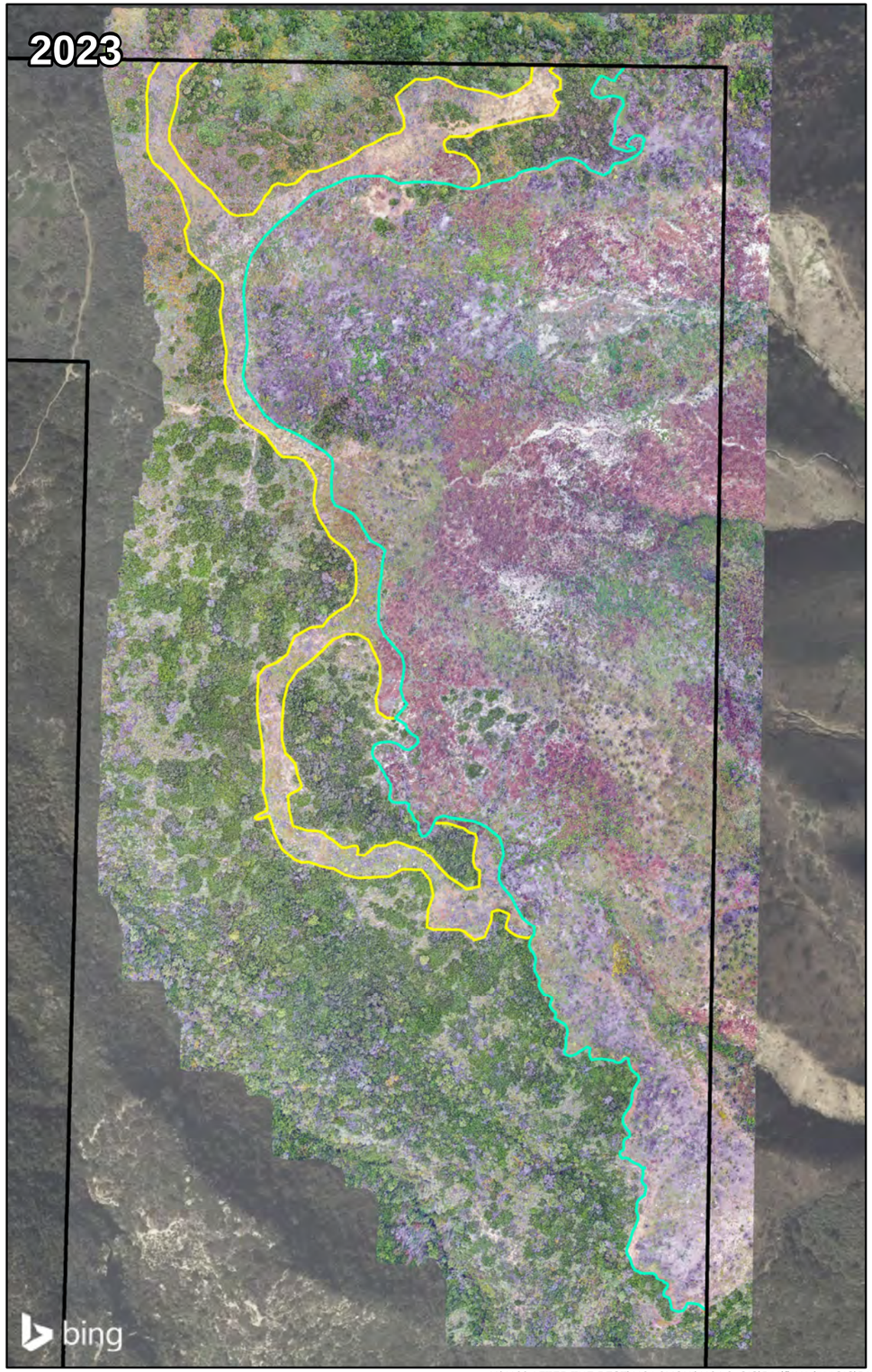
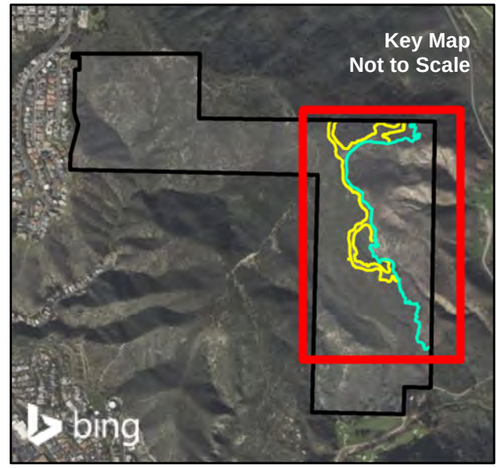
	February 17, 2023	April 12, 2023	June 22, 2023	October 21, 2023
Photograph Point 4				
Photograph Point 5				
Photograph Point 6				

EXHIBIT 2C - DOZER LINE RECOVERY PROGRESSION PHOTOGRAPHS

	February 17, 2023	April 12, 2023	June 22, 2023	October 21, 2023
Photograph Point 7	No images available for this date.			
Photograph Point 8				
Photograph Point 9				







Pacific Horizon Preserve Boundary

Burn Area - 30.17 ac.

Dozer Impacts - 4.75 ac.

N

0 275 550

Feet

1 inch = 275 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 29, 2024

PACIFIC HORIZON PRESERVE

2022 Versus 2023 Drone Aerial Comparison

GLENN LUKOS ASSOCIATES

Exhibit 3

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\PacificHorizonGIS\PacificHorizonFire_GIS\1184-02_PacificHorizon2022Fire_2022_vs_2023_DroneAerial.mxd

APPENDIX C

OCTA M2 PRESERVES
BIOLOGICAL MONITORING PROGRAM

2023 TERRESTRIAL REPTILE SURVEY REPORT

For the

EAGLE RIDGE, LIVE OAK CREEK, BOBCAT RIDGE, WREN'S VIEW, AND PACIFIC HORIZON PRESERVES

Prepared For:

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Report Preparer: David Moskovitz and Stephanie Cashin

March 7, 2024

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EXHIBITS

APPENDICES

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 that were covered in Corn and Bury study, versus the OCTA target species, requires a different search effort altogether, i.e., surveys that are less focused on microhabitats such as fallen trees and other debris. 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 five of the OCTA M2 Preserves, Eagle Ridge, Live Oak Creek, Bobcat Ridge, Wren's View, and Pacific Horizon. In 2022, GLA performed a pilot study [Appendix C] for the other two Preserves (Trabuco Rose and Silverado Chaparral) to test out the general methodology that was developed in coordination with the wildlife agencies. The general methodology indicates that each Preserve will be divided into a grid of sampling areas (cells) with dimensions that are standardized across all Preserves. An example was to utilize 250 meter-square cells (i.e., 250 meters by 250 meters). However, the general methodology noted that given factors associated with the Preserves (size, shape, topographic complexity, and accessibility), 250 meter-square cells could be too large to effectively survey the Preserves using the time-constrained method, and that pre-survey fieldwork would be performed to determine if smaller sampling areas are more appropriate. The pilot study performed for the Trabuco Rose Preserve and Silverado Chaparral Preserve affirmed the larger cell size to be ineffective, and for those Preserves, 125 meter-square cells (i.e., 125 meters by 125 meters) were utilized. However, after completion of the pilot study, even the 125-meter-square cells were perceived as too large, and so the report concluded that future surveys utilize even smaller survey areas. As described below in the methodology section of this report, the surveys of the five Preserves for 2023 utilized 50 meter-square cells (i.e., 50 meters by 50 meters).

2.0 PRESERVE DESCRIPTIONS

2.1 Eagle Ridge Preserve

The Eagle Ridge Preserve is an undeveloped 299-acre property that is surrounded by open space supporting similar habitats. Neither the OTW nor CHL have previously been documented at this

Preserve. Elevation ranges between 650 and 1,260 feet above mean sea level (AMSL). Topography consists of a northeast to southwest oriented ridgeline that slopes down steeply to the narrow Soquel Canyon Creek and canyon floor west of the ridgeline. Access includes an unpaved road along the length of the ridgeline and a narrow trail along the creek below. The Preserve supports dense, native and non-native habitats including chaparral, grassland, riparian, and woodland. Chaparral dominates the steep southeastern facing slope extending through the center of the Preserve, while woodland is the dominant habitat type in the east and west of the Preserve, occurring on steep northwestern facing slopes. Suitable habitat for covered reptiles that is accessible to surveying biologists is limited and associated with creek-side terraces and along the ridge road.

2.2 Live Oak Creek Preserve

The Live Oak Creek Preserve is an undeveloped 83-acre property surrounded by open space supporting similar habitats. The OTW has been previously detected during biological monitoring, but the CHL has not been detected previously. Elevation ranges between 1,200 and 1,600 feet AMSL. Topography consists of east to west oriented ridgelines flanked by steep slopes and a wider, low gradient foothill slope leading to the southeastern ridge. Access includes an unpaved road and two trails. The unpaved road enters the site at Live Oak Canyon Road and terminates on the southeastern ridge. One trail begins at the road terminus and continues north and west along the ridge; the second trail extends east from the road through the canyon bottom. Chaparral is the dominant habitat type and is often impenetrable on steep slopes with no existing trails. Scrub is limited to the south-facing slope of the north ridge and includes dense cactus scrub. Grassland and woodland are also present. Suitable habitat for covered reptiles that is accessible to surveying biologists is limited to the northern ridge and small patches of scrub adjacent to the road.

2.3 Bobcat Ridge Preserve

The Bobcat Ridge Preserve is an undeveloped 48-acre property surrounded by low-density residential development and open space supporting similar habitats. The OTW has been previously detected during biological monitoring, but the CHL has not been detected previously. Elevation ranges between 1,200 and 1,300 feet AMSL. Topography consists of a north to south oriented ridgeline on the eastern boundary and two secondary ridgelines and canyon that extend west and terminate at Live Oak Canyon Road. Access consists of a single trail that originates at the northern boundary on the main eastern ridge, extends to the southern boundary, continues west along an old unpaved road, and terminates at Live Oak Canyon Road. This Preserve supports dense, native habitats including chaparral, scrub, and limited riparian and oak woodland along the eastern and western boundaries. This Preserve is contiguous with similar native habitats in adjacent lands. Chaparral is the dominant habitat type and is often impenetrable on steep slopes with no existing trails. Coastal sage scrub and cactus scrub also dominate the steep slopes. Suitable habitat for covered reptiles that is accessible to surveying biologists is limited to the main eastern ridge, a portion of the central ridge, and the narrow trail along the southern boundary.

2.4 Wren's View Preserve

The Wren's View Preserve is an undeveloped 116-acre property that is surrounded by similar native habitats to the north and west and rural residential and other development to the east. The OTW has been previously detected during biological monitoring, but the CHL has not been detected previously. Elevation ranges between 920 and 1,250 feet AMSL. Topography consists of ridges flanked by steep slopes and a narrow canyon. Access includes a winding unpaved road that climbs to the ridge top and then down into the canyon and a smaller portion of road that extends southwest along the ridge. The Preserve supports dense, native habitats including chaparral, scrub, and woodland. The dominant habitat is chaparral; other habitats with substantial cover include coastal sage scrub and dense cactus scrub on steep slopes. Suitable habitat for covered reptiles that is accessible to surveying biologists is limited to very narrow patches adjacent to the road and patches along a trail near the center of the Preserve.

2.5 Pacific Horizon Preserve

The Pacific Horizon Preserve is an undeveloped 151-acre property surrounded by residential development, a golf course resort, and a wilderness park. Neither covered reptile species have previously been documented at this Preserve. Elevation ranges between 43 and 855 feet AMSL. Topography consists primarily of steep canyon slopes supporting dense vegetation. Access includes a public recreational trail, that originates from Moulton Meadows Park near the northern boundary, follows the main ridgeline, and continues southeast crossing the Preserve in two locations. A single-track bike trail extends from the ridgeline down into Aliso Canyon. The Preserve supports native habitats including chaparral, scrub, and limited grassland, and is contiguous with similar native habitats. Chaparral is the dominant habitat type and is often impenetrable on steep slopes with no existing trails. Scrub is mature, dense, and limited to two patches near the center and south of the Preserve and very small patches along the northern edge. Grassland is limited to a disturbed area near the center of the property. Suitable habitat for covered reptiles that is accessible to surveying biologists is limited to the northern boundary and small patches in the center and eastern slope.

3.0 METHODOLOGY

GLA biologists Jeff Ahrens and Stephanie Cashin conducted focused terrestrial reptile surveys at the above-referenced five OCTA Preserves during the summer and fall months of 2023. Using GIS, a 50-meter-square cell grid was placed over each Preserve and each cell was assigned an independent number. The baseline vegetation map was overlaid with the survey grid to assist with identification of 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. Suitable scrub habitat was surveyed where accessible, as a function of the topography and vegetation density. The majority of each Preserve was not surveyed due to limits of open scrub habitat compounded by access limitations, including steep slopes and dense shrub canopies [Exhibit 3]. The following summarizes the survey coverage for each Preserve:

- Eagle Ridge – A total of 14 cells were at least partially surveyed, representing approximately 8.65 acres of the 299-acre property [Exhibit 3A]. This included 11 cells (15, 31, 32, 66, 105, 126, 127, 150, 198, 222, and 324) that were accessed from the main ridge separating Carbon Canyon from Soquel Canyon, and three cells (136, 331, and 322) accessed by hiking the bottom of Soquel Canyon.
- Live Oak Creek – A total of 11 cells were at least partially surveyed, representing approximately 6.80 acres of the 83-acre property [Exhibit 3B]. This included 7 cells (30, 48, 49, 50, 68, 86, and 87) accessed by hiking along the prominent ridge in the northern part of the site, three cells (115, 133, and 134) accessed from the main access road through the site, and one cell (138) that was accessed via a trail in the southeastern part of the site.
- Bobcat Ridge – A total of 10 cells were at least partially surveyed, representing approximately 6.18 acres of the 48-acre property [Exhibit 3C]. This included four cells (14, 37, 63, and 76) along the central north-south ridgeline, two cells (46 and 48) along the west-east ridgeline, and four cells (75, 86, 91, and 92) along the southern site boundary. All cells were accessed by hiking starting from the northern boundary of the site.
- Wren's View – A total of 17 cells were at least partially surveyed, representing approximately 10.50 acres of the 116-acre property [Exhibit 3D]. This included six cells (75, 97, 114, 131, 148, and 149) along the ridge/access road from the Trabuco Canyon entrance, three cells (141, 158, and 184) accessed along the northeast to southwest ridgeline, two cells (40 and 73) accessed from canyon trail, and six cells (16, 24, 25, 37, 51, and 52) in the northwestern part of the site accessed via a side trail from the canyon trail.
- Pacific Horizon – A total of 11 cells were at least partially surveyed, representing approximately 6.80 acres of the 151-acre property [Exhibit 3E]. These included five cells (6, 7, 8, 18, and 27) in the northwestern part of the site and five cells (60, 61, 112, 114, 137, and 159) in the central portion of the site. All cells were accessed by hiking the main trail through the site starting from the northern boundary.

Two biologists independently searched for target species during typical peak activity by slowly meandering through appropriate habitat within each 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 with GPS, including the number of individuals detected, estimated age class, and prey items (if applicable). Non-target species were recorded once per cell when detected. Native and non-native ant colonies were also recorded once per cell to identify potentially suitable horned lizard habitat. Appendix B summarizes species data per 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 sonorae*, 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 cell averaged 20 minutes (10 minutes for two biologists). General environmental conditions were recorded at the beginning of each survey visit

(temperature, cloud cover, recent precipitation, wind speed, etc.). Table 3-1 summarizes terrestrial reptile survey weather conditions.

Table 3-1. Summary of Survey Weather Conditions

OCTA Preserve	Date	Time	Temperature (^{0}F)	Wind Speed (mph)	Cloud Cover (%)	Survey Biologist
Eagle Ridge	06/14/2023	0815-1700	59-67	2-3	100	JA, SC
Eagle Ridge	11/07/2023	0930-1245	72-75	2-3	75-80	JA, SC
Live Oak	09/15/2023	1300-1630	74-79	1-5	0-50	JA, SC
Live Oak	10/04/2023	1300-1600	83-86	2-3	0	JA, SC
Bobcat	06/08/2023	0935-1300	62-70	1-2	100	JA, SC
Bobcat	09/01/2023	1030-1400	77-80	1-2	0	JA, SC
Wren's View	09/14/2023	1000-1545	67-75	2-4	0-50	JA, SC
Wren's View	09/15/2023	1000-1250	68-71	1-3	50-100	JA, SC
Wren's View	10/03/2023	1000-1300	71-76	2-3	0	JA, SC
Wren's View	10/04/2023	1000-1300	82-86	2-3	0	JA, SC
Pacific Horizon	08/24/2023	1030-1430	69-73	2-8	50-75	JA, SC
Pacific Horizon	09/08/2023	0930-1400	75-82	1-5	0	JA, SC
Pacific Horizon	09/21/2023	1100-1300	68-70	3-5	70-100	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 cells were recorded once per cell 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 recorded once within survey cells when detected. 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.

In addition to field surveys, GLA biologists reviewed iNaturalist records of the target species in the vicinity of the Preserves. It should be noted that iNaturalist is a community-based science tool with user-reported records of species occurrences, each of which must include a photograph. Based on reviews of the photographs, GLA biologists considered only those records for which GLA could confirm species identification.

4.0 RESULTS

GLA biologists detected nine reptile species across the five OCTA Preserves surveyed in 2023 (Eagle Ridge, Live Oak Creek, Bobcat Ridge, Wren's View, and Pacific Horizon), although not all species were observed at all Preserves, and some were only detected at one of the five Preserves. Species detected included the OTW, coastal whiptail (*Aspidoscelis tigris stejnegeri*, CW), great basin fence lizard (*Sceloporus occidentalis longipes*, GBF), side-blotched lizard (*Uta*

stansburiana, SBL), coast patch-nosed snake (*Salvadora hexalepis virgultea*, CPS), red racer (*Coluber flagellum piceus,* RR), gopher snake (*Pituophis catenifer,* GS), red diamond rattlesnake (*Crotalus ruber*, RDR), and southern Pacific rattlesnake (*Crotalus oreganus helleri*, SPR). Of the nine species observed, three species (SBL, RR, SPR) were observed at Eagle Ridge, three species (OTW, CW, GBF) were observed at Live Oak Creek, four species (OTW, CW, SBL, RDR) were observed at Bobcat Ridge, five species (CW, GBF, SBL, CPS, GS) were observed at Wren's View, and two species (CW, GBF) were observed at Pacific Horizon.

Table 4-1 summarizes species detected at the OCTA 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 4-1. Summary of 2023 Terrestrial Reptile Detection

OCTA Preserve	Eagle Ridge	Live Oak Creek	Bobcat Ridge	Wren's View	Pacific Horizon
coast horned lizard					
orangethroat whiptail		X	X		
coast whiptail		X	X	X	X
Great Basin fence lizard		X		X	X
side-blotched lizard	X		X	X	
coast patch-nosed snake				X	
red racer	X				
gopher snake				X	
Red diamond rattlesnake			X		
Southern Pacific rattlesnake	X				

Of the target covered species, the CHL was not detected at any OCTA Preserve during 2023 surveys. The OTW was detected at two Preserves, Live Oak Creek and Bobcat Ridge. Exhibit 3 [Terrestrial Reptile Survey 2023 Map] depicts the location of covered reptiles detected at each Preserve. Exhibit 4 includes photographs of each of the five Preserves surveyed in 2023.

4.1 Eagle Ridge Preserve

The OTW and CHL were not detected at Eagle Ridge Preserve during 2023 surveys. Neither species was previously detected at this Preserve. Although not detected inside the Preserve, a red diamond rattlesnake was observed on the ridge road immediately outside of the northeast Preserve boundary.

Both native red harvester ants and non-native Argentine ants were detected at this Preserve. Native ant colonies were detected along existing roads, trails, and in open canopy scrub/chaparral habitat in eight surveyed cells [Exhibit 3A].

4.2 Live Oak Creek Preserve

Three individual adult and one juvenile OTW were detected at Live Oak Creek Preserve at two cells on the northern ridge [Exhibit 3B]. The OTW has previously been incidentally detected at this Preserve during stewardship monitoring. The CHL, which has not been documented at this Preserve, was not detected during the 2023 surveys.

No native ant colonies were detected at this Preserve.

4.3 Bobcat Ridge Preserve

The OTW, which has previously been incidentally detected at this Preserve during stewardship monitoring, was detected in 2023 at two cells near the southern boundary of Bobcat Ridge Preserve [Exhibit 3B]. The CHL, which has not been documented at this Preserve, was also not detected during the 2023 surveys.

Both native red and black harvester ants and non-native Argentine ants were detected at the Preserve. Native ant colonies were detected in three surveyed cells [Exhibit 3A]. Non-native ants were detected in five surveyed cells in open canopy scrub/chaparral habitat.

4.4 Wren's View Preserve

The OTW and CHL were not detected at Wren's View Preserve during 2023 surveys. The OTW has previously been incidentally detected at this Preserve during stewardship monitoring; however, the CHL has not been documented at this Preserve.

Both native red harvester ants and non-native Argentine ants were detected at the Preserve. Native ant colonies were detected in two surveyed cells along existing roads, trails, and in open canopy scrub/chaparral habitat [Exhibit 3A].

4.5 Pacific Horizon Preserve

The OTW and CHL were not detected at Pacific Horizon Preserve during 2023 surveys. Neither covered species has been documented at this Preserve.

No native ant colonies were detected at this Preserve.

5.0 CONCLUSION

5.1 Coast Horned Lizard

Although the CHL was not detected at the OCTA Preserves included in the 2023 focused surveys these results do not determine absence. However, it should be noted that native harvester ants were detected at three Preserves, Eagle Ridge, Bobcat Ridge, and Wren's View, which suggests that CHL may occur at these three Preserves based on the presence of their food source and suitable habitat.

Detection of CHL may be prevented by lack of access. Suitable habitat for this species consists of scrub or chaparral with an open canopy; however, such habitat must be accessible on foot and sufficiently open to allow surveyors to inspect under and around shrubs for CHL and native ant colonies. Cells selected for VES were generally accessed from current or former roads and trails or clearly defined game trails. The majority of the Preserves have high topographic relief, dense vegetation, and are undeveloped, limiting the number of cells with sufficient suitable habitat.

Increased vegetation density resulting from above average rainfall may have also contributed to lack of detection of CHL in 2023. The Orange County region received approximately 23 inches of rain (174 percent of average) in the 2023 water year,[1] which resulted in increased cover and height of annual weedy species and dense understory below shrubs in previously open habitat. The density of vegetation is used to select survey cells; therefore, it is possible that in lower rainfall years additional cells may be suitable and should be considered to add to the survey areas.

5.2 Orangethroat Whiptail

The OTW was detected at two OCTA Preserves, Live Oak Creek and Bobcat Ridge. The OTW has been detected at both of these Preserves previously; however, the 2023 observations expand the known occupied area for this species at these two Preserves. These new locations demonstrate that the OTW has potential to occur along the ridge trails; however, topography and vegetation density may limit including the entire length of the ridgelines in the VES.

The OTW was not detected at Wren's View during 2023 surveys; however, the OTW is expected to be extant based on ample suitable habitat and numerous incidental detections. Wren's View has high topographic relief and dense vegetation, including cactus scrub. The accessible areas along roads and trails comprise only a small portion of many cells, which excludes those cells from inclusion in the VES.

The OTW was not detected at Pacific Horizon; however, there are multiple iNaturalist records of this species in several locations surrounding Pacific Horizon. Since the coastal whiptail was confirmed present at Pacific Horizon and has similar habitat needs to the OTW, the latter is likely present but difficult to detect given the dense vegetation.

[1] Data from Santa Ana FS: NOAA 2023. "Monthly Precipitation Summary Water Year 2023," California Nevada River Forecast Center. October 28, 2023. https://www.cnrfc.noaa.gov/monthly_precip_2023.php

5.3 Survey Methodology

The 2023 reptile surveys incorporated recommendations from the 2022 pilot study, including reducing the size of grid cells, which improved the selection of survey areas such that each smaller cell included a higher percentage of suitable and accessible habitat relative to the larger cells in the pilot study that frequently included habitat that was not suitable or accessible due to topography. Ideally, each discrete survey area (cell) included in a VES should be similar in terms of total area of accessible, suitable habitat to prevent a disproportionate amount of time spent in dissimilar size habitat patches in each cell, which would prevent detection bias resulting from greater time spent searching a smaller area due to the time-limited methodology. Therefore, the 2023 smaller cells improved VES cell selection such that included cells more accurately represent suitable and accessible habitat for the covered species at each Preserve. However, as mentioned above, the higher-than-average rainfall of 2023 increased annual weedy species and thatching, possibly obscuring additional suitable areas adjacent to selected cells.

6.0 RECOMMENDATIONS

6.1 Coast Horned Lizard

The OCTA Preserves included in the 2023 surveys exhibit at least minimal suitability for CHL; however, the VES specified in the RMP may not be the most effective method to confirm presence. GLA continues to recommend more intensive, targeted sampling efforts for CHL, potentially including pitfall trapping, focused surveys without time constraint, and wildlife cameras positioned at healthy ant colonies. Environmental DNA (eDNA) could also be investigated for its potential to confirm presence of target species; environmental samples could be collected at native ant colonies and analyzed for CHL DNA.

6.2 Orangethroat Whiptail

The OTW was detected during the 2023 surveys at two Preserves and is expected at two additional Preserves; therefore, the VES methodology is suitable for this species, and GLA recommends this method for future monitoring.

6.3 Survey Methodology

The 2023 survey methodology, which followed the 2022 pilot survey recommendations, improved survey area selection and is recommended to continue in future monitoring efforts. As mentioned, excessive annual weeds may have excluded potentially suitable habitat; therefore, areas adjacent to VES cells should be reassessed for inclusion in future survey efforts.

7.0 REFERENCES

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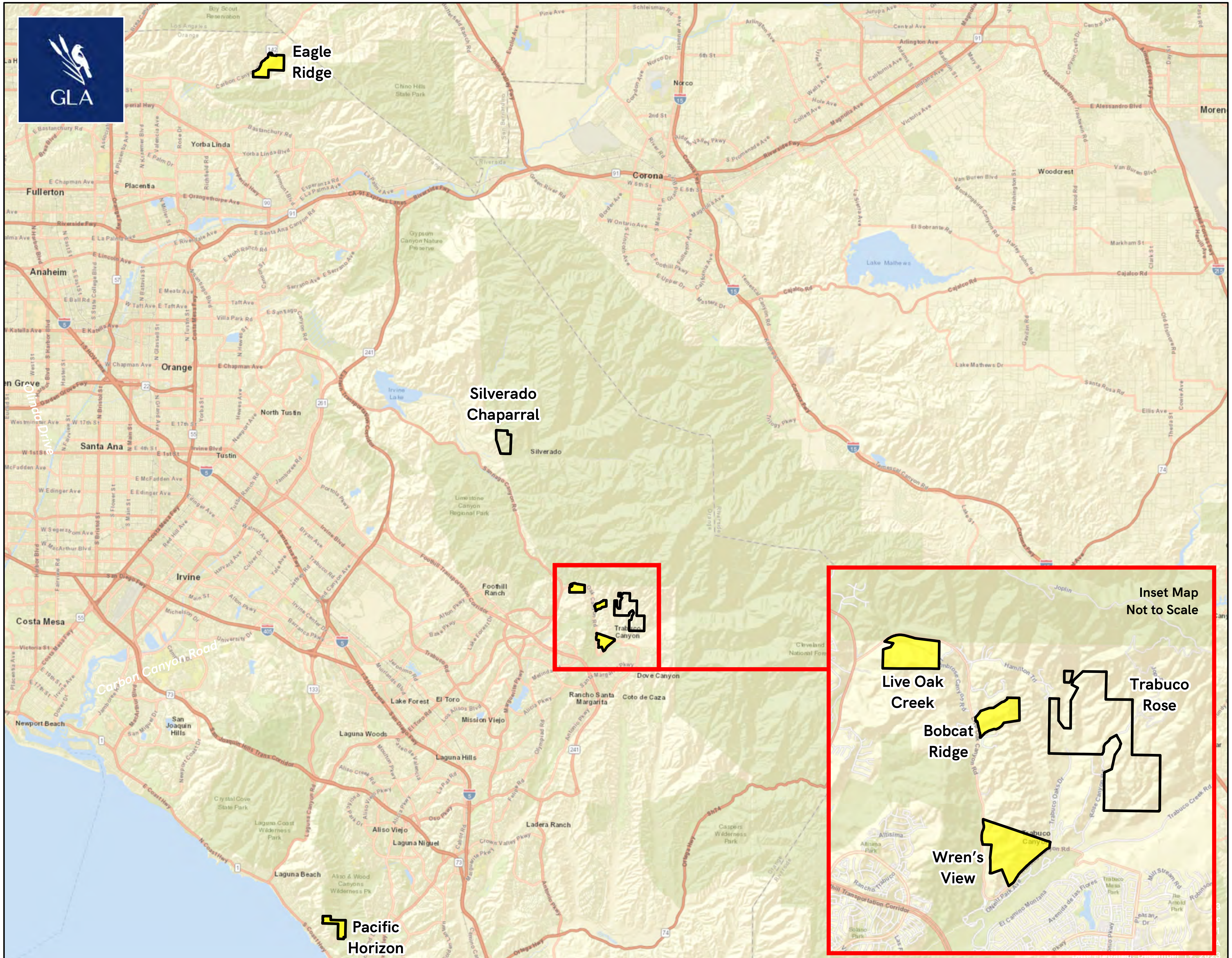
P:1184-3a.2023FocusedReptileReport

Exhibit 1
Location Map

OCTA Preserves



OCTA Preserve

2023 Terrestrial Reptile Surveyed Preserves

N

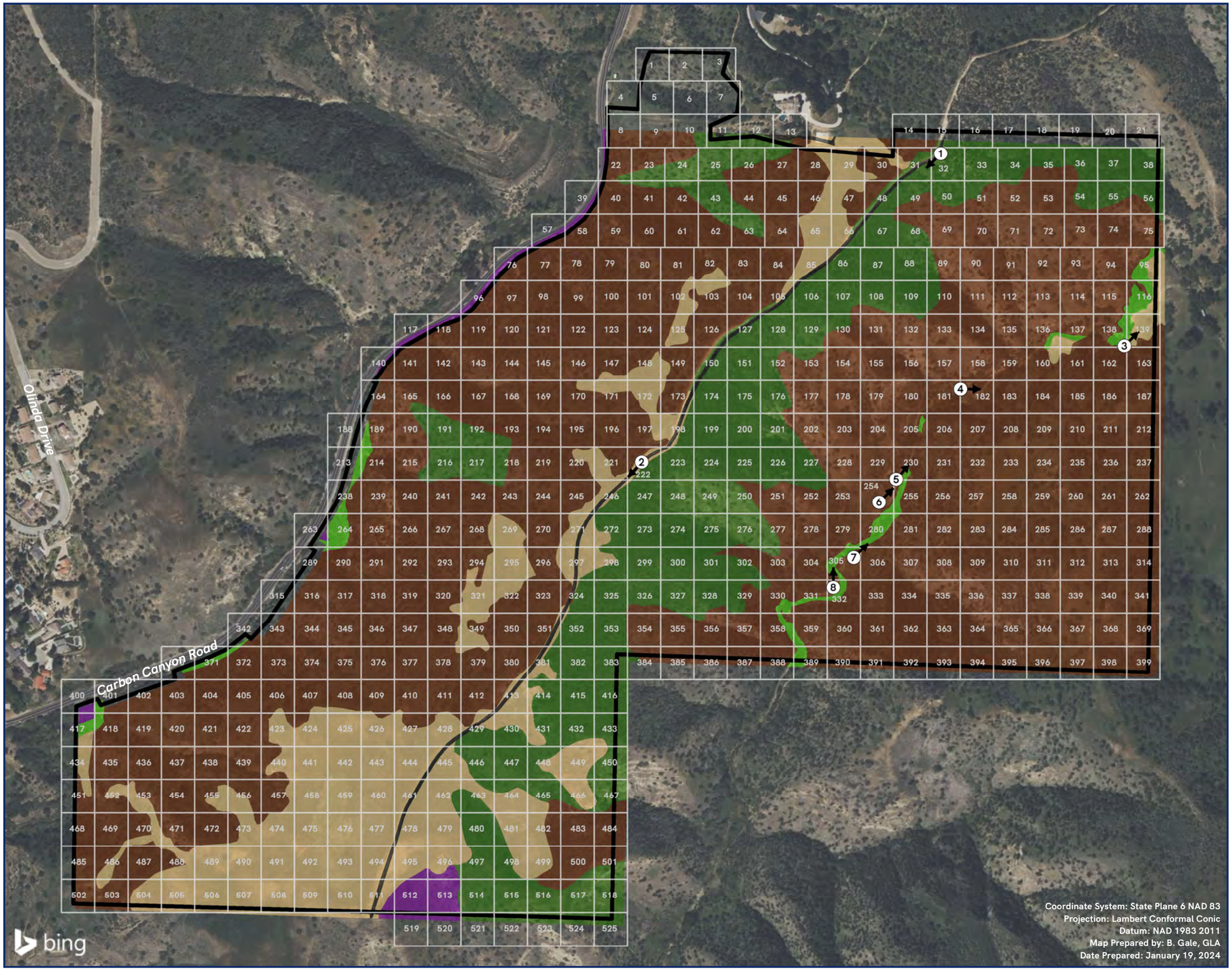
0 1.5 3 6
Miles

1 inch = 3 miles

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\Surveys2023\1184-X_OCTA_Preserves_Herp2023.mxd

Exhibit 2A
Vegetation Map

Eagle Ridge Preserve



Eagle Ridge Preserve

Grid Cell

Photo Location

Vegetation Community

Chaparral

Grassland

Riparian

Woodland

Developed/Non-native

Barren

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

N

0 237.5 475
Feet

1 inch = 475 feet

1 cm = 57 meters

GLA

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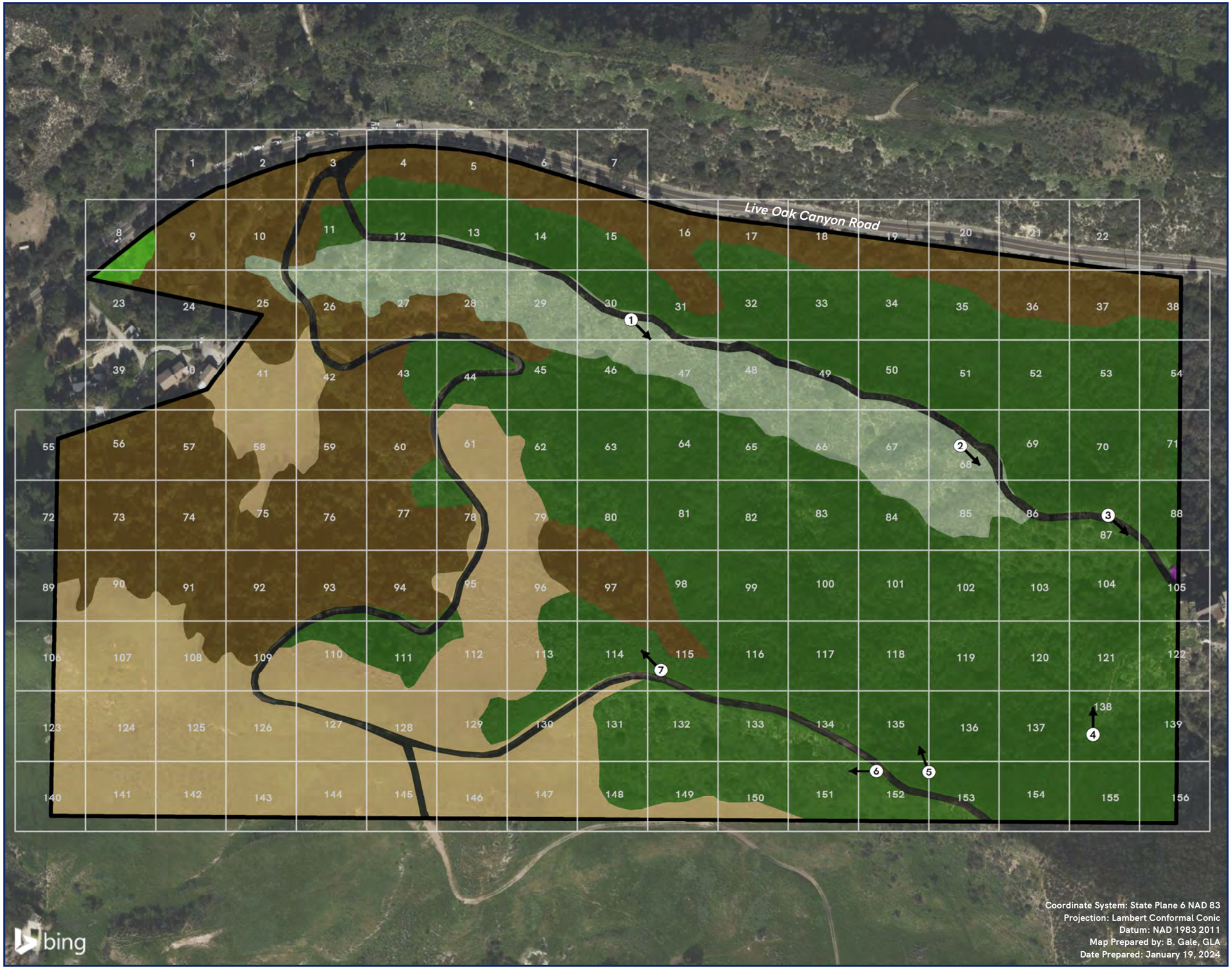
Exhibit 2B
Vegetation Map

Live Oak Creek Preserve



Live Oak Creek Preserve

Grid Cell

Photo Location

Vegetation Community

Chaparral

Grassland

Riparian

Scrub

Woodland

Developed/Non-native

Barren

N

0 112.5 225
Feet

1 inch = 225 feet

1 cm = 27 meters

GLA

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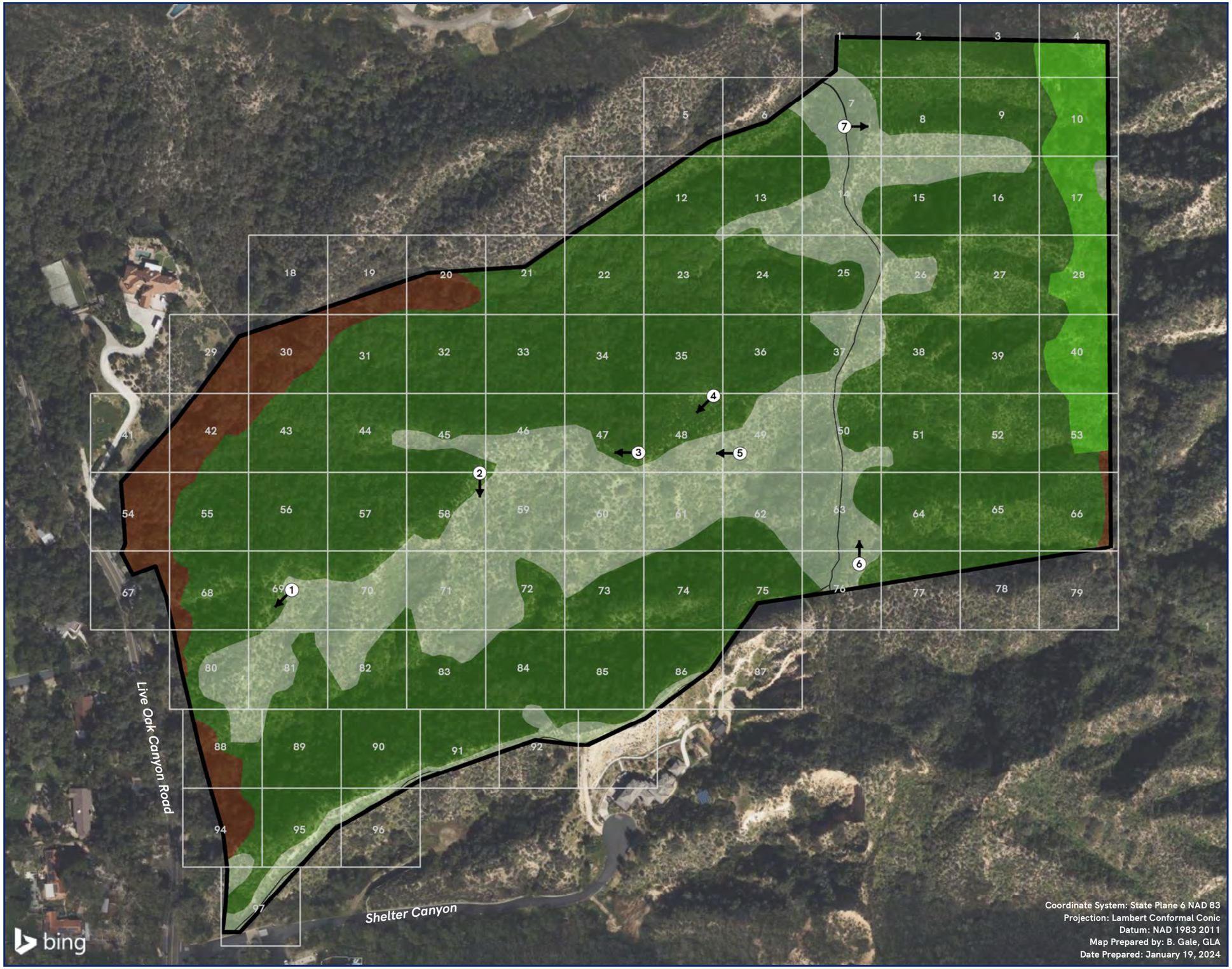
Exhibit 2C
Vegetation Map

Bobcat Ridge Preserve



Bobcat Ridge Preserve

Grid Cell

Photo Location

Vegetation Community

Chaparral

Riparian

Scrub

Woodland

Barren

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

N

0 100 200
Feet

1 inch = 200 feet

1 cm = 24 meters

GLA

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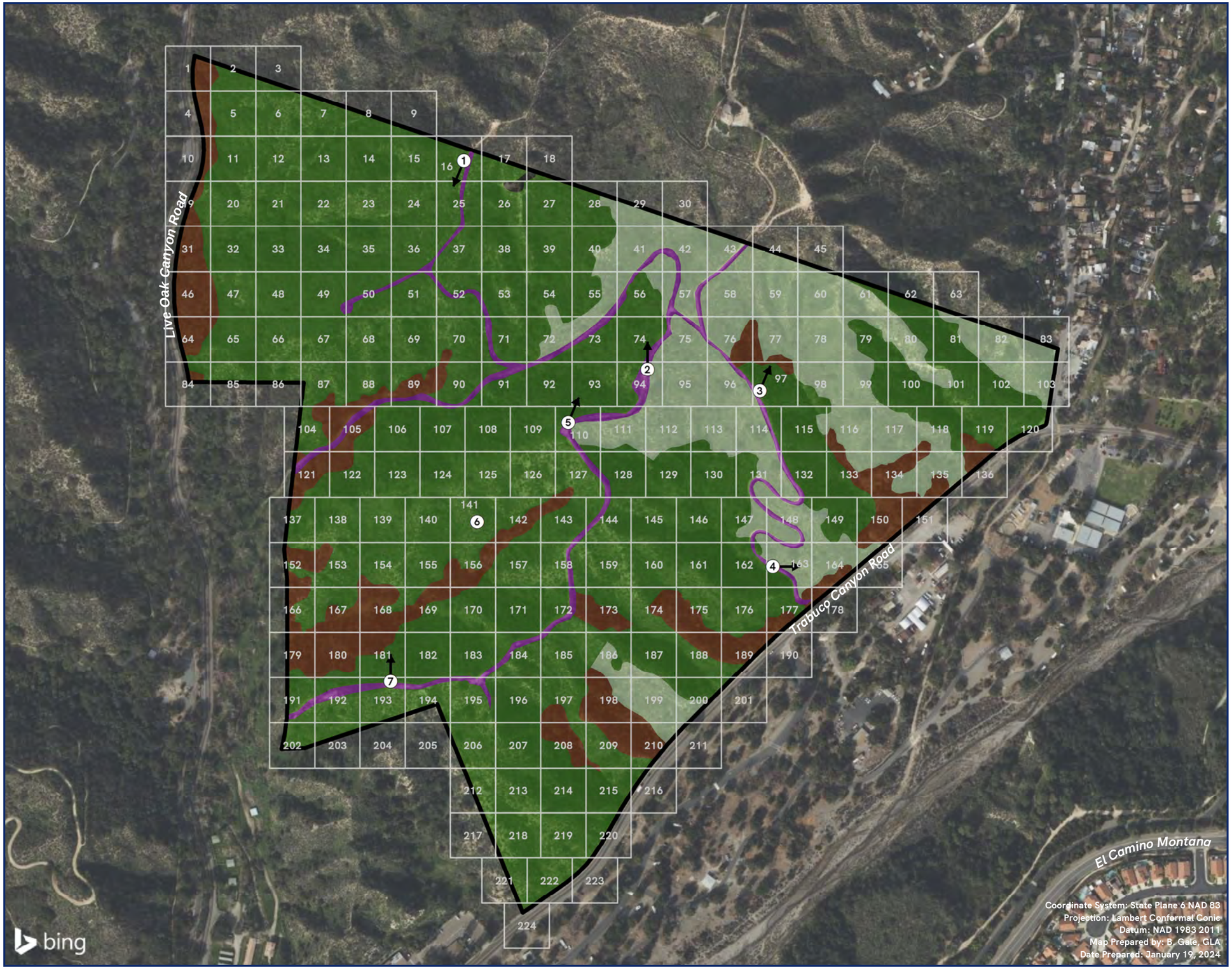
Exhibit 2D
Vegetation Map

Wren's View Preserve



Wren's View Preserve

Grid Cell

Photo Location

Vegetation Community

Chaparral

Scrub

Woodland

Developed/Non-native

Barren

N

0 175 350
Feet

1 inch = 350 feet

1 cm = 42 meters

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

GLA

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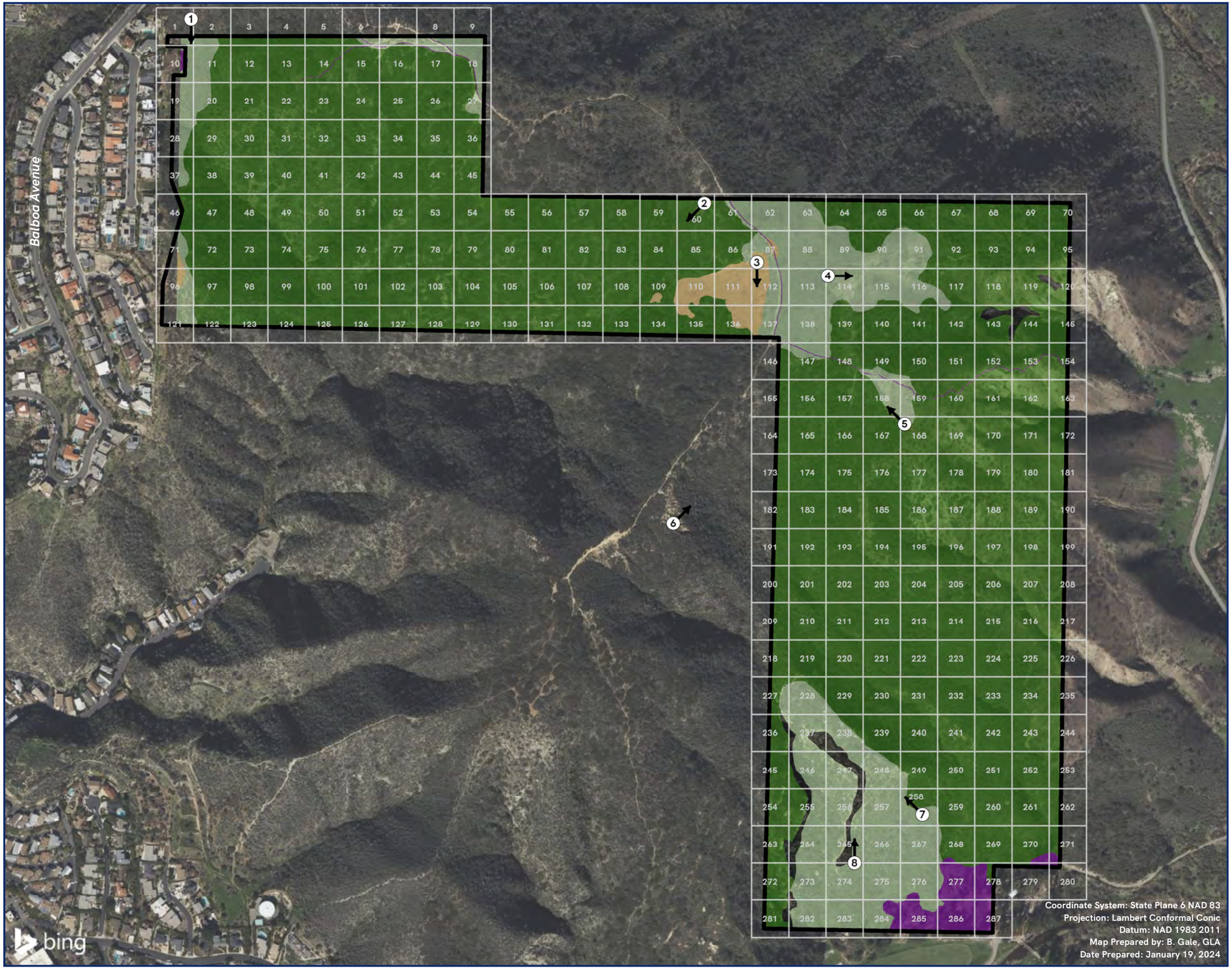
Exhibit 2E
Vegetation Map

Pacific Horizon Preserve



Pacific Horizon Preserve

Grid Cell

Photo Location

Vegetation Community

Chaparral

Grassland

Scrub

Developed/Non-native

Barren

N

0 212.5 425
Feet

1 inch = 425 feet

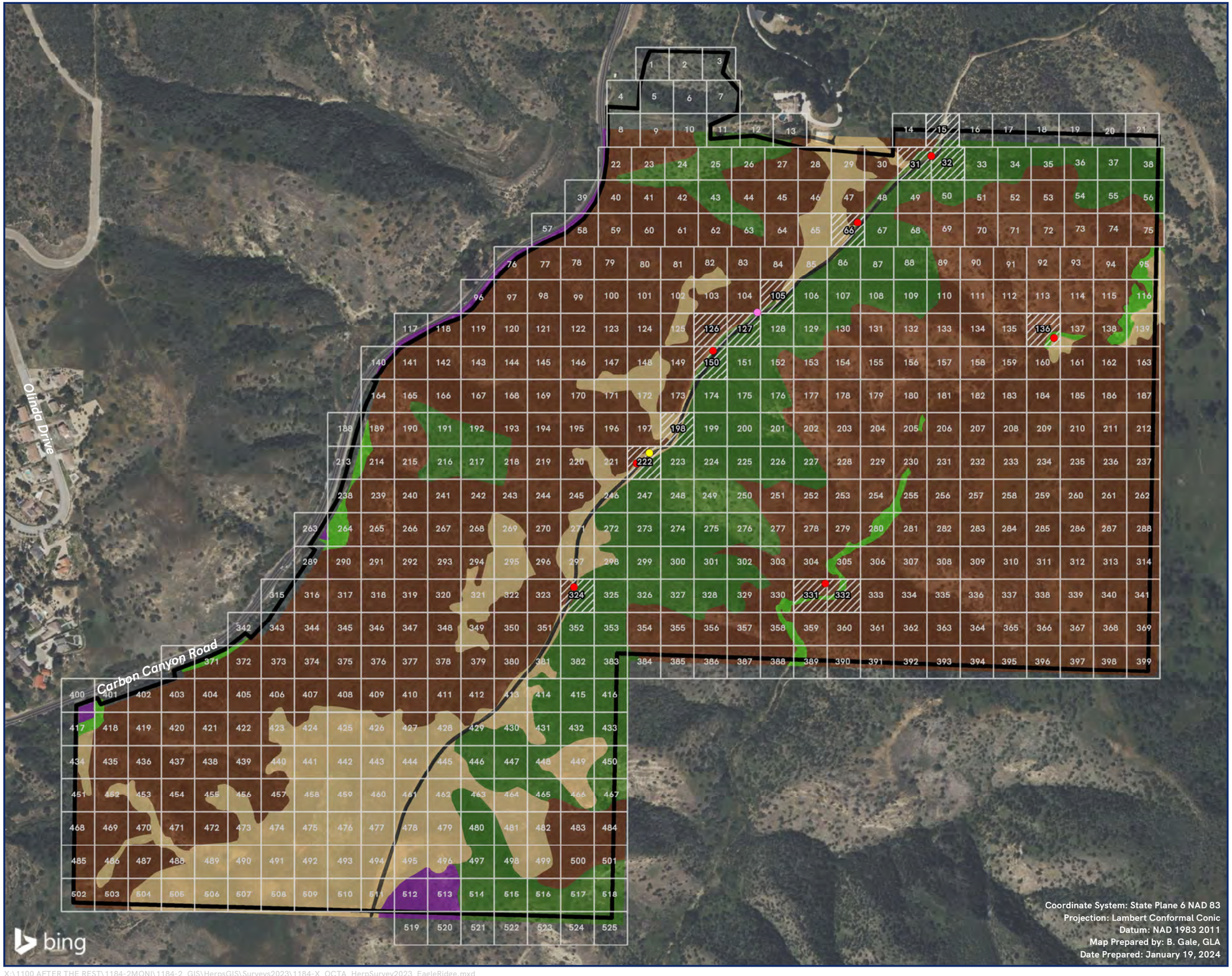
1 cm = 51 meters

GLA

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\Surveys2023\1184-X_OCTA_Veg_PacificHorizon.mxd

Exhibit 3A
Terrestrial Reptile Survey 2023

Eagle Ridge Preserve



Eagle Ridge Preserve

Grid Cell

Surveyed Grid Cell

Current Monitoring Period

Native Red Harvester (Active)

Native Red Harvester (Not Active)

Other Ant Species

Vegetation Community

Chaparral

Grassland

Riparian

Woodland

Developed/Non-native

Barren

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

N

0 237.5 475
Feet

1 inch = 475 feet

1 cm = 57 meters

GLA

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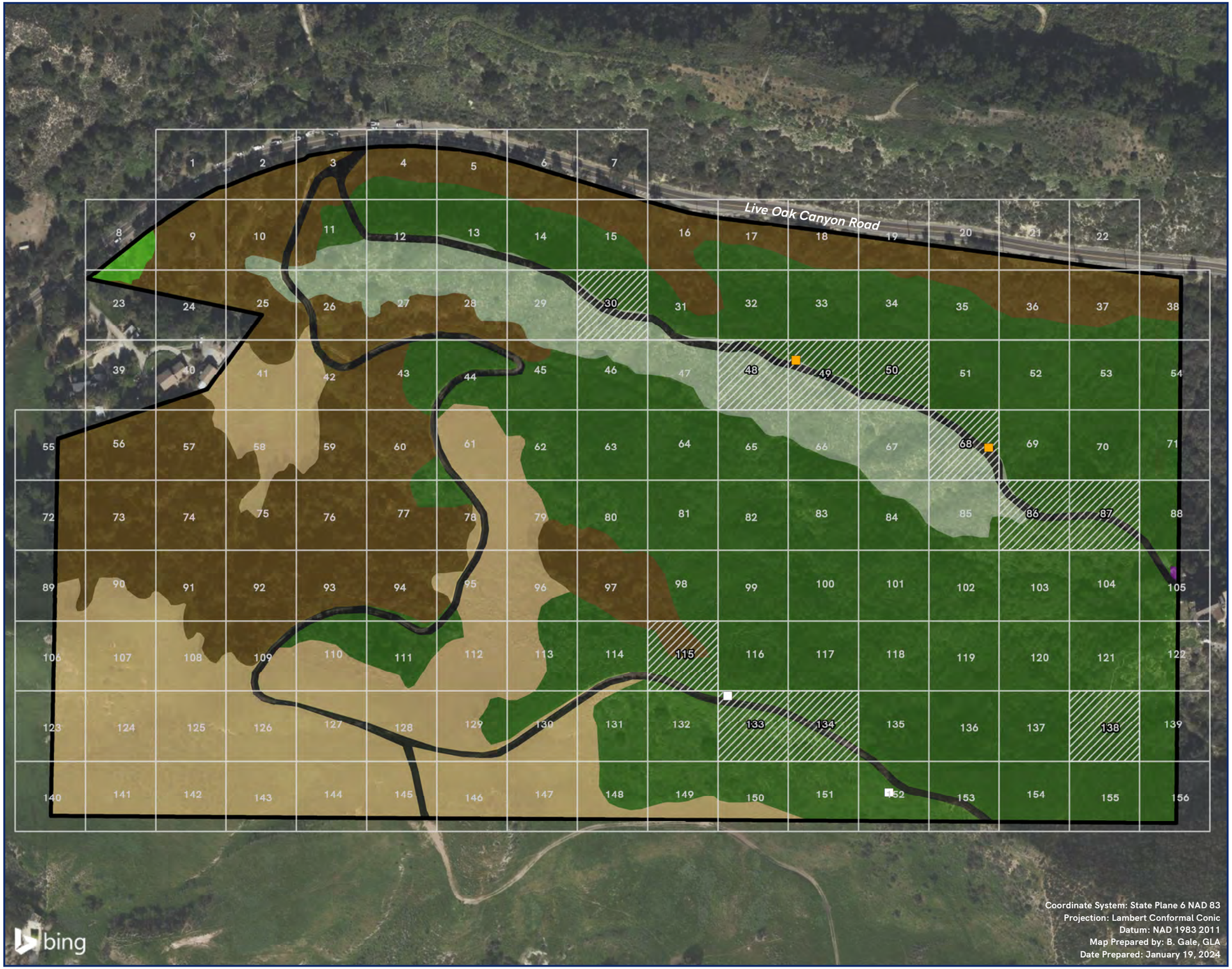
Exhibit 3B
Terrestrial Reptile Survey 2023

Live Oak Creek Preserve



Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

Live Oak Creek Preserve

Grid Cell

Surveyed Grid Cell

Current Monitoring Period

Orangethroat Whiptail

Previous Monitoring Periods

Orangethroat Whiptail

Vegetation Community

Chaparral

Grassland

Riparian

Scrub

Woodland

Developed/Non-native

Barren

N

0 112.5 225
Feet

1 inch = 225 feet

1 cm = 27 meters

GLA

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\Surveys2023\1184-X_OCTA_HerpSurvey2023_LiveOakCreek.mxd

Exhibit 3C
Terrestrial Reptile Survey 2023

Bobcat Ridge Preserve

Live Oak Canyon Road

Shelter Canyon

bing

Bobcat Ridge Preserve

Grid Cell

Surveyed Grid Cell

Current Monitoring Period

- Orangethroat Whiptail
- Native Red Harvester (Active)
- Native Black Harvester
- Other Ant Species

Previous Monitoring Periods

- Orangethroat Whiptail

Vegetation Community

- Chaparral
- Riparian
- Scrub
- Woodland
- Barren

N

0 100 200
Feet

1 inch = 200 feet

1 cm = 24 meters

GLA

Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: January 19, 2024

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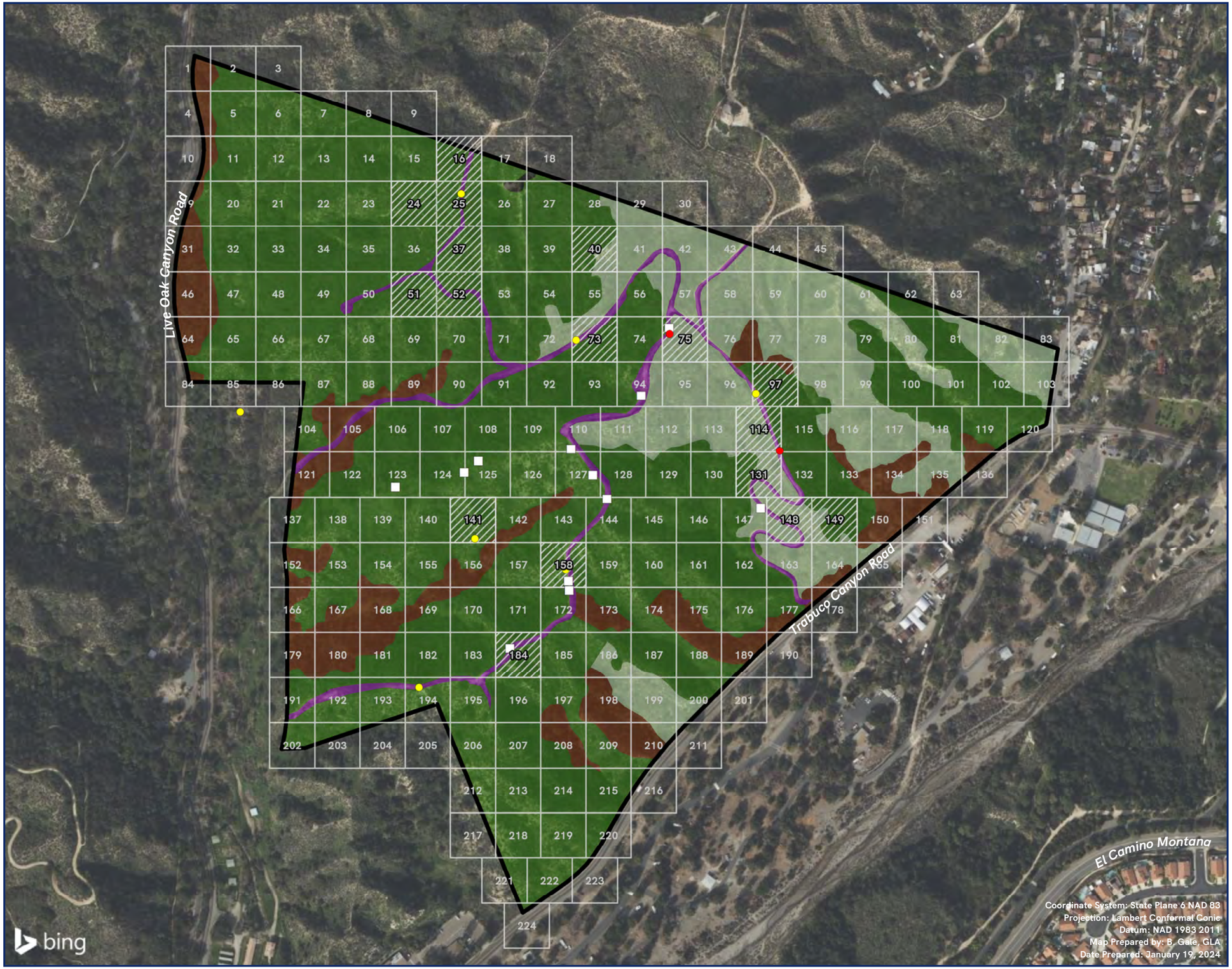
Exhibit 3D
Terrestrial Reptile Survey 2023

Wren's View Preserve



Wren's View Preserve

Grid Cell

Surveyed Grid Cell

Current Monitoring Period

Native Red Harvester (Active)

Other Ant Species

Previous Monitoring Periods

Orangethroat Whiptail

Vegetation Community

Chaparral

Scrub

Woodland

Developed/Non-native

Barren

N

0 175 350
Feet

1 inch = 350 feet

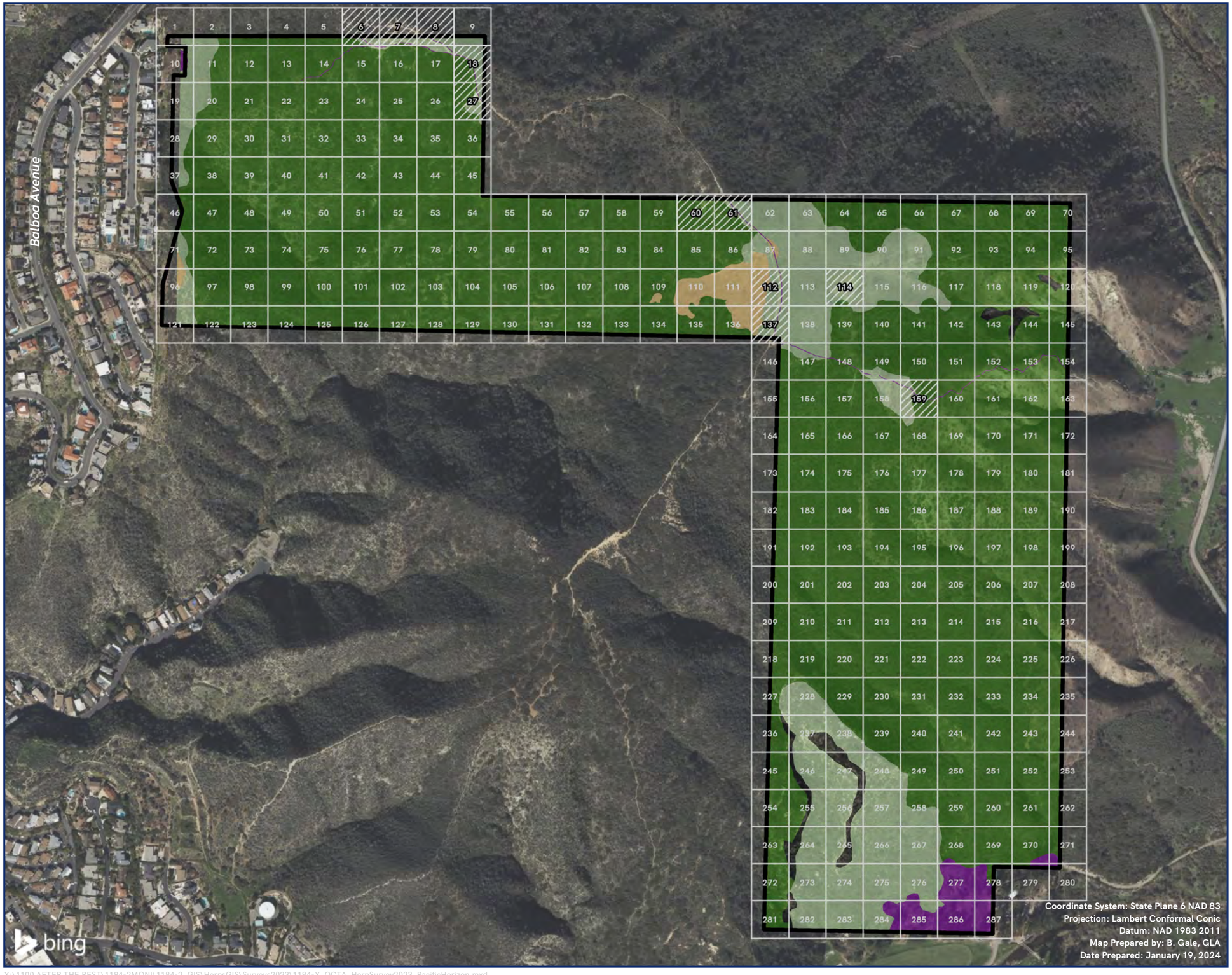
1 cm = 42 meters

GLA

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\Surveys2023\1184-X_OCTA_HerpSurvey2023_WrensView.mxd

Exhibit 3E
Terrestrial Reptile Survey 2023

Pacific Horizon Preserve



Pacific Horizon Preserve

Grid Cell

Surveyed Grid Cell

Vegetation Community

Chaparral

Grassland

Scrub

Developed/Non-native

Barren

N

0 212.5 425
Feet

1 inch = 425 feet

1 cm = 51 meters

GLA

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\HerpsGIS\Surveys2023\1184-X_OCTA_HerpSurvey2023_PacificHorizon.mxd

Photograph 1: Eagle Ridge Photo 1, depicting the ridge road with native harvester ants present, dominated by mustard and non-native grasses with limited bare ground, facing approximately southwest.

Photograph 2: Eagle Ridge Photo 2, depicting the ridge road with native harvester ants present, dominated by non-native grasses with limited bare ground, facing approximately southwest.

Photograph 3: Eagle Ridge Photo 3, depicting the canyon floor trail dominated by dense non-native grass thatch and no bare areas, facing northeast.

Photograph 4: Eagle Ridge Photo 4, depicting the canyon floor trail dominated by tocalote *(Centaurea melitensis)* and no bare areas, facing east.

Exhibit 4 - Site Photos – Eagle Ridge

OCTA Terrestrial Reptile Survey 2023

Photograph 5: Eagle Ridge Photo 5, depicting the canyon floor trail dominated by non-native grasses and white horehound (*Marrubium vulgare*), facing northeast.

Photograph 6: Eagle Ridge Photo 6, depicting canyon floor dominated by dense non-native grass thatch, facing northeast.

Photograph 7: Eagle Ridge Photo 7, depicting the canyon floor dominated by non-native grass thatch and white horehound with no bare ground areas, facing northeast.

Photograph 8: Eagle Ridge Photo 8, depicting the canyon floor trail with native scrub species and limited bare ground areas, facing north.

Exhibit 4 - Site Photos – Eagle Ridge

OCTA Terrestrial Reptile Survey 2023

Photograph 9: Live Oak Creek Photo 1, depicting dense cactus scrub habitat on steep slope with dense chaparral on opposite slope, facing southeast.

Photograph 10: Live Oak Creek Photo 2, depicting steep coastal sage scrub dominated slope with non-native grasses filling understory, facing southeast.

Photograph 11: Live Oak Creek Photo 3, depicting open sage scrub habitat on narrow ridge trail, facing southeast.

Photograph 12: Live Oak Creek, depicting one of four orangethroat whiptail (*Aspidoscelis hyperythra*) detected in cells 49 and 68 in habitat depicted in Photo 3.

Exhibit 4 - Site Photos – Live Oak Creek

OCTA Terrestrial Reptile Survey 2023

Photograph 13: Live Oak Creek Photo 4, depicting narrow sage scrub habitat along trail, facing north.

Photograph 14 Live Oak Creek Photo 5, depicting dense cactus scrub on steep slopes with narrow trail on ridge, facing north northwest.

Photograph 15: Live Oak Creek Photo 6, depicting steep slope with native shrubs and non-native grass thatch dominating understory, facing west.

Photograph 16: : Live Oak Creek Photo 7, depicting dense scrub and non-native grasses with limited open areas, facing northwest.

Exhibit 4 - Site Photos – Live Oak Creek

OCTA Terrestrial Reptile Survey 2023

Photograph 17: Bobcat Ridge Photo 1, depicting dense coastal and non-native grasses on steep slopes, facing southwest.

Photograph 18: Bobcat Ridge Photo 2, depicting dense scrub on steep slopes with non-native grasses dominating the understory, facing approximately south.

Photograph 19 Bobcat Ridge Photo 3, depicting dense sage scrub with no open areas on ridge trail, facing west.

Photograph 20: Bobcat Ridge Photo 4, depicting open sage scrub habitat adjacent to Photo 3, facing southwest.

Exhibit 4 - Site Photos – Bobcat Ridge

OCTA Terrestrial Reptile Survey 2023

Photograph 21: Bobcat Ridge Photo 5, depicting dense sage scrub on steep slope, down slope of Photo 4, facing west.

Photograph 22 Bobcat Ridge Photo 6, depicting open low-growing sage scrub on ridge trail, facing approximately north.

Photograph 23: Bobcat Ridge, depicting a coastal whiptail (*Aspidocelis tigris stejnegeri*) detected in habitat similar to Photo 6.

Photograph 24: Bobcat Ridge Photo 7, depicting steep slopes dominated by dense scrub and chaparral, facing approximately east.

Exhibit 4 - Site Photos – Bobcat Ridge

OCTA Terrestrial Reptile Survey 2023

GLA

Photograph 25: Wren's View Photo 1, depicting low growing sage scrub with open bare areas on ridge trail, facing southwest.

Photograph 26: Wren's View Photo 2, depicting steep slope dominated by dense sage and cactus scrub with ridge road at left, facing approximately north.

Photograph 27: Wren's View Photo 3, depicting steep slopes dominated by sage scrub with non-native grasses in understory, facing north northeast.

Photograph 28 : Wren's View Photo 4, depicting steep slope dominated by cactus scrub with non-native grasses filling understory,facing east.

Exhibit 4 - Site Photos – Wren's View

OCTA Terrestrial Reptile Survey 2023

Photograph 29: Wren's View Photo 5, depicting steep slopes with dense cactus scrub at left and dense chaparral at center, facing north northeast.

Photograph 30: Wren's View Photo 6, depicting sage scrub habitat with open areas and no grass thatching.

Photograph 31: Wren's View Photo 7, depicting weed thatched scrub adjacent to road and steep cactus scrub dominated slopes at distance, facing north.

Photograph 32: Wren's View, depicting coast patch-nosed snake (*Salvadora hexialepis virgultea*) detected in open scrub habitat.

Exhibit 4 - Site Photos – Wren's View

OCTA Terrestrial Reptile Survey 2023

Photograph 33: Pacific Horizon Photo 1, depicting dense scrub on steep slopes, facing south.

Photograph 34: Pacific Horizon Photo 2, depicting sage scrub shallow slope with open areas.

Photograph 35: Pacific Horizon Photo 3, depicting non-native grassland restoration area, facing south.

Photograph 36: Pacific Horizon Photo 4, depicting short sage scrub in burn scar with limited open areas, facing east.

Exhibit 4 - Site Photos – Pacific Horizon

OCTA Terrestrial Reptile Survey 2023

Photograph 37: Pacific Horizon Photo 5, depicting short sage scrub in burn scar with limited open areas, facing northwest.

Photograph 38: Pacific Horizon Photo 6, depicting dense chaparral on steep slopes with no open areas, facing northeast.

Photograph 39: Pacific Horizon Photo 7, depicting very steep slope dominated by dense chaparral and sage scrub wit no open areas, facing northwest.

Photograph 40: Pacific Horizon Photo 8, depicting dense sage scrub on slope with grass thatching no open areas, facing north.

Exhibit 4 - Site Photos – Pacific Horizon

OCTA Terrestrial Reptile Survey 2023

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 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.

REFERENCES

Corn, P. S., and R. B. Bury. 1990. *Sampling Methods for Terrestrial Amphibians and Reptiles*. USDA Forest Service, General and Technical Report PNW-GTR-256, 34 pp.

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 - 2023 Terrestrial Reptile Survey Data

Eagle Ridge											
CELL#	CHL	OTW	CW	GBF	SBL	GSL	CPS	RR	GS	RDR	SPR
15	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0	0
127	0	0	0	0	0	0	0	0	0	0	0
136	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	1 A	0	0	0
324	0	0	0	0	0	0	0	0	0	0	0
331	0	0	0	0	0	0	0	0	0	0	0
332	0	0	0	0	0	0	0	0	0	0	0
358	-	-	-	-	I	-	-	-	-	-	-
478	-	-	-	-	-	-	-	-	-	-	I

-	not surveyd	CHL	coast horned lizard
A	Adult	OTW	orangethroat whiptail
J	Juvenile	CW	coast whiptail
U	Unknown	GBF	great basin fence lizard
S	Scat	SBL	side-blotched lizard
0	Absent	GSL	granite spiney lizard
I	Incidental	CPS	coast patch-nosed snake
		RR	red racer
		GSL	gopher snake
		RDR	red diamond rattlesnake
		SPR	southern Pacific rattlesnake

Appendix B - 2023 Terrestrial Reptile Survey Data

Live Oak Creek											
CELL#	CHL	OTW	CW	GBF	SBL	GSL	CPS	RR	GS	RDR	SPR
30	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	1 A	0	0	0	0	0	0	0
49	0	1 J	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0
68	0	3 A	0	1 A	0	0	0	0	0	0	0
86	0	0	1 A	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0
134	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0

-	not surveyd	CHL	coast horned lizard
A	Adult	OTW	orangethroat whiptail
J	Juvenile	CW	coast whiptail
U	Unknown	GBF	great basin fence lizard
S	Scat	SBL	side-blotched lizard
0	Absent	GSL	granite spiney lizard
I	Incidental	CPS	coast patch-nosed snake
		RR	red racer
		GSL	gopher snake
		RDR	red diamond rattlesnake
		SPR	southern Pacific rattlesnake

Appendix B - 2023 Terrestrial Reptile Survey Data

Bobcat Ridge											
CELL#	CHL	OTW	CW	GBF	SBL	GSL	CPS	RR	GS	RDR	SPR
14	0	0	1 A	0	1 A	0	0	0	0	1 A	0
37	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0
76	0	1 A	0	0	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0	0	0	0	0
87	-	I	-	-	-	-	-	-	-	-	-
91	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0

-	not surveyd	CHL	coast horned lizard
A	Adult	OTW	orangethroat whiptail
J	Juvenile	CW	coast whiptail
U	Unknown	GBF	great basin fence lizard
S	Scat	SBL	side-blotched lizard
0	Absent	GSL	granite spiney lizard
I	Incidental	CPS	coast patch-nosed snake
		RR	red racer
		GSL	gopher snake
		RDR	red diamond rattlesnake
		SPR	southern Pacific rattlesnake

Appendix B - 2023 Terrestrial Reptile Survey Data

Wren's View											
CELL#	CHL	OTW	CW	GBF	SBL	GSL	CPS	RR	GS	RDR	SPR
16	0	0	0	0	1 A	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	1 A	0	0
97	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	1 J	0	0	0	0
131	0	0	0	1 A	0	0	0	0	0	0	0
141	0	0	0	0	0	0	0	0	0	0	0
148	0	0	1 A	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	1 A	0	0	0	0	0	0	0
184	0	0	0	0	0	0	0	0	0	0	0

-	not surveyd
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 spiney lizard
CPS	coast patch-nosed snake
RR	red racer
GSL	gopher snake
RDR	red diamond rattlesnake
SPR	southern Pacific rattlesnake

Appendix B - 2023 Terrestrial Reptile Survey Data

Pacific Horizon											
CELL#	CHL	OTW	CW	GBF	SBL	GSL	CPS	RR	GS	RDR	SPR
6	0	0	0	1 A	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0
60	0	0	1 A	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0

-	not surveyd	CHL	coast horned lizard
A	Adult	OTW	orangethroat whiptail
J	Juvenile	CW	coast whiptail
U	Unknown	GBF	great basin fence lizard
S	Scat	SBL	side-blotched lizard
0	Absent	GSL	granite spiney lizard
I	Incidental	CPS	coast patch-nosed snake
		RR	red racer
		GSL	gopher snake
		RDR	red diamond rattlesnake
		SPR	southern Pacific rattlesnake

APPENDIX D

THIRD ANNUAL MONITORING REPORT

FOR

DISTURBED LANDS WITHIN PACIFIC HORIZON PRESERVE RESTORATION

PACIFIC HORIZON PRESERVE
CITY OF LAGUNA BEACH, ORANGE COUNTY, CALIFORNIA

FEBRUARY 22, 2024

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
THIRD 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, the *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 2023.

Pacific Horizon Restoration Activity Log	
Date	**Activity**
7/13/2023	RECON field crew performed[1] herbicide treatment of artichoke thistle regrowth in the artichoke thistle removal area using glyphosate-based herbicide and hand tools (i.e. shovels).
7/24/2023	RECON field crew performed herbicide treatment of artichoke thistle regrowth within the artichoke thistle removal area using glyphosate-based herbicide and hand tools (i.e. shovels).
7/26-7/27//2023	RECON field crew performed thatch control of artichoke thistle removal area using mechanical line trimmers, shovels, and rakes to pile the dead biomass.

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 third 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 three 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. As such, significant infill of native species in these areas was observed in the third year of monitoring, with the most prominent native species including California buckwheat (*Eriogonum fasciculatum*), California bush sunflower (*Encelia californica*), California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), and deerweed (*Acmispon glaber*). Additionally, the cactus pad plantings are surviving and displaying new growth.

The 2022-2023 rainy season exhibited prolific rain events with over 17 inches of rain recorded between September 2022 and April 2023. With these rains, there was increased germination of native annual wildflowers within the OCTA property. These species include California poppies (*Eschscholzia californica*), California sun cups (*Camissoniopsis bistorta*), coast paintbrush (*Castilleja affinis*), blue dicks (*Dichelostemma capitatum*), Texas toadflax (*Nuttallanthus texanus*), and common cryptantha (*Cryptantha intermedia*). This indicates the presence of a diverse seed bank of native annual species that will germinate upon optimal weather conditions. For a list of all plant species observed during annual monitoring, a key to species is attached as Appendix B.

[1] All RECON field crew days were under the supervision of a qualified biologist.

The trail decompaction areas show less unauthorized entry, with minimal to no bike and pedestrian disturbance. Overall, as previously mentioned, the trail restoration areas are showing signs of natural recruitment from surrounding coastal sage scrub (CSS) habitat.

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 in eradicating these target species. While the herbicide was effective, the treatment area has been colonized by mixed annual non-native grasses and summer mustard (*Hirschfeldia incana*).

Natural recruitment of surrounding native species including coyote brush (*Baccharis pilularis*), lemonadeberry, California sagebrush, and purple needlegrass (*Stipa pulchra*) was also noted in the artichoke thistle control area. However, due to the high coverage of non-native grasses, natural recruitment is slow within this area. Follow-up treatment of the annual non-native grasses was recommended and is being implemented. Application of native seed collected within the Preserve and hand broadcasting is recommended to boost native shrub coverage in the artichoke treatment area.

V. RECOMMENDATIONS

Recommended maintenance for the next year is to focus on removal of annual grasses within the disturbed lands and artichoke treatment areas, routine (as-needed) fence/sign repair, and as-needed erosion control along trails.

A. Trail Disturbance Restoration Areas

Recommended maintenance actions in the next year include routine maintenance of the fence line and follow-up hand removal of annual grasses or new occurrences of non-native species 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, and new occurrences of any invasive species during the winter and spring months. Post-treatment, the artichoke thistle area now hosts predominantly mixed non-native grasses; therefore, removal of these non-native plant species is recommended with supplemental hand broadcasting of native seed during the 2023-2024 rainy season. This will encourage native plant recruitment and coverage, while offsetting non-native plant germination.

C. Monitoring

Monitoring will continue on a quarterly basis during the fourth year, and a corresponding annual report will be submitted to the CCC by December 31, 2024.

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.

APPENDIX B

Key to Species
Pacific Horizon Preserve Disturbed Lands - Third-Year Monitoring (2023)

Abbreviation	Botanic Name	Common Name	Source
AC GL	*Acmispon glaber*	deerweed	Natural Recruitment
AR CA	*Artemisia californica*	California sagebrush	Natural Recruitment
AT SE	*Atriplex semibaccata*	Australian saltbush	Introduced
AV sp.	*Avena sp.*	non-native Oat	Introduced
BA PI	*Baccharis pilularis*	coyote brush	Natural Recruitment
BR MA	*Bromus madritensis ssp. ruben*	red brome	Introduced
CA AF	*Castilleja affinis*	coast paintbrush	Natural Recruitment
CA BI	*Camissoniopsis bistorta*	California sun cups	Natural Recruitment
CA WE	*Calochortus weedii var. intermedius*	intermediate mariposa lily	Natural Recruitment
CR CO	*Crassula connata*	pigmy weed	Natural Recruitment
CR IN	*Cryptantha intermedia*	Common cryptantha	Natural Recruitment
DE FA	*Deinandra fasciculata*	clustered tarweed	Natural Recruitment
DI CA	*Dichelostemma capitatum*	blue dicks	Natural Recruitment
DU LA	*Dudleya lanceolata*	laceleaf liveforever	Natural Recruitment
DU MU	*Dudleya multicaulis*	many-stemmed dudleya	Natural Recruitment
EN CA	*Encelia californica*	bush sunflower	Natural Recruitment
ER FA	*Erioganum fasciculatum*	California buckwheat	Natural Recruitment
ES CA	*Eschscholzia californica*	California poppy	Natural Recruitment
GA AN	*Galium angustifolium*	narrow-leaf bedstraw	Natural Recruitment
HE AR	*Heteromeles arbutifolia*	toyon	Natural Recruitment
HE GR	*Heterotheca grandiflora*	telegraph weed	Natural Recruitment
HE SE	*Heterotheca sessiflora*	sessiflower false goldenaster	Natural Recruitment
HI IN	*Hirschfeldia incana*	shortpod mustard	Introduced
HO sp.	*Hordeum sp.*	non-native barley	Introduced
IS ME	*Isocoma menziesii*	coastal goldenbush	Natural Recruitment
LA SE	*Lactuca serriola*	prickly lettuce	Introduced
LY CA	*Lycium californicum*	California box thorn	Natural Recruitment
MA MA	*Marah macrocarpa*	wild cucumber	Natural Recruitment
MI AU	*Mimulus aurantiacus*	sticky monkeyflower	Natural Recruitment
NNG	Non-native grass	non-native grass	Introduced
NU TE	*Nuttallanthus texanus*	Texas toadflax	Natural Recruitment
OP BA	*Opuntia basilaris*	Beavertail cactus	Natural Recruitment
OP LI	*Opuntia littoralis*	Coast prickly pear	Natural Recruitment
PL ER	*Plantago erecta*	California plantain	Natural Recruitment
PS BI	*Pseudognaphalium bioletti*	two-colored rabbit tobacco	Natural Recruitment
RH IN	*Rhus integrifolia*	lemonadeberry	Natural Recruitment
SA ME	*Salvia mellifera*	black sage	Natural Recruitment
SI BE	*Sisyrinchium bellum*	blue eyed grass	Natural Recruitment
ST PU	*Stipa pulchra*	purple needlegrass	Natural Recruitment

- Pacific Horizon Preserve
- Restoration Areas
- Existing Fence Repair
- AWCWP - Authorized Trails: Open Access
- AWCWP - SOCWA CTP Access Road/ Aliso Creek Trail: Managed Access

N

0 500 1,000 2,000

Feet

1 inch = 1,000 feet

PACIFIC HORIZON PRESERVE

Vicinity Map

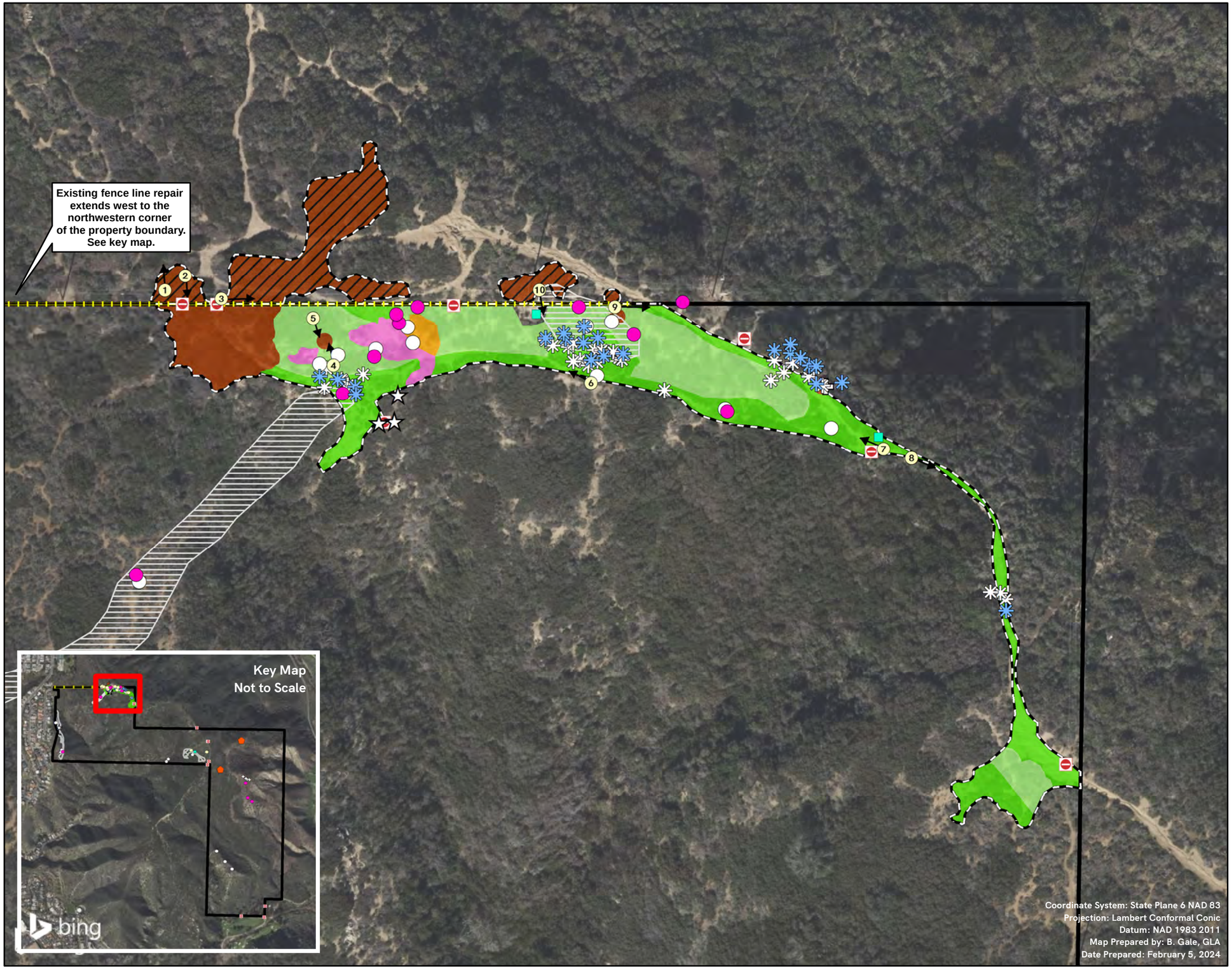
GLENN LUKOS ASSOCIATES

Exhibit 1

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\PacificHorizonGIS\CCC_GIS\1184-2 PacificHorizonCCCVicinityMap.mxd

Exhibit 2 - Page 1
Restoration and Photo Location Map

Pacific Horizon Preserve



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

Current Monitoring Period (2022-2023)

Covered Species

Intermediate Mariposa Lily

Many-stemmed Dudleya

Previous Monitoring Periods

Covered Species

Intermediate Mariposa Lily

Many-stemmed Dudleya

Non-Covered Sensitive Species

Big-leaved Crownbeard

Western Dichondra

N

0 30 60

Feet

1 inch = 60 feet

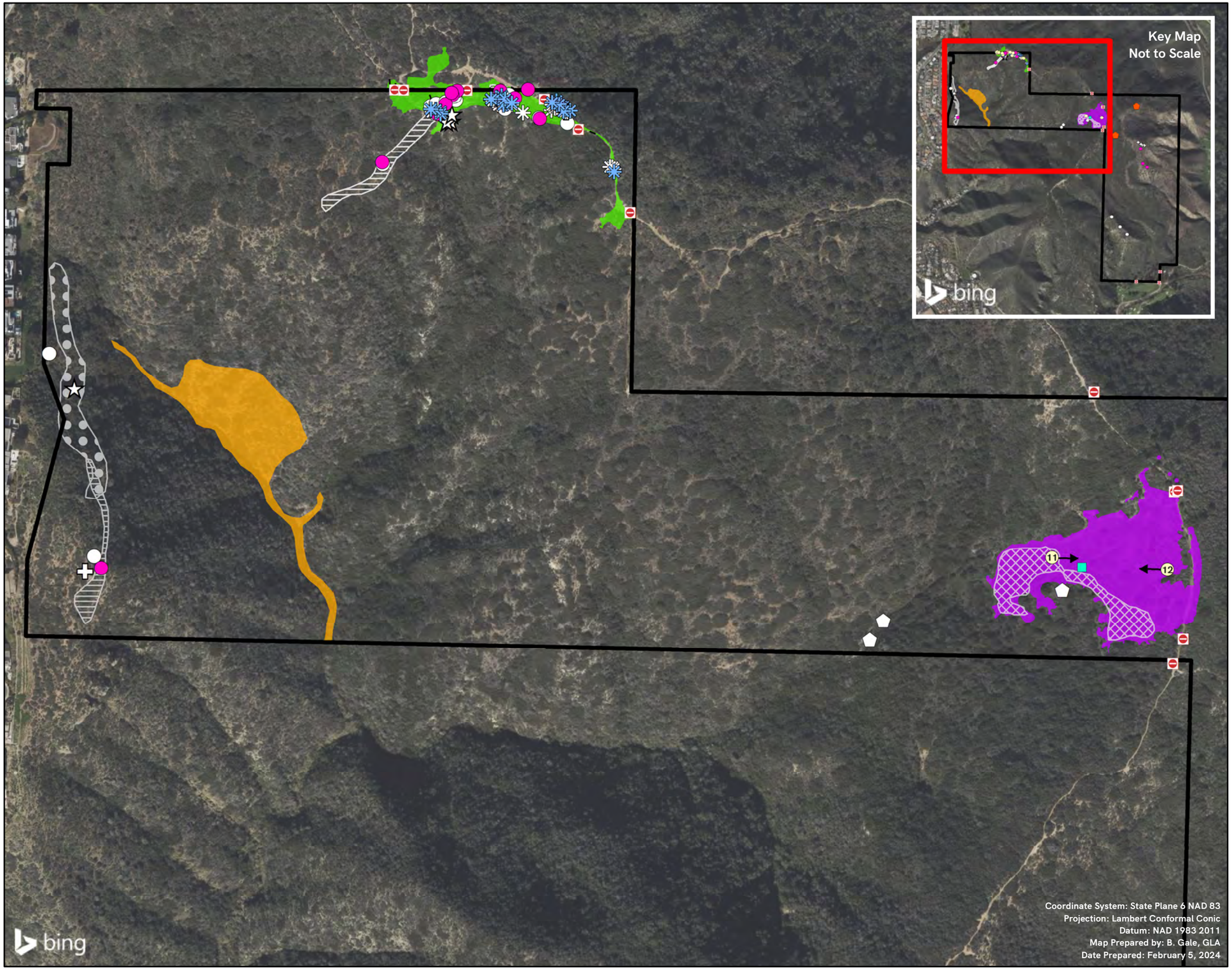
Coordinate System: State Plane 6 NAD 83
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Map Prepared by: B. Gale, GLA
Date Prepared: February 5, 2024

GLA

X:\1100 AFTER THE REST\1184-2MONI\1184-2_GIS\PacificHorizonGIS\CCC_GIS\1184-X_OCTA_PacificHorizon_Restoration_PhotoLocations_Pg1.mxd

Exhibit 2 - Page 2
Restoration and Photo Location Map

Pacific Horizon Preserve



Pacific Horizon Preserve

Disturbed Lands
Restoration Area - See Exhibit 3

Artichoke Thistle Removal Area - 2.34 ac.

Pampas Grass Removal Area - 1.42 ac.

"Do Not Enter/
Restoration in Progress" Sign

Approximate Location of
Approved Camera Station

Photo Location

Current Monitoring Period (2022-2023)

Covered Species

Intermediate Mariposa Lily

Many-stemmed Dudleya

Previous Monitoring Periods

Covered Species

Intermediate Mariposa Lily

Many-stemmed Dudleya

Non-Covered Sensitive Species

Big-leaved Crownbeard

Catalina Mariposa Lily

Western Dichondra

N

0 112.5 225
Feet

1 inch = 225 feet

GLA

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Photograph 1: View of treated iceplant located on County property. Flowering California sun cups (*Camisoniopsis bisorta*), Texas toadflax (*Nuttallanthus texanus*), and deerweed (*Acmispon glaber*) shown. Additional native species include California buckwheat *(Eriogonum fasciculatum*), California bush sunflower *(Encelia californica),* and California sagebrush *(Artemisia californica*). All photos are dated April 3, 2023, unless specified.

Photograph 2: View of decommissioned trail, fencing, and signage. No signs of recent bike or pedestrian disturbance in the decommissioned area. The area hosts a high coverage of germinating California sagebrush, which indicates the area is naturally restoring. Additional flowering species include deerweed, Texas toadflax, California sun cups, pigmy weed *(Crassula conata*), and wild cucumber *(Marah macrocarpa).*

Photograph 3: View of treated iceplant located on County property (left side) and on Preserve property (right side). While the treated area is bare, no new sign of non-native growth was observed.

Photograph 4: View of decompacted area. Area previously used as a bike jump; therefore, light erosion is present due to its history and recent rain events. There is a high density of native annual species present, such as California sun cups, California poppy (*Eschscholzia californica*), common cryptantha (*Cryptantha intermedia),* and blue dicks (*Dichlostemma capitatum*).

Photograph 5: Elevated view of bare areas previously used as bike jump. The area hosts a mix of native and non-native annual species, which include prickly lettuce (*Lactuca serriola*) and red brome (*Bromus madrietensis* ssp. *rubens*). Additional native species shown is toyon (*Heteromales arbutifolia*), California box thorn (*Lycium californicum*), and black sage (*Salviia mellifera).*

Photograph 6: View of removed and recontoured bike berm. No signs of recent bike disturbance. The sides of the trail are colonizing with native shrubs such as California sagebrush, California buckwheat, and coast prickly pear (*Opuntia littoralis*). Along the path annual native wildflowers such as blue dicks, pigmy weed, California plantain (*Plantago erecta*), and coast paintbrush (*Castilleja affinis*) were noted.

Photograph 7: View of decommissioned trail (left side) and open recontoured trail (right side). The area hosts a high density of mixed non-native grasses and clustered tarweed (*Deinandra fasciculata*). Overall native shrub species such as lemonadeberry, deerweed, California buckwheat, and California sagebrush are naturally recruiting.

Photograph 8: View of recontoured path. Overall, the area is dominated by established native shrubs, with minimal mixed non-native grasses on the sides of the trail. The image depicts several native species including coast paintbrush, blue dicks, California sagebrush, California buckwheat, lemonadeberry, black sage, narrow-leaf bedstraw (*Galium angustifolium*), and purple needlegrass (*Stipa pulchra*).

Photograph 9: View of a previously disturbed area that is naturally restoring with native species such as purple needlegrass, deerweed, California buckwheat, California sagebrush, toyon, blue dicks, coyote bush (*Baccharis pilularis*), and two-color rabbit tobacco (*Pseudognaphalium biolettii*).

Photograph 10: View of area approved for camera placement. Little to no invasive, non-native vegetation was observed, with lemonadeberry, California buckwheat, California sagebrush, deerweed, beavertail cactus, and coastal prickly pear establishing within the previously disturbed area. Overall, the site is displaying positive restoration trajectory.

Photograph 11: View of treated artichoke thistle area from the lower extent. There is little to no artichoke thistle present, but the area is occupied by mixed non-native grasses.

Photograph 12: View of treated artichoke thistle area from the trail. Depicted is mixed non-native grasses and summer mustard (*Hirschfeldia incana*). The surrounding native species includes lemonadeberry, coyote bush, California sagebrush, blue dicks, and blue-eyed grass (*Sisyrinchium bellum*).

Additional Photograph: Depicted is a patch of California poppies within the decommissioned area. The 2022-2023 rain events created prolific blooms within the preserve.

Additional Photograph: Depicted are annual native wildflowers including California sun cups, common cryptantha, and Texas toadflax adjacent to the decommissioned trail.

Additional Photograph: Depicted is a patch of coast paintbrush intertwined with California sagebrush. These patches are observed throughout the OCTA property.

Additional Photograph: Depicted is a bolting lanceleaf liveforever (*Dudleya lanceolata*).

Appendix D
2024 Summary Letter for Maintenance Activities Performed on OCTA Preserves (RECON Number 9779)

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RECON

An Employee-Owned Company

February 14, 2024

Ms. Lesley Hill
Environmental Mitigation Program
Orange County Transportation Authority
550 South Main Street
Orange, CA 92863-1584

Reference: 2023 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 2023 (January–December) on the Orange County Transportation Authority (OCTA) Preserves. During 2023, maintenance occurred at all seven preserves which include the following: 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 2023 have been included in Attachment 1, Figures 1 through 7. Additionally, photographs taken in 2023 of maintenance work at the preserves have been included in Attachment 2, Photographs 1 through 39.

Trabuco Rose Preserve

During 2023, maintenance tasks performed at the Trabuco Rose Preserve included the removal of fallen branches and debris, recontouring of access and fire roads following heavy rain events, control of non-native invasive plant species, vegetation thinning and removal within fuel modification zones, bird nesting surveys and monitoring of Orange County Fire Authority (OCFA) during tree removal work, vegetation removal on fire roads and access roads, installation of new fencing, and the recontouring of fire roads to fix the erosion (Figures 1a and 1b).

In January, a field crew cut up and removed large branches and debris that had fallen on the easement road and fire roads (Photograph 1). All biomass was removed from the roads, left on-site, and not placed within any waterways. Following heavy rain events in January, Hickey Creek, which is located just inside the main gate of the preserve and crosses the easement road (Trabuco Oaks Drive), was impassable. Subcontractor Apex Contracting and Consulting Inc. (Apex) used a mini-excavator to pull back the banks of Hickey Creek to allow for safe ingress and egress of vehicles (Photograph 2). A monitor was on-site when this work was performed, with no work performed within the Ordinary High Water Mark of the creek. At the end of January, when Hickey Creek's flow had decreased, Apex returned to the site with a mini-excavator and a drill attachment to break up a buried culvert that was uncovered in early January 2023 following the rainstorms. The smaller concrete pieces were worked into the soil profile and rebar found within the culvert was removed from the site. Apex also worked on pulling the banks back at more gradual slopes to allow for more clearance of emergency vehicles. While on-site, Apex also repaired erosion rills that had formed on one of the interior fire roads following the last rain events.

In February, field crews spot-sprayed germinating artichoke thistle (*Cynara cardunculus*) within the following numbered/lettered areas: 2, B, 28, 31, C, 32, 33, D, E, F, 37, 36, and 35 (see Figure 1a and Photographs 3 and 4). Additionally in February, the field crew cut and removed branches that had fallen onto the fire roads. The crew kept the fallen biomass on-site but made sure to keep the roads and waterways clear of any debris.

During March, field crews performed fuel modification work adjacent to 20022 Trabuco Oaks Drive (see Figure 1b, Trabuco Rose A). All biomass was placed away from roads and drainages and spread out to reduce the risk of creating a fire hazard.

On April 12, a RECON biologist performed a bird nesting survey at the stand of eucalyptus (*Eucalyptus* spp.) trees, located near the main gate of the preserve, just inside one of the interior gates and near Hickey Spur. No nests were observed, and on April 13 and 14, OCFA crews cut down the eucalyptus trees with OCTA and RECON biological monitors on-site to supervise the work and to minimize impacts to biological resources.

In April, field crews returned to the area adjacent to 20022 Trabuco Oaks Drive (see Figure 1b, Trabuco Rose A and Photograph 5) for more fuel modification work and removed/thinned vegetation within two additional fuel modification zones on the preserve, including 20021 Trabuco Oaks Drive (see Figure 1b, Trabuco Rose A), and 1 Windy Ridge Road (see Figure 1b, Trabuco Rose B and Photograph 6).

The vegetation that was growing on the fire roads and easement road was controlled with line-trimmers and spot-sprayed with a glyphosate-based herbicide during mid-May (Photographs 7 and 8).

In June, a tree fell on the fence line bordering the 20022 Trabuco Oaks Drive property. The fence was repaired, and the branches were removed from the property line, but left on-site.

On July 10, a field crew installed snow fencing around an existing man-made pit that remains on-site from past mining operations. The fence was installed to deter wildlife (i.e. deer) from falling into the pit and not being able to climb out. Also in July, field crews removed vegetation via line-trimmers and herbicide on the fire roads located within the Rose Canyon side of the preserve. They also spent time cutting back overhanging vegetation from trees and shrubs to allow for the safe passage of emergency vehicles (Photograph 9). At the end of the month, a field crew removed fuel (fallen branches) near the 20021 Trabuco Oaks Drive property (Photograph 10).

From August 22 to 23, a field crew worked on redistributing oak tree branches that had fallen on the easement road (Trabuco Oaks Drive), the crew returned on September 14 to cut up and remove additional oak tree branches that had fallen on a fire road (Photograph 11). Branches were removed from the roads and distributed throughout the preserve.

In September, subcontractor Apex recontoured/regraded the interior fire roads on the Trabuco Canyon side of the preserve (Photograph 12). Work was needed following the rainy season to repair the erosion that had created ruts and rills. Apex fixed the erosion and installed additional water bars to prevent water from eroding the roads in future years.

At the beginning of October, a field crew returned to the preserve to cut back more overhanging vegetation that was growing along the fire roads to allow for safe passage by emergency vehicles, and sprayed herbicide on the fire roads in select areas (Photograph 13). The crew also performed more fuel modification work near 20022 Trabuco Oaks Drive, removing fallen branches and vegetative debris. Once the fuel modification work was completed, non-native invasive species (NNIS) control was performed in the following numbered/lettered areas: 22, 23, I, 13, 14, 15, 2, B, 24, 25, 26, H, and J (see Figure 1a). The primary species controlled included: artichoke thistle, tamarisk (*Tamarix ramosissima*), fennel (*Foeniculum vulgare*), mustard (*Brassica nigra*), eucalyptus, and tree tobacco (*Nicotiana glauca*).

On November 1, Apex returned to the Trabuco Rose Preserve, and worked on repairing the eroded sections of the fire roads located on the Rose Canyon side of the property (Photograph 14). Most of the repair work was focused in the area near the old mining operation.

The final maintenance tasks performed at the Trabuco Rose Preserve during 2023 were performed during the week of December 5. Work included the control of NNIS found on the rose canyon side of the preserve, including castor bean (*Ricinus communis*), tamarisk, artichoke thistle, and mustard (see area labeled as G, Figure 1a and Photographs 15, 16, and 17). Following NNIS control, the field crew installed additional fencing (three strands of barbless wire) and maintained damaged fencing in the area that borders the former Joplin Ranch (Photograph 18). A summary of all maintenance work completed at the Trabuco Rose Preserve during 2023 is included in Table 1.

Table 1
Summary of Work Completed at Trabuco Rose Preserve
(January–December 2023)

Date	Task
January 12, 2023	Removed fallen oak tree branches from the fire road that is adjacent to easement road. All biomass was left on-site but outside of roads and waterways.
January 18, 2023	Following a heavy rain event, subcontractor Apex used a mini-excavator to pull back the banks of Hickey Creek (where it crosses the easement road) to allow vehicles to safely pass. No work was performed in the Ordinary High Water Mark.
January 26, 2023	Apex returned to the banks of Hickey Creek with a mini-excavator and drill attachment to break up a buried culvert. Erosion rills that had formed on one of the interior fire roads were also repaired on this date.
February 6 – 8, 2023	Spot-sprayed germinating artichoke thistle plants with a glyphosate-based herbicide in the following numbered/lettered areas: 2, B, 28, 31, C, 32, 33, D, E, F, 37, 36, and 35 (see Figure 1a).
February 9, 2023	Cut up and removed fallen oak tree branches from the easement road. All biomass was left on-site but outside of roads and waterways.
March 8, 2023	Performed vegetation thinning and removal within fuel modification zone adjacent to 20022 Trabuco Oaks Drive (see Figure 1b, Trabuco Rose A).
April 12, 2023	Performed a bird nesting survey at the eucalyptus trees located near the main gate of the preserve, in preparation for tree removal work.
April 13 and 14, 2023	Monitored OCFA during cutting down of eucalyptus trees.
April 17, 20, and 21, 2023	Performed vegetation thinning and removal within fuel modification zones adjacent to 20021 and 20022 Trabuco Oaks Drive (see Figure 1b, Trabuco Rose A); the fuel modification zone adjacent to 1 Windy Ridge Road (see Figure 1b, Trabuco Rose B); and line-trimmed vegetation along easement road.
May 22 – 23, 2023	Sprayed vegetation on the fire roads with a glyphosate-based herbicide and line-trimmed vegetation growing along easement road.
June 19, 2023	Removed a tree that had fallen on the fence line bordering the 20022 Trabuco Oaks Drive property. Branches were left on-site but removed from the property line and waterways. The damaged fence was also repaired on this date.
July 10, 2023	Installed snow fencing around an existing man-made pit (located in Rose Canyon near old mining operation) to deter wildlife from falling into the pit.
July 10 – 12, 2023	Line-trimmed and then applied a glyphosate-based herbicide to vegetation growing on interior fire roads on Rose Canyon side of preserve.
July 28, 2023	Removed fallen branches and other vegetative debris near the 20021 Trabuco Oaks Drive property. Biomass was left on-site but outside of roads and waterways.
August 22 and 23, 2023	Removed fallen oak tree branches from easement road. All biomass was left on-site but outside of roads and waterways.
September 14, 2023	Cut up and removed fallen oak tree branches from the fire road. All biomass was left on-site but outside of roads and waterways.
September 19, 2023	Apex recontoured/regraded the fire roads within Trabuco Canyon area of the preserve to fix erosion rills that had formed following the last rain season.

Table 1 Summary of Work Completed at Trabuco Rose Preserve (January–December 2023)	
Date	Task
October 2 – 5, 2023	Cut back overhanging vegetation along fire roads and sprayed roads with herbicide in select areas, line-trimmed vegetation growing within the fuel modification zone adjacent to 20022 Trabuco Oaks Drive and controlled non-native invasive species in the following numbered/lettered areas: 22, 23, I, 13, 14, 15, 17, 2, B, 24, 25, 26, H, and J (see Figure 1a).
November 1, 2023	Apex recontoured/regraded the fire roads within the Rose Canyon area of the preserve (near the old mining operation) to fix erosion rills that had formed following the last rain season.
December 5 – 8, 2023	Performed NNIS control on Rose Canyon side of preserve including the control of castor bean, tamarisk, artichoke thistle, and mustards (see area labeled G, Figure 1a). Additionally, more fencing was installed and some sections were repaired along the property line that borders the former Joplin Ranch property (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 done was consistent with the OCTA Resource Management Plans.	

Wren's View Preserve

Maintenance tasks were performed throughout the year at Wren's View Preserve (see Table 2 and Figure 2). In January, a RECON field crew began removing old, barbed wire that was no longer serving a purpose from along the fire road located in the northwestern section of the preserve (Photograph 19).

In mid-June, a field crew line-trimmed herbaceous and non-native vegetation growing adjacent to Trabuco Canyon Road for fire prevention (Photograph 20), and line-trimmed the vegetation that was growing on the fire roads (Photograph 21), taking special care to avoid sensitive plant species, including intermediate mariposa lily (*Calochortus weedii* var. *intermedius*). In early July, field crews returned to the preserve to spot-spray any remaining, living vegetation growing on the fire roads.

On August 10, a field crew removed a very large oak branch that had fallen onto one of the fire roads. The branch was cut up, with the debris left on-site, but removed from the roads, and not placed within waterways.

In early September, a field crew continued removing the barbed wire on-site that was no longer serving a purpose (Photograph 22). Also in September, Apex recontoured/regraded the fire roads, avoiding the areas where intermediate mariposa lily populations had historically been located. Apex repaired the roads and installed water bars to prevent water from eroding the roads in future years (Photograph 23).

During October, a field crew removed old, chain link fencing from along a northern fire road of the preserve, that was no longer serving a function (see Figure 2). All removed barbed wire and chain link fencing was taken off the preserve and disposed of at an off-site facility. 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 Preserve (January–December 2023)	
Date	Task
January 23, 2023	Began removing barbed wire from along the fire road in the northwestern section of the preserve.
June 13 and 14, 2023	Line-trimmed vegetation growing adjacent to Trabuco Canyon Road and along the lower portions of the fire roads.
June 19 and 20, 2023	Line-trimmed vegetation growing on the fire roads.
July 3 and 6, 2023	Applied a glyphosate-based herbicide to vegetation on the fire roads.
August 10, 2023	Removed large fallen oak tree branches from the fire road, cut up debris, and left debris on-site (off of roads and outside waterways).
September 5 – 7, 2023	Removed barbed wire that is no longer serving a function from the preserve.
September 21 and 22, 2023	Apex recontoured/regraded the fire roads to fix erosion rills and installed water bars to prevent water from eroding the roads in future years.
October 2 and 3, 2023	Removed old, chain link fencing that is longer serving a function from northern section of preserve, along the fire road.
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 conduct nesting bird surveys, and proceed accordingly based on findings of the surveys. All work done was consistent with the OCTA Resource Management Plans.	

Live Oak Creek Preserve

Maintenance tasks performed at the Live Oak Creek Preserve in 2023 began in March with the line-trimming of vegetation growing on the fire roads (Figure 3a).

In April, a field crew performed fuel modification work by thinning vegetation and/or removing vegetation around two properties: 19071 Live Oak Canyon Road (see Figure 3a, Live Oak Creek A and Photograph 24) and 19041 Lambrose Canyon Road (see Figure 3a, Live Oak Creek B).

In late July, it was reported that a large oak branch had fallen on Live Oak Canyon Road from the preserve. It was then discovered that an active beehive was located within the fallen tree branch. OCTA retained a professional beehive removal company to safely remove the beehive and relocate off-site. Once the bees were all gone, a field crew removed the branch from along the shoulder of Live Oak Canyon Road (Photograph 25) and placed the woody debris back on to the preserve, and also fixed the damaged fence (Photograph 26).

NNIS control targeting artichoke thistle and tree tobacco, was performed from August 7 through 9 (see Figure 3b for locations). The artichoke thistle plants were first cut down to ground level and the biomass was mulched and left on-site (Photograph 27). All remaining and living plant parts were then sprayed with a glyphosate-based herbicide. Also, during August, vegetation that was growing on the fire roads was line-trimmed (Photograph 28).

On November 1, Apex recontoured/regraded the fire roads at the preserve, following the rainy season which had caused damage to the roads (Photograph 29). Apex was able to fix all erosion ruts and rills on the fire roads. Also in November, a field crew used line-trimmers to control vegetation growing on the fire roads. Additionally, the field crew performed NNIS control on Spanish broom (*Spartium junceum*) resprouts. The Spanish broom aboveground biomass was cut to ground level (Photograph 30) and the remaining stumps were then treated with herbicide (Photograph 31). All cut Spanish broom biomass was removed from the site and disposed of at an off-site facility. The last maintenance task performed at the Live Oak Creek Preserve in 2023 was at the end of November when a field crew reinstalled a damaged post and added a new OCTA preserve sign to the post. They also removed a camera

stand that had been installed by others, without permission. 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 2023)

Date	Task
March 7 and 8, 2023	Line-trimmed vegetation growing on the fire roads.
April 18 and 19, 2023	Thinned and removed vegetation within the fuel modification zones adjacent to 19071 Live Oak Canyon Road (see Figure 3a, Live Oak Creek A) and 19041 Lambrose Canyon Road (see Figure 3a, Live Oak Creek B).
July 25, 2023	Removal of a beehive from a fallen oak tree branch located on Live Oak Canyon Road.
August 7 – 9, 2023	Cut down artichoke thistle and tree tobacco, and then applied herbicide to remaining living parts with a glyphosate-based herbicide. Vegetation growing on the fire roads was also line-trimmed.
August 11, 2023	Removed a fallen oak tree branch from along the shoulder of Live Oak Canyon Road (that had previously had the beehive in it) and put vegetative debris back on to preserve property, and fixed damaged fence.
November 1, 2023	Apex recontoured/regraded the fire roads to fix erosion ruts and rills that had formed following the last rainy season.
November 20 and 21, 2023	Reinstalled fallen post and reattached OCTA preserve sign to post, removed a camera stand that was installed by others, line-trimmed vegetation growing on fire roads, and controlled Spanish broom (see Figure 3b) by cutting and removing aboveground biomass and painting stumps with herbicide. All Spanish broom biomass was removed from the site.
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 conduct nesting bird surveys, and proceed accordingly based on findings of surveys. All work done was consistent with the OCTA Resource Management Plans.	

Bobcat Ridge Preserve

Maintenance tasks were performed at Bobcat Ridge Preserve (Figure 4) in January and August 2023. In January, barbed wire that was no longer serving a function was removed from the southern boundary of the preserve (Photograph 32). In August, a field crew line-trimmed non-native grasses and other herbaceous non-native vegetation along the southern boundary of the preserve (Photograph 33) and along a walking path on the ridge line that biologists use to monitor the preserve. Also in August, a field crew attached two new preserve signs to existing posts, as the previous signs had gone missing. 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 2023)

Date	Task
January 23, 2023	Removed barbed wire, that was no longer serving a function, from the southern boundary of the preserve.
August 22, 2023	Line-trimmed non-native grasses and other herbaceous non-native vegetation and reattached two new preserve signs to existing posts.
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 conduct nesting bird surveys and proceed accordingly based on findings of surveys. All work done was consistent with the OCTA Resource Management Plans.	

Silverado Chaparral Preserve

During 2023, maintenance tasks were performed in July and September at the Silverado Chaparral Preserve (Figure 5). In late July, a field crew line-trimmed and then applied a glyphosate-based herbicide to the vegetation that was growing on the fire road (Photograph 34). In mid-September, a field crew line-trimmed non-native herbaceous vegetation along an approved trail within the preserve (see Figure 5). The area line-trimmed was the width of a narrow walking trail, that biologists use to monitor the preserve. Approximately 300 feet of the upper portion of the trail and 300 feet of the lower portion of the trail (the access points) were not line-trimmed, with the intention of deterring unauthorized access. 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 2023)

Date	Task
July 24 – 26, 2023	Line-trimmed and then applied a glyphosate-based herbicide to vegetation growing on the fire road.
September 18 and 19, 2023	Line-trimmed a narrow walking path on an approved trail.
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 conduct nesting bird surveys and proceed accordingly based on findings of surveys. All work done was consistent with the OCTA Resource Management Plans.	

Pacific Horizon Preserve

Maintenance tasks during 2023 at the Pacific Horizon Preserve (Figure 6) began in late February/early March with NNIS control within the burn area of the preserve, including the control of artichoke thistle, mustards (*Brassica* spp., *Hirschfeldia* spp.), fennel, tree tobacco, and pampas grass (*Cortaderia selloana*) (see Figure 6).

In June, a field visit was performed by GLA (monitoring contractor for OCTA Preserves), RECON, and Native West Nursery to scout out multi-stemmed dudleya (*Dudleya multicaulis*) populations and their current stages of growth for future seed collection efforts and restoration work. Several plants were located on this date and mapped for future seed collection.

On July 13, a field crew spot-sprayed germinating artichoke thistle plants (Photograph 35) with a glyphosate-based herbicide within the artichoke thistle control area (shown as a yellow-colored outline on Figure 6). Also in July, a field crew returned to the burn area to treat all germinating NNIS with herbicide (Photograph 36). The field crew also repaired damaged fencing and posts that had been installed across a decommissioned trail and at the entrance to a Southern California Edison (SCE) unauthorized trail to deter mountain bikers from accessing the burn area (see Figure 6 for SCE unauthorized trail, unauthorized bike trail, and fencing/signage locations). In late July, a field crew dethatched the artichoke thistle control area by cutting down all non-native vegetation and raking the biomass into piles to allow for more native plant germination and recruitment (Photograph 37).

The last maintenance task performed at the Pacific Horizon Preserve during 2023 was in mid-August when Native West Nursery personnel collected multi-stemmed dudleya seed, native soil, along with seed from other native species for future restoration work in various areas within the preserve. 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 2023)	
Date	Task
February 27 and March 7, 2023	Spot-sprayed NNIS within the burn area with a glyphosate-based herbicide (see Figure 6).
June 6, 2023	Field survey was performed to detect multi-stemmed dudleya populations and current stages of growth for future seed collection efforts.
July 13, 2023	Spot-sprayed germinating NNIS (including artichoke thistle, mustards, and fennel) with a glyphosate-based herbicide in artichoke thistle control area.
July 24, 2023	Spot-sprayed NNIS within the burn area with a glyphosate-based herbicide, including artichoke thistle, mustards, fennel, tree tobacco, and pampas grass.
July 25 – 27, 2023	Dethatched artichoke thistle control area by cutting down all non-native vegetation and raking into piles.
July 27, 2023	Repaired damaged fencing, signage, and posts at entrance to the SCE unauthorized trail, and along the unauthorized bike trail that leads down to the burn area (see Figure 6).
August 18, 2023	Native West Nursery (under contract with RECON) collected multi-stemmed dudleya seed, native soil, and other native seed species for future restoration work.
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 conducted a nesting bird survey and proceeded accordingly based on findings of surveys. All work done was consistent with the OCTA Resource Management Plans.	

Eagle Ridge Preserve

Maintenance work performed at the Eagle Ridge Preserve in 2023 began in August with the line trimming/removal of vegetation growing on the fire road, located on the top of the preserve (Figure 7). Vegetation control on the fire road began in mid-August and was completed in mid-September.

From October 16 – 19, 2023, a field crew line-trimmed a walking path through Soquel Canyon, removing primarily non-native herbaceous species (Photograph 38). The walking path was created to allow for easier passage for the biological monitors and maintenance crews working in the Soquel Canyon area of the preserve. Also, during this maintenance visit, NNIS control was performed, focusing on tree tobacco within Soquel Canyon (see Figure 7). The tree tobacco aboveground biomass was cut to ground level with the remaining stumps treated with herbicide (Photograph 39). All vegetative biomass was left on-site.

The last maintenance visit performed at the Eagle Ridge Preserve during 2023 was on December 15 when a field crew assisted GLA with the installation of two posts and wildlife cameras in two separate areas of the preserve, one along the fire road and one within Soquel Canyon near the stream. Dates of the work maintenance performed at the Eagle Ridge Preserve are included below in Table 7.

Table 7 Summary of Work Completed at Eagle Ridge Preserve (January–December 2023)	
Date	Task
August 14 – 16, 2023	Line-trimmed vegetation growing on the fire road, located on the top of the preserve (see Figure 7).
August 30 – September 1, 2023	Line-trimmed and then applied a glyphosate-based herbicide to vegetation growing on the fire road.
September 13 and 14, 2023	Applied a glyphosate-based herbicide to remaining living vegetation on the fire road.
October 16 – 19, 2023	Line-trimmed non-native vegetation to create a walking path/foot trail within Soquel Canyon (see Figure 7). NNIS control was also performed within Soquel Canyon.
December 15, 2023	Assisted Jeff Ahrens (GLA Wildlife Biologist) with installing posts and wildlife cameras in two separate locations.
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 conducted a nesting bird survey and proceeded accordingly based on findings of surveys. All work done was 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

RCA:jg

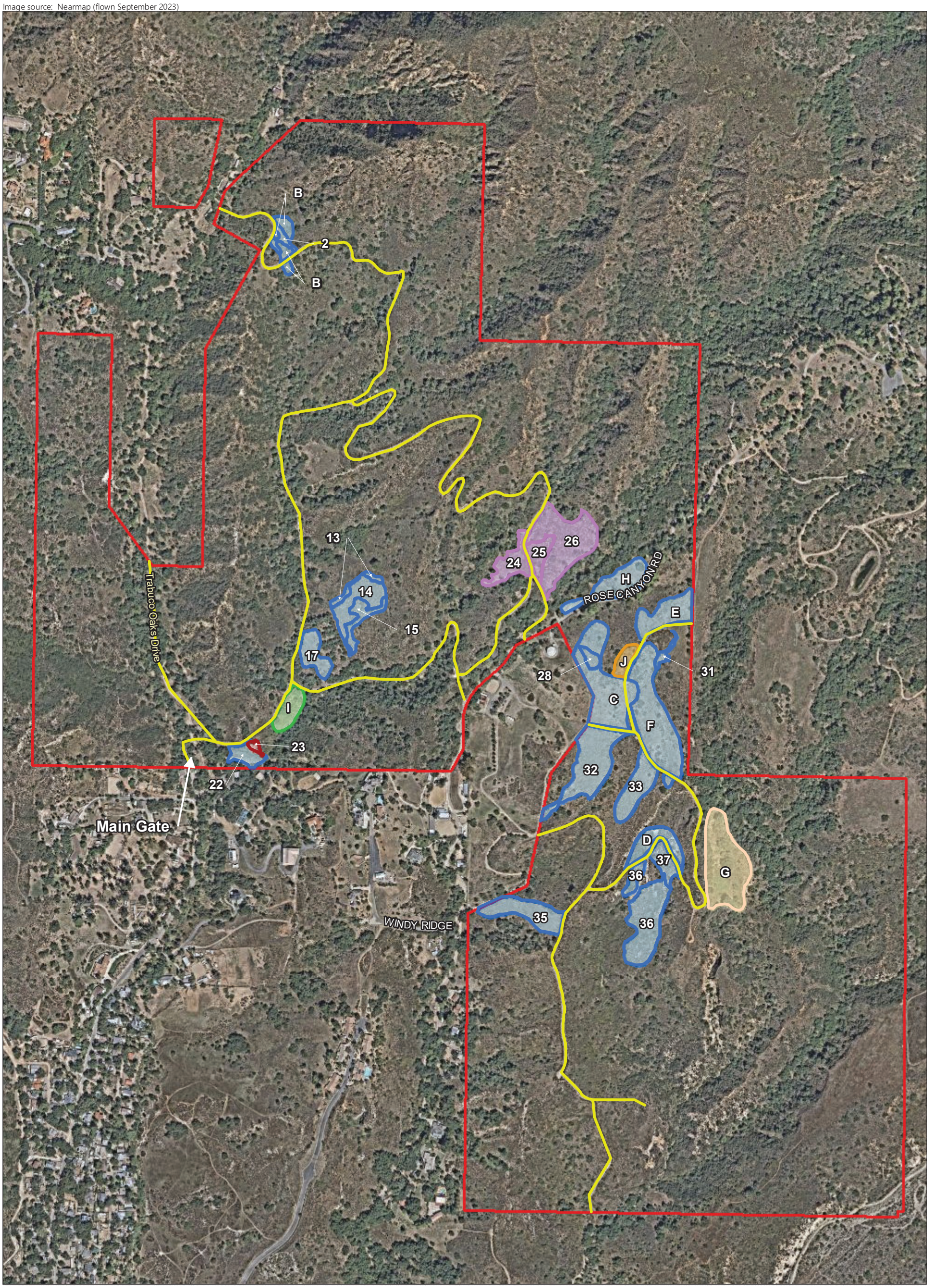
Attachments

ATTACHMENTS

ATTACHMENT 1

Figures 1 through 7

Image source: Nearmap (flown September 2023)



Trabuco Rose

Fire Road / Access Road

Note: Polygons with numbers were mapped by GLA and presented in the ISMP (2017). Polygons with letters mapped by RECON.

NNIS Control Areas (treated in 2023)

- Fennel
- Tamarisk
- Artichoke Thistle and Mustard
- Castor Bean, Artichoke Thistle, Tamarisk, and Mustard
- Eucalyptus and Tree Tobacco
- Artichoke Thistle

0 Feet 500

RECON

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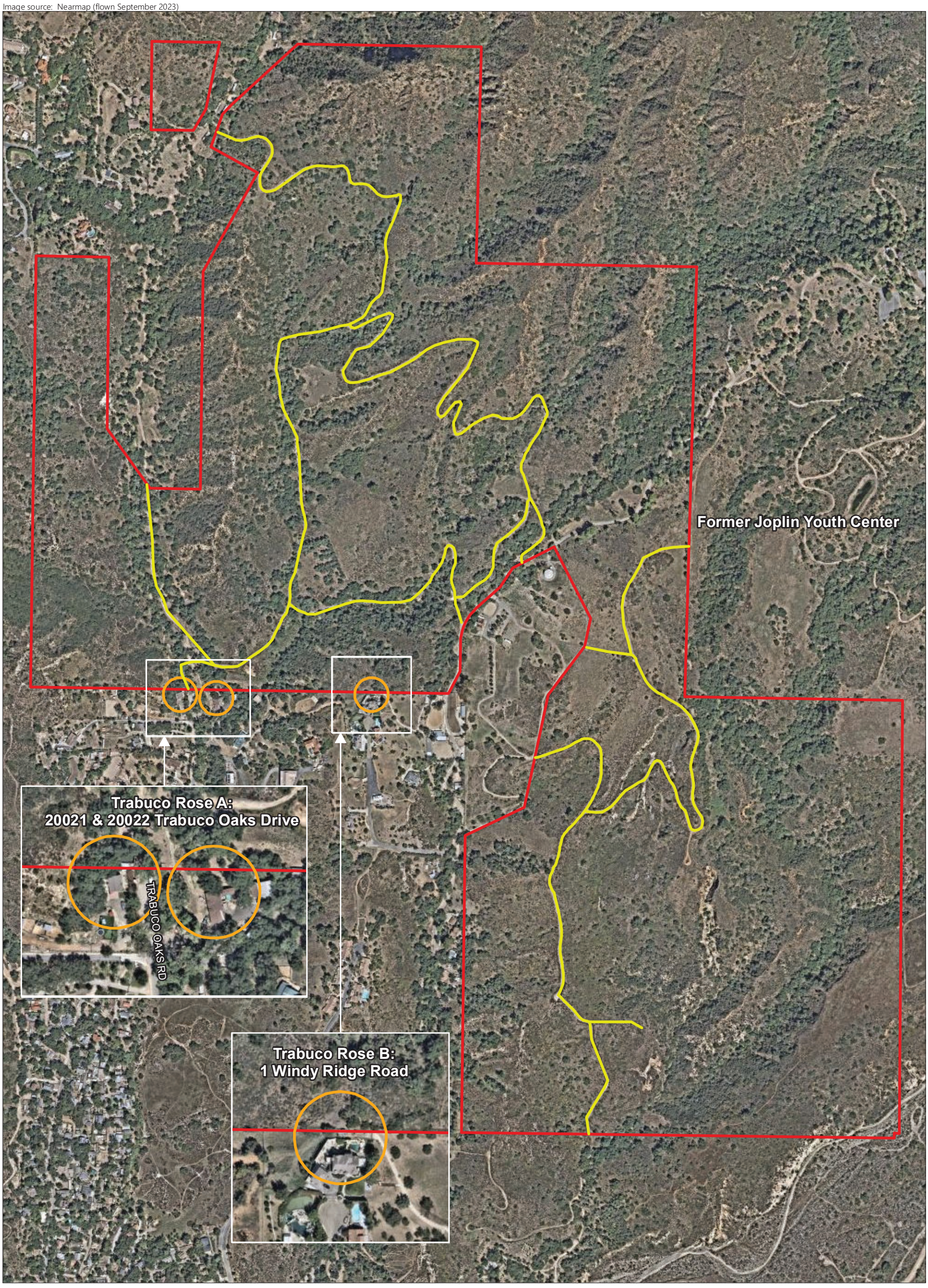
FIGURE 1a
Trabuco Rose Preserve

Image source: Nearmap (flown September 2023)



Trabuco Rose

Fire Road / Access Road

Fuel Modification Zones

100' Buffer Around Habitable Structures

Trabuco Rose A

Trabuco Rose B

RECON

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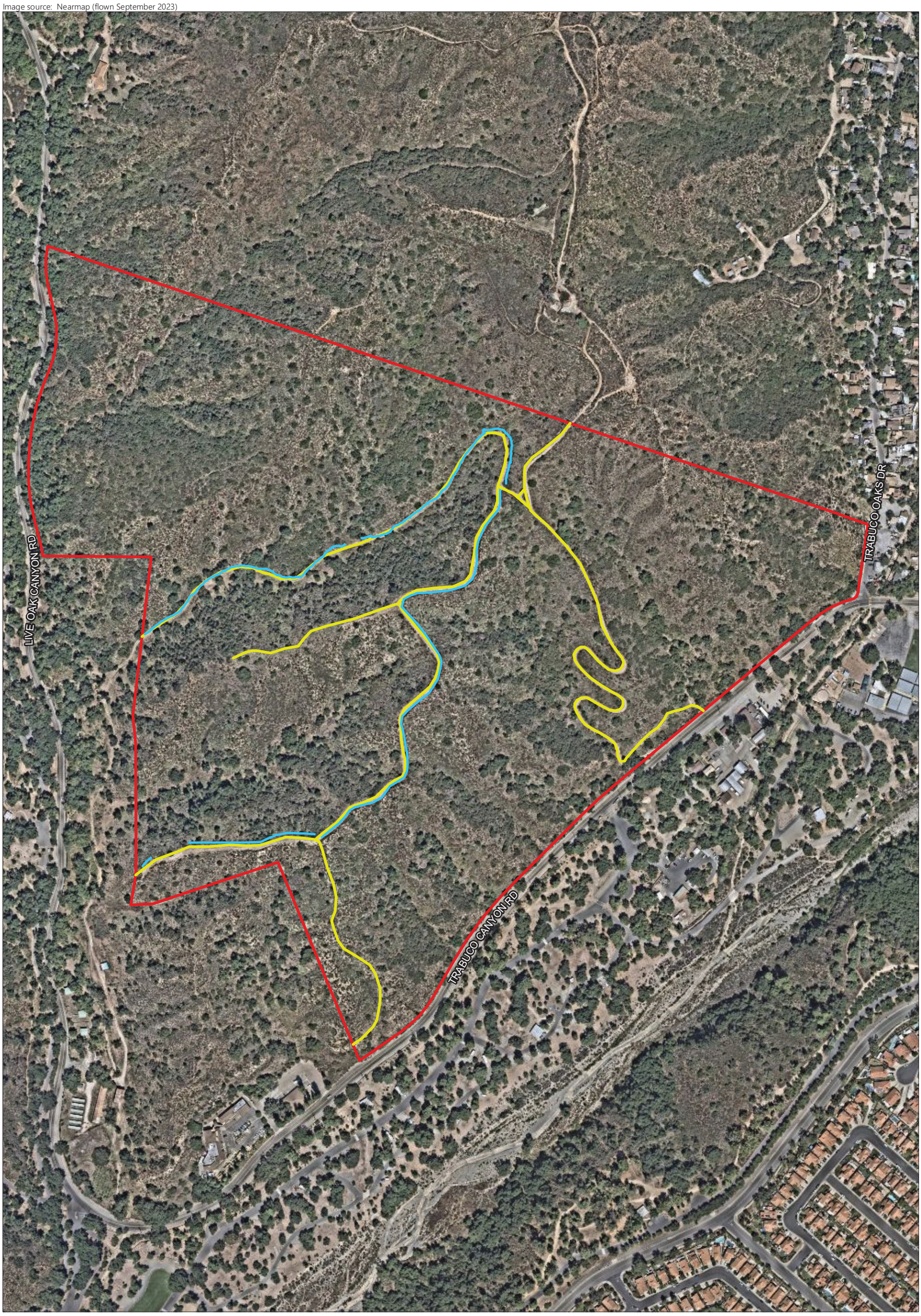
FIGURE 1b

Trabuco Rose Preserve

Image source: Nearmap (flown September 2023)



RECON

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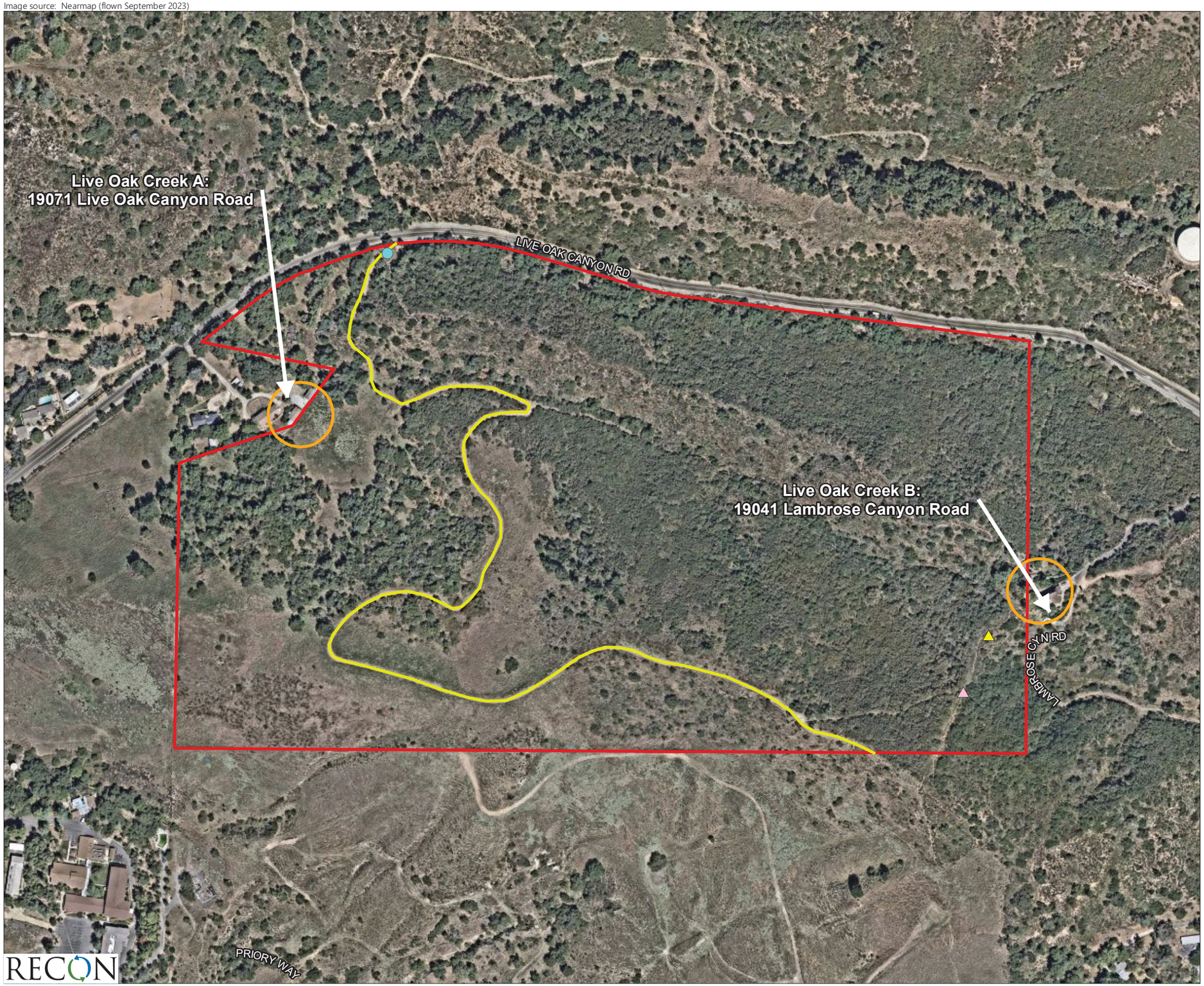
FIGURE 2
Wren's View Preserve

Image source: Nearmap (flown September 2023)



Live Oak Creek Preserve Boundary
Fire Road / Access Road
Gate
OCTA Sign and Post
(reinstalled November 2023)
Remote Camera Stand
(removed November 2023)

Fuel Modification Zones

100' Buffer Around Habitable Structures
Live Oak Creek A
Live Oak Creek B

0 Feet 300

RECON

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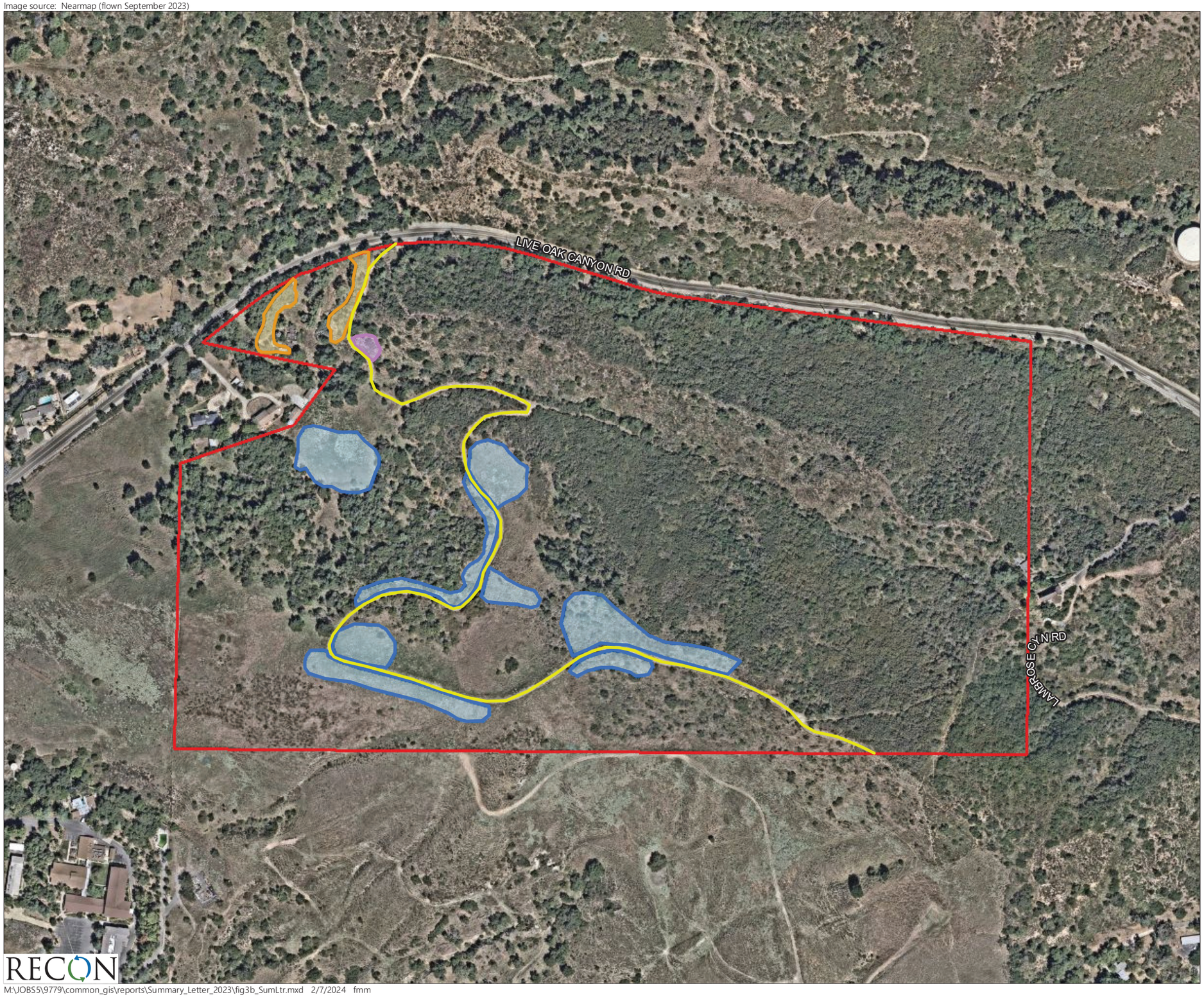
FIGURE 3a
Live Oak Creek Preserve

Image source: Nearmap (flown September 2023)



Live Oak Creek Preserve Boundary

Fire Road / Access Road

NNIS Control Areas (treated in 2023)

Tree Tobacco

Artichoke Thistle

Spanish Broom

0 Feet 300

RECON

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FIGURE 3b
Live Oak Creek Preserve

Image source: Nearmap (flown September 2023)

Bobcat Ridge Preserve Boundary

Preserve Signs

0 Feet 200

RECON

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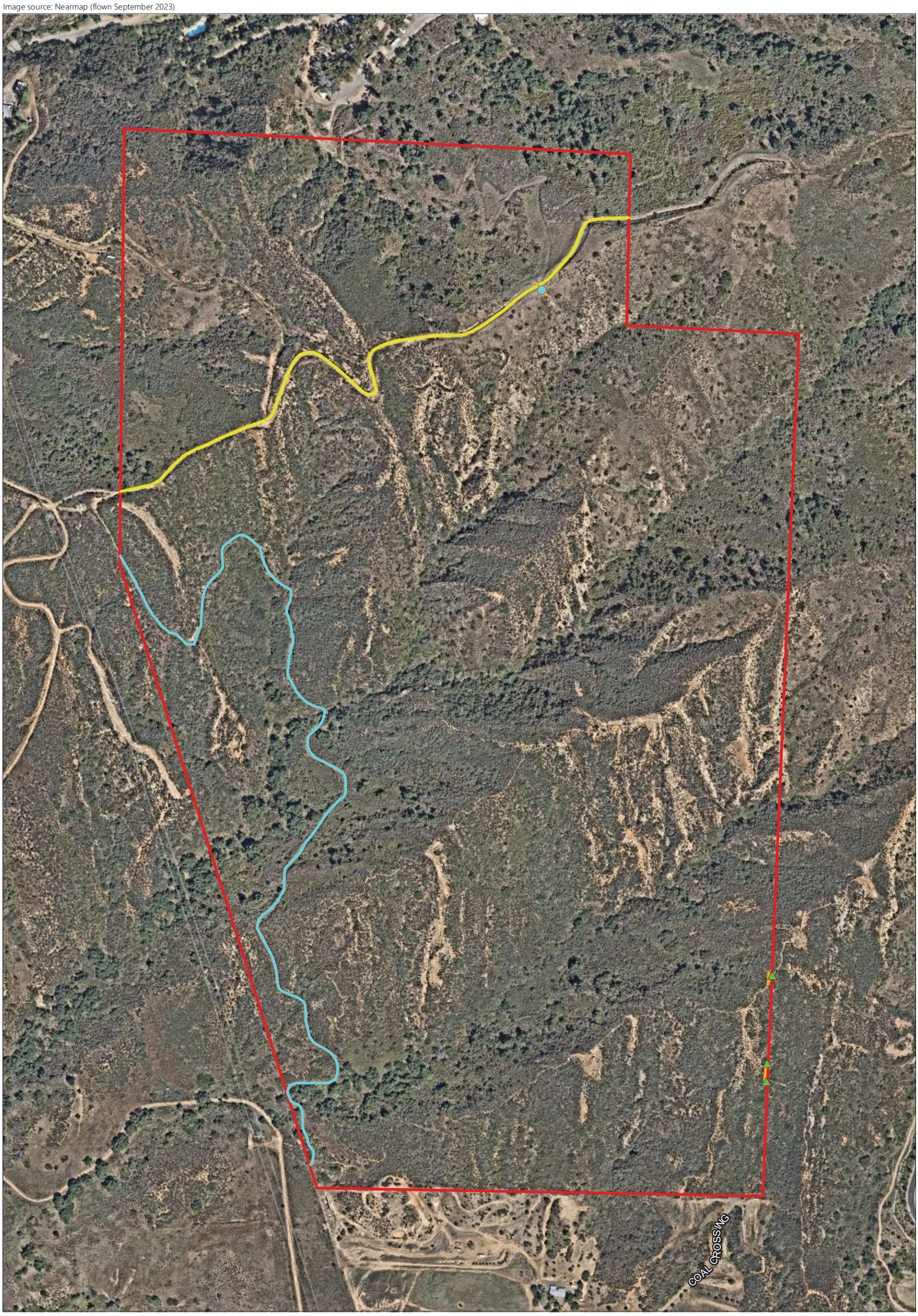
FIGURE 4

Bobcat Ridge Preserve

Image source: Nearmap (flown September 2023)



Silverado Chaparral Preserve Boundary
Fire Road
Foot Trail (Line trimmed in September 2023)
Fence
Gate
Sign

0 Feet 350

RECON

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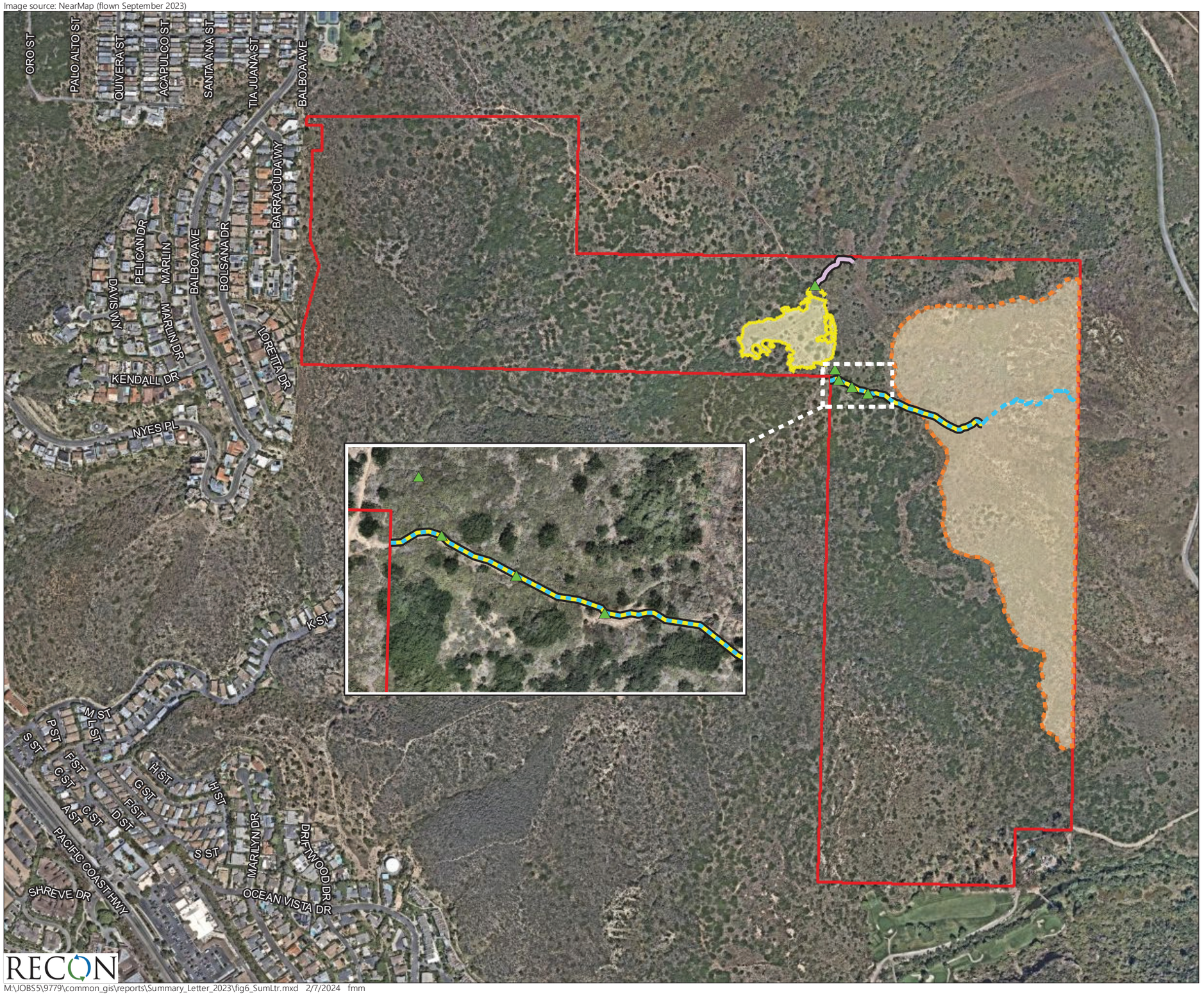
FIGURE 5
Silverado Chaparral Preserve

Image source: NearMap (flown September 2023)



- Pacific Horizon Preserve Boundary
- SCE Unauthorized Trail
- Decommissioned Trail (Installed May 2022, repairs made through July 2023)
- Unauthorized Bike Trail (Decommissioned from 2022 – 2023)
- Fencing/Signage (Installed June 2022, repairs made through July 2023)

NNIS Control Areas (treated in 2023)

- Artichoke Thistle, Mustard, and Fennel
- Burn Area (Artichoke Thistle, Mustard, Fennel, Tree Tobacco, and Pampas Grass)

0 Feet 500

RECON

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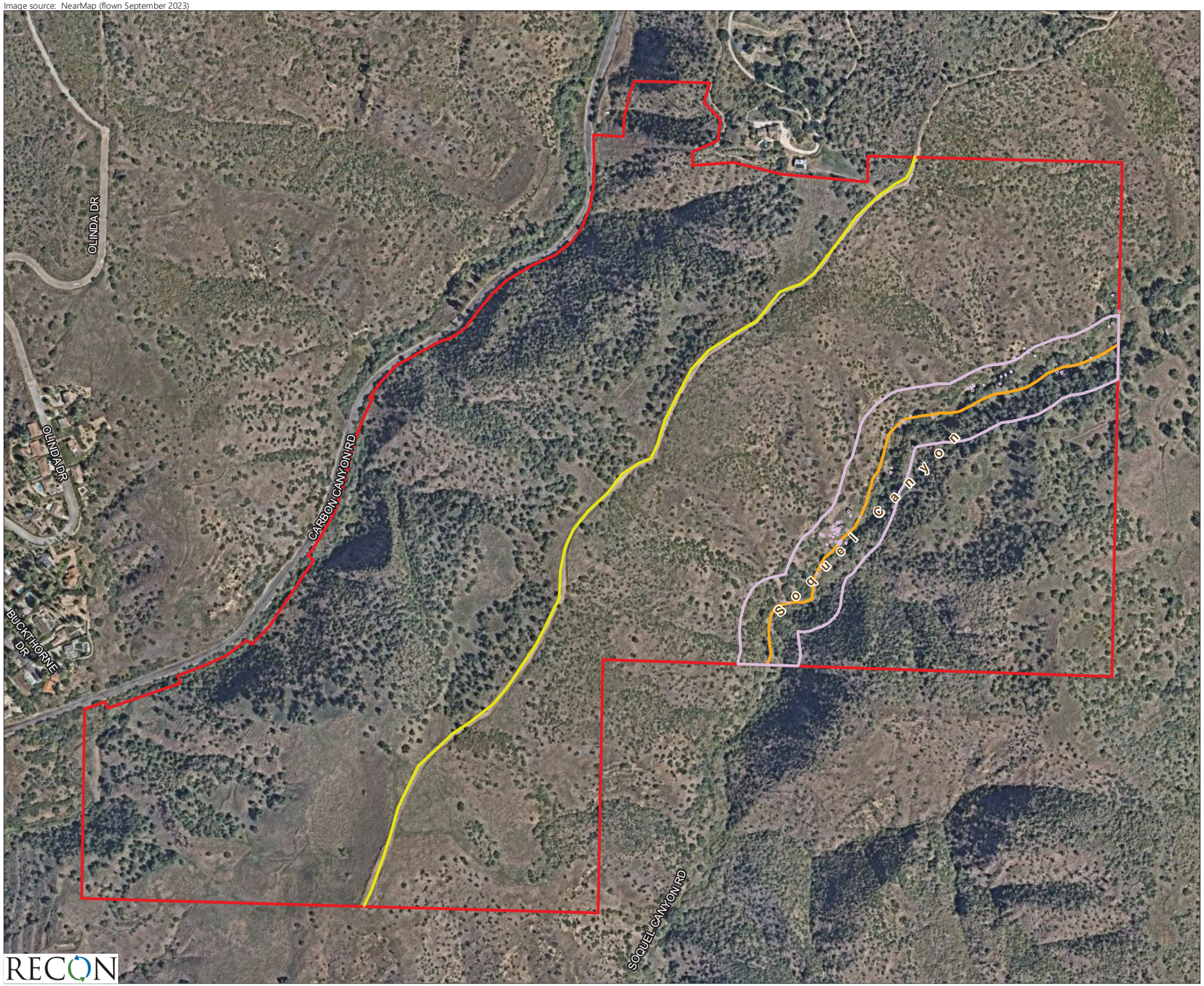
FIGURE 6
Pacific Horizon Preserve

Image source: NearMap (flown September 2023)



Eagle Ridge Preserve Boundary

Fire Road

Foot Trail (Line-trimmed in August 2023)

NNIS Control Area (treated in 2023)

Tree Tobacco

0 Feet 500

RECON

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FIGURE 7
Eagle Ridge Preserve

ATTACHMENT 2

Photographs 1 through 39

PHOTOGRAPH 1
Removal of Fallen Oak Tree Branches from Easement Road,
Trabuco Rose Preserve, January 2023

PHOTOGRAPH 2
Apex Repairing Easement Road Where It Crosses Hickey Creek,
Trabuco Rose Preserve, January 2023

PHOTOGRAPH 3
Spot-Spraying of Artichoke Thistle Plants with Herbicide,
Trabuco Rose Preserve, February 2023

PHOTOGRAPH 4
Artichoke Thistle Plants, Following Herbicide Application,
Trabuco Rose Preserve, February 2023

PHOTOGRAPH 5
Fuel Modification Work Near 20022 Trabuco Oaks Drive,
Trabuco Rose Preserve, April 2023

PHOTOGRAPH 6
Fuel Modification Work Near 1 Windy Ridge Road,
Trabuco Rose Preserve, April 2023

PHOTOGRAPH 7
Vegetation Control on Fire Roads/Access Roads,
Trabuco Rose Preserve, May 2023

PHOTOGRAPH 8
Vegetation Control Along Easement Road, Trabuco Rose Preserve, May 2023

PHOTOGRAPH 9
Removal of Overhanging Branches Adjacent to Fire Roads, Trabuco Rose Preserve, July 2023

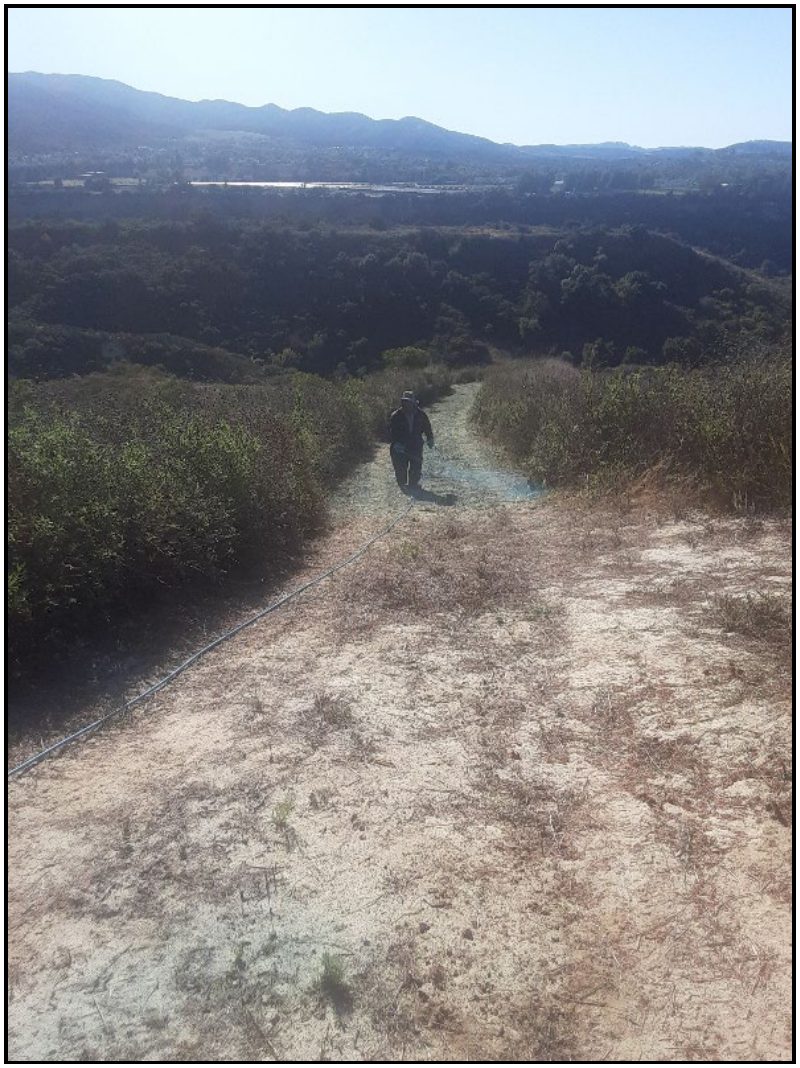
PHOTOGRAPH 10
Fuel Modification Work Near 20021 Trabuco Oaks Drive, Trabuco Rose Preserve, July 2023

PHOTOGRAPH 11

Cut Up and Removed Fallen Oak Tree Branch from Fire Road, Trabuco Rose Preserve, September 2023

PHOTOGRAPH 12

Apex Recontouring Fire Roads to Fix Erosion Following Rainy Season, Trabuco Rose Preserve, September 2023



PHOTOGRAPH 13
Herbicide Application on Vegetation Growing on Fire Roads, Trabuco Rose Preserve, October 2023

PHOTOGRAPH 14
Recontouring of Fire Road in Rose Canyon to Repair Erosion Ruts and Rills,
Trabuco Rose Preserve, November 2023

PHOTOGRAPH 15
NNIS Control (Castor Bean in Background) in Rose Canyon,
Trabuco Rose Preserve, December 2023

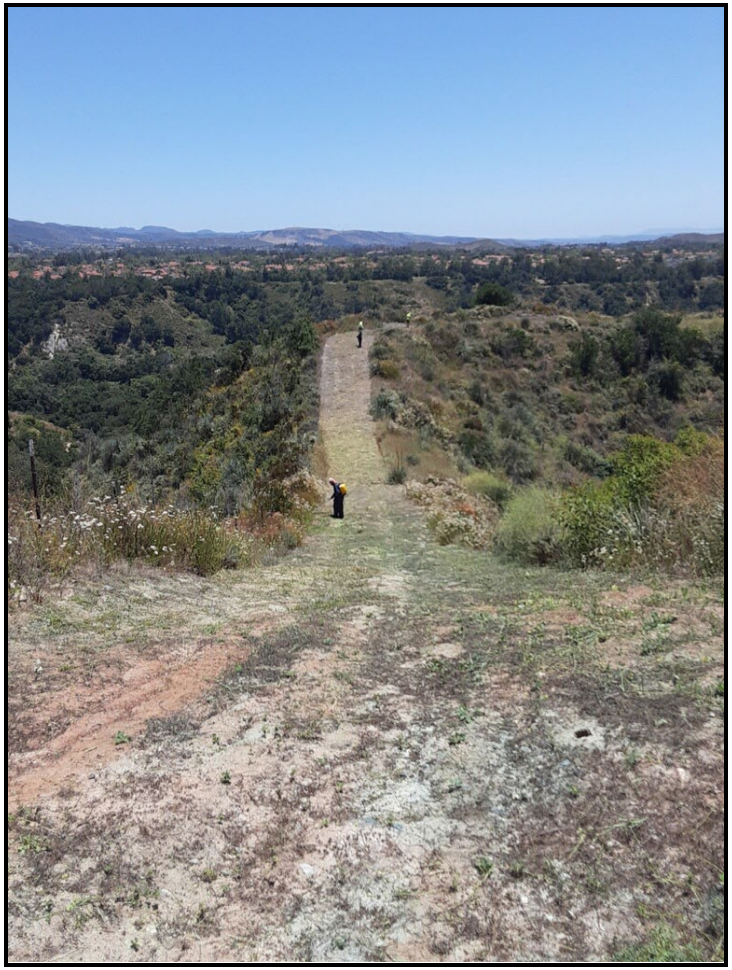
PHOTOGRAPH 16
Cutting of Tamarisk in Rose Canyon, Trabuco Rose Preserve, December 2023

PHOTOGRAPH 17
Stumps of Tamarisk Following Herbicide Application in Rose Canyon, Trabuco Rose Preserve, December 2023

PHOTOGRAPH 18
Installation and Maintenance of Fence Along Preserve Boundary Near Former Joplin Ranch, Trabuco Rose Preserve, December 2023

PHOTOGRAPH 19
Removal of Barbed Wire Fencing, Wren's View Preserve, January 2023

PHOTOGRAPH 20
Line Trimming of Vegetation Along Trabuco Canyon Road,
Wren's View Preserve, June 2023



PHOTOGRAPH 21
Vegetation Control on Fire Roads,
Wren's View Preserve, June 2023

PHOTOGRAPH 22
Continuation of Removal of Barbed Wire Fencing,
Wren's View Preserve, September 2023

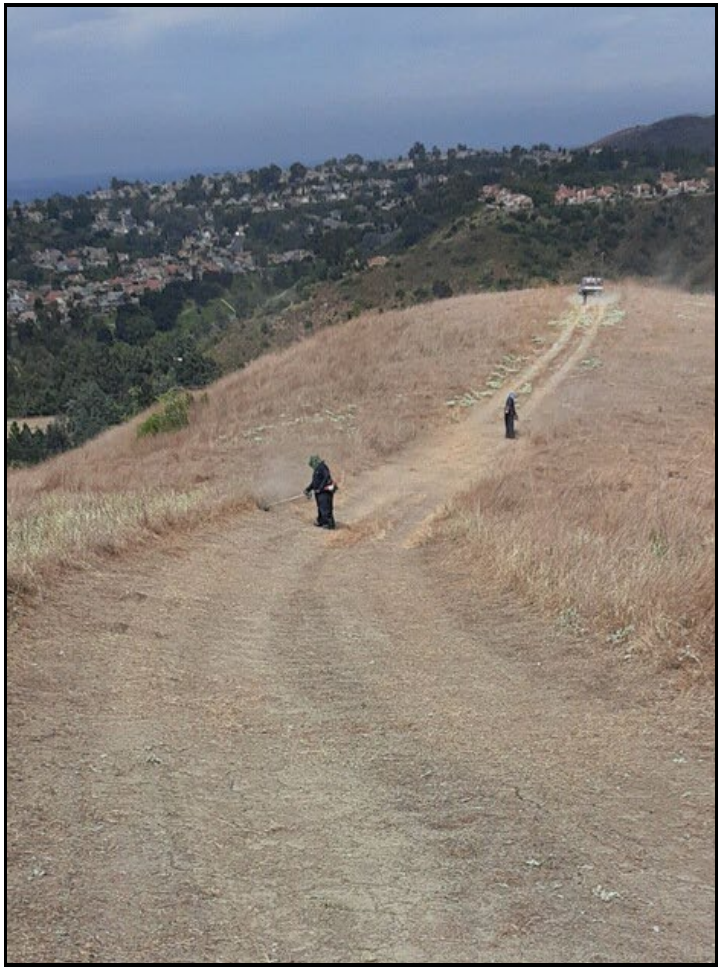
PHOTOGRAPH 23
Apex Recontouring Fire Roads to Fix Erosion Following Rainy Season,
Wren's View Preserve, September 2023

PHOTOGRAPH 24
Fuel Modification Work Near 19071 Live Oak Canyon Road,
Live Oak Creek Preserve, April 2023

PHOTOGRAPH 25
Removal of Fallen Oak Tree Branches Along Live Oak Canyon Road,
Live Oak Creek Preserve, August 2023

PHOTOGRAPH 26
Repairs Made to Damaged Fence Line, Live Oak Creek Preserve, August 2023

PHOTOGRAPH 27
Cut-down Artichoke Thistle Plants and Spraying of Living Biomass with Herbicide, Live Oak Creek Preserve, August 2023



PHOTOGRAPH 28
Line Trimming of Vegetation on Fire Roads, Live Oak Creek Preserve, August 2023

PHOTOGRAPH 29
Recontouring of Fire Road to Repair Erosion Rills,
Live Oak Creek Preserve, November 2023

PHOTOGRAPH 30
Control of Spanish Broom by Cutting of Aboveground Biomass, Live Oak Creek Preserve, November 2023

PHOTOGRAPH 31
Control of Spanish Broom Following the Cutting of Biomass, Herbicide Applied to Stumps, Live Oak Creek Preserve, November 2023

PHOTOGRAPH 32
Removal of Barbed Wire Fencing, Bobcat Ridge Preserve, January 2023

PHOTOGRAPH 33
Line Trimming of Non-Native Herbaceous Species Along Southern Boundary, Bobcat Ridge Preserve, August 2023

PHOTOGRAPH 34
Vegetation Control on Fire Road,
Silverado Chaparral Preserve, July 2023

PHOTOGRAPH 35
Non-Native Invasive Species Control in Artichoke Thistle Control Area, Pacific Horizon Preserve, July 2023

PHOTOGRAPH 36
Non-Native Invasive Species Control in Burn Area,
Pacific Horizon Preserve, July 2023

PHOTOGRAPH 37
Artichoke Thistle Control Area Following Dethatch Work,
Pacific Horizon Preserve, July 2023

PHOTOGRAPH 38
Line Trimming a Walking Path through Soquel Canyon, Eagle Ridge Preserve, October 2023

PHOTOGRAPH 39
Tree Tobacco Cut and Stump Painted with Herbicide (Shown in Foreground), and Walking Trail Line Trimmed, Eagle Ridge Preserve, October 2023