FINAL

COUNTY OF SAN DIEGO
MULTIPLE SPECIES CONSERVATION PROGRAM

SOUTH COUNTY SUBAREA PLAN
ANNUAL REPORT
YEAR 26

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ACRONYMS

BLM – Bureau of Land Management
BMO – Biological Mitigation Ordinance
Board – Board of Supervisors
Caltrans – California Department of Transportation
CAP – Climate Action Plan
CDFW – California Department of Fish and Wildlife
CEQA – California Environmental Quality Act
CNRA – California Natural Resources Agency
COI – Certificate of Inclusion
County – County of San Diego
County Preserves – County-owned or managed parks or preserves with preserve lands
DBH – Diameter at Breast Height
DGS – County of San Diego Department of General Services
DIY – Do-it-Yourself
DPR – County of San Diego Department of Parks and Recreation
DPW – County of San Diego Department of Public Works
EHC – Environmental Habitat Conservancy
EOTAS - East Otay Trail Alignment Study
HabiTrak – Habitat Tracking Reporting, State of California instrument and database
HCP – Habitat Conservation Plan
HOA – Homeowners Association
IA – Implementing Agreement
IMG – Inspect and Manage
JPA – Joint Powers Authority
LUEG – Land Use & Environmental Group
MD – Management Directive
MHPA – Multiple Habitat Planning Area
MLP – Mitigation Land Policy
MSCP – Sub-Regional Multiple Species Conservation Program
MSCP Preserve – Multiple Species Conservation Program Subarea Plan Preserve
NCCP Act– Natural Community Conservation Planning Act
Otay Ranch POM – Otay Ranch Preserve Owner/Manager
PAMA – Pre-Approved Mitigation Area
PDS – County of San Diego Planning & Development Services
PIT – Passive Integrated Transponder
RDF – Regional Decarbonization Framework
RDM – Residual Dry Matter
REPI - U.S. Navy Readiness and Environmental Protection Integration
RMP – Resource Management Plan
RMWD – Ramona Municipal Water District
ROE – Right-Of-Entry Permit
RWQCB – Regional Water Quality Control Board
SANDAG – San Diego Association of Governments
SDGE – San Diego Gas & Electric
SDHS – San Diego Humane Society
SDMMP – San Diego Management and Monitoring Program
SDMS – San Diego Mycological Society

SDRC – San Diego River Conservancy
SDRPF – San Diego River Park Foundation
STEAM – Science, Technology, Engineering, Arts, and Math
STIC – Stream Temperature, Intermittency, and Conductivity
Subarea Plan – South County Subarea Plan
SWRCB – State Water Resources Control Board
TMP – Targeted Monitoring Plan (formerly known as Comprehensive Monitoring Plan)
TransNet EMP – Environmental Mitigation Program for regional transportation projects administered by SANDAG
USACE – United States Army Corps of Engineers
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
WCB – Wildlife Conservation Board
Wildlife Agencies – used collectively for the USFWS and CDFW

EXECUTIVE SUMMARY

MULTIPLE SPECIES CONSERVATION PROGRAM SUBAREA PLAN

80,519 acres preserved

82% of MSCP Preserve goal achieved

13,383 acres County-owned, managed or funded

30 County Parks and Preserves

Reporting Year Highlights

411 acre MSCP Preserve increase

47 MSCP covered species monitored or documented in County Preserves

12 Grant-funded management projects

5 MSCP Preserve management partnership projects

16 MSCP Preserve monitoring and research partnerships

This is the 26th annual report for the County of San Diego (County) Multiple Species Conservation Program's (MSCP) South County Subarea Plan (Subarea Plan) adopted by the County Board of Supervisors on October 22, 1997 for a term of 50 years. This report was prepared in conformance with Section 14.2 of the Implementing Agreement (IA) executed between the County, California Department of Fish and Wildlife (CDFW), and the United States Fish and Wildlife Service [USFWS] (collectively referred to as Wildlife Agencies) on March 17, 1998. The 50-year permit requires the preservation, protection, and creation of connections between biologically valuable habitats while encouraging development in less sensitive areas. This report accounts for MSCP Subarea Plan implementation from January 1 through December 31, 2023 and summarizes key accomplishments for the permit term. Topics include the following:

- Preserve assembly
- Covered projects
- Habitat gain and loss
- Species and habitat conservation
- Preserve management
- Preserve monitoring and research
- Financial summary, and
- Program administration.

The MSCP Subarea Plan serves to conserve the region's native habitats, plants, and animals for the enjoyment of future generations; protect the vast diversity of native plants and animals (including threatened and endangered species); and ensure opportunities for passive recreation. This unique regional conservation program, one of only 17 completed in California and with one of the largest covered species lists, works across jurisdictional boundaries, protects watersheds and water quality, and accommodates future growth by simplifying building regulations. It also ensures compliance with many federal and state regulations including the Federal Endangered Species Act and associated Habitat Conservation Plan (HCP) permits, State Endangered Species Act, and State Natural Communities Conservation Planning Act (NCCP) and associated permits.

The County's partnership with the Wildlife Agencies through the MSCP ensures that the unincorporated area's rich biodiversity is conserved while allowing development to occur through the County's permitting process. The MSCP provides the basis for the County to receive an incidental take permit from the Wildlife Agencies. An incidental take permit is a permit that can be issued under the Federal and State Endangered Species Acts for lawful projects that might result in impacts to endangered or threatened species or the species' habitat. The incidental take permit the County receives through the MSCP can be extended to future development projects that comply with the MSCP so that those projects do not have to secure their own separate incidental take permits from the Wildlife Agencies. Through this permitting mechanism, the MSCP helps streamline permitting, provide regional conservation of natural habitats, and facilitate economic growth in the unincorporated area. The Annual Report highlights the monitoring efforts conducted for sensitive plant and animal species within the

South County Subarea Plan boundaries that ensures long-term viability of habitat and species. In addition, the Annual Report highlights land stewardship activities for preserve lands, such as installing fencing and signage, patrolling preserve lands, managing public access areas, removing invasive species, and planting trees and vegetation.

Preserve Assembly

The goal of the South County Subarea Plan is to assemble a 98,379-acre South County Subarea Plan Preserve (MSCP Preserve). The MSCP Preserve is assembled through preserve lands acquired prior to 1998 (baseline conserved lands), lands acquired since 1998 by the County and its federal, state, and local non-profit partners (conserved lands), and lands added to the MSCP Preserve through mitigation from private development projects (private mitigation)[1]. Preservation is prioritized within areas identified as having habitat with high biological value or within a habitat linkage[2]. These are the Pre-Approved Mitigation Areas (PAMA) and the hardline preserve areas. Hardline preserve areas are lands that will be included in the MSCP Preserve as a result of negotiations between the County, Wildlife Agencies, and landowners. The Department of Parks and Recreation (DPR) implements the MSCP through land acquisition, management, and monitoring of preserve lands to ensure preservation of sensitive species and habitat.

The MSCP Preserve acreage is equal to the baseline acres plus acres gained within PAMA and hardline preserve areas from private mitigation and public and non-profit conservation partner acquisitions. In general, acquisitions or private mitigation outside PAMA or hardline preserve areas are considered complementary conservation and do not count towards the MSCP Preserve. However, the Wildlife Agencies have approved complementary County acquisitions outside the 1997 PAMA to be counted in the MSCP Preserve as they contribute to the biological goals of the MSCP. These acres are reported below as habitat gains.

The County has successfully implemented the South County Subarea Plan for 26 years, assembling 80,519 acres of the MSCP Preserve, which represents 82% of the 98,739-acre conservation goal. County, federal, state, and local non-profit partner acquisitions, as well as private development mitigation all contribute to the assemblage of the MSCP Preserve. County-owned, managed, or funded conserved lands in the MSCP Subarea Plan Area totals 13,383 acres[3] (17%), while federal and state conserved lands contribute approximately 61% of the assembled MSCP Preserve. Local non-profit acquisitions have contributed approximately 4%, and private mitigation has contributed approximately 18% to the conserved 80,108 acres.

The County owns or manages 30 properties within the MSCP Preserve. These lands are managed for the benefit of the MSCP covered species and habitats. During the 2023 reporting period, January 1, 2023 to December 31, 2023, 411 acres were added to the MSCP Preserve (conserved within the PAMA and hardline preserve areas) through federal acquisitions and private mitigation. The USFWS acquired 26 acres located within PAMA and added to the MSCP Preserve. Private land dedication required as a County condition of private development added 385 acres inside the hardline preserve area and 31 acres outside the hardline preserve area.

[1] All acquisitions are from willing sellers.

[2] Habitat linkages are corridors that allow plants and animals to move between biological core resource areas (areas of high quality habitat suitable to sustaining MSCP covered species).

[3] All acreage reported for MSCP Preserve Assemblage utilizes GIS acreages, as opposed to Assessor's acreages, as the HabiTrak database only uses GIS acreages. GIS and Assessor's acreages can vary depending on terrain and mapping factors.

During the course of the 50-year MSCP permit, the County and MSCP partners understood that once the MSCP Preserve had reached a large size, the focus on the MSCP Preserve would shift from assemblage of preserve lands to ensuring that the MSCP Preserve is successfully functioning and meeting its goals and objectives. As the MSCP Preserve is now 80,519 acres (82% of the preservation goal), DPR is working with its local, state and federal partners to assess the overall MSCP preserve goals and objectives. This includes analyzing, from a regional perspective, habitat and species monitoring data across the 80,519 acres. This effort has recently been initiated and will be ongoing through the term of the permit.

Covered Projects

The County permitted 62 development projects in the reporting period in the MSCP Subarea Plan Area, all of which were residential projects. No agricultural exemptions were issued during the reporting period.

Habitat Gains and Losses

The South County Subarea Plan states that the rate of development and associated habitat impacts must not exceed the rate of conservation of preserve lands within the South County Subarea Plan's boundaries. This goal is to ensure that the two actions are occurring at approximately the same pace or are within "step" or "rough step" of one another. Rough step is the relationship between the conservation of preserve lands and impacts to habitat due to development. The two actions should be balanced, with impacts to habitat due to development not exceeding the conservation of preserve lands.

In the Annual Report, lands added to the Preserve are described as a "gain," and development within the South County Subarea Plan boundaries are described as a "loss." There was a total of 442 acres of habitat gains and 432 acres of habitat losses in the reporting period. Preservation within areas identified as having habitat with high biological value, PAMA and the hardline preserve areas, was 411 acres. There was an additional 31 acres of complementary conservation outside these areas. Habitat losses total 32 acres inside PAMA and hardline preserve areas and 400 acres outside these areas.

Cumulatively, the MSCP Preserve is in compliance with the rough step analysis, with habitat gains exceeding habitat losses. Rough step compares total gains and losses within and outside of PAMA and hardline preserve areas categorized by total acres and habitat types. The purpose of rough step is to ensure that the conservation of high-quality habitat and development in lower-quality habitat occurs in roughly the same amounts at the same time. Habitat located within the PAMA, or hardline preserve areas, is considered high-quality, while low-quality habitat is outside these areas. Cumulatively, the majority of habitat gains occurred within PAMA and hardline preserve areas, while the majority of habitat losses occurred outside of PAMA and hardline preserve areas. This indicates that the overall conservation goals are being met to create a functional MSCP Preserve as high-quality habitat within PAMA and hardline preserve areas are being conserved and lower-quality habitat is being developed.

Species and Habitat Conservation

A total of 30 County-owned or managed parks and preserves (County Preserves) contribute to the MSCP Subarea Plan landscape, habitat, and species objectives[4]. They are part of the MSCP Preserve and are managed for the benefit of the MSCP covered species and habitats. MSCP Subarea Plan objectives ensure the persistence of habitat linkages for wildlife movement, critical biological resource areas for MSCP plant and animal habitat, and MSCP plant and animal occurrences in these areas. County Preserves span 11 of 16 biological core resource areas and protect habitat linkages. They contribute to conservation goals of each of the target segments (Lake Hodges, South County, North Metro-Lakeside-Jamul, and South Metro-Lakeside-Jamul). They conserve all 18 target habitats with chaparral and coastal sage scrub being the most widespread in County Preserves. Of the 85 species covered by the MSCP, 53 MSCP covered species are expected within the MSCP Subarea Plan boundaries as originally anticipated in the MSCP Subarea Plan. A total of 47 MSCP covered species are documented in County Preserves located within the MSCP Subarea Plan Area.

The County's MSCP-related acquisitions focus on buying lands that contain high-quality habitat with the intent of conserving species in perpetuity. Since 1998, the County has purchased properties that support 19 MSCP covered species that were not previously found on other County Preserves. These acquisitions provide long-term protection for the species and ensure that they will not be impacted by other land uses such as development. Together with the federal, state, local partners, and private mitigation conservation, the County and its partners contribute to preservation of the unique biological resources present in San Diego County.

Preserve Management

The County Preserves' stewardship and adaptive management ensures biological value and function of natural resources are maintained or enhanced. The County provides land stewardship of County Preserves through habitat restoration, invasive plant and animal control, replacement tree planting and inventory, access control, fire management, and environmental education. Land stewardship activities are guided by preserve-specific Resource Management Plans (RMPs), annual work plans, and monitoring activities. RMPs provide guidance for the continued management and protection of biological and cultural resources. The County has prepared 16 RMPs for County Preserves in the MSCP Subarea Plan Area and is updating existing RMPs for County Preserves that have new additions and preparing new RMPs for newer acquisitions. Management and maintenance of County Preserves are conducted by staff and volunteers that implement stewardship activities such as installing fencing and signage, patrolling preserve lands, managing public access areas, removing invasive species, and planting trees and native vegetation. Adaptive management is using preserve monitoring to inform stewardship. For example, if monitoring finds invasive, non-native plants increasing in extent and negatively impacting MSCP covered species and habitats, stewardship actions would control the invasive, non-native plants.

Ranger reports on County Preserves documented habitat restoration, access control, fire management, environmental education, and invasive, non-native plant and animal control actions completed to benefit MSCP covered species and habitats.

[4] The Annual Report provides detail on a subset of the County Preserves (the open space lands owned or managed by the County within the MSCP Subarea Plan Area).

Grant-funded projects across seven County Preserves benefited MSCP covered species, such as coastal California gnatcatcher, least Bell's vireo, coastal cactus wren[5], arroyo toad, light-footed Ridgway's rail, and southwestern pond turtle and included habitat restoration, access control, invasive, non-native plant control, invasive non-native animal control, and trail alignment. Grant funding totaled over $22 million and was provided by 12 grants, County General Funds, and one local agency matching. Grant funds were from three WCB Proposition 68 grants, one State Coastal Conservancy Proposition 68 grant, two CDFW Proposition 1 grants, two TransNet Environmental Mitigation Program (EMP) grants, one U.S Navy Readiness and Environmental Protection Integration Program grant, two State Water Resources Control Board (SWRCB) Border Water Quality Infrastructure grants, and one California Natural Resources Agency (CNRA) Proposition 84 River Parkways grant.

Preserve management partners implemented five management projects across three County Preserves to benefit wetland, riparian, stream, and coastal sage scrub habitats. Partners were the City of San Diego (Stormwater Department), Nature Collective, Caltrans, Alter Terra (Earth Island Institute), and the San Dieguito River Valley Conservancy.

Private mitigation lands management was documented for 14 properties and included habitat restoration, access control, fire management, environmental education, invasive, non-native plant control, and invasive non-native wildlife control actions completed to benefit MSCP covered species and habitats.

Environmental education informs the public about the county's natural and cultural resources. In 2023, the County was excited to offer many popular educational programs and approximately 23,000 guests participated in over 730 programs. County Preserve visitors were able to attend in-person ranger-led hikes and programs, Hawk Talk and Hawktober programs in 18 County parks, I Love a Clean San Diego watershed cleanup event in one County park, Discovery Program events, and other popular environmental education programs and activities. County Park staff participated in the San Diego Festival of Science & Engineering by providing a nature discovery table featuring several live animals, and presenting on stage for live broadcast to all San Diego Unified schools. Also, DPR partnered with Nature Unplugged to host ranger-led hikes during their 2023 Hike-a-Thon, which helped raise funds for their scholarship and subsidy program for organizations and communities in need. County Park Rangers also participated in the DIY Homeschool Sessions program that helps prepare do-it-yourself (DIY) materials for homeschool families to conduct their own programs in parks. The County also continued the environmental education programs of the TRACK Trails Program, Story Trails for Green Friday, Nature Explorers Program, and partnering with the San Diego Astronomy Association on several in-person events. In addition, DPR maintains social media accounts to inform San Diego County residents and visitors of what is occurring on DPR's preserve lands. Over 150 DPR field staff and volunteers implement education and interpretation programs to connect people to nature, thereby allowing residents and visitors to understand the importance of conserving natural resources and helping to inspire the next generation of environmental stewards.

Preserve Monitoring and Research

The MSCP monitoring program on County Preserves includes various monitoring efforts, including implementation of the Targeted Monitoring Plan (TMP), baseline inventory surveys,

[5] The MSCP Subarea Plan lists the San Diego cactus wren as an MSCP covered species. At the time of adoption of the MSCP Subarea Plan, the San Diego cactus wren was identified as a sub-species of the coastal cactus wren. This is no longer the case. The San Diego cactus wren is now commonly known as the coastal cactus wren and is an MSCP covered species.

research partnerships, and special-status species monitoring. DPR manages and monitors vegetation communities within County preserve lands that provide habitat for special-status species and MSCP covered species[6]. In addition, DPR manages and monitors MSCP covered species at the species level. MSCP covered species monitoring focuses on species for which population-level monitoring is considered critical for effective management. DPR conducts biological monitoring of sensitive plants, animals, and habitats by conducting baseline surveys and implementation of the TMP. The TMP includes focused goals and objectives as well as detailed monitoring protocols for specific plants and animal species and habitat types. The TMP is implemented annually and provides important data to measure success of meeting the MSCP species specific goals and objectives. Baseline surveys are used to document plant and animal species and habitats (including sensitive species and habitats), identify and address habitat stressors/threats, and map invasive plants and animals. Baseline surveys are conducted on new properties after acquisition.

In addition to baseline surveys, additional special-status species monitoring is conducted at certain County Preserves to further protect the sensitive resources that are specific to certain County Preserves. For example, raptor foraging monitoring is conducted annually at Ramona Grasslands Preserve. Raptor foraging monitoring ensures that raptors (including hawks and eagles) are successfully thriving within the Ramona Grasslands Preserve as there are numerous raptor nests in and around the preserve. Successful raptor use of the preserve is a result of properly managed habitat that supports prey populations.

DPR conducts species and habitat monitoring on County Preserves to ensure that not only are the species and habitats are conserved properly, but that appropriate adaptive management strategies are identified and implemented as quickly as possible when needed. As the monitoring data is collected each year, species trends are more deeply understood and assist DPR with successful conservation and sustaining of the species. TMP survey results not only assist in determining when adaptive management strategies need to be implemented for species threatened from identified stressors, such as invasive, non-native plant species, but also identifies species that are stable or increasing in numbers.

These efforts have monitored or documented 47 MSCP covered species in County Preserves and an additional five MSCP covered species on private mitigation lands during previous reporting years, as well as approximately 185 special-status species living within County preserve lands, demonstrating that conservation efforts have been effective in protecting regionally important species and ensuring a thriving ecosystem.

TMP monitoring was performed for MSCP covered species across 12 County Preserves during the reporting period, including eight preserves in the South County MSCP Subarea. During the reporting period TMP monitoring efforts targeted 11 MSCP covered species (and one habitat) and documented an additional 16 MSCP covered species during these monitoring efforts. Raptor surveys and annual residual dry matter (RDM) monitoring were conducted within Ramona Grasslands Preserve during the reporting period.

[6] Special-status species are species that have been assessed and their population status has been found to be in decline or non-sustainable without conservation measures being implemented. These species are listed or are candidates to be listed under the Federal Endangered Species Act, California Endangered Species Act, State Species of Special Concern or are found on other watch lists. Not all special-status species are MSCP covered species. MSCP covered species include species that, if present, indicate that the habitat and other species living in that same habitat should be doing well or were species that could have been impacted by County or private development activities.

Preserve monitoring and research partnership projects totaled 16 in the reporting year across 30 County Preserves in the South County MSCP Subarea. These projects inform stewardship and adaptive management in County Preserves and the MSCP Preserve. Monitoring and research topics included Harbison's dun skipper, arroyo toad, southwestern pond turtle, coastal California gnatcatcher, least Bell's vireo, burrowing owl, coastal cactus wren, and tricolored blackbird, as well as other species inside and outside of the MSCP Subarea Plan Area. Research occurred on County Preserves through the County's right-of-entry (ROE) permit process. ROEs were requested by federal and state agencies, universities, the San Diego Zoo, the San Diego Natural History Museum, environmental organizations, a wildlife rehabilitation organization, and a community science organization.

Private mitigation lands monitoring detected 21 MSCP covered species across 12 properties, including three MSCP covered species not observed on County Preserves.

Financial Summary

The County Board of Supervisors appropriates funds for land acquisition and management and monitoring of preserve lands throughout the adopted MSCP Subarea Plan Area, draft North County MSCP Plan Area, and proposed East County MSCP Plan Area.

Land acquisition appropriations fund land purchases, land stewardship, and baseline inventory surveys. Since 1998, the County has invested over $51 million which leveraged over $35 million of other funding to acquire 8,484 acres in the MSCP Subarea Plan, including 556 acres owned by County partners. The County has acquired (through acquisitions, management agreements, or leveraged funding) a total of 13,383 acres of preserve lands in the MSCP Subarea Plan (baseline preserve lands plus lands conserved since 1998).

Management and monitoring appropriations fund staff positions, contracting resources, and capital expenses dedicated solely to MSCP monitoring and stewardship activities. MSCP monitoring staff oversee MSCP covered species and habitat monitoring. County Rangers provide operational "boots on the ground" to manage County Preserves. MSCP monitoring activities included biological monitoring in County Preserves via the County's TMP, monitoring of special-status species not included in the TMP, and monitoring of sensitive species during and after park improvement projects. MSCP stewardship activities include habitat restoration, access control, fire management, environmental education, and invasive, non-native plant and animal control. Over $22 million of grant funding augments annual appropriations for projects spanning Fiscal Year 2016-2017 through Fiscal Year 2022-2023. DPR maintains its commitment to its parks and preserve lands conservation program by continuing to allocate funding for the management and monitoring of County Preserves.

Management and monitoring on private mitigation lands is funded through mechanisms established during the RMP approval process (i.e., special districts, endowments, or annual fees). The health of these endowments and use of these funds are reported in the RMP annual reports.

Program Administration

The County coordinates implementation of the MSCP Subarea Plan with the Wildlife Agencies. In 2023, one Major Amendment was finalized that included amending 77.02 acres of conservation lands into the MSCP Subarea Plan boundary. The MSCP Subarea Plan maps will

be updated in the 2024 Annual Report to reflect these changes. There were no other Minor, Major, or Subarea amendments to the MSCP Subarea Plan or MSCP map updates in 2023.

CHAPTER 1

Introduction

San Diego county has one of the most diverse habitats in the United States, with over 200 rare, threatened, or endangered species inhabiting the region. To protect the region's biodiversity, in 1997, the County of San Diego (County) partnered with 11 other jurisdictions, community stakeholders, the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW; [collectively referred to as Wildlife Agencies]) to develop the Multiple Species Conservation Program (MSCP). The MSCP is a long term, regional habitat conservation program focused on balancing the protection of plant and animal species with recreation, development, and agricultural activities within San Diego region. On October 22, 1997, the County Board of Supervisors (Board) adopted the 50-year MSCP South County Subarea Plan, which includes the unincorporated areas in the southwestern portion of the region.

The County's partnership with the Wildlife Agencies, through the MSCP, ensures the unincorporated area's rich biodiversity is conserved while allowing development to occur through the County's permitting process. Through the MSCP, development applicants can rely on the County's permits under the Federal Endangered Species Act, State Endangered Species Act, and State Natural Communities Conservation Planning Act to impact threatened and endangered species and their habitats, eliminating the need for individual project-by-project permitting under these regulations.

The South County Subarea Plan Implementing Agreement (IA) between the County and Wildlife Agencies, became effective on March 17,1998. Per the IA, each year the County prepares a MSCP South County Subarea Plan Annual Report that includes information about habitat gained through acquisitions or dedications of preserve lands, habitat lost due to development, and the management and monitoring efforts performed to ensure the assembled MSCP Preserve is functioning successfully. The reporting period for the Annual Report and past annual reports has been based on the calendar year. Future reporting periods may be adjusted to align with the County's fiscal year from July 1 through June 30.

The 2023 Annual Report summarizes habitat gains and losses as well as County management and monitoring programs within the South County Subarea Plan boundaries for the reporting year of January 1, 2023 through December 31, 2023, and ongoing progress from previous reporting years. The 2023 reporting period marks the 26th year of implementing the MSCP Subarea Plan.

In addition to the adopted South County Subarea Plan, there are two additional MSCP planning areas in the unincorporated area: the draft North County Plan and future East County Plan. On October 28, 2020, the County's Board of Supervisors directed staff to develop a plan for the draft North County Plan Area, like the plan currently in place for the South County Subarea Plan. The draft North County Plan will cover the northwestern portion of the unincorporated area and is anticipated to be brought to the Board of Supervisors for consideration in Fiscal Year 2025-26. The eastern portion of the unincorporated area is covered by the future East County Plan, which will be prepared after North County Plan adoption.

The DPR implements the MSCP in all three MSCP planning areas through land acquisition, management, and monitoring of preserve lands to ensure preservation of sensitive species and

habitat. The acquisition criteria for County preserve land includes high-quality habitat and biodiversity, biological connectivity, access, and value. DPR works closely with a County-wide acquisition roundtable team consisting of staff from the Climate Action Plan (CAP) update, Regional Decarbonization Framework (RDF), Department of Public Works (DPW), Department of Environmental Health and Quality, Planning & Development Services (PDS), Agriculture, Weights and Measures, and Department of General Services (DGS) to analyze potential acquisitions from a multi-faceted perspective to ensure alignment with the County's sustainability programs including the CAP update, water quality protection, and RDF.

The County evaluates multiple factors when considering preserve lands for potential acquisition and inclusion into County preserve lands, including biology, connectivity, accessibility, and value. Foremost is an evaluation of wildlife biology. The land should include quality habitat and/or opportunities to restore habitat that supports regional biodiversity. Connectivity is another factor the County considers. The County seeks land that supports wildlife corridors and connectivity for sustainable wildlife movement. Connectivity to County preserve lands makes long-term management and stewardship more efficient because the same operational team can perform those functions. A contiguous property preserves not only the habitat but also the financial resources that help extend the County's reach and maximize resource utilization. Accessibility to potential acquisitions is another factor considered. The County must be able to access all its lands to meet stewardship and monitoring requirements as well as potential access to the public for passive recreation and environmental education where appropriate. Limited and sustainable public access that does not negatively impact sensitive resources is an integral part of the MSCP. Lastly, the County considers financial and economic value to ensure that public resources are wisely invested. The County only considers land with willing sellers who agree to sell at appraised value or less.

Chapter 2 Preserve Assembly

The South County Subarea Plan requires the County, Wildlife Agencies, and partnering agencies to conserve 98,379 acres (MSCP Preserve). The MSCP Preserve goal of 98,379 acres was determined by the area needed to successfully conserve populations of MSCP covered species, associated high-quality habitats, and wildlife linkages between large, conserved areas. Habitat that is mostly intact or has not been degraded by impacts such as from development activities or a high frequency of fires is generally considered to be high-quality. To create opportunities for residents and visitors to connect with nature, passive recreation is allowed within County preserve lands in areas where MSCP covered species and habitat would not be impacted.

Chapter 2, *Preserve Assembly*, summarizes land acquisitions and conveyances into the MSCP Preserve in the reporting year and cumulatively. The Baseline Preserve, land already preserved at the time of the MSCP Subarea Plan adoption, is quantified. Conservation lands acquired by Wildlife Agencies, Bureau of Land Management (BLM), non-profit partners, and County are documented for the reporting year and cumulatively. Mitigation lands conserved by private entities and mitigation banks providing mitigation for MSCP covered species are also documented. Together, these lands comprise the MSCP Preserve and provide regional conservation for plants, animals, and their habitats in the unincorporated county.

Chapter 3 Covered Projects

The County permits development under the MSCP Subarea Plan for private and public projects (covered projects). Chapter 3, *Covered Projects*, documents covered projects permitted by the County in the reporting year under the MSCP Subarea Plan. Project reporting includes clearing for single-family residences on small parcels and agricultural exemptions.

Chapter 4 Habitat Gains and Losses

Annual tracking of Subarea Plan gains, losses, management, and monitoring is required by Section 14.2 of the IA, and the HCP and NCCP Act permits. Chapter 4, *Habitat Gains and Losses*, documents the cumulative habitat gain from MSCP Preserve assembly and habitat loss from covered projects. All habitat gains and losses are reported annually to CDFW and tracked in a central database called HabiTrak. The HabiTrak reports generated by CDFW are used to track permit compliance and ensure that rough step permit requirements are being met. Rough step is the relationship between the conservation of preserve lands and impacts to habitat due to development. The two actions should be balanced, with impacts to habitat due to development not exceeding the conservation of preserve lands.

Chapter 5 Species and Habitat Conservation

Implementation of the South County Subarea Plan protects habitat and species through the acquisition, management, and monitoring of dedicated preserve lands and MSCP covered plant and animal species. Acquisitions of preserve lands are focused within the South County Subarea Plan's Pre-Approved Mitigation Area (PAMA) and hardline preserve areas. These are lands that have been identified as having high-quality habitat or as contributing to regional habitat linkages that connect large tracts of habitat. These regional habitat linkages are critical for the long-term conservation of MSCP covered species as they allow for movement of species between large, conserved areas of high-quality habitat.

The County Preserves conserve 47 MSCP covered species and their habitats. County Preserves refers to County-owned and managed parks and preserves that contribute to the MSCP Preserve. The County Preserves are managed for the benefit of the MSCP covered species and habitats. Chapter 5, *Species and Habitat Conservation*, evaluates how the County Preserves meet the MSCP objectives and monitors compliance with landscape-level, habitat-level, and species-level conservation targets identified in the MSCP Subarea Plan. The number of County Preserves and acres preserved is summarized for the reporting year and cumulatively. The County Preserves' contribution to segment goals, biological resource core areas, and habitat linkages is quantified. Habitats and vegetation communities important to MSCP covered species, conserved in County Preserves are quantified and their contribution to MSCP Subarea Plan targets are assessed. MSCP covered species conserved in County Preserves are documented and their contribution to MSCP Subarea Plan occurrence and habitat conservation are assessed. These analyses evaluate compliance with MSCP Subarea Plan objectives.

Chapter 6 Preserve Management

The County Preserves are managed for the benefit of MSCP covered species. Chapter 6, *Preserve Management*, documents stewardship, management, and education implemented on County Preserves, including Otay Ranch Preserve (which is jointly owned and managed by the

County and the City of Chula Vista), and private mitigation lands. Resource Management Plans (RMPs) incorporate baseline inventory surveys and provide management and monitoring directives for MSCP covered species and habitats. Annual work plans direct resources to implement management actions. Habitat restoration, access control, fire management, environmental education, and invasive, non-native plants and animal control actions reported by County rangers and consulting staff are summarized for County Preserves, and MSCP covered species and habitats benefited are identified. These same actions and benefits are summarized for grant-funded management projects, preserve management partnerships, and private mitigation lands.

Chapter 7 Preserve Monitoring and Research

The County Preserves are monitored to determine the effectiveness of habitat conservation and management actions for MSCP covered species and habitats. Chapter 7, *Preserve Monitoring and Research*, summarizes MSCP covered species and habitat monitored or documented. The Targeted Monitoring Plan (TMP) monitors a sub-set of County Preserves and informs adaptive management. TMP results are provided for the target MSCP covered species. Grant-funded monitoring projects, monitoring and research partnerships, and private mitigation lands monitoring descriptions and results are provided. Monitoring results are used to inform updates of RMPs, TMPs, and annual work plans.

Chapter 8 Financial Summary

The County funds acquisition, management, and monitoring of County Preserves. Chapter 8, *Financial Summary*, summarizes County and grant funding used to implement its MSCP Subarea program. Funding sources include the General Fund, Otay Ranch Preserve Community Facilities District 97-2, and grants.

Chapter 9 Program Administration

The County works with regional partners to implement and update the MSCP Subarea Plan. Chapter 9, *Program Administration*, reports key accomplishments, coordination efforts, minor and major amendments, and map updates.

CHAPTER 2

Preserve Assembly

Through December 31, 2023, the MSCP Preserve totals 80,519 acres and 82% of the 98,379-acre conservation target. It is comprised of land owned or managed by the County, Wildlife Agencies, BLM, local partners and non-profits, and private mitigation. In the reporting year, January 1, 2023 to December 31, 2023, 411 acres were added to the MSCP Preserve. This includes 26 acres preserved by USFWS and 385 acres preserved by private mitigation. There were no County acquisitions or acquisitions by local, non-profit partners in 2023. The MSCP Preserve benefits MSCP covered species and habitats.

Acreage reported in Chapters 2, 3, 4, and 5 are GIS acreage as opposed to Assessor's acreage. GIS acreage is utilized in the aforementioned chapters as MSCP Preserve gains and losses are tracked in HabiTrak, the CDFW database, using GIS acreage. For consistency, GIS acreage is used when reporting on acreage for MSCP Preserve assemblage, losses, and how the conserved lands within the MSCP Preserve are successfully meeting MSCP and Subarea Plan goals and objectives. Acreage reported in Chapter 6 is in both Assessor's and GIS acreage. Assessor's acreage is reported in Chapters 6 and 8 as this is the formal unit of measurement the County utilizes internally for real estate acquisitions, accounting, and reporting. The use of GIS acreage vs Assessor's acreage is specified at the beginning of each chapter.

2.1 Preserve Assembly Status

The MSCP Preserve totals 80,519 acres with 82% of the 98,379-acre preservation goal achieved (**Table 1**, *Summary of MSCP Subarea Plan Preserve Assembly Status*). The County, Wildlife Agencies, BLM, local and non-profit partners, and private entities own and manage MSCP Preserve lands. The MSCP Preserve is assembled through a combination of baseline preserve lands that existed in 1997, lands preserved as mitigation from development permit projects, and public agency and non-profit conservation partner acquisitions from willing sellers. "Historical Baseline Preserve" is land conserved prior to MSCP Subarea Plan adoption in 1997. It includes County-owned, -managed, or -funded lands (5,466 acres); Wildlife Agencies and BLM lands (32,600 acres); and private mitigation areas (7,755 acres). "Conserved lands since 1998" includes lands preserved by these same entities, plus lands conserved by local and non-profit partners. Preservation is prioritized within areas identified as having habitat with high biological value or as habitat linkages, which include the Pre-Approved Mitigation Area (PAMA) and the hardline preserve areas.[7] MSCP Preserve goals are split between public acquisitions (including local/non-profit partners) and private mitigation with each having a preserve goal[8].

The MSCP Preserve acreage is baseline acres plus acres gained within PAMA and hardline preserve areas from private mitigation and public and non-profit conservation partner acquisitions (**Table 1**, *Summary of MSCP Subarea Plan Preserve Assembly Status*). The Wildlife Agencies have approved complementary County acquisitions outside the 1997 PAMA

[7] Hardline preserve areas are lands that will be included in the MSCP Preserve as a result of negotiations between the County, Wildlife Agencies, and landowners.

[8] The Historical Baseline Preserve and Conserved Lands Since 1998 shown in Table 1 do not add up to the total MSCP Preserve, as a subset of Historical Baseline is also potentially counted by some agencies in the Conserved Lands Since 1998. Record keeping has evolved during MSCP Subarea Plan implementation. HabiTrak data and approved County complementary acquisitions are used to determine the MSCP Preserve size.

areas to be counted in the MSCP Preserve as they contribute to the biological goals of the MSCP. In general, private mitigation or acquisitions outside PAMA or hardline preserve areas is complementary conservation and does not count toward the MSCP Preserve.

In addition to the 98,379-acre preservation acreage goal, the MSCP Subarea Plan also requires that the MSCP Preserve function for covered species by conserving specific wildlife corridors and habitat types. The County and the Wildlife Agencies will continue to look at potential gaps within the PAMA and hardline preserve areas to guide future acquisitions and private mitigation opportunities to ensure a functional MSCP Preserve.

TABLE 1. SUMMARY OF MSCP SUBAREA PLAN PRESERVE ASSEMBLY STATUS

Landowner	MSCP Preserve Goals (acres)	2022 MSCP Preserve Total (acres)	2023 MSCP Preserve Gain (acres)	2023 MSCP Preserve Total (acres)	% Achieved
Historical Baseline Preserve					
County[a]	5,461	5,466	-	5,466	100%
Federal and State	32,600	32,600	-	32,600	100%
Private	7,755	7,755	-	7,755	100%
Total	**45,816**	**45,821**	**-**	**45,821**	**100%**
Conserved Lands Since 1998					
Public and Partner Conservation					
Federal and State		25,101	26	25,127	
County[a]		7,895	-	7,895	
Local/non-profit partners		3,347	-	3,347	
Total	**18,850**	**36,343**	**26**	**36,369**	**193%**
Private Mitigation					
Dedicated Within Hardline	11,563	4,643	-	4,643	
Dedicated Outside Hardline	22,150	1,919	385	2,304	
Total	**33,713**	**6,562**	**385**	**6,947**	**21%**
MSCP Preserve Total[b]					
Total	**98,379**	**80,108**	**411**	**80,519**	**82%**

NOTES:

a County acquisitions adjusted to reflect previously reported MSCP Preserve acreage.

b Baseline Preserve acres may be included in the "Conserved Lands – Public Acquisitions" total acreage. Therefore, the MSCP Preserve Total acreage is derived from summing Appendix E, Summary of Habitat Losses and Gains. "Cumulative Gain" total and Appendix A, the 2016 through 2019 approved additions to the MSCP Preserve that have not been formally designated in HabiTrak.

SOURCES: 2022 Annual Report and 2023 HabiTrak report Summary of Project Gains included in Appendix C, Summary of MSCP Gains.

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2.2 Baseline Preserve

The MSCP Preserve includes baseline preserve land acreage that was conserved prior to MSCP Subarea Plan adoption in 1997. **Table 2**, *MSCP Subarea Plan Historical Baseline Preserve,* shows the historical breakdown, by landowner, of the 45,821-acre Baseline Preserve.

TABLE 2. MSCP SUBAREA PLAN HISTORICAL BASELINE PRESERVE

Landowner	Acres
County	5,466
Federal and State	32,600
Private	7,755
Total Baseline Preserve	**45,821**

2.3 Public and Partner Conservation

Public and partner acquisitions owned and managed in the MSCP Preserve total 36,347 acres (**Table 3**, *MSCP Public and Partner Acquisitions Since 1988*). Within the MSCP Subarea Plan boundaries, land owned and/or managed by the Wildlife Agencies, local partners, and the County total 54,906 acres. Section 10.4 of the IA states that the estimated conserved acreages through public acquisition to complete the MSCP Preserve "are approximate since the amount, timing, and location of land conserved through regulations, private mitigation and public acquisition are not exactly known." The MSCP Subarea Plan estimated that 18,850 acres would need to be conserved through public acquisitions to adequately assemble the MSCP Preserve. The MSCP Subarea Plan outlines that the 18,850 acres would be split between 9,425 acres acquired by the County with local funds and 9,425 acres acquired with federal and state funds. Total acquisitions by the federal, state, and County partners, 33,109 acres, exceeds the public acquisition goal of 18,850 acres.

The County and the Wildlife Agencies maintain up-to-date, accurate accounting of their acquisitions and acquisitions completed by partnering agencies. Tracking of public, local government, and non-profit partners' acquisitions is completed using both the CDFW maintained HabiTrak database and its subsequent reports that are found in **Appendices C, D, E**, **and F**, as well as manual accounting, which can be found in **Appendices A and B**.

The County has made several manual adjustments to HabiTrak accounting from 2016-2019 with approval from the Wildlife Agencies. In 2016, the County and the Wildlife Agencies concluded an accounting of conserved lands from public acquisition. As a result of the audit, 2,479 acres of County acquisitions were added to the MSCP Preserve, with five acres allocated to the Baseline MSCP Preserve total and 2,474 acres allocated to the MSCP Preserve total.

Since 2017, the County has contributed to the MSCP Preserve with acquisitions outside of PAMA and hardline areas (Appendix A2). In 2017, the Wildlife Agencies approved the inclusion of an additional 173 acres[9] in the MSCP Preserve for the County's Dictionary Hill acquisition. Subsequent acquisitions for Peutz Valley, Lakeside Linkage, Ramona Grasslands, and Skyline

[9] A total of 177 acres was specified in the letter to the Wildlife Agencies for the inclusion of Dictionary Hill Preserve into the MSCP Preserve. The letter used Assessor's acreage. In HabiTrak, GIS acreage for the same parcels totaled 173 acres. The 173 acres has been used in the manual accounting of County acquisitions added to the MSCP Preserve.

Preserves have resulted in 243 acres of non-PAMA or hardline area conservation of preserve lands to add to the MSCP Preserve. Data contained in this chapter reflects these manual additions to the MSCP Preserve plus those reported as HabiTrak 2023 habitat gains **(Appendix C**). (HabiTrak is cannot be updated to reflect the approved County additions to the MSCP Preserve from 2016 through 2019 without a formal amendment to the MSCP Plan Area.)

TABLE 3. MSCP PUBLIC AND PARTNER ACQUISITIONS SINCE 1998

Agency	Funded In MSCP Preserve (acres)	2023 MSCP Preserve Total Owned and Managed (acres)	Complementary Conservation Owned and Managed[a] (acres)	Total in the MSCP Subarea Plan Boundaries Owned and Managed (acres)
Federal				
USFWS	3,012	8,743	3,233	11,976
BLM	1,830	1,830	2,609	4,439
Subtotal	**4,842**	**10,573**	**5,842**	**16,415**
Non-Federal				
State	11,464	14,558	11,557	26,115
County	4,805[b]	7,895[c]	30	7,019[d]
Local Partners	2,606	3,347	1,104	4,451
Subtotal	**18,875**	**25,800**	**12,691**	**37,585**
Total				
Grand Total	**23,717**	**36,373**	**18,533**	**54,906**

NOTES:
a "Complementary Conservation" = "Outside the MSCP Preserve", a HabiTrak designation.
b Includes 205 acres that the County has purchased within other jurisdictions (Cities of San Diego and Chula Vista).
c Includes 689 acres that the County manages within other jurisdictions (Cities of San Diego and Chula Vista).
d Does not include 885 acres that the County manages within other jurisdictions (Cities of San Diego and Chula Vista).
SOURCES: 2022 Annual Report; Appendix B, Wildlife Agency Tracked Acquisitions; Appendix A; County Tracked Acquisitions Since 1998; Appendix C, Summary of MSCP Gains

County Preserve Lands

The County has acquired and/or managed 13,383 acres in the MSCP Subarea Plan Area (**Tables 2 and 3** and **Figure 1**). This includes 5,466 acres of baseline and 7,895 acres of newly acquired conserved lands. There were no County acquisitions in 2023 to add to the MSCP Preserve.

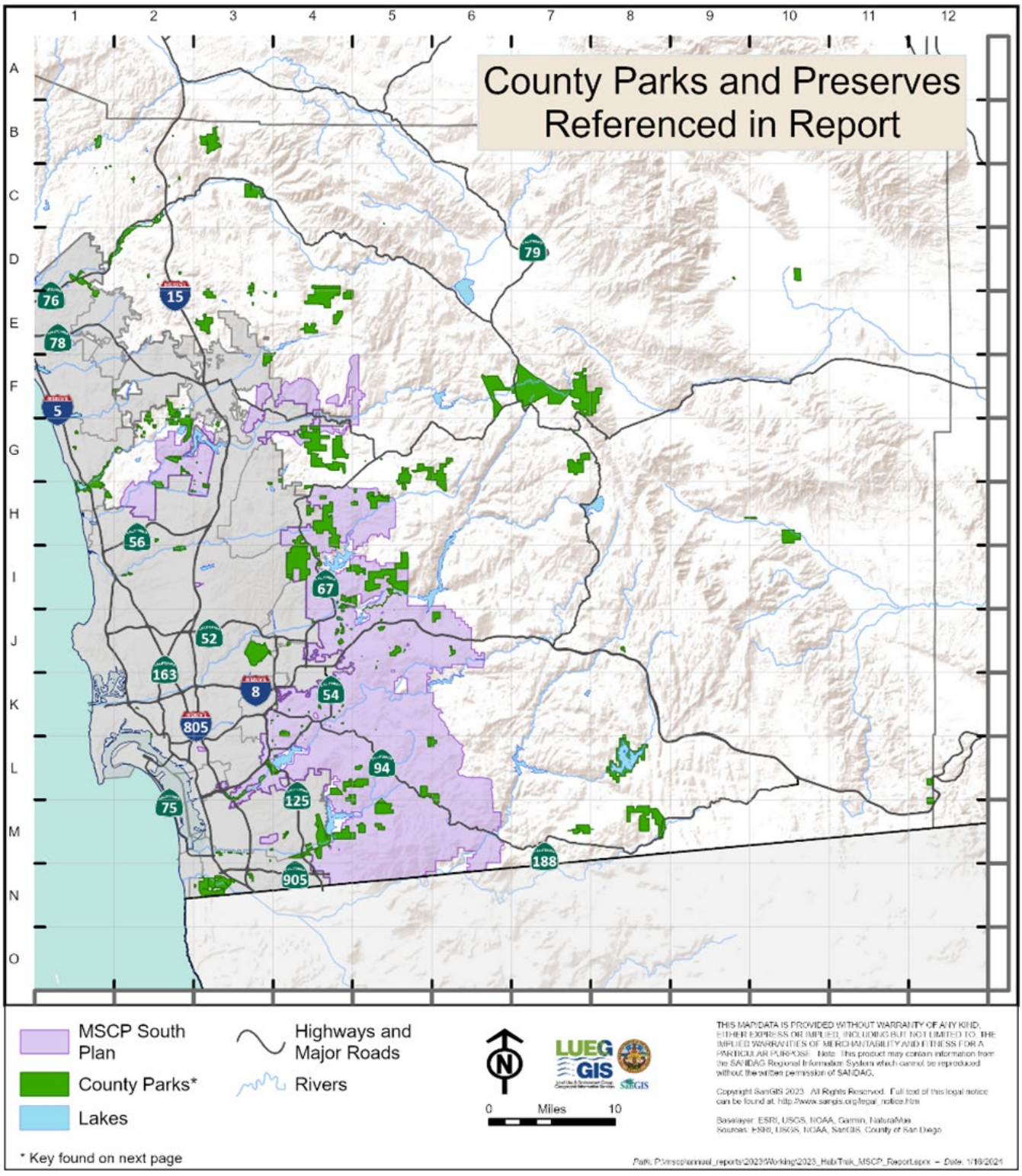

Figure 1. County Parks and Preserves Referenced in Annual Report

Map Key is on the following page

Map Key:

County Parks and Preserves Referenced in Report

MSCP Subarea Plan*

H5	Barnett Ranch Preserve**
H4, H5	Boulder Oaks Preserve
I4, J4	Cactus Park
H3	Christopher Hill Property
K4	Damon Lane Park
G2, G3	Del Dios Highlands Preserve**
K4	Dictionary Hill Preserve
H4	Dos Picos Park
I5	El Capitan Preserve**
I5	El Monte Park
J5	Flinn Springs Park
N3	Furby-North Property
I5, J5	Historic Flume Corridor
H5	Holly Oaks County Park
H4	Iron Mountain Preserve
J4, J5	Lakeside Linkage Preserve
L5, L6, M6	Lawrence & Barbara Daley Preserve
J4	Lindo Lake Park
H2, I2	Los Peñasquitos Canyon Preserve
I4, I5	Louis A. Stelzer Park
H5	Luelf Pond Preserve
G2, H2	Lusardi Creek Preserve
J3, J4	Mission Trails Regional Park
I4, I5	Oakoasis Preserve
J5	Old Ironsides Park
M4	Otay Lakes Park
L4, M3, M4, M5	Otay Ranch Preserve
L4, L5, M3, M4, M5	Otay Valley Regional Park
J6	Peutz Valley
G4	Ramona Grasslands Preserve**
G2	Santa Fe Valley Preserve
K5, K6, L5, L6	Skyline Preserve
J5	Stoneridge Preserve
L3, L4	Sweetwater Regional Park
H4, I4	Sycamore Canyon and Goodan Ranch Preserve
M2, N3	Tijuana River Valley Regional Park

Draft North County MSCP

G4, H3, H4	Blue Sky Ranch Ecological Reserve
F2	Diamond Trail Preserve Property
F2, G2	Escondido Creek Preserve
G3	Felicita Park
D1, E1	Guajome Park
D4, E4, E5	Hellhole Canyon Preserve
C2	Live Oak Park
G5, G6, H6	Mt. Gower Preserve
B3	Mt. Olympus Preserve
H4	Mt. Woodson Gateway Preserve
E1	Rancho Guajome Adobe Park
F2, G2	Sage Hill Preserve
H1, H2	San Dieguito Park
G1, H1	San Elijo Lagoon Ecological Reserve
D1, D2	San Luis Rey River Park
B1	Santa Margarita Preserve
F6, F7, G6	Santa Ysabel Preserve
G5, H5	Simon Preserve
F7, F8	Volcan Mt. Wilderness Preserve
C3	Wilderness Gardens Preserve
G7	William Heise Park

Future East County MSCP

H10	Agua Caliente Park
L12, M12	In-Ko-Pah Park
K8, L8	Lake Morena Park
C5, D5	Palomar Mountain Park
J8	Pine Valley Park
M7	Potrero Park
M8	Star Ranch
H9, H10	Vallecito Park

* Not all parks and preserves listed are counted towards the MSCP Preserve

** Portions of preserves are also in North County MSCP Plan

2.4 Private Mitigation

Private mitigation has conserved 6,947 acres in the MSCP Preserve (**Table 4**, *MSCP Private Mitigation*). In the reporting year, 385 acres of private mitigation were added to the MSCP Preserve. Private mitigation is estimated to preserve 33,713 acres over the permit term. Private mitigation primarily includes gains acquired through the County's permitting processes. Hardline agreements identified in the MSCP Subarea Plan (including Otay Ranch Preserve Owner/Manager [POM]) are found in the "Dedicated Private Hardline" totals. Private mitigation for new developments and other regulations are found in the "Privately Dedicated Lands" totals. An audit of the acreage of the dedicated private hardline (hardline areas) is in process and is anticipated to be completed in 2024 and reflected in the 2024 MSCP Annual Report. County staff are working on reconciling "Privately Dedicated Lands" data. This effort is anticipated to be completed in 2024 and the results are anticipated to be reported in the 2024 MSCP Annual Report.

TABLE 4. MSCP PRIVATE MITIGATION

Mitigation type	MSCP Preserve Goal (acres)	2022 Cumulative (acres)	2023 MSCP Preserve Gains (acres)	2023 MSCP Preserve Total (acres)
Dedicated Private Hardline[a]	11,563	4,643	0	4,643
Privately Dedicated Lands[b]	22,150	1,919	385	2,304
TOTAL	**33,713**	**6,562**	**385**	**6,947**

NOTES:
a Dedicated Private Hardline are HabiTrak Acres Inside Habitat Preserve attributed to Otay Ranch POM.
b Privately Dedicated Lands are HabiTrak Acres Inside Habitat Preserve attributed to Private.

2.5 Mitigation Areas and Banks

Five County owned and managed mitigation areas, Boden Canyon, Old Castle, Rancho San Diego, Singing Hills, and Sweetwater, are established in the unincorporated county. Rancho San Diego, Singing Hills, and Sweetwater are in the South County Plan Area boundary. With the Wildlife Agencies' approval, they are used to mitigate impacts to sensitive biological resources resulting from the County DPW construction, improvement, and maintenance projects. These mitigation areas are not used for mitigating private development projects as they were established for DPW projects. Use of credits is determined based on quality of habitat impacted in relation to quality of habitat available and is subject to approval by the United States Army Corps of Engineers (USACE), USFWS, CDFW, and Regional Water Quality Control Board (RWQCB). During the reporting period no mitigation area credits were used for DPW construction, improvement, or maintenance projects. The status of each of the mitigation areas is detailed in **Appendix G** and summarized below.

Boden Canyon. Mitigation area totals 39.50 acres and includes the seven habitat types of coast live oak woodland, coastal sage scrub, Engelmann oak woodland, mixed chaparral, native grasslands, non-native grasslands, and southern riparian/oak woodland. All credits for four of the seven habitat types have been used. Credits totaling 15.68 acres for mixed chaparral, native grasslands and non-native grasslands remain.

Old Castle. Mitigation area totals 60.02 acres and includes the four habitat types of coast live oak woodland, coastal sage scrub, mixed chaparral scrub, and southern willow scrub. All credits for coast live oak woodland are used. Credits totaling 14.90 acres remain for the other habitats.

Rancho San Diego. Mitigation area totals 409.20 acres and includes the seven habitat types of coast live oak woodland, coastal sage scrub, disturbed/ruderal, marsh/riparian scrub/floodplain, mixed chaparral, native grasslands, and southern riparian/oak woodland. Credits totaling 249.07 acres remain.

Singing Hills. Mitigation area totals 69.70 acres for coastal sage scrub. Credits totaling 69.01 remain.

Sweetwater. Mitigation area totals 24.33 acres for marsh/riparian scrub/floodplain. Credits totaling 5.19 remain.

Per Section 9.13 of the IA, two types of mitigation banks are allowed in the MSCP Subarea Plan – formal banks approved by the Wildlife Agencies and banks that existed prior to adoption of the IA. **Table 5**, *Mitigation Banks Available for Private Mitigation*, includes a list of approved mitigation banks in the South County Plan Area that are available for private mitigation. Additional information on approved mitigation banks can be found at www.wildlife.ca.gov/Conservation/Planning/Banking.

TABLE 5. MITIGATION BANKS AVAILABLE FOR PRIVATE MITIGATION

Mitigation Bank	Manager
Crestridge Phase Conservation Bank	Roselei Redrick, J. Whalen Associates, Inc.
Rancho Jamul Wetland Mitigation Bank	Wildlands, Inc.
Ramona Grasslands Conservation Bank	Michael McCollum
San Vicente Conservation Bank	Mitigation Land Specialists
Willow Road Conservation Bank	Mitigation Credit Services

2.6 Mitigation Land Policy (I-138)

In November 2020, the County Board of Supervisors reestablish the Board of Supervisors Mitigation Land Policy (MLP) I-138, Mitigation on County-Owned Land Managed by the County Department of Parks and Recreation (DPR), which does not replace nor supersede Board of Supervisors Policy I-117, Mitigation Banking Policy. Policy I-117 was included as part of the original MSCP approvals and sets the procedures in establishing, using, and managing mitigation banks. MLP I-138 describes the County's program for acquiring land and making it available to mitigate the biological impacts of public and private projects through the sale of mitigation credits. Although MLP I-138 is not a mitigation bank, it authorizes DPR to administer the sale of mitigation credits. MLP I-138 sets forth methods by which the value of the mitigation credits may be determined and requires applicants to pay for the valuation. The policy also requires an endowment for annual stewardship costs. A Certificate of Mitigation and Purchase Agreement is required for each transaction. The County trades the conveyance of mitigation credits to purchasers and the application of mitigation credits to development projects. County numbers, in **Table 6**, *Mitigation Land Policy*, and **Appendix A**, accurately show year-to-year manual County updates and subtraction of acres used for MLP credits. There was one sale within the MSCP Subarea Plan boundaries in 2023 in Furby North County Preserve of 0.166 acres for $12,118. **Table 6** also shows revenue generated since adoption in the MSCP Subarea

Plan from the sale of mitigation credits in accordance with the MLP. The County considers requests to use MLP I-138 on the preserves listed in **Table 6** according to GIS mapping of the vegetation available on those sites, which are generally acquired with County funds. The County also uses MLP within the other MSCP Plan Areas, but these numbers are not reported in this document.

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TABLE 6. MITIGATION LAND POLICY

Date	MSCP Plan Area	Project	Preserve	Credits Sold	Mitigation Credit Cost	Endowment For Stewardship
5/3/2011	SC	Tuscan Ridge	Louis A. Stelzer Park	1.070	$16,050.00	$4,060.00
6/21/2011	NC	L. Rancho Viejo	Wilderness Gardens - Rowan	3.700	$37,000.00	$18,500.00
6/22/2011	SC	Dictionary Hill - Maria Ave	Lakeside Linkage	0.310	$7,225.00	$1,240.00
10/2/2012	SC	DPW South (5) - Tavern Rd, Wing Ave, Woodside Ave., Emery Rd, Jamacha Blvd	Lawrence & Barbara Daley	2.450	$98,000.00	$14,700.00
1/17/2013	City of SD	Swiss Park Staging Area	Furby-North (East Otay Mesa)	1.000	$23,300.00	$6,000.00
2/14/2013	City of SD	San Ysidro Freight Yard Improvement	Tijuana River Valley Regional Park[a]	1.750	$61,250.00	$10,500.00
4/3/2014	NC	De Luz Rd Emergency Storm Drain Repair	Wilderness Gardens - Rowan	0.360	$14,400.00	$6,000.00
1/21/2014	SC	Central Ave Drainage Improvement and Woodside Ave Flood Control	Lawrence & Barbara Daley	0.370	$14,800.00	$2,220.00
5/23/2014	EC	Pine Valley SHF Substation	Pine Valley	0.630	$14,679.00	$6,000.00
6/10/2015	NC	San Vicente Rd Improvement - Ramona	Wilderness Gardens - Overall	3.380	$31,050.00	$85,650.00
6/10/2015	SC	San Vicente Rd Improvement - Ramona	Lawrence & Barbara Daley	8.040	$223,512.00	
7/11/2016	City of SD	LOSSAN double-tracking and Mid-Coast light rail	Tijuana River Valley Regional Park[a]	10.000	$350,000.00	$630,644.00

Date	MSCP Plan Area	Project	Preserve	Credits Sold	Mitigation Credit Cost	Endowment For Stewardship
9/30/2016	NC	Holmwood Ln Drainage Improvement	Wilderness Gardens - Rowan	0.010	$4,000.00	$50.00
9/14/2018	NC	Santa Ysabel Nature Center	Santa Ysabel East	3.270	$26,160.00	$11,380.00
2/20/2019	NC	Santa Ysabel Preserve	Santa Ysabel East	0.500	$4,000.00	$1,750.00
10/13/2023	SC	Furby North County Preserve	Furby North County Preserve	0.166	$12,118.00	$74,903.76
			TOTAL	**37.006**	**$937,544.00**	**$873,597.76**
		Add:				
		Interest Earned			$20,750.74	$113,014.10
		Less Fund Disbursements:	MSCP Plan Area			
		Rice El Capitan MSCP Acquisition	SC		$ (60,275.00)	
		Bottle Peak MSCP Acquisition	NC		$ (196,950.00)	
		University Heights MSCP Acquisition	NC		$ (29,479.00)	
		SR 67 Preserve Expansion	SC		$ (254,562.00)	
		Mountain Gate MSCP Acquisition	NC		$ (354,000.00)	
		Funds Available			$63,028.74	$986,611.86

NOTES:
[a] Park is outside of the MSCP Subarea Plan Area but is within the City of San Diego MSCP
SOURCE: DPR

CHAPTER 3

Covered Projects

Section 4.3.4 of the MSCP Subarea Plan discusses clearing and grading permit exemptions for single-family residences and agriculture. The County issues Certificates of Inclusion (COIs) to track exempt acres. The County permitted 62 development projects in the reporting period in the MSCP Subarea Plan Area, all of which were residential projects. No agricultural exemptions were issued during the reporting period. Habitat clearing acreages for development projects in 2023 are cumulatively included in **Appendix D**. The number of covered projects and associated permit types are included in **Table 7**, *MSCP Covered Projects in Reporting Year.*

Acreage reported in Chapter 3 is in GIS acreage as opposed to Assessor's acreage. GIS acreage is utilized as MSCP Preserve gains and losses are tracked in HabiTrak, the CDFW database, using GIS acreage. For consistency, GIS acreage will be used when reporting on acreage for MSCP Preserve assemblage, losses, and how the conserved lands within the MSCP Preserve are successfully meeting MSCP and Subarea Plan goals and objectives.

TABLE 7. MSCP COVERED PROJECTS IN REPORTING YEAR

Permit Type	Number of Projects
Single Family Exemptions COI	62
Agricultural Exemption COI	0
TOTAL SINCE 1998	**4,409**

SOURCE: 2023 HabiTrak Report found in Appendix D, Summary of Project Losses

3.1 Clearing for Single Family Residences

COIs were issued for 62 permits for single-family residential projects totaling 72.9 acres in 2023. Private landowners of parcels existing as of January 1, 1997, within the MSCP Subarea Plan boundaries and zoned for single-family residences, can apply for a COI for their property. COIs are issued for clearing or grading of two or five acres depending on whether the parcel is in PAMA or not, and ten acres if a house existed on the parcel before October 22, 1997, even if the landowners intend to clear less. The MSCP Subarea Plan does not have a limit for how many total acres can be cleared for single-family residences. **Appendix D** includes COIs for permits issued in 2023 for clearing habitat on parcels ten acres or smaller.

The following details the grading and clearing exemptions provided in Section 4.3.4.2 of the MSCP Subarea Plan, as implemented by the Biological Mitigation Ordinance (BMO). Parcels which are less than ten acres, occurring within the MSCP Subarea Plan boundaries that were zoned for single-family dwellings and contained a dwelling unit as of October 22, 1997, are exempt from the clearing regulations. Within PAMA, parcels existing as of January 1, 1997, without a dwelling unit as of October 22, 1997, and are less than ten acres and zoned for single-family residential uses, are allowed to clear up to two acres provided that clearing and grading of such two-acre portions does not interfere with achieving the goals and criteria of the MSCP Subarea Plan. Grading and clearing on the remaining portion of the parcel must meet the mitigation requirements of the BMO. Outside PAMA, grading and clearing on parcels less than ten acres, zoned for single-family residential uses as of January 1, 1997, and without a dwelling

unit as of October 22, 1997, shall be permitted for clearing on a total of five acres. Clearing the remainder of the parcel shall be subject to the requirements of the MSCP Subarea Plan and BMO.

These exempted acres are tracked and were accounted for within the MSCP Subarea Plan, which was designed and developed with anticipation of these clearing exemptions not interfering with the County's ability to achieve the goals and objectives of the MSCP Subarea Plan.

3.2 Agricultural Exemption

No COIs were issued for agricultural exemptions in 2023. Section 4.3.4.3 of the MSCP Subarea Plan allows up to 3,000 acres of cumulative clearing and grading for agriculture without mitigation requirements of the MSCP Subarea Plan and the BMO. When the clearing and grading of habitat reaches 3,000 acres, all other clearing and grading for agriculture will be subject to the mitigation requirements of the MSCP Subarea Plan and the BMO. Private landowners can apply for a COI for agricultural clearing and grading until the 3,000 acres are reached. COIs issued for agricultural clearing in the Subarea since the MSCP Subarea Plan was approved are listed in **Appendix H**, a cumulative reporting. Since 1998, the County has issued 13 COIs covering 1,224 acres for agricultural clearing or 41% of the 3,000 acres.

CHAPTER 4

Habitat Gains and Losses

There was a total of 442 acres of habitat gains and 432 acres of habitat losses in the reporting period. This includes 411 acres of habitat gain inside the MSCP Preserve and 31 acres of complementary conservation.[10] Habitat losses total 32 acres inside PAMA and hardline preserve areas and 400 acres outside these areas. Cumulatively, the MSCP Subarea Plan is in compliance with the rough step analysis, which ensures that habitat gains do not exceed habitat losses.[11] From 1998 to 2023, the majority of habitat gains occurred within PAMA and hardline preserve areas, while the majority of habitat loss occurred outside of PAMA and hardline preserve areas. This indicates that the overall conservation goals are being met to create a functional MSCP Preserve as high-quality habitat within PAMA, hardline preserve areas are being conserved, and lower-quality habitat is being developed.

As previously stated, acreage reported in Chapter 4 is in GIS acreage as opposed to Assessor's acreage. GIS acreage is utilized as MSCP Preserve gains and losses are tracked in HabiTrak, the CDFW database, using GIS acreage. For consistency, GIS acreage will be used when reporting on acreage for MSCP Preserve assemblage, losses, and how the conserved lands within the MSCP Preserve are successfully meeting MSCP and Subarea Plan goals and objectives.

4.1 Habitat Gains and Losses

Habitat gains of 411 acres and habitat losses of 32 acres occurred within PAMA and hardline preserve areas in the reporting period, see **Table 8**, *Habitat Gain and Loss in Reporting Year,* and **Appendix E**.[12] Habitat gains were reported within the MSCP Preserve through acquisitions and dedications of mitigation land via the discretionary permit process. Habitat losses were reported from permitted development within PAMA and hardline preserve areas. Mitigation gain and habitat loss were associated with the following types of projects for which approvals were granted and reported in COIs during the reporting period.

- Private projects (tentative maps/tentative parcel maps) with final map approval.
- Projects issued grading permits.
- Building permits exempt from the BMO.
- Lands acquired for preservation.

[10] Appendix C, *Summary of MSCP Gains*, includes HabiTrak Summary of Project Gains, total of "Inside the Preserve" and County complementary acquisitions.

[11] Appendix E, *Summary Habitat Losses and Gains*, includes HabiTrak Summary of Project Losses and Gains.

[12] Appendix C, *Summary of MSCP Gains*, includes HabiTrak Summary of Project Gains, total of "Inside the Preserve" and County complementary acquisitions.

Habitat Gains

In 2023, conserved land additions within PAMA and hardline preserve areas included federal acquisitions (26 acres) land private dedications in PAMA (385 acres [**Appendix C**]). There were 411 acres of habitat gain within the MSCP Preserve per HabiTrak.

Habitat Loss

Losses in 2023 were 32 acres within PAMA and hardline preserve areas, part of a total of 432 acres impacted by development projects within the MSCP Subarea Plan boundaries (**Table 8** and **Appendix D**).

TABLE 8. HABITAT GAIN AND LOSS IN REPORTING YEAR

Habitat Gain/Loss	Outside PAMA and Hardline Preserve Areas	Inside PAMA and Hardline Preserve Areas	Total
Habitat Gains			
County	-	-	-
Federal and State	-	26	26
Local/Non-profit partners	-	-	-
Private Mitigation Outside Hardline	31	385	416
Private Mitigation Inside Hardline	-	-	-
Total	31	411	442
Habitat Losses			
Total	400	32	432

SOURCES: 2023 HabiTrak reports found in Appendix C, Summary of MSCP Gains, Appendix D, Summary of MSCP Losses.

4.2 Habitat Tracking Reporting

CDFW maintains the HabiTrak toolset designed to track habitat losses and gains over time due to public and private development projects. HabiTrak reports for 2023 are attached to this reporting for the MSCP Subarea and are as follows.

- **Appendix C**, *Summary of MSCP Gains*, documents new acquisitions in the reporting year. Habitat gains in and outside PAMA and hardline preserve areas, as well as total acreage preserved by acquisition, are tracked. Habitat gains inside PAMA and hardline preserve areas are referred to as Acres Inside Habitat Preserve. These habitat gains represent the MSCP Preserve. Habitat gains outside PAMA and hardline preserve areas are referred to as Acres Outside Habitat Preserve. These habitat gains represent complementary conservation.

- **Appendix D**, *Summary of MSCP Losses*, documents habitat losses from covered project impacts by segment in the reporting year. Habitat losses inside and outside PAMA and hardline preserve areas, as well as total acreage lost by project, are tracked. Habitat losses inside PAMA and hardline preserve areas are referred to as Acres Inside

Habitat Preserve. Habitat losses outside PAMA and hardline preserve areas are referred to as Acres Outside Habitat Preserve.

- **Appendix E**, *Summary of Habitat Losses and Gains*, documents both habitat losses and gains for MSCP habitats in the reporting year and cumulatively. Like in the above, habitat gains and losses are tracked inside and outside PAMA and hardline preserve areas and cumulatively.

- **Appendix F**, *Habitat Conservation Accounting Model*, documents compliance with rough step proportionality. It reports on habitat losses and gains within PAMA and hardline preserve areas only for the North and South Metro-Lakeside-Jamul segments. It is within these segments that specific conservation ratios must be met.

Habitat gains and losses differ from those entered in HabiTrak as corrections for County acquisitions counted as Inside the Preserve are outstanding or not yet recorded in HabiTrak for reporting years 2016 through 2019. For example, in 2019, 144 acres of habitat gains should be attributed to the MSCP Preserve rather than outside PAMA and hardline preserve areas for County acquisitions. In other years, accounting for losses due to MLP credits may need adjustment. For these reasons, the cumulative gains and losses of acreage within the MSCP Subarea Plan boundaries in the HabiTrak reports differ from the MSCP Preserve assembly totals reported in previous sections of this report.

HabiTrak reports a 77,828-acre cumulative gain within PAMA and hardline preserve areas and a loss of 1,578 acres (**Appendix E**). HabiTrak data for the MSCP Subarea Plan does not show the total of 885 acres jointly owned and managed by the County in the cities of San Diego and Chula Vista. The acreage is outside of the MSCP Subarea Plan Area, but included in the County-owned, managed or funded lands in the MSCP Preserve. Manual accounting of County acreages in **Appendix A** also differs from HabiTrak because County numbers accurately show year-to-year manual County updates and subtraction of acres used for MLP credits. The Wildlife Agencies' acquisitions totals are also tracked manually and may differ from HabiTrak. The manual accounting numbers are corrected when errors are noted, and audits are performed. Additionally, through the discretionary permitting process, the California Environmental Quality Act (CEQA) requires the identification of potential impacts. The corresponding loss of habitat resulting from development and habitat conserved through mitigation is tracked. Habitat loss through ministerial projects that do not require a discretionary permit are in this report.

The HabiTrak database and report formats have undergone updates and changes, and the numbers are corrected once inputs are received. As such, a combination of HabiTrak reports and manual accounting of gains and losses within both the MSCP Subarea Plan boundaries and MSCP Preserve is utilized to total MSCP Preserve assemblage by landowner type documented in **Table 1 and Table 3**.

4.3 Rough Step Analysis

Rough step is the comparison of the total gains and losses within and outside of PAMA and hardline preserve areas in terms of total acres and habitat types. The purpose of rough step is to ensure that the conservation of high-quality habitat and habitat linkages, those lands inside PAMA and hardline preserve areas, occurs roughly in the same amounts at the same time as development outside PAMA and hardline preserve areas. **Table 9**, *Habitat Gains and Losses by Segment Since 1988 Per HabiTrak*, shows the cumulative gains and losses inside and outside

of PAMA and hardline preserve areas for each of the four segments within the MSCP Subarea Plan.

The majority of habitat gains for the four segments occurred within PAMA and hardline preserve areas, while the majority of habitat loss occurred outside of PAMA and hardline preserve areas. This numerical comparison indicates that the overall conservation goals are being met to create a functional MSCP Preserve as high-quality habitat within PAMA and hardline preserve areas is being conserved and lower-quality habitat is being developed. A visual rough step analysis of the biological core resource areas and habitat linkages are depicted in **Figure 2** and **Figure 3**.

Rough step status can also be determined by comparing gains and losses of vegetation types inside and outside PAMA in the North and South Metro-Lakeside-Jamul segments. (PAMA designations only apply to the North and South Metro-Lakeside-Jamul segments. Lake Hodges and South County are both hardline preserve areas.) **Appendix F** reports on the conservation of each vegetation type within the Metro-Lakeside-Jamul segment, as required by Section 4.4 of the MSCP Subarea Plan and Section 14 of the IA. It should be noted that existing vegetation maps used to develop baseline conditions in HabiTrak are regional in nature and may not be consistent with actual on-the-ground conditions. This data also indicates that conservation is proceeding in rough step with development. The report in **Appendix F** demonstrates the County's compliance with MSCP Subarea Plan Objective 1 "*Acknowledge the no-net-loss-of-wetlands standard to satisfy state and federal wetland goals, policies, and standards*."

TABLE 9. HABITAT GAINS AND LOSSES BY SEGMENT SINCE 1998 PER HABITRAK

	Cumulative (acres)		
Segment	**Outside PAMA and Hardline Preserve Areas**	**Inside PAMA and Hardline Preserve Areas**	**Total**
Habitat Gain			
Lake Hodges	546	2,963	3,509
North Metro-Lakeside-Jamul	6,951	11,561	18,512
South Metro-Lakeside-Jamul	12,039	13,693	25,732
South County	1,784	10,708	12,492
Total	**21,320**	**38,925**	**60,245**
Habitat Losses			
Lake Hodges	2,529	108	2,637
North Metro-Lakeside-Jamul	4,063	704	4,767
South Metro-Lakeside-Jamul	3,408	601	4,009
South County	1,024	160	1,184
Total	**11,024**	**1,573**	**12,597**

NOTE: Totals may not add up due to rounding.
SOURCE: 2022 Annual Report plus 2023 HabiTrak reports found in Appendix C, *Summary of MSCP Gains* and Appendix F, *Habitat Conservation Accounting Model*.

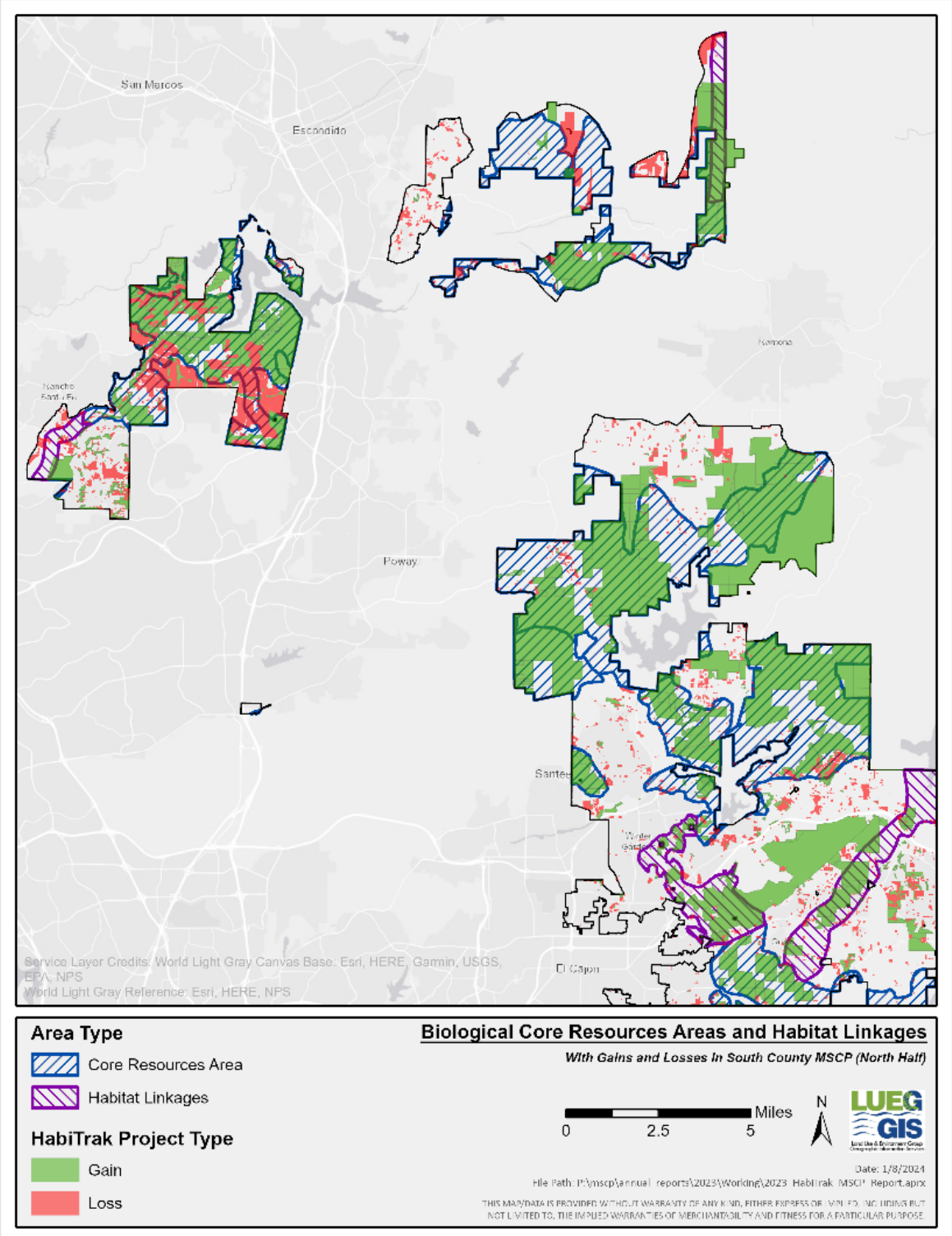

Figure 2. MSCP Biological Core Resource Areas and Habitat Linkages with Gains and Losses in the North Half of the MSCP Subarea Plan Area.

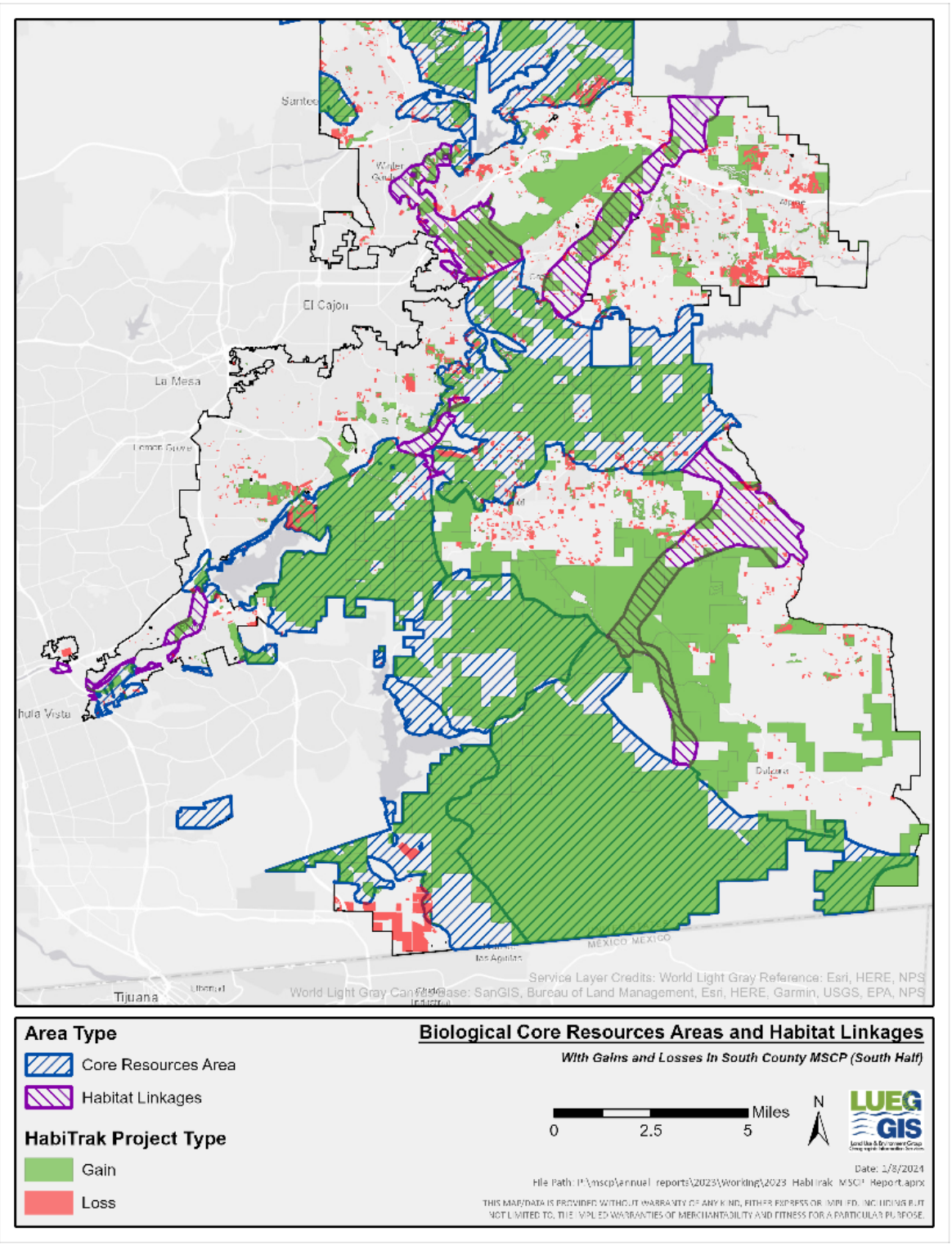

Figure 3. MSCP biological core resource areas and habitat linkages with gains and losses in the south half of the MSCP Subarea Plan Area.

CHAPTER 5

Species and Habitat Conservation

This chapter summarizes the contribution of County Preserves to the Sub-Regional MSCP (MSCP) and Subarea Plan objectives. The MSCP objectives ensure the persistence of habitat linkages for wildlife movement, critical biological resource areas for MSCP covered plant and animal species habitat, and MSCP covered plant and animal species occurrences in these areas.

The County initiated a *Preserve Functionality Assessment* to evaluate the contribution of County Preserves to the MSCP objectives at the landscape-, habitat-, and species-level. A total of 30 County Preserves currently contribute to MSCP Subarea Plan landscape, habitat, and species objectives. (County Preserves are those depicted and referenced in **Figure 1**). The MSCP Subarea Plan identifies targets at the landscape-, habitat-, and species-level to quantify contributions to the MSCP objectives and measure success of the MSCP Subarea Plan. At the landscape-level, contributions are measured in acres of biological core resource areas, habitat linkages, and segments conserved. At the habitat-level, contributions are measured in acres of target habitat types conserved. At the species-level, contributions are measured in the MSCP covered species conserved. Section 5.2 through Section 5.5 describes the preliminary results of the first phase of the *Preserve Functionality Assessment*. The first phase of the *Preserve Functionality Assessment* will be finalized in 2024.

At the landscape-level, County Preserves span 11 of 16 biological core resource areas and protects land within 6 of the 24 habitat linkages. At the habitat-level, the County Preserves contribute to habitat conservation goals of each of the target segments, which are Lake Hodges, South County, North Metro-Lakeside-Jamul, and South Metro-Lakeside-Jamul. The County Preserves conserve undeveloped lands that contain all 18 target habitats, with chaparral and coastal sage scrub being the most represented in 23 and 26 of County Preserves, respectively. At the species-level, of the 85 MSCP covered species, 47 have been documented across the County Preserves (**Appendix N**). Together with federal, state, local partner, and private mitigation conservation, the County and its partners contribute to preservation of the unique biological resources present in the unincorporated county.

As previously mentioned, acreage reported in Chapter 5 is in GIS acreage as opposed to Assessor's acreage. GIS acreage is utilized as MSCP Preserve gains and losses are tracked in HabiTrak, the CDFW database, using GIS acreage. For consistency, GIS acreage will be used when reporting on acreage for MSCP Preserve assemblage, losses, and how the conserved lands within the MSCP Preserve are successfully meeting MSCP and Subarea Plan goals and objectives.

5.1 MSCP Objectives

The Natural Communities Conservation Planning Conservation Guidelines, the MSCP, and the biological information from the MSCP's Multiple Habitat Planning Area (MHPA) Preserve alternative were used to establish conservation goals and criteria for habitat and individual species for each Segment of the MSCP Subarea Plan. These goals and criteria are based on the needs of the 85 MSCP covered species and an analysis of their habitats in the MSCP study area. Goals and criteria for conservation of biological core resource areas and habitat linkages within the individual segments are discussed in MSCP Subarea Plan Chapters 2, 3, and 4. The

anticipated levels of conservation for vegetation types and individual species are included in MSCP Subarea Plan Section 1.2.1 and Section 1.2.2, respectively and the progress that has been made regarding those goals is summarized in **Appendix E**.

The County has made substantial progress toward the achievement of the MSCP Subarea Plan Objectives listed below. For each objective, progress is documented in the referenced chapter or section of the annual report. The County Preserves contribution refers to those parks and preserves owned or managed by the County.

Objective 1: Acknowledge the no-net-loss-of-wetlands standard to satisfy state and federal wetland goals, policies, and standards.

Progress: Acknowledgment of the state and federal goals, policies, and standards of the no-net-loss-of-wetlands is provided in Chapter 4, *Habitat Gains and Losses* and **Appendix E**, *Summary of Habitat Losses and Gains,* with almost no impacts to wetlands.

Objective 2: Include measures to maximize the habitat structural diversity of conserved habitat areas, including conservation of unique habitats and habitat features (e.g., soil types, rock outcrops, drainages, and host plants).

Progress: Conservation of habitat diversity and unique habitats is provided in **Appendix E**, *Summary of Habitat Losses and Gains*. Properly managing conserved preserve lands ensures that habitat diversity is sustained. RMP development and implementation is provided in Chapter 6, *Preserve Management*. RMPs provide detailed site-specific physical, biological, and cultural information for County Preserves. These documents serve as a guidance document to manage and preserve the sensitive biological and cultural resources within County Preserves and include guidance for land management/stewardship activities. They also include a framework for on-site MSCP covered species monitoring and management. The County's monitoring program provides detailed specifications for implementation of management and monitoring within County-owned and managed conserved lands. Specifically, the TMP is an adaptive implementation plan that incorporates the site-specific monitoring strategy included in RMPs, focused goals and objectives for target resources, and detailed monitoring protocols. The TMP is consistent with regional priorities, includes goals, measurable objectives, and detailed protocols using best available science. Species- and habitat-specific monitoring results are provided in Chapter 7, *Preserve Monitoring and Research*. Habitat and species management is informed by the TMP. Management actions are described in Chapter 6, *Preserve Management*.

Objective 3: Provide for the conservation of spatially representative (e.g., coastal versus interior) examples of extensive patches of coastal sage scrub and other habitat types that were ranked as having high and very high biological value by the MSCP habitat evaluation model.

Progress: Habitat protection goals identified in MSCP Subarea Plan Table 1-2 and Table 4-2 are measured in Section 5.4, *Habitat-Level Conservation*. Habitat protection has occurred in all three Subarea Plan segments in extensive patches in the biological core resources areas (**Figures 2 and 3**). The County Preserves contribution toward the Subarea Plan habitat goals are evenly distributed among all three segments with over 6,000 acres of coastal sage scrub habitat conservation.

Objective 4: Create significant blocks of habitat to reduce edge effects and maximize the ratio of surface area to the perimeter of conserved habitats.

Progress: County Preserves conserve lands within 11 of the 16 core biological resource areas, and within six critical biological resource areas identified in MSCP Subarea Plan Section 4.2.2 and six habitat linkages identified in MSCP Subarea Plan Section 4.2.3 (Section 5.3, *Landscape-level Conservation*). As of December 31, 2023, the assembled 80,519-acre MSCP Preserve has large blocks of habitat that reduce edge effects and maximize the ratio of surface area to perimeter (**Figures 2 and 3**).

Objective 5: Provide incentives for development in the least sensitive habitat areas.

Progress: Development is incentivized in the least sensitive habitat areas through the application of **Appendix L** of the County's BMO, which identifies higher mitigation requirements for projects impacting biological resource core areas and lower mitigation requirements for projects impacting land outside these areas. The use of project mitigation sites within biological core resource areas is also incentivized by further lowering project mitigation requirements. Projects covered by the MSCP and compliant with County's BMO are documented in Chapter 3, *Covered Projects*.

Objective 6: Provide for the conservation of key regional populations of the covered species, and representation of sensitive habitats and their geographic sub-associations in biologically functioning units.

Progress: A total of 47 MSCP covered species are found on County Preserves. Conservation of target vegetation communities, species habitats, and species occurrences (i.e., compliance monitoring) is documented in Section 5.4, *Habitat-level Conservation* and Section 5.5, *Species-level Conservation*. Status and trends monitoring (i.e., effectiveness monitoring) is documented in Chapter 7, *Preserve Monitoring and Research*.

Objective 7: Conserve large, interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mule deer, golden eagle, and predators as appropriate. Special emphasis will be placed on conserving adequate foraging habitat near golden eagle nesting sites.

Progress: County Preserves conserve lands within 11 of the 16 core biological resource areas, and within six critical biological resource areas identified in MSCP Subarea Plan Section 4.2.2 and six habitat linkages identified in MSCP Subarea Plan Section 4.2.3. (Section 5.3, *Landscape-Level Conservation*).

5.2 MSCP Preserve Functionality Assessment

The County initiated an *MSCP Preserve Functionality Assessment* to evaluate the contribution of conserved lands to the Sub-Regional MSCP Plan's and MSCP Subarea Plan's objectives at the landscape-, habitat-, and species-level. This assessment will be a multi-phase effort with the first phase focused on the County Preserves that contribute to the assembled MSCP Preserve. As part of a regional effort, and in coordination with conserved land partners, future phases of the MSCP functionality assessment will focus on private mitigation contributions and lands conserved by federal, state, and non-profit partners. The MSCP Subarea Plan identifies measurable objectives at the landscape-, habitat-, and species-level to measure success of the assembled MSCP Subarea Plan Preserve. At the landscape-level, acres of conserved biological core resource areas, habitat linkages, and segments are the measurable objective. At the habitat-level, acres of conserved target habitat types are the quantifiable objective. At the species-level, the number of conserved MSCP covered species are used as the measurable

objective. The metrics presented in this chapter are the preliminary results of the contributions of County Preserves. The functionality analysis efforts continued in 2023 and final results of the first phase of the assessment are anticipated to be included in the 2024 MSCP Annual Report. In upcoming years, as part of a regional effort, and in coordination with conserved landowners, additional MSCP Preserve-lands assessment will be completed. It is anticipated that the next MSCP Preserve-lands to be analyzed will be private mitigation lands.

Prior to the County's initiation of the *Preserve Functionality Assessment*, DPR, the Wildlife Agencies, San Diego Management and Monitoring Program (SDMMP), and United States Geological Society (USGS) met to collaborate, determine available data sets, coordinate on analysis, and discuss the County's muti-phased approach to the project. The approach of the first phase f the assessment to focus on County Preserves was based on availability of data and knowledge of management activities on County Preserves and to show the County's contribution to the MSCP species and habitats goals and objectives. While supporting the *MSCP Preserve Functionality Assessment*, the Wildlife Agencies' preference is for the later phase of the assessment, which will focus on all conserved lands of the MSCP Preserve. The following components of the first phase of the assessment (County Preserves that contribute to the assembled MSCP Preserve) were discussed and are described as follows.

- **County Preserves.** County Preserves enrolled in the MSCP Preserve would be the units of analysis. These are the 30 County Preserves included in this Annual Report and depicted in **Figure 1**.

- **Data.** Data from 1997 to 2020 would be considered in the analysis. Data sources would include GIS data from DPR's TMP, RMPs, inventory surveys, habitat vegetation mapping, and restoration projects as well as the CNDDB. County partner data from the SDMMP, USGS, and Wildlife Agencies will also be included.

- **MSCP Covered Species on County Preserves.** The analysis would determine species-level contributions to MSCP covered species conservation goals. The data would be used to determine which of the 85 MSCP covered species are found on County Preserves. Results would be summarized in a matrix of MSCP covered species, their sensitivity classifications, and whether or not they were found on the County Preserves. A separate table would identify MSCP covered species by County Preserve.

- **Acreage of conserved and targeted habitat vegetation types on County Preserves.** The analysis would determine habitat-level contributions to MSCP habitat conservation goals. The data would be used to determine the habitat vegetation type acreage on County Preserves compared to the target acreage in Table 1-2 of the MSCP Subarea Plan. Results would be summarized in a matrix of vegetation types, their total acreages within County Preserves, and the relative contribution to the target acreages in Table 1-2 (e.g., percent contribution). The results would be summarized for the County Preserves as a whole and by each County Preserve.

- **Status summary of each MSCP covered species located on County Preserves.** The analysis would determine species-level contributions to MSCP covered species conservation goals. A status summary of each MSCP covered species conserved and their MSCP habitat conservation goals based on Table 3-5 of the MSCP would be provided. This summary would list MSCP covered species with the habitat conservation goals for each species. The amount of habitat conserved for each species on County Preserves would be quantified and percent contribution to the MSCP goal calculated.

For those species monitored by the TMP, the number of occurrences and percent contribution to the occurrence targets in Table 1-3 of the MSCP Subarea Plan would be summarized.

- **Summary of threats and monitoring activities on County Preserves for MSCP covered species.** The analysis would inform habitat and species-level management and monitoring actions for MSCP covered species. An analysis of threats to MSCP covered species and DPR monitoring activities that are implemented to ensure the success of the MSCP covered species on County Preserves would be conducted and a summary developed.

- **MSCP Preserve Functionality Report.** This report would summarize landscape-level, habitat-level, and species-level contributions and assess MSCP Preserve function on the County Preserves. A report encompassing the analyses described above would be developed. Recommendations for further analyses and reporting to address MSCP Preserve Functionality would be provided.

Section 5.3 through Section 5.5 provides preliminary results and assessments of the first phase of the Preserve Functionality Analysis, which analyzed the County's Preserves within the MSCP Preserve.

5.3 Landscape-Level Conservation

A landscape-level conservation analysis was conducted to determine the County's contributions to MSCP Subarea Plan Objective 4 *"Create significant blocks of habitat to reduce edge effects and maximize the ratio of surface area to the perimeter of conserved habitats" and Objective 7 "Conserve large, interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mule deer, golden eagle, and predators as appropriate. Special emphasis will be placed on conserving adequate foraging habitat near golden eagle nesting sites."* The results presented in this section are the preliminary results of a *Preserve Functionality Assessment*. As the County continued to conduct and develop the *Preserve Functionality Assessment* in 2023, final results are anticipated to be presented in the 2024 MSCP Annual Report.

The preliminary analysis was prepared using GIS-calculated acres. To complete this analysis, the County Preserves layer was overlaid with the MSCP Subarea Plan segments, biological core resource areas, and habitat linkages [13] to quantify the landscape level conservation contribution of the 30 County Preserves. All the parks and preserves included in the analysis were County Preserves; however, portions of the park or preserve may have been excluded from the MSCP Preserve due to existing use (e.g., campground, sports fields).

Based on this preliminary analysis, the County Preserves contribute to MSCP Subarea Plan landscape, habitat, and species objectives by spanning 11 biological core resource areas, 6 habitat linkages, and seven segments. **Table 10**, *Landscape-Level Conservation in County Preserves*, summarizes landscape-level conservation in the preserves.

Biological core resource areas. The MSCP Plan identifies 16 biological core resource areas in Table 2-2. Biological core resource areas generally support a high concentration of sensitive

[13] The biological core resource areas and habitat linkages are those identified in Figure 2-2 of the *Final Multiple Species Conservation Program* (MSCP Plan [1998]).

biological resources which, if lost or fragmented, could not be replaced or mitigated elsewhere. Eight of these biological core resource areas are identified as critical in the MSCP Subarea Plan Section 4.2.2. County Preserves contribute to the protection of 11 of the 16 biological core resource areas and six of the eight identified as critical. Future phases of the *Preserve Functionality Analysis* assess all conserved lands within the MSCP Preserve and it is anticipated that conserved lands will be located within all biological core resource areas in Table 2-2.

Habitat linkages. The MSCP Plan identifies 24 linkages between biological core resource areas in Table 2-2. Habitat linkages have characteristics that allow plants and animals to move between the biological core resource areas. Five of these linkages are targeted for acquisition in the North and South Metro-Lakeside-Jamul segments as identified in MSCP Subarea Plan Section 4.2.3. County Preserves protect linkages in the following segments: North and South Metro-Lakeside-Jamul, City of San Diego Northern Area, South County, City of Chula Vista, and City of San Diego Southern Area. Future phases of the *Preserve Functionality Analysis* will assess all conserved lands within the MSCP Preserve and it is anticipated that conserved lands will be located within the 24 linkages identified in Table 2-2.

Segments. The MSCP Subarea Plan identifies four segments within which the MSCP Preserve will be assembled. County Preserves span these four segments, plus three additional segments in other Subarea Plan Areas. Within the MSCP Subarea Plan Area, County Preserves contribute up to 77% of the segment goals.[14] Future phases of the Preserve Functionality Analysis will assess all conserved lands within the MSCP Preserve and it is anticipated that the assembled MSCP Preserve will meet all segment objectives.

The County Preserves contribute to MSCP Subarea Plan Objective 4 *"Create significant blocks of habitat to reduce edge effects and maximize the ratio of surface area to the perimeter of conserved habitats" and Objective 7 "Conserve large, interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mule deer, golden eagle, and predators as appropriate. Special emphasis will be placed on conserving adequate foraging habitat near golden eagle nesting sites."* The County Preserves conserved in each segment are summarized below and detailed in **Table 10**. Only the acreage within the MSCP Plan Area's boundaries are reported in **Table 10** as four County Preserves span both the South County and draft North County MSCP Plan Areas.

TABLE 10. LANDSCAPE-LEVEL CONSERVATION IN COUNTY PRESERVES

County Preserve	Area within MSCP Subarea Plan Area (acres)	Segment Name	Segment acres	Biological Core Resource Area Habitat Linkage	Core Area acres	Linkage acres
Barnett Ranch Preserve	668[a]	North Metro-Lakeside-Jamul	668	Central Poway/San Vicente Reservoir	275	-
Boulder Oaks Preserve	2,019	North Metro-Lakeside-Jamul	2,019	Central Poway/San Vicente Reservoir	1,416	-
Damon Lane Park	29	South Metro-Lakeside-Jamul	29	-	-	-
Del Dios Highlands Preserve	269[a]	North Metro-Lakeside-Jamul	269	Hodges Reservoir/San Pasqual Valley	167	-

[14] The segment goals are for all MSCP Preserve acquisitions—County, federal, state, non-profit partners, private mitigation.

County Preserve	Area within MSCP Subarea Plan Area (acres)	Segment Name	Segment acres	Biological Core Resource Area Habitat Linkage	Core Area acres	Linkage acres
Dictionary Hill Preserve	176	South Metro-Lakeside-Jamul	176	-	-	-
El Capitan Preserve	2,377[a]	North Metro-Lakeside-Jamul	2,377	Lake Jennings/Wildcat Canyon	2,312	-
El Monte Park	87	North Metro-Lakeside-Jamul	87	Lake Jennings/Wildcat Canyon	87	-
Flinn Springs Park	73	South Metro-Lakeside-Jamul	73	-	-	-
Furby-North Property	79	City of San Diego Southern Area	79	Vernal Pools, Otay Mesa	65	-
Holly Oaks Preserve	42	North Metro-Lakeside-Jamul	42	-	-	-
Iron Mountain Preserve	162	North Metro-Lakeside-Jamul	162	Central Poway/San Vicente Reservoir	162	-
Lakeside Linkage Preserve	199	North Metro-Lakeside-Jamul	199	Lake Jennings/Wildcat Canyon I-8 at Lakeside Linkage	11	188
Lawrence & Barbara Daley Preserve	581	South Metro-Lakeside-Jamul	581	Otay Mountain/Jamul Mountains to Sequan Peak Linkage	-	<1
Los Peñasquitos Canyon Preserve	199	City of San Diego Northern Area	199	Los Peñasquitos Lagoon/Del Mar Mesa Los Peñasquitos Creek west of Poway Linkage	176	14
Louis A. Stelzer Park	369	North Metro-Lakeside-Jamul	369	Lake Jennings/Wildcat Canyon	369	-
Luelf Pond Preserve	87	North Metro-Lakeside-Jamul	87	-	-	-
Lusardi Creek Preserve	226	Lake Hodges	226	Hodges Reservoir/San Pasqual Valley	226	-
Oakoasis Preserve	391	Lake Hodges	391	Central Poway/San Vicente Reservoir	27	-
Old Ironsides Park	4	South Metro-Lakeside-Jamul	4	Dehesa to El Capitan Reservoir Linkage	-	2
Otay Lakes Park	87	South County	87	Otay Lakes/Otay Mesa/Otay River Valley	87	-
Otay Ranch Preserve	3,996	City of Chula Vista South County	99 2,991	Jamul Mountains Otay Lakes/Otay Mesa/Otay River Valley	907 1,800	-

County Preserve	Area within MSCP Subarea Plan Area (acres)	Segment Name	Segment acres	Biological Core Resource Area Habitat Linkage	Core Area acres	Linkage acres
				Otay Mountain/Marron Valley	1,266	
Otay Valley Regional Park	412	South County City of Chula Vista City of San Diego Southern Area	189 125 99	Otay Lakes/Otay Mesa/Otay River Valley Otay River west of I-805 Linkage	319	41
Peutz Valley Preserve	255	North Metro-Lakeside-Jamul	255	Dehesa to El Capitan Reservoir Linkage	-	7
Ramona Grasslands Preserve	775[a]	North Metro-Lakeside-Jamul	755	Hodges Reservoir/San Pasqual Valley	775	-
Santa Fe Valley Preserve	320	Lake Hodges	308	Hodges Reservoir/San Pasqual Valley	308	-
Skyline Preserve	261	South Metro-Lakeside-Jamul	261	Otay Mountain/Jamul Mountains to Sequan Peak Linkage	-	122
Stoneridge Preserve	255	South Metro-Lakeside-Jamul	255	Dehesa to El Capitan Reservoir Linkage	-	249
Sweetwater Regional Park	352	South County South Metro-Lakeside-Jamul City of Chula Vista National City Sweetwater Authority	280 15 6 42 2	Sweetwater Reservoir/San Miguel Mountain Otay Lakes/Otay Mesa/Otay River Valley	44 129	108
Sycamore Canyon and Goodan Ranch Preserve	2,769	North Metro-Lakeside-Jamul City of San Diego Northern Area	2,766 3	Central Poway/San Vicente Reservoir Mission Trails/Kearny Mesa/East Elliot/Santee	1,269 1,500	-
Tijuana River Valley Regional Park	1,803	City of San Diego Southern Area	1,779	Tijuana Estuary/River Valley	1,198	-

[a] Barnett Ranch Preserve, El Capitan Preserve, Del Dios Highlands Preserve, and Ramona Grasslands Preserve are located within both the South County and draft North County MSCP Plan Areas. Acreages reported in this table reflect only the portions of the preserves within the MSCP Subarea Plan Area.

SOURCE: County, LUEG-GIS

5.4 Habitat-Level Conservation

A habitat-level conservation analysis was conducted to determine the County's contributions to MSCP Subarea Plan Objective 3 *"Provide for the conservation of spatially representative (e.g., coastal versus interior) examples of extensive patches of coastal sage scrub and other habitat types that were ranked as having high and very high biological value by the MSCP habitat*

evaluation model" and Objective 6 *"Provide for the conservation of key regional populations of the covered species, and representation of sensitive habitats and their geographic subassociations in biologically functioning units."* The results presented in this section are the preliminary results of the *MSCP Preserve Functionality Assessment*. Final results of the first phase of the assessment are anticipated to be completed in 2024 and reported in the 2024 MSCP Annual Report.

The preliminary analysis was prepared by the County using GIS-calculated acres. To complete this analysis, the County Preserves layer was overlaid with the vegetation layer to estimate the acres of MSCP target habitats in the County Preserves cumulatively, by segment (i.e., Lake Hodges, South County, and Metro-Lakeside-Jamul), and by sub-segment for Metro-Lakeside-Jamul (i.e., North and South).

Based on this analysis, County Preserves conserve all 18 target habitats within the MSCP Subarea Plan. Each County Preserve contains two to 15 habitat types. The most prevalent habitats conserved in County Preserves are chaparral (6,600 acres) and coastal sage scrub (6,900 acres). For these habitat types, County Preserves contribute up to 31% and 17%, respectively, to the Subarea Plan segment goals. **Table 11**, *Habitat Conservation in County Preserves*, details County Preserves' contribution to MSCP Preserve-wide habitat conservation goals. The acres of habitat conserved in each County Preserve is summarized in **Appendix I**.

County Preserves conserve habitat in all segments, with 12 of 16 target habitats conserved in the Lake Hodges segment, 13 of 17 target habitats conserved in South County, and 12 of 14 target habitats conserved in the Metro-Lakeside-Jamul Segment. Depending on the vegetation community, County Preserves account for up to approximately 75% of the habitat conservation goals identified in MSCP Subarea Plan Table 1-2. County Preserves contributions to the overall goals per segment have helped meet or exceed habitat conservation goals for maritime succulent scrub (South County), southern maritime chaparral (Lake Hodges), riparian forest (Metro-Lakeside-Jamul), and riparian woodland (South County). County Preserves' contribution is provided in **Table 12**, *Habitat Conservation Goals Achieved in County Preserves for all Subunits*, and summarized as follows.

- **Lake Hodges.** Twelve target habitats are conserved in the Lake Hodges segment. The largest contributions are for southern maritime chaparral (over 100%), riparian forest (82%), freshwater marsh (36%), and riparian scrub (34%).

- **South County.** Thirteen target habitats are conserved in the South County segment. The largest contributions are for maritime succulent scrub (over 100%), riparian woodland (over 100%), open water (95%), and riparian scrub (41%).

- **Metro-Lakeside-Jamul.** Twelve target habitats are conserved in the Metro-Lakeside-Jamul segment. The largest contributions are for riparian forest (over 100%), freshwater marsh (82%), grassland (48%), and riparian woodland (42%).

The MSCP Subarea Plan establishes additional habitat conservation goals for 13 habitats in the north and south sub-segments of the Metro-Lakeside-Jamul segment in MSCP Subarea Plan Table 4-2. County Preserves conserve 12 of 13 target habitat types in the North sub-segment and 5 of 13 in the South sub-segment. County Preserves' contributions are provided in **Table 13**, *Habitat Conservation Goals Achieved in County Preserves for Metro-Lakeside-Jamul Segment*, and summarized as follows.

- **North Metro-Lakeside-Jamul.** Twelve target habitats are conserved in North Metro-Lakeside-Jamul. The largest contributions are for freshwater marsh (over 100%), grassland (77%), riparian forest (73%), and chaparral (36%).

- **South Metro-Lakeside-Jamul.** Five target habitats are conserved in South Metro-Lakeside-Jamul. The largest contributions are for coastal sage scrub/chaparral (7%), and chaparral (3%).

TABLE 11. HABITAT CONSERVATION IN COUNTY PRESERVES

Vegetation Community	Cumulative within MSCP Subarea Plan Area (acres)	% of Total[a]
Coastal Sage Scrub	6,942	35%
Maritime Succulent Scrub	358	2%
Chaparral	6,604	35%
Southern Maritime Chaparral	901	5%
Coastal Sage Scrub/Chaparral	402	1%
Grassland	1,389	7%
Freshwater Marsh	52	0.2%
Oak Riparian Forest	301	2%
Riparian Forest	209	1%
Riparian Woodland	322	2%
Riparian Scrub	779	4%
Oak Woodland	303	2%
Tecate Cypress Forest	118	1%
Eucalyptus Woodland	49	0.2%
Open Water	19	0.1%
Disturbed Wetland	6	0.3%
Flood Channel	5	0.04%
Other Habitat[b]	752	4%
Alkali Seep	8	0.04%

[a]Component parts may not add up to 100% because of rounding errors.

[b]Other Habitat includes areas mapped as non-native vegetation, unvegetated habitat, disturbed land, agriculture, and urban/developed.

NOTES: Vegetation Communities listed are those identified in MSCP Subarea Plan Table 1-2. Habitat Protection Goals for the San Diego County Subarea.

SOURCE: County, LUEG-GIS.

TABLE 12. HABITAT CONSERVATION GOALS ACHIEVED IN COUNTY PRESERVES FOR ALL SEGMENTS

	Goals (acres)				In County Preserves within MSCP Subarea Plan Area (acres)				Contribution to Goals (%)			
	Segments			Total[a]	Segments			Total	Segments			Total
Vegetation Community	**LH**	**SC**	**MLJ**	**Goal**	**LH**	**SC**	**MLJ**		**LH**	**SC**	**MLJ**	
Coastal Sage Scrub	2,591	23,037	18,626	44,254	292	2,957	3,228	6,478	11%	13%	17%	15%
Maritime Succulent Scrub	0	158	0	158	28	258	14	300	-	163%	-	>100%
Chaparral	1,391	19,874	18,619	39,884	83	582	5,694	6,359	6%	3%	31%	16%
Southern Maritime Chaparral	5	0	0	5	12	-	866	877	233%	-	-	>100%
Coastal Sage Scrub/Chaparral	20	153	1,152	1,325	-	22	201	223	-	15%	17%	17%
Grassland	305	1,658	1,603	3,566	43	330	765	1,138	14%	20%	48%	32%
Freshwater Marsh	50	173	15	238	18	5	12	35	36%	3%	82%	15%
Oak Riparian Forest	7	141	2,045	2,194	-	-	287	301	1%	10%	14%	14%
Riparian Forest	21	243	84	348	17	61	85	164	82%	25%	101%	47%
Riparian Woodland	6	8	6	20	-	55	3	57	-	687%	42%	>100%
Riparian Scrub	38	424	298	760	13	172	-	-	34%	41%	-	24%
Oak Woodland	21	284	1,901	2,206	1	-	-	302	4%	-	16%	14%
Tecate Cypress Forest	0	5,589	0	5,589	-	118	-	118	-	2%	-	2%
Eucalyptus Woodland	61	17	41	120	8	23	11	42	13%	135%	26%	35%
Open Water	19	6	124	149	4	6	4	14	22%	95%	3%	9%
Disturbed Wetland	4	34	52	90	-	-	-	22	1%	65%	-	25%
Flood Channel	15	132	197	344	2	-	3	5	14%	-	1%	1%
Other Habitat	16	2	0	18	24	212	201	438	>100%	>100%	>100%	>100%

[a] Component parts may not add to total because of rounding errors.

[b] Contributions to City of Chula Vista and City of San Diego MSCP Subarea Plan segment goals are not provided. For this reason, the sum of the segments does not equal the County Preserve acreage. Habitat protection goals are from MSCP Subarea Plan Table 1-2, *Habitat Protection Goals for the San Diego County Subarea*.

SOURCE: County, LUEG-GIS.

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TABLE 13. HABITAT CONSERVATION GOALS ACHIEVED IN COUNTY PRESERVES FOR METRO-LAKESIDE-JAMUL SEGMENT

	Metro-Lakeside-Jamul Goals (acres)		Conserved in County Preserves within MSCP Subarea Plan Area (acres)		Contribution to Goals (%)	
Vegetation Community	**North**	**South**	**North**	**South**	**North**	**South**
Coastal Sage Scrub	9,525	9,101	2,371	145	25%	2%
Maritime Succulent Scrub	-	-	14	-	-	-
Chaparral	12,134	6,285	4,331	159	36%	3%
Southern Maritime Chaparral	-	-	763	-	-	-
Coastal Sage Scrub/Chaparral	454	698	138	46	30%	7%
Grassland	633	971	490	-	77%	-
Freshwater Marsh	2	13	10	-	500%	-
Oak Riparian Forest	1,121	923	218	2	19%	-
Riparian Forest	51	33	37	-	73%	-
Riparian Woodland	6	-	2	-	33%	-
Riparian Scrub	236	63	-	-	-	-
Oak Woodland	1,036	862	258	15	25%	2%
Tecate Cypress Forest	-	-	-	-	-	-
Eucalyptus Woodland	27	14	2	5	7%	-
Open Water	90	34	3	-	3%	-
Disturbed Wetland	-	52	5	-	-	-
Flood Channel	34	163	2	-	6%	-
Other Habitat	-	-	132	6	-	-
Total	25,353	19,411	8,776	373	35%	2%

NOTES: Metro-Lakeside-Jamul Goals are from MSCP Subarea Plan Table 4-2.
SOURCE: County, LUEG-GIS.

5.5 Species-Level Conservation

A species-level conservation analysis was conducted to determine the County's contribution to MSCP Subarea Plan Objective 6, *"Provide for the conservation of key regional populations of the covered species, and representation of sensitive habitats and their geographic subassociations in biologically functioning units"* and Objective 7 *"Conserve large interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mule deer, golden eagle, and predators as appropriate. Special emphasis will be placed on conserving adequate foraging habitat near golden eagle nesting sites."* The results presented in this section are the preliminary results of a Preserve Functionality Assessment. Final results of the first phase of the *Preserve Functionality Assessment* will be presented in the 2024 MSCP Annual Report.

To complete this analysis, MSCP covered species occurrence data for occurrences documented from 1998 to 2020 was consolidated. GIS data sources were SanBIOS, California Natural Diversity Database, SDMMP's MSP Species Master Occurrence Matrix databases, USFWS Regss locations of sensitive species sightings database, and USFWS sensitive species (polygons). The County Preserves layer was overlaid with this data to determine MSCP covered species within the County Preserves. RMPs and baseline reports for County Preserves were reviewed for additional MSCP covered species that may have been missing from the GIS data. If GIS data or document review indicated an MSCP covered species was present in a County Preserve, it was determined to be documented in a County Preserve. The results were provided by MSCP covered species and by County Preserve and are summarized in **Appendix I**.

The County Preserves have documented occurrences for 47 MSCP covered species, including 25 MSCP covered plant, two MSCP covered invertebrate, two MSCP covered reptile, 16 MSCP covered bird, and two MSCP covered mammal species. Of the 30 County Preserves evaluated, 26 have documented MSCP covered species. The MSCP covered species found on County Preserves, as well as their general conservation status, can be found in **Appendix N**.

Some MSCP covered species are widespread across the County Preserves and occurrences are protected in several different locations. This allows for the protection of key regional populations in different geographical areas, supporting MSCP Subarea Plan Objective 6, *"Provide for the conservation of key regional populations of the covered species, and representation of sensitive habitats and their geographic subassociations in biologically functioning units."* The most widespread MSCP covered plant species are the coast barrel cactus and San Diego goldenstar (each documented in five County Preserves) and variegated dudleya (documented in six County Preserves). Blainville's horned lizard is documented in 19 County Preserves and Belding's orange-throated whiptail is documented in 18 County Preserves. The most widespread bird species are the southern California rufous-crowned sparrow (documented in 20 County Preserves), coastal California gnatcatcher (documented in 16 County Preserves), and Cooper's hawk, (documented in 15 County Preserves). The most widespread mammal is southern mule deer (documented in 16 County Preserves).

MSCP covered species have also been documented only in a single County Preserve. This includes Del Mar manzanita in Lusardi Creek Preserve, heart-leaved pitcher sage in Iron Mountain Preserve, Otay manzanita in Otay Ranch Preserve, Otay mesa mint in Otay Ranch Preserve, San Diego thornmint in Sycamore Canyon and Goodan Ranch Preserve, ferruginous hawk and white-faced ibis in Del Dios Highlands Preserve, and Swainson's hawk in Barnett Ranch Preserve.

County Preserves conserve large, interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mountain lion, southern mule deer, and golden eagle. Mountain lions are documented in nine County Preserves (Barnett Ranch Preserve, Boulder Oaks Preserve, Del Dios Highlands Preserve, El Capitan Preserve, Iron Mountain Preserve, Lakeside Linkage Preserve, Otay Ranch Preserve, Peutz Valley Preserve, and Sycamore Canyon and Goodan Ranch Preserve). Southern mule deer are documented in 16 County Preserves (Barnett Ranch Preserve, Boulder Oaks Preserve, Del Dios Highlands Preserve, El Capitan Preserve, El Monte Park, Iron Mountain Preserve, Lakeside Linkage Preserve, Lawrence and Barbara Daley Preserve, Louis A. Stelzer Preserve, Lusardi Creek Preserve, Oakoasis Preserve, Otay Ranch Preserve, Peutz Valley Preserve, Ramona Grasslands Preserve, Stoneridge Preserve, and Sycamore Canyon and Goodan Ranch Preserve). Golden eagles are documented in seven County Preserves (Barnett Ranch Preserve, Del Dios Highlands Preserve, El Capitan Preserve, Otay Ranch Preserve, Ramona Grasslands Preserve, Skyline Preserve, and Sycamore Canyon and Goodan Ranch Preserve). Conservation of habitat for these species contributes to MSCP Subarea Plan Objective 7, *"Conserve large, interconnected blocks of habitat that contribute to the preservation of wide-ranging species such as mule deer, golden eagle, and predators as appropriate. Special emphasis will be placed on conserving adequate foraging habitat near golden eagle nesting sites."*

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CHAPTER 6

Preserve Management

Preserve management within the MSCP Subarea is an important element of the MSCP Preserve success and the overall success of the MSCP Subarea Plan. The overall management goal of the MSCP Subarea Plan is to ensure that the biological value and function of natural resources are maintained or improved over time, where land is preserved as part of the MSCP through acquisition, regulation (the discretionary permit process), mitigation or other means. In conformance with IA Section 10.9, *Preserve Management*, and Section 10.10, *Preserve Management Program*, the County is responsible for managing the land it owns or acquires as well as ensuring that other private mitigation lands dedicated to the County within the MSCP Preserve are managed consistent with the MSCP Subarea Plan. This chapter summarizes the stewardship activities in County Preserves and private mitigation areas.

6.1 County Resource Management Plan

The County has a coordinated stewardship, monitoring, and adaptive management program to ensure proper management and protection of sensitive species and habitat on County Preserves. The RMPs provide a framework for long-term stewardship/management and monitoring actions required to protect biological resources on County Preserves. RMPs document biological and cultural resources on-site and provide guidance on management and preservation of the resources within County Preserves in accordance with Management Directives (MDs) pursuant to the requirements of the MSCP Subarea Plan Framework Management Plan (County 2001) and Table 3-5 of the MSCP Plan. To develop County Preserve-specific RMPs, the County conducts baseline inventory surveys that document the biological and cultural resources on the property. The County prepares RMPs for County Preserves larger than 300 acres or under 300 acres for County Preserves with unique habitat or species values. Their preparation is prioritized annually across all three MSCP Plan areas. The County has prepared or is in the process of preparing 20 RMPs in the MSCP Subarea Plan Area. RMPs are updated as needed, such as when additional baseline inventory surveys are completed or there are additions to existing County Preserves. Land stewardship/management actions are generally implemented by ranger staff. RMP updates are in progress for Barnett Ranch, Boulder Oaks, Lusardi Creek, Ramona Grasslands, Sycamore Canyon and Goodan Ranch, and Tijuana River Valley Regional Park, all of which are located within the MSCP Subarea Plan boundaries. Management completed in the reporting year is summarized in Section 6.2 and **Appendix J**.

The County also conducts targeted monitoring on County Preserves to ensure species are thriving, to identify threats and stressors, and to identify appropriate adaptive management activities to further support biological and cultural resources. The monitoring is guided by the County's TMP. The TMP ensures consistency with the preserve-specific RMPs. RMPs include a framework for general stewardship management activities (including public access) and are incorporated into the TMP by reference. The TMP is an adaptive implementation plan that includes focused goals and objectives for target MSCP covered species and habitats and detailed monitoring protocols. As part of the County's monitoring program, baseline inventory surveys are conducted on newly acquired properties that are part of the County Preserve. The baseline inventory surveys are used to identify the appropriate monitoring for each property, consistent with the TMP. The TMP and monitoring results are provided in Chapter 7, *Preserve*

Monitoring and Research. Adaptive management actions informed by TMP monitoring are included in Section 6.2, Preserve Management of County Lands.

Table 14, *Resource Management Plans for County Preserves*, reflects the current status of baseline inventory surveys and RMPs for the 20 County Preserves with RMPs completed or in progress.

TABLE 14. RESOURCE MANAGEMENT PLANS FOR COUNTY PRESERVES

County Preserve	Baseline Inventory Surveys Completed	RMP Completed	RMP Revisions
1. Barnett Ranch Preserve	2001-2003, 2018	2004	In Progress
Holly Oaks Preserve[a]	2018	In Progress	
Luelf Pond Preserve[a]	2018	In Progress	
2. Boulder Oaks Preserve	2007, 2013	2008	In Progress
3. Del Dios Highlands Preserve[b]	2008-2011	2011	
4. Dictionary Hill Preserve	2020	In Progress	
5. El Capitan Preserve	2008	2009	
6. El Monte Park	2008	2009	
7. Furby-North Property	2011	2012	
8. Iron Mountain Preserve	2021	In Progress	
9. Lakeside Linkage Preserve	2008, 2021	2010	In Progress
10. Lawrence and Barbara Daley Preserve	2009-2010	2011	
11. Lusardi Creek Preserve	2008, 2018	2009	In Progress
12. Otay Ranch Preserve	1989-1991	2002	2018
13. Oakoasis Preserve	2008	2009	
14. Peutz Valley Preserve	2022	In Progress	
15. Ramona Grasslands Preserve[b]	2009, 2021	2013	In Progress
16. Louis A. Stelzer Park	2008	2009	
17. Skyline Preserve	2022	In Progress	
18. Stoneridge Preserve	2012	2013	
19. Sycamore Canyon and Goodan Ranch Preserve	2008, 2012, 2016, 2019, 2021	In Progress	
20. Tijuana River Valley Regional Park	2018	2007	In Progress

NOTES:
a Barnett Ranch, Holly Oaks, and Luelf Pond Preserves will be managed under a single RMP as Holly Oaks and Luelf Pond Preserves are part of Barnett Ranch Preserve.
b Ramona Grasslands and Del Dios Highlands Preserves span the MSCP Subarea Plan Area and draft North County MSCP Plan Area. They are included here because they are managed as a single unit.

SOURCE: County of San Diego Department of Parks and Recreation.

6.2 Preserve Management of County Preserves

Preserve management benefits the 47 MSCP covered species found across County Preserves. Stewardship and adaptive management activities performed in 2023 on County Preserves guided by TMP, annual work plans, and RMPs are described below and summarized in **Appendix J**. For each park or preserve, its size (first in Assessor's acreage and then in GIS acreage), and MSCP segment are provided. Assessor's and GIS acreages are both reported as the County acquires all real estate transactions in Assessor's acreage, while HabiTrak, the tracking database used to track MSCP Preserve assemblage, only utilizes GIS acreage. The two acreages can differ as Assessor's records of the legal acreage of parcels are plotted on paper and then converted into GIS. For these reasons, acreage in the following section will be reported as Assessor's acreage and GIS acreage for each park or preserve.

All parks and preserves discussed in this section are located with the MSCP Subarea Plan Area or are in a partnering MSCP Subarea Plan Area and are counted towards the County's MSCP Preserve assemblage. All County Preserves that are owned or managed by DPR within the MSCP Subarea Plan are discussed in the following section of the report to record the management actions implemented to ensure that the preserve lands within the MSCP Subarea Plan are successfully managed and the MSCP habitats and covered species thrive. It will be noted if a property is not counted towards the MSCP Preserve. County Preserves spanning multiple MSCP Plan areas or ownerships are acknowledged. MSCP covered species, other sensitive species, and habitats benefited by preserve management activities are identified. The following categories are used to link management actions to TMPs, annual work plans, and RMPs.

- **Habitat restoration and management actions** are habitat or species-specific. These actions are guided by the documents outlining adaptive management strategies such as the preserve-specific RMPs and annual work plans as well as by survey information resulting from the implementation of the TMP, baseline surveys, research partner surveys, and other environmental surveys performed on County Preserves. As a standard management practice, dead or dying trees in the County Preserves are replaced with habitat appropriate native tree species that include coast live oak, Engelmann oak, sycamore, cottonwood, and arroyo willow, among other species. Replacement of dead or dying trees benefits MSCP covered species by providing habitat for nesting birds and cover for foraging amphibians. Cause of death of the trees on County Preserves is most commonly attributed to drought conditions, old age or disease. Tree pests including goldspotted oak borer and invasive shot hole borer remain a threat to trees on County Preserves and affected trees are treated when infestation is observed. Native shrub species commonly used in restoration projects include native cacti, lemonadeberry, laurel sumac, monkey flower, and Mexican elderberry. However, specific tree and shrub species will not be listed for every County Preserve in this section.

- **Invasive, non-native plant and animal control** implements MD A.3*. Reduce, control, or where feasible eradicate invasive, non-native fauna known to be detrimental to native species and/or the local ecosystem*, MD B.2. *Reduce, control, or eradicate non-native flora known to be detrimental to native species and local ecosystem*, and B.3. *Manage and minimize the expansion of invasive, non-native flora within the Preserve*, and corresponding sub-directives. Invasive, non-native plant species treatment and removal is also conducted on County Preserves and the targeted plant species may not be

specified but would most likely include mustard and non-native annual grasses, among other species.

- **Access control** implements MD C.1. *Limit types of public uses to those appropriate for the Preserve,* C.2. *Manage public access in sensitive biological and cultural resource areas within the Preserve,* C.5. *Install and maintain fencing and gates within the Preserve,* C.6. *Properly maintain access roads, staging areas and trails for user safety, to protect natural and cultural resources, and to provide high-quality user experiences,* C.7. *Install, and maintain appropriate signage to effectively communicate important information to Preserve visitors,* D.1. *Maintain a safe and healthy environment for Preserve users,* and D.2. *Publicize and enforce regulations regarding littering/dumping, and corresponding sub-directives*. The mission of the County is to enhance the quality of life in San Diego County by providing exceptional parks and recreation experiences and preserving significant natural resources. Activities that address unauthorized access or implement access control measures to protect sensitive resources are described under this heading.

- **Fire management** implements MD B.4. *Provide for fire management activities that are sensitive to natural and cultural resources* and corresponding sub-directives.

- **Environmental education** implements MD C.3. *Provide interpretive and educational materials* and corresponding sub-directives.

Warrior Hike Trail on El Capitan Preserve.

Barnett Ranch Preserve

Preserve Total Acreage: 708 Assessor's acres, 745 GIS acres
MSCP Subarea Plan: 690 Assessor's acres, 668 GIS acres
Segment: Metro-Lakeside-Jamul
Draft North County MSCP: 18 Assessor's acres, 77 GIS acres

Management benefits the ten MSCP covered species known to occur on or utilizing the Preserve, which are Belding's orange-throated whiptail, Blainville's horned lizard, Cooper's hawk, tricolored blackbird, golden eagle, southern California rufous-crowned sparrow, Swainson's hawk, western bluebird, southern mule deer, and mountain lion. Management actions included the following.

- **Habitat restoration and management**. A total of 40 coast live oaks were planted by County Park Rangers.

- **Invasive, non-native plant control**. Invasive, non-native plant removal efforts included hand-pulling, string trimmers, and herbicide across five acres. Target species included goats head, Russian thistle, mustard, and milk thistle.

- **Access control**. County Park Rangers repaired four interpretive signs to discourage unauthorized trail use. Daily patrols to stop trash dumping and littering within the staging area continued. County Park Rangers have also continued to educate visitors in order to prevent off-trail activity.

- **Fire management**. County Park Rangers maintained an existing firebreak, close to residential property, using mowers and string trimmers along Deviney Road. The Bunnie Fire of August 2023 burned approximately 184 acres within the preserve. Preserve staff coordinated with firefighters during the response to minimize damage to rare plants and cultural resources. The fire was fully contained within three days, and regrowth was observed in burned areas within three months. Biological surveys will be conducted to determine appropriate adaptive management actions to assist in habitat restoration of the burned areas.

- **Environmental education**. County Park Rangers hosted discovery tables, a ranger hike, and three public tree planting events. In total, these events attracted 119 visitors.

Boulder Oaks Preserve

Preserve Total Acreage: 1,964 Assessor's acres, 2,022 GIS acres
MSCP Subarea Plan: 1,964 Assessor's acres, 2,022 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the 12 MSCP covered species known to occur on the Preserve, which are felt-leaved monardella, Lakeside ceanothus, Orcutt's brodiaea, San Miguel savory, Blainville's horned lizard, Belding's orange-throated whiptail, coastal California gnatcatcher, Cooper's hawk, southern California rufous-crowned sparrow, western bluebird, mountain lion, and southern mule deer. Management actions included the following.

- **Habitat restoration and management.** County Park Rangers planted 111 coast live oak trees. Three dead coast live oaks were removed from the Preserve.

- **Invasive, non-native plant control.** Invasive, non-native plant species removal efforts included hand-pulling, removal with string trimmers, and intermittent herbicide application across 25 acres. Target species included mustard, Dyer's rocket, and milk thistle. This threat abatement allows for higher-quality habitats in the Preserve for all the MSCP covered species.

- **Access control**. County Park Rangers repaired two no trespassing signs to prevent unauthorized access. Approximately 60 feet of ranch fencing was also repaired. The game cameras installed in 2022 continued to be monitored on a regular basis in 2023. When illegal access was observed, County Park Rangers addressed trespassers and achieved compliance through education.

- **Fire management**. County Park Rangers maintained existing firebreak along the entry road and on-site structures.

- **Environmental education**. Although the Preserve remains closed to the public, County Park Rangers hosted one public tree planting event, which was attended by 15 visitors.

Cactus Park

Preserve Total Acreage: 61 Assessor's acres, 62 GIS acres
MSCP Subarea Plan: 61 Assessor's acres, 62 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the two MSCP covered species known to occur on the Preserve, which are Blainville's horned lizard and coastal California gnatcatcher. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 35 coast live oak trees and 25 western cottonwood trees as part of canopy restoration efforts.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included hand-pulling, mowing, and intermittent herbicide usage across approximately three acres. Target species included castor bean and tamarisk.

- **Access control**. County Park Rangers increased ranger presence to address unauthorized vehicle activity and illegal dumping on the Preserve.

- **Fire management**. County Park Rangers maintained existing firebreaks within the Preserve. The fire breaks were maintained using weed whips, mowing, and hand-pulling.

Damon Lane Park

Park Total Acreage: 29 Assessor's acres, 29 GIS acres
MSCP Subarea Plan: 29 acres
Segment: Metro-Lakeside-Jamul

Management benefits the MSCP habitat known to occur on the Park, which are coastal sage scrub, grasslands, and riparian forest. Management actions include the following.

- **Habitat restoration and management**. County Park Rangers removed two eucalyptus trees that were potentially hazardous to existing park structures. Additional management challenges also resulted from changes in stormwater runoff amounts coming into the park from housing constructed on the north side of the park. The fence that separates the park from the adjacent housing development was knocked over, and the Homeowner's Association (HOA) agreed to repair the fence to be performed in early 2024. The amount of water also slightly damaged the trail. County Park Rangers will be installing a third culvert and performing trail repair in 2024. Also, the small walking bridge will be replaced in 2024 due to erosion. Debris and sand were also observed to have flowed towards the storm drain and will be addressed by County Park Rangers in early 2024.

- **Invasive, non-native plant control.** Invasive, non-native plant species removal efforts included hand-pulling, cutting, and selective use of herbicides and string trimmers across four acres. Target species included mustards, castor bean, and Mexican fan palm.

- **Access control**. County Park Rangers installed four new signs restricting off-leash dogs within the park.

- **Fire management**. County Park Rangers maintained an existing firebreak via mowing and string trimmers. The fire break follows the fence line around the entire park.

Del Dios Highlands Preserve

Preserve Total Acreage: 774 Assessor's acres, 782 GIS acres
MSCP Subarea Plan: 269 Assessor's acres, 269 GIS acres
Segment: Metro-Lakeside-Jamul
Draft North County MSCP: 505 Assessor's acres, 513 GIS acres

Management benefits the 15 MSCP covered species known to occur on or utilizing the Preserve, which are Encinitas baccharis, wart-stemmed ceanothus, Belding's orange-throated whiptail, Blainville's horned lizard, coastal California gnatcatcher, Cooper's hawk, golden eagle, northern harrier, peregrine falcon, southern California rufous-crowned sparrow, ferruginous hawk, white-faced ibis, western bluebird, mountain lion, and southern mule deer. Management actions included the following.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included chainsaws, string trimmers and hand-pulling across one acre. Target species included tree tobacco, ox tongue, black mustard, and castor bean.

- **Access control**. County Park Rangers noted occasional instances of illegal camping on the Dubois house foundation. Campsites were reported and cleaned up. Rangers regularly conduct patrols to prevent illegal camping.

- **Fire management**. County Park Rangers maintained an existing firebreak along San Diego Gas & Electric (SDGE) power pole trail using string trimmers, mowers, and hedgers. An additional firebreak along Mt. Israel Road was also maintained with string trimmers and hedgers.

Dictionary Hill Preserve

Preserve Total Acreage: 180 Assessor's acres, 177 GIS acres
MSCP Subarea Plan: 180 Assessor's acres, 177 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the eight MSCP covered species known to occur on the Preserve, which are San Diego barrel cactus, San Diego goldenstar, variegated dudleya, Blainville's horned lizard, Belding's orange-throated whiptail, coastal California gnatcatcher, Cooper's hawk, and southern California rufous-crowned sparrow. Management actions included the following.

- **Habitat restoration and management.** A habitat restoration project benefiting California coastal gnatcatcher, Quino checkerspot and monarch butterfly is ongoing across the Preserve. Initiated in 2021 as a Proposition 68 Grant-funded project, this habitat restoration effort aims to restore and enhance four acres of habitat on the Preserve. More information regarding this project can be found in *Section 6.3 Grant Funded Management Projects*.

- **Invasive, non-native plant control**. Invasive, non-native plant species control methods included the use of string trimmers and hand tools to treat approximately ten acres. Target species included mustard, stinkwort, and fountain grass.

- **Access control**. County Park Rangers installed 13 new signs indicating the limits of sensitive habitat within the Preserve. Signs were installed in response to County Park Rangers reporting instances of illegal off-road vehicle activity, littering, off-leash dogs, graffiti, alcohol consumption, and smoking within the Preserve. Other preventative and corrective actions include daily Ranger patrols, litter removal, and graffiti abatement.

- **Fire management**. County Park Rangers performed maintenance of the existing firebreaks using string trimmers. Existing firebreaks occur adjacent to the south, west, northwest, and southeast borders of the Preserve.

- **Environmental education**. A County Park Ranger led one hike within the Preserve, attended by three visitors who learned about the native plant and animal species that can be found on the Preserve.

Dos Picos Park

Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 89 coast live oak trees in 2023. Rangers also planted ten lemonadeberry and ten toyon shrubs across a total of 0.2 acre. County Park Rangers removed 15 coast live oak trees and seven California sycamore trees that had died and were potentially hazardous to park visitors.

- **Invasive, non-native plant control**. Invasive, non-native plant species treatment and removal efforts included the use of string trimmers, mowing, and herbicide application across approximately 20 acres. Non-native mustard was targeted for removal.

- **Access control**. County Park Rangers repaired two border fences, installed one vehicle gate, and installed two new signs informing visitors of fishing information. County Park Rangers reported instances of visitors accessing the park after-hours and attempting to dump unwanted pets at the pond inside the Park. County Park Rangers and other staff conduct regular patrols to prevent illegal activities by locking park gates, restrooms, and other amenities at closing time.

- **Fire management**. County Park Rangers maintained a firebreak along the park's main service road using string trimmers and herbicides.

- **Environmental education**. County Park Rangers held multiple educational activities, including guided hikes, animal presentations, a fire safety talk, and a tree planting event, to approximately 850 park visitors.

El Capitan Preserve

Preserve Total Acreage: 2,759 Assessor's acres, 2,324 GIS acres
MSCP Subarea Plan: 2,759 Assessor's acres, 2,324 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the 11 MSCP covered species known to occur on the Preserve, which are felt-leaved monardella, Lakeside ceanothus, Belding's orange-throated whiptail, Blainville's horned lizard, Cooper's hawk, golden eagle, southern California rufous-crowned sparrow, coastal cactus wren, western bluebird, mountain lion, and southern mule deer. Management actions included the following.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included hand-pulling and use of weed whips across approximately five acres. Stinkwort was the target species.

- **Access control**. County Park Rangers replaced six portions of fencing and three informational signs in the Preserve.

- **Fire management**. County Park Rangers maintained a safe zone around the restrooms and parking lot using weed whips.

- **Environmental education**. County Park Rangers guided "Warrior Hikes" held on Memorial Day and Veteran's Day. A total of 380 Park visitors attended. During busy days, County Park Rangers increased their presence to increase outreach efforts to help educate visitors about how to properly prepare for the Preserve's difficult trails and maximize their hiking experience.

Warrior Hike participants at El Capitan Preserve.

El Monte Park

Park Total Acreage: 120 Assessor's acres, 117 GIS acres
MSCP Subarea Plan: 120 Assessor's acres, 117 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the three MSCP covered species known to occur on the Preserve, which are southern California rufous-crowned sparrow, western bluebird, and southern mule deer. Other notable wildlife species reported by park rangers in 2023 include long-tailed weasel, gray fox, golden eagle, bald eagle, and mountain lion. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 230 native trees, including 200 coast live oak, ten sycamore, and 20 western cottonwood. County Park Rangers removed one carob tree and one coast live oak tree that had died and posed a risk to public. Fifty shrubs were also planted by County Park Rangers, including 20 toyon, 15 elderberry, and 15 lemonadeberry.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included hand-pulling and use of hand tools across approximately 0.25 acre. Target species included tree tobacco, Mexican fan palm, and Russian thistle.

- **Access control**. County Park Rangers installed three new signs informing park visitors of potentially dangerous wildlife within the preserve. In response to illegal activities including unauthorized access, camping, graffiti, drug use, off-road activity, and hunting, County Park Rangers increased patrols, installed signage, and implemented the use of trail cameras.

- **Fire management**. County Park Rangers maintained a firebreak around the perimeter of the park and adjoining property lines.

- **Environmental education**. County Park Rangers held a variety of interpretive programs, including Hawk Talks, touch tables, early morning birding, and a volunteer flume hike, with a combined attendance of more than 1,300 Park visitors.

Flinn Springs Park

Park Total Acreage: 80 Assessor's acres, 73 GIS acres
MSCP Subarea Plan: 80 Assessor's acres, 73 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the MSCP covered habitats known to occur on the Park, which are chaparral, coastal sage scrub/chaparral, and oak riparian forest. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 80 coast live oak and 40 Engelmann oak trees. Twelve dead coast live oak trees and four dead Engelmann oak trees were removed. County Park Rangers also implemented two habitat restoration projects, the Butterfly Garden Project and the Native Plant on Trails Project, for which rangers planted eight native white sage shrubs and other nectar resources.

- **Invasive, non-native plant control**. Invasive, non-native plant species control efforts included the use of hand tools, string trimmers, drag harrows, and a tractor blade for giant reed, castor bean, and mustard species across the Park. The Park is adjacent to Crestridge Ecological Preserve, owned by CDFW, so treatment of invasive, non-native plant species on the Park benefits movement of animals through both properties, as well as benefiting native plant species. Targeted species included mustards, castor bean, and giant reed.

- **Access control**. County Park Rangers installed six new interpretive signs at the Park's pollinator garden. County Park Rangers began locking dumpster lids in response to illegal dumping within the Park.

- **Fire management**. County Park Rangers maintained an existing firebreak along Park boundaries.

- **Environmental education**. County Park Rangers held multiple educational outreach events through the Discovery Program/school field trips during April, May, and June of 2023. A total of 270 Park visitors attended these events. County Park Rangers also organized multiple Discovery Table demonstrations at special events and programs.

Furby-North Preserve

Property Total Acreage: 83 Assessor's acres, 79 GIS acres
City of San Diego MHPA: 83 Assessor's acres, 79 GIS acres

Management benefits the ten MSCP covered species known to occur on the Preserve, which are coast (San Diego barrel) cactus, Otay tarplant, snake cholla, Belding's orange-throated whiptail, Blainville's horned lizard, coastal cactus wren, coastal California gnatcatcher, least Bell's vireo, northern harrier, and southern California rufous-crowned sparrow. Management actions included the following.

- **Access control**. Illegal trails and off-road activity continue to be a challenge throughout the Preserve. County Park Rangers added fencing, gates, and large boulders to deter these activities. County Park Rangers also installed signs along Otay Mesa Road restricting illegal trash dumping.

- **Invasive, non-native plant control**. Invasive, non-native plant species control efforts were performed in the northern portion of the Preserve associated with 2023 Targeted Monitoring Plan management efforts as described in Chapter 7, Section 7.1.

Holly Oaks Preserve

Preserve Total Acreage: 40 Assessor's acres, 42 GIS acres
MSCP Subarea Plan: 40 Assessor's acres, 42 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the four MSCP covered species known to occur in the Park, which are Cooper's hawk, Swainson's hawk, tricolored blackbird, and western bluebird. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted ten coast live oak trees in the Preserve.

- **Invasive, non-native plant control**. Invasive, non-native plant species control efforts included hand-pulling and using line trimmers across approximately seven acres. Herbicide was also applied to four of the seven acres. Target species included mustard species and goat-head.

- **Access control**. Approximately 50 feet of three rail ranch fences were repaired to ensure that Preserve visitors remained on the authorized trail. Unleashed dogs were a recurring issue in the Preserve. County Park Rangers contacted individuals and gained voluntary compliance.

- **Fire management**. County Park Rangers maintained an existing firebreak along the access roads and staging area.

Iron Mountain Preserve

Preserve Total Acreage: 160 Assessor's acres, 162 GIS acres
MSCP Subarea Plan: 160 Assessor's acres, 162 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the seven MSCP covered species known to occur on the Preserve, which are heart-leaved pitcher sage, Belding's orange-throated whiptail, Blainville's horned lizard, Cooper's hawk, southern California rufous-crowned sparrow, mountain lion, and southern mule deer. MSCP covered habitats known to occur in the Preserve, which include chaparral, also benefit from management. Management actions included the following.

- **Invasive, non-native plant control**. Invasive, non-native plant species control efforts included hand-pulling and string trimmers across approximately 0.1 acre. Target species included black mustard.

- **Access control**. Park Rangers patrolled and did not observe any signs of unauthorized access or activities.

Lakeside Linkage Preserve

Preserve Total Acreage: 210 Assessor's acres, 209 GIS acres
MSCP Subarea Plan: 210 Assessor's acres, GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the eight MSCP covered species known to occur on the Preserve, which are Belding's orange-throated whiptail, Blainville's horned lizard, coastal cactus wren, coastal California gnatcatcher, Cooper's hawk, southern California rufous-crowned sparrow, western bluebird, and southern mule deer. Other species and habitats targeted by management actions are Hermes copper butterfly and Diegan coastal sage scrub. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 70 coast live oak trees and 25 western cottonwood trees as part of canopy restoration efforts.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included hand-pulling, mowing, and intermittent herbicide usage across approximately 12 acres. Target species included castor bean and tamarisk.

- **Access control**. County Park Rangers increased ranger presence to address unauthorized vehicle activity and illegal dumping on the Preserve.

- **Fire management**. County Park Rangers maintained existing firebreaks within the Preserve. The firebreaks are located where neighboring habitable structures are located within 100 feet of the Preserve's boundaries. The fire breaks were maintained using weed whips, mowing, and hand-pulling at the central, east, west and southwest properties of the Preserve.

Lawrence and Barbara Daley Preserve

Preserve Total Acreage: 604 Assessor's acres, 581 GIS acres
MSCP Subarea Plan: 604 Assessor's acres, 581 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the eight MSCP covered species known to occur on the Preserve, which are Palmer's goldenbush, Blainville's horned lizard, Belding's orange-throated whiptail, Cooper's hawk northern harrier, southern California rufous-crowned sparrow, western bluebird, and southern mule deer. Additional species and habitats benefited are nesting habitat for great horned owl. Management actions included the following.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included weed whipping across approximately three acres. Castor-bean was the target species. Castor-bean along the road continues to regenerate and inhibit growth of other plant species.

- **Access control**. County Park Rangers installed one new aluminum grant sign, as well as removing an unauthorized encampment following posting of notice-to-vacate signs. Litter and dumped items were removed from this area.

- **Fire management**. County Park Rangers maintained an existing firebreak along Highway 94 using weed whips, and a firebreak along Honey Springs Road using mowing and weed whips.

Los Peñasquitos Canyon Preserve

Preserve Total Acreage: 277 Assessor's acres, 266 GIS acres
City of San Diego MHPA: 277 Assessor's acres, 266 GIS acres

Management benefits the four MSCP covered species known to occur on the Preserve, which are San Diego goldenstar, Orcutt's brodiaea, San Diego button-celery, and least Bell's vireo. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 154 trees, including 135 coast live oak and 19 cottonwoods. County Park Rangers removed 20 of the planted coast live oak trees that were determined not to be healthy. . Additional management challenges in 2023 included repairing flood damaged areas and rebuilding trails after large storm events, and restoring the Ranch House Crossing Bridge following damage.

- **Invasive, non-native plant and animal control**. Invasive, non-native plant species removal efforts included mowers, weed whipping, herbicide, and hand tools across approximately 33 acres. Target species included tumbleweed, stinkwort, black mustard, common fennel, and Russian thistle. Annual spraying for palm weevil and gold-spotted oak borer was also conducted.

- **Access control**. County Park Rangers repaired one monument sign and one swing gate and installed one new feral pig fence. County Park Rangers also continued to patrol the

Preserve to prevent littering, smoking, off-leash dogs, and minimize unauthorized access to Los Peñasquitos Creek.

- **Fire management**. County Park Rangers maintained an existing firebreak on the south rim of the canyon, as well as east of Alkaid Drive.

- **Environmental education**. County Park Rangers led numerous educational outreach efforts in 2023, including: one Discovery Program event held at the Preserve with 568 attendees, weekend docent tours with a total of 90 attendees, ranger-led hikes with 100 attendees, Rad Regional Parks Month workshops with 800 attendees, San Diego County Fair presentations with 100 attendees, picnics with goats with 40 attendees, and library story times with 160 attendees. A watershed model installation was also installed at the Ranch House.

Louis A. Stelzer Park

Park Total Acreage: 373 Assessor's acres, 368 GIS acres
MSCP Subarea Plan: 373 Assessor's acres, 368 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the eight MSCP covered species known to occur on the Park, which are Lakeside ceanothus, San Diego goldenstar, Belding's orange-throated whiptail, Blainville's horned lizard, northern harrier, southern California rufous-crowned sparrow, coastal California gnatcatcher, and southern mule deer. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 50 Engelmann oak trees and 180 coast live oak trees. Fifty cacti and 60 individuals of other succulent species were also planted across a total of 0.5 acre.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included hand-pulling, intermittent herbicide usage, and string trimmers across approximately seven acres. Target species included poison oak and various weed species. Trail vegetation management was also conducted across 3.5 acres using weed whips and hand tools.

- **Access control**. County Park Rangers installed and repaired ten signs and three fences within the Park. Rangers also increased patrols in response to incidents of illegal dumping and one car stolen from the parking lot.

- **Fire management**. County Park Rangers maintained an existing firebreak around existing structures and along the adjoining property line.

- **Environmental education**. County Park Rangers hosted multiple environmental education events within the park including Discovery Program hikes, science fairs, a job fair, an egg hunt, star parties, and a warrior hike. Educational events were attended by over 8,000 visitors.

Discovery Program students on a school field trip to Louis A. Stelzer Preserve.

Luelf Pond Preserve

Preserve Total Acreage: 87 Assessor's acres, 87 GIS acres
MSCP Subarea Plan: 87 Assessor's acres, 87 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the six MSCP covered species known to occur on or utilizing the Preserve, which are Blainville's horned lizard, Cooper's hawk, golden eagle, western bluebird, southern mule deer, and mountain lion. Management actions included the following.

- **Habitat Restoration and Management.** County Park Rangers planted ten coast live oak trees.
- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included shoveling, hand-pulling, and using string trimmers across approximately three acres. Target species included tree tobacco and mustard. Seeds from invasive plants continue flowing into the Preserve from upstream neighborhoods, presenting an ongoing maintenance challenge.
- **Access control**. County Park Rangers installed two new interpretive signs.
- **Fire management**. County Park Rangers maintained an existing firebreak along Duck Pond Lane.

Lusardi Creek Preserve

Preserve Total Acreage: 224 Assessor's acres, 226 GIS acres
MSCP Subarea Plan: 224 Assessor's acres, 226 GIS acres
Segment: Lake Hodges

Management benefits the 11 MSCP covered species known to occur on the Preserve, which are coast barrel cactus, Del Mar manzanita, variegated dudleya, Belding's orange-throated whiptail, Blainville's horned lizard, coastal California gnatcatcher, Cooper's hawk, least Bell's vireo, northern harrier, southern California rufous-crowned sparrow, and southern mule deer. Management actions included the following.

- **Access control**. Trash heaps were identified and removed near Artesian Gate.
- **Fire management**. County Park Rangers maintained existing firebreaks in the Preserve .

Oakoasis Preserve

Preserve Total Acreage: 436 Assessor's acres, 442 GIS acres
MSCP Subarea Plan: 436 Assessor's acres, 442 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the six MSCP covered species known to occur on the Preserve, which are Lakeside ceanothus, Blainville's horned lizard, Cooper's hawk, southern California rufous-crowned sparrow, western bluebird, and southern mule deer. Management actions included the following.

- **Invasive, non-native plant control**. Invasive, non-native plant species control included the use of hand-pulling and string trimmers across approximately two acres. Target species included stinkwort.
- **Access control**. County Park Rangers continued to patrol the Preserve multiple times a day to prevent illegal trash dumping and unauthorized parking along the entrance road. Five informational signs were replaced as well as five sections of concrete fencing.
- **Environmental education**. Environmental education programs included star parties led by San Diego Astronomy Association attracting approximately 600 visitors, as well as ranger-led hikes with approximately 50 visitors.

Super bloom hike on Oakoasis Preserve.

Old Ironsides County Park

Park Total Acreage: 4 Assessor's acres, 4 GIS acres
MSCP Subarea Plan: 4 Assessor's acres, 4 GIS acres
Segment: Metro-Lakeside-Jamul and PAMA

Management benefits the MSCP covered habitat known to occur in the Park, which is oak riparian forest. Management actions included the following.

- **Habitat restoration and management.** County Park Rangers planted 20 coast live oak trees and four Engelmann oak trees. Six dead coast live oak trees and two dead Engelmann oak trees were removed.
- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included the use of hand tools, hand-pulling, and line trimmers across 0.75 acre. Target species included mustard species, giant reed, and castor bean.
- **Access control**. County Park Rangers installed five new signs informing visitors of Park rules and regulations. In response to graffiti vandalism, County Park Rangers reached out to the County Sheriff and requested extra patrols inside the Park.
- **Fire management**. County Park Rangers used line trimmers to clear and maintain existing firebreaks along Park boundaries.

- **Environmental education**. I Love a Clean San Diego hosted a volunteer watershed cleanup event in the park, which was attended by 30 people.

Otay Lakes Park

Park Total Acreage: 79 Assessor's acres, 87 GIS acres
MSCP Subarea Plan: 79 Assessor's acres, 87 GIS acres
Segment: South County

Management benefits the two MSCP covered species known to occur on the Park, which are variegated dudleya and Otay mesa mint. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted ten coast live oak trees.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included the use of weed whips across approximately ten acres.

- **Fire management**. County Park Rangers maintained existing firebreaks using string trimmers in the Park Host area of the Park.

- **Environmental education**. Environmental outreach efforts included 12 County Park Ranger-led nature hikes, which were attended by 124 participants.

Otay Ranch Preserve (Otay Ranch POM)

Preserve Total Acreage: 3,973 Assessor's acres, 4,707 GIS acres
MSCP Subarea Plan: 3,973 Assessor's acres, 4,707 GIS acres
Segment: City of Chula Vista and South County

The County and City of Chula Vista work jointly as the Otay Ranch POM and are responsible for implementing the Otay Ranch Phase 2 Resource Management Plan Update (RMP; RECON 2018) management and monitoring strategies within the 4,373-acre Otay Ranch Preserve. The management and monitoring of the Otay Ranch Preserve is funded through the collection of assessments from Community Facility District 97-2, administered by the City of Chula Vista. In 2023, preserve monitoring and operations/maintenance tasks were implemented by the Preserve Steward/Biologist (RECON Environmental Inc.) in consultation with the Otay Ranch POM. Regular coordination meetings occurred during 2023 to track progress of MSCP management and monitoring. Habitat maintenance activities were performed to control non-native plant species and brown-headed cowbird, and enhance habitat for sensitive species, including coastal cactus wren, Quino checkerspot butterfly, Otay tarplant habitat, and vernal pools. All work summarized in this report is detailed in the 2023 Annual Report for the Otay Ranch Preserve and can be found in **Appendix M**.

Management activities in the Preserve benefits the 32 MSCP covered species known to occur on the Preserve, which include 17 plant, two invertebrate, two reptile, nine bird, and two mammal species. The MSCP covered species on the Preserve are Otay manzanita, San Diego golden star, Orcutt's brodiaea, Dunn's mariposa lily, San Miguel savory, snake cholla, Otay tarplant, variegated dudleya, Palmer's goldenbush, San Diego button-celery, coast barrel cactus, Tecate cypress, heart-leaved pitcher sage, Gander's pitcher sage, felt-leaved monardella, willowy monardella, spreading navarretia, Otay mesa mint, San Diego fairy shrimp,

Thorne's hairstreak butterfly, Belding's orange-throated whiptail, Blainville's horned lizard, Cooper's hawk, southern California rufous-crowned sparrow, golden eagle, burrowing owl, coastal cactus wren, northern harrier, peregrine falcon, coastal California gnatcatcher, least Bell's vireo, mountain lion, and southern mule deer. Habitats, such as vernal pools, maritime succulent scrub, riparian habitat, and coastal sage scrub were enhanced.

- **Habitat restoration and management.** Regularly scheduled site visits were conducted to document access issues, sensitive species, newly detected species, non-native plant species, and the overall health of the sites. Specifically, monitoring activities included focused rare plant surveys, Quino checkerspot butterfly surveys, vegetation mapping, photographic monitoring, least Bell's vireo and yellow-billed cuckoo surveys, shot hole borer tree health surveys, gold-spotted oak borer monitoring, Hermes copper butterfly surveys, Harbison's dun skipper surveys, golden eagle camera surveys, vernal pool plant monitoring, native shrub tissue sampling, wet season fairy shrimp surveys, seed collection and redistribution, and vegetation rapid assessment monitoring. Baseline surveys were conducted on the 2.2-acre Bonita Glen parcel, including habitat mapping, species inventories, and establishment of photographic monitoring plots.

  Additional management projects are being implemented on the Preserve through grant funding. As part of a Transnet EMP funded project, the County is implementing habitat restoration activities within the Preserve to benefit Quino checkerspot butterfly. The project includes container plant installation, seeding, watering, erosion and access control, and monitoring; and the project is anticipated to be complete by September 2024. As part of a project funded by a WCB grant, County funding, and local agency matching, the County is completing a comprehensive planning document for 13 new trail alignments in the Preserve. Wet season fairy shrimp surveys were conducted as part of the planning effort for this project. Preparation of the Draft EIR is underway. More information regarding these projects can be found in *Section 6.3 Grant Funded Management Projects*.

- **Invasive, non-native plant control and habitat enhancement.** Numerous non-native plant control efforts occurred during the reporting year, and were conducted using herbicides, line trimmers, and hand tools. The invasive, non-native plant species treated were short-pod mustard, tocalote, stinkwort, oats, bromes, star-thistle, horehound, poison hemlock, sweetclover, burclover, filaree, fennel, black mustard, prickly sow-thistle, annual rye grass, Crete weed, small-flower catchfly, fescue, soft chess, common catchfly, smooth cat's ear, castor-bean, Russian thistle, prickly lettuce, and sand-spurrey. In addition, shrubs were selectively thinned and removed from existing coast cholla patches to increase available coastal cactus wren habitat. The primary shrubs removed via hand tools and trimmers during shrub thinning activities were broom baccharis and lemonadeberry. Otay tarplant and Quino checkerspot butterfly host and nectar plants were flagged for avoidance prior to applying herbicide.

- **Access control.** Access control within the Preserve continues to be one of the highest priority tasks. Sensitive habitat, plants, and wildlife have been impacted by unauthorized foot and bicycle traffic, off-highway vehicle, target-shooting activities, and unauthorized route creation. Access management efforts to prevent illegal access and block unauthorized trails included the installation of 0.04 acre of fascicled tarweed vertical mulch and 0.12 acre of coast cholla, installation of T-posts with concrete along 50 linear feet of fencing, installation of 1,429 linear feet of fencing, repair of 418 linear feet of fencing on site and 70 linear feet of fencing off site along CDFW property, 20 linear feet

of rock barrier installation, installation of six signs, repair of two signs, replacement of two signs, and four gate repairs, as well as coordinating with adjacent land managers, including CDFW and the City of San Diego. Fencing at Jamul Mountains, Dulzura, McMillin, Salt Creek, San Ysidro, and Northern San Ysidro parcels were installed and/or repaired after they were vandalized by trespassers. Signs were installed and replaced at Dulzura, Jamul Mountains, Little Cedar Canyon, McMillin, and Wolf Canyon parcels. Gates were repaired at Northern Salt Creek and Salt Creek parcels.

- **Fire management**. No focused fuel management activities were identified in the Otay Ranch Preserve Annual Report. However, while control of weeds and implementation of shrub thinning programs are typically implemented on the Preserve for habitat restoration or for the benefit of MSCP covered species and other wildlife, these activities also help reduce the amount of fuel available to carry fire within the Preserve. The Preserve Steward/Biologist attended the Fire Coordination Meeting for Land Managers hosted by SDMMP on March 23, 2023.

Additional management and monitoring efforts conducted on Otay Ranch Preserve are reported in the 2023 Otay Ranch Preserve Annual Report (**Appendix M**).

Otay Valley Regional Park

Park Total Acreage: 442 Assessor's acres, 432 GIS acres
MSCP Subarea Plan: 442 Assessor's acres, 432 GIS acres
Segment: South County

Management benefits the seven MSCP covered species known to occur on the Preserve, which are Otay tarplant, Orcutt's bird's beak, variegated dudleya, San Diego button-celery, coastal cactus wren, coastal California gnatcatcher, and least Bell's vireo. Habitats, such as maritime succulent scrub, freshwater marsh, and coastal sage scrub were enhanced by removing non-native plant species. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 6,000 cholla cactus across two acres within the Preserve as part of the ongoing Cholla Cactus Restoration Project. A total of 30 coast live oak trees were also planted in the Preserve.

- **Invasive, non-native plant control**. Invasive, non-native plant removal efforts included using string trimmers across approximately two acres.

- **Access control**. County Park Rangers installed six "no off-roading" signs, conducted as-needed coordination with the San Diego Police Department, and increased weekly patrols to prevent unauthorized use of motorized vehicles, which continues to be a management challenge in Area B of the Preserve. Four metal gates were also installed to deter unauthorized access.

- **Fire management**. County Park Rangers maintained existing firebreaks through as-needed mowing.

- **Environmental education**. Environmental outreach efforts included one bike ride led by the San Diego Mountain Biking Association, which was attended by 40 participants.

Additional management and monitoring efforts conducted by the City of San Diego are reported in the City of San Diego MSCP Annual Report.

Peutz Valley Preserve

Park Total Acreage: 240 Assessor's acres, 255 GIS acres
MSCP Subarea Plan: 240 Assessor's acres, 255 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the seven MSCP covered species known to occur on the Preserve, which are Belding's orange throated whiptail, Blainville's horned lizard, American peregrine falcon, southern California rufous-crowned sparrow, western bluebird, southern mule deer, and mountain lion. Management also benefits the habitat found on the Preserve including southern riparian woodland, coastal sage scrub-chaparral transition, and southern mixed chaparral. Management actions, performed by the San Diego River Park Foundation (SDRPF) and County Park Rangers, included the following.

- **Invasive, non-native plant control.** Invasive, non-native plant control efforts included using line trimmers across approximately one acre. Target species included mustards and tall grasses.

- **Fire management.** County Park Rangers used line trimmers to maintain existing fire breaks along trails and around the Park entrance.

Ramona Grasslands Preserve

Preserve Total Acreage: 3,639 Assessor's acres, 3,635 GIS acres
MSCP Subarea Plan: 804 Assessor's acres, 558 GIS acres
Segment: Metro-Lakeside-Jamul
Draft North County MSCP: 2,835 Assessor's acres, 3,077 GIS acres

Management benefits the four MSCP covered species known to occur on the MSCP Subarea Plan Area portion of the Preserve, which are Belding's orange-throated whiptail, Blainville's horned lizard, golden eagle, and southern mule deer. Within the draft North County MSCP Plan area on the Preserve, several MSCP Subarea Plan covered species can be found and include Engelmann oak, San Diego thornmint, spreading navarretia, San Diego fairy shrimp, arroyo toad, southwestern pond turtle, western spadefoot toad, western burrowing owl, grasshopper sparrow, tricolored blackbird, Cooper's hawk, Canada goose, ferruginous hawk, northern harrier, peregrine falcon, long-billed curlew, white-faced ibis, western bluebird, coastal California gnatcatcher, southern mule deer, pallid bat, and Townsend's big-eared bat. Other species and habitats targeted by management actions are Diegan coastal sage scrub, riparian, non-native grassland, and Stephens' kangaroo rat. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 23 coast live oak trees and removed one dead coast live oak tree that was potentially hazardous to the Preserve's visitors. A grazing lease was finalized after the Grazing Management Plan was updated, bringing cattle back to the Preserve. The grazing lease reduces invasive, non-native plant cover and ensures that suitable habitat is available to sensitive species, including the Stephens' kangaroo rat. As part of a Transnet EMP funded project, the County is implementing a bullfrog eradication project within the Preserve to benefit

arroyo toad and southwestern pond turtle. Installation of silt fencing and eradication efforts are anticipated to begin in early 2024. More information regarding this project can be found in *Section 6.3 Grant Funded Management Projects*.

- **Invasive, non-native plant control**. County Park Rangers coordinated with the County of San Diego Department of Agriculture, Weights and Measures to strategically treat and remove milk thistle, artichoke, and tamarisk. Cattle grazing resumed in January of 2023, allowing County Park Rangers to manage target plant species specific to each management area. Other invasive, non-native plant species removal efforts included hand-pulling, shoveling, and intermittent herbicide usage across approximately 165 acres. Target species included tree tobacco, tamarisk, Russian thistle, milk thistle, and artichoke thistle. Herbicides were not used within vernal pool basins or within 10 feet of basin margins.

- **Access control**. A total of ten new signs were installed to mark established trails and park boundaries, and to prevent trespassing and unauthorized trail use. Approximately three miles of barbed wire fencing was removed and replaced by County Park Rangers. In addition, two metal gates were installed to help protect the Preserve's natural resources and prevent unauthorized vehicle activity. Game cameras were maintained and used to monitor unauthorized activity. The County continued the "Responsible Photography" campaign initiated in 2022 to help encourage photographers and groups to stay on existing trails.

  As a measure to protect the golden eagles nesting adjacent to the Preserve, a seasonal trail allows restricted access only during the non-breeding season (August through November). This trail is closed during the rest of the year. Trail use is also restricted to 50 users per day, two days a week, and a permit is required to access the trail. County Park Rangers are present along the trail to facilitate the permitting process, provide oversight, and educate trail users about the resource. A total of 435 hikers, 86 equestrians, and ten mountain bikers utilized the trail for a total of 531 users. The daily average use was 20 participants. Users must watch an online video that provides educational outreach regarding the nearby golden eagle nest and other sensitive species and take a survey prior to receiving the permit. No permits were revoked due to violation of rules and regulations.

- **Fire management**. County Park Rangers maintained existing firebreaks along the Preserve's border with adjacent residences and along roads within the Highland Hills community.

- **Environmental education**. Environmental outreach efforts included County Park Rangers staffing nature touch table events, four school field trips, a Hawktober event, two girl scout hikes, one 4-H hike, a boy scout tree planting event, and a Mother's Day event. Discovery tables were staffed by County Park Rangers every Saturday and Sunday, between August 15 and November 15, 2023, at the Old Survey Road 97 trailhead. These Discovery Tables were visited by 531 visitors. Almost 1,900 visitors were reached by the County Park Ranger's environmental outreach efforts at the Preserve.

Skyline Preserve

Preserve Total Acreage: 267 Assessor's acres, 261 GIS acres
MSCP Subarea Plan: 267 Assessor's acres, 261 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits MSCP covered species currently known to occur on the Preserve, which are Belding's orange-throated whiptail, Blainville's horned lizard, Cooper's hawk, southern California rufous-crowned sparrow, northern harrier, and golden eagle. Other species and habitats targeted by management actions are Diegan coastal sage scrub, southern mixed chaparral, chamise chaparral, and Engelmann oak woodland. Management actions, performed by the Environmental Habitat Conservancy (EHC), included the following.

- **Access control**. EHC maintained an existing access gate that ensured proper management activities can be implemented on the Preserve.

- **Fire management**. New information discovered indicates that DPR's property lines are much further east than previously known and are not adjacent to structures that require maintenance of a fire break.

Stoneridge Preserve

Preserve Total Acreage: 245 Assessor's acres, 245 GIS acres
MSCP Subarea Plan: 245 Assessor's acres, 245 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the seven MSCP covered species known to occur on the Preserve, which are Belding's orange-throated whiptail, Blainville's horned lizard, coastal California gnatcatcher, Cooper's hawk, southern California rufous-crowned sparrow, western bluebird, and southern mule deer. Other species and habitats targeted by management actions are Diegan coastal sage scrub and southern mixed chaparral. Management actions included the following.

- **Access control**. County Park Rangers requested additional patrols from the San Diego County Sheriff's Department in response to incidents of illegal dumping.

- **Fire management**. County Park Rangers maintained an existing firebreak near the access gate, where the Preserve borders a residence.

Sweetwater Regional Park

Park Total Acreage: 489 Assessor's acres, 490 GIS acres
MSCP Subarea Plan: 489 Assessor's acres, 490 GIS acres
Segment: South County

Management benefits the three MSCP covered species known to occur on the Park, which are coastal cactus wren, coastal California gnatcatcher, and least Bell's vireo. Other species and habitats targeted by management actions are riparian and aquatic. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 150 coast live oak trees in the Preserve. Native shrubs also were planted, including ten toyon, ten white sage, and ten purple sage. County Park Rangers removed five dead coast live oak trees that were potentially hazardous to the Park's visitors. As part of a grant from the WCB, the County is restoring coastal sage scrub and enhancing riparian habitat around Morrison Pond. This three-year restoration project will also benefit least Bell's vireo. Implementation began in 2022. More information regarding this project can be found in *Section 6.3 Grant Funded Management Projects*.

- **Access control**. County Park Rangers increased patrols in order to prevent vandalism, theft, dumping, and unauthorized camping and parking. County Park Rangers repaired 100 feet of lodgepole fencing. Illegal encampments, motorized vehicles, and dumping at staging areas continue to present management challenges for the Park.

- **Fire management**. County Park Rangers maintained an existing firebreak around Morrison Pond and in the western portion of the Park.

- **Environmental education**. Environmental outreach efforts included County Park Rangers lead a Discovery Table with 20 visitors, invasive plant removal event with five attendees, and a native plant workshop.

Sycamore Canyon and Goodan Ranch Preserve

Preserve Total Acreage: 2,847 Assessor's acres, 2,931 GIS acres
MSCP Subarea Plan: 2,847 Assessor's acres, 2,931 GIS acres
Segment: Metro-Lakeside-Jamul

Management benefits the 15 MSCP covered species known to occur on the Preserve, which are San Diego thornmint, San Diego goldenstar, variegated dudleya, willowy monardella, Belding's orange-throated whiptail, Blainville's horned lizard, burrowing owl, coastal California gnatcatcher, Cooper's hawk, golden eagle, northern harrier, southern California rufous-crowned sparrow, western bluebird, mountain lion, and southern mule deer. Other habitats targeted by management actions are southern coast live oak riparian forest, coast live oak woodland, and southern mixed chaparral. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 400 coast live oak trees, six Engelmann oak trees, and 134 native shrub species including white sage, black sage, Cleveland sage, California sunflower, toyon, lemonadeberry, and elderberry. County Park Rangers also removed four coast live oak trees and five California sycamore trees that had died or become otherwise hazardous to park visitors. Trees and native shrubs were planted as part of the Oak Grove Revegetation Project and the Disturbed Areas Restoration Project, which aim to plant new oaks near existing groves and to restore disturbed areas around the visitor center through replanting efforts.

- **Invasive, non-native plant control**. Invasive, non-native plant species removal efforts included intermittent herbicide usage, hand-pulling, and the use of string trimmers across approximately 75 acres. Target species included fountain grass, black mustard, stinkwort, thistle, and wild radish. Two invasive eucalyptus trees were also removed. Invasive, non-native plant species control efforts were performed associated with the on-site San Diego thornmint population within the Preserve associated with 2023 Targeted Monitoring Plan management efforts as described in Chapter 7, Section 7.1.

- **Access control**. County Park Rangers installed 12 new boundary signs in order to prevent unauthorized trail usage. A total of 500 feet of new fencing was also installed to prevent unauthorized activities. Incidents of unauthorized trail use, illegal dumping, and off-road vehicle use were noted by County Park Rangers, who addressed these issues by increasing the frequency of patrols, engaging with trail users, installing signs, and keeping service road gates closed at all times. Heavy brush was also piled to block off unauthorized trails and step overs were reinforced to discourage off-road vehicle use. In addition, turnouts along Highway 67 were blocked off to prevent illegal dumping.

- **Fire management**. County Park Rangers maintained existing firebreaks along service roads within the Preserve, using string trimmers, hand-pulling, and hand tools.

- **Environmental education**. Environmental outreach efforts included County Park Rangers leading interpretive hikes, nature discovery tables, night hikes, star parties, a tree planting event, and a Hawktober interpretive program. Outreach efforts were attended by a total of 845 visitors. In addition to Preserve-sponsored events, the San Diego Wildlife Tracking Team conducts seasonal surveys in Sycamore Canyon to assess and monitor wildlife within the Preserve.

Tijuana River Valley Regional Park

Park Total Acreage: 1,592 Assessor's acres, 1,609 GIS acres
City of San Diego MHPA: 1,592 Assessor's acres, 1,609 GIS acres

Management benefits the 16 MSCP covered species known to occur on the Preserve, which are coast barrel cactus, Orcutt's bird's-beak, Torrey pine (planted), wart-stemmed ceanothus, Belding's orange-throated whiptail, Blainville's horned lizard, coastal cactus wren, coastal California gnatcatcher, Cooper's hawk, least Bell's vireo, light-footed Ridgway's rail, northern harrier, southern California rufous-crowned sparrow, southwestern willow flycatcher, American peregrine falcon, and tricolored blackbird. Riparian habitat was also targeted by management actions. Management actions included the following.

- **Habitat restoration and management**. County Park Rangers planted 60 coast live oak trees and removed one dead sycamore tree that was potentially hazardous to Park visitors. Several ongoing and approved management projects within the Park are grant funded. These projects are summarized below, and more information regarding these projects can be found in *Section 6.3 Grant Funded Management Projects*.

  In 2023, the County completed the final year of least Bell's vireo habitat restoration activities associated with a California Natural Resources Agency (CNRA) grant that was awarded in 2016. This restoration was conducted across two acres and included

removal of invasive plants, planting native species, and temporary irrigation, and is discussed further in Section 6.3 below.

As part of a grant from the State Coastal Conservancy, the County will design and implement improvements within Smuggler's Gulch to capture trash and sediment to prevent these materials from being transported downstream to important riparian habitat along the Tijuana River. The project will include a sedimentation basin, trash capture devices, and culvert improvements. As part of this project, the County conducted protocol surveys for several MSCP-covered species in 2021 including California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher. The County also conducted a habitat assessment of the area to identify and map habitat types to ensure maximum avoidance of native habitat. The County continued design for the project in 2023 and is planning to complete the design and apply for environmental permits in 2024.

As part of a grant from SWRCB, the County received funding to remove trash and accumulated sediments from Smuggler's Gulch. This project will benefit water quality within the watershed and is expected to begin in 2024.

As part of a grant from CDFW, the County drafted a Habitat Restoration Plan for the entire Tijuana River Valley Regional Park. This restoration plan will provide a comprehensive and contiguous strategy for habitat restoration within this Preserve. As part of this project, the County conducted protocol surveys for several MSCP-covered species in this Park in 2021 including coastal California gnatcatcher, least Bell's vireo, light-footed Ridgway's rail, and southwestern willow flycatcher, among others. The County also worked toward conducting environmental review under the CEQA. The County will apply for environmental permits, complete environmental analysis, and finalize the Habitat Restoration Plan in 2024.

Another grant funded restoration project in the Tijuana River Valley Regional Park is the Brown Property Fill Removal/Restoration project, which would improve water quality by removing trash and invasive species and restore the Tijuana River and adjacent areas to its native habitat. Restoration planning and environmental review for this project was completed in 2023 using grant funds from CDFW; implementation is funded separately under a different grant. Implementation of the project is funded by a grant from the SWRCB and is anticipated to begin in 2024. The project includes removal of invasive species and existing structures from the Brown property, and short-term maintenance and monitoring. The project will benefit least Bell's vireo and other wildlife by restoration of disturbed lands into native habitat. The County received grant funding in 2023 from the U.S. Navy to develop an adaptive work plan and implement restoration efforts within the Park, which will improve and enhance habitat for least Bell's vireo and coastal California gnatcatcher. Implementation is expected to begin in early 2024.

- **Invasive, non-native plant and insect control**. Invasive, non-native plant species removal efforts included hand-pulling, string trimmers, riding lawn mowers, herbicide application, and the use of hand tools across approximately 150 acres. Target species included Russian thistle, castor bean, tree tobacco, crown daisy, nasturtium, giant reed, and non-native grasses.

- **Access control**. County Park Rangers installed 80 new informational/directional signs to encourage Park visitors to stay on the designated trails, identify sensitive habitat, and

deter illegal trash dumping. One double-swing gate was also repaired. County Park Rangers and staff members conduct daily patrols to prevent and address illegal dumping across the Park, which remains an ongoing issue despite preventative efforts. Patrols also discourage unauthorized trail use, a recurring issue that subjects native plants and wildlife to trampling and exacerbates erosion in sensitive areas. Reminders to stay on trails are provided in Park brochures, on signage and kiosks throughout the park, and by rangers during patrols. In addition, equestrian volunteers conduct monthly patrols and report incidents of illegal dumping and unauthorized trail use to County Park Rangers.

- **Fire management**. County Park Rangers maintained two existing firebreaks using string trimmers, hand tools, herbicide application, and chainsaws.

- **Environmental education**. Environmental outreach efforts included County Park Rangers leading nature hikes, snake presentations, an animal touch tables, a Hawktober event, and a Rad Regional Park event. Events were attended by a total of 220 visitors.

Comprehensive Tree Program

The County has always had a commitment to planting trees on County Preserves and this was formalized in 2016 with the Comprehensive Tree Program. Dead or dying trees, along with trees that pose potential risks to County Preserve visitors, are removed and replaced. The replacement ratio is three new trees replaced for each tree that is removed. Native tree species are used in the preserve lands, while non-native, non-invasive trees may be planted near park facilities and active recreation areas to increase resilience, diversity, and beauty. Since 2016, over 36,000 trees have been installed on County properties. Over 5,000 trees were planted in 2023. The Tree Plotter Inventory web application augments the efforts of the Comprehensive Tree Program. Started in April 2021, this web-based program will ultimately result in a full inventory of all new and existing trees on every County Preserve and can be accessed by the public. Each tree will have a GPS location, its species, health ranking, and other characteristics, including trunk diameter at 4.5 feet above ground (DBH), as well as photos of each tree through time. Reports can be generated by tree, or County Preserve, and can also show the ecosystem benefits of the trees. This application will assist in understanding when adaptive management strategies are needed to ensure that the trees are thriving. In 2023, part of the Tree Plotter Inventory efforts included conducting a complete tree inventory of the existing and new trees at several park facilities, in addition to mapping all newly planted trees at all County Parks and Preserves.

6.3 Grant Funded Management Projects

The County implemented 12 grant funded management projects across seven County Preserves in the reporting year. See **Table 15**, *Grant Funded Management Projects, Locations, and Species Benefited in Reporting Year*. These projects benefited six MSCP covered species, which are coastal California gnatcatcher, least Bell's vireo, coastal cactus wren, arroyo toad, southwestern pond turtle, and Ridgway's rail, and included habitat restoration, access control, invasive, non-native plant control, invasive non-native animal control, and trail alignment. Grant-funded projects occurred at Dictionary Hill Preserve, Sweetwater Regional Park, Ramona Grasslands Preserve, Tijuana River Valley Regional Park, Boulder Oaks Preserve, and Otay Ranch Preserve. Grant funding totaled over $22 million and was provided by 12 grants, County General Funds, and one local agency matching. Grant funds were from three WCB Proposition 68 grants, one State Coastal Conservancy Proposition 68 grant, two CDFW Proposition 1

grants, two TransNet Environmental Mitigation Program (EMP) grants, one U.S Navy Readiness and Environmental Protection Integration Program grant, two SWRCB Border Water Quality Infrastructure grants, and one California Natural Resources Agency (CNRA) Proposition 84 River Parkways grant.

The County actively seeks grants to supplement stewardship activities in addition to those funded through County general fund. These activities meet the MSCP Subarea Plan's fourth Specific Objective to "implement a program for the conservation and management of habitats of federal and state endangered, threatened, or rare species," as well as the MSCP Subarea Plan's Biological Goal (Section 1.2.1) to help conserve both diversity and functionality of the southwestern county ecosystem through preservation and adaptive management. In 2023, the County applied for five grants, which included proposals for restoration of habitats within preserves, and were awarded five grants.

TABLE 15. GRANT FUNDED MANAGEMENT PROJECTS, LOCATIONS, AND MSCP SPECIES BENEFITED IN REPORTING YEAR

Project	Preserve	MSCP Species Benefited
Coastal California Gnatcatcher Habitat Restoration	Dictionary Hill Preserve	Coastal California gnatcatcher, coastal cactus wren, Quino checkerspot butterfly[1], monarch butterfly[1]
East Otay Trail Alignment Study	Otay Ranch Preserve	Quino checkerspot butterfly[1]
Otay Ranch Preserve Enhancement	Otay Ranch Preserve	Quino checkerspot butterfly[1]
Ramona Grasslands and Boulder Oaks Preserve Bullfrog Eradication	Ramona Grasslands, Boulder Oaks Preserve	Arroyo toad, southwestern pond turtle
Morrison Pond Restoration and Enhancement	Sweetwater Regional Park	Coastal California gnatcatcher, coastal cactus wren, least Bell's vireo
Smuggler's Gulch Dredging	Tijuana River Valley Regional Park	Coastal California gnatcatcher, least Bell's vireo
Smuggler's Gulch Improvements	Tijuana River Valley Regional Park	Least Bell's vireo
Invasive Species Removal and Restoration Plan	Tijuana River Valley Regional Park	Least Bell's vireo, coastal California gnatcatcher, light-footed Ridgway's rail
Brown Property Fill Removal/Restoration	Tijuana River Valley Regional Park	Least Bell's vireo
Invasive Removal, Restoration, and Interpretive Signage	Tijuana River Valley Regional Park	Least Bell's vireo
Habitat Improvement, Restoration, and Erosion Control	Tijuana River Valley Regional Park	Least Bell's vireo and coastal California gnatcatcher
Brown Property Restoration Project	Tijuana River Valley Regional Park	Least Bell's vireo

[1] Species are not MSCP covered species; however, will benefit from habitat restoration.

Dictionary Hill Preserve Coastal California Gnatcatcher Habitat Restoration Project

Funding Source: WCB Proposition 68 Grant and County funding
Funding Amount: $814,560 (Prop 68 funds $790,000 and County funds $24,560)
Project Timeline: June 2021 – March 2025
Target Species or Habitat: Coastal California gnatcatcher, coastal cactus wren, Quino checkerspot butterfly, monarch butterfly, and coastal sage scrub habitat
Management Action: Invasive plant treatment and native plant establishment

The *Dictionary Hill Preserve Coastal California Gnatcatcher Habitat Restoration Project* will restore and enhance habitat on Dictionary Hill Preserve to benefit coastal California gnatcatcher and other coastal sage scrub dependent species. This project was approved for funding at the May 2021 WCB hearing for the full project amount of $551,535. A budget augmentation for $263,000 was approved at the November 2023 WCB hearing.

Dictionary Hill Preserve is located within a stepping-stone linkage for coastal California gnatcatcher, providing suitable habitat patches between established breeding areas in proximity to the Preserve and between Core Resource Areas, and supports up to four territories. Starting in Winter 2021, the project initiated a four-year program for the treatment of large stands of invasive non-native plants identified throughout the Preserve to benefit the on-site coastal sage scrub and sensitive species that occur in this vegetation community, including MSCP covered San Diego goldenstar, variegated dudleya, San Diego barrel cactus, southern California rufous-crowned sparrow, Belding's orange-throated whiptail, and Cooper's hawk. The project will install 1,750 coastal sage scrub plants over four acres of disturbed coastal sage scrub to expand existing nesting and foraging habitat for coastal California gnatcatcher, install 25 pounds of Quino checkerspot butterfly host plant/nectar species seed mix, install 25 pounds of monarch butterfly host plant/nectar species seed mix, and install 200 pounds of coastal sage scrub seed mix. An additional 825 coastal sage scrub species will be installed within the restoration area during the 2024 maintenance period.

Throughout 2023, hand weeding and herbicide application occurred within the five restoration areas. Supplemental watering was conducted biweekly from April – September 2023. During the first quarter of Year 2 (April – June 2023), it was noted that herbivory was affecting approximately 20 percent of planted prickly pear and that several construction fences were damaged. These issues were addressed in the second quarter of Year 2 (July – September 2023) by installing herbivory cages around all prickly pear and repairing or replacing damaged fencing. In May and June 2023, two maintenance events occurred to treat and remove weeds within the 155-acre enhancement area.

The first annual monitoring visit of the restoration and enhancement areas occurred in April 2023. Within the restoration areas, native plant cover was estimated at 30 percent while non-native plant cover was estimated at four percent. Overall container plant survivorship was estimated at 86 percent. Within the enhancement area, native plant cover was estimated to be 60 percent and non-native plant cover was reduced from approximately ten to two percent. During the first monitoring year, a total of 86 plant species and 46 animal species were observed or detected on the Preserve. These included five sensitive species: Cooper's hawk, turkey vulture, Costa's hummingbird, Southern California rufous-crowned sparrow, and coastal California gnatcatcher. Red-shouldered hawk also was observed in the second quarter of Year 2.

East Otay Trail Alignment Study

Funding Source: WCB Proposition 68 Grant ($450,000), County funding ($150,000), and local agency match ($50,000)
Funding Amount: $650,000
Project Timeline: March 2021 – March 2025
Target Species or Habitat: Upland habitat surrounding trails
Management Action: Habitat Management

The *East Otay Trail Alignment Study (EOTAS)* project will complete an Environmental Impact Report (EIR) for the comprehensive planning document which identifies 13 new trail alignments totaling approximately 80.5 linear miles of hiking, biking, riding, and wheelchair accessible pathways and trails near and around the ecologically rich Otay Lakes Area. The project is a result of a multi-agency effort to identify a coordinated and sustainable trail system in southern San Diego County. As part of this project, wet season fairy shrimp surveys began towards the end of 2021 and no listed fairy shrimp species were found present in the EOTAS survey area. The project will provide a comprehensive trail network while maintaining ecological diversity and preserving quality habitat in the Otay Ranch Preserve. The Notice of Preparation of an EIR was released in January 2023, and preparation of the Draft EIR is underway.

Otay Ranch Preserve Enhancement

Funding Source: TransNet Environmental Mitigation Program
Funding Amount: $80,000
Project Timeline: March 2023 – September 2024
Target Species or Habitat: Quino checkerspot butterfly
Management Action: Habitat management and restoration

The *Otay Ranch Preserve Enhancement* project addresses access control issues on multiple Otay Ranch Preserve (POM) parcels. With coordination with the City of Chula Vista and Preserve Manager (RECON), the project goal is to restore and increase the quality of habitat for Quino checkerspot butterfly near Minnewawa Truck Trail through seasonal road closure, seeding and planting within suitable Quino habitat. The project is funded by a *TransNet* EMP Short Term Threat Reduction Stewardship grant of $80,000 to the County in 2023. The project objectives include container plant installation, seeding, watering, erosion and access control, and monitoring. The project is anticipated to be complete by September 2024.

Ramona Grasslands and Boulder Oaks Preserve Bullfrog Eradication

Funding Source: TransNet Environmental Mitigation Program
Funding Amount: $223,668
Project Timeline: March 2023 – July 2025
Target Species or Habitat: Arroyo toad and southwestern pond turtle
Management Action: Invasive, non-native animal control

The *Ramona Grasslands and Boulder Oaks Preserve Bullfrog Eradication* project was implemented to ensure southwestern pond turtle and red-legged frog persistence within conserved lands of San Diego County by enhancing unoccupied habitat that have potential to support these species and to enhance a MSCP Core Resource Area. The project is funded by a

TransNet EMP grant of $223,668 awarded to the County in 2023. The objective of the project is to implement a bullfrog eradication program within Ramona Grasslands Preserve and the treatment ponds on adjacent Ramona Municipal Water District (RMWD) property and within the four ponds of Boulder Oaks Preserve. Bullfrog eradication efforts within Boulder Oaks Preserve would improve habitat to facilitate the translocation of southwestern pond turtle and red-legged frog. Arroyo toad, a federally endangered species, has been observed within Santa Maria Creek west of Rangeland Road within the western portions of Ramona Grasslands Preserve. The presence of adult and juvenile bullfrogs reduces the chances of a viable population of arroyo toads and southwestern pond turtles within the Preserve. Installation of silt fencing and eradication efforts are anticipated to begin in early 2024.

Sweetwater Regional Park Morrison Pond Restoration and Enhancement

Funding Source: WCB Proposition 68 Grant and County funding
Funding Amount: $509,110 (WCB Prop 68 funds $397,185 and County funds $111,925)
Project Timeline: November 2021 – March 2025
Target Species or Habitat: Vegetation surrounding riparian wetland and adjacent upland habitats
Management Action: Invasive plant treatment and native plant establishment

The *Sweetwater Regional Park Morrison Pond Restoration and Enhancement* project within Sweetwater Regional Park will restore 3.45 acres of coastal sage scrub habitat for coastal California gnatcatcher and coastal cactus wren. In addition, the project will enhance riparian and adjacent upland habitat around Morison Pond within the 19.29-acre project area. The three-year habitat restoration project will also benefit the least Bell's vireo. Funding for the project is provided by a WCB 2020 Proposition 68 grant awarded in November 2020 and with County matching funds. The project's objectives are: (1) initiate a three-year invasive, non-native plant control program throughout the 19.29 acres to enhance the existing habitat and benefit sensitive and listed species, including least Bell's vireo; (2) plant native trees provided by the County Tree Program; (3) install 3,450 coastal sage scrub species over approximately 3.45 acres to expand nesting and foraging habitat for coastal California gnatcatcher and coastal cactus wren; and (4) install 135 pounds of coastal sage scrub seed mix over approximately 3.45 acres to expand nesting and foraging habitat for coastal California gnatcatcher and coastal cactus wren. Implementation of the Restoration and Enhancement Plan began in 2022. Following installation of the coastal sage scrub species in 2022 and initial removal of invasive non-native plant species, monitoring and maintenance activities will continue to ensure successful installation of native plants and eradication of invasive, non-native plant species. In 2023, the project continued implementation and began maintenance, monitoring, and reporting. In 2024, the County will continue implementation, maintenance, monitoring, and reporting for the project.

Smuggler's Gulch Dredging Project

Funding Source: SWRCB Border Water Quality Infrastructure Grant
Funding Amount: $4,250,000
Project Timeline: October 2023 – December 2025
Target Species or Habitat: Riparian Wetland and adjacent upland habitats
Management Action: Habitat enhancement

The Smuggler's Gulch Dredging Project will improve water quality by removing trash and sediments that have accumulated within the Smuggler's Gulch channel and Pilot Channel in the

Tijuana River over years of transboundary flows coming from Mexico. The project will include a full-scale dredging effort throughout the entirety of Smuggler's Gulch channel and disposal of the dredged material. This project complements the Smuggler's Gulch Improvements Project discussed above. This project is funded by a SWRCB Border Water Quality Infrastructure Grant of $4,250,000 the County successfully secured in late 2023 by leveraging existing County funding for the project. Implementation of the grant is expected to begin in early 2024. Implementation benefits will include enhancement of the hydrologic health and habitat of the Tijuana River Valley watershed.

Smuggler's Gulch Improvements Project

Funding Source: State Coastal Conservancy Proposition 68 Grant ($10,000,000) and County funding ($323,000)
Funding Amount: $10,323,000
Project Timeline: January 2021 – June 2028
Target Species or Habitat: Riparian, wetland and adjacent upland habitats
Management Action: Habitat Enhancement

The *Smuggler's Gulch Improvements Project* is a Capital Improvements Project within Tijuana River Valley Regional Park that originated from the County's *Tijuana River Valley Needs and Opportunities Assessment* completed in March 2020. The County secured a $10M grant on May 27, 2021 to implement the *Smuggler's Gulch Improvements Project,* which will capture additional trash and sediment where Smuggler's Gulch enters the United States to avoid these materials from moving downstream where they can impact important riparian habitat in the main Tijuana River channel. This project includes design, environmental review, and construction of a sedimentation basin, trash capture devices, and culvert improvements at Smuggler's Gulch and surrounding areas. As part of this project, the County conducted protocol surveys for several MSCP-covered species in 2021 including California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher. The County also conducted a habitat assessment of the area to identify and map habitat types to ensure maximum avoidance to native habitat. Once implemented, this project has the potential to protect native habitat downstream by capturing trash upstream. The County continued design for the Project in 2023. The County will complete design and apply for environmental permits in 2024.

Tijuana River Valley Invasive Species Removal and Restoration Plan

Funding Source: CDFW Proposition 1 Grant
Funding Amount: $520,167
Project Timeline: July 2020 – March 2024
Target Species or Habitat: Riparian, wetland and adjacent upland habitats
Management Action: Planning for habitat restoration
The *Tijuana River Valley Invasive Species Removal and Restoration Plan* project will complete the planning and permitting steps necessary for the future implementation of a large-scale habitat restoration project which will target invasive and non-native plants within the Tijuana River Valley Regional Park. This project is funded through a CDFW Proposition 1 grant totaling $520,167 which was awarded to the County in March 2020. The project will complete a Habitat Restoration Plan, apply for necessary regulatory permits, and obtain environmental clearance pursuant to the CEQA so that the project will be "shovel-ready" for implementation as the next phase. The Habitat Restoration Plan will analyze the entirety of the Tijuana River Valley Regional Park which encompasses approximately 1,800 acres of the Tijuana River Valley.

Existing information will be supplemented by technical studies conducted during the project to inform implementation priorities and effective restoration methods in the Habitat Restoration Plan for future implementation. The overall project goal is to remove and treat invasive, non-native plants within the Tijuana River Valley Regional Park and restore targeted areas with native vegetation. This will enhance the ecological function of the Tijuana River Valley and provide habitat for the sensitive species that occur in this region, including several MSCP covered species such as least Bell's vireo, coastal California gnatcatcher, and light-footed Ridgway's rail. The project was initiated in Fall 2020. Protocol surveys for target species were conducted in 2021. These surveys included several MSCP-covered species including coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher. In 2022, a draft biological technical report and a draft cultural resources report were prepared. In late Fall 2023, the Habitat Restoration Plan and the Draft Initial Study Mitigated Negative Declaration were circulated for public review. The County will apply for environmental permits, complete environmental analysis, and finalize the Habitat Restoration Plan in early 2024.

Tijuana River Valley Regional Park Brown Property Fill Removal/Restoration

Funding Source: CDFW Proposition 1 Grant
Funding Amount: $1,328,000
Project Timeline: June 2018 – March 2025
Target Species or Habitat: Least Bell's vireo
Management Action: Habitat restoration

The *Tijuana River Valley Regional Park Brown Property Fill Removal/Restoration* project will complete planning for a restoration project for least Bell's vireo in the Tijuana River Valley Regional Park over a nearly 7-year time period. The project is funded by a CDFW Proposition 1 grant of $1,328,000 awarded to the County in 2017. The County worked with regulatory agencies and stakeholders to revise this project in 2022. The revised project includes preparation of a habitat restoration plan for the Brown Property, preparation of design plans and environmental analysis to allow for the future removal of accumulated sediment, debris, and vegetation from the Tijuana River Valley and the Smuggler's Gulch channel to enhance the hydrologic health and habitat of the Tijuana River Valley watershed, as well as additional hydrologic studies.

Restoration planning for the Brown Property was completed in June 2023 and included technical studies, design, and environmental review and documentation. Implementation of the restoration plan will include removal of invasive species and existing structures from the Brown property in the Tijuana River Valley Regional Park. While the existing CDFW grant cannot be used for implementation of this restoration plan, the County successfully secured alternative grant funding in late 2023 and implementation will begin in early 2024. Implementation benefits will include restoration of disturbed land into native habitat for least Bell's vireo and other native wildlife.

In Fall 2023, the County also completed environmental review and documentation for the future removal of accumulated sediment, debris, and vegetation from the Tijuana River Valley and the Smuggler's Gulch channel. While the existing CDFW grant cannot be used for implementation of the sediment removal, the County successfully secured alternative grant funding and the sediment removal project implementation will begin in early 2024. Implementation benefits will include enhancement of the hydrologic health and habitat of the Tijuana River Valley watershed.

Tijuana River Valley Regional Park Invasive Removal, Restoration and Interpretive Signage

Funding Source: CNRA Proposition 84 River Parkways Grant
Funding Amount: $494,920
Project Timeline: October 2016 – February 2024
Target Species or Habitat: Least Bell's vireo
Management Action: Invasive, non-native plant control and habitat restoration

The *Tijuana River Valley Regional Park Invasive Removal, Restoration and Interpretive Signage* project will restore and enhance least Bell's vireo habitat at Tijuana River Valley Regional Park. The project is funded by a CNRA Proposition 84 River Parkways grant for $494,920 awarded to the County in 2016. The funding supplements ongoing habitat restoration activities in the Tijuana River Valley Regional Park. The project removed invasive, non-native plants, particularly tamarisk, and restored treated areas by planting native plant species across two acres. In 2022, DPR was granted an extension of the project performance period to February 2024 to ensure successful establishment of native plants and eradication of invasive, non-native plants from the restoration area. In 2023, crews spot-treated, weed whipped, and/or removed by hand non-native seedlings within the restoration site. Non-native plants were hand-pulled where growing adjacent to native plants. Supplemental watering occurred as needed. All irrigation was removed from the site in Fall 2023, which concluded all work within the restoration site. The project has met the grant's dual goals of tamarisk eradication and increasing native riparian vegetation. The County will complete grant close-out paperwork and submit final invoicing in early 2024. This project provided new habitat for several species within the Park, including least Bell's vireo, an MSCP covered species.

Tijuana River Valley Regional Park Habitat Improvement, Restoration, and Erosion Control

Funding Source: U.S. Navy Readiness and Environmental Protection Integration (REPI) Program Funding
Funding Amount: $1,500,000
Project Timeline: September 2023 – September 2028
Target Species or Habitat: Least Bell's vireo and coastal California gnatcatcher
Management Action: Habitat restoration

The Tijuana River Valley Regional Park Habitat Improvement, Restoration, and Erosion Control Project will develop an adaptive work plan and implement restoration efforts within the Park, which will improve and enhance habitat for least Bell's vireo and coastal California gnatcatcher. The adaptive work plan will detail habitat improvement and resilience efforts to benefit least Bell's vireo and coastal California gnatcatcher. The project is funded by a $1,500,000 cooperative agreement with the Navy under the REPI Program, which was executed in Fall 2023. Implementation is expected to begin in early 2024.

Tijuana River Valley Regional Park Brown Property Restoration Project

Funding Source: SWRCB Border Water Quality Infrastructure Grant
Funding Amount: $2,000,000
Project Timeline: October 2023 – February 2026
Target Species or Habitat: Upland Coastal Sage Scrub and Least Bell's vireo
Management Action: Habitat restoration

The Tijuana River Valley Regional Park Brown Property Restoration Project will improve water quality by removing trash and invasive species and restore the Tijuana River and adjacent areas to its native habitat. The project will include demolition of on-site structures, restoration of the approximately seven-acre property to native upland coastal sage scrub habitat, and short-term maintenance and monitoring of the restoration site. The project is funded by a SWRCB Border Water Quality Infrastructure Grant of $2,000,000 awarded to the County in late 2023. Implementation of the grant is expected to begin in early 2024. Implementation benefits will include restoration of disturbed land into native habitat for least Bell's vireo and other native wildlife.

6.4 Preserve Management Partnerships

Five County partners implemented five management projects across three County Preserves within the reporting year to benefit wetland, riparian, stream, and coastal sage scrub habitats. Natural resources restoration activities, including invasive, non-native plant species treatment and active habitat restoration, were implemented in three County Preserves: Santa Fe Valley Preserve, Tijuana River Valley Regional Park, and Lusardi Creek Preserve; and continued deployment of trash capture booms as well as implementation of channel and culvert maintenance was conducted in the Tijuana River Valley Regional Park. Partners were the City of San Diego (Stormwater Department), Nature Collective, Caltrans, Alter Terra (Earth Island Institute), and the San Dieguito River Valley Conservancy.

The regular management, monitoring, and invasive, non-native species removal activities performed by County Rangers, staff, and contractors is augmented by other organizations and projects at various Parks and Preserves, including those detailed below. Through the Right-Of-Entry (ROE) permit process, DPR assists with the habitat restoration and enhancement projects proposed by outside government agencies, municipalities, and environmental organizations that benefit the County's preserve lands. These projects not only support the County's management activities, but they also provide another source of stewardship to support the success of native and sensitive plant and animal species in County Preserves. For the individual projects detailed below, only County Preserves are mentioned, but many of the habitat management projects extend well outside of the County Preserves in the MSCP Subarea Plan.

Invasive Non-native Plant Treatment/Santa Fe Valley Preserve

Lead Agency: Nature Collective
Project Timeline: October 2022 – October 2024
Target Species or Habitat: Coastal California gnatcatcher and riparian habitat
Management Action: Invasive, non-native plant control
County Preserve: Santa Fe Valley Preserve

The *Invasive Non-native Plant Treatment/Santa Fe Valley Preserve* project will retreat giant reed, a non-native invasive plant species, along the San Dieguito River in Santa Fe Valley Preserve three times over a two-year period. In 2022, the Nature Collective conducted their first work event, which consisted of foliar treatment of giant reed with herbicide approved for use in riparian habitat. Monitoring and retreatments of the project area continued in 2023. This project helps maintain the ecological health of riparian habitats in the preserve, as well as benefiting downstream areas by minimizing the spread of invasive plant species.

Channel Maintenance and Invasive Non-native Plant Treatment/Tijuana River Valley Regional Park

Lead Agency: City of San Diego (Stormwater Department)
Project Timeline: August 2023 – August 2025
Target Species or Habitat: Channels and wetland habitat
Management Action: Channel maintenance and invasive, non-native plant control, and restoration
County Preserve: Tijuana River Valley Regional Park

The Channel Maintenance and Invasive Non-native Plant Treatment/Tijuana River Valley Regional Park project will conduct channel maintenance, as well as non-native invasive plant treatment and native plant restoration within previous maintenance areas within Tijuana River Valley Regional Park over a two-year period. Channel maintenance will occur periodically within the Smuggler's Gulch drainage channel and Tijuana River Pilot Channel, and will consist of removing soil, rock, and vegetation from the channel bottoms. Channel maintenance will require some pumping of stagnant water downstream. The City of San Diego will also maintain existing culverts under Monument Road and the Disney Crossing. The second component of this project is invasive, non-native plant treatment for approximately 20 acres of previous maintenance areas within Smuggler's Gulch, Tijuana River Pilot Channel, and the Smythe-Bandola Mitigation Site. This treatment will focus on removal of giant reed, castor bean (*Ricinus communis*), tamarisk (*Tamarix* sp.), and trash, and will be followed by wetlands rehabilitation and enhancement in the Smythe Channel and Via de la Bandola Channel. The second project component will mitigate for impacts to wetland waters of the U.S. and State. The project includes various measures to protect environmental resources. Best Management Practices (BMPs) will be present at designated staging areas for equipment and material staging, including temporary storage of spoils. This project also limits travel to designated access routes and includes restrictions on use of vehicles and equipment. Various measures are included for protection of nesting birds and preventing the spread of invasive shot hole borer. Implementation of this project provides flood protection to the surrounding properties, mitigates for impacts to jurisdictional features, and enhances the quality of wetland habitat in the Preserve, which supports MSCP covered species such as least Bell's vireo.

Wetland Restoration Phase 2

Lead Agency: Caltrans
Project Timeline: December 2016 – December 2023
Target Species or Habitat: Wetland habitat
Management Action: Habitat restoration and invasive, non-native plant control
County Preserve: Tijuana River Valley Regional Park

The *Wetland Restoration Phase 2* project will restore ten acres of wetlands in Tijuana River Valley Regional Park over a six-year period. Caltrans began *Phase 2* in December 2016. This project is a continuation of *Phase 1* of the restoration activity, which began in 2013, and involved mitigation associated with the Mid Coast Transit Project. Project elements include invasive, non-native plant control, debris/trash removal, native wetland plantings, and temporary irrigation for supplemental watering. Following the completion of the active restoration, a minimum of five years is dedicated to monitoring in order to ensure mitigation efforts have been successful. Restoration of wetland habitat benefits the MSCP covered species found within the park including least Bell's vireo, northern harrier, and Cooper's hawk. Monitoring of the restoration site continued through 2023.

Smuggler's Gulch Transportable Floating Trash Booms

Lead Agency: Alter Terra, a project of Earth Island Institute
Project Timeline: January 2017 – present
Target Species or Habitat: Riparian and stream habitat
Management Action: Habitat restoration
County Preserve: Tijuana River Valley Regional Park

The *Smuggler's Gulch Transportable Floating Trash Booms* project removes trash from the Smuggler's Gulch drainage channel before it enters the Tijuana River to benefit stream and riparian habitat in the Tijuana River Valley Regional Park over a four-year period. In 2017, Alter Terra, a project of Earth Island Institute, began planning the installation of a floating trash removal system. The first phase of this project included pre-construction activities including planning and design, which were completed from 2017-2019. The implementation phase of this project began in December 2019 with the construction and installation of the trash booms at the channel. The trash removal system is comprised of two sets of trash booms constructed of repurposed plastic. The booms were placed in the Smuggler's Gulch drainage channel to capture trash crossing the US-Mexico border. The trash booms remain deployed during the wet season and are regularly monitored and cleared with assistance from the Urban Corps, which partners with *Live Well San Diego*. The trash booms were checked and cleaned of debris at least once every two weeks and after every significant rain event measuring 0.5 inches or more of measurable precipitation. Trash booms remained active during Spring 2021 and were removed during the dry season. Trash booms are redeployed before each wet season except for a few weeks out of each season to facilitate DPR's channel maintenance work. Through these habitat enhancement efforts, this project benefits several MSCP covered species occurring in the park, including coastal California gnatcatcher, least Bell's vireo, and northern harrier.

San Dieguito Watershed Invasive Non-native Plant Control Program

Lead Agency: San Dieguito River Valley Conservancy
Project Timeline: September 2019 – June 2023
Target Species or Habitat: Riparian habitat
Management Action: Invasive, non-native plant control
County Preserve: Lusardi Creek Preserve

The *San Dieguito Watershed Invasive Non-native Plant Control Program* removes invasive, non-native plants from riparian habitat in Lusardi Creek Preserve. As a partner of the San Dieguito River Park Joint Powers Authority (JPA), the San Dieguito River Valley Conservancy

also obtained a ROE permit to implement a portion of this project within the Lusardi Creek Preserve. Approximately three acres of the creek have been targeted for this project due to an abundance of giant reed within the watershed. The project began with the initial removal of giant reed above ground biomass within the project area. All giant reed canes are chipped on-site and follow best management practices to prevent the further spread of this invasive species. Following the initial biomass removal, re-sprouts are treated approximately once per month to maximize the efficacy of the treatments. In 2020, the use of wildlife cameras was added to the project scope to monitor how wildlife respond to and utilize the enhanced area. Monitoring and retreatments of the project area continued in 2023. This project will improve the ecological function of this important riparian habitat and support the MSCP covered species, least Bell's vireo.

6.5 Private Mitigation Lands Management

Private Resource Management Plans (RMPs) are required as a condition of development entitlements when biological resources are impacted by the proposed development project and the acreage of required mitigation exceeds 50 acres, on- or off-site. Private RMPs may also be required when open space less than 50 acres is proposed if a particularly sensitive resource is present that would benefit from active management and/or monitoring.

Private RMPs are approved by PDS and require submission of annual monitoring reports that focus on the resource attributes of that specific site and detail the monitoring and habitat management activities conducted within the previous year. Annual reports also document any issues and the overall health of the Preserve, which allows the County to assess the biological integrity of the open space habitats protected by each Private RMP. Controlling and managing public access through fencing, signage, and patrolling is another component of the Private RMPs. Management and monitoring on private mitigation lands is funded through mechanisms established during the Private RMP approval process (i.e., special districts, endowments, or annual fees). The health of these endowments and use of these funds are reported in the RMP annual reports.

Private RMP annual reports are publicly available online through the PDS Document Library[15] using the associated Record ID. **Appendix K** provides a general overview of the 19 Private RMPs located within the MSCP Subarea Plan including a description of the habitat conservation area, required surveys, and monitoring/maintenance status for each Private RMP. The following section is a summary of the RMP annual reports received in the 2022-2023 reporting period.

2023 Annual Report Private RMP Review

Fourteen of the nineteen (73%) Private RMPs submitted reports for the 2022-2023 reporting period. Each report was reviewed by County PDS staff to evaluate compliance with the RMP document terms. Review letters were sent to all 14 responsible habitat managers and/or property owners that submitted reports. Review letters notified managers of the need, if any, to address specific management topics. Common areas for improvement in future reports include addressing financial status, monitoring results, and complying with the general provisions of the approved RMP. The Wildlife Agencies are routinely copied on correspondence from the County to the land managers regarding annual monitoring reports wherein greater detail of the report

[15] The PDS Document Library can be accessed at: https://www.sandiegocounty.gov/content/sdc/pds/doclibrary.html.

review results can be obtained. Stewardship and management activities on private mitigation lands are described below and summarized in **Appendix L.**

Bernardo Lakes Preserve

MSCP Subarea Plan: 111 acres
Segment: Lake Hodges

Once the RMP is implemented, management could benefit the five MSCP covered species historically known to occur on or utilizing the preserve, which are Orcutt's brodiaea, San Diego barrel cactus, coastal California gnatcatcher, southern California rufous-crowned sparrow, and southern mule deer. No annual report summarizing management actions was submitted this reporting year. A summary of the County steps taken in 2023 towards bringing this RMP into compliance is provided in the next section.

4S Ranch Ralphs Preserve

MSCP Subarea Plan: 1,065 acres
Segment: Lake Hodges

Management benefits the six MSCP covered species known to occur on or utilizing the preserve, which are southern California rufous-crowned sparrow, thread-leaved brodiaea, variegated dudleya, Belding's orange-throated whiptail, northern harrier, and coastal California gnatcatcher. Management actions included the following:

- **Invasive, non-native plant control:** Removal efforts included hand pulling of artichoke thistle covering less than 0.50 acre. After continuous efforts of removal, it was determined that there is a diminishing population and old seeds occurred from being blown in onto the preserve.

- **Access control:** Resource managers patrolled weekly to ensure compliance with trespassing, illegal activity, dumping or vandalism. No significant activity occurred during access control and no law enforcement was involved during the monitoring year. Small amounts of windblown trash were also removed from the preserve.

4S Ranch Specific Plan Preserve

MSCP Subarea Plan: 547 acres
Segment: Lake Hodges

Management benefits the six MSCP covered species known to occur on or utilizing the preserve, which are southern California rufous-crowned sparrow, thread-leaved brodiaea, variegated dudleya, Belding's orange-throated whiptail, northern harrier, and coastal California gnatcatcher. Management actions included the following:

- **Invasive, non-native plant control**: Efforts included treatment and removal of non-native species riparian areas and non-native grassland habitat. Non-native species observed included artichoke thistle, tamarisk, stinkwort, pampas grass, black mustard, fennel, tree tobacco, eucalyptus, and castor bean.

- **Access control:** Resource managers monitored for illegal off-road vehicle and trail access issues. Damaged fencing was repaired and replaced. Trash and debris were removed during site visits.

Golem Preserve

MSCP Subarea Plan: 154 acres
Segment: Lake Hodges

Management benefits the five MSCP covered species known to occur on or utilizing the preserve, which are wart stemmed ceanothus, Del Mar manzanita, coastal California gnatcatcher, California rufous-crowned sparrow, and mountain lion. Management actions included the following.

- **Habitat restoration**: Resource managers conducted general maintenance in the Upland Restoration Site. Sticky dudleya grown in the SDRPF nursery that produced significantly more seed will be returned to the area where original seed was collected from planting efforts in 2021.

- **Invasive, non-native plant control**: Removal efforts included ongoing weed control of 1.1 acres at the coastal sage restoration sites as well as an adjacent one-acre site which was treated with herbicide followed up with the hand pulling of weeds. Weed control also occurred in the floodplain to control nonnative grasses. Additionally, 90 eucalyptus saplings were removed by cut stump herbicide treatment and canary palms were also treated with herbicide.

- **Access control:** Resource managers patrolled almost daily and there is a security guard at the main entrance every day. Graffiti was removed from signs and new trails and access points are closed to protect coastal California gnatcatcher habitat.

- **Environmental education:** Outreach occurred directly with people using the trail system, and through coordinated hikes and restoration projects.

Starwood (Crosby) Preserve

MSCP Subarea Plan: 170 acres
Segment: Lake Hodges

Management benefits the 13 MSCP covered species known to occur on or utilizing the preserve, which are San Diego mesa mint, San Diego button celery, Orcutt's brodiaea, San Diego ambrosia, Del Mar manzanita, San Diego barrel cactus, wart-stemmed ceanothus, San Diego fairy shrimp, Belding's orange-throated whiptail, coastal California gnatcatcher, Cooper's hawk, northern harrier, and southern California rufous-crowned sparrow. Management actions included the following.

- **Habitat restoration**: Resource managers planted native plant species to restore the over trimming that occurred as part of brush management activities including ten California adolphia, five dudleya, 30 California sagebrush, and 30 California buckwheat plants in the Upland Habitat Management Area and about 20 wart-stemmed ceanothus,

15 coyote brush, five chamise, five California sagebrush, and five brittlebush were planted in the Chaparral Habitat Management Area.

- **Invasive, non-native plant control**: Removal efforts included ongoing weed control to avoid perennial invasive plants as well as spot herbicide treatment to reduce plant outbreaks.

- **Invasive, wildlife control**: Efforts included surveying for brown-headed cowbird and American bullfrog. American bullfrog egg removal also took place.

- **Access control**: After increased unauthorized use and vandalism, work continues with Encinitas and 4S Ranch Sheriff departments to utilize trespass arrest authorization forms if needed, as well as continued monitoring and coordination with adjacent land managers if necessary.

- **Fire Management:** Resource managers conducted brush management in coordination with the San Diego County Fire Marshall to maintain a “defensible space” around structures. Removal efforts included clearing weeds with hand tools and trimming larger vegetation, such as shrubs and trees, back away from homes and flammable structures.

- **Environmental education:** The Crosby Open Space website was regularly updated to provide community members with access to news and information about the Preserve as well as education towards citizen science applications and conserving water resources.

Woodridge Preserve

MSCP Subarea Plan: 54.2 acres
Segment: North Metro-Jamul-Lakeside

Management benefits the three MSCP covered species known to occur on or utilizing the preserve, which are coastal California gnatcatcher, southern California rufous-crowned sparrow, and Belding's orange-throated whiptail. Management actions included the following:

- **Habitat restoration**: Resource managers planted approximately 150 cacti to develop coastal cactus wren habitat and maintained the previous years’ plantings.

- **Invasive, non-native plant control:** Removal efforts included treatment of more than 1,000 black mustard plants, as well as several stinkwort.

- **Fire Management:** Fuel zones were thinned or cleared to no more than 50 percent to help protect the surrounding residential community.

- **Access control:** Resource managers conducted weekly to bi-weekly patrols to prevent vandalism and illegal activities. Minimal trash was found and picked up during patrols and other management activities. Fences and gates are in good working order and no maintenance was required. Illegal trails were blocked and raked over and covered with vegetation.

- **Environmental education:** Kiosks were periodically updated with photos and information. Materials included information of native plants and animals.

Blossom Valley Preserve

MSCP Subarea Plan: 285.9 acres
Segment: North Metro-Jamul-Lakeside

Management benefits the seven MSCP covered species known to occur on or utilizing the preserve, which are southern California rufous-crowned sparrow, southern mule deer, San Diego horned lizard, Belding's orange-throated whiptail, bald eagle, mountain lion, and northern harrier. Management actions included the following.

- **Invasive, non-native plant control:** Resource managers removed a small number of tree tobacco and fountain grass along the main public access trail.

- **Access control:** Resource managers conducted site visits at least twice per month. Several off-leash dogs were observed during these patrols, and dog owners were issued a verbal reminder of the rules and asked to put their dog on leash. Minimal trash was found and picked up during patrols and other management activities. All fences and gates are in good working order and no maintenance was required. No other major issues occurred during patrol.

- **Environmental education:** A kiosk was established on the Flume Trail, which displays information on native and invasive species, and provides a trail map to trail users. Efforts included providing educational outreach to trail users as they were encountered on trails.

McCrink Ranch Preserve

MSCP Subarea Plan: 269.9 acres
Segment: Lake Hodges

Once the RMP is implemented, management could benefit the six MSCP covered species historically known to occur on or utilizing the preserve, which are San Diego barrel cactus, sticky dudleya, coastal California gnatcatcher, southwestern pond turtle, southern California rufous-crowned sparrow, and Cooper's hawk. No annual report summarizing management actions was submitted this reporting year. A summary of the County steps taken in 2023 towards bringing this RMP into compliance is provided in the next section.

Maranatha Chapel Preserve

MSCP Subarea Plan: 87 acres
Segment: Lake Hodges

Once the RMP is implemented, management could benefit the five MSCP covered species historically known to occur on or utilizing the preserve, which are wart-stemmed lilac, coastal California gnatcatcher, Cooper's hawk, northern harrier, and southern mule deer. No annual report summarizing management actions was submitted this reporting year. A summary of the County steps taken in 2023 towards bringing this RMP into compliance is provided in the next section.

El Apajo Preserve

MSCP Subarea Plan: 25.6 acres
Segment: North Metro-Jamul-Lakeside

Once the RMP is implemented, management could benefit the two MSCP covered species historically known to occur on or utilizing the preserve, which are Blainville's horned lizard and northern harrier. No annual report summarizing management actions was submitted this reporting year. A summary of the County steps taken in 2023 towards bringing this RMP into compliance is provided in the next section.

Greenhills Ranch Preserve

MSCP Subarea Plan: 38.9 acres
Segment: North Metro-Jamul-Lakeside

Management benefits the four MSCP covered species known to occur on or utilizing the preserve, which are coastal cactus wren, coastal California gnatcatcher, southern California rufous-crowned sparrow, southern mule deer. Management actions included the following.

- **Invasive, non-native plant control:** Removal efforts included weed whacking and chemical treatments throughout the preserve. Targeted species included mustard and tecolote.

- **Access control:** Resource managers conducted quarterly patrols and six maintenance visits. Minimal trash was found and picked up during regular maintenance and monitoring visits. Trespass and damage from bike activity was observed was addressed with adaptive management strategies. Four additional trespassing signs were installed to discourage trespassing in key locations.

- **Environmental education:** Resource managers regularly communicated with the Homeowners Association (HOA) to report visits and activities. Coordination regarding trespassing issue was a main focus as well as the approval and implementation of signage design, purchase, and installation.

Artesian Trail Preserve

MSCP Subarea Plan: 3.2 acres
Segment: Lake Hodges

Once the RMP is implemented, management could benefit the one MSCP covered species historically known to occur on or utilizing the preserve, thread-leaved brodiaea. No annual report summarizing management actions was submitted this reporting year. A summary of the County steps taken in 2023 towards bringing this RMP into compliance is provided in the next section.

Lonestar Preserve

MSCP Subarea Plan: 62.16 acres
Segment: South County

Management benefits eight MSCP covered species known to occur on or utilizing the preserve including Otay tarplant, Otay mesa mint, variegated dudleya, burrowing owl, San Diego fairy shrimp, Riverside fairy shrimp, northern harrier, and coastal cactus wren. Management actions included the following:

- **Habitat restoration**: Resource managers coordinated with San Diego Zoo Wildlife Alliance and others on habitat management and improvement for Otay tarplant and burrowing owl. Four brush piles were installed to benefit burrowing owl habitat.

- **Invasive, non-native plant control:** Efforts included mowing of non-native grassland to improve habitat for burrowing owls and the Otay tarplant. Herbicide and line trimming were applied during contractor visits to remove exotics, as well as minor manual removal. Mustard germinated after the rains in the fall and acetic acid treatments were conducted.

- **Access control:** Resource managers conducted monthly monitoring visits and found two damaged sections of fencing in the northeast corner of the site. Both sections were repaired. Trash was picked up inside and outside the preserve mostly along the fencing next to the road.

- **Environmental education**: The resource manager attended the San Diego County Burrowing Owl meeting. Extensive coordination was conducted with the San Diego Zoo Wildlife Alliance for burrowing owl management.

East Otay Mesa Preserve

MSCP Subarea Plan: 92.23 acres
Segment: South County

Management benefits the six MSCP covered species known to occur on or utilizing the preserve, which are San Diego barrel cactus, coastal California gnatcatcher, southern California rufous-crowned sparrow, northern harrier, California horned lark, and southern mule deer. Management actions included the following:

- **Invasive, non-native plant control:** Removal efforts included hand removal of pampas grass, fennel, and artichoke thistle.

- **Access control:** Resource managers conducted 19 site visits. All signage was in good condition. A small portion of the fence was removed between the preserve and the adjacent property. Minimal trash was found and removed during site inspections.

- **Environmental education:** The resource manager communicated with the adjacent property manager regarding encroachments.

Sloane Canyon Preserve

MSCP Subarea Plan: 39.18 acres
Segment: South Metro-Lakeside-Jamul

Management benefits the one MSCP covered species known to occur on or utilizing the preserve, Belding's orange-throated whiptail. Management actions included the following.

- **Invasive, non-native plant control:** No removal occurred**,** as minimal amounts of non-native vegetation were found within the open space.

- **Access control:** Resource managers conducted biannual patrols. Fences and gates are in adequate condition and no trash removal was needed.

- **Environmental education:** The resource manager communicated with neighboring property owners who were implementing brush management on their property to make sure they were aware of the sensitive nature of the preserve. No encroachment occurred on the property.

High Meadow Ranch (Trevi Hills) Preserve

MSCP Subarea Plan: 358 acres
Segment: North Metro-Lakeside-Jamul

Management benefits the nine MSCP covered species known to occur on or utilizing the preserve, which are Lakeside ceanothus, coastal California gnatcatcher, northern harrier, golden eagle, southern California rufous-crowned sparrow, Blainville’s horned lizard, Belding's orange-throated whiptail, southern mule deer, and Cooper’s hawk. Management actions included the following.

- **Invasive, non-native plant control:** Removal efforts included multiple treatments of tamarisks using chainsaws to first cut tamarisks down, the application of post-emergent herbicide, and re-treatment efforts, Additionally, weed trimmers were used to cut stinkwort, mustard, and tocalote before applying post-emergent herbicide.

- **Access control:** Resource managers conducted quarterly monitoring visits. Trash and debris were minimal, and no problem areas were observed.

Otay Crossings Commerce Park Preserve

MSCP Subarea Plan: 24.3 acres
Segment: South County

Management benefits the seven MSCP covered species known to occur on or utilizing the preserve, which are Otay tarplant, San Diego barrel cactus, variegated dudleya, San Diego fairy shrimp, Riverside fairy shrimp, burrowing owl, and northern harrier. Management actions included the following.

- **Invasive, non-native plant control**: Weed control and removal efforts focused on Australian saltbush, black mustard, cheeseweed, non-native grass species, shortpod

mustard, fennel, crown daisy, milk thistle, prickly lettuce, sow thistle, tocalote, and Russian thistle. Hand weeding focused on slender-leaved ice plant in the Quino checkerspot butterfly area. Stinkwort and crown daisy were detected in small quantities and were controlled. Crystalline ice plant was removed around the Quino checkerspot butterfly areas. Stinkwort was observed for the first time and removal efforts in 2024 will focus on stinkwort, Australian saltbush, and Russian thistle.

- **Access control:** Resource managers conducted monthly patrols. Repairs to fencing and a gate on the north parcel were made. Off road vehicle trespass, including the U.S. Border Patrol and recreational off-roaders, continues to be problem.

OMC Resource Management Area

MSCP Subarea Plan: 16.08 acres
Segment: South County

Management benefits several MSCP species that have potential of occurring on the preserve including the Otay tarplant, burrowing owl, and the northern harrier. Management activities included the following:

- **Invasive, non-native plant control:** Six invasive species including Australian saltbush, black mustard, artichoke thistle, fennel, shortpod mustard, and Russian thistle or tumbleweed were documented and have slowly been removed as other priorities such as fencing and signage took place on the property. Due to last season's heavy rains, access for trailers and equipment to conduct invasive species control were more difficult. .

- **Access Control**: General site monitoring took place monthly and revealed off-road vehicle use, cut fencing, smashed gates, and damaged t-posts and signs. The resource manager installed three gates along the main dirt road. The resource manager coordinated with the San Diego County Sheriff's Off-Road Enforcement team to help reduce unauthorized off-road vehicle use. Additionally, at least a dozen garbage bags of debris were removed from the preserve.

Sweetwater Vistas Resource Management Area

MSCP Subarea Plan: 28.8 acres
Segment: South County

Management benefits several MSCP covered species known to occur on or utilizing the preserve, which are the coopers hawk, coastal California gnatcatcher, least Bell's vireo, and the northern harrier. Management activities included the following:

- **Invasive, non-native plant control:** Several annual and perennial invasive species were documented. Six site visits focused treatment efforts on mustard, castor bean, fountain grass, salt cedar, fennel, palm seedlings, and giant reed.

- **Access Control**: Resource managers conducted monthly patrols and large amounts of debris were found which required large trash removal events organized by the property

owner. A total of 13 signs were installed to increase awareness of the preserve and reduce trespassing.

Non-Compliant Private RMP Reporting

Five of the 19 (26%) RMPs did not submit annual reports for the 2022-2023 calendar year. These five non-compliant RMPs include RMP 98-001 Bernardo Lakes, RMP 02-001 McCrink, RMP 02-003 Maranatha Chapel, RMP 03-002 El Apajo, and RMP 06-005 Artesian Trail. These five RMPs have been out of compliance since the mid-2000s due to missing RMP implementation components (e.g., Resource Manager, funding mechanism, Open Space Maintenance Agreement, and/or easements). The County has and will continue to improve its processes and procedures, as necessary, to ensure additional compliance cases are not created. The County is also working towards bringing the five RMPs into compliance. In 2023, the County corresponded with three RMP responsible parties and is still evaluating paths forward for two of the more complicated RMP compliance cases. Below summarizes the County steps taken in 2023 towards bringing these RMPs into compliance and their current status.

Bernardo Lakes Preserve (PDS2008-3914-98-001) – County staff continued to actively work with the HOA to ensure the updated Property Analysis Record identifies all of the RMP implementation costs. Next steps will include County review and approval of the proposal and to set up a new Open Space Maintenace Agreement. This effort will continue into 2024 and a status update will be provided in the 2024 MSCP Annual Report.

McCrink Ranch Preserve (PDS2008-3914-02-001) – The County and developer entered into an agreement that will result in an item going before the Board of Supervisors for approval to allow the County's Department of Parks and Recreation to accept an endowment and the conveyance of the remaining approximately 82.33 acres of open space to implement the RMP. This effort will continue into 2024 and a status update will be provided in the 2024 MSCP Annual Report.

Maranatha Chapel Preserve (PDS2008-3914-02-003) – County staff continued to identify and assess the County's options to achieve compliance. An RMP was approved for the 72-acre preserve in 2003. Additionally, an Open Space Easement was recorded over the five-acre southern portion of the RMP area in 2019. The County is identifying ways to put the entire RMP into long term conservation and establish a funding mechanism for monitoring and management. Discussions will continue into 2024 and a status update will be provided in the 2024 MSCP Annual Report.

El Apajo Preserve (PDS2008-3914-03-002) – County staff continued to identify and assess the County's options to achieve compliance. An RMP was approved for the 25.6-acre preserve in 2003. Additionally, two Conservation Easements were recorded over the RMP area in 2003. The County is identifying ways to put the RMP into long term conservation and establish a funding mechanism and parties to the Open Space Maintenance Agreement for monitoring and management. Discussions will continue into 2024 and a status update will be provided in the 2024 MSCP Annual Report.

Artesian Trail Preserve (PDS2009-3914-06-005) – County staff continued to identify and assess the County's options to achieve compliance. An RMP was approved for the 3.2-acre preserve in 2007 and an Open Space Easement was recorded over the RMP area in 2006. The County is identifying ways to put the RMP into long term conservation and establish a funding

mechanism for monitoring and management. Discussions will continue into 2024 and a status update will be provided in the 2024 MSCP Annual Report.

6.6 Education and Outreach

DPR Staff table and visitors at the Science Fair and Exhibition at Petco Park.

One of DPR's key missions is educating the public about the County's biological and cultural resources. Rangers and volunteers are trained to lead environmental education programs and provide multiple interpretive services to the public. Presentations are available to people of all ages at schools, parks, campgrounds, interpretive centers, camps, scout groups, and churches. In 2023, DPR returned to offering a wide range of popular educational programs again and approximately 23,000 guests participated in over 730 programs. Highlights for 2023 include the following:

Hawktober and Hawk Talk continued to be one of DPR's most popular educational programs. In 2023, County Park Rangers visited 18 County parks and interacted with over 1,500 guests. This program offers attendees the chance to learn about the importance of raptors in our ecosystem and the unique adaptations that make them such capable predators. Two Park Rangers completed their initial trainings to become certified handlers, co-presented at multiple locations and completed at least one solo presentation.

Animal ambassadors are a popular way for County Park Rangers to educate visitors about the native animals found in San Diego County.

Hike-a-Thon encourages more people to spend quality time outside – wherever and whenever they can. DPR partnered with Nature Unplugged to host ranger-led hikes during their October 2023 Hike-a-Thon. The event had a dual purpose: to encourage people to fully experience nature, and to raise funds to Nature Unplugged's scholarship and subsidy program for

organizations and communities in need. Mileage was calculated October 1 -31, 2023 via a trail application. Participants had all month to log their travels for opportunities to collect prizes and earn matched dollars for charitable contributions. County Parks hosted a Kick-off event and four ranger-led hikes to promote the program, which drew 2012 participants overall – 412 from California – and logged 8,431 collective miles in San Diego County.

Discovery Program assists educators and elementary school students with exploring the wealth of nature at local parks and in their own backyards, at no cost to the participants. The curriculum correlates with Next Generation Science Standards and includes the subjects of plants and photosynthesis, astronomy, birds, Native Americans, geology, insects, and general ecology. The hands-on courses include a County Park Ranger visit to the school, activities for classroom use, a field trip and County Park Ranger-led hikes, and post-field trip activities for classroom and home use. The program is found in eight parks throughout the County, including Guajome Regional Park, Felicita County Park, San Dieguito County Park, Los Peñasquitos Canyon County Preserve, Louis A. Stelzer County Park, El Monte County Park, Flinn Springs County Park, and Otay Lakes County Park. Five of these County properties are located within the MSCP Subarea Plan boundary. In 2023, the Discovery Program hosted over 3,500 students from various schools in San Diego County.

Green Friday is celebrated the day after Thanksgiving; it's a day when County Parks encourages San Diegans to swap shopping plans for outdoor experiences via family-friendly activities in parks and preserves. In 2023, DPR hosted 25 volunteer park beautification and tree planting events through the three-day weekend, at numerous park locations. DPR also hosted several fitness events and an interpretive program, including a mountain biking event at Morrison Pond, a junior ranger program and Kumeyaay nature hike at Potrero County Park, and a Star Party at Sycamore Canyon/Goodan Ranch County Preserve. DPR also continued a four-year Story Trails partnership with County Libraries to encourage reading in public spaces. This program encourages families to spend quality time outside by displaying pages of children's books – in both English and Spanish – along popular hiking trails. Green Friday activities will continue in 2024. They are always free and designed for people of all ages and interests, in all parts of San Diego County.

TRACK Trails Program helps children explore the beauty of nature as part of the national Kids in Parks campaign. It features kiosks at trailheads with brochures detailing fun and adventurous aspects of the hikes offered. Children earn prizes by visiting the TRACK Trails website and tracking their adventures in their online nature journals. Seven DPR parks currently participate in the TRACK Trails program: Guajome Regional Park, Felicita Park, San Dieguito Park, San Elijo Park, Lake Morena Park, and Lindo Lake Park. In 2023, 69 participants submitted registrations for 106 adventures completed at DPR TRACK Trails over the course of the year.

Astronomy Programs: DPR continued the partnership with the San Diego Astronomy Association via monthly Star Party programs at parks such as Oakoasis County Park, Wilderness Gardens, and Sycamore Canyon County Preserves – weather permitting. These events continue to be popular with people of all ages and sizes and help to increase public awareness and enjoyment of astronomy and the physical sciences.

DIY Homeschool Sessions is a program where County Park Rangers prepare do-it-yourself (DIY) materials for homeschool families to conduct their own programs in parks. Two information sessions were held in 2023. One at Flinn Springs County Park and the other at Stelzer County Park. Resources included guidance on how to lead nature walks and hikes on a variety of topics, including geology, insects, plants and photosynthesis, solar system, trees and

forest ecology and Native American history. The program is fully customizable and is based on our successful Nature Explorers Program for elementary school students.

San Diego Festival of Science & Engineering is committed to providing experiential Science, Technology, Engineering, Art, and Math (STEAM) activities to diverse populations. There is a region-wide kick-off event, STEM Expo and other ancillary activities spread across a week – forming a comprehensive community event that inspires curious youth to become tomorrow's science, technology, engineering, art, and math leaders. In 2023, County Park Rangers participated in this festival at the Expo at Petco Park by providing a nature discovery table featuring several live animals. Staff were also asked to present on the live stage, showcasing a snake and a hawk for Q & A which was broadcast to all San Diego Unified schools. The kick-off event was hosted at San Dieguito Event where thousands of attendees perused information booths, attended workshops enjoyed shows and participated in DPR-led programs such as a birds of prey workshop, meditation session and native plant walk. This program was offered free to the public.

Nature Explorers Program is a five-year plan for increasing local awareness of resources and recreational opportunities through strategic intervention. Program curriculum is designed to inform and inspire San Diegans through awareness of environmental issues. Program excursions leverage County-owned areas and community partners, such as local representatives from the BLM, to provide participants access to green space through safe and responsible recreation. The first stage, Junior Explorers, positions the County in partnership with local schools to increase environmental sensitivity by connecting school age children with their neighborhood parks. The second stage is the Nature Explorers group, which includes comprehensive pre- and post-trip evaluation of on-site learning to increase environmental literacy among teen participants. As teens continue to engage with the program, the program provides opportunities for participants to progress into leadership roles that exemplify stewardship among their peers. In 2023, Nature Explorers participants hiked Morrison Pond, Mission Trails Regional Park, Louis A. Stelzer County Park, San Elijo Lagoon Ecological Reserve, San Diego National Wildlife Refuge, and Dictionary Hill County Preserve. Participants kayaked at Lake Morena County Park, enjoyed the surf at Coronado beach, paddle boarded Mission Bay and slept under the stars at Joshua Tree National Park, William Heise County Park, Sweetwater Regional Park, Oakoasis County Preserve, Dos Picos County Park, and Agua Caliente County Park campgrounds. The focal point for these trips included highlighting the significance of water conservation and the importance of 'Leave No Trace' principles when encountering delicate environments and exploring local outdoor spaces as an option for exercise to maintain a healthy and balanced lifestyle.

Additional education and outreach activities include the following:

- Display center interpretation.
- Daily interpretation at County Preserves' nature centers, museums, and kiosks.
- MSCP and environmental presentations to community groups and service boards.
- County Ranger-led nature talks, slide shows, walks, and hikes.
- Community service projects which include tree planting, ongoing tree care and watering.
- Stormwater and watershed education.

- Leave No Trace Program

Social media is also a powerful tool that DPR utilizes to share information about park people, places, and programs. A multi-platform approach is used to ensure content is available in many formats, in the places where people choose to get their information. In addition to sdparks.org and the department's e-newsletter, Facebook, Instagram, Twitter, YouTube, and Pinterest are used to relay important department information, such as land acquisitions, environmental reports, preserve updates, species highlights, habitat restoration projects and volunteer opportunities to grow San Diego's tree canopy.

- Here are reports from DPR's online accounts from the end of 2023: DPR maintains 11 active Facebook pages, which cumulatively have more than about 75,000 followers. The main DPR Facebook page has nearly 26,000 followers and is ranked in the top five among other counties in California. Other accounts have been set up for the community centers in Fallbrook, Lakeside and Spring Valley, Waterfront Park, Lido Lake, 4S Ranch, El Monte, and Sweetwater Bike Park. Two program pages have also been built: Women in the Wild and Summer Movies in the Park.

- DPR's Twitter/X feed has over 13,000 followers and is ranked second only to San Francisco's twitter feed that covers both the city and county.

- DPR's main Instagram account is only a few years old and has already gained nearly 11,000 followers (organically). Additional Instagram Accounts exist for the Sweetwater Bike Park, SD Nights, the Spring Valley Gym, and the Goats at Los Peñasquitos (DPR's first animal ambassador social media forum).

- DPR's YouTube channel has had over 200,000 views and 692 subscribers.

- DPR's Pinterest page has over 2,200 followers.

- DPR has an E-blast distribution list of 24,525 subscribers.

- DPR website receives an average of over 65,000 visits per month.

Discovery Program: County Park Ranger's school visit.

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CHAPTER 7

Preserve Monitoring and Research

Variegated dudleya, an MSCP covered species, at Sycamore Canyon and Goodan Ranch Preserve (left photo) and Orcutt's bird's-beak, an MSCP covered species, at Tijuana River Valley Regional Park (right photo)

Preserve monitoring within the MSCP Subarea Plan Area assesses the success of the MSCP Subarea Plan. In conformance with IA Section 14.5, Biological Monitoring, the County is responsible for monitoring the land it owns or acquires as well as ensuring that other private mitigation lands dedicated to the County within the MSCP Preserve are monitored consistent with the MSCP Subarea Plan. This chapter summarizes the monitoring activities in County Preserves and private mitigation areas.

MSCP monitoring on County Preserves includes TMP monitoring, baseline inventory surveys, research partnerships, and private mitigation lands monitoring. MSCP monitoring in the reporting year consisted of TMP monitoring, research partnerships, and private mitigation lands monitoring; no baseline inventory surveys occurred in 2023. County monitoring efforts also include the monitoring of sensitive species during and after park improvement projects. The 2023 monitoring results of park improvement projects are included in Section 7.1, Preserve Biological Monitoring of County Lands. Monitoring efforts conducted by County partners in 2023 can be found in Section 7.3, Preserve Monitoring and Research Partnerships. MSCP monitoring surveys have resulted in the monitoring or documentation of 47 MSCP covered species and one MSCP covered habitat in County Preserves and an additional three MSCP covered species on private mitigation lands (**Table 16**, *MSCP Covered Species or Habitats Documented by Program*).

TABLE 16. MSCP COVERED SPECIES OR HABITATS DOCUMENTED BY PROGRAM

	Monitoring Program				
MSCP Covered Species and Habitats	**TMP[a]**	**ROE[a]**	**Otay Ranch POM**	**Private Mitigation**	**Baseline Inventory Surveys**
Plants					
1. Del Mar manzanita				✓	✓
2. Dunn's mariposa lily			✓		✓
3. Encinitas baccharis	✓				✓
4. Felt-leaved monardella			✓		✓
5. Gander's pitcher sage			✓		
6. Heart-leaved pitcher sage					✓
7. Lakeside ceanothus	✓				✓
8. Orcutt's bird's beak	✓	✓			✓
9. Orcutt's brodiaea		✓	✓		✓
10. Otay manzanita			✓		✓
11. Otay mesa mint			✓		
12. Otay tarplant	✓	✓	✓		✓
13. Palmer's goldenbush			✓		✓
14. San Diego ambrosia				✓	
15. San Diego barrel cactus	✓[b]		✓	✓	✓
16. San Diego button celery			✓		✓
17. San Diego goldenstar		✓	✓	✓	✓
18. San Diego thornmint	✓	✓			✓

	Monitoring Program				
MSCP Covered Species and Habitats	**TMP[a]**	**ROE[a]**	**Otay Ranch POM**	**Private Mitigation**	**Baseline Inventory Surveys**
19. San Diego mesa mint					
20. San Miguel savory	✓		✓		✓
21. Snake cholla			✓	✓	✓
22. Spreading (prostrate) navarretia			✓		✓
23. Sticky dudleya					
24. Tecate cypress			✓		
25. Thread-leaved brodiaea				✓	
26. Torrey pine					✓
27. Variegated dudleya	✓		✓	✓	✓
28. Wart-stemmed ceanothus	✓[b]			✓	✓
29. Willowy monardella	✓	✓	✓		✓
Birds					
30. American peregrine falcon	✓[b]		✓	✓	✓
31. Bald eagle	[c]				
32. Burrowing owl	✓		✓	✓	✓
33. Coastal (San Diego) cactus wren	✓	✓	✓	✓	✓
34. Coastal California gnatcatcher	✓[b]	✓	✓	✓	✓
35. Cooper's hawk	✓[b]		✓	✓	✓

	Monitoring Program				
MSCP Covered Species and Habitats	**TMP[a]**	**ROE[a]**	**Otay Ranch POM**	**Private Mitigation**	**Baseline Inventory Surveys**
36. Ferruginous hawk	✓[b]				✓
37. Golden eagle	✓	✓	✓	✓	✓
38. Least Bell's vireo	✓[b]	✓	✓	✓	✓
39. Light-footed Ridgway's rail				✓	✓
40. Northern harrier	✓	✓		✓	✓
41. Southern California rufous-crowned sparrow	✓[b]			✓	✓
42. Southwestern willow flycatcher		✓			✓
43. Swainson's hawk	✓[b]				✓
44. Tricolored blackbird		✓			✓
45. Western bluebird	✓[b]				✓
46. White-faced ibis	✓[b]				✓
Reptiles and Amphibians					
47. Arroyo toad	[c]				
48. Belding's orange-throated whiptail	✓[b]		✓	✓	✓
49. Blainville's horned lizard		✓	✓	✓	✓
Mammals					
50. Mountain lion			✓		✓
51. Southern mule deer	✓[b]		✓	✓	✓

	Monitoring Program				
MSCP Covered Species and Habitats	**TMP[a]**	**ROE[a]**	**Otay Ranch POM**	**Private Mitigation**	**Baseline Inventory Surveys**
Invertebrates					
52. San Diego fairy shrimp	✓[d]		✓		
53. Thorne's hairstreak butterfly			✓		
Habitats					
54. Vernal pool/alkali playa	✓				✓

NOTES:
a TMP = Targeted Monitoring Plan; ROE = DPR issued Right-of-Entry (ROE) Permit
b These species were incidental observations during TMP monitoring surveys.
c Monitoring is conducted for this species, but it has not been observed in the South County MSCP area.
d This species was observed on the draft North County MSCP portion of a County Preserve and is presumed to utilize the South County MSCP areas of the same preserve.

SOURCES:
DPR ROE database
Environmental Science Associates. 2024. Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report. Prepared for Department of Parks and Recreation County of San Diego. March.
PDS Private Mitigation RMP Annual Reports.

SanBios GIS data

7.1 Preserve Biological Monitoring of County Lands

The MSCP monitoring program on County Preserves includes baseline inventory surveys, TMP monitoring, park improvement special status species monitoring, and other resource-specific monitoring. No baseline surveys were completed in 2023. TMP monitoring for the reporting year started in early spring 2023 and was conducted at 12 County parks and preserves to monitor MSCP covered species and habitats in six County parks and preserves within the South County MSCP Subarea, and six preserves outside the South County MSCP Subarea. Annual residual dry matter (RDM) and peak forage production monitoring was performed on Ramona Grasslands Preserve.

Baseline inventory surveys identify and map existing biological resources within a property. They are used to develop or update preserve-specific RMPs. In addition to informing management activities for individual areas, these surveys provide baseline status of MSCP covered species for future monitoring efforts.

The TMP consists of a combination of surveillance-type monitoring (e.g., ongoing assessments of threats and habitat conditions, and presence/absence surveys to confirm presence of targeted species), baseline condition assessments to determine population-specific threats and conditions, and monitoring to assess the response of a particular species to specific management treatments. Rare plant monitoring follows the most current Management and

Monitoring Strategic Plan Rare Plant Monitoring Protocol prepared by the SDMMP, and additional monitoring protocols stated in the TMP. Habitats and species included in the TMP are listed in **Table 17**, *Targeted Monitoring Plan Species and Habitats by Location*. Monitoring frequency is provided in **Table 18**, *Targeted Monitoring Plan Species and Habitats Monitoring Frequency*.

The TMP goal to collect high-quality data to inform trends in occurrences and populations, evaluate the current habitat conditions, assess threats, and provide adaptive management recommendations to ensure that the conservation goals of the MSCP are being met. The TMP prioritizes preserve level monitoring to allocate funding where it is most needed. It includes focused management and monitoring goals and objectives for target resources and detailed monitoring protocols (Environmental Science Associates and ICF 2022). The County utilizes the TMP to implement the biological goals and objectives discussed in MSCP Subarea Plan Section 6.4.1 and Section 14.5.

The TMP was revised in 2021 to incorporate ten new preserves (five MSCP Subarea Plan County Preserves and five draft North County MSCP County Preserves). The 2021 TMP update included seven additional species. The five Subarea Plan County Preserves included in the TMP update are Barnett Ranch Preserve, Furby-North Preserve, Tijuana River Valley Regional Park, Lawrence and Barbara Daley Preserve, and Stoneridge Preserve[16]. All MSCP County Preserves with RMPs are now included in the TMP monitoring efforts. In 2019, the TMP monitoring results from 2015-2019 were reviewed to determine lessons learned and further refine priorities, goals, objectives, and monitoring methods. The proposed revisions were integrated into the TMP update in 2021. In 2021, the Wildlife Agencies were included in the review process of updating TMP. In total, the TMP currently addresses monitoring and adaptive management within 20 open space parks and preserves. The sections below address monitoring of MSCP covered species performed through implementation of the TMP.

[16] Hellhole Canyon, Mt. Olympus, Santa Margarita, Simon, and Wilderness Gardens are also included in the TMP update and area located in the draft North County MSCP Plan Area.

TABLE 17. TARGETED MONITORING PLAN SPECIES AND HABITATS BY LOCATION

Common Name [a]	Boulder Oaks	Lakeside Linkage	El Capitan	El Monte	Louis A. Stelzer	Oakoasis	Sycamore Canyon and Goodan Ranch	Ramona Grasslands [b]	Del Dios Highlands [b]	Lusardi Creek	Barnett Ranch	Tijuana River Valley Regional Park	Furby-North	Stoneridge
San Diego thornmint							✓							
Otay tarplant													✓	
Orcutt's bird's-beak												✓		
Encinitas baccharis									✓					
Lakeside ceanothus	✓		✓		✓	✓								
Variegated dudleya							✓			✓				
Willowy monardella							✓							
Spreading (Prostrate) navarretia								✓						
San Miguel savory	✓													
San Diego fairy shrimp								✓ [b]						
Arroyo toad								✓						
Tricolored blackbird								✓[b]						
Golden eagle			✓					✓	✓		✓			
Burrowing owl								✓[b]						
Northern harrier												✓		
Coastal (San Diego) cactus wren		✓												

Common Name [a]	Boulder Oaks	Lakeside Linkage	El Capitan	El Monte	Louis A. Stelzer	Oakoasis	Sycamore Canyon and Goodan Ranch	Ramona Grasslands [b]	Del Dios Highlands [b]	Lusardi Creek	Barnett Ranch	Tijuana River Valley Regional Park	Furby-North	Stoneridge
Bald eagle								✓ b						
Least Bell's vireo												✓		
Vernal Pool / Alkali Playa Habitat	✓							✓ b						

NOTES:

a Stephens' kangaroo rat (*Dipodomys stephensi*), Harbison's dun skipper (*Euphyes vestris harbisoni*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) are monitored as part of the TMP. These species are excluded here because they are not covered species under the MSCP Subarea Plan.

b Portions of the Ramona Grasslands and Del Dios Highlands Preserves are located within the draft North County MSCP. This species was observed in the draft North County MSCP portion of the Preserves.

SOURCES:

Environmental Science Associates and ICF. 2015. Comprehensive Monitoring Plan. Prepared for Department of Parks and Recreation County of San Diego. July.

Environmental Science Associates and ICF. 2022. Targeted Monitoring Plan. Prepared for Department of Parks and Recreation County of San Diego. December.

TABLE 18. TARGETED MONITORING PLAN SPECIES AND HABITATS MONITORING FREQUENCY

Species or Habitat[a]	Monitoring Frequency[b]	Monitored in Reporting Year
San Diego thornmint	Population quantified and threats assessed annually for 5 years	Yes
Otay tarplant	Population quantified and threats assessed annually for 5 years	Yes
Orcutt's bird's-beak	Population quantified and threats assessed every 2 years	Yes
Encinitas baccharis	Population quantified and threats assessed every 2 years	Yes
Lakeside ceanothus	Population quantified and threats assessed every 5 years	No
Variegated dudleya	Population quantified and threats assessed every 3 years	Yes
Willowy monardella	Population quantified and threats assessed annually for 5 years	Yes
San Miguel savory	Population quantified and threats assessed every 3 years	Yes
Arroyo toad	Population and habitat quantified, and threats assessed annually for 5 years	Yes
	RDM monitoring annually	Yes
Tricolored blackbird	Presence/absence surveys and habitat and threats assessment every 2 years	Yes
Golden eagle	Foraging study monthly for 3 years	Yes
Burrowing owl	Presence/absence surveys, and habitat and threats assessment every 3 years	Yes
	RDM monitoring annually	Yes[c]
Coastal (San Diego) cactus wren	Avian point counts monthly during breeding season, every three years	No
	Qualitative habitat and threat assessment, photo monitoring, and vegetation density estimates during breeding season, every 3 years	No
Northern harrier	Nest monitoring annually for 5 years	Yes
	Threats assessment annually for 5 years	Yes
Bald eagle	Foraging study monthly for 3 years	Yes
Least Bell's vireo	Presence/absence and nest monitoring surveys, habitat and threat assessments annually for 5 years	Yes[d]
	Monitor shot hole borer annually or based on DPR Emergent Tree Pests Plan recommendation	No
	Monitor habitat recovery (Tijuana River Valley Regional Park only), annually or based on DPR Emergent Tree Pests Plan recommendation	No
	Brown-headed cowbird trapping, as needed (April 1 – June 30)	Yes[d]

Species or Habitat[a]	Monitoring Frequency[b]	Monitored in Reporting Year
Vernal pool / alkali playa habitat	Quantitative vegetation and wet-season fairy shrimp monitoring every 3 years	No
	Qualitative monitoring early and late season, annually for 5 years	Yes
	RDM monitoring annually	Yes
	Hydrological monitoring every 5 years	No
	San Diego fairy shrimp (*Branchinecta sandiegonensis*) monitored as part of qualitative monitoring	No

NOTES:
a Stephens' kangaroo rat (*Dipodomys stephensi*), Harbison's dun skipper (*Euphyes vestris harbisoni*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) are monitored as part of the TMP. These species are excluded here because they are not covered species under the MSCP Subarea Plan.
b Indicated monitoring frequency is after the baseline is established for the species or habitat.
c Residual Dry Matter (RDM) monitoring only occurring at Ramona Grasslands Preserve, in draft North County MSCP
d Monitoring and brown-headed cowbird trapping only occurred at Santa Margarita Preserve, in draft North County MSCP
SOURCE:
Environmental Science Associates and ICF. 2015. Comprehensive Monitoring Plan. Prepared for Department of Parks and Recreation County of San Diego. July.

Baseline Inventory Surveys

Baseline inventory surveys are conducted on County Preserves to establish what biological and cultural resources are on-site. These surveys allow for the development of preserve-specific RMPs with adaptive management strategies to ensure the sustainable management and monitoring of the sensitive resources, as well as the RMPs' Vegetation Management Plans, Grazing Management Plans, and Public Access Plans. Baseline biodiversity resources surveys include vegetation communities mapping, rare and sensitive plant species, invasive and non-native plant species, avian, herpetological, butterfly, bat, small mammal, medium mammal, and large mammal surveys. Biodiversity surveys take place over the course of one calendar year to maximize the potential to observe any late season flowering plant species or migratory animal species on the preserve land.

Targeted Monitoring Plan

Fourteen MSCP covered species and one habitat were monitored across 12 County Preserves as part of the TMP monitoring efforts in the reporting year (**Table 19**, *Targeted Monitoring Plan Species Monitored in Previous Reporting Years: Year-to-Year Comparison* and **Appendix O**, *Targeted Monitoring Plan Resource-Specific Monitoring 2023 Annual Report*). Six of the plant populations increased including San Diego thornmint, variegated dudleya, and willowy monardella at Sycamore Canyon and Goodan Ranch Preserve, Orcutt's bird's-beak at Tijuana River Valley Regional Park, Otay tarplant at Furby-North Preserve, and San Miguel savory at Boulder Oaks County Preserve. Monitoring followed the methods and key considerations as outlined in the TMP (Environmental Science Associates and ICF 2022) for each species and habitat type. An additional 16 MSCP covered species were incidentally observed during TMP

monitoring (**Table 20**, *Incidental Observations of Other MSCP Covered Species During TMP Surveys in Reporting Year*).

The TMP includes management objectives for target species and habitats. For example, for all TMP MSCP covered plant species, management objectives include maintaining invasive, non-native plant cover to less than 20% cover (Environmental Science Associates and ICF 2022). Monitoring completed in the previous reporting years includes an assessment of management needs for the following year. Implementation of management actions is documented in Chapter 6, Preserve Management.

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TABLE 19. TARGETED MONITORING PLAN SPECIES MONITORED IN PREVIOUS REPORTING YEARS: YEAR-TO-YEAR COMPARISON

Species[b]	Location/Measurements	2015	2016	2017	2018	2019	2021	2022	2023
San Diego thornmint	Sycamore Canyon and Goodan Ranch Population estimate, individuals	OY[g]	20,000-30,000	777,300	5,525	27,200	12,990	41,921	46,032
Orcutt's bird's-beak	Tijuana River Valley Regional Park[a] Population estimate, individuals	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	123	315	9,668
Otay tarplant	Furby North[a] Population estimate, individuals	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	1	610	3,667
Lakeside ceanothus	Boulder Oaks Population estimate, individuals	600	O/Y[g]	O/Y[g]	O/Y[g]	O/Y[g]	1,100	O/Y[g]	O/Y[g]
	El Capitan Population estimate, individuals	400	O/Y[g]	O/Y[g]	O/Y[g]	O/Y[g]	450	O/Y[g]	O/Y[g]
	Louis A. Stelzer Population estimate, individuals	135	O/Y[g]	O/Y[g]	O/Y[g]	O/Y[g]	428	O/Y[g]	O/Y[g]
	Oakoasis Population estimate, individuals	225	O/Y[g]	O/Y[g]	O/Y[g]	O/Y[g]	573	O/Y[g]	O/Y[g]

Species[b]	Location/Measurements	2015	2016	2017	2018	2019	2021	2022	2023
Encinitas baccharis	Del Dios Highlands Population estimate, individuals	250	O/Y[g]	344	O/Y[g]	350	350	O/Y[g]	177
San Miguel savory	Boulder Oaks Population estimate, individuals	OY[g]	184	145	145	99	127	O/Y[g]	607
Variegated dudleya	Lusardi Creek Population estimate, individuals	OY[g]	199	199	199	33	0	O/Y[g]	9
	Sycamore Canyon and Goodan Ranch Population estimate, individuals	OY[g]	11	60	O/Y[g]	30	1,275	O/Y[g]	1,348
Willowy monardella	Sycamore Canyon and Goodan Ranch Population estimate, individuals	441	238	284	283	364	305	332	444
Golden eagle	Ramona Grasslands Species Observed	yes	yes	O/Y[g]	O/Y[g]	yes	yes	yes	yes
	Off-site Species Nesting	no	yes	O/Y[g]	O/Y[g]	yes	yes	yes	yes
	Barnett Ranch[a] Species Observed	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	N/A[h]	N/A[h]
	El Capitan Preserve On-site Species Nesting	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	no
Tricolored blackbird	Ramona Grasslands Species Observed	O/Y[g]	O/Y[g]	yes	yes	yes	No monitoring	no	yes[e]
	Species Nesting	O/Y[g]	O/Y[g]	no	no	no	No monitoring	no	no

Species[b]	Location/Measurements	2015	2016	2017	2018	2019	2021	2022	2023
Burrowing owl	Ramona Grasslands Species Observed	O/Y[g]	yes[c]	O/Y[g]	no	no	O/Y[g]	no	no[f]
	Species Nesting	O/Y[g]	no	O/Y[g]	no	no	O/Y[g]	no	no
Coastal (San Diego) cactus wren	Lakeside Linkage Species Observed	O/Y[g]	O/Y[g]	O/Y[g]	yes	yes	O/Y[g]	yes	O/Y[g]
	Species Nesting	O/Y[g]	O/Y[g]	O/Y[g]	no	yes	O/Y[g]	yes	O/Y[g]
Bald eagle	Ramona Grasslands Species Observed	yes	yes	OY[g]	OY[g]	yes	yes	yes	yes
	Species Nesting	yes	yes[d]	OY[g]	OY[g]	yes[d]	no	yes[d]	yes
Northern harrier	Tijuana River Valley Regional Park[a] Species Observed	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	yes	yes
	Species Nesting	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	yes	yes
Least Bell's vireo	Tijuana River Valley Regional Park[a] Species Observed	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	OY[g]	OY[g]
	Species Nesting	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	OY[g]	OY[g]
	Santa Margarita Preserve[a] Species Observed	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	yes	yes
	Species Nesting	N/A[a]	N/A[a]	N/A[a]	N/A[a]	N/A[a]	yes	yes	yes
Arroyo toad (ARTO)	Ramona Grasslands # of occupied reaches	OY[g]	9	9	6	7	0 reaches	0 ARTO	

Species[b]	Location/Measurements	2015	2016	2017	2018	2019	2021	2022	2023
							occupied 2 juvenile ARTO detected in upland area	tadpoles detected	12 reaches occupied 8,565 ARTO tadpoles detected
Vernal pool/alkali playa	Ramona Grasslands # of pools supporting at least one USACE indicator species	OY[g]	15	OY[g]	11	17	15	OY[g]	18
	# of pools supporting spreading (prostrate) navarretia	OY[g]	0	OY[g]	0	0	0	OY[g]	OY[g]
	# of pools supporting San Diego fairy shrimp	OY[g]	14	OY[g]	0	7	0	4	OY[g]

NOTES:
a Tijuana River Valley Regional Park, Furby North Preserve, Santa Margarita Preserve, and Barnett Ranch Preserve were added to the Targeted Monitoring Plan in 2019, monitoring began for each property in 2021.
b Stephens' kangaroo rat (*Dipodomys stephensi*), Harbison's dun skipper (*Euphyes vestris harbisoni*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*) are also monitored as part of the TMP.
c One burrowing owl was reported by DPR staff. None were observed during surveys.
d Bald eagle nest territory is located on Ramona Grasslands Preserve within the NC MSCP portion of the Preserve. Successful nesting was documented 2014-2016. Nesting was documented but not successful in 2019, 2021, and 2022.
e Tricolored blackbird monitoring was conducted by AECOM as part of an ROE monitoring and research partnership, results are included in the 2023 TMP report.
f Burrowing owl monitoring was conducted by San Diego Zoo Wildlife Alliance as part of an ROE monitoring and research partnership, results are included in the 2023 TMP report.
[g] O/Y indicates that, per the monitoring frequency of the species/habitat; site conditions not appropriate for monitoring; or changes to monitoring frequency occurred to be consistent with regional monitoring efforts, no monitoring was conducted as it was an "Off Year".
[h] Initial monitoring efforts determined that additional surveys were not required as species was not currently utilizing property.

SOURCES:
ICF International. 2017. CMP Resource-Specific Monitoring 2016 Annual Report. November. Prepared for: County of San Diego Department of Parks and Recreation.
ICF International. 2018. CMP Resource-Specific Monitoring 2017 Annual Report. January. Prepared for: County of San Diego Department of Parks and Recreation.
ICF. 2018. Targeted Monitoring Plan Resource-Specific Monitoring 2018 Annual Report. October. Prepared for: County of San Diego Department of Parks and Recreation.
Environmental Science Associates. 2022. *Raptor Foraging Surveys & Nest Monitoring 2021-2022 Summary Report Ramona Grasslands Preserve & El Capitan Preserve for the County of San Diego Department of Parks and Recreation*. Prepared for Department of Parks and Recreation San Diego County. December.

Environmental Science Associates. 2023a. Targeted Monitoring Plan Resource-Specific Monitoring 2022 Annual Report. Prepared for Department of Parks and Recreation County of San Diego. January.
Environmental Science Associates. 2023b. *Ramona Grasslands Preserve 2022-2023 Raptor Surveys Summary Report.* Prepared for the County of San Diego Department of Parks and Recreation. November.

Environmental Science Associates. 2024. Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report. Prepared for Department of Parks and Recreation County of San Diego. March.

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TABLE 20. INCIDENTAL OBSERVATIONS OF OTHER MSCP COVERED SPECIES DURING TMP SURVEYS IN REPORTING YEAR

Species	Ramona Grasslands	Sycamore Canyon and Goodan Ranch	Tijuana River Valley Regional Park	Furby-North	Lakeside Linkage	Lusardi Creek	Del Dios Highlands
1. San Diego barrel cactus			✓			✓	
2. San Diego thornmint		✓					
3. Variegated dudleya		✓					
4. Wart-stemmed ceanothus							✓
5. Orange-throated whiptail							✓
6. Cooper's hawk	✓		✓				
7. Swainson's hawk	✓						
8. Ferruginous hawk	✓						
9. American Peregrine falcon	✓		✓				
10. Western bluebird			✓				
11. Long-billed curlew			✓				
12. White-faced ibis			✓				
13. Coastal California gnatcatcher		✓	✓	✓		✓	
14. Least Bell's vireo			✓				
15. Southern California rufous-crowned sparrow			✓				✓

Species	Ramona Grasslands	Sycamore Canyon and Goodan Ranch	Tijuana River Valley Regional Park	Furby-North	Lakeside Linkage	Lusardi Creek	Del Dios Highlands
16. Mule deer	✓						

SOURCE:
Environmental Science Associates. 2023b. *Ramona Grasslands Preserve 2022-2023 Raptor Surveys Summary Report.* Prepared for the County of San Diego Department of Parks and Recreation. November.
Environmental Science Associates. 2024. Targeted Monitoring Plan Resource-Specific Monitoring 2023 Annual Report. Prepared for Department of Parks and Recreation County of San Diego. March

San Diego Thornmint

Monitoring Location: Sycamore Canyon and Goodan Ranch Preserve
Plot Establishment Dates: April 22, May 4-5, 2016 (10 plots); and May 4, 2017 (added 1 plot)
Reporting Year Monitoring Dates: May 11, 12, 15, 2023
Number of Permanent Monitoring Plots: 11
Reporting Year Population Estimate: 46,032 plants

The San Diego thornmint population estimate was 46,032 individuals at Sycamore Canyon and Goodan Ranch Preserve in 2023, and a total of 12,877 San Diego thornmint were estimated within the monitoring plots. Incidentally observed special-status plant species included small-flowered bindweed at 10 of the 11 monitoring plots, Palmer's grappling hook at eight of the 11 monitoring plots, and variegated dudleya at one monitoring plot. Across the monitoring plots, San Diego thornmint habitat contained invasive, non-native plants including non-native grasses and forbs, particularly tocalote. Purple false brome, an invasive grass species, was abundant in multiple monitoring plots, accounting for up to 35% of total plant cover. The annual San Diego thornmint population fluctuates based on rainfall. In years prior to 2023, high annual rainfall has been associated with a smaller population size due to increased competition from invasive, non-native plants (Preston 2019). Contrary to this pattern, San Diego thornmint populations increased in 2023 surveys despite higher-than-average annual rainfall. Population estimates range between a low of 5,525 in 2018 to a high of 777,300 individuals in 2017 (**Table 19**).

Monitoring results indicate the importance of invasive, non-native plant control for this species. At Sycamore Canyon and Goodan Ranch Preserve, eight of the 11 plots would benefit from invasive, non-native plant control (ESA 2024). The TMP recommends overall invasive, non-native plant cover be kept to less than 20% and cover of purple false brome be kept to less than 10% (ESA and ICF 2015). Non-native plant cover of plots 1, 2, 4, 5, 7, 8, 9, and 11 were recorded at 37.8%, 32.8%, 28.6%, 11.6%, 31.2%, 26.8%, 27.4%, and 20.0%, respectively. Although total non-native plant cover for plot 5 was under the recommended 20%, cover of purple false brome was 10.0%, exceeding the recommended limit. Remaining plots were under 10% total non-native plant cover.

Focused management occurred in 2023 in response to the high thatch and invasive non-native plant cover in monitoring plots 1, 2, 4, 5, 7, 8, 9, and 11. Management consisted of carefully hand-pulling target invasive non-native species within an approximately 1.10-acre management area where San Diego thornmint populations were previously detected. Line trimmers were then

used to dethatch remaining non-native species surrounding San Diego thornmint occurrences within approximately 12-meter radius circles around three established monitoring plot center points. Non-native species consisted predominantly of purple false brome. No herbicide was used.

Encinitas Baccharis

Monitoring Location: Del Dios Highlands Preserve
Plot Establishment Dates: July 24 and 30, 2015
Reporting Year Monitoring Dates: July 18 and August 8, 2023
Number of Permanent Monitoring Plots: 3
Reporting Year Population Estimate: 177 plants

The Encinitas baccharis population estimate was 177 individuals at Del Dios Highlands Preserve in 2023. A total of 40 plants were estimated within the monitoring plots. During 2023 monitoring surveys, surveyor access to the maximum extent of the population was hindered by the presence of a robust native plant canopy including chamise. Due to this situation not all plants could not be counted causing the 2023 population estimate to be lower compared to previous years. Additional special-status plant species observed within the monitoring plots include wart-stemmed ceanothus. Incidental special-status wildlife species detected outside the monitoring plot include Belding's orange-throated whiptail and Southern California rufous-crowned sparrow.

Invasive non-native plant species observed in the monitoring plots included purple false brome and red brome; additional non-native plant species included small fescue. Adaptive management recommendations include thinning native shrub canopy, including chamise and woollyleaf ceanothus, to reduce competition and improve access to the monitoring plots, as well as conducting reconnaissance surveys to identify additional populations in the Preserve, as incidental observations of Encinitas baccharis were reported in the northern part of the Preserve in 2023.

Encinitas Baccharis is a Targeted Monitoring Plan species found in Del Dios Highlands Preserve.

Orcutt's Bird's-beak

Monitoring Location: Tijuana River Valley Regional Park
Plot Establishment Dates: June 29, 2016 and June 5, 2017
Reporting Year Monitoring Dates: May 26, 2023 and June 14, 2023
Number of Permanent Monitoring Plots: 2
Reporting Year Population Estimate: 9,668 plants

The Orcutt's bird's beak population estimate was 9,668 individuals at Tijuana River Valley Regional Park in 2023. A total of 298 Orcutt's bird's-beak plants were estimated within the monitoring plots. Additional special-status plant species, such as San Diego sunflower, western dichondra, and ashy spike-moss, were also observed within the monitoring plots.

Monitoring results indicate the importance of invasive, non-native plant control for this species. The Orcutt's bird's-beak habitat contained invasive non-native grasses and herbs, particularly wild oat, red brome, and crown daisy. Focused management occurred in response to high thatch cover observed in 2022. Management activities occurred within a 0.35-acre management area and involved hand-pulling invasive plants, particularly tocalote and red brome, that were directly adjacent to Orcutt's bird's beak individuals. No herbicide was used.

Otay Tarplant

Monitoring Location: Furby-North Preserve
Plot Establishment Dates: June 29, 2016 and June 2, 2023 (added one plot)
Reporting Year Monitoring Dates: May 19 and 26, 2023 and June 2, 2023
Number of Permanent Monitoring Plots: 2

Reporting Year Population Estimate: 3,667 plants

The Otay tarplant population estimate was 3,667 plants at Furby-North Preserve in 2023. A total of 511 Otay tarplant plants were estimated within the monitoring plots, one of which was newly established in 2023. Special-status species incidentally observed within the monitoring plots included San Diego bursage, San Diego sunflower, common golden star, small-flowered bindweed, and Palmer's grappling hook. Special-status species coastal California gnatcatcher and turkey vulture were observed within the Preserve, outside the monitoring plots. The Otay tarplant habitat contained invasive non-native grasses and herbs, particularly compact brome, crown daisy, annual fescue, and tocalote.

Focused management occurred in 2023 in response to high thatch and invasive non-native plant cover observed in 2022. Management activities involved hand-pulling non-native grasses directly adjacent to Otay tarplant individuals, followed by line trimming and thatch removal across the approximately 0.11-acre management area, avoiding hand-pulled areas to prevent impacts to Otay tarplant. No herbicide was used. Total non-native plant cover within the two monitoring plots were 25.8 and 10.8%; continued thatch removal and non-native plant control are recommended to ensure persistence of Otay tarplant within the Preserve.

Otay Tarplant is a Targeted Monitoring Plan species found in Furby North Preserve.

San Miguel Savory

Monitoring Location: Boulder Oaks Preserve
Plot Establishment Dates: April 6 and 16, 2016
Reporting Year Monitoring Dates: April 26, 2023
Number of Permanent Monitoring Plots: 2
Reporting Year Population Estimate: 607

The San Miguel savory population estimate was 607 plants at Boulder Oaks Preserve in 2023. A total of 132 San Miguel savory plants were estimated within the monitoring plots. Southern mountain misery was the only special-status species incidentally observed within one monitoring plot. San Miguel savory habitat across both monitoring plots contained invasive, non-native grasses and herbs, particularly annual fescue and smooth cat's ear.

Adaptive management for San Miguel savory was conducted in 2023 in response to 2022 TMP management recommendations for Boulder Oaks County Preserve, which included that total invasive non-native plant cover be kept to less than 20% cover. Adaptive management was conducted across approximately 0.55-acre within the Preserve, including the monitoring plot's maximum extent and an area northwest of the monitoring plot that contain a dense population of invasive non-native veldt grass. Non-native plants within 12 inches of the San Miguel savory plants and the management area were carefully removed by hand. No herbicide was used. Although non-native plant cover was low in 2023, 0.8% and 1% for the two monitoring plots, the TMP recommends continued, focused non-native plant removal within and surrounding the monitoring plot where perennial veldt grass was detected (BOCLCH02) to ensure the persistence of San Miguel savory within the Preserve. Perennial veldt grass removal may occur in areas beyond the current management area, as necessary to prevent encroachment and establishment of the high-priority invasive species. Herbicide may also be applied when invasive non-native grasses have reached two to three inches in height during the peak of the growing season (ESA 2024).

Variegated Dudleya

Monitoring Location: Lusardi Creek Preserve
Plot Establishment Dates: Lusardi Creek Preserve: April 27, 2016
Reporting Year Monitoring Dates: Lusardi Creek Preserve: April 7, 24, and 28, 2023;
Number of Permanent Monitoring Plots: 1
Reporting Year Population Estimate: 9

The population estimate for variegated dudleya was nine plants at Lusardi Creek Preserve in 2023. Monitoring for variegated dudleya is recommended at Lusardi Creek Preserve every 3 years, and only one variegated dudleya was detected within the monitoring plot in 2023. Incidental special-status species observed within Lusardi Creek Preserve included ashy spike-moss, San Diego barrel cactus, coastal California gnatcatcher, and California horned lark. Variegated dudleya habitat within Lusardi Creek Preserve included invasive non-native grasses and herbs, particularly purple false brome.

Focused management for variegated dudleya occurred at Lusardi Creek Preserve in 2023, following the 2022 TMP recommendation that percent cover of invasive non-native plant species be kept to less than 20% within the vicinity of variegated dudleya populations (ESA and ICF 2022). Management activities at the Preserve involved careful hand-pulling of invasive non-native plants within 18 inches of variegated dudleya plants. Invasive plants were also hand-pulled from previously installed herbivory fencing to encourage native plant recruitment. Herbicide was not applied in the Preserve. Despite focused management, non-native cover remains above the 20% recommended limit, at 41.2 percent. To ensure the persistence of variegated dudleya at the Preserve, the TMP recommends additional and ongoing focused management, specifically invasive non-native plant removal and thatch removal.

Monitoring Location: Sycamore Canyon/Goodan Ranch Preserve

Plot Establishment Dates: June 23, 2017 and April 14, 2021
Reporting Year Monitoring Dates: April 7 and 14, 2023
Number of Permanent Monitoring Plots: 2
Reporting Year Population Estimate: 1,348

The 2023 population estimate for variegated dudleya was 1,348 plants at Sycamore Canyon and Goodan Ranch Preserve, with a total of 558 variegated dudleya individuals in the monitoring plots. Special-status species incidentally observed within Sycamore Canyon and Goodan Ranch Preserve included San Diego thornmint, Palmer's grappling hook, ashy spike-moss, and coastal California gnatcatcher. Variegated dudleya habitat contained invasive non-native plant species, particularly purple false brome and tocalote.

Focused management for variegated dudleya occurred at Sycamore Canyon and Goodan Ranch Preserve in 2023, following the 2022 TMP recommendation that percent cover of invasive non-native plant species be kept to less than 20% within the vicinity of variegated dudleya populations (ESA and ICF 2022). Activities at Sycamore Canyon and Goodan Ranch Preserve included hand-pulling of invasive plants within the maximum extents of variegated dudleya populations, focusing on areas where variegated dudleya had previously occurred. Sycamore Canyon and Goodan Ranch management also included line trimming non-native plants surrounding variegated dudleya occurrences within 12-meter radius circles of monitoring plot center points. Herbicide was not applied in the Preserve. Despite focused management, non-native cover at the Preserve remains above the 20 percent recommended limit, at 37 percent and 39.6 percent at the two monitoring plots. To ensure the persistence of variegated dudleya at the Preserve, the TMP recommends additional and ongoing focused management, specifically invasive non-native plant removal and thatch removal.

Willowy Monardella

Monitoring Location: Sycamore Canyon and Goodan Ranch Preserve
Plot Establishment Dates: July 7, 2015, June 22, 2016 and June 9, 2021
Reporting Year Monitoring Dates: June 15 and 27, 2023
Number of Permanent Monitoring Plots: 3
Reporting Year Population Estimate: 444

The three willowy monardella monitoring plots within Sycamore Canyon/Goodan Ranch Preserve were monitored in 2023. A total of 68 willowy monardella plants were estimated within the monitoring plots. The entire population within the Preserve is an estimated 444 individual plants. The population estimates range from a low of 238 in 2016 to a high of 444 in 2023 (**Table 19**). Population variability may be attributed to how surveyors count clumps of plants rather than annual fluctuations in population size (ESA and ICF 2022). No additional special-status species were observed within the three monitoring plots, although coastal California gnatcatcher, monarch butterfly, and turkey vulture were incidentally observed outside monitoring plots. Across all monitoring plots, willowy monardella habitat contained invasive non-native grasses and herbs, particularly slender wild oat, purple false brome, annual fescue, tocalote, and brome grasses. Invasive crimson fountain grass was detected at multiple locations within the monitoring plot located in Clark Canyon.

Focused management occurred for willowy monardella at Sycamore Canyon and Goodan Ranch Preserve in 2023. While percent cover of non-native plants was below the 20% target recommended by the TMP in 2022, results of 2022 monitoring indicated that willowy monardella populations at the monitoring plot nearest the preserve ranger station may be threatened by

competition from native California buckwheat. In 2023, management activities focused on removing California buckwheat plants that were intermixed with willowy monardella plants. Invasive non-native grasses were also pulled at the monitoring plot. Continued removal of California buckwheat, non-native grasses, and thatch is recommended to preserve willowy monardella in Sycamore Canyon and Goodan Ranch Preserve.

Arroyo Toad

Monitoring Location: Ramona Grasslands Preserve
Stream Reaches: USGS-established monitoring reaches along Santa Maria Creek (16 stream reaches out of 21 total)
Assessment: Visual surveys for life stages and threat and habitat assessment
Reporting Year Monitoring Dates: May 16, 17, 18, and 19, 2023
Reporting Year Species Observed: Yes – 8,565 arroyo toad larvae (14)[17]

In 2023, a total of 8,565 arroyo toad larvae were observed within Santa Maria Creek during the surveys. A total of 23 survey reaches have been established in Santa Maria Creek. DPR consultant surveyed 18 of the 23 reaches while USGS surveyed the remaining 5 reaches. Flowing water was observed within the channel throughout the survey period and pool depth ranged between shallow, medium, and deep. Occupied reaches vary from a low of zero in 2022 and a high of twelve in 2023 (**Table 19**).

Vegetation along Santa Maria Creek generally consists of riparian forest/riparian woodland, characterized by a prominence of mule fat, black willow, and red willow. Much of the northwestern, downstream extent of the creek is less dense and exhibits more open channel. Flowing water was observed within the channel throughout the survey period and pool depth ranged between shallow, medium, and deep. The northeastern, downstream extent of the survey area provides a much higher concentration of suitable habitat for arroyo toad. This portion of the creek supports a relatively high concentration of sand and gravel, shallow pooling, and reduced overstory density, all of which are characteristics that are necessary for supporting breeding behavior and successful larval development.

One invasive non-native plant, tamarisk, occurs at low to moderate densities throughout Santa Maria Creek, increasing in density downstream. Arundo and perennial pepperweed were mapped in low densities along Santa Maria Creek. Exotic predators have been noted in abundance during previous monitoring efforts; however, were observed in low numbers during the 2023 surveys. One red swamp crayfish and one American bullfrog were observed.

Ongoing rangeland management practices that keep cattle out of Santa Maria Creek during the arroyo toad breeding season will be maintained.

Regional monitoring efforts for arroyo toad included monitoring surveys performed by USGS through a DPR issued ROE permit. A total of 14 arroyo toad larvae were observed during surveys of the 5 remaining reaches within Santa Maria Creek. Special-status wildlife species, two-striped garter snake, was incidentally observed during the surveys, and invasive non-native wildlife species, American bullfrog, was also incidentally observed during the surveys along one reach segment in the southwest portion of the preserve.

[17] Monitoring results from USGS provided in parentheses

Arroyo toad tadpoles, a Targeted Monitoring Plan species, found in Santa Maria Creek in Ramona Grasslands Preserve.

Northern Harrier

Monitoring Location: Tijuana River Valley Regional Park
Habitat surveyed: Suitable foraging and nesting habitat
Assessment: Visual surveys and habitat and threat assessment
Reporting Year Monitoring Dates: March 24, April 25, May 25, and June 27, 2023
Reporting Year Species Observed: Yes
Reporting Year Species Nesting: Yes (1 nesting territory fledged)

Northern harriers were observed during all surveys with the highest observations during the month of April. Fledglings were observed during the May survey. All nesting behavior was predominantly detected within Territory 1; courtship display flights were also observed in Territory 5. Territory 1 fledged and the nest site is close to a public trail and a known historic nest location. Potential territory 5's nest site was not located and assumed to have failed given the lack of nesting behavior and fledgling observations. Up to three other territories (Territories 2, 3, and 4) have potential to occur in the Park but were not confirmed due to the lack of breeding behavior including the observation of two adult birds. Overall, there were a similar number of northern harrier observations in 2023 compared to 2022, but less compared to 2021. The higher number of northern harriers in 2021 may have been in response to an increase in prey items (e.g., gophers or other rodents) or a shift in movement in the area. More individuals were observed foraging in the scrub habitat south of Sunset Avenue and west of Saturn Boulevard in Potential Territory 3 in 2023 compared to 2022.

Incidentally observed special-status species include gadwall, double-crested cormorant, great blue heron, green heron, white-faced ibis, long-billed curlew, turkey vulture, osprey, sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, white-tailed kite, merlin, American peregrine falcon, Vaux's swift, least Bell's vireo, coastal California gnatcatcher, western bluebird, yellow-breasted chat, and yellow warbler.

Overall, the Park provides high-quality suitable foraging and nesting habitat for northern harriers as demonstrated by observed foraging behavior and the Park being occupied by up to five northern harrier territories in 2023. However, threats such as nest disturbance and predator harassment, without effective management, may diminish the success of the species over time. The Territory 1 nest site is close to an authorized public trail; although the nest successfully fledged in 2023, an increase in public use and U.S. Border Patrol activities could affect future nesting success if trail usage encroaches on nesting harriers. While predator harassment was not observed in 2023, an expected increase of trash from the recently opened campground could encourage increased park usage by northern harrier nesting predators. Regularly maintaining trash cans and removing trash around the park campground may prevent attraction of nest predators. Trash removal is especially important during the nesting season due to the proximity of the campground to Territory 1. Trash cans in the park campground will be maintained and trash observed around the campground will also be removed.

Tricolored Blackbird

Monitoring Location: Ramona Grasslands Preserve
Habitat surveyed: Suitable foraging and nesting habitat
Assessment: Visual surveys
Reporting Year Monitoring Dates: May 25, 2023
Reporting Year Species Observed: Yes
Reporting Year Species Nesting: No

Tri-colored blackbird monitoring was conducted through a DPR-issued ROE (see Section 7.3 below). Twelve tricolored blackbirds were observed flying overhead and perched on powerlines on Ramona Municipal Water District (RMWD) property adjacent to Ramona Grasslands Preserve in 2023. Primarily males were detected foraging along the road and into the grassland. The main colony resides on the adjacent RMWD property. No birds were observed carrying food back to the nest and very few birds were observed in the foraging area, suggesting the colony was in incubation phase during the time of the survey. In the past, tricolored blackbirds have been documented foraging annually in Ramona Grasslands with nesting occurring on the adjacent RMWD property (**Table 19**).

The TMP management goal for tricolored blackbirds is to maintain suitable foraging and nesting habitat on Ramona Grasslands Preserve. Based on previous habitat and threats assessments, the Preserve has low potential for tricolored blackbird nesting habitat. There are no wetland/marsh areas with protective substrate/vegetation on the Preserve within a large enough area that can support a breeding colony of tricolored blackbirds. Ramona Grasslands Preserve still provides suitable foraging habitat but currently lacks moderate- to high-quality nesting habitat. No adaptive management recommendations are suggested currently for the Preserve due to the lack of moderate- to high-quality tricolored blackbird nesting habitat (ESA and ICF 2022).

Coastal Cactus Wren

Monitoring Location: Lakeside Linkage Preserve
Habitat surveyed: Six avian point count stations
Assessment: Avian point counts and habitat and threats assessment
Reporting Year Management Date: October 30, 2023

As outlined in the TMP, monitoring for coastal cactus wren is recommended at Lakeside Linkage Preserve every three years and is next scheduled for 2025; therefore, monitoring for this species was not conducted in 2023. However, management of cactus patches at Lakeside Linkage Preserve occurred on October 30, 2023. The TMP management goal for San Diego cactus wren is to restore, enhance, and maintain suitable nesting habitat for San Diego cactus wren on the Lakeside Linkage Preserve (ESA and ICF 2022). As such, removal of native vegetation within established cacti patches was recommended in 2022 at both cactus restoration sites in the central property of the Preserve, established in 2013, to prevent predator access to nest sites.

Focused management was conducted in 2023 within a 0.63 acre of the northern cactus restoration area in the central property of the Preserve. Management of suitable habitat for cactus wren consisted of line-trimming taller-growing ruderal invasive non-native vegetation (e.g., non-native grasses, tocalote, and shortpod mustard) to reduce the overall height of standing biomass and disarticulation of herbaceous weeds. All vegetation (native and non-native) was removed by hand if it was laddering in any cacti patches. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

Vernal Pool/Alkali Playa

Monitoring Location: Ramona Grasslands Preserve
Habitat surveyed: Subset of 19 vernal pools and one alkali playa
Assessment: Hydrological monitoring (17 pools and one alkali playa) and qualitative monitoring (19 pools and one alkali playa)
Reporting Year Monitoring Dates: Hydrological monitoring on February 27-28, March 3, 7, 10, 13, 17, 24, and 28, April 4, 10, 17, and 24, and May 1, 2023. Qualitative monitoring on February 27-28 and May 17, 2023
Reporting Year Habitat Function: 19 of 19 pools and one alkali playa

Hydrological monitoring was conducted during an above-average rainfall year, and all pools were continuously inundated from a minimum of five days to a maximum of 64 days. Wet season surveys were conducted at study locations with three centimeters or more of standing water following 24 hours of significant rain events (0.5 inches or more of rain in a 24-hour period). Due to contract timing, hydrological monitoring surveys began on February 27, 2023, 72 days after the first major rain event, and the total number of days inundated at the deepest point is assumed to be higher than what is shown in monitoring results due to the study period initiating after the first rain event. In 2023, all monitored vernal pools and alkali playas were inundated after the March rain events. Hydrological monitoring results showed a diversity in vernal pool types (e.g., shallow vs. deep) across the Preserve, and is reflected in a range of plant distributions and inundation lengths. Fairy shrimp monitoring was not conducted in 2023, although the presence of fairy shrimp and other vernal pool fauna was assessed as part of qualitative monitoring.

Two qualitative monitoring visits were conducted at Ramona Grasslands County Preserve in 2023, on February 27-28 and May 17, 2023. Qualitative monitoring surveys included assessments of water quality, edge effects, topographic disturbance, and trespass. Recording a species list of observed vernal pool fauna (visual only, no netting), invasive non-native plant species, sensitive plant species, and vernal pool indicator species were also compiled. The Preserve's vernal pools were found to support several vernal pool indicator plant species such as woolly marbles, winged water-starwort, toothed downingia, and Howell's quillwort as well as aquatic invertebrates including fairy shrimp, seed shrimp, copepods, and amphibian tadpoles and toadlets, including western spadefoot toad and California toad.

Invasive, non-native plant species were observed in all monitored pools, with Mediterranean barley being the most abundant. Qualitative monitoring observations indicated that overall vernal pool habitat and vernal pool complex conditions are moderate to low with most pools exhibiting moderate to high functionality. The Preserve's alkali playas, although not true vernal pools, also support a unique flora, including Parish's brittlescale, Coulter's saltbush, dwarf peppergrass, and southern tarplant, although overall habitat condition is considered low to moderate due to the abundance of non-native plants, primarily Boccone's sand spurrey. Vernal pool and alkali habitat playa habitat suitability for vernal pool indicator plants and animals has declined across the Preserve. This is likely due to variable climatic conditions such as drought and flooding, a lack of year-to-year natural recruitment of native plant species and high invasive non-native grass cover, resulting in less complex vegetation composition and structure, and a decline in species abundance and species distribution within the pools and playas.

The TMP recommends overall invasive non-native plant cover within vernal pool basins to be kept to less than 20 percent (ESA and ICF 2022). Based on 2022 adaptive monitoring recommendations, focused invasive non-native plant species treatment/removal was performed in 15 vernal pools and four alkali playa, three of which are not currently part of regular monitoring. Two focused invasive, non-native plant management visits were conducted at Ramona Grasslands County Preserve, the first between June 1 and June 7, 2023 and the second between September 5 and September 6, 2023. The first management visit was conducted while vernal pools and alkali playa features were no longer holding water and the soil substrate was firm, although native vernal pool plants were observed live and growing. Native plants were flagged for avoidance during a site visit on June 1, 2023, prior to the start of invasive non-native plant removal activities. Management activities consisted of hand weeding invasive non-native plant species within the vernal pool basins and line trimming a three-foot buffer around the pools for a total management area of 2.64 acres. The second management visit was conducted later in the season to remove any new invasive non-native plant species that had grown since the first management visit. Management consisted of hand weeding standing invasive non-native plant biomass. Line trimmers were also used within the pool basins to cut up to two inches above ground where there was limited native plant growth. Additional line trimming was used to touch up the three-foot buffer where needed. Biomass was then manually collected, bagged, and properly disposed of at an approved off-site facility. Herbicide was not applied within vernal pool basins or within ten feet of basin margins during both management visits.

Otay Ranch Preserve Monitoring

Otay Ranch Preserve is jointly owned by the County and City of Chula Vista (Otay Ranch POM) and is counted towards the assembled MSCP Preserve as dedicated private hardline mitigation. Monitoring of MSCP covered species and habitats ensures that the covered species are thriving and that any potential threats can be quickly addressed. The 2023 monitoring tasks were

conducted in support of the Phase 1 and Phase 2 RMPs (County of San Diego 1993 and RECON 2018).

In 2023, monitoring efforts focused on vegetation mapping, vegetation rapid assessment, photographic monitoring, and surveys for rare plant species, vernal pool plant species, Quino checkerspot butterfly, Harbison's dun skipper, Hermes copper butterfly, least Bell's vireo, and yellow-billed cuckoo. Tree health surveys were conducted to document the effects of the invasive Kuroshio shot hole borer (KSHB) within riparian habitat on multiple parcels of the Preserve. Gold-spotted oak borer monitoring was also conducted. Tissue sampling and testing was conducted on five lemonadeberry shrubs showing signs of stress and suspected fungal pathogen. Golden eagle camera monitoring initiated in 2021, continued in 2022 and 2023. Wet season fairy shrimp surveys were conducted for the 2022-2023 rainy season. Additionally, monitoring efforts included site visits to the various Otay Ranch parcels to document access issues, sensitive species, any newly detected species, non-native plant species, and the overall health of the sites. Site-specific monitoring took place from January 1 to December 31, 2023 and included site visits to cover most of the property that is currently included as part of the 4,373-acre Otay Ranch Preserve; no activities were performed on the 11.9-acre Piper Ranch parcels during 2023. Regular coordination meetings between the Preserve Steward/Biologist and Otay Ranch POM occurred to track progress of management and monitoring activities. Baseline surveys for the 2.2-acre Bonita Glen parcel, including habitat mapping, species inventories, and establishment of photographic monitoring plots, were conducted in 2023. All 2023 management and monitoring activities are included in the 2023 Annual Report for Otay Ranch Preserve (**Appendix M**).

Species Specific Adaptive Management Monitoring

Monitoring of special-status species not included in the TMP or supplemental to the TMP monitoring is also a component of the County's monitoring program. The information gathered during these surveys provides guidance on a species-specific level as to when, if any, adaptive management strategies need to be implemented on County Preserves. Species specific monitoring occurred in 2023 as described below.

Raptor Foraging Study at Ramona Grasslands Preserve

Raptor use and foraging behavior is monitored at the Ramona Grasslands Preserve to understand bald eagle, golden eagle, and raptor abundance and distribution; to inform adaptive management and public use; and to evaluate potential threats. The study also includes monitoring the year-to-year status of the off-site golden eagle territory adjacent to the preserve. Study methodology includes raptor point count field surveys and golden eagle nest monitoring.

Seventeen raptor species were detected at both the northeast and southwest survey areas during the 2022-2023 raptor point count surveys (ESA 2023b). Seven of the 17 raptors were MSCP covered species, which are golden eagle, bald eagle, American peregrine falcon, northern harrier, Cooper's hawk, Swainson's hawk, and ferruginous hawk. Special-status species red-tailed hawk, red-shouldered hawk, Mississippi kite, zone-tailed hawk, prairie falcon, merlin, American kestrel, great horned owl, and osprey were also observed. Special-status raptors with potential to breed on the Preserve includes golden eagle, bald eagle, and Cooper's hawk. Red-tailed hawk was the most frequently observed raptor species within and adjacent to the Preserve, followed by bald eagle. Raptor species richness was highest during the spring season at the northwest survey area and in the winter season at the northeast survey area.

Raptor species richness was higher in the northeast survey area throughout all seasons except the spring season (ESA 2023b).

An adult golden eagle individual or pair, assumed to be the Bandy Canyon territory, was observed during the 2022–2023 survey period within the Preserve. The resident pair successfully fledged two young in 2019 and one young in 2020 and 2021. The first monitoring survey was conducted in February 2023. One adult golden eagle was flying low within the canyon. At the nest site, a flowering plant growing on the edge of the nest bowl made it extremely difficult to see into the nest. Movement was observed, and it was assumed to be a golden eagle in an incubation position. The fifth monitoring survey was conducted in June 2023. At the end of the observation period, one adult and one juvenile golden eagle were observed flying through Bandy Canyon. Due to the difficulty of seeing into the nest, and no previous observations of a chick, there was not a definitive confirmation of where the juvenile came from.

It was not certain which nest this juvenile fledged from, so a sixth and final monitoring survey was conducted in June 2023 to verify the nest site used in 2023. The nest site that was originally identified in February 2023 had signs of whitewash, so it is likely that this was the nest site used in 2023 and the chick had not been visible to biologists during April and May 2023 nest monitoring. One adult and one juvenile golden eagle were seen flying through the canyon. In conclusion, the golden eagle nest site in Bandy Canyon was occupied and successfully fledged one chick (determined through the observation of an independently flying juvenile) in 2023.Golden eagles were detected in all seasons but not detected during each survey within the Preserve. Monitoring results indicate Preserve use by a minimum of one resident golden eagle throughout the survey period. An adult golden eagle individual or pair, assumed to be the Bandy Canyon territory, was observed during the 2022–2023 survey period within the Preserve. One tagged golden eagle was observed, but it was too far away for the number to be read. Three juvenile golden eagles were observed at one time during the fall season. Other individuals within the Preserve were undistinguishable (i.e., without markers or features). In all, at least six distinct golden eagles were observed during this survey period, which is the highest number of individuals documented since surveys began in 2013.

The highest numbers of individual golden eagles were observed during the fall season: three juveniles and two adults. One subadult was also observed earlier in the year during the August 2022 surveys; therefore, up to six distinct golden eagles used the Preserve during the fall season. Up to four distinct golden eagles (two adults, one juvenile, and one unknown-aged individual) were observed at one time using the Preserve during the winter season, and this remained the same in the spring. The golden eagles continued to forage in the Preserve in the summer, with up to three distinct golden eagles (two adults and one subadult) observed.

Bald eagles were detected in each season but were not detected during each survey within the Preserve. During the fall season, two adults were observed perched in one of the eucalyptus trees within the northeast survey area. During the winter season, two adults and one subadult were observed. This is typically the season when breeding behavior is observed regularly. In the spring season, no foraging activities were observed; however, three adults, one subadult, and one juvenile were documented. One adult was observed chasing out a third adult while the second adult was on the nest in an incubating position. During the summer season, the only foraging behavior documented was an adult bringing an unknown prey item to the nest for a juvenile. This was also the season when the juvenile was seen fledgling from the nest.

The highest density and spatial-use for bald eagles on the Preserve were observed in the grasslands south of the nest tree from within the northeast survey area and the northernmost RMWD effluent pond.

Throughout the survey period, the Preserve consistently supported one bald eagle territory. This territory successfully fledged young in 2014 through 2016 and was also successful in 2023. The nest was in a eucalyptus grove from 2014 through 2021 along the boundary of the NE portion of the Preserve and the Ramona Municipal Water District property. In 2022, the nest location moved to a different eucalyptus grove wholly within the northeast portion of the Preserve and is where the pair nested in 2023. It is assumed the pair of bald eagles that nested in 2021 and 2022 is the same pair that nested in the Preserve during the 2023 breeding season.

Golden eagle, an MSCP covered species, being chased by a raven in Ramona Grasslands Preserve.

Residual Dry Matter Monitoring at Ramona Grasslands Preserve

Ramona Grasslands Preserve is divided into 12 management units, ten of which are grazed. The grazing program enhances rare plant and wildlife populations and reduces invasive, non-native plants. To measure success, species, and habitat-specific Residual Dry Matter (RDM) targets were established. RDM is the amount of dry grass remaining after the growing season and grazing. Typically, a lower RDM is desirable to prevent the build-up of thatch (e.g., dried grass) and to allow for greater visibility for native wildlife (e.g., shorter grass length). Target RDM values vary depending on the target plant or animal species management and range from 300 – 2,100 lbs./acre.

RDM monitoring was performed in September 2023. Monitoring results were a low of 1,294 to a high of 6,858 lbs./acre (ESA 2024). Of the ten grazed management units measured, eight were above RDM target values and nine showed an increase in RDM values from 2022 to 2023. Results were likely influenced by the increased annual rainfall in 2023, including the late-season rainstorm event in August 2023 that initiated vegetative growth. Extreme fluctuations in rainfall

in recent years (e.g., drought conditions in 2018, above-average rainfall in 2019, below-average to average rainfall in 2020, and drought conditions in 2021 and 2022) drive substantial variability in vegetative cover from year to year. The increase in RDM values between 2022 and 2023 is likely due to above-average rainfall levels in the region, including late-season rainfall.

In November 2022, DPR entered into a grazing agreement with a new lessee and cattle were added to the Preserve in January 2023. DPR is coordinating with the new lessee to provide information on the conservation goals to be fulfilled by grazing on the Preserve and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the Preserve.

Park Improvement MSCP Covered Species Monitoring

Monitoring of MSCP covered species during park improvement projects is a critical component to minimize impacts to MSCP covered species. These monitoring efforts are a priority for the County.

Smuggler's Gulch Dredging Project

The Smuggler's Gulch Dredging Project is a County project within the Tijuana River Valley Regional Park which includes removal of trash, sediment, debris, and non-native plant species within the Smuggler's Gulch flood control channel. This work is completed as part of the County of San Diego's Flood Control Maintenance efforts through Regional General Permit 53. In 2023, activities included maintenance of an approximately 24,500 square foot area of the channel and removal of 1,000 square feet of arundo. During these maintenance activities, a red-tailed hawk nest was observed adjacent to the work area. Biological monitoring occurred throughout the duration of the work activities to confirm the nest was not impacted by channel maintenance. Nesting bird surveys and biological monitoring continued throughout the duration of the activities to ensure no impacts to nesting birds, including MSCP-covered species.

7.2 Grant Funded Monitoring Projects

There were no grant-funded monitoring projects in the reporting year.

7.3 Preserve Monitoring and Research Partnerships

Sixteen monitoring and research partnerships occurred in 2023 on County Preserves through the County's ROE permit process (**Table 21**, *Preserve Monitoring and Research Partnerships Projects, Monitoring Targets, and Locations in Reporting Year*). ROEs were requested by federal and state agencies, universities, the San Diego Zoo, the San Diego Natural History Museum, environmental organizations, a wildlife rehabilitation organization, and a community science organization. In 2023, as in years prior, the County continued to issue ROEs free of charge, however, due to the extensive review these permits require to ensure compliance with the MSCP and County rules, a fee to recover a portion of the processing cost may be implemented for ROEs in the future. ROEs issued in 2023 included studies focused on species such as Harbison's dun skipper, arroyo toad, southwestern pond turtle, coastal California gnatcatcher, least Bell's vireo, burrowing owl, coastal cactus wren, and tricolored blackbird, as well as other species inside and outside of the MSCP Subarea Plan Area. Only those studies that include properties within the MSCP Subarea Plan are summarized below. Reports and

research findings obtained through the ROE permit process are shared with the County to further supplement monitoring efforts and to inform management recommendations.

TABLE 21. PRESERVE MONITORING AND RESEARCH PARTNERSHIPS PROJECTS, MONITORING TARGETS, AND LOCATIONS IN REPORTING YEAR

Project Name	Project Lead	Monitoring/ Research Target	County Preserves Within MSCP Subarea Plan Area	County Parks and Preserves Outside MSCP Subarea Plan Area
1. Native Plant Seed Bank	San Diego Zoo	Rare, native plants	• Boulder Oaks Preserve • Del Dios Highlands Preserve • El Capitan Preserve • Sycamore Canyon and Goodan Ranch Preserve • Louis A. Stelzer Preserve • Oakoasis Preserve • Ramona Grasslands Preserve • Tijuana River Valley Regional Park	• Santa Margarita Preserve • Santa Ysabel Preserve • Volcan Mountain Wilderness Preserve • Wilderness Gardens Preserve • William Heise Park
2. Regional Arroyo Toad Monitoring	USGS	Arroyo toad	• Ramona Grasslands Preserve • Boulder Oaks Preserve • Stoneridge Preserve • Old Ironsides Park • Sweetwater Regional Park	• Hellhole Canyon Preserve • Lake Morena Park • San Luis Rey River Park • Santa Margarita Preserve • Santa Ysabel Preserve • Wilderness Gardens Preserve
3. Southwestern Pond Turtle Monitoring in Aquatic Habitats	USGS	Southwestern pond turtle	• Los Peñasquitos Canyon Preserve • Lusardi Creek Preserve • Ramona Grasslands Preserve	• Santa Ysabel Preserve • Star Ranch Preserve • Wilderness Gardens Preserve • Sage Hill Preserve

Project Name	Project Lead	Monitoring/ Research Target	County Preserves Within MSCP Subarea Plan Area	County Parks and Preserves Outside MSCP Subarea Plan Area
4. Sensitive Avian Species Demography Monitoring	USGS	Coastal California gnatcatcher, least Bell's vireo, coastal cactus wren, and southwestern willow flycatcher	• Cactus Park • Damon Lane Park • El Capitan Preserve • El Monte Park • Furby-North Preserve • Historic Flume Trail • Lakeside Linkage Preserve • Lawrence and Barbara Daley Preserve • Louis A. Stelzer Preserve • Lusardi Creek Preserve • Otay Lakes Park • Otay Ranch Preserve • Otay Valley Regional Park • Ramona Grasslands Preserve • Santa Fe Valley Preserve • Stoneridge Preserve • Sweetwater Regional Park • Sycamore Canyon and Goodan Ranch Preserve • Tijuana River Valley Regional Park	• Blue Sky Ranch Ecological Reserve • Diamond Trail • Guajome Regional Park • Lakeside Sports Park • Mission Trails Regional Park • San Luis Rey River Park • Santa Margarita Preserve
5. Spider Diversity Study	San Diego Natural History Museum	Terrestrial arthropod diversity, specifically Arachnida.	• Oakoasis Preserve	• None
6. Harbison's Dun Skipper Surveys	Dan Marschalek, University of Central Missouri	Harbison's dun skipper	• Otay Ranch Preserve	• Hellhole Canyon Preserve
7. Bumble Bee Study	Xerces Society	Bumble bees	• Dictionary Hill Preserve • Stoneridge Preserve • Dos Picos Park • Louis A. Stelzer Preserve	• Agua Caliente Park • San Dieguito Park

Project Name	Project Lead	Monitoring/ Research Target	County Preserves Within MSCP Subarea Plan Area	County Parks and Preserves Outside MSCP Subarea Plan Area
8. Burrowing Owl Monitoring	San Diego Zoo Wildlife Alliance	Burrowing owl	• Ramona Grasslands Preserve	• None
9. Rare Plant Surveys	AECOM	Rare plants included in the San Diego Management and Monitoring Program's Management Strategic Plan for Western San Diego County	• Tijuana River Valley Regional Park • Ramona Grasslands Preserve • Boulder Oaks Preserve • Sycamore Canyon and Goodan Ranch Preserve	• Simon Preserve • Escondido Creek Preserve • Mt. Olympus Preserve
10. Release of Rehabilitated Wildlife	San Diego Humane Society / Project Wildlife	Rehabilitated native wildlife	• Barnett Ranch Preserve • Boulder Oaks Preserve • Del Dios Highlands Preserve • Dictionary Hill Preserve • Dos Picos Park • El Capitan Preserve • El Monte Park • Flinn Springs Park • Holly Oaks County Park • Lakeside Linkage Preserve • Lawrence & Barbara Daley Preserve • Los Peñasquitos Canyon Preserve • Louis A. Seltzer Park • Luelf Pond Preserve • Lusardi Creek Preserve • Oakoasis Preserve • Otay Lakes Park • Ramona Grasslands Preserve • Sycamore Canyon and Goodan Ranch Preserve • Tijuana River Valley Regional Park	• Agua Caliente Park • Hellhole Canyon Preserve • In-Ko-Pah County Park • Lake Morena Park • Mt. Gower Preserve • Palomar Mountain Park • Potrero Park • San Elijo Lagoon Ecological Reserve • Santa Margarita Preserve • Santa Ysabel Preserve • Simon Preserve • Volcan Mt. Wilderness Preserve • Wilderness Gardens Preserve • William Heise Park
11. Coastal California Gnatcatcher Surveys	California State Parks	Coastal California gnatcatcher	• Tijuana River Valley Regional Park (Goat Canyon)	• None
12. Avian/Tricolored Blackbird Surveys	AECOM	Tricolored blackbird	• Ramona Grasslands Preserve	• None

Project Name	Project Lead	Monitoring/ Research Target	County Preserves Within MSCP Subarea Plan Area	County Parks and Preserves Outside MSCP Subarea Plan Area
13. Carabid Beetle Studies	UC Berkeley	Carabid beetles	• Ramona Grasslands Preserve	• None
14. Environmental and Engineering Studies for Proposed SR 67	Caltrans	Biology, engineering, floodplain, visual resource studies	• Sycamore Canyon and Goodan Ranch Preserve	• Mt. Woodson Gateway County Preserve
15. Feral Pig Eradication and Control Project and Monitoring	San Diego State University and CDFW	Feral pigs	• Boulder Oaks Preserve • Ramona Grasslands Preserve	• Santa Ysabel Preserve • William Heise Park • Lake Morena Park • Volcan Mountain Wilderness Preserve • Mt. Gower Preserve
16. Mushroom Identification Excursions	San Diego Mycological Society	Various mushroom species	• Dos Picos Preserve • Flinn Springs Park • Los Peñasquitos Canyon Preserve • Louis A. Stelzer Park • Oakoasis Preserve	• Felicita Park • Potrero Park

Source: County of San Diego Department of Parks and Recreation

Native Plant Seed Bank

Project Lead: Zoological Society of San Diego, dba San Diego Zoo Global
Project Timeline: May 2021 – April 2024
Target Species or Habitat: Rare, native plants
County Preserves within MSCP Subarea Plan Area: Boulder Oaks Preserve, Del Dios Highlands Preserve, El Capitan Preserve, Sycamore Canyon and Goodan Ranch Preserve, Louis A. Stelzer Park, Oakoasis Preserve, Ramona Grasslands Preserve, Tijuana River Valley Regional Park
County Preserves Outside MSCP Subarea Plan Area: Santa Margarita Preserve, Santa Ysabel Preserve, Volcan Mountain Wilderness Preserve, Wilderness Gardens Preserve, William Heise Park

The Native Plant Seed Bank project is spearheaded by the San Diego Zoo with a goal to conserve San Diego County's rare, threatened, and endangered plants as recognized by the California Native Plant Society's rare plant inventory. The San Diego Zoo is a regional partner in the California Plant Rescue project which is a statewide effort to conserve the most at-risk plant species in California. Surveys are conducted within 13 County parks and preserves to locate sensitive plant species. Once identified, San Diego Zoo staff collect an herbarium voucher, if available, and will monitor the population until it senesces. After senescence, ripe seeds are

collected from the documented populations for long term seed banking. Collected seeds are processed, counted, and weighed prior to storage and 40% of the collection is sent to the USDA-ARS National Laboratory for Genetic Resources Preservation in Fort Collins, Colorado for backup storage. Seeds are tested for viability and herbarium vouchers are deposited at the San Diego Natural History Museum. Seed banks are maintained for long term conservation and to provide sufficient plant material for the establishment of new populations or to augment existing populations in southern California. MSCP covered species which have been conserved by the Native Plant Seed Bank include Orcutt's brodiaea, Lakeside lilac, and felt-leaved monardella, among others.

Regional Arroyo Toad Monitoring

Project Lead: USGS
Project Timeline: January 2022 – December 2023
Target Species or Habitat: Arroyo toad
County Preserves within MSCP Subarea Plan Area: Boulder Oaks Preserve, Old Ironsides Park, Ramona Grasslands Preserve, Stoneridge Preserve, Sweetwater Regional Park
County Preserves Outside MSCP Subarea Plan Area: Hellhole Canyon Preserve, Lake Morena Park, San Luis Rey River Park, Santa Margarita Preserve, Santa Ysabel Preserve, Wilderness Gardens Preserve

The Regional Arroyo Toad Monitoring project was initiated in 2020 for the purpose of implementing a regional monitoring program for the MSCP covered arroyo toad as part of the SDMMP. Prior to 2022, surveys were conducted across seven County parks and preserves in areas where arroyo toads are known to occur and areas of potential habitat. The surveys were expanded in 2022 to add four additional County parks and preserves (Boulder Oaks Preserve, Sweetwater Regional Park, Old Ironsides Park, and Stoneridge Preserve), for a total of 11 parks and preserves. Surveys are conducted through visual observations aided by dip netting to positively identify arroyo toad tadpoles in aquatic habitats. Genetic information obtained through toe clippings is also collected for genetic analysis. Genetic analysis is done to compare current findings with past data to determine the degree of genetic variation within and between arroyo toad populations in San Diego, which could identify potential population bottlenecks or connectivity issues. Results of the surveys will be used to estimate the distribution and status of the arroyo toad, determine threats and habitat covariates, and to identify future management actions. Data will also be used to determine source populations which can be used to reestablish arroyo toads in previously occupied areas within conserved lands. Monitoring continued through 2023 with results discussed in Section 7.1 under Arroyo Toad.

In addition to arroyo toad surveys, this monitoring effort includes installation of Stream Temperature, Intermittency, and Conductivity (STIC) loggers in water sources throughout survey areas. STIC loggers collect temperature and flow data on ephemeral streams and other water sources throughout the preserves.

Southwestern Pond Turtle Monitoring in Aquatic Habitats

Project Lead: USGS
Project Timeline: November 2020 – October 2024
Target Species or Habitat: Southwestern pond turtle
County Preserves within MSCP Subarea Plan Area: Lusardi Creek Preserve, Ramona Grasslands Preserve, and Los Peñasquitos Canyon Preserve

County Preserves Outside MSCP Subarea Plan Area: Wilderness Gardens Preserve, Santa Ysabel Preserve, Sage Hill Preserve, and Star Ranch Preserve

The Southwestern Pond Turtle Monitoring in Aquatic Habitats project was initiated in 2020 to study the current status and demography of the southwestern pond turtle in San Diego County as part of the SDMMP. USGS collects pond turtle data by setting baited hoop traps in aquatic areas which are checked daily while set. Successfully captured turtles will be weighed, measured, photographed, and marked with a passive integrated transponder (PIT) tag for long term monitoring. USGS also collects tail tissue samples for further genetic analysis. Visual surveys are conducted to assess habitat conditions and to document the presence of native and non-native aquatic species. Trapping surveys are utilized for marking/recapturing previously marked individuals to assess growth and to contribute to demography monitoring. Genetic analysis will help determine the degree of genetic variation within and between pond turtle populations to identify possible genetic bottlenecks or barriers. Information will also be used to determine source populations which can be used to reestablish pond turtles in previously occupied areas as a potential recovery strategy. Southwestern pond turtle is an MSCP-covered species, and the results of this study could help identify future management strategies for this species.

Sensitive Avian Species Demography Monitoring

Project Lead: USGS
Project Timeline: March 2020 – March 2024
Target Species or Habitat: Coastal California gnatcatcher, least Bell's vireo, coastal cactus wren, southwestern willow flycatcher
County Preserves within MSCP Subarea Plan Area: Cactus Park, Damon Lane Park, El Capitan Preserve, El Monte Park, Furby-North Preserve, Historic Flume Trail, Lakeside Linkage Preserve, Lawrence and Barbara Daley Preserve, Louis A. Stelzer Park, Lusardi Creek Preserve, Otay Lakes Park, Otay Ranch Preserve, Otay Valley Regional Park, Ramona Grasslands Preserve, Santa Fe Valley Preserve, Stoneridge Preserve, Sweetwater Regional Park, Sycamore Canyon and Goodan Ranch Preserve, Tijuana River Valley Regional Park
County Preserves Outside MSCP Subarea Plan Area: Blue Sky Ranch Ecological Reserve, Diamond Trail, Guajome Regional Park, Lakeside Sports Park, Mission Trails Regional Park, San Luis Rey River Park, Santa Margarita Preserve

The Sensitive Species Demography Monitoring project encompasses a long-term regional monitoring effort spearheaded by USGS to monitor populations of four sensitive and MSCP covered species: coastal California gnatcatcher, least Bell's vireo, coastal cactus wren, and southwestern willow flycatcher. Surveys for the monitoring program are conducted to collect data on the distribution, abundance, and demography of these four species to assess the progress of local populations towards recovery. For coastal California gnatcatcher and coastal cactus wren, three surveys are conducted each year to ascertain presence of the species within areas of suitable habitat. For least Bell's vireo and southwestern willow flycatcher, surveys are conducted twice a year to determine presence. Visual observations with the aid of song playbacks are utilized and if presence is confirmed, the number, banding status, age (adult or juvenile), and breeding status of all sighted birds will be recorded. For coastal California gnatcatcher, a habitat assessment for coastal sage scrub is conducted to quantify the cover, structure, and composition of coastal sage scrub vegetation which the species depends on. For least Bell's vireo and southwestern willow flycatcher, vegetation surveys are also conducted to identify evidence of the invasive shot hole borer which may be contributing to recent population declines. The results of this study will help determine the status of regional populations for these

four sensitive species which will help guide future management actions. Monitoring efforts are ongoing and will continue through 2024.

Spider Diversity Study

Project Lead: San Diego Natural History Museum
Project Timeline: June 2023 – June 2025
Target Species or Habitat: Terrestrial arthropod diversity, particularly class Arachnida.
County Preserves within MSCP Subarea Plan Area: Oakoasis Preserve
County Preserves Outside MSCP Subarea Plan Area: None

The spider diversity study examines terrestrial arthropod diversity within Oakoasis Preserve, focusing on members of the class Arachnida. Twelve surveys are planned over the course of the project timeline, during which SDNHM employees record visual observations, take photographs, and collect specimens for identification. Surveys are conducted by inspecting leaf litter, overturning rocks and wood debris, and occasionally flooding burrows with small amounts of water. Surveys are conducted primarily along and adjacent to established trails, although surveyors are able to travel off-trail to investigate rock piles and plant communities that would be otherwise inaccessible. All overturned rocks, wood, and other debris are returned to original conditions after the inspection is complete. In order to sample arthropod diversity in all vegetation communities present within Oakoasis Preserve, seven study locations were proposed based on surrounding plant communities. In addition to specimens collected for identification, four voucher specimens may also be collected, representing two males and two females of a known species to allow for morphological comparison between individuals of the same sex. Collected specimens will be submitted to the SDNHM collection to serve as vouchers for the diversity study. Data retrieved during this study will be used to update the Checklist of Spiders of San Diego County, which is maintained by the SDNHM.

Harbison's Dun Skipper Surveys

Project Lead: University of Central Missouri/Dr. Dan Marschalek
Project Timeline: May 2023 – December 2023
Target Species or Habitat: Harbison's Dun Skipper
County Preserves within MSCP Subarea Plan Area: Otay Ranch Preserve
County Preserves Outside MSCP Subarea Plan Area: Hellhole Canyon Preserve

The Harbison's Dun Skipper Survey project was implemented in 2023 to determine the maximum population of adult Harbison's dun skippers present during the May through July flight season. During this time frame, surveys were conducted between one and two times a week for a total of sixteen surveys divided between Otay Ranch Preserve and Hellhole Canyon Preserve. Non-lethal sampling methods were also used to collect genetic material, which will be analyzed with samples collected between 2014 and 2017. Data collected during the Harbison's Dun Skipper Survey project will be used to inform population estimates for the species. Genetic sampling was conducted on June 8, June 17, and July 5, 2023 under this ROE; however, no individuals were detected during these surveys.

Bumble Bee Study

Project Lead: Xerces Society
Project Timeline: May 2023 – May 2025
Target Species or Habitat: Bumble Bees
County Preserves within MSCP Subarea Plan Area: Dictionary Hill Preserve, Stoneridge Preserve, Dos Picos Park, Louis A. Stelzer Preserve
County Preserves Outside MSCP Subarea Plan Area: Agua Caliente Park, San Dieguito Park

The Bumble Bee Study project was initiated in 2023 to collect data for inclusion in the Bumble Bee Atlas, a state-wide community science partnership between the Xerces Society for Invertebrate Conservation and CDFW. Volunteers collect, photograph, and release bumble bees following Xerces Society survey methodology. Photographs of bumble bees are then submitted for identification, along with ecological data including plant species the bees were collected on, vegetation communities present within the survey area, and weather conditions. Data collected during these surveys is compiled into the Bumble Bee Atlas, a community science project that collects data from volunteers surveying in all regions of the state, with the aim of providing updated range and population estimates of bumble bee species throughout California. The Xerces Society was issued a Scientific Collecting Permit authorizing take or possession of Crotch's bumble bee, Franklin's bumble bee, western bumble bee, and/or Suckley's cuckoo bumble bee for scientific, educational, or propagation purposes. The Bumble Bee Study project will continue through May of 2025.

Burrowing Owl Monitoring

Project Lead: San Diego Zoo Wildlife Alliance
Project Timeline: June 2021 – December 2024
Target Species or Habitat: Burrowing owl
County Preserves within MSCP Subarea Plan Area: Ramona Grasslands Preserve
County Preserves Outside MSCP Subarea Plan Area: None

The Burrowing Owl Monitoring project implemented burrowing owl monitoring for burrowing owls dispersing into the Ramona Grasslands Preserve after burrowing owl translocation on the adjacent San Diego Habitat Conservancy (SDHC) mitigation bank parcel in early 2021. The project monitors movements and nesting of translocated burrowing owls, their offspring, and extant wild burrowing owls. The project includes the use of direct observations and remote cameras for nest monitoring, capturing and banding of burrowing owls to gather data on survival and nest success, as well as allowed for supplemental feeding to increase the likelihood of nest success. The San Diego Zoo Wildlife Alliance conducted burrowing owl surveys at Ramona Grasslands Preserve in 2023. No burrowing owls or burrowing owl sign were documented during these surveys. While not conducted in 2023, TMP monitoring for this species should be coordinated with the San Diego Zoo Wildlife Alliance to implement consistent monitoring protocols, limit duplication of efforts, provide cumulative adaptive management recommendations, and provide transparency on any implemented management activities.

Rare Plant Monitoring and Discovery Surveys

Project Lead: AECOM
Project Timeline: May 2023 – May 2024
Target Species or Habitat: Various sensitive plant species
County Preserves within MSCP Subarea Plan Area: Tijuana River Valley Regional Park, Ramona Grasslands Preserve, Boulder Oaks Preserve, Sycamore Canyon and Goodan Ranch Preserve
County Preserves Outside MSCP Subarea Plan Area: Escondido Creek Preserve, Simon Preserve, Mt. Olympus Preserve

The Rare Plant Surveys project performs monitoring (Inspect and Manage [IMG]) and discovery surveys of rare plants included in the SDMMP Management Strategic Plan for Western San Diego County. Survey results assist the County regarding rare plant populations on County property. A total of seven County preserves are included in this ROE permit. In 2023 the population estimate for Parish's brittlescale at Ramona Grasslands Preserve was 606; the population estimate for Orcutt's brodiaea at Boulder Oaks Preserve was 12,833; and the population estimate for Orcutt's bird's beak at Tijuana River Valley Regional Park was 370. Discovery surveys were performed for Baja California oatgrass at Sycamore Canyon and Goodan Ranch Preserve and Encinitas baccharis at Del Dios Highlands Preserve in 2023. The purpose of these discovery surveys was to locate new or additional undiscovered rare plant populations outside of known monitored rare plant populations. Baja California oatgrass was discovered at Sycamore Canyon and Goodan Ranch Preserve with an estimated population of 517 individuals. Also, a new population of Encinitas baccharis was discovered at Del Dios Highlands Preserve with an estimated population of 42 individuals.

Release of Rehabilitated Wildlife

Project Lead: San Diego Humane Society / Project Wildlife
Project Timeline: March 2023 – December 2023
Target Species or Habitat: Rehabilitated native wildlife
County Preserves within MSCP Subarea Plan Area: Barnett Ranch Preserve, Boulder Oaks Preserve, Del Dios Highlands Preserve, Dictionary Hill Preserve, Dos Picos Park, El Capitan Preserve, El Monte Park, Flinn Springs Park, Holly Oaks County Park, Lakeside Linkage Preserve, Lawrence & Barbara Daley Preserve, Los Peñasquitos Canyon Preserve, Louis A. Seltzer Park, Luelf Pond Preserve, Lusardi Creek Preserve, Oakoasis Preserve, Otay Lakes Park, Ramona Grasslands Preserve, Sycamore Canyon and Goodan Ranch Preserve, Tijuana River Valley Regional Park
County Preserves Outside MSCP Subarea Plan Area: Agua Caliente Park, Hellhole Canyon Preserve, In-Ko-Pah County Park, Lake Morena Park, Mt. Gower Preserve, Palomar Mountain Park, Potrero Park, San Elijo Lagoon Ecological Reserve, Santa Margarita Preserve, Santa Ysabel Preserve, Simon Preserve, Volcan Mt. Wilderness Preserve, Wilderness Gardens Preserve, William Heise Park

The Release of Rehabilitated Wildlife project was initiated in 2023 to facilitate the release of rehabilitated wildlife into native habitats within County parks and preserves. Project Wildlife, an affiliate organization of the San Diego Humane Society (SDHS), rehabilitates injured, sick, and displaced animals recovered by members of the public within San Diego County. Under the terms of SDHS partnership with the County, SDHS staff identified potential release locations based on the species' native habitats. SDHS coordinated the release of rehabilitated wildlife

with DPR to determine if the species, number of animals to be released, and release date were suitable for the proposed release location. DPR was able to deny release requests or select alternate dates for release. The San Elijo Ecological Reserve, unlike other parks and preserves participating in this project, could only serve as a release location if the rehabilitated wildlife had been originally recovered from the reserve.

Coastal California Gnatcatcher Surveys

Project Lead: California State Parks
Project Timeline: February 2023 – August 2025
Target Species or Habitat: Coastal California Gnatcatcher
County Preserves within MSCP Subarea Plan Area: Tijuana River Valley Regional Park
County Preserves Outside MSCP Subarea Plan Area: None

This project implements presence/absence surveys for coastal California gnatcatcher in the Goat Canyon area of Tijuana River Valley Regional Park. Surveys are conducted to fulfil environmental compliance requirements for the annual maintenance of the Goat Canyon sediment basins. The primary goal is to document presence/absence of coastal California gnatcatcher; however, if this species is detected during surveys, attempts are made to document breeding status, including nest locations and nest. In 2023 coastal California gnatcatchers were observed within the survey area in Tijuana River Valley Regional Park.

Regional Tricolored Blackbird Surveys

Project Lead: AECOM
Project Timeline: May 2023 – July 2023
Target Species or Habitat: Tricolored Blackbird
County Preserves within MSCP Subarea Plan Area: Ramona Grasslands Preserve
County Preserves Outside MSCP Subarea Plan Area: None

The Tricolored Blackbird Survey project was implemented in 2023 to document the presence of tricolored blackbirds on conserved lands. AECOM biologists conducted surveys across the preserve to identify general tricolored blackbird breeding locations. Biologists also performed habitat assessments of the survey area, using GIS to plot the location and extent of suitable habitat. Survey results will assist in informing SDMMP plans for proposing management of conserved lands for this species. Results of 2023 monitoring surveys are discussed above under Section 7.1 Tricolored blackbird.

Carabid Beetles Study

Project Lead: UC Berkeley
Project Timeline: February 2023 – June 2023
Target Species or Habitat: Carabid beetles
County Preserves within MSCP Subarea Plan Area: Ramona Grasslands Preserve
County Preserves Outside MSCP Subarea Plan Area: None

Carabid beetle studies were implemented in the Ramona Grasslands Preserve for the purpose of collecting samples of carabid beetle populations as part of a statewide study for a conservation genomics project. The main goal of sampling is to collect species of the Golden Bear Harpaline beetles (*Dicheirus* spp.). Secondary goals are to collect other carabid beetles

and soil-dwelling, associated arthropods that may impact the Golden Bear Harpalines beetles. Sampling in San Diego County will focus on *D. dilatatus angulatus*, a subspecies known only from a small number of specimens. Approximately six specimens of *D. dilatatus angulatus* will be collected if found. For the other carabid beetles and soil-dwelling, associated arthropods, approximately two individuals of each unique species will be collected. The other soil-dwelling associated arthropods will only include macroinvertebrates such as centipedes. Any off-trail access shall avoid and minimize impacts to flora and fauna to the maximum extent possible.

Environmental and Engineering Surveys for State Route (SR) 67

Project Lead: Caltrans
Project Timeline: March 2022 – December 2024
Target Species or Habitat: Biology, engineering, floodplain, and visual resource studies
County Preserves within MSCP Subarea Plan Area: Sycamore Canyon and Goodan Ranch Preserve
County Preserves Outside MSCP Subarea Plan Area: Mt Woodson Gateway County Preserve

Environmental and engineering surveys for the SR 67 project were implemented to document existing conditions ahead of the proposed SR 67 Improvements Project. Caltrans and consultants conduct engineering field studies across the permit area, using conventional and remote sensing survey methods to determine property rights and boundaries, create Digital Terrain Models, and locate key design points and facilities. Surveyors may also use flagging to mark important locations including right of way limits, easements, environmentally sensitive areas, and existing facilities. Biological surveys include wetland delineations, presence/absence surveys for sensitive plants and wildlife, floodplain surveys, and general biological surveys to document existing plant and animal species, plant communities, and the potential for sensitive species to occur within the survey area. Visual reviews are also conducted to establish baseline levels of visual quality of the viewshed from various locations. For all survey types occurring as part of this project, surveyors may record photographs and videos as well as collect minimal amounts of soil, rock, and plant material for analysis. The Environmental and Engineering Studies program was initiated in 2022 and has been extended to continue through December 2024.

Feral Pig Eradication and Control Project and Monitoring

Project Lead: San Diego State University and CDFW
Project Timeline: September 2023 – September 2025
Target Species or Habitat: All habitats and species
County Parks and Preserves Within the MSCP Subarea Plan Area: Boulder Oaks Preserve and Ramona Grasslands Preserve
County Parks and Preserve Outside the MSCP Subarea Plan Area: Santa Ysabel Preserve, William Heise Park, Lake Morena Park, Volcan Mountain Wilderness Preserve, Mt. Gower Preserve

The *Feral Pig Eradication and Control Project and Monitoring* encompasses a multi-agency effort involving the County, City of San Diego, CDFW, USFWS, United States Forest Service, BLM, United States Department of Agriculture-Wildlife Services, California Department of Parks and Recreation, Vista Irrigation District, and Helix Water District to eradicate and prevent future occurrences of feral pigs in San Diego County. Feral pigs are a non-native species in San Diego

County and are the result of escaped domestic stock, introduced European wild boar, or a hybrid of both and are considered an invasive species in California. Feral pigs pose a serious threat to native ecosystems due to their foraging behavior called rooting, which involves physically disturbing soils and uprooting plants to search for food which can destroy stands of native vegetation. In 2015, the implementation phase of the project was initiated, and eradication efforts began. Active trapping and removal efforts ended in Summer 2020. In Fall 2020, CDFW in partnership with San Diego State University obtained a ROE to initiate the monitoring phase of the project to determine the success of eradication efforts. Wildlife cameras and visual surveys are utilized to monitor for feral pig occurrences in places where they have previously been known to occur. Since the monitoring phase was initiated, no feral pigs have been sighted on County property. Monitoring continued through 2023 and will continue until September 2025.

Mushroom Identification Excursions

Project Lead: San Diego Mycological Society
Project Timeline: March 2023 – May 2024
Target Species or Habitat: Varied species of mushrooms
County Preserves within MSCP Subarea Plan Area: Dos Picos Preserve, Flinn Springs Park, Los Peñasquitos Canyon Preserve, Louis A. Stelzer Park, Oakoasis Preserve
County Preserves Outside MSCP Subarea Plan Area: Felicita Park, Potrero Park

This ROE permit allows members of the San Diego Mycological Society (SDMS) to search for mushrooms in the noted preserves and gather specimens for identification. Samples of mushrooms will be collected by hand and members of SDMS will not disturb the soil and will not take all specimens of any type of mushroom. Samples of mushrooms will be brought to a central location, usually a picnic table in the property, and the samples will be identified and discussed. When discussion of mushroom samples is complete, the samples are returned to the field. Some of the mushroom specimens gathered during excursions will be vouchered in the herbarium at the SDNHM with the goal of cataloging mushrooms in San Diego County. Any off-trail access shall avoid and minimize impacts to flora and fauna to the maximum extent possible.

7.4 Private Mitigation Lands Monitoring

MSCP monitoring of Private Preserves is achieved through RMP annual monitoring reports that focus on the resource attributes of that specific site and detail the monitoring and habitat management activities conducted within the previous year. Annual reports document any issues and the overall health of the Preserve, which allows the County to assess the biological integrity of the open space habitats protected by each RMP. Annual reports are publicly available online through the PDS Document Library[18] using the associated Record ID. **Appendix K** provides a general overview of the 19 RMPs located within the MSCP Subarea Plan including a description of the habitat conservation area, required surveys, and monitoring/maintenance status for each RMP.

An accounting of RMP annual report submissions revealed that in 2023, 14 of the 19 (73%) RMPs submitted reports for the 2022-2023 reporting period. **Table 22**, *MSCP Covered Species*

[18] The PDS Document Library can be accessed at: https://www.sandiegocounty.gov/content/sdc/pds/doclibrary.html.

Documented on Private Mitigation Lands In Reporting Year, summarizes the MSCP covered species documented in the 2022-2023 annual RMP monitoring reports.

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TABLE 22. MSCP COVERED SPECIES DOCUMENTED ON PRIVATE MITIGATION LANDS IN REPORTING YEAR

Private Mitigation Area

Common Name	Bernardo Lakes	4S Ranch Ralphs	4S Ranch Specific Plan	Golem	Starwood (Crosby)	Woodridge	Blossom Valley	McCrink Ranch	Maranatha Chapel	El Apajo	Greenhills Ranch	Artesian Trail	East Otay Mesa	Lonestar	Sloane Canyon	High Meadow Ranch (Trevi Hills)	Otay Crossings Commerce Park	OMC	Sweetwater Vistas
Plants																			
Del Mar manzanita					✓														
San Diego barrel cactus					✓								✓				✓		
San Diego ambrosia					✓														
San Diego goldenstar		✓																	
Thread-leaved brodiaea		✓																	
Wart-stemmed ceanothus					✓														
Snake cholla																	✓		
Variegated dudleya																	✓		
Reptiles																			
Blainville's horned lizard (San Diego horned lizard)		✓					✓												
Orange-throated whiptail						✓													✓
Birds																			
Burrowing owl														✓			✓		
Coastal California gnatcatcher				✓	✓	✓	✓				✓		✓			✓			✓

Private Mitigation Area

Common Name	Bernardo Lakes	4S Ranch Ralphs	4S Ranch Specific Plan	Golem	Starwood (Crosby)	Woodridge	Blossom Valley	McCrink Ranch	Maranatha Chapel	El Apajo	Greenhills Ranch	Artesian Trail	East Otay Mesa	Lonestar	Sloane Canyon	High Meadow Ranch (Trevi Hills)	Otay Crossings Commerce Park	OMC	Sweetwater Vistas
California rufous-crowned sparrow				✓			✓						✓				✓		
Cooper's hawk				✓	✓												✓		✓
Golden eagle		✓																	
Least Bell's vireo				✓	✓														✓
Light-footed Ridgway's rail					✓														
Northern harrier														✓			✓	✓	
Peregrine falcon				✓															
Coastal (San Diego) cactus wren														✓					
Mammals																			
Southern mule deer				✓			✓												

CHAPTER 8

Financial Summary

Dos Picos Park pond providing habitat and water for on-site wildlife.

The County is responsible for funding acquisition, management, and monitoring of lands within the MSCP Subarea Plan. The costs associated with these activities may be funded through local and regional sources. The County primarily uses General Fund monies to acquire land or leverage funding to acquire additional preserve lands. Additionally, the County Board of Supervisors annually appropriates funding for ongoing management and monitoring efforts. Management and monitoring efforts for conveyed lands in the Otay Ranch Preserve, which are jointly owned and managed by the County and the City of Chula Vista, are funded through Community Facilities District 97-2 administered by the City of Chula Vista. Lastly, the County has sought additional funding through various grant programs such as those offered through the San Diego Association of Governments (SANDAG) *TransNet* EMP.

8.1 County Contribution

The Board of Supervisors allocates funding for ongoing management and monitoring efforts on 46,200 acres within the MSCP Subarea, draft North County MSCP, and proposed East County MSCP Plan Areas, approximately 27,120 acres of which were acquired since the MSCP Subarea Plan was adopted. Acreage discussed in this section is reported as Assessor's acreage and not GIS acreage to provide consistency of reporting acreage across all three

MSCP Plan Areas. The acreage of preserve lands within the three MSCP Plan Areas include approximately:

- 8,480 acres acquired, managed, or funded within the MSCP Subarea Plan Area since 1998.
- 15,820 acres acquired and managed in the draft North County MSCP Plan Area since 2001.
- 2,820 acres acquired and managed in the proposed East County MSCP Plan Areas since 2001.
- Of the original, baseline 19,000 acres of preserve lands owned and managed by the County across the three MSCP Plan Areas prior to the MSCP Subarea Plan adoption, approximately 5,500 acres are in the MSCP Subarea Plan Area.

As in years past, in Fiscal Year 2023-2024, the County Board of Supervisors appropriated $7.5 million for acquisition of preserve lands throughout the adopted South County Subarea, draft North County MSCP, and proposed East County MSCP Plan Areas. The County's Capital Improvement Needs Assessment for the next five years (Fiscal Year 2024-2025 to Fiscal Year 2028-2029) continues to plan for future investments in MSCP acquisitions. In this reporting period, over $12.7 million was spent to successfully manage and maintain the County's MSCP preserve lands across the three MSCP Plan Areas. Approximately 110 full time staff as well as additional part-time staff and almost 1,600 volunteers implemented management and monitoring activities on County Preserves in 2023. Stewardship activities include those tasks detailed in Chapter 6, *Preserve Management.* MSCP monitoring activities included those tasks detailed in Chapter 7, *Preserve Monitoring and Research*.

Since 1998, the County has invested over $51 million which leveraged over $35 million of other funding to acquire 8,484 acres in the MSCP Subarea Plan, including 556 acres owned by County partners. No County acquisitions occurred in the MSCP Subarea Plan in 2023. Since 1998, The County has invested over $77 million while leveraged over $60 million of other funding to acquire 15,817 acres in the draft North County MSCP Plan Area. During the reporting period, 447 acres were acquired in the draft North County MSCP Plan Area funded by $1.9 million of County funds and $200,000 in grant funds. In addition, since 1998, the County has invested approximately $10 million which leveraged over $1.3 million of other funding to acquire 2,817 acres in the proposed East County MSCP Plan Area. No acquisitions occurred in the proposed East County MSCP Plan Area in 2023.

In addition to the 45,000 acres of County-owned preserve lands, the County and the City of Chula Vista jointly own and manage Otay Ranch Preserve.

8.2 Otay Ranch Preserve Community Facility District 97-2

Community Facility District 97-2 funds, administered by the City of Chula Vista, are used for managing and monitoring the Otay Ranch Preserve. The approved budget for Fiscal Year 2023-2024 was $650,000 for preserve monitoring, operations, and maintenance. Preserve monitoring includes scheduled surveys for various species by parcel, focused rare plant surveys, baseline surveys for newly acquired properties, updating vegetation mapping, land stewardship,

meetings and on-going coordination, and reporting. Operations and maintenance include access control and invasive species treatment activities.

8.3 *TransNet* Funding

SANDAG is a regional transportation agency responsible for administering TransNet EMP funds collected as a local half-cent sales tax for transportation improvements. The vote to extend the TransNet tax in 2004 included $850 million to fund land acquisition, land management, and species monitoring of mitigation lands for local and regional transportation projects. As of June 2018, the $850 million TransNet EMP has supported the acquisition of 40 properties throughout the region, totaling more than 8,780 acres.[19] As of 2022, SANDAG invested more than $46.5 million to manage and monitor the regional habitat preserve system.[20] The County has received almost $2.7 million of management and monitoring TransNet EMP funds from 2006 through 2023.

[19] http://www.keepsandiegomoving.com/EMP-Group/EMP-acquisitions.aspx.

[20] https://www.sandag.org/projects-and-programs/environment/regional-habitat-conservation/regional-management-and-monitoring

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CHAPTER 9

Program Administration

Hikers enjoying an interpretive talk in Dos Picos Park.

9.1 MSCP COORDINATION EFFORTS

MSCP Subarea Plan IA Section 14.0 requires coordination with the Wildlife Agencies. Coordination meetings are scheduled regularly between the County and the Wildlife Agencies. Coordination also occurs regularly with regional technical groups, other jurisdictions, stakeholders, and the public. The County continues to actively participate in regularly scheduled MSCP group meetings including the SANDAG *TransNet* EMP Working Group, SDMMP Working Group, MSCP Annual Workshop, Quarterly Acquisitions coordination meetings, South County Land Managers Working Group, San Dieguito River Park JPA, SDRC, the Tijuana River Valley Recovery Team, the Tijuana River Water Quality Improvement Plan Working Group, the Tijuana River National Estuarine Research Reserve Advisory Council, the Mission Trails Regional Park Task Force, the Otay Ranch POM Executive/Policy Committees and Joint Staff, the Otay Valley Regional Park Executive/Policy Committees and Joint Staff, the Otay Valley Regional Park citizens advisory committee, California HCP Coalition, National HCP Coalition, Santa Ana to Palomar Linkage Alliance, County of San Diego Sustainability Task Force, and the United States Border Management Task Force Group. The various MSCP group meetings consist of

members from USFWS, CDFW, BLM, local/governmental participating agencies, private stakeholders, and members of the general public. The primary objectives of these meetings are to discuss land acquisitions, management, monitoring methodologies, conservation techniques, and regional coordination. These meetings provide meaningful educational information and create public awareness regarding the importance of habitat conservation and how it adds to quality of life.

MSCP Subarea Plan implementation also requires coordination among County departments. Regularly scheduled internal meetings regarding MSCP topics are held to facilitate and ensure consistency in implementing the MSCP Subarea Plan. The DPR, PDS, DPW, and DGS MSCP staff meet regularly to discuss issues and exchange ideas.

9.2 MSCP SUBAREA PLAN UPDATES

The following discussion summarizes work completed on the proposed amendments and projects processed with Wildlife Agency staff concurrence during this reporting period.

MSCP Amendments

The County finalizes amendments upon concurrence from the Wildlife Agencies and when amendment conditions are satisfied. In 2022, there was one proposed Major Amendment to the MSCP Subarea Plan to incorporate an additional 77.02 acres of conservation land discussed with the Wildlife Agencies. The Major Amendment was granted by the Wildlife Agencies on March 1, 2023. The conservation lands are located in an unincorporated portion of northern San Diego and consist of 5 parcels (Assessor’s Parcel Numbers 283-055-28-00, 283-055-29-00, 283-055-30-00, 283-055-31-00, and 283-055-31-00).

MSCP Map Update

The maps associated with the MSCP Subarea Plan were originally adopted by the County Board of Supervisors on October 22, 1997. The maps have been updated through the years to reflect changes in designations for Major and/or Minor Amendment areas to either "take authorized" or "preserve" designations.

The MSCP Subarea Plan map will be updated in the 2024 Annual Report to reflect the Major Amendment to include 77.02 acres of conservation lands.

CHAPTER 10

References

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APPENDIX A-1

County Tracked Acquisitions Since 1998

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	Owned By Local/Non Profits	Preserve/ Hardline Owned By County	MHPA & Chula Vista	Total Counted Toward MSCP Preserve	Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)	Total Acreage of Acquisition	Land Cost	County Funds	Non County Funds	Funding Source
1998										
Tijuana River Valley, Arietta			39	39		39	$ 478,000		$ 478,000	State
Tijuana River Valley, Calmat Option I			164	164		164	$ 1,225,272		$ 1,225,272	State, City of San Diego
Tijuana River Valley, West/Dymott			40	40		40	$ 410,000		$ 410,000	State
1999										
Tijuana River Valley, Calmat Option Final			28	28		28	$ 208,837		$ 208,837	State
Lakeside, Arabo		9		9		9	$ 160,000	$ 80,000	$ 80,000	County, State, Federal
Lakeside, Ham		48		48		48	$ 800,000	$ 400,000	$ 400,000	County, State, Federal
Lakeside, HJMD		33		33		33	$ 490,000	$ 245,000	$ 245,000	County, State, Federal
Lakeside, Yunis		13		13		13	$ 270,000	$ 135,000	$ 135,000	County, State, Federal
Lusardi Creek, Rancho Vista		98		98		98	$ 1,845,500	$ 922,750	$ 922,750	County, State, Federal
2000										
Lusardi Creek, Santa Fe Views		97		97		97	$ 1,976,000	$ 988,000	$ 988,000	County, State
Hollenbeck Canyon, L&B Daley Pres, Ph I		290		290		290	$ 1,000,000	$ 1,000,000		County
Hollenbeck Canyon, L&B Daley Pres, Ph II		291		291		291	$ 1,000,000	$ 1,000,000		County

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	**Owned By Local/Non Profits**	**Preserve/ Hardline Owned By County**	**MHPA & Chula Vista**	**Total Counted Toward MSCP Preserve**	**Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)**	**Total Acreage of Acquisition**	**Land Cost**	**County Funds**	**Non County Funds**	**Funding Source**
Lakeside, United Brokers		8		8		8	$ 153,000	$ 76,500	$ 76,500	County, State
Tijuana River Valley, Piper/Shelton			142	142		142	$ 1,752,750	$ 500,000	$ 1,252,750	County, State
Wright's Field, Alpine School District	41	0		41		41	$ 425,000	$ 175,000	$ 250,000	County, State, Federal
Wright's Field, Union Bank	40	0		40		40	$ 356,633	$ 148,196	$ 208,437	County, State
2001										
Lakeside, Pavel		11		11		11	$ 200,000	$ 100,000	$ 100,000	County, State
Otay River Valley Park, Malcolm			1	1		1	$ 46,000		$ 46,000	County, Developer
Otay River Valley Park, O Brien			8	8		8	$ 205,500	$ 102,776	$ 102,724	Developer negotiated by County
2002										
Lakeside, Shuler		59		59		59	$ 425,000		$ 425,000	State, Federal
Tijuana River Valley, Hanson			74	74		74	$ 1,387,500	$ 1,387,500		County
Tijuana River Valley, Skibbe			10	10		10	$ 485,000		$ 485,000	State, City (Federal)
Wright's Field, Findel Ranch	29			29		29	$ 500,000	$ 500,000		County
Iron Mountain, Ramona Serena/ Barnett Ranch		665		665		665	$ 4,440,000	$ 2,440,000	$ 2,000,000	County, State, Federal
2003										
Otay River Valley Park, Hirlinger-Baker		0	8	8		8	$ 95,000	$ 95,000		State, Federal

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	**Owned By Local/Non Profits**	**Preserve/ Hardline Owned By County**	**MHPA & Chula Vista**	**Total Counted Toward MSCP Preserve**	**Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)**	**Total Acreage of Acquisition**	**Land Cost**	**County Funds**	**Non County Funds**	**Funding Source**
Iron Mountain, Berkeley Hering		59		59		59	$ 457,200	$ 62,200	$ 395,000	County, State, Federal
Iron Mountain, Boulder Oaks		1,271		1,271		1,271	$ 4,410,000	$ 1,102,500	$ 3,307,500	County, State, Federal
Iron Mountain, Reams Thomsen		46		46		46	$ 180,000		$ 180,000	County, State, Federal
Sycamore Canyon Preserve (I-122)		28		28		28				County, I-122
East Otay Mesa, Furby North			79	79		79	$ 1,296,600	$ 1,296,600		County
Otay River Valley Park, Munson Otay			19	19		19	$ 13,300		$ 13,300	State
Tijuana River Valley, Horwin			21	21		21	$ 365,000		$ 365,000	State
Tijuana River Valley, Nelson Sloan			73	73		73	$ 699,782		$ 699,782	State
Wright's Field, Apollo 120 acres	120			120		120	$ 1,800,000	$ 800,000	$ 1,000,000	County, State
2004										
Escondido Creek, Polo (110 acres, but 4 acres in NC)		106		106		106	$ 1,700,000	$ 1,374,000	$ 326,000	County, I-122 (8 acres), State
Sycamore Canyon Preserve (I-122)		63		63		63				County, I-122
Otay River Valley Park, Georgiana Smith		89		89		89	$ 2,611,000		$ 2,611,000	State
Otay River Valley Park, Greg Smith		98		98		98	$ 3,243,000		$ 3,243,000	State

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	**Owned By Local/Non Profits**	**Preserve/ Hardline Owned By County**	**MHPA & Chula Vista**	**Total Counted Toward MSCP Preserve**	**Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)**	**Total Acreage of Acquisition**	**Land Cost**	**County Funds**	**Non County Funds**	**Funding Source**
2005										
Stoneridge (FKA Harbison), Bahde Donation		20		20		20				County acquired donation (interdept) post MSCP creation
Otay River Valley Park, Grindle		8		8		8	$ 138,000	$ 46,800	$ 91,200	County, State
Otay River Valley Park, Kimball		13		13		13	$ 196,000		$ 196,000	State
Otay River Valley Park, Lanzetta			6	6		6	$ 125,000		$ 125,000	State
Tijuana River Valley, Dairy Mart Ponds			60	60		60				County had managed for State, State formalized by transfer
2006										
Otay River Valley Park, Sandoval (1 & 2)			13	13		13	$ 700,000		$ 700,000	State
Otay River Valley Park, Otay Land Company			114	114		114	$ 1,490,000		$ 1,490,000	State
Pitchford (MLJ at Stelzer)		3		3		3	$ 75,000	$ 75,000		County
Sheriff's East Mesa Buffer		9		9		9	$ 45,000	$ 45,000		County
2007										
Greenfield Transfer Mitig 17 acres	17			17		17	$1	$1		Olivenhain Water Mitigation Mgt

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	Owned By Local/Non Profits	Preserve/ Hardline Owned By County	MHPA & Chula Vista	Total Counted Toward MSCP Preserve	Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)	Total Acreage of Acquisition	Land Cost	County Funds	Non County Funds	Funding Source
2008										
Del Dios Highlands (Greer)		10		10		10	$ 675,000	$ 675,000		County
Sycamore Canyon/Goodan Ranch (Armstrong)		20		20		20	$ 160,000	$ 160,000		County
Ramona Grasslands (Gildred Portion in SC MSCP)		463		463		463	$ 3,630,000	$ 412,500	$ 3,217,500	County, State, Federal
2009										
Christopher Hill TET dedication - Dedication was 69 acres in 2009 with all but 5 acres baseline then; Now 5 acres approved as Preserve										County accepted in bankruptcy settlement
2010										
Del Dios Highlands (Helix-Lambron)		153		153		153	$ 4,000,000	$ 1,400,000	$ 2,600,000	County, Federal
Sycamore Canyon southern additions		150		150		150	$ 1,310,000	$ 1,310,000		County
Lakeside Hansen Pond (Endangered Habitats Conservancy)	141			141		141	$ 4,000,000	$ 1,000,000	$ 3,000,000	County, State, EHC
2011										
Stoneridge Preserve - Worley		227		227		227	$ 2,650,000	$ 2,650,000		County
Sycamore Canyon/Goodan Ranch		112		112		112	$ 2,820,000	$ 2,620,000	$ 200,000	County, State
Mit Land Policy Deduction-Stelzer, Lakeside Linkage		-1		-1		-1				

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	Owned By Local/Non Profits	Preserve/ Hardline Owned By County	MHPA & Chula Vista	Total Counted Toward MSCP Preserve	Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)	Total Acreage of Acquisition	Land Cost	County Funds	Non County Funds	Funding Source
2012										
San Diego River Foundation El Capitan	158			158		158	$ 205,000	$ 200,000	$ 5,000	County, Non-Profit
Boulder Oaks -Salvation Army		748		748		748	$ 6,555,000	$ 6,555,000		County
Mit Land Policy Deduction - L B Daley		-2		-2		-2				
2013										
Oakoasis-Sophisticated Investments		37		37		37	$ 72,000	$72,000		County
Sycamore Canyon/Goodan Ranch (South-Barratt American)		18		18		18	$ 180,000	$ 180,000		County
Otay River Valley Park, Reed/Paintball City MHPA	8			8		8	$ 262,500	$ 262,500		General Fund
Lusardi Creek, Fingal		31		31		31	$ 1,360,000	$ 1,160,000	$ 200,000	County, State
Mit Land Policy Deduction - Tijuana River Valley			-3	-3		-3				
2014										
Stoneridge Preserve (tax default)		1		1		1	$ 9,563	$ 9,563		County
Mit Land Policy Deduction - L B Daley		0		-0.37		-0.37				
2015										
Flinn Springs MSCP		33		33		33	$ 400,000	$ 400,000		County
Sycamore Canyon/Goodan		100		100		100	$ 810,000	$ 610,000	$ 200,000	County, State
Sycamore Canyon/Goodan		40		40		40	$ 541,000	$ 541,000		County

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	Owned By Local/Non Profits	Preserve/ Hardline Owned By County	MHPA & Chula Vista	Total Counted Toward MSCP Preserve	Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)	Total Acreage of Acquisition	Land Cost	County Funds	Non County Funds	Funding Source
Mit Land Policy Deduction - L B Daley		-8		-8		-8				
2016										
S. Vicente Connection (Navarro)		23		23		23	$ 224,000	$ 224,000		County
Mit Land Policy Deduction - Tijuana River Valley			-10	-10		-10				
2017										
S. Vicente Connection (Moore-Moffet)		69		69		69	$ 627,670	$ 627,670		County
Dictionary Hill		173		173		173	$ 5,467,000	$ 5,467,000		County
2018										
S. Vicente (Uridel)		19		19		19	$ 223,000	$111,500	$ 111,500	County/State
Lakeside Linkage (Centex)		75		75		75	$ 2,250,000	$ 2,250,000		County
Peutz Valley Preserve (Helix Land)		255		255		255	$ 1,651,000	$ 1,451,000	$ 200,000	County/State
2019										
Ramona Grasslands (Carroll)		121		121		121	$ 950,000	$ 950,000		County
Skyline Preserve		262		262		262	$ 1,068,000	$ 602,080	$ 465,920	County/SANDAG
Sycamore Goodan (Miera)		20		20		20	$ 220,000	$ 220,000		County
Iron Mountain Preserve		162		162		162	$ 1,280,000	$ 1,080,000	$ 200,000	County/State
Dictionary Hill (North)		1		1		1	$ 40,000	$ 40,000		County
Dictionary Hill (Inholding)		1		1		1	$ 30,000	$ 30,000		County

	Acres Acquired					Cost		Funding		
Acquisition Year Area and Property Name	**Owned By Local/Non Profits**	**Preserve/ Hardline Owned By County**	**MHPA & Chula Vista**	**Total Counted Toward MSCP Preserve**	**Total Outside of MSCP Preserve (Not Counted Towards MSCP Preserve)**	**Total Acreage of Acquisition**	**Land Cost**	**County Funds**	**Non County Funds**	**Funding Source**
2020										
Sycamore Goodan (Miera II)		10		10		10	$ 110,000	$ 110,000		County
Sycamore Goodan (Miera III)		30		30		30	$ 330,000	$ 330,000		County
Ramona Grasslands (Trussells)		5		5	20	25	$ 950,000	$ 950,000		County
Dictionary Hill (Ouidiani)		0		0	1	1	$ 40,000	$ 40,000		County
2021										
No SC MSCP acquisitions in 2021										
2022										
Ramona Grasslands (Metzler)		217		217	9		$640,000	$640,000		County
2023										
No SC MSCP acquisitions in 2023										
Total	**556**	**7,010**	**885**	**8,451**	**30**	**8,481**	**$ 85,024,608**	**$ 49,842,636**	**$ 35,181,972**	**--**

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APPENDIX A-2

DPR Outside Preserve Acquisitions Post 2016

DPR Outside Preserve Acquisitions Post 2016 **Non-PAMA, Non-Hardline Preserve (HP) Acres**

Acquisition Information						Vegetation		Core/Linkage		Habitat Evaluation Model	
Acquisition Name	**APNs**	**Total Acreage**	**Hardline Preserve Acres**	**PAMA Acres**	**Non-PAMA Acres**	**Vegetation Type**	**Acres**	**BCLA Type**	**Acres**	**Habitat Quality**	**Acres**
LAKESIDE LINKAGE PRESERVE - (CENTEX)	397-180-1300	74.94		70.21	4.73	Coastal Sage Scrub	0.00	HABITAT LINKAGES	3.89	Developed	3.52
										Moderate	0.41
										Very High	0.81
PEUTZ VALLEY PRESERVE	402-160-1800, 402-160-1900,	254.63	177.60	0.17	76.86	Chaparral	71.67			Developed	0.10
	402-160-2000, 402-261-0100					Coastal Sage Scrub	3.36			High	25.68
						Coastal Sage-Chaparral Scrub	0.50			Low	5.02
						Oak Riparian Forest	0.56			Moderate	15.04
						Urban/Developed	0.77			Very High	31.02
RAMONA GRASSLANDS PRESERVE - (CARROLL)	276-050-29	121.33		119.17	2.16	Chaparral	0.00	CORE RESOURCES AREA	2.16	Developed	2.09
						Coastal Sage Scrub	0.00			Very High	0.06
						Urban/Developed	2.16				
RAMONA GRASSLANDS PRESERVE - (TRUSSELL)	276-050-16	24.85		5.36	19.48	Chaparral	19.27	CORE RESOURCES AREA	19.48	Developed	0.20
										High	0.46
										Low	3.64
						Urban/Developed	0.21			Moderate	15.19
SKYLINE PRESERVE	599-042-06, 599-051-19,	261.60		122.01	139.59	Chaparral	133.62	HABITAT LINKAGES	0.01	High	0.56
	599-100-16					Coastal Sage Scrub	0.08			Low	124.42
						Oak Woodland	5.89			Moderate	14.61
				TOTAL	**242.82**						

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APPENDIX B

Wildlife Agency Tracked Acquisitions

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
10	FDIC (Rancho San Diego)	1167	1144	0	0	0%	$0	0	0	0%	$0	$0	$0	1996	None
10a	FDIC (Rancho San Diego)	475	468	0	0	0%	$0	0	0	0%	$0	$0	$0	1996	None
10b	FDIC (Rancho San Diego)	28	28	0	0	0%	$0	0	0	0%	$0	$0	$0	1996	None
10c	FDIC (Rancho San Diego)	129	129	0	0	0%	$0	0	0	0%	$0	$0	$0	1996	None
10d	FDIC (Rancho San Diego)	26	0	0	0	0%	$0	0	0	0%	$0	$0	$0	1996	None
240	National Fish and Wildlife Foundation (Smith "V parcel")	278	278	0	0	0%	$0	0	0	0%	$0	$0	$0	1997	None
101	Emerald Properties Corp (N. San Miguel)	500	499	217	216	43%	$1,300	283	283	57%	$1,700	$850	$3,000	1997	Prop 117 and LWCF
101a	Emerald Properties Corp (N. San Miguel)	1188	1176	0	0	0%	$0	0	0	0%	$0	$0	$0	1997	None

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
200	TPL (Las Montanas I)	276	112	0	0	0%	$0	276	112	100%	$1,800	$0	$1,800	1998	LWCF
222	Singing Hills (Duncan)	79	76	0	0	0%	$0	0	0	0%	$0	$0	$0	1998	None
137	Hamel (I)	45	2	0	0	0%	$0	45	2	100%	$211	$0	$211	1998	LWCF
237a	Mozaffarian	10	10	0	0	0%	$0	10	10	100%	$40	$0	$40	1998	LWCF
237b	Mozaffarian	5	5	0	0	0%	$0	0	0	0%	$0	$0	$0	1998	LWCF
92	Doenges, Robert S. & William S.	87	85	0	0	0%	$0	87	85	100%	$446	$0	$446	1998	LWCF
199	Liker	8	8	0	0	0%	$0	8	8	100%	$150	$0	$150	1998	LWCF
200a	TPL (Las Montanas II)	661	279	0	0	0%	$0	661	279	100%	$1,500	$0	$1,500	1998	LWCF
200b	TPL (McGinty Ranch I)	582	582	0	0	0%	$0	582	582	100%	$1,675	$0	$1,675	1999	LWCF
137a	Hamel (II)	79	0	0	0	0%	$0	79	0	100%	$319	$0	$319	1999	LWCF
1	Department of Treasury (Gomez)	88	26	0	0	0%	$0	0	0	0%	$0	$0	$0	1999	None
200c	TPL (McGinty Ranch II)	112	112	0	0	0%	$0	0	0	0%	$0	$0	$0	1999	None

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
89	Desert Pacific Council/Boy Scouts	83	0	0	0	0%	$0	83	0	100%	$393	$0	$393	1999	LWCF
23	Beitmann	5	5	0	0	0%	$0	5	5	100%	$28	$0	$28	1999	LWCF
86	DeGuzman	37	0	0	0	0%	$0	37	0	100%	$180	$0	$180	1999	LWCF
84	DeGuzman	34	0	0	0	0%	$0	34	0	100%	$153	$0	$153	1999	LWCF
85	DeGuzman	41	0	0	0	0%	$0	41	0	100%	$180	$0	$180	1999	LWCF
132	Grant, Kenneth Carlton	14	10	0	0	0%	$0	14	10	100%	$140	$0	$140	2000	LWCF
164	Immenschuh	641	640	0	0	0%	$0	641	640	100%	$1,760	$0	$1,760	2000	LWCF
288	Rice	253	0	0	0	0%	$0	253	0	100%	$1,140	$0	$1,140	2000	LWCF
288a	Rice	1	0	0	0	0%	$0	1	0	100%	$3	$0	$3	2000	LWCF
200f	TPL (Shinohara I)	85	78	0	0	0%	$0	85	78	100%	$2,700	$0	$2,700	2001	LWCF
288b	Rice	286	6	0	0	0%	$0	286	6	100%	$1,332	$0	$1,332	2001	LWCF
15	Clarke	38	38	0	0	0%	$0	38	38	100%	$170	$0	$170	2001	LWCF
200g	TPL (Shinohara II)	40	34	0	0	0%	$0	40	34	100%	$1,381	$0	$1,381	2002	LWCF
12	Sampo	69	18	0	0	0%	$0	69	18	100%	$280	$0	$280	2002	LWCF
14	Mills	19	19	0	0	0%	$0	19	19	100%	$115	$0	$115	2002	LWCF

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
200h	TPL (Shinohara III)	369	368	0	0	0%	$0	369	368	100%	$4,540	$0	$4,540	2004	LWCF
16	Baker Trust	19	0	0	0	0%	$0	19	0	100%	$100	$0	$100	2004	LWCF
16a	Baker Trust	1	1	0	0	0%	$0	1	1	100%	$5	$0	$5	2004	LWCF
13	Asistoisdmr Holdings	37	0	0	0	0%	$0	37	0	100%	$260	$0	$260	2004	LWCF
315	Chula Vista 186 LLC	185	0	0	0	0%	$0	185	0	100%	$1,302	$0	$1,302	2004	LWCF
180	King	5	0	0	0	0%	$0	5	0	100%	$175	$0	$175	2005	LWCF
295	Roberts	10	0	0	0	0%	$0	10	0	100%	$225	$0	$225	2005	LWCF
230	Mitchell	3	0	0	0	0%	$0	3	0	100%	$250	$0	$250	2005	LWCF
3a	County of San Diego	22	22	0	0	0%	$0	0	0	0%	$0	$0	$0	2005	None
296	Robinson	10	0	0	0	0%	$0	10	0	100%	$55	$0	$55	2005	LWCF
175	Kelly, etal	5	0	0	0	0%	$0	5	0	100%	$205	$0	$205	2006	LWCF
103h	TET	53	0	0	0	0%	$0	53	0	100%	$225	$0	$225	2006	LWCF
363	Brown	41	41	0	0	0%	$0	41	41	100%	$50	$0	$50	2007	LWCF
396	Wilhite	41	41	0	0	0%	$0	41	41	100%	$480	$0	$480	2007	LWCF
297	Catholic Diocese	27	0	0	0	0%	$0	27	0	100%	$150	$0	$150	2009	LWCF
103a	TET	338	338	0	0	0%	$0	0	0	0%	$0	$0	$0	2009	None

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
357	Jones	20	0	0	0	0%	$0	20	0	100%	$230	$0	$230	2010	LWCF
272	TET	261	260	0	0	0%	$0	0	0	0%	$0	$0	$0	2010	None
176	Kennerly	10	0	0	0	0%	$0	10	0	100%	$80	$0	$80	2011	LWCF
302	Salerno	10	0	0	0	0%	$0	10	0	100%	$80	$0	$80	2011	LWCF
251	Nauman	2	0	0	0	0%	$0	2	0	100%	$78	$0	$78	2011	LWCF
319	Sevel	1	0	0	0	0%	$0	1	0	100%	$33	$0	$33	2011	LWCF
104	Evans	2	1	0	0	0%	$0	2	1	100%	$87	$0	$87	2011	LWCF
411	Lauss	2	0	0	0	0%	$0	2	0	100%	$52	$0	$52	2011	LWCF
266	Peppard	10	0	0	0	0%	$0	0	0	0%	$0	$0	$250	2012	Other
71	The Nature Conservancy	1858	1309	0	0	0%	$0	0	0	0%	$0	$0	$0	2012	None
127	Cuevas	10	0	0	0	0%	$0	10	0	100%	$235	$0	$235	2012	LWCF
102b	Trimark	167	167	0	0	0%	$0	0	0	0%	$0	$0	$0	2013	None
149	Heuschele	6	0	0	0	0%	$0	6	0	100%	$35	$0	$35	2013	LWCF
194	Lee	6	0	0	0	0%	$0	0	0	0%	$0	$0	$0	2013	None
388a	Bella Lago	10	10	0	0	0%	$0	0	0	100%	$0	$0	$0	2014	None
326	Bols	41	9	0	0	0%	$0	0	0	0%	$0	$0	$220	2014	Other
238	Spring Valley Ranch	43	0	0	0	0%	$0	43	0	100%	$435	$0	$435	2015	LWCF
503	Pio Pico	82	0	0	0	0%	$0	0	0	0%	$0	$0	$0	2016	None

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	Property Name	Total Acres	Total Acres in MSCP MHPA	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP MHPA	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
98	Beaver Hollow	120	0	0	0	0%	$0	120	0	100%	$975	$0	$975	2016	LWCF
367	Trachtenberg	4	0	0	0	0%	$0	4	0	100%	$70	$0	$70	2016	LWCF
290	Riedman	41	0	0	0	0%	$0	41	0	100%	$285	$0	$285	2016	LWCF
312	TNC Schooler	4	4	0	0	0%	$0	4	4	100%	$45	$0	$45	2016	LWCF
2a	CALTRANS (River Splinter)	21	20	0	0	0%	$0	0	0	0%	$0	$185	$0	2017	None
2	CALTRANS (Go-Cart)	2	1	0	0	0%	$0	0	0	0%	$0	$375	$0	2017	None
327	Sickles	10	1	0	0	0%	$0	10	1	100%	$235	$0	$235	2017	LWCF
114	North	1	0	0	0	0%	$0	1.00	0	100%	$7	$0	$7	2017	LWCF
2e	CALTRANS (Millar Ranch Rd)	19	0	0	0	0%	$0	0	0	0%	$0	$190	$0	2018	None
192	Alshadhir	19	8	0	0	0%	$0	19	8	100%	$188	$0	$188	2018	LWCF
55	Chow	22	3	0	0	0%	$0	22	3	100%	$155	$0	$155	2018	LWCF
2b	CALTRANS (Bonita Meadows)	107	6	0	0	0%	$0	0	0	0%	$0	$1,140	$0	2018	None
2c	CALTRANS (Bonita Meadows)	127	119	0	0	0%	$0	0	0	0%	$0	$1,140	$0	2018	None

TABLE B-1. WILDLIFE AGENCY TRACKED ACQUISITIONS– U.S. FISH AND WILDLIFE SERVICE

USFWS Acquisitions[a]				State of California Funded				Federal Government Funded							
Track No	**Property Name**	**Total Acres**	**Total Acres in MSCP MHPA**	**Prorated Acres Purchased**	**Prorated Acres in MSCP MHPA**	**% Contribution**	**Cost (000s)**	**Prorated Acres Purchased**	**Prorated Acres in MSCP MHPA**	**% Contribution**	**Cost (000s)**	**Total Donated Value (000s)**	**Total Property Cost (000s)**	**Year**	**Funding Source**
2d	**CALTRANS (94/54 Corridor)**	52	1	0	0	0%	$0	0	0	0%	$0	$510	$0	2018	None
505, 505a	**Journey Partners**	58	47	0	0	0%	$0	55	44	100%	$1,730	$0	$1,730	2019	LWCF
249	**Offutt**	1	0	0	0	0%	$0	1	1	100%	$10	$0	$10	2019	TSDF
Otay-Sweet-water	**TNC Lyons Valley Partners**	121	72	0	0	0%	$0	121	72	100%	650	$0	$650	2020	LWCF
51	**Castro**	6	6	0	0	0%	$0	6	6	100%	$115	$0	$115	2023	LWCF
95	**Dy**	11	11	0	0	0%	$0	11	11	100%	$336	$0	$336	2023	LWCF
231	**Mohlay**	10	10	0	0	0%	$0	10	10	100%	$284	$0	$284	2023	LWCF
	Total	**11,931**	**8,743**	**217**	**216**	**--**	**$1,300**	**5,015**	**2,822**	**--**	**$32,246**	**$4,390**	**$34,016**	**--**	**--**

[a] All acquisitions are part of the San Diego National Wildlife Refuge. USFWS is the land manager and fee title owner of all acquisitions in table.

TABLE B-2. WILDLIFE AGENCY TRACKED ACQUISITIONS – BUREAU OF LAND MANAGEMENT

CaseNum	Property Name	Total Acres	Agency's Prorated Acres Purchased	Acres in MHPA only	Prorated acres in MHPA only	Acres in MHPA Amendment Area	Prorated acres in MHPA Amendment Area	Acres in MSCP MHPA (both)	Prorated Acres in MSCP MHPA (both)	Agency % Contribution	Agency's Cost (000s)	Total Cost of Property (000s)	Fund Authority	Year Acquired
CACA037104	**Helix/Lambron**	381	381	381	381	0	0	381	381	100%	$1,090.0	$1,090.0	LWCF	1997
CACA039258	**TPL (Sycamore Canyon)**	354	354	167	167	23	23	190	190	100%	$750.0	$750.0	LWCF	1998
CACA040203	**Anderson**	126	126	1	1	0	0	1	1	100%	$250.0	$250.0	LWCF	2000
CACA040237	**TPL (Rancho Jamul)**	1,093	1093	253	253	7	7	260	260	100%	$2,000.0	$2,000.0	LWCF	1999
CACA040314	**TET (Marron Valley)**	332	332	332	332	0	0	332	332	100%	$1,021.0	$1,021.0	LWCF	1999
CACA041430	**Anderson/Hendron**	31	31	0	0	0	0	0	0	100%	$60.0	$60.0	LWCF	2000
CACA041516	**TET**	33	33	33	33	0	0	33	33	100%	$80.0	$80.0	LWCF	2000
CACA042687	**TPL (Clark Ranch)**	947	947	4	4	0	0	4	4	100%	$3,867.0	$3,867.0	LWCF	2001
CACA043168	**Fetters**	162	162	0	0	162	162	162	162	100%	$325.1	$325.1	LWCF	2002
CACA044234	**Cain**	461	461	23	23	437	437	461	461	100%	$1,320.0	$1,320.0	LWCF	2002
CACA045193	**Brailsford/Keller**	42	42	1	1	0	0	1	1	100%	$140.0	$140.0	LWCF	2004
CACA045308	**Klein**	118	118	1	1	0	0	1	1	100%	$470.0	$470.0	LWCF	2004
CACA046156	**TPL**	359	359	4	4	0	0	4	4	100%	$1,436.0	$1,436.0	LWCF	2004
CACA050366	**TET (O'Neal Cnyn) Donation**	167	0	0	0	167	0	167	0	0.00%	$0.0	$0.0	None	2009
		4,606	**4,439**	**1,200**	**1,200**	**796**	**629**	**1,997**	**1,830**		**$12,809.1**	**$12,809.1**		

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
Boden Canyon Ecological Reserve															
821737	Boden Canyon (Phase I)	572	506	524	463	92%	$2,172	0	0	0%	$0	$442	$2,372	1998	Prop 117
821826	Boden Canyon (Expansion #1)	604	548	558	506	92%	$2,180	0	0	0%	$0	$430	$2,360	1999	Prop 117
821858	Boden Canyon (Expansion #2)	67	64	67	64	100%	$210	0	0	0%	$0	$105	$210	1999	Prop 117
Canada de San Vicente															
822300	Monte Vista Ranch (Iron Mountain, Expansion #3)	392	390	0	0	0%	$0	0	0	0%	$0	$0	$0	2008	Mitigation
822399	Monte Vista Ranch	4,026	1,558	2,453	949	61%	$9,700	1,573	609	39%	$6,221	$0	$15,921	2009	Prop 12 and Section 6
822506	Monte Vista Ranch (Iron Mountain, Expansion #4)	314	11	0	0	0%	$0	314	11	100 %	$2,100	$300	$2,100	2010	Section 6
822883	Bonfils	266	9	93	3	35%	$158	173	6	65%	$293	$0	$450	2014	Prop 117 and Section 6

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
Crestridge Ecological Reserve															
821774	Crestridge	2,372	1,958	857	707	36%	$3,506	0	0	0%	$0	$1,889	$3,506	1999	Prop 117
821964	Crestridge Expansion #1	256	256	0	0	0%	$0	0	0	0%	$0	$0	$2,258	2002	Mitigation
822003	Rancho Montana Unit Pilgrim Mitigation Bank (CALTRANS)	125	125	0	0	0%	$0	0	0	0%	$0	$0	$0	2002	N/A
Hollenbeck Canyon Wildlife Area															
821913	Hollenbeck Canyon (Expansion #1 - Original CDFG Segment)	3241	945	3,170	925	98%	$10,997	0	0	0%	$0	$0	$11,240	2001	General Fund & Prop12
822132	Hollenbeck Canyon (Expansion #2 - Honey Springs Ranch)	2012	82	2,012	82	100%	$7,420	0	0	0%	$0	$0	$7,420	2004	Prop 12
822257	Hollenbeck Canyon (Expansion #3)	304	0	50	0	17%	$205	254	0	83%	$1,031	$0	$1,235	2006	Prop 12 and Section 6
822632	Hollenbeck Canyon Wildlife Area, Expansion #4	577	34	178	10	31%	$693	393	23	68%	$1,532	$87	$2,250	2011	Prop 40 and Section 6

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
822907	Hollenbeck Canyon Wildlife Area, Expansion #5	381	79	88	18	23%	$361	0	0	0%	$0	$0	$1,564	2015	Prop 117
822908	Hollenbeck Canyon Wildlife Area, Expansion #6	187	166	66	58	35%	$253	121	108	65%	$467	$0	$720	2016	Prop 117
12-2016 rptd "pending"; 12-2017 rptd 822915	Hollenbeck Canyon Wildlife Area, Expansion #7 HabiTrak 17-123	27	0	10	0	35%	$84	18	0	65%	$156	$0	$240	2016	Prop 117
HabiTrak 17-124; Hist# 822923	Hollenbeck Canyon Wildlife Area APNs 59710009, 59710011, 59710012 11/7/2016	113													
Lake Hodges Ecological Reserve															
821996	Pilgrim Mitigation Parcels (CALTRANS)	19	19	0	0	0%	$0	0	0	0%	$0	$0	$0	2002	N/A

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
McGinty Mountain Ecological Reserve															
821486	McGinty Mountain Expansion #2 - Willow Glen	200	200	110	110	55%	$357	0	0	0%	$0	$583	$647	1996	Prop 70
HabiTrak 20-012	McGinty Mountain APN 51909104	86	86											2020	
Otay Mountain Ecological Reserve															
821509	Otay Mt North	211	211	211	211	100%	$2,880	0	0	0%	$0	$0	$2,880	1996	Prop 117 and Prop 70
822061	Otay Village 15	1,037	1,037	392	392	38%	$7,376	436	436	42%	$8,200	$0	$19,500	2004	Prop 12 and Section 6
Rancho Jamul Ecological Reserve															
821560	Rancho Jamul (Phase 1)	2,268	1,532	627	423	28%	$1,050	1,641	1,108	72%	$2,750	$0	$3,800	1997	Prop 117 and Section 6
821809	Rancho Jamul (Expansion #1)	1,398	986	466	329	33%	$800	932	657	67%	$1,600	$800	$2,400	1998	Natural Resources Infrastructure Fund and

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
															Prop 117
821962	Rancho Jamul ER (Expansion #2 - HQ)	40	4	40	4	100%	$2,000	0	0	0%	$0	$0	$2,000	2001	Prop 12
822037	Rancho Jamul Proctor Valley Unit (Villages 14 and 16)[b]	1,463	811	421	233	29%	$6,475	1,042	577	71%	$16,025	$0	$22,500	2003	Prop 12 and Section 6
	Expansion 4	3	1	0	0	0%	$0	0	0	0%	$0	$0	$0	2018	Mitigation
822074	Rancho Jamul Expansion #3 (CalMat Quarry)	551	551	551	551	100%	$6,450	0	0	$0	$0	$0	$6,450	2004	Prop 12
San Vicente Highlands															
821881	Iron Mountain Wildlife Area - Boys & Girls Club	240	240	0	0	0%	$0	0	0	$0	$0	$803	$0	2000	N/A
		1,181	1,181	1,181	1,181	100%	$3,800	0	0	$0	$0	$0	$3,800	2000	Prop 12
	Briles	7	7	7	7	100%	$115	0	0	$0	$0	$0	$115	2018	Prop 117
822584	Environmental Trust Bankruptcy (San Vicente)	0	0	0	0	0%	$0	0	0	$0	$0	$2,160	$0	2009	Mitigation

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	Parcel Name	Total Acres	Total Acres in MSCP	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Prorated Acres Purchased	Prorated Acres in MSCP	% Contribution	Cost (000s)	Total Donated Value (000s)	Total Property Cost (000s)	Year	Funding Source
Sycuan Peak Ecological Reserve															
821488	Sycuan Peak (Expansion #1)	122	122	122	122	100%	$413	0	0	$0	$0	$0	$413	1996	EEMP
821554	Sycuan Peak (Expansion #2)	297	297	78	78	26%	$250	0	0	$0	$0	$0	$950	1997	Prop 117, ISTEA, EEMP
821740	Sycuan Peak (Expansion #3)	253	252	253	252	100%	$700	0	0	$0	$0	$123	$700	1998	Prop 70 and Prop 117
822292	Sycuan Peak (Expansion #4)	601	177	150	44	25%	$367	451	132	75%	$1,100	$0	$1,467	2006	Prop 12 and Section 6
822900	Sycuan Peak (Expansion #5)	76	69	27	24	35%	$53	49	45	65%	$97	$0	$150	2015	Prop 117
822909	Sycuan Peak (Expansion #6)	2	2	1	1	35%	$11	1	1	65%	$19	$0	$30	2016	Prop 117
822914	Sycuan Peak (Expansion #7) HabiTrak 17-121	10	0	4	0	35%	$11	7	0	65%	$21	$0	$32	2016	Prop 117

TABLE B-3. WILDLIFE AGENCY TRACKED ACQUISITIONS– CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

CDFW Acquisitions in County Subarea Since 1998[a]				State of California Funded				Federal Government Funded							
Parcel History #	**Parcel Name**	**Total Acres**	**Total Acres in MSCP**	**Prorated Acres Purchased**	**Prorated Acres in MSCP**	**% Contribution**	**Cost (000s)**	**Prorated Acres Purchased**	**Prorated Acres in MSCP**	**% Contribution**	**Cost (000s)**	**Total Donated Value (000s)**	**Total Property Cost (000s)**	**Year**	**Funding Source**
17-122; Hist# 822920	Sycuan Peak Ecological Reserve APN 52109008 10/25/2016	40													
HabiTrak 20-013	Sycuan Peak Ecological Reserve APNs 52101005, 52108004	172	42											2020	
		26,115	**14,558**	**14,766**	**7,750**		**$71,044**	**7,406**	**3,714**		**$41,613**	**$7,723**	**$121,680**		

NOTES:
[a] All acquisitions are owned in fee title and managed by California Department of Fish and Wildlife unless otherwise noted.
[b] U.S. Fish and Wildlife Service is the land manager

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APPENDIX C

Summary of MSCP Gains

Summary of Project Gains

MSCP South San Diego County

From 1/1/2023 To 12/31/2023

County of San Diego

Project Tracking #	Project Name	Location	Applicant	APN	Date Cons.	Status	Mgmt Resp.	Conservation Type	Mit. Bank Credits Used	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-089	Golem 99-003		San Dieguito River Park	678-021-0200	12/31/2023	Gain	Private	Easement	0.00	0.00	8.01	8.01
23-090	Greenhills Ranch 05-004		Dudek Environmental/Habitat Restoration Sciences	395-452-0100	12/31/2023	Gain	Private	Easement	0.00	0.80	5.00	5.81
23-096	OS_ESMT 67806041		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.70	3.71	4.41
23-101	OS_ESMT 9022308	PARCELID 10006857	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.19	0.00	0.19
23-100	OS_ESMT 9022308	PARCELID 10006847	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.17	0.00	0.17
23-106	OS_ESMT 9022309	PARCELID 10006885	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.14	0.00	0.14
23-108	OS_ESMT 9022309	PARCELID 10006901	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.19	0.00	0.19
23-103	OS_ESMT 9022309	PARCELID 10006856	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.14	0.00	0.14
23-107	OS_ESMT 9022309	PARCELID 10006889	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.15	0.00	0.15
23-105	OS_ESMT 9022309	PARCELID 10006882	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.14	0.00	0.14
23-104	OS_ESMT 9022309	PARCELID 10006855	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.14	0.00	0.14
23-097	OS_ESMT 9022309	Parcel ID 10006903	Unknown		12/31/2023	Gain	Unknown	Easement	0.00	0.23	0.00	0.23
23-098	OS_ESMT 9022524		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.04	2.83	2.86
23-091	OS_ESMT 9022526		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.54	0.00	0.54
23-095	OS_ESMT 9022527		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.00	0.12	0.12
23-102	OS_ESMT 9022528		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.01	0.23	0.23
23-092	OS_ESMT 9022530		Pinnacle at Santa Fe Valley LLC	678-020-2500	12/31/2023	Gain	Private	Easement	0.00	0.00	0.34	0.34
23-093	OS_ESMT 9022530		Pinnacle at Santa Fe Valley LLC	678-060-4100	12/31/2023	Gain	Private	Easement	0.00	0.41	3.94	4.35
23-099	OS_ESMT 9022531		Pinnacle at Santa Fe Valley LLC	678-020-2500	12/31/2023	Gain	Private	Easement	0.00	0.70	0.09	0.79

County of San Diego

Project Tracking #	Project Name	Location	Applicant	APN	Date Cons.	Status	Mgmt Resp.	Conservation Type	Mit. Bank Credits Used	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-094	OS_ESMT 9022533		Pinnacle at Santa Fe Valley LLC	678-020-2500	12/31/2023	Gain	Private	Easement	0.00	0.71	0.54	1.25
23-081	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-101-0300	12/31/2023	Gain	Private	Easement	0.00	4.49	26.24	30.73
23-086	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-102-0100	12/31/2023	Gain	Private	Easement	0.00	0.54	107.10	107.64
23-085	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-072-0300	12/31/2023	Gain	Private	Easement	0.00	0.00	1.09	1.09
23-087	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-071-1700	12/31/2023	Gain	Private	Easement	0.00	0.00	33.39	33.39
23-080	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-020-1200	12/31/2023	Gain	Private	Easement	0.00	0.08	67.15	67.23
23-083	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-101-0100	12/31/2023	Gain	Private	Easement	0.00	16.34	14.64	30.98
23-082	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-101-0200	12/31/2023	Gain	Private	Easement	0.00	4.16	53.68	57.85
23-084	RMP High Meadows Ranch 12-003		HELIX Environmental Planning, Inc.	389-102-0200	12/31/2023	Gain	Private	Easement	0.00	0.00	20.89	20.89
23-088	Sloane Canyon 12-002		San Diego Open Space Management	521-080-1100	12/31/2023	Gain	Private	Easement	0.00	0.00	35.86	35.86
23-079	UPDATE		United States of America	598-010-1100	12/31/2023	Gain	Federal	Acquisition	0.00	0.00	9.92	9.92
23-077	UPDATE		United States of America	585-140-0800	12/31/2023	Gain	Federal	Acquisition	0.00	0.00	10.58	10.58
23-078	UPDATE		United States of America	585-080-0800	12/31/2023	Gain	Federal	Acquisition	0.00	0.00	5.67	5.67
Total for Agency: County of San Diego									**0.00**	**30.98**	**411.02**	**442.00**

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APPENDIX D

Summary of MSCP Losses

Summary of Project Losses

MSCP South San Diego County

From 1/1/2023 To 12/31/2023

County of San Diego

Project Tracking #	Project Name	Location	Applicant	APN	Date of Loss	Status	CEQA Doc.	Activity Type	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-007	BP 11902 Camp Rd Spring Valley LLC		11902 Camp Rd Spring Valley LLC	506-020-0200	12/31/2023	Loss	0	Industrial	0.02	0.00	0.02
23-045	BP Alpert		Sarah A Alpert	396-030-0900	12/31/2023	Loss	0	Single-Family Residential	0.99	0.00	0.99
23-001	BP Alpine Ranch LLC		Alpine Ranch LLC	404-132-0600	10/4/2023	Loss	0	Single-Family Residential	2.06	0.00	2.06
23-049	BP Arab		Zenna A Arab	515-021-0200	12/31/2023	Loss	0	Single-Family Residential	0.11	0.00	0.11
23-056	BP Avila		Enrique Avila	484-292-1100	12/31/2023	Loss	0	Single-Family Residential	0.32	0.00	0.32
23-030	BP Baldonado		David P and Karen Baldonado	650-070-2300	12/31/2023	Loss	0	Single-Family Residential	0.03	0.00	0.03
23-055	BP Batra Shah		BATRA SHAH FAMILY TRUST 05-24-13	305-091-1300	12/31/2023	Loss	0	Single-Family Residential	0.64	0.00	0.64
23-017	BP Bongiovanni		Bongiovanni Living Trust 09-18-01	399-131-1300	12/31/2023	Loss	0	Single-Family Residential	0.74	0.00	0.74
23-022	BP Carty		Keith M and Candace W Carty	600-110-2800	12/31/2023	Loss	0	Single-Family Residential	0.64	0.00	0.64
23-036	BP Corona		Miguel and Gloria Corona	327-010-6200	12/31/2023	Loss	0	Single-Family Residential	1.10	0.00	1.10
23-042	BP County of San Diego		County of San Diego	391-050-0500	12/31/2023	Loss	0	Active Parks	0.00	1.39	1.39
23-035	BP Dabish		Durance and Shouna Rita Dabish	498-153-4900	12/31/2023	Loss	0	Single-Family Residential	0.46	0.00	0.46
23-052	BP Dawood		DAWOOD EMAD&JANAN 2023 LIVING TRUST 05-13-23	515-022-3700	12/31/2023	Loss	0	Single-Family Residential	0.06	0.00	0.06
23-026	BP Del Mar Real Estate		Del Mar Real Estate Investment LLC	305-071-3300	12/31/2023	Loss	0	Single-Family Residential	0.31	0.00	0.31
23-015	BP Drake		DRAKE JAN S&LINDA K SURVIVORS TRUST 06-01-83	396-220-1500	12/31/2023	Loss	0	Single-Family Residential	0.00	0.13	0.13
23-029	BP Essak		Salam and Halah T Essak	501-100-5800	12/31/2023	Loss	0	Single-Family Residential	0.03	0.00	0.03
23-044	BP Feilen		Kevin J and Autumn R Feilen	329-160-2100	12/31/2023	Loss	0	Single-Family Residential	0.55	0.00	0.55
23-004	BP German		Jeff & Tanya C German	395-160-0200	12/31/2023	Loss	0	Single-Family Residential	0.00	0.48	0.48

Project Tracking #	Project Name	Location	Applicant	APN	Date of Loss	Status	CEQA Doc.	Activity Type	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-002	BP Ghazal		Ghazal	597-280-4900	12/31/2023	Loss	0	Single-Family Residential	0.58	0.00	0.58
23-005	BP Gonzalez		Gonzalez	404-144-1000	12/31/2023	Loss	0	Single-Family Residential	0.01	0.00	0.01
23-013	BP Goycoochea		Albert and Karlene Goycoochea	519-141-0200	12/31/2023	Loss	0	Single-Family Residential	0.00	0.29	0.29
23-041	BP High Meadow Ranch		High Meadow Ranch LP	389-082-2600	12/31/2023	Loss	0	Single-Family Residential	0.00	0.46	0.46
23-019	BP High Meadow Ranch		High Meadow Ranch LP	389-062-0600	12/31/2023	Loss	0	Single-Family Residential	1.04	0.00	1.04
23-006	BP High Meadow Ranch		High Meadow Ranch	389-062-1100	12/31/2023	Loss	0	Single-Family Residential	0.76	0.00	0.76
23-025	BP High Meadow Ranch		High Meadow Ranch LP	389-062-1700	12/31/2023	Loss	0	Single-Family Residential	0.46	0.00	0.46
23-021	BP High Meadow Ranch		High Meadow Ranch LP	389-091-0100	12/31/2023	Loss	0	Commercial	0.50	0.00	0.50
23-016	BP High Meadow Ranch		High Meadow Ranch LP	389-092-0700	12/31/2023	Loss	0	Single-Family Residential	0.00	0.80	0.80
23-046	BP Hoffman		HOFFMAN DANIEL&KRISTIN FAMILY TRUST 06-22-00	599-100-4000	12/31/2023	Loss	0	Single-Family Residential	1.75	0.00	1.75
23-018	BP Jackson		Erica L Jackson	396-011-2800	12/31/2023	Loss	0	Single-Family Residential	0.14	0.00	0.14
23-054	BP Jaramillo		Jose E Jaramillo	649-160-0500	12/31/2023	Loss	0	Single-Family Residential	1.17	0.00	1.17
23-014	BP Kory		Eden Kory	599-051-1000	12/31/2023	Loss	0	Single-Family Residential	0.00	1.02	1.02
23-028	BP Larson		Erik J & Iliana M Larson	592-060-1700	12/31/2023	Loss	0	Single-Family Residential	0.08	0.00	0.08
23-043	BP Lazar		Lazar Family Trust 11-18-14	520-320-0300	12/31/2023	Loss	0	Single-Family Residential	0.22	0.00	0.22
23-024	BP Mahogany		Mahogany Property Owner LLC	648-130-0200	12/31/2023	Loss	0	Industrial	2.76	0.00	2.76
23-031	BP Mahogany Property Owner		Mahogany Property Owner LLC	648-130-0300	12/31/2023	Loss	0	Industrial	3.27	0.00	3.27
23-020	BP Mahogany Property Owner LLC		MAHOGANY PROPERTY OWNER LLC	648-130-1000	12/31/2023	Loss	0	Industrial	1.49	0.00	1.49
23-010	BP Mikha Builders		Mikha Builders LLC	508-031-3100	12/31/2023	Loss	0	Single-Family Residential	0.09	0.00	0.09
23-027	BP Osuna Valley Stock Farm		Osuna Valley Stock Farm LLC	268-180-5200	12/31/2023	Loss	0	Agriculture	1.74	0.00	1.74
23-038	BP Palmera Gardens		Palmera Gardens LLC	649-050-0500	12/31/2023	Loss	0	Single-Family Residential	0.62	0.00	0.62

Project Tracking #	Project Name	Location	Applicant	APN	Date of Loss	Status	CEQA Doc.	Activity Type	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-037	BP Parsons		PARSONS TYRONE C&CASSANDRA B	240-230-2900	12/31/2023	Loss	0	Single-Family Residential	0.93	0.00	0.93
23-047	BP Rasor		Victor and Sarah M Rasor	283-044-2100	12/31/2023	Loss	0	Single-Family Residential	0.90	0.00	0.90
23-032	BP Richardson		David B Richardson Trust 05-31-06	509-010-3800	12/31/2023	Loss	0	Single-Family Residential	0.00	0.22	0.23
23-050	BP Rivera		RIVERA 2023 TRUST 08-21-23	520-171-0200	12/31/2023	Loss	0	Single-Family Residential	0.95	0.00	0.95
23-011	BP Ruelas		Humberto Jr and Margarita D Ruelas	514-240-1900	12/31/2023	Loss	0	Single-Family Residential	0.81	0.00	0.81
23-009	BP San Pasqual Valley Estates		San Pasqual Valley Estates LLC	276-170-0400	12/31/2023	Loss	0	Single-Family Residential	0.00	1.06	1.06
23-003	BP Sanchez		Sanchez	520-152-0500	12/31/2023	Loss	0	Rural Residential	0.78	0.00	0.78
23-034	BP SCI California Funeral Services		SCI CALIFORNIA FUNERAL SERVICES INC	592-040-1000	12/31/2023	Loss	0	Commercial	0.00	8.37	8.37
23-058	BP Sellers		Ian and Priscilla Sellers	399-131-0200	12/31/2023	Loss	0	Single-Family Residential	0.44	0.00	0.44
23-040	BP Shultz		SHULTZ JOHN W REVOCABLE TRUST 07-03-17	324-070-1500	12/31/2023	Loss	0	Single-Family Residential	0.00	1.10	1.10
23-053	BP Smith		Nathan Daniel Smith	599-051-2200	12/31/2023	Loss	0	Single-Family Residential	1.16	0.00	1.16
23-008	BP Snider		Snider Family Trust 02-13-96	324-070-3300	12/31/2023	Loss	0	Single-Family Residential	0.00	0.24	0.24
23-012	BP Suarez		Laura E Suarez	504-142-0000	12/31/2023	Loss	0	Single-Family Residential	0.18	0.00	0.18
23-048	BP Toidi Inc		Toidi Inc	585-116-0500	12/31/2023	Loss	0	Single-Family Residential	0.66	0.00	0.66
23-051	BP UPDATE		UPDATE	589-120-0700	12/31/2023	Loss	0	Single-Family Residential	0.19	0.00	0.19
23-039	BP UPDATE		UPDATE	648-130-1000	12/31/2023	Loss	0	Industrial	0.29	0.00	0.29
23-033	BP Vongsotsavanh		VONGSOTSAVANH ART&SIDA	521-010-1000	12/31/2023	Loss	0	Single-Family Residential	1.23	0.00	1.23
23-023	BP Williams		Ronald D II and Nicole A Williamsl	597-221-3800	12/31/2023	Loss	0	Single-Family Residential	0.00	0.08	0.08
23-068	COI Bongiovanni		BONGIOVANNI LIVING TRUST 09-18-01	399-130-4900	12/31/2023	Loss	0	Single-Family Residential	0.26	0.00	0.26
23-062	COI Butler		Butler Maria E Living Trust 02-16-16	329-132-1900	12/31/2023	Loss	0	Single-Family Residential	3.94	0.01	3.95
23-066	COI Davison		Justin Davison	399-020-6700	12/31/2023	Loss	0	Single-Family Residential	4.33	0.00	4.33
23-067	COI Esho		Milad F Esho	396-250-2700	12/31/2023	Loss	0	Single-Family Residential	1.67	0.00	1.67

Project Tracking #	Project Name	Location	Applicant	APN	Date of Loss	Status	CEQA Doc.	Activity Type	Acres Outside Habitat Preserve	Acres Inside Habitat Preserve	Total Acres
23-063	COI Fairbanks		FAIRBANKS LOT 597 LLC	269-201-2700	12/31/2023	Loss	0	Single-Family Residential	0.55	0.00	0.55
23-064	COI Fairbanks		FAIRBANKS LOT 598 LLC	269-201-2600	12/31/2023	Loss	0	Single-Family Residential	0.11	0.00	0.11
23-065	COI Jennings		JENNINGS RAYMOND S&MEAGAN G	520-100-3400	12/31/2023	Loss	0	Single-Family Residential	4.90	0.00	4.90
23-059	COI Randall		Barnard Randall G	519-200-5500	12/31/2023	Loss	0	Single-Family Residential	2.22	0.00	2.22
23-060	COI Robertson		Robertson Family Trust 10-30-17	404-521-0200	12/31/2023	Loss	0	Single-Family Residential	3.48	0.00	3.48
23-061	COI San		Nicolas P and Shayna San	276-160-0700	12/31/2023	Loss	0	Single-Family Residential	0.05	1.95	2.00
23-057	Sotto Properties		Sotto Properties LLC	265-492-5100	12/31/2023	Loss	0	Single-Family Residential	0.01	0.59	0.60
23-071	TM 21263 Parcel Map 22005		UPDATE		12/31/2023	Loss	0	Single-Family Residential	3.14	0.00	3.14
23-072	TM 21304 Parcel Map 22049		UPDATE		12/31/2023	Loss	0	Single-Family Residential	0.04	0.00	0.04
23-073	TM 5081 Subdivision Map 16587		UPDATE		12/31/2023	Loss	0	Single-Family Residential	52.29	14.19	66.48
23-074	TM 5203 Subdivision Map 16556		UPDATE		12/31/2023	Loss	0	Single-Family Residential	32.62	0.00	32.62
23-075	TM 5421 Subdivision Map 16597		UPDATE		12/31/2023	Loss	0	Single-Family Residential	53.15	0.00	53.15
23-076	TM 5505 Subdivision Map 16562		UPDATE		12/31/2023	Loss	0	Single-Family Residential	121.11	0.00	121.11
23-069	TM 5522 Subdivision 16542		UPDATE	403-420-0800 403-420-0900 403-420-1000 403-420-1100 403-420-1200 403-420-1300 403-420-1400 403-420-1500 403-420-1600 403-420-1700 403-420-1800 403-420-1900 403-420-2000 403-420-2100 403-420-2200 403-420-2300 403-420-2400	12/31/2023	Loss	0	Single-Family Residential	3.01	0.00	3.01
23-070	TM 5566 Subdivision Map 16570		UPDATE		12/31/2023	Loss	0	Single-Family Residential	79.59	0.00	79.59

Total for Agency: County of San Diego	**399.74**	**32.39**	**432.13**

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APPENDIX E

Summary of Habitat Losses and Gains

Summary of Habitat Losses and Gains

Plan: MSCP South San Diego County

Date Range: 1/1/2023 - 12/31/2023

Project Gain Status: Gain

Project Loss Status: Loss

County of San Diego

		Acres Inside the Habitat Preserve Planning Area					Acres Outside the Habitat Preserve				Total Acres			
		Habitat Loss		Habitat Gain			Habitat Loss		Habitat Gain		Habitat Loss		Habitat Gain	
Habitat Type	**Target Cons.**	**Current Period**	**Cummulative**	**Current Period**	**Cummulative**	**Cons. to Date %**	**Current Period**	**Cummulative**	**Current Period**	**Cummulative**	**Current Period**	**Cummulative**	**Current Period**	**Cummulative**
Beach	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saltpan	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Southern Foredunes	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Southern Coastal Bluff Scrub	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coastal Sage Scrub	42,873	23.18	782.03	259.76	30,571.30	71.31 %	73.87	1,494.57	1.31	8,129.74	97.05	2,276.60	261.08	38,701.04
Maritime Succulent Scrub	6	0.00	0.00	0.00	3.89	64.77 %	0.00	0.00	0.00	8.23	0.00	0.00	0.00	12.12
Chaparral	39,871	6.14	321.81	124.89	34,601.35	86.78 %	42.44	3,022.24	2.70	10,140.74	48.57	3,344.05	127.60	44,742.09
Southern Maritime Chaparral	5	0.00	1.95	0.00	5.82	116.31 %	0.00	11.36	0.00	22.66	0.00	13.31	0.00	28.47
Coastal Sage-Chaparral Scrub	1,325	0.00	12.40	0.00	1,008.94	76.15 %	4.38	143.19	0.00	1,115.49	4.38	155.59	0.00	2,124.43
Grassland	3,171	0.00	69.49	0.72	1,956.85	61.71 %	62.16	1,331.27	0.00	963.75	62.16	1,400.76	0.72	2,920.60
Southern Coastal Salt Marsh	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Freshwater Marsh	233	0.19	0.29	0.00	152.71	65.54 %	0.01	4.56	0.00	62.52	0.19	4.84	0.00	215.22
Riparian Forest	348	0.00	0.45	0.00	311.73	89.58 %	0.00	2.88	0.00	76.32	0.00	3.33	0.00	388.05
Oak Riparian Forest	2,192	0.95	33.99	5.89	1,018.85	46.48 %	0.99	51.28	0.00	476.56	1.94	85.27	5.89	1,495.40
Riparian Woodland	20	0.00	0.00	0.00	10.88	54.39 %	0.00	0.00	0.00	6.45	0.00	0.00	0.00	17.33
Riparian Scrub	383	0.00	7.57	0.00	122.96	32.10 %	0.00	17.06	0.00	78.49	0.00	24.64	0.00	201.45
Oak Woodland	2,211	0.58	51.56	19.51	1,165.00	52.69 %	0.94	172.77	15.80	543.17	1.52	224.32	35.31	1,708.17
Torrey Pine Forest	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tecate Cypress Forest	5,589	0.00	0.00	0.00	5,605.24	100.29 %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5,605.24
Eucalyptus Woodland	105	0.03	9.06	0.14	46.01	43.82 %	0.04	415.58	0.00	68.19	0.07	424.64	0.14	114.20
Open Water	149	0.00	0.50	0.00	38.93	26.13 %	0.17	6.41	0.00	38.30	0.17	6.91	0.00	77.23
Disturbed Wetland	90	0.00	1.99	0.00	78.99	87.77 %	0.00	16.25	0.00	26.00	0.00	18.24	0.00	104.99
Natural Floodchannel	225	0.00	0.45	0.00	34.07	15.14 %	0.00	0.00	0.00	4.83	0.00	0.45	0.00	38.90
Shallow Bays	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Ocean/Deep Bay	0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Disturbed Land	0	0.59	119.11	0.11	468.89		21.46	764.84	0.00	375.98	22.05	883.96	0.11	844.86
Agriculture	0	0.74	120.24	0.00	550.56		192.87	1,813.54	1.46	2,342.29	193.61	1,933.77	1.46	2,892.85
Urban/Developed	0	0.00	45.07	0.00	74.62		0.42	2,159.27	9.71	626.52	0.42	2,204.33	9.71	701.14
Agency Total:		**32.39**	**1,577.94**	**411.02**	**77,827.57**		**399.74**	**11,427.07**	**30.98**	**25,106.24**	**432.13**	**13,005.02**	**442.00**	**102,933.81**

Note: The Agriculture and Urban/Developed category is included to account for all land included within a project and habitat preserve planning area.

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APPENDIX F

Habitat Conservation Accounting Model

Habitat Conservation Accounting Model

MSCP South San Diego County

From 1/1/2023 To 12/31/2023

Project Gain Status: Gain

Project Loss Status: Loss

County of San Diego	**Total Subarea Habitat Preserve**	**Conservation Target**	**Estimated Take**	**Conservation Ratio**	**Cumulative Conservation Inside Habitat Preserve**	**Max. Allowable Impacts for the Current Period**	**Actual Loss Inside Habitat Preserve for Current Period**	**+ or - Max. Allowable Impacts**
Beach	0	0	0	0.00	0.00	0.00	0.00	n/a
Saltpan	0	0	0	0.00	0.00	0.00	0.00	n/a
Southern Foredunes	0	0	0	0.00	0.00	0.00	0.00	n/a
Southern Coastal Bluff Scrub	0	0	0	0.00	0.00	0.00	0.00	n/a
Coastal Sage Scrub	23,569	18,717	4,852	3.86	12,778.39	3,466.48	55.76	-
Maritime Succulent Scrub	0	0	0	0.00	0.00	0.00	0.00	n/a
Chaparral	22,179	18,662	3,517	5.31	14,463.81	2,804.94	29.17	-
Southern Maritime Chaparral	0	0	0	0.00	0.00	0.00	0.00	n/a
Coastal Sage-Chaparral Scrub	1,366	1,152	214	5.38	824.29	159.21	0.00	-
Grassland	2,145	1,741	404	4.31	1,085.10	267.02	3.18	-
Southern Coastal Salt Marsh	0	0	0	0.00	0.00	0.00	0.00	n/a
Freshwater Marsh	15	15	0	0.00	6.75	0.00	0.00	n/a
Riparian Forest	84	84	0	0.00	86.09	0.00	0.00	n/a
Oak Riparian Forest	2,044	2,043	1	2,043.00	945.70	0.52	1.94	+
Riparian Woodland	6	6	0	0.00	4.24	0.00	0.00	n/a
Riparian Scrub	298	298	0	0.00	56.12	0.00	0.00	n/a
Oak Woodland	2,355	1,912	443	4.32	1,049.58	263.16	1.52	-
Torrey Pine Forest	0	0	0	0.00	0.00	0.00	0.00	n/a
Tecate Cypress Forest	0	0	0	0.00	0.00	0.00	0.00	n/a
Eucalyptus Woodland	53	41	12	3.42	13.52	4.76	0.00	-
Open Water	124	124	0	0.00	18.39	0.00	0.00	n/a
Disturbed Wetland	52	52	0	0.00	47.10	0.00	0.00	n/a
Natural Floodchannel	197	197	0	0.00	12.92	0.00	0.00	n/a
Shallow Bays	0	0	0	0.00	0.00	0.00	0.00	n/a
Pacific Ocean/Deep Bay	0	0	0	0.00	0.00	0.00	0.00	n/a
Disturbed Land	1,259	0	1,259	0.00	253.70	0.00	20.31	+
Agriculture	1,608	0	1,608	0.00	485.03	0.00	44.53	+

County of San Diego	Total Subarea Habitat Preserve	Conservation Target	Estimated Take	Conservation Ratio	Cumulative Conservation Inside Habitat Preserve	Max. Allowable Impacts for the Current Period	Actual Loss Inside Habitat Preserve for Current Period	+ or - Max. Allowable Impacts
Urban/Developed	0	0	0	0.00	30.31	0.00	0.42	+
Total Acres for Agency: County of San Diego					**32,161.04**		**156.82**	

Note: The Agriculture and Urban/Developed category is included to account for all land included within a project and habitat preserve planning area.

This report only pertains to the Metro-Lakeside-Jamul segment of the County 's subarea plan. It includes gains that occur within the Preapproved Mitigation Area (PAMA) while counting all losses within the entire segment.

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APPENDIX G

Mitigation Bank Status

	Coast Live Oak Woodland	Coastal Sage Scrub	Disturbed/ Ruderal	Engelmann Oak Woodland	Marsh/ Riparian Scrub/Floodplain	Mixed Chaparral	Native Grasslands	Non-Native Grasslands	Southern Willow Scrub	Southern Riparian/ Oak Woodland	Totals
Boden Canyon											
Total	0.8	10.2	0	2.5	0	14.9	0.1	1	0	10	39.5
Used	0.8	10.2	0	2.5	0	0	0	0.32	0	10	23.82
Remaining	0	0	0	0	0	14.9	0.1	0.68	0	0	**15.68**
Old Castle											
Total	0.62	41.2	0	0	0	17.95	0	0	0.25	0	60.02
Used	0.62	40.856	0	0	0	3.53	0	0	0.11	0	45.116
Remaining	0	0.344	0	0	0	14.42	0	0	0.14	0	**14.904**
Rancho San Diego											
Total	4.8	226.2	80.3	0	2.4	19.6	3.4	0	0	72.5	409.2
Used	2.85	126.2597	6.215	0	0.34	7.63	0.51	0	0	16.7	160.5047
Remaining	1.95	99.9403	74.085	0	2.06	11.97	2.89	0	0	55.8	**248.6953**
Singing Hills											
Total	0	69.7	0	0	0	0	0	0	0	0	69.7
Used	0	0.695	0	0	0	0	0	0	0	0	0.695
Remaining	0	69.005	0	0	0	0	0	0	0	0	**69.005**
Sweetwater											
Total	0	0	0	0	24.33	0	0	0	0	0	24.33
Used	0	0	0	0	19.14	0	0	0	0	0	19.14
Remaining	0	0	0	0	5.19	0	0	0	0	0	**5.19**
Total Remaining	**1.95**	**169.2893**	**74.085**	**0**	**7.25**	**41.29**	**2.99**	**0.68**	**0.14**	**55.8**	**353.4743**

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APPENDIX H

COIs Issued for Agricultural Clearing

	Date Issued	APN	Permit Number	Site Name	Acres
1	12/11/00	399-020-17	AE301	Gibson	28.60
2	03/16/01	513-080-23	AE01-005	Boney	2.00
3	01/14/04	285-030-10	AD03-051	Royden	9.86
4	01/14/04	327-011-03	AD03-051	Royden	42.72
5	08/09/04	375-171-03	AD 04-048	Shank	1.00
6	08/09/04	375-171-04	AD 04-048	Shank	1.00
7	3/31/2011	Portions of 389-091-05, -06, −25	None	High Meadow Ranch	6.55
8	8/10/2011	240-270-58, 242-010-71, -72, 242-030-37, -38, 242-031-03, 242-080-01, -07, 243-110-01, −04, 243-150-05, 244-020-04	AD 11-017	Rancho Guejito	763.00
9	10/13/2011	242-070-07	AD 09-058	Rockwood Ranch	29.30
10	2/12/2015	242-070-07	None	Rancho Guejito	13.77
11	7/2/2015	243-020-05, -07, -10, 243-030-02, 243-070-01,-08	PDS2015-LDGRMN-20025	Vineyard Ranch	35.9
12	12/3/2015	242-010-71, -73, 242-030-38, 242-070-09, -12, -13, -14, 242-270-57	PDS2015-LDGRMJ-30016	Rancho Guejito	279.1
13	1/14/2016	585-113-22	PDS2015-AD-15-013	Nencini	10.9
	Total				**1,223.7**

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APPENDIX I

Species and Habitat Conservation in County Preserves

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Table I-1. Habitat Conservation within Subarea Segments in County Preserves

Preserve/Habitat Types	Acres
Barnett Ranch County Preserve	**665**
Agriculture	112
Chaparral	310
Coastal Sage Scrub	95
Eucalyptus Woodland	<1
Grassland	143
Oak Woodland	5
Urban/Developed	1
Boulder Oaks County Preserve	**2,019**
Agriculture	1
Chaparral	1,575
Coastal Sage Scrub	104
Disturbed Land	15
Grassland	101
Oak Riparian Forest	24
Oak Woodland	187
Open Water	2
Urban/Developed	11
Cactus County Park	**62**
Agriculture	<1
Coastal Sage Scrub	38
Open Water	<1
Riparian Scrub	<1
Urban/Developed	22
Damon Lane County Park	**30**
Agriculture	<1
Coastal Sage Scrub	9
Eucalyptus Woodland	5
Grassland	1
Riparian Forest	10
Urban/Developed	5
Del Dios Highlands County Preserve	**269**
Chaparral	235
Coastal Sage Scrub	21
Disturbed Land	<1
Oak Woodland	5

Preserve/Habitat Types	Acres
Urban/Developed	9
Dictionary Hill Preserve	**176**
Chaparral	23
Coastal Sage Scrub	147
Disturbed Land	2
Riparian Scrub	<1
Urban/Developed	4
Dos Picos County Park	**78**
Agriculture	1
Chaparral	29
Coastal Sage Scrub	2
Oak Woodland	24
Urban/Developed	21
El Capitan County Preserve	**2,377**
Chaparral	1,799
Coastal Sage Scrub	274
Coastal Sage-Chaparral Scrub	107
Disturbed Land	<1
Oak Riparian Forest	30
Oak Woodland	163
Urban/Developed	3
El Monte County Park	**87**
Chaparral	<1
Coastal Sage Scrub	30
Oak Riparian Forest	18
Oak Woodland	16
Riparian Scrub	1
Urban/Developed	22
Flinn Springs County Park	**73**
Chaparral	44
Coastal Sage-Chaparral Scrub	9
Disturbed Land	5
Oak Riparian Forest	12
Urban/Developed	4
Furby-North	**79**
Coastal Sage Scrub	44
Disturbed Land	30

Preserve/Habitat Types	Acres
Grassland	4
Urban/Developed	1
Goodan Ranch/Sycamore Canyon County Preserve	**2,733**
Agriculture	30
Chaparral	1,712
Coastal Sage Scrub	690
Coastal Sage-Chaparral Scrub	25
Disturbed Land	2
Grassland	154
Oak Riparian Forest	35
Oak Woodland	80
Riparian Scrub	<1
Riparian Woodland	4
Urban/Developed	2
Iron Mountain Preserve	**162**
Chaparral	162
Oak Woodland	1
Lakeside Linkage Preserve	**209**
Coastal Sage Scrub	188
Disturbed Land	1
Grassland	<1
Urban/Developed	20
Lawrence & Barbara Daley Preserve	**581**
Agriculture	<1
Chaparral	124
Coastal Sage Scrub	391
Coastal Sage-Chaparral Scrub	<1
Disturbed Land	5
Grassland	12
Oak Riparian Forest	49
Urban/Developed	<1
Lindo Lake County Park	**55**
Eucalyptus Woodland	10
Freshwater Marsh	2
Open Water	19
Urban/Developed	23

Preserve/Habitat Types	Acres
Los Peñasquitos Canyon County Preserve	**199**
Chaparral	72
Coastal Sage Scrub	6
Disturbed Land	14
Disturbed Wetland	1
Freshwater Marsh	3
Grassland	51
Riparian Scrub	2
Riparian Woodland	40
Urban/Developed	11
Louis A. Stelzer County Park	**369**
Chaparral	6
Coastal Sage Scrub	328
Grassland	15
Oak Riparian Forest	19
Urban/Developed	<1
Luelf Pond County Preserve	**87**
Chaparral	60
Oak Woodland	27
Urban/Developed	<1
Lusardi Creek County Preserve	**226**
Chaparral	30
Coastal Sage Scrub	138
Coastal Sage-Chaparral Scrub	3
Disturbed Land	12
Disturbed Wetland	1
Eucalyptus Woodland	1
Freshwater Marsh	2
Grassland	25
Natural Flood Channel/Streambed	1
Riparian Forest	3
Riparian Scrub	6
Urban/Developed	3
Oakoasis County Preserve	**391**
Chaparral	338
Grassland	8
Oak Woodland	43

Preserve/Habitat Types	Acres
Urban/Developed	3
Old Ironsides County Park	4
Oak Riparian Forest	3
Urban/Developed	1
Otay Lakes County Park	**10**
Coastal Sage Scrub	10
Shallow Bays	<1
Otay Ranch POM	**3,964**
Agriculture	14
Chaparral	615
Coastal Sage Scrub	2,486
Coastal Sage-Chaparral Scrub	118
Disturbed Land	<1
Eucalyptus Woodland	10
Freshwater Marsh	10
Grassland	231
Maritime Succulent Scrub	83
Natural Floodchannel/Streambed	122
Oak Riparian Forest	6
Oak Woodland	20
Riparian Scrub	41
Tecate Cypress Forest	160
Urban/Developed	48
Otay Valley Regional Park	**433**
Agriculture	58
Coastal Sage Scrub	268
Disturbed Land	1
Eucalyptus Woodland	<1
Freshwater Marsh	3
Grassland	45
Maritime Succulent Scrub	10
Riparian Forest	2
Riparian Scrub	18
Urban/Developed	27
Peutz Valley	**255**
Chaparral	235
Coastal Sage Scrub	11

Preserve/Habitat Types	Acres
Coastal Sage-Chaparral Scrub	4
Oak Riparian Forest	4
Urban/Developed	1
Ramona Grasslands County Preserve	**533**
Agriculture	<1
Chaparral	292
Coastal Sage Scrub	227
Grassland	1
Oak Riparian Forest	6
Oak Woodland	1
Riparian Forest	2
Urban/Developed	2
San Vicente	**117**
Coastal Sage Scrub	114
Oak Riparian Forest	<1
Oak Woodland	4
Santa Fe Valley Preserve	**299**
Agriculture	18
Chaparral	47
Coastal Sage Scrub	170
Disturbed Land	2
Disturbed Wetland	<1
Eucalyptus Woodland	4
Freshwater Marsh	14
Grassland	15
Natural Floodchannel/Streambed	2
Oak Riparian Forest	<1
Oak Woodland	1
Open Water	4
Riparian Forest	6
Riparian Scrub	11
Urban/Developed	4
Skyline Preserve	**262**
Chaparral	240
Coastal Sage Scrub	15
Oak Woodland	7

Preserve/Habitat Types	Acres
Stoneridge Preserve	**247**
Chaparral	67
Coastal Sage Scrub	155
Coastal Sage-Chaparral Scrub	7
Oak Riparian Forest	15
Oak Woodland	3
Urban/Developed	<1
Sweetwater Regional Park	**186**
Grassland	148
Urban/Developed	37
Tijuana River Valley Regional Park	**1,779**
Agriculture	641
Bog and Marsh	13
Coastal Sage Scrub	257
Disturbed Land	21
Disturbed Wetland	11
Eucalyptus Woodland	<1
Freshwater Marsh	1
Grassland	11
Open Water	105
Riparian Scrub	549
Urban/Developed	168

SOURCE: County of San Diego, LUEG-GIS

Table I- 2. MSCP Covered Species Documented in County Preserves

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Plants			
Aphanisma			
California Orcutt grass			
Coast (San Diego) barrel cactus *5 County Preserves*	✓	✓	• Dictionary Hill Preserve[a] • Furby-North Property • Lusardi Creek Preserve • Otay Ranch Preserve • Tijuana River Valley Regional Park
Coast wallflower			
Coastal (Shaw's) agave			
Coastal Dunes Milkvetch			
Dehesa beargrass			
Del Mar manzanita *1 County Preserve*	✓		• Lusardi Creek Preserve
Del Mar Mesa sandaster			
Dunn's mariposa lily *1 County Preserve*	✓		• Otay Ranch Preserve
Encinitas Baccharis *1 County Preserve*	✓		• Del Dios Highlands Preserve
Felt-leaved monardella *3 County Preserves*	✓		• Boulder Oaks Preserve • El Capitan Preserve • Otay Ranch Preserve
Fire (Dense) redgrass			
Gander's butterweed			
Gander's pitcher sage *1 County Preserve*	✓		• Otay Ranch Preserve
Heart-leaf pitcher sage *1 County Preserve*	✓		• Iron Mountain Preserve[a]
Lakeside ceanothus *4 County Preserves*	✓		• Boulder Oaks Preserve • El Capitan Preserve • Louis A. Stelzer Park • Oakoasis Preserve
Nevin's barberry			
Orcutt's bird's beak *2 County Preserves*	✓		• Otay Valley Regional Park • Tijuana River Valley Regional Park

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Orcutt's brodiaea *4 County Preserves*	✓		• Boulder Oaks Preserve • Los Peñasquitos Canyon Preserve • Otay Ranch Preserve • Santa Fe Valley Preserve
Otay manzanita *1 County Preserve*	✓		• Otay Ranch Preserve
Otay mesa mint *2 County Preserves*	✓		• Otay Lakes County Park • Otay Ranch Preserve
Otay tarplant *3 County Preserves*	✓		• Furby-North Property • Otay Ranch Preserve • Otay Valley Regional Park
Palmer's goldenbush (Palmer's ericameria) *2 County Preserves*	✓		• Lawrence and Barbara Daley Preserve • Otay Ranch Preserve
Parry's tetracoccus			
Prostrate/Nuttall's lotus			
Purple (Narrow-leaved) nightshade			
Salt marsh bird's beak			
San Diego ambrosia			
San Diego button-celery *3 County Preserves*	✓		• Louis A. Stelzer Park • Otay Ranch Preserve • Otay Valley Regional Park
San Diego goldenstar *5 County Preserves*	✓		• Dictionary Hill Preserve • Los Peñasquitos Canyon Preserve • Louis A. Stelzer Park • Otay Ranch Preserve • Sycamore Canyon and Goodan Ranch Preserve
San Diego mesa mint			
San Diego thorn-mint *1 County Preserve*	✓		• Sycamore Canyon and Goodan Ranch Preserve
San Miguel savory *2 County Preserves*	✓		• Boulder Oaks Preserve • Otay Ranch Preserve
Short-leaf dudleya			
Slender-pod jewelflower (California mustard)			
Small-leaved rose			

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Snake cholla *2 County Preserves*	✓	✓	• Furby-North Property[a] • Otay Ranch Preserve
Spreading (Prostrate) navarretia *1 County Preserve*	✓		• Otay Ranch Preserve
Sticky dudleya			
Tecate cypress *1 County Preserve*	✓		• Otay Ranch Preserve
Thread-leaf brodiaea			
Torrey pine *1 County Preserve*		✓	• Tijuana River Valley Regional Park[a] (planted)
Variegated dudleya *6 County Preserves*	✓		• Dictionary Hill Preserve • Lusardi Creek Preserve • Otay Lakes Regional Park • Otay Ranch Preserve • Otay Valley Regional Park • Sycamore Canyon / Goodan Ranch Preserve
Wart-stemmed ceanothus *2 County Preserves*	✓		• Del Dios Highlands Preserve • Tijuana River Valley Regional Park
Willowy monardella *2 County Preserves*	✓		• Otay Ranch Preserve • Sycamore Canyon and Goodan Ranch Preserve
Invertebrates			
Riverside fairy shrimp			
San Diego fairy shrimp *1 County Preserve*	✓		• Otay Ranch Preserve
Thorne's hairstreak butterfly *1 County Preserve*	✓		• Otay Ranch Preserve
Wandering skipper			

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Amphibians and Reptiles			
Arroyo toad			
Belding's orange-throated whiptail *15 County Preserves*	✓	✓	• Barnett Ranch Preserve • Boulder Oaks Preserve[a] • Del Dios Highlands Preserve[a] • Dictionary Hill Preserve[a] • El Capitan Preserve • Furby-North Property • Lakeside Linkage Preserve • Lawrence and Barbara Daley Preserve • Louis A Stelzer Park[a] • Lusardi Creek Preserve • Otay Ranch Preserve • Ramona Grasslands Preserve • Stoneridge Preserve • Sycamore Canyon and Goodan Ranch Preserve • Tijuana River Valley Preserve
California red-legged frog			
Blainville's (Coast, San Diego) horned lizard *16 County Preserve*	✓	✓	• Barnett Ranch Preserve • Boulder Oaks Preserve [a] • Del Dios Highlands Preserve [a] • Dictionary Hill Preserve • El Capitan Preserve [a] • Furby-North Property[a] • Lakeside Linkage Preserve • Lawrence and Barbara Daley Preserve • Louis A. Stelzer Park • Lusardi Creek Preserve • Oakoasis Preserve [a] • Otay Ranch Preserve • Ramona Grasslands Preserve • Stoneridge Preserve • Sycamore Canyon and Goodan Ranch Preserve • Tijuana River Valley Preserve [a]
Southwestern pond turtle			

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Birds			
Bald eagle			
Belding's savannah sparrow			
Burrowing owl *2 County Preserves*	✓	✓	• Otay Ranch Preserve • Sycamore Canyon and Goodan Ranch Preserve[a]
California brown pelican			
California least tern			
Canada goose			
Coastal (San Diego) Cactus wren *7 County Preserves*	✓	✓	• El Capitan Preserve[a] • Furby-North Property • Lakeside Linkage Preserve • Otay Ranch Preserve • Otay Valley Regional Park • Sweetwater Regional Park • Tijuana River Valley Regional Park
Coastal California gnatcatcher *15 County Preserves*	✓		• Boulder Oaks Preserve • Del Dios Highlands Preserve • Dictionary Hill Preserve • Furby-North Property • Lakeside Linkage Preserve • Louis A. Stelzer Park • Lusardi Creek Preserve • Otay Lakes Regional Park • Otay Ranch Preserve • Otay Valley Regional Park • Santa Fe Valley Preserve • Stoneridge Preserve • Sweetwater Regional Park • Sycamore Canyon and Goodan Ranch Preserve • Tijuana River Valley Regional Park

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Cooper's hawk *15 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Boulder Oaks Preserve[a] • Del Dios Highlands Preserve • Dictionary Hill Preserve[a] • El Capitan Preserve[a] • Iron Mountain Preserve • Lakeside Linkage Preserve[a] • Lawrence and Barbara Daley Preserve[a] • Lusardi Creek Preserve • Oakoasis Preserve[a] • Otay Ranch Preserve • Skyline Preserve • Stoneridge Preserve • Sycamore Canyon and Goodan Ranch Preserve[a] • Tijuana River Valley Regional Park
Elegant tern			
Ferruginous hawk *1 County Preserve*		✓	• Del Dios Highlands Preserve[a]
Golden eagle *6 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Del Dios Highlands Preserve • El Capitan Preserve • Otay Ranch Preserve • Ramona Grasslands Preserve • Sycamore Canyon and Goodan Ranch Preserve[a]
Large-billed savannah sparrow			
Least Bell's vireo *8 County Preserves*	✓		• Furby-North Property • Los Peñasquitos Canyon Preserve • Lusardi Creek Preserve • Otay Lakes Regional Park • Otay Ranch Preserve • Otay Valley Regional Park • Sweetwater Regional Park • Tijuana River Valley Regional Park
Light-footed Ridgway's rail *1 County Park*	✓		• Tijuana River Valley Regional Park
Long-billed curlew			
Mountain plover			

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Northern harrier *8 County Preserves*	✓	✓	• Del Dios Highlands Preserve • Furby-North Property[a] • Lawrence and Barbara Daley Preserve[a] • Louis A. Stelzer Preserve • Lusardi Creek Preserve[a] • Otay Ranch Preserve • Sycamore Canyon and Goodan Ranch Preserve[a] • Tijuana River Valley Regional Park
Peregrine falcon *4 County Preserves*	✓	✓	• Del Dios Highlands • Peutz Valley Preserve • Otay Ranch Preserve • Tijuana River Valley[a]
Reddish egret			
Southern California rufous-crowned sparrow *16 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Boulder Oaks Preserve[a] • Del Dios Highlands Preserve[a] • Dictionary Hill Preserve[a] • El Capitan Preserve[a] • El Monte Park[a] • Furby-North Preserve[a] • Lakeside Linkage Preserve[a] • Lawrence and Barbara Daley Preserve[a] • Louis A. Stelzer Park[a] • Lusardi Creek Preserve[a] • Oakoasis Preserve[a] • Otay Ranch Preserve • Stoneridge Preserve[a] • Sycamore Canyon amd Goodan Ranch Preserve[a] Tijuana River Valley Regional Park[a]
Southwestern willow flycatcher *1 County Preserve*	✓		• Tijuana River Valley Regional Park
Swainson's hawk *1 County Preserve*		✓	• Barnett Ranch Preserve[a]
Tricolored blackbird *2 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Tijuana River Valley Regional Park

MSCP Covered Species	Documented in County Preserves		County Preserve or Park
	GIS source	Other Source	
Western bluebird *10 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Boulder Oaks Preserve[a] • Del Dios Highlands Preserve[a] • El Capitan Preserve[a] • El Monte Park[a] • Lakeside Linkage Preserve[a] • Lawrence and Barbara Daley Preserve • Oakoasis Preserve[a] • Stoneridge Preserve • Sycamore Canyon and Goodan Ranch Preserve
Western snowy plover			•
White-faced ibis *1 County Preserve*		✓	• Del Dios Highlands Preserve[a]
Mammals			
American badger			
Mountain lion *6 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Boulder Oaks Preserve[a] • Del Dios Highlands Preserve • El Capitan Preserve • Otay Ranch Preserve • Sycamore Canyon and Goodan Ranch Preserve[a]
Southern mule deer *14 County Preserves*	✓	✓	• Barnett Ranch Preserve[a] • Boulder Oaks Preserve • Del Dios Highlands Preserve • El Capitan Preserve • El Monte Park[a] • Lakeside Linkage Preserve[a] • Lawrence and Barbara Daley Preserve[a] • Louis A. Stelzer Preserve • Lusardi Creek Preserve • Oakoasis Preserve • Otay Ranch Preserve[a] • Ramona Grasslands Preserve[a] • Stoneridge Preserve • Sycamore Canyon and Goodan Ranch Preserve

NOTES:

[a] Species documented in County Preserve in a report rather than in GIS. Reports are referenced in the sources below.

SOURCES:

AECOM. 2019. Baseline Biodiversity Survey Report for the Holly Oaks County Park, Luelf Pond Preserve, and Barnett Ranch Preserve Properties County of San Diego Department of Parks and Recreation. Prepared for Department of Parks and Recreation County of San Diego. June.

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U.S. Fish and Wildlife Service. 2020. Sensitive Species (polygons). Occurrence polygons documenting species sightings from 1998 to present included for MSCP species occurrences.

Table I- 3. MSCP Covered Species Documented by County Preserve

County Preserves	MSCP Covered Species Documented
Barnett Ranch County Preserve	*10 MSCP covered species*
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Cooper's hawk[a]
	Golden eagle[a]
	Southern California rufous-crowned sparrow[a]
	Swainson's hawk[a]
	Tricolored blackbird[a]
	Western bluebird[a]
Mammals	Mountain lion[a]
	Southern mule deer[a]
Boulder Oaks County Preserve	*12 MSCP covered species*
Plants	Felt-leaved monardella
	Lakeside ceanothus
	Orcutt's brodiaea
	San Miguel savory
Reptiles	Belding's orange-throated whiptail[a]
	Blainville's (Coast, San Diego) horned lizard[a]
Birds	Coastal California gnatcatcher
	Cooper's hawk[a]
	Southern California rufous-crowned sparrow[a]
	Western bluebird[a]
Mammals	Mountain lion
	Southern mule deer
Del Dios Highlands County Preserve	*15 MSCP covered species*
Plants	Encinitas baccharis
	Wart-stemmed ceanothus
Reptiles	Belding's orange-throated whiptail[a]
	Blainville's (Coast, San Diego) horned lizard[a]
Birds	Coastal California gnatcatcher
	Cooper's hawk
	Golden eagle
	Northern harrier
	Peregrine falcon
	Southern California rufous-crowned sparrow[a]
	Ferruginous hawk[a]

County Preserves	MSCP Covered Species Documented
Birds (cont.)	White-faced Ibis[a]
	Western bluebird
Mammals	Mountain lion
	Southern mule deer
Dictionary Hill County Preserve	*8 MSCP covered species*
Plants	Coast (San Diego) barrel cactus[a]
	San Diego goldenstar
	Variegated dudleya
Reptiles	Blainville's (Coast, San Diego) horned lizard
	Belding's orange-throated whiptail[a]
Birds	Coastal California gnatcatcher
	Cooper's Hawk[a]
	Southern California Rufous-crowned sparrow[a]
El Capitan County Preserve	*11 MSCP covered species*
Plants	Felt-leaved monardella
	Lakeside ceanothus
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard[a]
Birds	Coastal (San Diego) cactus wren
	Cooper's hawk[a]
	Golden eagle
	Southern California rufous-crowned sparrow[a]
	Western bluebird[a]
Mammals	Mountain lion
	Southern mule deer
El Monte County Park	*3 MSCP covered species*
Birds	Southern California rufous-crowned sparrow[a]
	Western bluebird[a]
Mammals	Southern mule deer[a]
Furby-North Property	*10 MSCP covered species*
Plants	Coast (San Diego) barrel cactus
	Otay tarplant
	Snake cholla[a]
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard[a]

County Preserves	MSCP Covered Species Documented
Birds	Coastal (San Diego) cactus wren
	Coastal California gnatcatcher
	Least Bell's vireo
	Northern harrier[a]
	Southern California rufous-crowned sparrow[a]
Lakeside Linkage County Preserve	*8 MSCP Covered Species*
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Coastal cactus wren
	Coastal (San Diego) California gnatcatcher
	Cooper's hawk[a]
	Southern California rufous-crowned sparrow[a]
	Western bluebird[a]
Mammals	Southern mule deer[a]
Lawrence and Barbara Daley County Preserve	*8 MSCP covered species*
Plants	Palmer's goldenbush
Reptiles	Blainville's (Coast, San Diego) horned lizard
	Belding's orange-throated whiptail
Birds	Cooper's hawk
	Northern harrier
	Southern California rufous-crowned sparrow[a]
	Western bluebird
Mammals	Southern mule deer[a]
Los Peñasquitos Canyon County Preserve	*4 MSCP covered species*
Plants	Orcutt's brodiaea
	San Diego button-celery
	San Diego goldenstar
Birds	Least Bell's vireo
Louis A. Stelzer County Park	*8 MSCP covered species*
Plants	Lakeside ceanothus
	San Diego goldenstar
Reptiles	Belding's orange-throated whiptail[a]
	Blainville's (Coast, San Diego) horned lizard[a]
Birds	Coastal California gnatcatcher
	Northern harrier[a]
	Southern California rufous-crowned sparrow[a]
Mammals	Southern mule deer

County Preserves	MSCP Covered Species Documented
Lusardi Creek County Preserve	*11 MSCP covered species*
Plants	Coast (San Diego) barrel cactus
	Del Mar manzanita
	Variegated dudleya
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Coastal California gnatcatcher
	Cooper's hawk
	Least Bell's vireo
	Northern harrier
	Southern California rufous-crowned sparrow
Mammals	Southern mule deer[a]
Oakoasis County Preserve	*6 MSCP covered species*
Plants	Lakeside ceanothus
Reptiles	Blainville's (Coast, San Diego) horned lizard[a]
Birds	Cooper's hawk[a]
	Southern California rufous-crowned sparrow[a]
	Western bluebird[a]
Mammals	Southern mule deer
Otay Lakes County Park	*2 MSCP covered species*
Plants	Otay mesa mint
	Variegated dudleya
Otay Lakes Regional Park	*2 MSCP covered species*
Birds	Costal California gnatcatcher
	Least Bell's vireo
Otay Ranch Preserve	*32 MSCP covered species*
Plants	Coast (San Diego) barrel cactus
	Dunn's mariposa lily
	Felt-leaf monardella
	Gander's pitcher sage
	Orcutt's brodiaea
	Otay manzanita
	Otay mesa mint
	Otay tarplant
	Palmer's goldenbush
	San Diego button-celery
	San Diego goldenstar

County Preserves	MSCP Covered Species Documented
Plants (cont.)	San Miguel savory
	Snake cholla
	Spreading (prostrate) navarretia
	Tecate cypress
Invertebrates	San Diego fairy shrimp
	Thorne's hairstreak butterfly
	Variegated dudleya
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
	Willowy monardella
Birds	Burrowing owl
	Coastal (San Diego) cactus wren
	Coastal California gnatcatcher
	Cooper's hawk
	Golden eagle
	Least Bell's vireo
	Northern harrier
	Peregrine falcon
	Southern California rufous-crowned sparrow
Mammals	Mountain lion
	Southern mule deer
Otay Valley Regional Park	*7 MSCP covered species*
Plants	San Diego button-celery
	Orcutt's bird's beak
	Otay tarplant
	Variegated dudleya
Birds	Coastal (San Diego) cactus wren
	Coastal California gnatcatcher
	Least Bell's vireo
Ramona Grasslands County Preserve	*4 MSCP covered species*
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Golden eagle
Mammals	Southern mule deer
Santa Fe Valley Preserve	*2 MSCP covered species*
Plants	Orcutt's brodiaea
Birds	Coastal California gnatcatcher

County Preserves	MSCP Covered Species Documented
Stoneridge County Preserve	*7 MSCP covered species*
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Coastal California gnatcatcher
	Cooper's hawk
	Southern California rufous-crowned sparrow
	Western bluebird
Mammals	Southern mule deer
Sweetwater Regional Park	*3 MSCP covered species*
Birds	Coastal (San Diego) cactus wren
	Coastal California gnatcatcher
	Least Bell's vireo
Sycamore Canyon and Goodan Ranch County Preserve	*15 MSCP covered species*
Plants	San Diego goldenstar
	San Diego thornmint
	Variegated dudleya
	Willowy monardella
Reptiles	Belding's orange-throated whiptail
	Blainville's (Coast, San Diego) horned lizard
Birds	Burrowing owl[a]
	Coastal California gnatcatcher
	Cooper's hawk[a]
	Golden eagle[a]
	Northern harrier[a]
	Southern California rufous-crowned sparrow[a]
	Western bluebird
Mammals	Mountain lion[a]
	Southern mule deer
Tijuana River Valley Regional Park	*16 MSCP covered species*
Plants	Coast (San Diego) barrel cactus
	Orcutt's bird's-beak
	Torrey pine[a] (planted)
	Wart-stemmed ceanothus
Reptiles	Belding's orange-throated whiptail
	Blainville's horned lizard[a]

County Preserves	MSCP Covered Species Documented
Birds	Coastal (San Diego) cactus wren
	Coastal California gnatcatcher
	Cooper's hawk
	Least Bell's vireo
	Light-footed Ridgway's rail
	Northern harrier
	Peregrine falcon
	Southern California rufous-crowned sparrow[a]
	Southwestern willow flycatcher
	Tricolored blackbird

NOTES:

[a] Species documented in County Preserve in a report rather than in GIS. Reports are referenced in the sources below.

SOURCES:

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U.S. Fish and Wildlife Service. 2020. Regss Locations of Sensitive Species Sightings database. Occurrences points documenting species sightings from 1998 to present included for MSCP species occurrences.

U.S. Fish and Wildlife Service. 2020. Sensitive Species (polygons). Occurrence polygons documenting species sightings from 1998 to present included for MSCP species occurrences.

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APPENDIX J

Stewardship and Adaptive Management in County Parks and Preserves in Reporting Year

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Barnett Ranch Preserve	Open	40 trees planted • coast live oak		5 acres • goats head • Russian thistle • mustard • milk thistle	• Four interpretive signs repaired. Daily patrols to prevent dumping and littering within the staging area.	Firebreak maintained	Multiple events, including Discovery tables, ranger hike, three tree planting events 119 visitors
Boulder Oaks Preserve	Closed	111 trees planted • coast live oak	3 dead trees removed	25 acres • black mustard • Dyer's rocket • milk thistle	• Two no trespassing signs repaired. Sixty feet of ranch fencing repaired. • Game cameras installed in 2022 continued to be monitored.	Firebreak maintained along entry road and on-stie structures	One public tree planting event attended by 15 visitors
Cactus Park	Open	60 trees planted • coast live oak • western cottonwood		• castor bean • tamarisk	• Increased ranger presence to address unauthorized vehicle activity and illegal dumping	Firebreak maintained	
Damon Lane Park	Open		2 dead trees removed	4 acres • castor bean • Mexican fan palm • mustard	• Four new signs restricting off-leash dogs were installed.	Firebreak maintained	
Del Dios Highlands Preserve	Open			1 acre • black mustard • castor bean • tree tobacco • ox tongue	• Illegal campsites removed at Dubois house foundation. Increased ranger patrols to prevent illegal camping.	Firebreak maintained along SDGE trail	

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Dictionary Hill Preserve	Open	Ongoing restoration across four acres to benefit gnatcatcher, Quino checkerspot, and monarch butterfly		10 acres • black mustard • stinkwort • fountain grass	• 13 new signs for sensitive habitat boundaries installed • Daily ranger patrols, litter removal, and graffiti abatement	Firebreak maintained	One ranger-led hike attended by three visitors
Dos Picos Park	Open	89 trees planted • coast live oak 20 shrubs planted, including toyon and lemonadeberry	22 dead trees removed	20 acres • black mustard	• Two border fences were repaired. • Two new fishing information signs were installed. • One vehicle gate installed	Firebreak maintained	Multiple events, including guided hikes, live animal presentations, a fire safety talk, and a tree planting event. 850 visitors
El Capitan Preserve	Open			5 acres • stinkwort	• Replaced three informational signs. • Replaced six portions of fencing.	Firebreak maintained	County Park Rangers guided "warrior hikes" on Memorial Day and Veteran's Day. 380 visitors attended.
El Monte Park	Open	230 trees planted • coast live oak • sycamore • western cottonwood 50 shrubs planted, including toyon, elderberry, and lemonadeberry	2 dead trees removed	0.25 acre • Mexican fan palm • Russian thistle • tree tobacco	• Three new informational signs installed • Ranger patrols increased to prevent unauthorized trails use and graffiti, and other unauthorized activities	Firebreak around perimeter of park	Hawk Talks, touch tables, birding, and flume hike. 1,300 visitors

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Flinn Springs Park	Open	120 trees planted • coast live oak • Engelmann oak 8 native shrubs planted (white sage)	16 dead trees removed	• giant reed • mustard • castor bean	• Six new interpretive signs installed	Firebreak maintained	Discovery tables, special events, and outreach/school field trips 270 visitors
Furby-North Property	Closed				• Fencing, gates, and large boulders added to deter illegal trails and offroad activity • No dumping enforcement signs installed along Otay Mesa Road		
Holly Oaks County Park	Open	10 trees planted • coast live oak		7 acres • black mustard • goats head	• Repaired 50 feet of fencing • Unleashed dog enforcement	Firebreak maintained	
Iron Mountain Preserve	Closed			0.1 acre • black mustard	• No signs of illegal activities observed during patrols		
Lakeside Linkage Preserve	Open	95 trees planted • coast live oak • western cottonwood		12 acres • tamarisk • castor bean	• Ranger presence increased to address unauthorized vehicle activity and illegal dumping	Firebreak maintained	
Lawrence and Barbara Daley Preserve	Closed			3 acres • castor bean	• One new grant sign installed • Unauthorized campsite removed, including litter and dumped items	Firebreak maintained	

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Los Peñasquitos Canyon Preserve	Open	154 trees planted • coast live oak • western cottonwood Flood damaged areas and trails were repaired; and Ranch House Crossing Bridge was restored following flood damage.	20 dead trees removed	33 acres • tumbleweed • black mustard • fennel • Russian thistle • Stinkwort Annual spraying for palm weevil and gold-spotted oak borer also conducted	• One monument sign installed, one swing gate installed, and one new feral pig fence installed • Ranger patrols continued to address littering, smoking, off-leash dogs, and unauthorized creek access	Firebreak maintained	Numerous events, including a Discovery Program, ranger-led hikes, workshops, County Fair presentations, story times, and picnics with goats. 568 visitors
Louis A. Stelzer Park	Open	230 trees planted • coast live oak • Engelmann oak 110 cacti and other succulents planted		3.5 acres • various weed species • poison oak	• Ten signs and three fences were installed and repaired • Patrol increased to prevent illegal access and dumping	Firebreak maintained	Multiple events including Discovery Program hikes, science fairs, a job fair, an egg hunt, star gazing programs, and a warrior hike. Over 8,000 visitors
Luelf Pond Preserve	Open	10 trees planted • coast live oak		3 acres • tree tobacco • black mustard	• Two new interpretive signs installed	Firebreak maintained	
Lusardi Creek Preserve	Open				• Illegally dumped trash removed	Firebreak maintained	

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Oakoasis Preserve	Open			2 acres • stinkwort	• Patrols increased to prevent trash dumping and unauthorized parking • Five informational signs installed • Five sections of concrete fencing replaced		Star gazing programs and ranger-led hikes 650 visitors
Old Ironsides County Park	Open	24 trees planted • coast live oak • Engelmann oak	8 dead trees removed	0.75 acre • mustard • castor bean • giant reed	• Five new rules and regulations signs installed • Requested extra patrols from County Sheriff in response to graffiti vandalism	Firebreak maintained	1 watershed cleanup event 30 visitors
Otay Lakes County Park	Open	10 trees planted • coast live oak		10 acres • various non-native species		Firebreak maintained	12 ranger-led hikes 124 visitors
Otay Valley Regional Park	Open	30 trees planted • coast live oak 6,000 cholla installed		2 acres • various non-native species	• Six “no off-roading” signs installed • Four metal gates installed • Patrols increased to prevent unauthorized use of motorized vehicles	Firebreak maintained	1 bike ride attended by 40 visitors
Peutz Valley Preserve	Closed			1 acre • mustard • non-native grasses		Firebreak maintained	

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Ramona Grasslands Preserve	Open	23 trees planted • coast live oak Grazing lease finalized to reduce non-native plant cover and improve habitat for sensitive wildlife species. Bullfrog eradication being implemented.	1 dead tree removed	165 acres • tree tobacco • tamarisk • Russian thistle • milk thistle • artichoke thistle	• Ten no parking, trail, and park boundary signs installed • Replacement of three miles of barbed wire fence • Two gates installed • Game cameras maintained • Continuation of Responsible Photography campaign • Continuation of seasonal closure and limits on user numbers and days for trail near golden eagle nest	Firebreak maintained	Multiple events including touch tables, school field trips, a Hawktober event, kikes, and tree planting. 1,900 visitors
Skyline Preserve	Closed				• Access gate maintained to allow for management activities	No adjacent structures; no firebreak needed	
Stoneridge Preserve	Closed				• Additional patrols requested from County Sheriff in response to incidents of illegal dumping	Firebreak maintained	
Sweetwater Regional Park	Open	150 trees planted • coast live oak 30 native shrubs planted, including toyon, white sage, and purple sage Grant-funded restoration of coastal sage scrub and riparian habitat	5 dead trees removed		• 100 feet of lodgepole fencing repaired • Ranger patrols increased to prevent vandalism, dumping, theft, and unauthorized camping and parking	Firebreak maintained	Three programs including a Discovery Table, invasive plant removal, and native plant workshop 25 visitors

Preserve	Status	Habitat Restoration	Hazardous or Non-Native Tree Removal	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Sycamore Canyon/ Goodan Ranch Preserve	Open	406 trees planted • Engelmann oak • coast live oak 134 shrubs planted, including white sage, black sage, Cleveland sage, California sunflower, toyon, lemonadeberry, and elderberry	9 trees removed	75 acres • fountain grass • stinkwort • black mustard • thistle • wild radish	• 12 new boundary signs installed • 500 feet of fencing installed • Patrol increased to prevent illegal access and dumping	Firebreak maintained	Multiple events, including interpretive hikes, night hikes, discovery tables, star gazing, tree planting, and Hawktober program 845 visitors
Tijuana River Valley Regional Park	Open	60 trees planted • coast live oak Final year of grant-funded riparian habitat restoration awarded in 2016 was completed.	1 dead tree removed	150 acres • Russian thistle • castor bean • tree tobacco • hottentot-fig • nasturtium • crown daisy • giant reed • non-native grasses (*Poaceae*)	• 80 new informational and directional signs installed to prevent off-trail activity • One gate repaired • Daily patrols to prevent illegal access and dumping	Firebreak maintained	Multiple programs, including nature hikes, snake presentations, animal touch tables, a Hawktober event, and Rad Regional Park event 220 visitors

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APPENDIX K

Private Mitigation Land Monitoring and Maintenance in Reporting Year

	RMP Number	RMP Name	RMP Date	Habitat Manager	Annual Report Due	Surveys[1]	Project Status	Monitoring / Maintenance Status
1	PDS2008-3914-98-001	Bernardo Lakes	Feb-1998	None	Dec	Sensitive Species (annually)	Built-out	Former TET property. The County provided a PAR for the HOA Board to review. Discussions with the HOA will continue in 2024.
APNs: 678-070-30, -31, 678-420-26, -27, 678-421-01, 678-422-01, -02, -04, 678-430-25, 678-432-01, 678-070-35 **Habitat Conservation Area Description:** A total of 111.8 acres of open space is dedicated with 71.8 acres of the 111.8 previously conveyed. The open space is located west of the current western termini of Rancho Bernardo Road, immediately north of Artesian Road and west of Four Gee Road. The property consists mostly of coastal sage scrub with some freshwater marsh, southern willow scrub, and non-native grassland.								
2	PDS2008-3914-99-001	4S Ranch, Ralphs Family Preserve	Sep-1999	Joaquin Meza	Aug	Report new invasive plants population	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 678-031-02, -03, -04, -05, -06, -07, -08, -09, Portions of 678-031-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20 **Habitat Conservation Area Description:** Approximately 1,065 acres immediately south of Lake Hodges, including coastal sage scrub, southern mixed chaparral, native and non-native grassland								
3	PDS2012-3914-99-002-02	4S Ranch, Specific Plan Preserve	Sep-1999	Habitat Restoration Sciences	Sep	Report new invasive plants populations	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: *Lusardi Creek Portion* (south) 312-284-01, 312-285-01, 312-150-04; *North* 678-050-49, 678-030-08, 678-050-51 **Habitat Conservation Area Description:** A total of approximately 547 acres of open space is located on this property. 312 acres are located in the northern portion of the project, adjacent to the Ralph's Family Reserve, and 230 acres is located in the southerly portion of the site within La Jolla Valley, surrounding the Lusardi Creek riparian corridor								
4	PDS2008-3914-99-003	Golem, East Gorge	Jan-2000	San Dieguito River Valley Joint Powers Authority	Dec	CAGN (twice annually)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 678-020-02, -03, 678-021-02, -03, 265-320-03 **Habitat Conservation Area Description** 154 acres of open space was set aside to preserve California adolphia, southwestern spiny rush, San Diego marsh elder, Del Mar manzanita, wart-stemmed ceanothus, California gnatcatcher, southern California rufous-crowned sparrow, coastal western whiptail, and mountain lion.								
5	PDS2008-3914-99-004	Starwood, Santa Fe Valley	Jun-2004	Rincon Consultants	Mar	Sensitive Species (annually)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: *Open Space I* 265-320-18, -22, -30, 265-291-21, -23, -25, -26, -27, 265-290-41, -43, 267-050-42, -44, -46, 267-190-01, 267-132-18, 267-050-57, 267-132-11, 267-051-05, 30, Portion of 267-190-02, *Open Space II* Portions of 267-190-32, 267-290-35, 267-180-72, 267-191-01, -02, -11 **Habitat Conservation Area Description:** The open space is equivalent to approximately 170 acres, located in the north-central San Diego County, along the San Dieguito River corridor south of Del Dios Highway at Bing Crosby Boulevard. 14 sensitive plant species and 12 sensitive wildlife species were observed onsite: California adolphia, San Diego mesa mint, San Diego button celery, spreading navarretia, Orcutt's brodiaea, San Diego ambrosia, Del Mar manzanita, Nuttall's scrub oak, San Diego barrel cactus, San Diego marsh elder, San Diego sagewort, southwestern spiny rush, summer holly, wart-stemmed ceanothus, San Diego fairy shrimp, orange-throated whiptail, Bell's sage sparrow, California horned lark, California gnatcatcher, Cooper's hawk, great blue heron, loggerhead shrike, northern harrier, southern California rufous-crowned sparrow, white-tailed kite, and San Diego black-tailed jackrabbit.								

	RMP Number	RMP Name	RMP Date	Habitat Manager	Annual Report Due	Surveys[1]	Project Status	Monitoring / Maintenance Status
6	PDS2008-3914-99-005	Woodridge	Updated-2016	Center For Natural Lands Management	Dec	CSS (2 out of 5 years) CAGN (2 out of 5 years) Delicate Clarkia (1 out of 5 years)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 395-151-69, -70, 395-432-23, -24, -30, -31 **Habitat Conservation Area Description:** Located south of Pino Drive and west of Lakeview Drive in Lakeside, about 1/2 mile west of Lake Jennings. The site has approximately 55 acres of Diegan coastal sage scrub and native grasslands, and a small patch of eucalyptus woodland, and supports the federally-listed threatened coastal California gnatcatcher. The Center for Natural Lands Management received title to the property in December of 1999 at which time the Woodridge habitat conservation areas management commenced. The County of San Diego holds an Open Space Easement on the conservation area.								
7	PDS2008-3914-01-001	Blossom Valley	Updated-2012	Center for Natural Lands Management	Dec	DCSS and SMC (1 out of 5 years) Oak Tree for GSOB (annually) CAGN (2 out of 5 years) Rush-like Bristleweed and Englemann Oak (1 out of 5 years)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 390-061-03, -04 **Habitat Conservation Area Description:** The 286-acre habitat conservation area was dedicated in fee to the Center for Natural Lands Management in July 2009 as off-site mitigation for the Blossom Valley Estates development. The site is located in Blossom Valley, about 2 miles east of Lake Jennings. The site supports Diegan coastal sage scrub, southern mixed chaparral, and coast live oak woodland that all burned completely during the Cedar Fire in 2003. The site's terrain is very steep and rugged.								
8	PDS2008-3914-02-001	McCrink Ranch, Santa Fe Valley	Jan-2003	None	Jan	Sensitive Species (annually)	Partially built- out	The County provided a PAR for the developer to review. Discussions with the developer will continue in 2024.
APNs: 265-320-25, 267-060-48, -49 **Habitat Conservation Area Description:** This 270-acre preserve area is located in west-central San Diego County, approximately 5 miles east of Interstate 5 and 3 miles west of Interstate 15, south of Del Dios Highway. The site primarily supports coastal sage scrub and southern mixed chaparral.								
9	PDS2008-3914-02-003	Maranatha Chapel	Oct-2002	None	Dec	CAGN (every two years) Rare Plant (every two years)	Built-out	The County is drafting a PAR for the Maranatha Chapel to review. Discussions with the Maranatha Chapel will continue in 2022.
APN: 267-060-37, Portion of 267-060-38 **Habitat Conservation Area Description:** The preserve is located at the western terminus of Rancho Bernardo Road, between Artesian Road and Del Dios Highway. Approximately 82 acres of open space is located in two sections (Open Space 1 North and Open Space 1 South). Nearly half of the property is Diegan coastal sage scrub habitat, with the remaining habitat as non-native grassland, chaparral, oak woodland, freshwater marsh, eucalyptus woodland, disturbed (roads), and developed land.								

	RMP Number	RMP Name	RMP Date	Habitat Manager	Annual Report Due	Surveys[1]	Project Status	Monitoring / Maintenance Status
10	PDS2008-3914-03-002	El Apajo	Jun-2003	None	Dec	Avian and Amphibian (annually) Floral Inventory (every 5 years)	Built-out	Discussions with County Counsel regarding enforcement options will continue in 2022.
APN: 268-360-15 **Habitat Conservation Area Description** This 25.6-acre open space area was conserved for annual grassland and wetlands. It is located within the San Dieguito River Valley along Via de Santa Fe Road northwest of its junction with El Apajo Road.								
11	PDS2010-3914-05-004	Greenhills Ranch	Sep-2006	Habitat Restoration Sciences	Jan	CAGN (every 2 years) San Diego Cactus Wren (every 2 years)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APN: 395-452-01 **Habitat Conservation Area Description:** The 44.04-acre open space is located south of Lake Jennings Road and west of Interstate 8. Observed on the property were California gnatcatcher, southern California rufous-crowned sparrow, silvery legless lizard, Coronado skink, western spadefoot, black-tailed jackrabbit, mule deer, turkey vulture, Bewick's wren, San Diego sunflower, prostrate spineflower, and ashy spike-moss.								
12	PDS2009-3914-06-005	Artesian Trail	Apr-2007	San Dieguito River Park Conservancy	Sep	Thread-leaf Brodiaea (annually)	Built-out	Discussions with County Counsel regarding enforcement options will continue in 2024.
APNs: 267-142-33, -34, -35, -36 **Habitat Conservation Area Description:** The project dedicated approximately 3.2 acres of land into open space in response to a four-lot subdivision. The site is located in the Community of Rancho Santa Fe, four miles west of Interstate 15, south of Artesian Road. The property preserves approximately 2.6 acres of non-native grassland and 0.6-acre of coastal sage scrub. Observed on the property were approximately 688 federally threatened thread-leaf brodiaea (*Brodiaea filifolia*), and approximately 155 California adolphia (*Adolphia californica*).								
13	PDS2012-3914-11-002	Lonestar	Dec-2011	San Diego Habitat Conservancy	Jan	Sensitive Plant Species (every 5 years) CAGN (2 out of every 5 years) Fairy Shrimp (2 out of every 5 years)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs:646-030-21-00, 646-070-36-00, 646-070-37-00 **Habitat Conservation Area Description:** Non-native grassland and CSS in East Otay Mesa. The Preserve provides habitat for several sensitive animal species, including the California gnatcatcher, Coronado skink, burrowing owl, and white-tailed kite.								

	RMP Number	RMP Name	RMP Date	Habitat Manager	Annual Report Due	Surveys[1]	Project Status	Monitoring / Maintenance Status
14	PDS2014-RMPM-10-003	East Otay Mesa	Feb-2012	Open Space Management, Inc.	Jan	CAGN (every 3 years) Burrowing Owl and Raptor (annually) QCB (every 3 years) Sensitive Plant (every 3 years)	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 648-050-20, 648-011-06, Portions 648-040-31, 648-040-55, 648-040-57 92 acres located on the west and east sides of Alta Road north of Calzada de la Fuente in East Otay Mesa. Habitats are coastal sage scrub, chaparral, and non-native grassland. Supports burrowing owls, barrel cactus, Matilija poppy, and San Diego sunflower.								
15	PDS2015-RMPM-12-002	Sloane Canyon	Nov-2013	Open Space Management, Inc.	Feb	Plant and Animal Spec*ies (every 3 years)*	Built-out	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APN: 521-080-11 **Habitat Conservation Area Description:** The Sloane Canyon open space comprises 39.3 acres on Sloane Canyon Road in Jamul. It includes 4.72 acres of riparian woodland, 6.0 acres of Diegan coastal sage scrub, 9.71 acres of Diegan coastal sage scrub/chaparral, 17.2 acres of southern mixed chaparral, and 1.67 acres of disturbed habitat.								
16	PDS2015-RMPM-12-003	Trevi Hills	Feb-2013	Open Space Management, Inc.	Feb	Lakeside Ceanothus (every 5 years)	In process	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 389-071-17, 389-101-01, -02, -03, 389-072-03, 389-102-01, -02, 389-020-12 **Habitat Conservation Area Description:** The Trevi Hills/ High Meadow Ranch open space comprises approximately 350 acres off Muth Valley Road and High Meadow Road. The open space provides for the long-term conservation of intact southern mixed chaparral habitat and the Lakeside ceanothus or Lakeside wild lilac (*Ceanothus cyaneus*)								
17	PDS2016-RMP-16-004	Otay Crossings Commerce Park	Aug-2017	San Diego Habitat Conservancy	Jan	Burrowing Owl (annually) QCB (every 3 years) Fairy Shrimp (2 out of every 5 years) Sensitive Plant (varies)	In process	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 648-071-15, 648-080-31, 648-080-32 **Habitat Conservation Area Description:** The Otay Crossing Commerce Park on-site biological open space is comprised of 24.3 acres. It includes 0.03 acres of wetland, 6.8 acres of coastal sage scrub, 16.2 acres of non-native grassland, and 1.2 acres of disturbed habitat.								
18	PDS2019-RMP-19-004	OMC	March- 2019	Urban Corps San Diego	Jan	Burrowing Owl (annually)	Graded	2022-2023 report was submitted and reviewed by county staff, no major concerns.
APNs: 646-080-34 **Habitat Conservation Area Description:** This land is being conserved as required for non-native grassland mitigation for the project located in East Otay Mesa. The purpose of the RMP is to provide measures to establish a self-sustaining colony of California ground squirrels as to provide suitable habitat for the burrowing owl.								

	RMP Number	RMP Name	RMP Date	Habitat Manager	Annual Report Due	Surveys[1]	Project Status	Monitoring / Maintenance Status
19	PDS2018-RMP-18-002	Sweetwater Vistas	May-2021	San Diego Habitat Conservancy	Jan	CAGN (every 5 years) LBV (every 5 years)	Graded	2022-2023 report was submitted and reviewed by county staff, no major concerns.

APNs: 505-672-07, 09, 10 and partial of 505-672-03,23,37

Habitat Conservation Area Description: The Sweetwater Vistas biological open space is comprised of 28.8 acres. It includes 0.02 acres of disturbed wetland, 1.17 acres of cismontane alkali marsh, 0.03 acres of freshwater marsh, 0.33 acres of mule fat scrub, 3.75 acres of southern willow scrub, 0.22 acres of tamarisk scrub, 0.31 acres of non-native riparian, 0.49 acres of Arundo-dominated riparian, 16.8 acres of Diegan coastal sage scrub, 2.7 acres of non-native grassland, 0.8 acres of disturbed, 0.6 acres of eucalyptus woodland, 1.4 acres of non-native vegetation, and <0.1 acres of urban/developed habitat

NOTES:

[1] Subject to change due to RMP updates and/or adaptive management

APN – Assessor Parcel Number
CAGN – coastal California gnatcatcher
CSS – Coastal Sage Scrub
DCSS – Diegan Coastal Sage Scrub
GSOB – gold-spotted oak borer
HOA – Homeowners Association
HM – habitat manager
QCB – Quino checkerspot butterfly
RMP – Resource Management Plan
SMC – Southern Maritime Chaparral
TET – The Environmental Trust, Inc.

SOURCE:
County of San Diego Department of Planning and Development Services

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APPENDIX L

Stewardship and Management on Private Mitigation Lands

Preserve	Status	Habitat Restoration	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Bernardo Lakes	Non-reporting					
4S Ranch Ralphs	Reporting		• Less than 1/2 acres Artichoke thistle	• Weekly patrolling • Minimal road repairs • Minimal trash removal		
4S Ranch Specific Plan	Reporting		• Fennel • Artichoke Thistle • Tamarisk • Stinkwort • Pampas grass • Black mustard • Tree tobacco • Eucalyptus • Castor bean	• Regular trash removal • Repair of damaged fence due to off-road vehicle • Monitoring of illegal off-road vehicle and trail access		
Golem	Reporting		Coastal Sage • 1.1 acres Floodplain • Non-native grasslands • Canary palms • 90 eucalyptus saplings	• Almost daily patrols • Daily security guard at front entrance • Graffiti removal • Closed illegal access to CAGN habitat		• Outreach with trail users • Coordinated hikes and restoration projects
Starwood (Crosby)	Reporting	Upland Habitat • Ten California adolphia • Five chalk dudleya • 30 California sagebrush • 30 California buckwheat	• Perennial weed • American bullfrog • Brown-headed cowbird	• Coordination with sheriff department to address increased unauthorized use and vandalism	• Defensible space maintained	• Regular website updates

Preserve	Status	Habitat Restoration	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
		Chaparral Habitat • 20 wart-stemmed Ceanothus • 15 coyote brush • Five chamise • Five California sagebrush Five brittlebush				
Woodridge	Reporting	• 150 cacti for coastal cactus wren habitat	• 1,000black mustard • Several stinkwort	• Weekly to bi-weekly patrols to prevent vandalism and illegal activities • Illegal trails repaired and blocked • Minimal trash removed	• Fuel zones maintained and thinned no more than 50%	• Kiosks updated periodically
Blossom Valley	Reporting		• Tree tobacco • Fountain grass	• Twice per month • Minimal trash removed		• Outreach with trail users • Kiosk installed at Flume Trail
McCrink Ranch	Non-Reporting					
Maranatha Chapel	Non-reporting					
El Apajo	Non-reporting					

Preserve	Status	Habitat Restoration	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
Greenhills Ranch	Reporting		• Mustard • Tecolote	• Quarterly patrols • Six maintenance visits • Minimal trash removed • Four trespassing signs installed		• Coordination with HOA
Artesian Trail	Non-reporting					
Lonestar	Reporting	• Coordination with San Diego Zoo Wildlife Alliance to install four brush piles • Coordination with San Diego Zoo Wildlife Alliance to improve habitat for Otay tarplant and burrowing owl	• Mowing of non-native grassland • Herbicide, line trimming, and manual removal of invasive species • Acetic acid treatments for mustard	• Monthly visits • Repaired two damaged sections of fencing • Trash removed along fencing near road		• Attended San Diego County Burrowing Owl meeting • Coordination with San Diego Zoo Wildlife Alliance
East Otay Mesa	Reporting		• Pampas grass • Fennel • Artichoke thistle	• 19 site visits • A small section of fencing was repaired • Minimal trash removed		• Communication with adjacent property owner regarding encroachments
Sloane Canyon	Reporting		• Monitoring of invasives: Arundo	• Biannual patrols		• Communication with adjacent property owner regarding brush clearing limits

Preserve	Status	Habitat Restoration	Invasive Species Control	Access Control, Trail and Infrastructure Installation and Maintenance	Fire Management	Environmental Education
High Meadow Ranch (Trevi Hills)	Reporting		• 170 individual tamarisks	• Patrolled quarterly and repaired and reinstalled fencing • Minimal trash was removed		
Otay Crossings Commerce Park	Reporting		• Fennel • Black mustard • Tocalote • Tamarisk • Russian thistle • Australian saltbush • Stinkwort • Crown daisy	• Monthly patrols • Minimal trash removed • Coordination with Border Patrol to limit preserve access • Installed signs to notify public of private preserve • Repairs to fence		
OMC	Reporting			• Monthly monitoring • Installed three gates • At least 12 garbage bags of debris were removed		• Coordination with Off Road Enforcement Team to help educate the public on legal areas to ride off-road vehicles.
Sweetwater Vistas			• Several annual and perennial species • Mustard • Castor bean • Fountain grass • Tamarisk • Fennel • Palm seedlings • Giant reed	• Monthly patrols • Large trash removal event • 13 signs installed		

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APPENDIX M

Annual Report for the Otay Ranch Preserve, Johnson Canyon Otay Tarplant Preserve, and Piper Ranch

January 1 – December 31, 2023

Annual Report for the Otay Ranch Preserve, Johnson Canyon Otay Tarplant Preserve, and Piper Ranch
January 1–December 31, 2023

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Acronyms and Abbreviations

APN	Assessor's Parcel Number
ATV	all-terrain vehicle
BHCO	Brown-headed cowbird
Cal-IPC	California Invasive Plant Council
CAGN	coastal California gnatcatcher
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CFD	Community Facilities District
City	City of Chula Vista
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
EMP	Environmental Mitigation Program
FY	Fiscal Year
GPS	global positioning system
GSOB	gold-spotted oak borer
HOA	homeowners association
IMG	Inspect and Manage
ISHB	Invasive shot hole borer
LBVI	least Bell's vireo
MSP	Management and Monitoring Strategic Plan
MSCP	Multiple Species Conservation Program
POM	Preserve Owner/Manager (City and County)
Preserve	Otay Ranch Preserve
PSB	Preserve Steward/Biologist (RECON)
QCB	Quino checkerspot butterfly
RMP	Otay Ranch Preserve Phase 1 & Phase 2 Resource Management Plans
SANDAG	San Diego Association of Governments
SDMMP	San Diego Management and Monitoring Program
SDNHM	San Diego Natural History Museum
SHB	Shot hole borer
SR-125	State Route 125
USDC	U.S. Department of Commerce
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
YBCU	yellow-billed cuckoo

1.0 Introduction

The purpose of the 2023 annual report is to provide a summary of monitoring and management tasks performed on conveyed lands under Preserve Owner/Manager (POM) management in calendar year 2023 using funds generated by Community Facilities District (CFD) 97-2. This annual report also includes a summary of monitoring and management tasks performed within the Johnson Canyon Otay Tarplant Preserve using funds generated by the CFD 11M. No activities were performed on the Piper Ranch parcels during 2023. Monitoring and management tasks were based on the priorities identified in the Otay Ranch Phase 2 Resource Management Plan Update (RMP; RECON 2018).

The Otay Ranch Preserve (Preserve) is located in southwestern San Diego County and is composed of three major parcels: Otay River parcel, Proctor Valley parcel, and San Ysidro Mountains parcel (County of San Diego [County] 1993). The Preserve boundaries include lands within the city of Chula Vista (City) and the county of San Diego. Through December 31, 2023, lands that have been conveyed to the Preserve total 4,373.428 acres, including the property owner funded 11.900-acre Piper Ranch parcels (Table 1). Table 2 provides the assessor's parcel number (APN) and acreage for the Johnson Canyon Otay Tarplant Preserve parcel that is part of Rolling Hills Ranch Preserve. Figures 1 through 3 show the locations of conveyed land.

The Preserve is a hardline preserve that has been designed and is managed specifically for protection and enhancement of the multiple species present. The Preserve also serves to connect large areas of open space through a series of wildlife corridors, including connections between regional open space areas west and east of Otay Reservoir and north to San Miguel Mountain. The Preserve is managed by the POM (City and County). Preserve monitoring and operations/maintenance tasks were implemented by the Preserve Steward/Biologist (PSB; RECON) in consultation with the POM.

The purpose of this annual report is to document access issues, new site disturbances, previously undetected plant and wildlife species, sensitive species, and management tasks performed between January 1, 2023 and December 31, 2023.

Table 1 Conveyed Preserve Parcels, Assessor's Parcel Numbers, and Acreages as of December 2023		
Parcel(s)	Assessor's Parcel Number (APN)	Acreage
Bonita Glen	598-080-10[a]	2.189
Dulzura	598-160-17, 598-170-18, 647-050-06, 647-060-03, 647-060-05[b]	801.018
Salt Creek	643-070-08, 643-070-16[c], 644-080-09, 644-080-11, 644-080-15, 644-090-04	784.500
San Ysidro	647-130-03, 647-140-01	517.422
Proctor Valley Extension	598-090-01, 598-030-01, 598-080-05	399.700
Proctor Valley	598-080-06[d]	275.286
Ridge	598-140-04, 598-140-05	270.000
Jamul Mountains	598-070-08, 598-070-10[e]	258.132
McMillin	647-100-08, 647-100-10	230.280
Millenia	646-020-14, 646-030-20	189.200
Little Cedar Canyon	647-110-03, 647-120-03[f]	160.000
Northern Salt Creek	643-070-14	149.758[g]
Northern San Ysidro	647-090-07[h]	118.500
Proctor Valley (North)	597-150-16[i]	82.381
Proctor Valley (South)	598-020-05	40.000
Western Wolf Canyon	644-313-13, 644-313-14[j], 644-313-65, 644-313-66, 644-340-25	32.340
Wolf Canyon[k]	644-313-11	29.322
Johnson Canyon (East)	646-030-34[l]	21.500
Piper Ranch[m]	646-030-27, 646-030-33	11.900
TOTAL		**4,373.428**

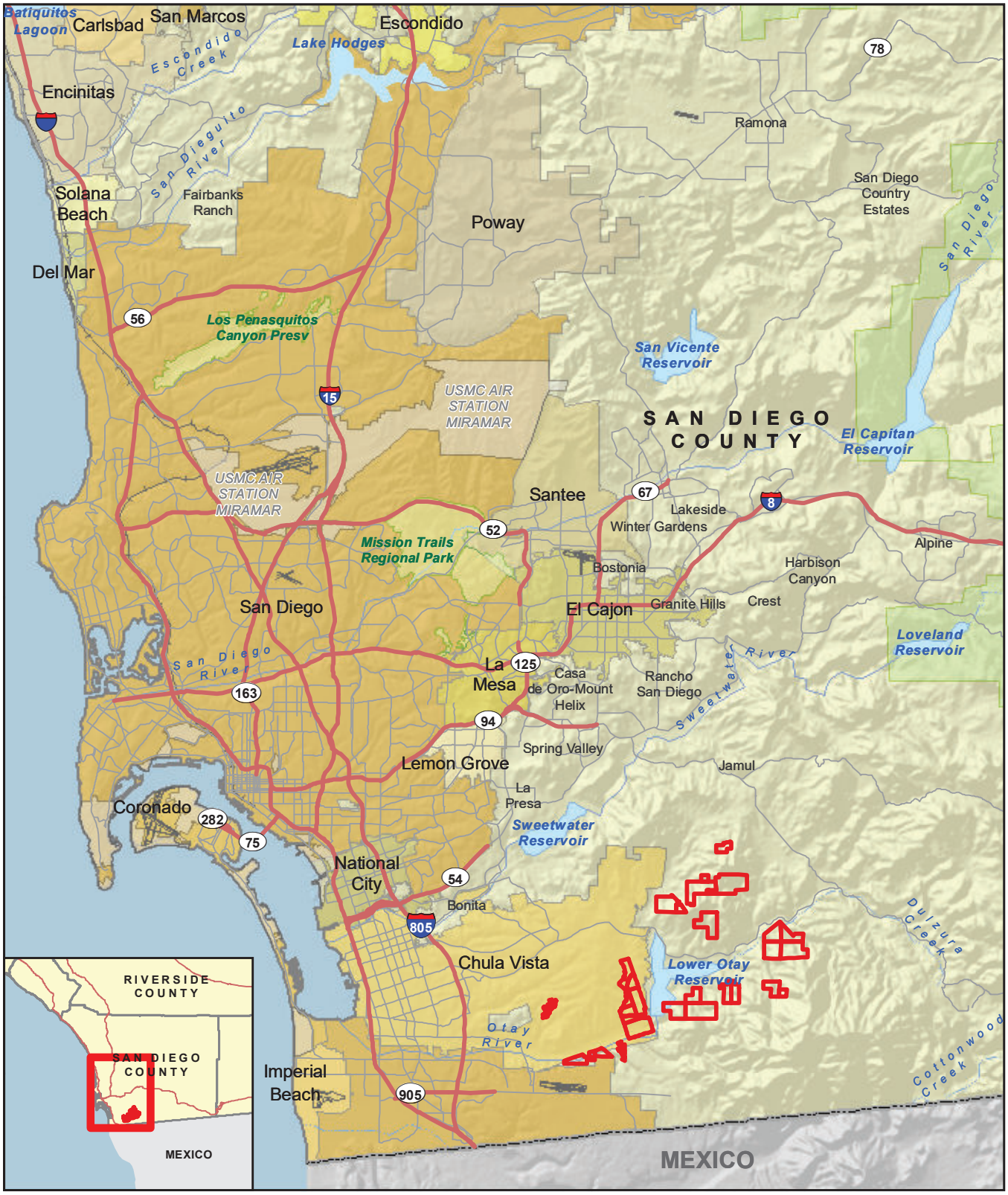
NOTE: Parcel acreages are based on grant deeds provided by the City of Chula Vista. The deed acreages may differ slightly from the acreages calculated using geographic information system due to minor discrepancies in the parcel boundaries.

[a]Previous APN 598-080-05.
[b]Previous APNs 598-160-14, 598-170-04, 647-050-04, 647-060-01.
[c]Previous APN 643-070-10.
[d]Previous APN 598-08-002.
[e]Previous APNs 598-070-05, 598-070-06.
[f]Previous APNs 647-110-01, 647-120-01.
[g]Northern Salt Creek total acreage increased by 1.161 acres due to conveyance of Parcels A through E within the Parcel during 2022.
[h]Previous APN 647-090-04.
[i]Previous APN 597-150-06.
[j]Previous APN 646-030-31.
[k]Previous APN 644-313-12.fs
[l]The current APN is provided along with the original grant deed acreage from APN 644-313-07.
[m]A separate CFD will be established in the future.

Table 2 Rolling Hills Ranch Preserve Johnson Canyon Otay Tarplant Preserve Parcel Conveyed Preserve Parcel, Assessor's Parcel Number, and Acreage		
Parcel(s)	Assessor's Parcel Number	Acreage
Johnson Canyon Otay Tarplant Preserve[1]	646-030-32	10.010
TOTAL		**10.010**

NOTE: Parcel acreage is based on the grant deed provided by the City of Chula Vista. The deed acreage may differ slightly from the acreage calculated using geographic information system due to minor discrepancies in the parcel boundaries.

[1]Funded by CFD 11M. Management and monitoring activities performed in accordance with the Otay Ranch Resource Management Plan (Helix Environmental Planning 2003).



Conveyed Land Under POM Management

FIGURE 1
Regional Location of Otay Ranch Preserve, Johnson Canyon Otay Tarplant Preserve, and Piper Ranch

RECON

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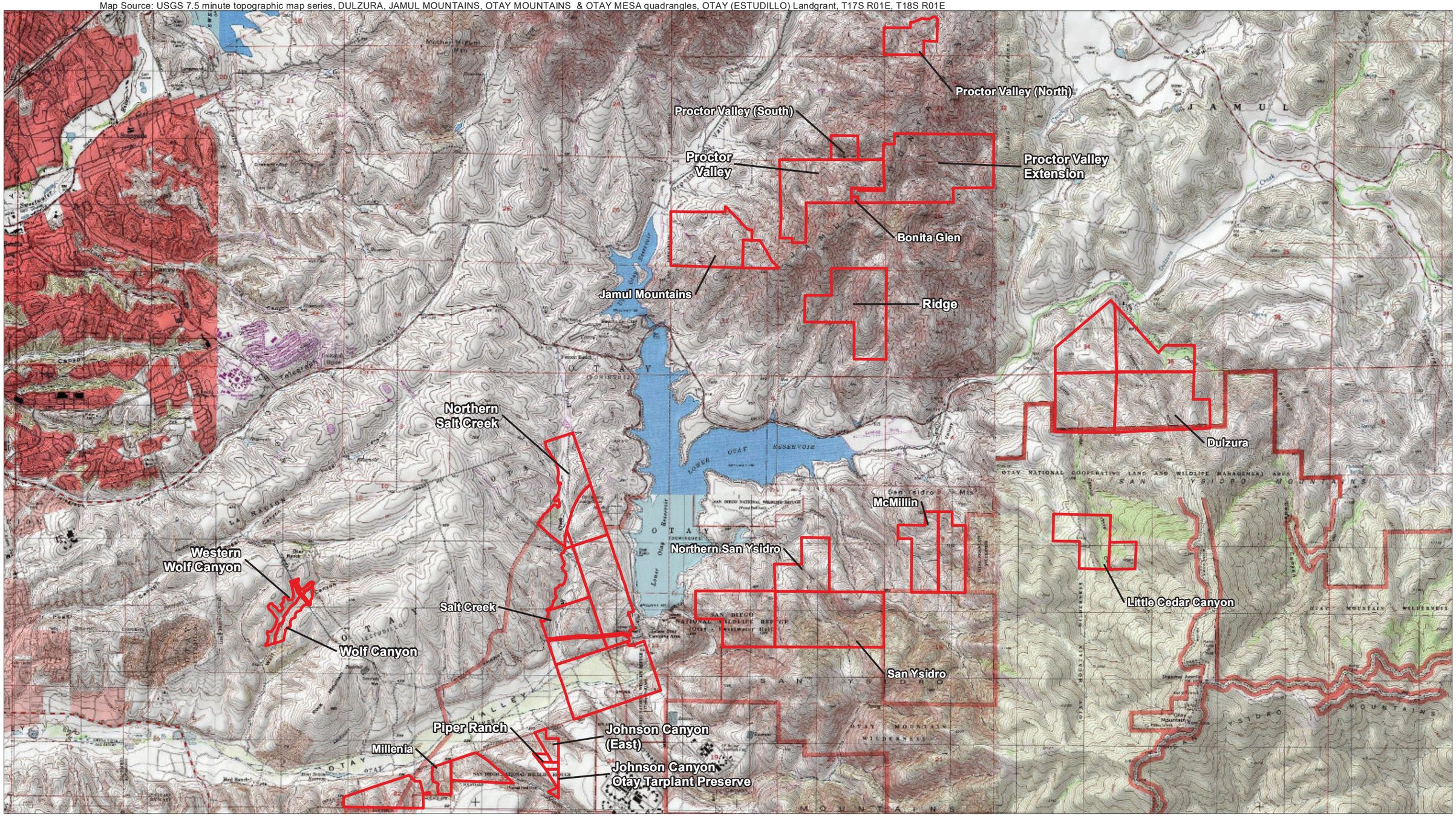
Map Source: USGS 7.5 minute topographic map series, DULZURA, JAMUL MOUNTAINS, OTAY MOUNTAINS & OTAY MESA quadrangles, OTAY (ESTUDILLO) Landgrant, T17S R01E, T18S R01E



Conveyed Land Under POM Management

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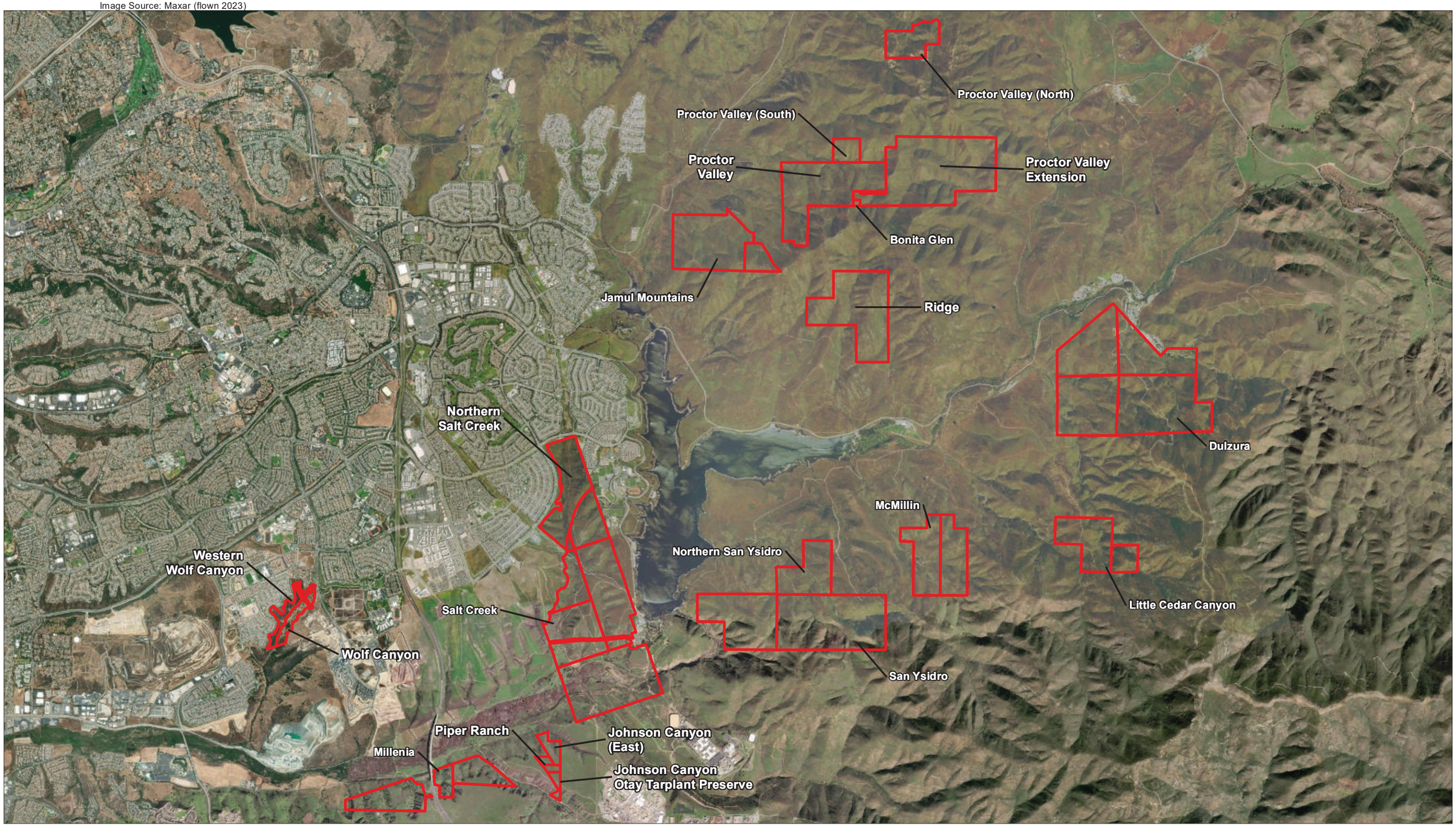
FIGURE 2
Otay Ranch Preserve, Johnson Canyon Otay Tarplant Preserve, and Piper Ranch Location on USGS Map

Image Source: Maxar (flown 2023)



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Conveyed Land Under POM Management

FIGURE 3
Otay Ranch Preserve, Johnson Canyon Otay Tarplant Preserve, and Piper Ranch on Aerial Photograph

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2.0 Preserve Monitoring

This chapter describes Preserve monitoring tasks that occurred between January 1 and December 31, 2023. These Preserve monitoring tasks were proposed in the Fiscal Year (FY) 2022–23 annual work plan, FY 2022-23 addendum, and FY 2023–24 annual work plan (RECON 2022a, 2023a, and 2023b). The headings used within this annual report match the associated task numbers in the FY 2022–23 and FY 2023–24 annual work plans. Attachment 1 includes Figures 4 through 53. Attachment 2 includes Photographs 1 through 47.

The following Preserve monitoring tasks were conducted in support of the Otay Ranch Preserve Phase 1 and Phase 2 RMPs (County of San Diego 1993 and RECON 2018): focused rare plant surveys, baseline surveys, Quino checkerspot butterfly (*Euphydras editha quino*; QCB) surveys, least Bell's vireo (*Vireo bellii pusillus*; LBVI) and yellow-billed cuckoo (*Coccyzus americanus occidentalis*; YBCU) surveys, shot hole borer (*Euwallacea* sp.; SHB) tree health surveys, gold-spotted oak borer (*Agrilus auroguttatus*) monitoring, Hermes copper butterfly (*Lycaena hermes*) surveys, Harbison dun skipper (*Euphyes vestris harbisoni*) surveys, golden eagle (*Aquila chrysaetos*) camera surveys, vernal pool plant monitoring, wet season fairy shrimp surveys, native shrub tissue sampling, seed collection and redistribution, and vegetation rapid assessment monitoring. The Preserve monitoring tasks also included land stewardship consisting of site visits, meetings and coordination, and reporting.

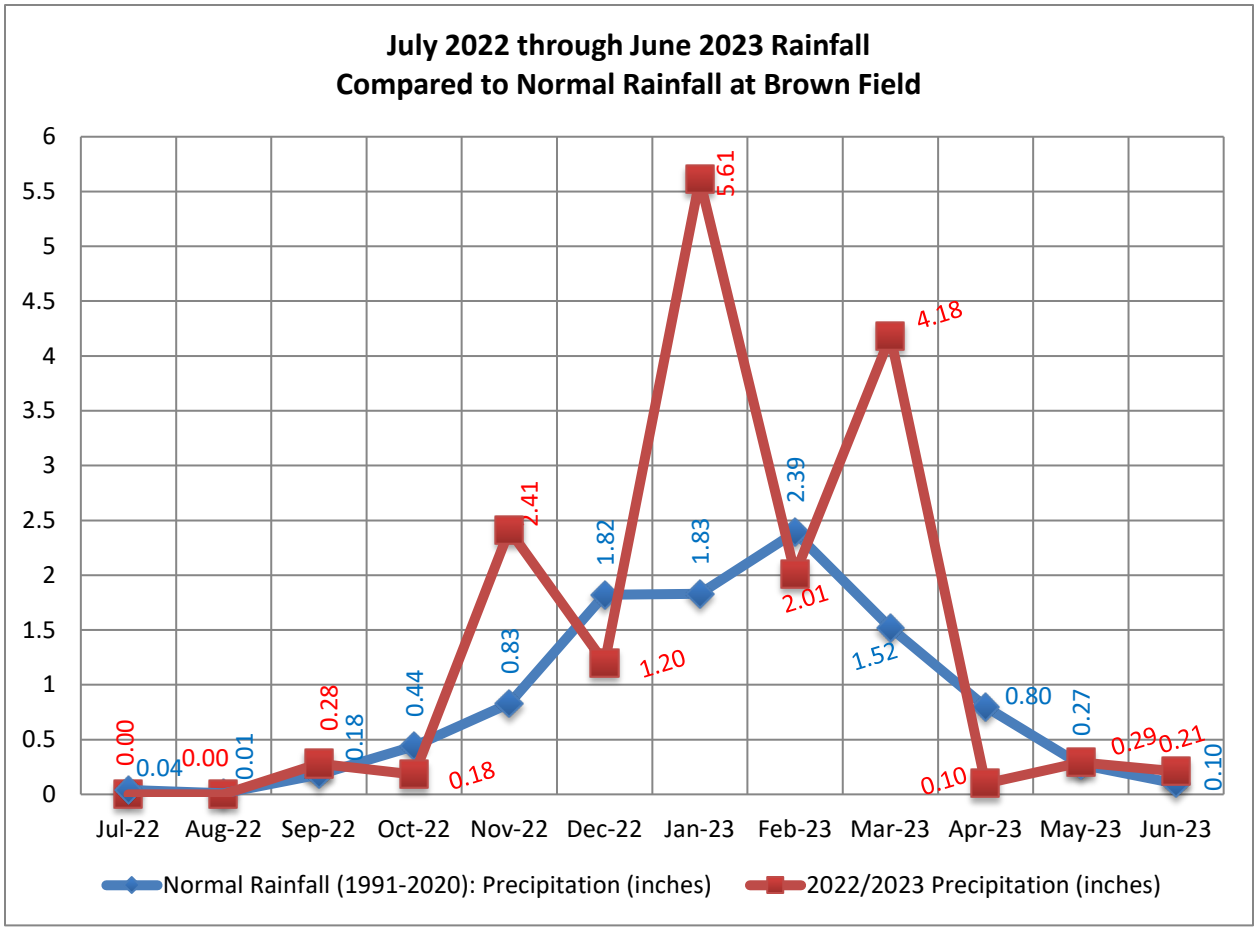
2023 Weather Summary

The total rainfall for the 2022-2023 season was higher than normal by 6.24 inches. Between July 1, 2022, and June 30, 2023, rainfall at Brown Field (the closest reporting station) was 16.47 inches (Table 3 and Graph 1; U.S. Department of Commerce [USDC] 2023a). At Brown Field, normal rainfall during this time period is approximately 10.23 inches based on rainfall data collected between 1991 and 2020 (USDC 2023b). The entire rainy season (October 2022 through April 2023) was higher than normal with rainfall of approximately 15.69 inches. The above-average rain events throughout the rainy season resulted in extensive germination of annual species.

Temperatures were below normal during most months between June 2022 and July 2023 (Table 4; Graph 2). Only August and September 2022 had above normal temperatures (see Table 4 and Graph 2). The above average rainfall and below average temperatures led to favorable conditions for an expanded growing season during the spring of 2023.

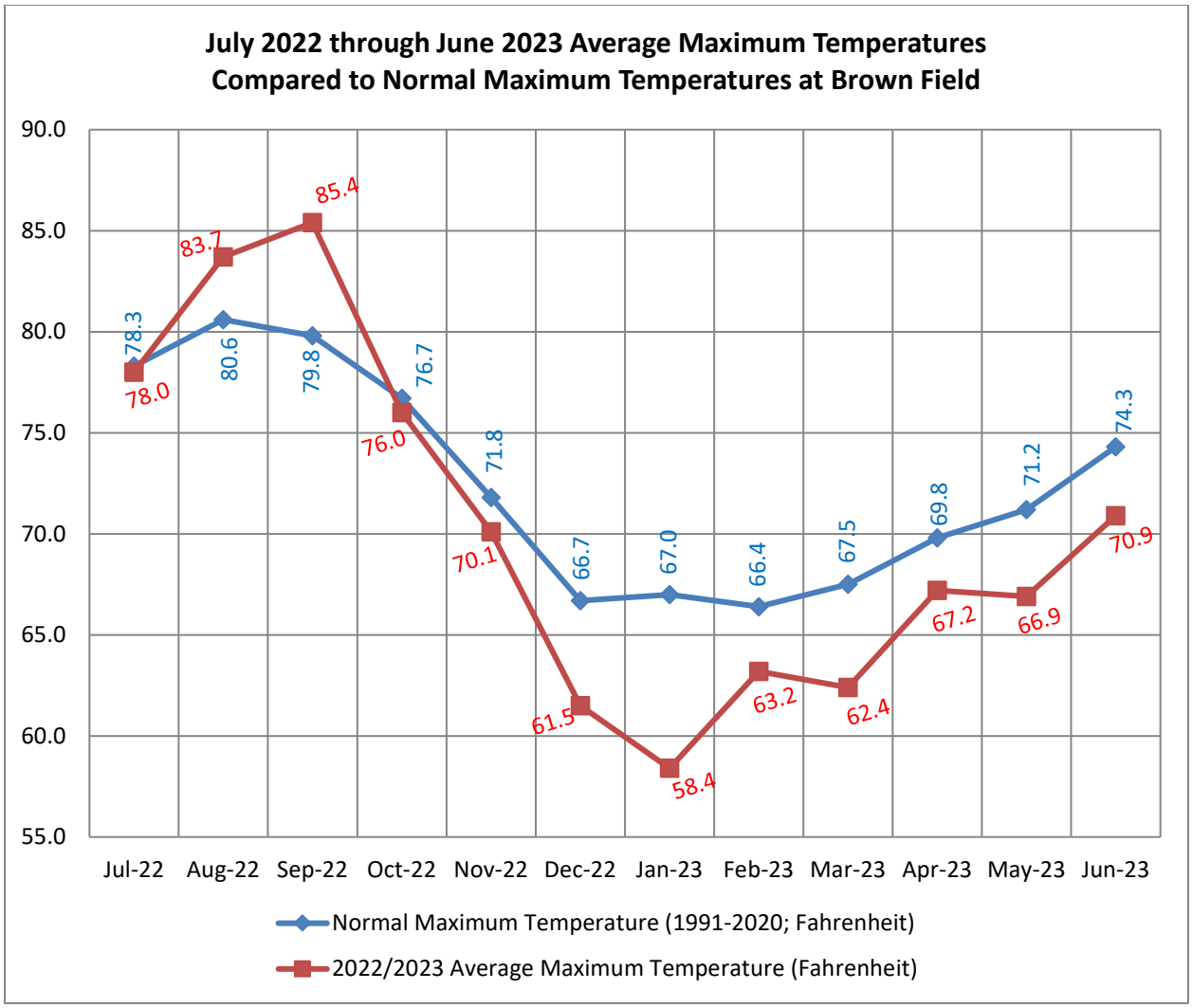
Table 3 July 2022 through June 2023 Rainfall Compared to Normal Rainfall			
Month	Precipitation (inches)[1]	Normal Rainfall: Precipitation (inches)[2]	Difference (inches)
2022			
July	0.0	0.04	-0.04
August	0.0	0.01	-0.01
September	0.28	0.18	+0.10
October	0.18	0.44	–0.26
November	2.41	0.83	+1.58
December	1.20	1.82	–0.62
2023			
January	5.61	1.83	+3.78
February	2.01	2.39	–0.38
March	4.18	1.52	+2.66
April	0.10	0.8	–0.7
May	0.29	0.27	+0.02
June	0.21	0.1	+0.11
GRAND TOTAL	**16.47**	**10.23**	**6.24**

[1]SOURCE: USDC 2023a.
[2]SOURCE: USDC 2023b. Average based on Period of Record from 1991-2020.



GRAPH 1
July 2022 through June 2023 Rainfall Compared to Normal Rainfall at Brown Field

Table 4 July 2022 through June 2023 Average Maximum Temperatures Compared to Normal Maximum Temperatures			
Month	Average Maximum Temperature (Fahrenheit)[1]	Normal Maximum Temperature (Fahrenheit)[2]	Difference (Fahrenheit)
July 2022	78.0	78.3	**-0.3**
August 2022	83.7	80.6	**+3.1**
September 2022	85.4	79.8	**+5.6**
October 2022	76.0	76.7	**-0.7**
November 2022	70.1	71.8	**-1.7**
December 2022	61.5	66.7	**-5.2**
January 2023	58.4	67.0	**-8.6**
February 2023	63.2	66.4	**-3.2**
March 2023	62.4	67.5	**-5.1**
April 2023	67.2	69.8	**-2.6**
May 2023	66.9	71.2	**-4.3**
June 2023	70.9	74.3	**-3.4**
[1]SOURCE: USDC 2023a. [2]SOURCE: USDC 2023b.			



GRAPH 2
July 2022 through June 2023 Average Maximum Temperatures
Compared to Normal Maximum Temperatures at Brown Field

Task 1: Surveys

Surveys conducted between January 1, 2023 and December 31, 2023 are discussed in the subtask sections below. The results of the baseline survey, QCB surveys, wet season fairy shrimp surveys, brown-headed cowbird trapping, native shrub tissue sampling and SHB tree health surveys, LBVI and YBCU surveys, are summarized in Section 4, Subtasks 4d (FY 2022-23), 4j (FY 2022-23), 4k (FY 2022-23), 4a (FY 2023-24), 4c (FY 2023-24), and 4d (FY 2023-24).

Subtask 1b. (FY 2022-23) and Subtask 1d. (FY 2023-24): Shot Hole Borer (*Euwallacea* sp.; SHB) Tree Health Surveys

Tree health surveys were conducted to document the effects of SHB within riparian vegetation at the Northern Salt Creek, Salt Creek, and Wolf Canyon parcels. Surveys were conducted at the end of spring as any lack of vigor would be obvious in the tree crown, and signs of the SHB would be fresh and easier to see. Seven photo monitoring points established at Northern Salt Creek and Salt Creek parcels in 2021 within riparian areas with willow stands were revisited quarterly in 2023. Two riparian photo monitoring points were established at Wolf Canyon on March 7, 2023 and were revisited quarterly. Photograph 1 shows a representative riparian photo monitoring location. Tree health surveys consisted of a visual inspection of all willow trees for signs of SHB and Fusarium Dieback such as SHB entry/exit holes, frass, bark staining, sugary exudate, gumming, and branch die back. Any trees with visible signs of potential SHB infestation and/or potential Fusarium Dieback were mapped with a global positioning system (GPS) unit. Samples were collected and sent to Dr. Akif Eskalen's lab at the University of California, Davis on May 26, 2023. Table 5 lists the dates, parcels, and tasks. Figure 4 shows the monitoring location.

Table 5
Shot Hole Borer Tree Health Surveys
Dates, Parcels, and Task

Date	Parcel(s)	Task
02/07/2023	Northern Salt Creek, Salt Creek	Repeat photo monitoring
03/07/2023	Wolf Canyon	Establish photo monitoring
05/10/2023	Northern Salt Creek, Salt Creek	Tree health surveys and repeat photo monitoring
05/23/2023	Salt Creek, Wolf Canyon	Tree health surveys and repeat photo monitoring
08/09/2023	Northern Salt Creek, Wolf Canyon	Repeat photo monitoring
08/10/2023	Salt Creek	Repeat photo monitoring
11/16/2023	Northern Salt Creek, Salt Creek, Wolf Canyon	Repeat photo monitoring

Subtask 1c. (FY 2022-23): Native Shrub Tissue Sampling

Root and bark samples were collected from five lemonade berry (*Rhus integrifolia*) shrubs that showed signs of stress and suspected fungal pathogen (Figure 5). Native shrub tissue sampling included a visual inspection of select shrubs for signs of dieback such as bark scaling or cracking,

yellowing and browning foliage, and gum exudation. The sampled shrubs were mapped with a GPS unit and photographs of the symptoms and tissue sampled were collected. The PSB collected samples from Wolf Canyon (two sample locations), Northern Salt Creek (one sample location), and Salt Creek (two sample locations) on August 28, 2023. The samples were mailed to the California Department of Food and Agriculture (CDFA) Plant Pest Diagnostics Center for disease identification. The sampling methods were confirmed by CDFA Plant Pest Diagnostics Center prior to collection. On October 18, 2023 the Plant Pest Diagnostics Lab of California Department of Food and Agriculture provided the results of the samples.

Subtask 1d. (FY 2022-23): Wet Season Fairy Shrimp Surveys

The PSB conducted protocol wet season fairy shrimp surveys in accordance with the U.S. Fish and Wildlife Service (USFWS) guidelines (USFWS 2017) under USFWS permit TE-797665 and in accordance with USFWS's approval for RECON's proposed deviation methods (RECON 2022b). Surveys were conducted with the assistance of RECON biologists Jade Woll and Chelsea Polevy (Table 6). Surveys were timed to occur approximately 8 to 12 days following significant rain events to allow sufficient time to observe adult fairy shrimp. Since the surveys are meant to inform future Otay Ranch Preserve management decisions and were not conducted in association with any proposed development or impacts, the surveys were terminated after five visits. Figure 6 shows the ponding areas where surveys were conducted. Photograph 2 demonstrates a surveyor taking depth measurements during a focused survey. Photograph 3 shows a ponded area.

Table 6
2022 2023 Wet Season Survey Dates, Personnel, Times, and Conditions for the Otay Ranch Preserve Salt Creek Parcels

Survey Visit Number	Date	Personnel	Time	Weather Conditions[1]
1	11/17/2022	Kayo Valenti	11:15 a.m.–3:52 p.m.	72–75°F air temperature, 25-90% cloud cover, 0–3 mph winds
1	11/21/2022	J.R. Sundberg	10:54 a.m.–12:28 p.m.	71–73°F air temperature, 15% cloud cover, 2 mph winds
2	12/22/2022	J.R. Sundberg	1:51 p.m.–2:42 p.m.	66–67°F air temperature, 30-35% cloud cover, 1–3 mph winds
2	12/23/2022	J.R. Sundberg Lindsay Willrick[2]	12:24 p.m.–3:47 p.m.	67–70°F air temperature, 15% cloud cover, 2–3 mph winds
3	01/26/2023	J.R. Sundberg Jade Woll[3]	10:22 p.m.–4:02 p.m.	56–64°F air temperature, 0% cloud cover, 4-8 mph winds
3	01/26/2023	Kayo Valenti Jade Woll[3]	10:13 a.m.–5:20 p.m.	59–65°F air temperature, 0% cloud cover, 4–8 mph winds
4	02/10/2023	J.R. Sundberg	9:48 a.m.–1:23 p.m.	66–72°F air temperature, 0-20% cloud cover, 3 mph winds

Table 6
2022 2023 Wet Season Survey Dates, Personnel, Times, and Conditions for the Otay Ranch Preserve Salt Creek Parcels

Survey Visit Number	Date	Personnel	Time	Weather Conditions[1]
4	02/10/2023	Kayo Valenti Chelsea Polevy[4]	10:02 a.m.–3:16 p.m.	67–76°F air temperature, 10-75% cloud cover, 1-5 mph winds
5	03/10/2023	J.R. Sundberg	8:22 a.m.–1:51 p.m.	54–62°F air temperature, 100% cloud cover, 0–1 mph winds
5	03/10/2023	Kayo Valenti	8:51 a.m.–1:51 p.m.	60–62°F air temperature, 90-100% cloud cover, 0–3 mph winds

[1]°F = degrees Fahrenheit; % = percent; mph = miles per hour
[2]Biologist Lindsay Willrick assisted with the survey under direct supervision of the permitted biologist.
[3]RECON biologist Jade Woll assisted with the survey under direct supervision of the permitted biologist, splitting her time between each permittee.
[4]RECON biologist Chelsea Polevy assisted with the survey under direct supervision of the permitted biologist.

On March 8, 2023, USFWS provided approval for a request to conduct ad hoc sampling in areas where ponding had not been observed in previous years. If fairy shrimp were observed to be present with the naked eye, a permitted biologist was authorized to opportunistically sample the ponding areas with a dip net for the purpose of fairy shrimp species identification. An ad hoc survey was conducted at the Millenia parcels on April 4, four days after the twelfth significant rain event, to gather additional information in ponding areas where data collection had not occurred previously. Four ponding areas were visually examined for fairy shrimp (Figure 7).

Subtask 1e. (FY 2022-23): Vegetation Rapid Assessment (Potential SANDAG TransNet EMP Grant Matching/Complementary Work)

On September 12, rapid assessment surveys were conducted within the hydroseed, hand-seed, and container plant areas as matching/complementary work for the 18-month San Diego Association of Governments (SANDAG) TransNet Environmental Mitigation Program (EMP) grant for Quino checkerspot (*Euphydryas editha quino*; QCB) short-term threat reduction project. Figure 8 shows the 0.69-acre quantitative monitoring area within the Dulzura parcels. Repeat photographs were taken at four previously established locations. Photographs were also taken to show general site conditions. Three rapid assessment forms were completed, one for each of the following areas: proposed seed by hand, proposed container plants, and proposed hydroseed. The California Department of Fish and Wildlife-California Native Plant Society (CDFW-CNPS) Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form (CNPS 2019) was followed for this effort. Tables 7 through 9 present the results of the survey.

Table 7 Rapid Assessment Results: Container Plant Area		
Scientific Name	Common Name	Percent Cover
Acmispon glaber	deerweed	0.01
Artemisia californica	California sagebrush	0.01
Bromus rubens	Red brome	0.01
Centaurea melitensis	Maltese star-thistle	0.25
Eriogonum fasciculatum	California buckwheat	0.01
Erodium sp.	filaree, storksbill	0.25
Hirschfeldia incana	short-pod mustard	0.01
Lepidium sp.	peppergrass	0.01
Salsola sp.	thistle	2.00
Schismus barbatus	Mediterranean schismus	0.01
Sisymbrium sp.	mustard	0.01
Total Percent Absolute Cover		2.58

Table 8 Rapid Assessment Results: Seed by Hand Area		
Scientific Name	Common Name	Percent Cover
Acmispon glaber	deerweed	0.25
Adenostoma fasciculatum	chamise	5.00
Artemisia californica	California sagebrush	0.25
Bromus rubens	Red brome	1.00
Centaurea melitensis	Maltese star-thistle	0.25
Chlorogalum pomeridianum	wavy-leaf soap-plant	0.01
Crocanthemum scoparium	peak rush-rose	0.01
Cryptantha sp.	cryptantha	0.01
Erodium sp.	filaree, storksbill	0.25
Festuca myuros	rattail sixweeks grass	1.00
Gastridium phleoides	nit grass	0.01
Logfia gallica	daggerleaf cottonrose	0.25
Plantago erecta	dot-seed plantain	0.01
Silene gallica	small-flower catchfly	0.01
Stipa sp.	needle grass	0.01
Xylococcus bicolor	mission manzanita	0.25
Total Percent Absolute Cover		8.57

Table 9 Rapid Assessment Results: Hydroseed Area		
Scientific Name	Common Name	Percent Cover
Acmispon glaber	deerweed	0.01
Artemisia californica	California sagebrush	0.25
Avena sp.	oats	0.01
Baccharis sarothroides	broom baccharis	0.01
Bromus hordeaceus	soft chess	0.01

Table 9 Rapid Assessment Results: Hydroseed Area		
Scientific Name	Common Name	Percent Cover
Bromus rubens	red brome	1.00
Centaurea melitensis	Maltese star-thistle	4.00
Croton setiger	dove weed	0.01
Deinandra fasciculata	fascicled tarweed	2.00
Eriogonum fasciculatum	California buckwheat	0.25
Erodium sp.	filaree, storksbill	3.00
Festuca myuros	rattail sixweeks grass	1.00
Gutierrezia sp.	matchweed	0.25
Hirschfeldia incana	short-pod mustard	2.00
Lasthenia sp.	goldfields	0.01
Lamarckia aurea	golden-top	0.01
Plantago erecta	dot-seed plantain	0.01
Salsola sp.	thistle	0.01
Silene gallica	small-flower catchfly	0.01
Sisymbrium sp.	mustard	0.01
Stipa sp.	needle grass	0.01
Total Percent Absolute Cover		**13.87**

Subtask 1f.(FY2022-23): Focused Rare Plant Surveys

Rare plant surveys focusing on annual and herbaceous and conspicuous perennial species were conducted in spring 2023. The results of the rare plant surveys are shown in Figures 9 and 10. Rare plant survey dates are included in Table 10 and includes rare plant monitoring in accordance with the Management and Monitoring Strategic Plan (MSP) using the Inspect and Manage (IMG) protocol for species identified by the MSP IMG management group as priority species. Table 11 lists the non-IMG focused rare plant survey locations and focal plant types. Increases in the number of annual and herbaceous perennial individuals observed in 2023 were likely due to higher-than-normal rainfall conditions and observing species in previously undocumented areas.

Table 10 Focused Rare Plant Surveys Dates and Locations	
Date	Location (Parcels)
04/25/2023	Proctor Valley (North)
04/27/2023	Little Cedar Canyon
05/02/2023	Dulzura
05/09/2023	Proctor Valley (North)*
05/25/2023	San Ysidro* and Northern San Ysidro*
05/26/2023	Dulzura
06/09/2023	Little Cedar Canyon
06/13/2023	Northern Salt Creek* and Millenia*

Table 10 Focused Rare Plant Surveys Dates and Locations	
Date	Location (Parcels)
06/14/2023 06/15/2023 06/15/2023	Western Wolf Canyon*
06/15/2023	San Ysidro* and Northern San Ysidro*
*MSP IMG monitoring location.	

Table 11 Focused Rare Plant Survey Locations and Focal Plant Type (non IMG)	
Parcel(s)	Rare Plant Survey Focus – Plant Type
Dulzura	conspicuous perennial species
Little Cedar Canyon	conspicuous perennial species

Non-IMG surveys focused on the Priority Group 1 species detailed in the work plan (FY 2022-23). Additional Priority Group 1 and Priority Group 2 through 4 species were monitored incidentally as budget allowed and are discussed below. A description of the criteria that were used to define each priority group can be found in the RMP (RECON 2018). The California Native Plant Society's (CNPS) Botanical Survey Guidelines were used as a guide for focused rare plant surveys (CNPS 2001). Rare plant occurrences were recorded in a California Natural Diversity Database (CNDDB) data dictionary created by the PSB. Information collected in the data dictionary included species name, number of individuals, site quality, and additional comments. For species that are highly vulnerable to threats, such as variegated dudleya (*Dudleya variegata*), the top three threats were recorded for each metapopulation. In the field, surveyors revisited previously mapped locations as well as walked meandering transects to visually search for sensitive plants. Surveys occurred in spring when annual and herbaceous perennial species were most visible. Table 12 shows the results of the non-IMG focused rare plant surveys for Priority Group 1 species. Representative photos are shown in Photographs 4 and 5.

Table 12 Non IMG Focused Rare Plant Survey Results for Priority Group 1 Species				
Parcel(s)	Priority Group	Common Name	Scientific Name	Number of Individuals
Dulzura	1	Gander's pitcher sage	*Lepechinia ganderi*	721
		Mexican flannelbush	*Fremontodendron mexicanum*	0
Little Cedar Canyon	1	Felt-leaved Monardella	*Monardella hypoleuca* ssp. *lanata*	7
		Gander's pitcher sage	*Lepechinia ganderi*	35[a] 4[b]
		Mexican flannelbush	*Fremontodendron mexicanum*	83
[a]Inside parcels. [b]Outside and adjacent to parcels.				

Results of the 2023 MSP IMG rare plant surveys are shown in Table 13 and Figures 11 through 15. Representative photos are shown in Photographs 6 through 9. An IMG survey plot, for Orcutt's

brodiaea at Little Cedar Canyon parcel, that was requested by San Diego Management and Monitoring Program (SDMMP) to be established if Orcutt's brodiaea was observed present was not established as there was no sign of the rare plant.

Table 13
2023 Management Strategic Plan Inspect and Manage Rare Plant Survey Results

Common Name	Scientific Name	Parcel(s)	Estimated Number of Individuals	MSP IMG
Jennifer's monardella	*Monardella stoneana*	NSY	1	MOST_3NSYP004_2
		SY	3	MOST_3NSYP004_1
Orcutt's brodiaea	*Brodiaea orcuttii*	NSY & SY	76	BROR_3SYPA008_1
Otay tarplant	*Deinandra conjugens*	NSC	6,688	DECO13_3SCPA016_1
		WWC & WC	4,916	DECO13_3ORVA018_1
		MLLN	1,203	DECO13_3ORPR035_1
		MLLN	1,500,734	DECO13_3ORPR037_1
San Miguel savory	*Clinopodium chandleri*	PVN	86	CLCH5_3PRVA00_3

MLLN = Millenia
NSC = Northern Salt Creek
NSY = Northern San Ysidro
PVN = Proctor Valley (North)
SY = San Ysidro
WC = Wolf Canyon
WWC = Western Wolf Canyon

Additional sensitive species that were incidentally observed are included in Table 14 and Figures 16 through 26. Photograph 10 shows a representative photo of Dunn's mariposa lily.

Table 14
Incidental Rare Plant Observations*

Parcel(s)	Priority Group	Common Name	Scientific Name	Number of Individuals
Bonita Glen	4	San Diego viguiera	*Bahiopsis laciniata*	80
		Ashy spike-moss	*Selaginella cinerascens*	2
Dulzura	1	San Diego goldenstar	*Bloomeria clevelandii*	720
		Dunn's mariposa lily	*Calochortus dunnii*	12
	4	Golden-ray pentachaeta	*Pentachaeta aurea* ssp. *aurea*	10,000
		Chaparral rein-orchid,	*Piperia cooperi*	8
		San Diego needle grass	*Stipa diegoensis*	11
Jamul Mountains	1	Variegated dudleya	*Dudleya variegata*	56
	2	San Diego barrel cactus	*Ferocactus viridescens*	14
	4	Ashy spike-moss	*Selaginella cinerascens*	1,000
Johnson Canyon Otay Tarplant Preserve	1	Otay tarplant	*Deinandra conjugens*	11
Little Cedar Canyon	1	Dunn's mariposa lily	*Calochortus dunnii*	12
	4	Ocellated Humboldt lily	*Lilium humboldtii* ssp. *ocellatum*	25
		California adder's-tongue	*Ophioglossum californicum*	5
		Chaparral rein-orchid,	*Piperia cooperi*	2
McMillin	4	Golden-ray pentachaeta	*Pentachaeta aurea* ssp. *aurea*	100
Millenia	1	Otay mesa mint	*Pogogyne nudiuscula*	28

Table 14 Incidental Rare Plant Observations*				
Parcel(s)	Priority Group	Common Name	Scientific Name	Number of Individuals
		San Diego button-celery	*Eryngium aristulatum* var. *parishii*	26
Northern Salt Creek	4	Graceful tarplant	*Holocarpha virgata* ssp. *elongata*	28
Proctor Valley (North)	1	Dunn's mariposa lily	*Calochortus dunnii*	202
Proctor Valley Extension	4	California adder's-tongue	*Ophioglossum californicum*	2
Ridge	1	San Diego goldenstar	*Bloomeria clevelandii*	5
	4	Western dichondra	*Dichondra occidentalis*	1
		Palmer's grapplinghook	*Harpagonella palmeri*	105
Salt Creek	1	Snake cholla	*Cylindropuntia californica* var. *californica*	2
	3	Munz's sage	Salvia munzii	30
	4	Palmer's grapplinghook	*Harpagonella palmeri*	200
		Hogwallow starfish	*Hesperevax caulescens*	60
		Ashy spike-moss	*Selaginella cinerascens*	1,000
San Ysidro	1	San Diego goldenstar	*Bloomeria clevelandii*	1
		Dunn's mariposa lily	*Calochortus dunnii*	3
		Gander's pitcher sage	*Lepechinia ganderi*	1
	3	Purple stemodia	*Stemodia durantifolia*	15
	4	Small-flowered morning-glory	*Convolvulus simulans*	20
		Fish's milkwort	*Rhinotropis cornuta* var. *fishiae*	1
*Observed during rare plant surveys, other focused surveys, or site visits and maintenance visits.				

Subtask 1g. (FY 2022-23) and Subtask 1g. (FY 2023-24): Golden Eagle (*Aquila chrysaetos*) Camera Surveys

The golden eagle camera surveys were initiated in 2021 to document golden eagle usage within the Preserve, as well as eagle responses to disturbance. The data will assist the U.S. Geological Survey (USGS) with their regional data collection and long-term raptor management plan preparation. The data will be reviewed for golden eagle presence, behavior, ID tags, age, prey items, and human presence.

Golden eagle camera survey dates, locations, and tasks are included in Table 15. In 2023, three cameras at Dulzura and seven cameras at McMillin were reinstated (Figure 27). Existing thin metal posts were replaced with thicker T-posts to stabilize the cameras in windy conditions. Photograph 11 demonstrates the camera set up. In addition, two cameras (06RDG and 07RDG) were installed at a new location in the northwest corner of Ridge parcels, based on scouting results (see Figure 27). The cameras were strapped to rocks. In 2023, it was determined to remove from service five cameras from Ridge and two cameras from Proctor Valley (North) due to immigrant traffic, high bobcat use, and high winds. All reinstated cameras were monitored every six weeks through December 2023 to check on placement angles, check for theft, and to replace SIM cards and batteries. In September

2023, one cellular service-connected solar-powered wildlife camera was installed as a trial at 02DLZ. Photograph 12 demonstrates the camera set up for this camera. The photos were monitored remotely through a smart phone and the web portal. All data was reviewed for golden eagle presence, behavior, ID tags, age, prey items, and human presence. Photographs 13 and 14 show a golden eagle image that was captured by a wildlife camera at the McMillin parcels during 2023.

Table 15
Golden Eagle Camera Survey
Dates, Locations, and Tasks

Date	Location (Parcels)	Task[1]
03/08/2023	Dulzura	Reinstate cameras
03/17/2023	McMillin	Reinstate cameras
03/23/2023	Dulzura	Replace thin metal posts with thicker T-posts, service cameras
03/28/2023	Ridge	Remove cameras 01 and 02
03/29/2023	McMillin	Replace thin metal posts with thicker T-posts, service cameras
04/10/2023	Ridge	Remove remaining cameras 03, 04, and 05
04/19/2023	Dulzura	Service cameras
05/09/2023	McMillin	Service cameras
05/22/2023	McMillin	Replace thin metal posts with thicker T-posts, service cameras
05/31/2023	McMillin	Service cameras
06/15/2023	Dulzura	Service cameras
07/21/2023	McMillin	Service cameras
08/01/2023	Dulzura	Service cameras
08/31/2023	McMillin	Service cameras
09/12/2023	Dulzura	Install one solar powered wildlife camera with cellular service, service cameras
09/13/2023	Proctor Valley (North)[2]	Removed cameras from service
09/19/2023	Ridge	Scout and map potential camera locations
10/11/2023	McMillin	Service cameras
10/30/2023	Dulzura	Service cameras
11/27/2023	Ridge	Install two cameras at a new location
11/28/2023	McMillin	Service cameras
12/12/2023	Dulzura	Service cameras

[1]Cameras were serviced to replace SD cards and replace batteries, as needed. Camera positions were adjusted, as needed. Cameras were resecured, as needed. T-posts were replaced with thicker material, as needed.
[2]There is no 2023 data for Proctor Valley (North) as these cameras were not active.

It should be noted that December 2023 SIM card photos and videos were not collected prior to report submittal. December 2023 results will be included in the 2024 annual report. The following is a summary of the photo data captured from January through November 2023. Photographs 15 through 19 include wildlife bycatch from the cameras.

- McMillin: Four observations of golden eagle (camera "03MCM" on 3/20/2023 and 3/23/2023, camera "05MCM" on 3/29/2023, and camera "07MCM" on 3/29/2023) occurred in 2023. McMillin continues to have the most migrant foot traffic. Additionally, it was discovered that

two SD memory cards were stolen from camera locations "03MCM" and "04MCM" during the camera check on 10/11/2023, at which time these cameras received new SD memory cards. During the following site visit on 11/28/2023, it was discovered that camera location "04MCM" was turned away from the target rock, at which time the camera was adjusted to face the target rock again. Many common gray fox (*Urocyon cinereoargenteus*), great horned owl (*Bubo virginianus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), and other small mammals and passerines were observed. Three cameras ("05MCM through 07MCM") monitor the same large set of boulders which has evidence of large raptor use (whitewash, bones, and feathers).

- Dulzura: No golden eagles were photographed at the Dulzura camera locations in 2023. Many common gray fox, American crow, common raven, and southern mule deer (*Odocoileus hemionus fuliginata*) were observed. Several red-tailed hawks (*Buteo jamaicensis*) were observed. Minor migrant activity was observed.

- Ridge: No golden eagles were photographed at the Ridge camera locations 01RDG through 05RDG that were removed from service in 2023. December 2023 SIM card photos and videos have not yet been collected from the newly installed Ridge camera locations, 06RDG and 07RDG. The following is data gathered from 01RDG through 05RDG cameras that were removed from service in March and April 2023. Great horned owl, common barn owl (*Tyto alba pratincola*), American crow, common raven, bobcat, and other small mammals such as California ground squirrel (*Otopermophilus beecheyi*) and passerines were observed. No migrant activity was noted.

- Proctor Valley North: These two cameras were not active during 2023.

On February 24, Beth Procsal (RECON) sent an email to the POM and USGS summarizing what RECON learned from the previous year of camera work, and what RECON proposes to do in 2023 based on the positive and negative data collected.

On March 14, Ms. Procsal sent an email to USGS and the POM regarding the next steps for the 2023 golden eagle camera surveys and how RECON proposes to continue assisting USGS with this golden eagle camera project.

Subtask 1h. (FY 2022-23): Quino Checkerspot Butterfly (*Euphydras editha quino*; QCB) Surveys

QCB surveys were conducted on the Salt Creek, Ridge, and Proctor Valley Extension parcels (Figure 28). Five adult flight surveys were conducted between March 8 and April 16, 2023, on 122.6 acres. Incidental butterfly observations were also recorded. QCB survey guidelines require surveys to be conducted weekly beginning the third week of February and ending the second Saturday in May. However, a deviation from these guidelines was approved by USFWS project manager Eric Porter for these surveys. The approved deviation allowed for a maximum of five surveys within the survey area rather than continuing surveys to the end of the season or until QCB were detected (RECON 2023c).

Prior to surveys, habitat assessments were conducted to map the presence and density of host plants. The habitat quality of each potentially suitable survey area was given a high, moderate, or excluded rating. This scale was based on presence and density of host and nectar plants; physical characteristics of the habitat (slope, vegetation density, and soil type); presence and density of invasive species; and proximity to previous QCB occurrences.

Habitat assessment and survey dates and locations are shown in Table 16. Representative photographs from the surveys and incidental observations are shown in Photographs 20 through 28. On February 22, the PSB met virtually with Eric Porter (USFWS) to discuss the potential start date for the QCB flight surveys. On March 13 and 28, nine QCB photo monitoring locations were established at the Ridge parcels. On March 26 and April 2, nine QCB photo monitoring locations were established at the Salt Creek parcels. On March 27, one photo monitoring location was established at the Proctor Valley Extension parcels. QCB photo monitoring locations were established during surveys. Established QCB photo monitoring locations are shown on Figure 29.

Table 16
Quino Checkerspot Butterfly Surveys
Dates and Locations

Date	Location (Parcels)	Survey Type
02/14/2023	Proctor Valley Extension	Habitat Assessment
02/16/2023	Salt Creek	Habitat Assessment
02/17/2023	Ridge	Habitat Assessment
02/21/2023	Salt Creek	Habitat Assessment
03/08/2023	Ridge	Survey 1
03/09/2023	Salt Creek	Survey 1
03/09/2023	Proctor Valley Extension	Survey 1
03/13/2023	Ridge	Survey 2 / established QCB landscape photo monitoring locations
03/13/2023	Salt Creek	Survey 2
03/13/2023	Proctor Valley Extension	Survey 2
03/26/2023	Salt Creek	Survey 3 / established QCB landscape photo monitoring locations
03/27/2023	Proctor Valley Extension	Survey 3 / established QCB landscape photo monitoring locations
03/28/2023	Ridge	Survey 3 / established QCB landscape photo monitoring locations
04/01/2023	Ridge	Survey 4
04/02/2023	Salt Creek	Survey 4 / established QCB landscape photo monitoring locations
04/06/2023	Salt Creek	Survey 5
04/06/2023	Proctor Valley Extension	Survey 4
04/10/2023	Ridge	Survey 5
04/16/2023	Proctor Valley Extension	Survey 5

Subtask 1i.(FY 2022-23): Vegetation Mapping

To prioritize additional QCB survey areas, Subtask 1i. Vegetation Mapping at the Proctor Valley (North) and Wolf Canyon parcels was removed from the Work Plan in consultation with the POM. The surveys at the Proctor Valley (North) and Wolf Canyon parcels will be proposed in a future work plan.

Subtask 1j. (FY 2022-23): Photographic Monitoring

To prioritize additional QCB survey areas, Subtask 1j. Photographic Monitoring at the Proctor Valley (North) and Wolf Canyon parcels was removed from the Work Plan in consultation with the POM. The monitoring at the Proctor Valley (North) and Wolf Canyon parcels will be proposed in a future work plan.

Subtask 1k. (FY 2022-23): Vernal Pool Plant Monitoring

Focused vernal pool plant surveys were conducted within 31 established pools, 8 road ruts, and 4 potential ponding areas at Salt Creek parcels. Surveys were conducted one time when the features were ponded and one time after the features were dry. Survey dates and locations are listed in Table 17. Surveys consisted of identifying and recording plant species present in the features. Sensitive plants were identified, and the locations and number of individuals were documented using a CNDDB data dictionary in a sub-meter-accurate GPS unit.

Table 17
Vernal Pool Plant Surveys
Dates and Locations

Date	Location (Parcels)
02/02/2023	Salt Creek
05/16/2023	Salt Creek

Federally and state listed plant species, Otay Mesa mint (*Pogogyne nudiuscula*), California Orcutt grass (*Orcuttia californica*), and San Diego button-celery (*Eryngium aristulatum var. parishii*), germinated and set seed during the 2023 growing season. Otay Mesa mint was observed within 29 of 30 established pools, 1 road rut, and 1 additional potential ponding area in 2023. Otay Mesa mint was not observed in established pool number 61. California Orcutt grass was observed within 5 of 30 established pools in 2023. San Diego button-celery was observed within 12 of 30 established pools in 2023. Table 18 shows the number of individuals observed of Otay Mesa mint, California Orcutt grass, and San Diego button-celery. Additional non-listed vernal pool indicator species observations included: flowering-quillwort *(Triglochin scilloides*), annual hair grass (*Deschampsia danthonioides),* dwarf woollyheads *(Psilocarphus brevissimus var. brevissimus),* adobe popcornflower *(Plagiobothrys acanthocarpus),* water pygmy-weed *(Crassula aquatica),* and chaffweed (*Lysimachia minima*). Dwarf woollyheads was observed in most of the features. In addition to the vernal pool indicator species, 27 other plant species were observed. Attachment 3 provides a comprehensive list of plant species observed during the vernal pool plant surveys. Figure 30 shows the federally and

state listed vernal pool plant species locations and number of individuals. Figure 31 shows where non-listed vernal pool indicator species were observed.

Table 18
Vernal Pool Plant Survey Results*

Species	Number of Individuals
Otay Mesa mint (*Pogogyne nudiuscula*)	15,684
California Orcutt grass (*Orcuttia californica*)	129
San Diego button-celery (*Eryngium aristulatum*)	164

*Seeds of Otay Mesa mint, San Diego button celery, and Orcutt grass were distributed into establish pools in the fall of 2020 and 2021. Seeds of Otay Mesa mint and California Orcutt grass were collected in the summers of 2019, 2020, and 2021 from the Cal Terraces vernal pool preserve with a Right of Entry permit authorized from the City of San Diego (dated April 17, 2019 through April 1, 2022). Seed from San Diego button-celery was collected from Otay Ranch Preserve Millenia parcels in 2020 and 2021.

Subtask 1l. (FY2022-23) and Subtask 1c. (FY2023-24): Least Bell's Vireo & Yellow-billed Cuckoo 2023 Surveys

Eight LBVI presence/absence surveys and nest monitoring visits were conducted by San Diego Natural History Museum (SDNHM; subcontractor) on approximately 39 acres of suitable habitat within the Salt Creek parcels, 19 acres within the Northern Salt Creek parcel, and 6 acres within the Wolf Canyon parcels following the survey methods described in the USFWS protocol (Figures 32 and 33; USFWS 2001).

In conjunction with the LBVI surveys, four YBCU presence/absence surveys were conducted by SDNHM on approximately 2.5 acres of suitable habitat within the Salt Creek parcels between June 29, 2023 and August 15, 2023 according to established protocol (see Figure 32; Halterman et al. 2015).

Subtask 1m. (FY 2022-23): Harbison Dun Skipper (*Euphyes vestris harbisoni*) Surveys

Focused surveys to detect the presence of HDS were conducted in suitable habitat with San Diego sedge (*Carex spissa*) at the Proctor Valley (North) and San Ysidro parcels. San Diego sedge is HDS's only known host plant. The adult flight period for this species is mid-May to mid-July.

Prior to 2023, focused surveys had not been conducted for HDS within the Proctor Valley (North) or San Ysidro parcels. A focused survey was conducted to detect presence/absence in mid-May to early June under appropriate weather conditions at each parcel. Since adult HDS was not observed or was observed in low numbers during the first survey, a second focused survey was conducted in late June at each parcel. The number of HDS individuals observed and observation locations were recorded. San Diego sedge individuals were also recorded during the surveys. The survey results are shown in Figures 34 and 35 and Photograph 29. Survey dates, personnel, weather conditions, and HDS observation results are shown in Table 19.

Table 19 Harbison Dun Skipper Survey Dates, Personnel, Times, Conditions, and Results for the Otay Ranch Preserve Proctor Valley (North) and San Ysidro Parcels					
Date	Parcel(s)	Personnel	Time	Weather Conditions	Harbison Dun Skipper Observations
05/23/2023	Proctor Valley (North)	A. Smisek J. Woll	NA	Start: 68°F air temperature 100% cloud cover 0–1 mph winds End: NA	23 hibernacula
06/05/2023	San Ysidro	J. Sundberg D. Gadia	12:00 p.m. - 3:30 p.m.	Start: 65°F air temperature 90% cloud cover 1–4 mph winds End: 68°F air temperature 45% cloud cover 2-5 mph winds	1 adult
06/16/2023	Proctor Valley (North)	K. Valenti A. Leavitt	10:40 a.m. - 2:15 p.m.	Start: 79°F air temperature 0% cloud cover 1–3 mph winds End: 86°F air temperature 0% cloud cover 1-3 mph winds	15 adults
06/23/2023	San Ysidro	A. Leavitt D. Gadia	12:20 p.m. - 4:00 p.m.	Start: 74°F air temperature 0% cloud cover 0-2 mph winds End: 74°F air temperature 0% cloud cover 1-3 mph winds	0
°F = degrees Fahrenheit, % = percent, mph = miles per hour, NA = Not Available					

Subtask 1n. (FY 2022-23) and Subtask 1b. (FY2023-24): Hermes Copper Butterfly (*Lycaena hermes*) Surveys

To prioritize additional QCB survey areas, Subtask 1n. Hermes Copper Butterfly Surveys at the Proctor Valley Extension parcels was reduced from the Work Plan in consultation with the POM. One site visit timed to occur during the adult flight season was conducted at the Proctor Valley Extension parcels rather than conducting focused surveys throughout the habitat. Focused surveys at the Proctor Valley Extension parcels will be proposed in a future work plan.

Site visits were timed to occur during the adult flight season at the following parcel sets where scattered spiny redberry (*Rhamnus crocea*) occurs at the Jamul Mountains, Little Cedar Canyon, McMillin, Northern San Ysidro, Proctor Valley Extension, Proctor Valley (North), Proctor Valley (South), Ridge, Salt Creek, and San Ysidro parcels. The PSB visited previously mapped host plant spiny redberry locations, mapped additional observations of spiny redberry, and recorded the proximity to California buckwheat (*Eriogonum fasciculatum*) on the dates and locations listed in Table 20. Mapped spiny redberry locations are shown on Figures 18, 20, 23, 25, and 26. No Hermes copper butterfly was detected during the surveys. Survey dates, personnel, and weather conditions are shown in Table 20.

Table 20 Hermes Copper Butterfly Survey Dates, Personnel, Times, and Conditions for the Otay Ranch Preserve Jamul Mountains, Little Cedar Canyon, McMillin, Northern San Ysidro, Proctor Valley Extension, Proctor Valley (North), Proctor Valley (South), Ridge, Salt Creek, and San Ysidro Parcels				
Date	Parcel(s)	Surveyors	Beginning Conditions	Ending Conditions
05/31/2023	McMillin	J. Sundberg D. Gadia	12:00 p.m.; 67°F; 100% cc; winds 1-3 mph	3:00 p.m.; 70°F; 90% cc; winds 2-4 mph
06/08/2023	Ridge	J. Sundberg C. Thomson	10:30 a.m.; 71°F; 5% cc; winds 2-5 mph	3:00 p.m.; 79°F; 15% cc; winds 5-8 mph
06/09/2023	Little Cedar Canyon	J. Sundberg D. Gadia	2:15 p.m.; 71°F; 70% cc; winds 0-2 mph	3:45 p.m.; 75°F; 60% cc; winds 1-5 mph
06/09/2023	Proctor Valley Extension, Proctor Valley (South)	K. Valenti J. Woll	11:00 a.m.; 68°F; 100% cc; winds 1-4 mph	3:50 p.m.; 78°F; 30% cc; winds 2-5 mph
06/16/2023	Proctor Valley (North)	K. Valenti A. Leavitt	10:40 a.m.; 79°F; 0% cc; winds 1-3 mph	2:18 p.m.; 86°F; 0% cc; winds 1-3 mph
06/19/2023	San Ysidro, Northern San Ysidro	J. Sundberg A. Leavitt	10:44 a.m.; 73°F; 70% cc; winds 2-3 mph	12:39 p.m.; 78°F; 15% cc; winds 3-7 mph
06/21/2023	Salt Creek	J. Sundberg D. Gadia	9:50 a.m.; 76°F; 0% cc; winds 1-4 mph	1:10 p.m.; 78°F; 0% cc; winds 3-6 mph
06/26/2023	Jamul Mountains	J. Sundberg J. Gaudio	9:40 a.m.; 63°F; 0% cc; winds 0-1 mph	2:00 p.m.; 70°F; 0% cc; winds 3-6 mph
°F = degrees Fahrenheit; mph = miles per hour; % = percent; cc = cloud cover				

Subtask 1o. (FY 2022-23): Gold-spotted Oak Borer (*Agrilus auroguttatus*; GSOB) Monitoring

GSOB monitoring was conducted once within the oak woodland at the Dulzura parcels. A field visit to visually inspect trees for GSOB sign was conducted by RECON licensed arborist J.R. Sundberg on June 15, 2023. No signs of GSOB were observed. The GSOB monitoring location is shown on Figure 36.

Subtask 1a. (FY 2023-24) Seed Collection and Redistribution

On August 11, Otay tarplant seed was collected from Millenia parcels and stored in paper bags for later dispersal at Johnson Canyon Otay Tarplant Preserve (Photograph 30). On November 29, Otay tarplant seed was dispersed at Johnson Canyon Otay Tarplant Preserve within suitable habitat, adjacent to previous Otay tarplant observed locations (Figure 37).

On August 17, vernal pool plant seed was collected from pools with abundant cover at the southern vernal pool mesa within the Salt Creek parcels and redistributed in pools with minimal cover at the

southern vernal pool mesa within the Salt Creek parcels and within two pools at the Millenia parcels east of State Route 125 (SR-125; see Figure 37). Species collected and redistributed included mainly Otay Mesa mint, and also toad rush (*Juncus bufonius*), dwarf woollyheads, spike-rush (*Eleocharis* sp.), and annual hair grass. On December 12, flowering Otay mesa mint was observed within Millenia parcels in the area that was recently hand seeded. It was noted that it was an unusual time of the year to observe this species flowering due to rain events that occurred on November 15 and 29.

Task 2: Land Stewardship

Subtask 2a. (FY 2022-23 and FY 2023-24): Site Visits

Regularly scheduled site visits were conducted January 1 through December 31, 2023 to document access issues, sensitive species, newly detected species, weeds, and the overall health of the sites. Site visit dates and locations are shown in Table 21.

Table 21
Site Visit Dates and Locations

Date	Location (Parcels)[1]
01/09/2023	Salt Creek, Northern Salt Creek, Millenia
01/11/20223	Jamul Mountains, Dulzura
01/23/2023	Millenia, Salt Creek
01/25/2023	Jamul Mountains, Dulzura
02/01/2023	San Ysidro, Northern San Ysidro
02/02/2023	Salt Creek
02/07/2023	Salt Creek, Northern Salt Creek
02/08/2023	Dulzura, Jamul Mountains
02/09/2023	Northern San Ysidro, Little Cedar Canyon, San Ysidro
02/14/2023	Proctor Valley Extension, Bonita Glen, Proctor Valley (South), Proctor Valley
02/16/2023	Salt Creek
02/17/2023	Ridge
02/20/2023	Jamul Mountains, Dulzura
02/21/2023	Salt Creek
03/02/2023	Johnson Canyon Otay Tarplant Preserve, Johnson Canyon (East), Millenia, Proctor Valley (North)
03/06/2023	Salt Creek
03/07/2023	Wolf Canyon, Western Wolf Canyon, Salt Creek, Northern Salt Creek
03/08/2023	Dulzura, Ridge, Jamul Mountains
03/09/2023	Salt Creek, Proctor Valley Extension
03/10/2023	Salt Creek
03/13/2023	Salt Creek, Ridge, Proctor Valley Extension
03/17/2023	McMillin, Northern San Ysidro, San Ysidro
03/23/2023	Jamul Mountains, Dulzura
03/26/2023	Salt Creek
03/27/2023	Proctor Valley Extension
03/28/2023	Ridge
03/29/2023	McMillin

Table 21 Site Visit Dates and Locations	
Date	Location (Parcels)[1]
04/01/2023	Ridge
04/02/2023	Salt Creek
04/04/2023	Millenia
04/05/2023	Salt Creek, Jamul Mountains, Dulzura
04/06/2023	Salt Creek, Proctor Valley Extension
04/10/2023	Millenia, Wolf Canyon, Western Wolf Canyon, Ridge
04/12/2023	Northern San Ysidro, San Ysidro
04/16/2023	Proctor Valley Extension
04/19/2023	Dulzura, Jamul Mountains
04/24/2023	Millenia
04/25/2023	Proctor Valley (North)
04/26/2023	Millenia
04/27/2023	Little Cedar Canyon
04/28/2023	Millenia
05/02/2023	Dulzura
05/05/2023	Jamul Mountains
05/09/2023	Proctor Valley (North)
05/10/2023	Salt Creek, Northern Salt Creek
05/15/2023	Johnson Canyon Otay Tarplant Preserve, Johnson Canyon (East), Millenia
05/23/2023	Wolf Canyon, Western Wolf Canyon, Northern Salt Creek, Salt Creek
05/25/2023	Northern San Ysidro, San Ysidro
05/26/2023	Dulzura, Jamul Mountains
05/31/2023	McMillin
06/01/2023	Wolf Canyon, Western Wolf Canyon
06/02/2023	Millenia
06/05/2023	San Ysidro, Northern San Ysidro
06/08/2023	Ridge
06/09/2023	Little Cedar Canyon, Proctor Valley Extension, Proctor Valley (South)
06/13/2023	Northern Salt Creek, Salt Creek, Millenia
06/14/2023	Wolf Canyon, Western Wolf Canyon
06/15/2023	Northern San Ysidro, Dulzura, Western Wolf Canyon, Wolf Canyon
06/16/2023	Proctor Valley (North)
06/19/2023	San Ysidro, Northern San Ysidro
06/21/2023	Salt Creek, Northern Salt Creek
06/23/2023	San Ysidro, Northern San Ysidro
06/26/2023	Jamul Mountains
06/27/2023	Northern Salt Creek, Salt Creek
07/03/2023	Salt Creek, Northern Salt Creek, Millenia
07/14/2023	Salt Creek, Northern Salt Creek
07/17/2023	McMillin, Northern Salt Creek, Salt Creek, Western Wolf Canyon, Wolf Canyon
07/19/2023	Millenia
07/20/2023	Jamul Mountains, Dulzura
07/21/2023	McMillin
07/24/2023	Salt Creek, Northern Salt Creek, Millenia, Western Wolf Canyon, Wolf Canyon

Table 21 Site Visit Dates and Locations	
Date	Location (Parcels)[1]
07/25/2023	Salt Creek, Northern Salt Creek
07/27/2023	Northern San Ysidro, San Ysidro
07/31/2023	Wolf Canyon, Western Wolf Canyon
08/01/2023	Jamul Mountains, Dulzura
08/09/2023	Northern Salt Creek, Western Wolf Canyon, Wolf Canyon
08/10/2023	Salt Creek, Northern Salt Creek
08/11/2023	Millenia
08/15/2023	Jamul Mountains, Dulzura
08/17/2023	Salt Creek, Northern Salt Creek, Millenia
08/22/2023	Jamul Mountains, Millenia, Salt Creek, Northern Salt Creek, Johnson Canyon (East), Johnson Canyon Otay Tarplant Preserve, Bonita Glen
08/24/2023	Northern Salt Creek, Salt Creek
08/25/2023	Northern San Ysidro, San Ysidro
08/28/2023	Salt Creek, Wolf Canyon, Western Wolf Canyon, Northern Salt Creek
08/29/2023	Dulzura
08/30/2023	Dulzura, Salt Creek, Northern Salt Creek, Wolf Canyon, Western Wolf Canyon
08/31/2023	McMillin, Salt Creek, Northern Salt Creek
09/01/2023	Salt Creek, Northern Salt Creek, Wolf Canyon, Western Wolf Canyon
09/06/2023	Proctor Valley (South), Proctor Valley, Proctor Valley Extension, Bonita Glen
09/07/2023	Western Wolf Canyon, Wolf Canyon, Salt Creek, Northern Salt Creek
09/12/2023	Dulzura
09/13/2023	Proctor Valley (North)
09/14/2023	Little Cedar Canyon, Jamul Mountains
09/18/2023	Salt Creek, Northern Salt Creek
09/19/2023	Ridge
09/22/2023	Salt Creek, Northern Salt Creek
09/25/2023	Northern San Ysidro, San Ysidro
09/26/2023	Jamul Mountains, Dulzura
09/29/2023	Salt Creek, Northern Salt Creek
10/04/2023	Dulzura
10/06/2023	Dulzura, Salt Creek
10/09/2023	Wolf Canyon, Western Wolf Canyon, Millenia
10/10/2023	Jamul Mountains, Dulzura
10/11/2023	Salt Creek, Northern Salt Creek, Millenia, McMillin
10/13/2023	Northern Salt Creek, Salt Creek
10/24/2023	San Ysidro, Northern San Ysidro, Ridge
10/25/2023	Jamul Mountains, Dulzura, Ridge
10/30/2023	Dulzura
10/31/2023	Salt Creek, Northern Salt Creek
11/06/2023 through 11/09/2023	Dulzura
11/14/2023	Jamul Mountains
11/15/2023	Salt Creek, Northern Salt Creek

Table 21 Site Visit Dates and Locations	
Date	Location (Parcels)[1]
11/16/2023	Wolf Canyon, Western Wolf Canyon, Northern Salt Creek, Salt Creek, Millenia
11/20/2023	Salt Creek, Northern Salt Creek
11/27/2023	Ridge
11/28/2023	McMillin, Little Cedar Canyon
11/29/2023	Jamul Mountains, Dulzura, Johnson Canyon (East), Millenia, Johnson Canyon Otay Tarplant Preserve
12/04/2023	San Ysidro, Northern San Ysidro, Little Cedar Canyon
12/05/2023	Salt Creek
12/06/2023	Proctor Valley (North), Dulzura
12/08/2023	Northern Salt Creek, Salt Creek, McMillin, Proctor Valley Extension, Proctor Valley, Proctor Valley (South), Bonita Glen
12/12/2023	Dulzura, Jamul Mountains, Western Wolf Canyon, Wolf Canyon, Salt Creek, Northern Salt Creek, Millenia
12/19/2023	Salt Creek
[1]Site visit conducted in conjunction with other scheduled monitoring and/or maintenance tasks.	

Noteworthy events documented from site visits are described below for each parcel set within Tables 22 through 39. Figures 16 through 26 and Figure 38 show noteworthy data collected in 2023. Photographs 31 through 33 show noteworthy wildlife species observed during site visits. Rare plants that were incidentally observed are included in Table 14, Subtask 1f above. In response to access issues documented during site visits, management actions are discussed in Subtask 5b, below.

Bonita Glen

Table 22 Noteworthy Events Documented from Site Visits at Bonita Glen Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	08/22/2023	A lightly used foot route was noted.	16
Plants	08/22/2023	Approximately 23 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	
	08/22/2023	Two purple owl's-clover (*Castilleja exserta* ssp. *exserta*) individuals were mapped. Purple owl's-clover is a host plant for QCB.	
	08/22/2023	Eight charlock (*Sinapis arvensis;* California Invasive Plant Council [Cal-IPC] Rating: Limited) individuals were observed. Non-native weed species ranked as 'limited' have minor ecological impacts; low to moderate rates of invasiveness; and limited distribution, but these species may be locally persistent and problematic (California Invasive Plant Council [Cal-IPC] 2023).	
Wildlife	08/22/2023	Two southern mule deer (*Odocoileus hemionus fuliginata*; Priority Group 2) detections were made.	

Dulzura Parcels

Table 23
Noteworthy Events Documented from Site Visits at Dulzura
Date, Observations, and Corresponding Figure

Type	Date	Observations	Figure(s)
Access Issues	04/19/2023	A migrant bivouac site with abundant trash was mapped in the drainage leading to the GOEA camera station.	17
	05/02/2023	Routes formed by foot traffic were mapped in the southeastern section of the parcels. Some of the routes were noted as not showing signs of recent use. The route occurs in chaparral habitat.	
	05/26/2023	A frequently used route formed by truck tire tracks was mapped in the western section of the parcels. The route occurs in coastal sage scrub adjacent to a seasonal drainage.	
	05/26/2023	A route formed by migrant foot traffic was mapped in the southwestern section of the parcels. The route showed signs of regular use. The route occurs in a seasonal drainage.	
	08/01/2023	Unauthorized truck routes were mapped within the northwestern section of the parcels. The route occurs within occupied QCB habitat. Barriers will be installed to keep vehicles from illegally entering the area.	
	11/29/2023	An actively used foot route was mapped. Several other foot routes were observed within the area.	
	12/12/2023	• It was noted that several shrubs were trimmed to widen a portion of an unauthorized foot route. • Areas with a large amount of trash within the eastern drainage were mapped. Photographs were taken to document the amount of trash (Photographs 34 and 35). • Lightly used foot routes were mapped	
Plants	02/20/2023	Approximately 5,400 dot-seed plantain individuals were mapped. Dot-seed plantain is a host plant for QCB.	
	04/19/2023, 05/02/2023	Common plant observations included 11 chocolate lilies (*Fritillaria biflora*).	
Wildlife	03/08/2023	One QCB (Priority Group 1) observation was incidentally made.	
	03/08/2023	One San Diego black-tailed jackrabbit (*Lepus californicus bennettii*; Priority Group 3) detection was made.	
	03/08/2023	One northern harrier (*Circus hudsonius*; Priority Group 1) detection was made.	
	04/19/2023	One Blainville's [=coast] horned lizard (*Phrynosoma 30lainvilii*; Priority Group 2) observation was made.	
	05/02/2023	One coast patch-nosed snake (*Salvadora hexalepis virgultea*; Priority Group 4) observation was made (see Photograph 32).	
	05/26/2023, 08/29/2023	Common animal observations included: Gabb's checkerspot (*Chlosyne gabbii*) and greater roadrunner (*Geococcyx californianus*).	
	11/29/2023	One white-tailed kite (*Elanus leucurus*; Priority Group 4) was observed.	

Jamul Mountains Parcels

Table 24 Noteworthy Events Documented from Site Visits at Jamul Mountains Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	01/11/2023	A new lightly used mountain bike route was observed circumventing a previously installed fence.	18
	03/08/2023	Motorcycle tire tracks were observed within the main dirt road.	
	05/05/2023	Foot traffic and bicycle tracks were observed going around a previously installed fence.	
	07/20/2023, 08/01/2023	Unauthorized routes identified through reviewing Google Earth imagery were field verified.	
	09/14/2023	Graffiti was cleaned off a preserve sign with acetone and a shop towel. It was effective in removing the graffiti without damaging the sign.	
	10/10/2023	A 6-foot-tall aluminum post was removed. The post marked an illegal bike route.	
Plants	06/26/2023	Approximately 11 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	
	02/20/2023, 03/23/2023	Approximately 17,535 dot-seed plantain individuals were mapped. Dot-seed plantain is a host plant for QCB.	
	06/26/2023	Ten artichoke thistle (*Cynara cardunculus* ssp. *flavenscens*; Cal-IPC Rating: Moderate) individuals were observed. Non-native weed species ranked as 'moderate' have substantial, but generally not severe, ecological impacts; moderate to high rates of dispersal and establishment; and limited- to wide-spread distribution. In general, successful establishment of weed species ranked as 'moderate' is dependent upon ecological disturbance (Cal-IPC 2023).	
Wildlife	08/1/2023	Two coastal California gnatcatcher (CAGN; Priority Group 1) detections were made.	
	08/22/2023	Five Blainville's horned lizard (Priority Group 2) observations were made (see Photograph 33).	
	11/29/2023	One white-tailed kite (Priority Group 4) was observed	

Johnson Canyon (East) Parcels

Table 25 Noteworthy Events Documented from Site Visits at Johnson Canyon (East) Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Ponding	03/03/2023	Ponded locations were mapped with a sub-meter GPS device.	19

Johnson Canyon Otay Tarplant Preserve

Table 26 Noteworthy Events Documented from Site Visits at Johnson Canyon Otay Tarplant Preserve Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Ponding	03/03/2023	Ponded locations were mapped with a sub-meter GPS device.	19

Little Cedar Canyon Parcels

Table 27 Noteworthy Events Documented from Site Visits at Little Cedar Canyon Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	04/27/2023	• New migrant foot trails were observed and mapped. • Photographs of damage from large numbers of migrants passing through the drainage were collected. • Photographs were collected demonstrating small fires used by migrants. The fires rings were less than two feet in diameter and appeared to have been built to provide warmth (Photograph 36). • Photographs of migrant refuse were collected (Photograph 37). • The PSB noted that high levels of disturbance consisting of trampling vegetation, soil erosion, pollution from refuse (trash and human excrement) are prevalent within the drainage and surrounding slopes. The level of disturbance has increased substantially in the last 5 years. • San Diego sedge was observed trampled from migrant foot traffic.	20
	12/04/2023	A location with a high volume of trash was mapped.	
General Observations	11/28/2023	A new portable U.S. government owned 911 station was noted within the parcels.	
Plants	04/27/2023	Common plant observations included one Jesuit flower (*Venegasia carpesioides*). Although this species is not a Priority Group species, it is uncommon in the preserve.	
	06/09/2023	Five pampas grass (*Cortaderia selloana*; Cal-IPC Rating: High) individuals were observed. Non-native weed species ranked as 'high' have severe ecological impacts, moderate to high rates of dispersal and establishment, and are widely distributed (Cal-IPC 2023).	
	06/09/2023	Thirty fennel (*Foeniculum vulgare*; Cal-IPC Rating: Moderate) individuals were observed.	

Table 27 Noteworthy Events Documented from Site Visits at Little Cedar Canyon Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Plants (cont.)	06/09/2023	Ten individuals of invasive plant species false hawkbit (*Urospermum picroides*) were observed. False hawkbit was documented in San Diego County for the first time in 2022. False hawkbit had previously not been recorded within Otay Ranch Preserve.	
	12/04/2023	One individual stinkwort (*Dittrichia graveolens*; CAL-IPC Rating: Moderate/Alert) was observed within the main drainage.	
Wildlife	02/09/2023, 04/27/2023	Common animal observations included: versatile fairy shrimp (*Branchinecta lindahli*) and Gabb's checkerspot.	

McMillin Parcels

Table 28 Noteworthy Events Documented from Site Visits at McMillin Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	05/31/2023	A route formed by all-terrain vehicle (ATV) tires was mapped in the northern section of the parcels. Two ATVs were observed using the route which leads to high quality QCB occupied habitat. Subtask 5b below includes T-post fence and sign installation in response to this.	20
	07/17/2023, 07/21/2023	Unauthorized ATV routes were mapped.	
	11/28/2023	• An unauthorized truck route was mapped through coastal sage scrub habitat. It was noted that this route has been used before. • An actively used foot route was mapped. • A recently mapped ATV route showed signs of continued use. It was recommended to extend the existing fencing to close the new route that passes through QCB habitat. Subtask 5b below includes T-post fence installation in response to this.	
Plants	05/31/2023	Approximately 15 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	

Millenia Parcels

Table 29 Noteworthy Events Documented from Site Visits at Millenia Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Plants (cont.)	04/10/2023, 07/24/2023	Common plant observations included: one western sea-purslane (*Sesuvium verrucosum*), 50 waterwort (*Elatine* sp.), and 20 water-starwort (*Callitriche* sp.) individuals.	21
Wildlife	04/10/2023	Twenty western spadefoot (*Spea hammondii;* Priority Group 3) individuals were observed.	
	06/13/2023	Two southern mule deer (Priority Group 2) were observed.	
	06/13/2023	One coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*; Priority Group 1) was detected.	
Ponding	01/23/2023, 04/04/2023	Four vernal pool and three potential ponding depressions were mapped.	

Northern Salt Creek Parcels

Table 30 Noteworthy Events Documented from Site Visits at Northern Salt Creek Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	06/13/2023	The northern gate south of Olympic Parkway was observed open with damage to the connecting T-post fence. Subtask 5b below includes T-post fence and gate repairs in response to this.	22
	12/12/2023	• It was noted that lemonade berry (*Rhus integrifolia*) was trimmed to maintain an unauthorized mountain bike route. • Motorbike tracks were observed on the main road.	
Trash Removal	06/27/2023	One grocery bag was filled with plastic bottle debris and disposed of off-site.	
Plants	06/13/2023	Approximately 146 common plant fascicled tarweed (*Deinandra fasciculata*) individuals were observed directly adjacent to Otay tarplant.	
Wildlife	10/13/2023, 10/31/2023	Two CAGN (Priority Group 1) detections were made.	
	05/12/2023, 05/23/2023, 06/27/2023	Three LBVI (Priority Group 1) detections were made.	
	10/31/2023	One northern harrier (Priority Group 1) detection was made.	

Northern San Ysidro Parcel

Table 31 Noteworthy Events Documented from Site Visits at Northern San Ysidro Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	02/09/2023	A previously mapped motor bike route with new connecting routes was observed as being actively used. The route passes through Quino checkerspot occupied habitat and CDFW property.	23
	03/17/2023	Recent motorcycle tire tracks were observed within Quino checkerspot habitat. One individual Quino checkerspot butterfly was observed on the tire tracks.	
	05/25/2023	A route formed by motorcycle tires was mapped in the southeastern section of the parcels. The route occurs within a seasonal drainage	
	06/15/2023	A motorcycle was observed traveling off-road in coastal sage scrub and chaparral habitat.	
	07/27/2023	Unauthorized foot routes were mapped.	
	08/25/2023	Unauthorized motorcycle tracks were mapped. It was noted that the tracks occurred within the last 4 days since it rained.	
Trash Removal	08/25/2023	One grocery bag full of bottles was collected and removed from the site.	
Wildlife	06/15/2023, 06/23/2023, 08/25/2023	Four LBVI (Priority Group 1) detections were made.	
	06/15/2023	One yellow-breasted chat (*Icteria virens*; Priority Group 3) detection was made.	

Proctor Valley Extension Parcels

Table 32 Noteworthy Events Documented from Site Visits at Proctor Valley Extension Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	02/14/2023	A migrant footpath was mapped. GoogleEarth aerial imagery from March 2022 was used to map the trail after observing a section of the trail in the field.	24
General Observations	02/14/2023	A new cattle fence was observed along the CDFW boundary that blocks cattle from entering onto POM lands.	
	03/13/2023	Five individual laurel sumac (*Malosma laurina*) that appeared to be dying from an unknown cause were mapped.	
	12/08/2023	Two new concrete helicopter pads were observed to be installed near the base of the San Diego Gas & Electric towers within the parcel.	

Table 32 Noteworthy Events Documented from Site Visits at Proctor Valley Extension Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Plants	02/14/2023	Common plant observations included seven chocolate lilies (*Fritillaria biflora*).	
	02/14/2023	Eleven crimson fountain grass (*Pennisetum setaceum*; Cal-IPC Rating: Moderate) individuals were mapped.	
Wildlife	02/14/2023	One southern mule deer (Priority Group 2) detection was made.	
	03/27/2023, 04/16/2023	Two rosy boa (*Lichanura orcutii*), a common animal, observations were made (see Photograph 31).	

Proctor Valley Parcels

Table 33 Noteworthy Events Documented from Site Visits at Proctor Valley Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	02/14/2023	A migrant footpath was mapped. GoogleEarth aerial imagery from March 2022 was used to map the trail after observing a section of the trail in the field.	24
General Observations	12/08/2023	Three new helicopter pads were observed to be installed near the base of the San Diego Gas & Electric towers within the parcel.	

Proctor Valley (North) Parcel

Table 34 Noteworthy Events Documented from Site Visits at Proctor Valley (North) Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	04/25/2023	A foot trail was mapped that appeared to have been built with hand tools. The trail was well defined.	25
Plants	06/16/2023	Approximately 100 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	
Wildlife	06/16/2023	One Blainville's horned lizard (Priority Group 2) detection was made.	
	06/16/2023	One Gabb's checkerspot individual, a common animal, was observed.	

Proctor Valley (South) Parcel

Table 35 Noteworthy Events Documented from Site Visits at Proctor Valley (South) Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Wildlife	09/06/2023	One monarch (*Danaus plexippus*; Priority Group 2) observation was made.	24

Ridge Parcels

Table 36 Noteworthy Events Documented from Site Visits at Ridge Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Access Issues	03/28/2023	Motorcycle tracks were mapped within the preserve. The trespassing occurred after the last rain event.	26
	10/24/2023	Newly installed T-post wire fencing was mapped off-site at the turnout to the Ridge parcels off Otay Lakes Road. The new fence was installed by an unknown entity. The fence blocks access to the turnout and gate.	
	10/25/2023	An alternative route to access the parcels listed in the Access Easement was examined. The route is suitable for driving and the gate is accessible.	
	11/27/2023	Scattered migrant trash was noted.	
Plants	06/08/2023	32 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	
	02/17/2023, 03/13/2023, 04/01/2023, 04/10/2023	Four Blainville's horned lizard (Priority Group 2) detections were made.	
Wildlife	02/17/2023	Two CAGN (Priority Group 1) detections were made.	
	03/13/2023	One red diamond rattlesnake (*Crotalus ruber*; Priority Group 3) detection was made.	
	03/28/2023	One common wildlife American parastrelle (*Parastrellus hesperus*) bat observation was made	

Salt Creek Parcels

Table 37
Noteworthy Events Documented from Site Visits at Salt Creek
Date, Observations, and Corresponding Figure

Type	Date	Observations	Figure(s)
Access Issues	01/09/2023	Multiple ATV routes were mapped in coastal cactus wren occupied habitat.	22
	01/09/2023	Approximately 3 linear feet of recently installed T-post barbless wire fencing was mapped as being cut to allow passage through an illegal motor bike and mountain bike route. It was noted that the recently installed coast cholla cactus cuttings (see Subtask 5b, below) appeared to be a deterrent to using the route.	
	02/16/2023	An ATV route was mapped in a former SANDAG TransNet EMP coastal cactus wren habitat restoration grant project area. Subtask 5b below includes T-post fence installation in response to this.	
	02/16/2023	A new mountain bike route was mapped within coastal sage scrub habitat occupied by coastal California gnatcatcher.	
	02/16/2023	Two people were sitting outside of their red SUV near the red gate west of Wueste Road inside the preserve. They had a table set up and were flying a drone over cactus wren habitat.	
	03/09/2023	ATV tire tracks were observed in coastal sage scrub habitat. The tracks appeared since the last rains which was within a week of the observation.	
	03/09/2023	Two people were parked in a red SUV near the eastern property boundary on-site. They had a table set up and were flying a drone over vegetation treatment areas SC_13, SC_10a, and SC_9.	
	03/13/2023	ATV tire tracks were observed approximately 50 feet southeast of the tire tracks observed on March 9. The tracks were in coastal sage scrub habitat. The route appeared to have been used one or two times in recent weeks. Several San Diego barrel cactus and coast cholla (*Cylindropuntia prolifera*) were damaged by the vehicle.	
	03/26/2023	Unauthorized vehicles within the preserve were recorded. The tire tracks were within Quino checkerspot and coastal cactus wren habitat.	
	04/02/2023	Two separate groups of motorcycles each consisting of three vehicles were observed within the parcels.	
	07/17/2023	Unauthorized ATV routes were mapped.	
	12/05/2023	An unauthorized truck route through the boundary fence was observed near the Wueste Road gate. Subtask 5b below includes fence repair in response to this.	
	12/12/2023	Two separate unauthorized ATV routes were mapped.	

Table 37 Noteworthy Events Documented from Site Visits at Salt Creek Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Trash Removal	12/05/2023	Two large kites were removed from vegetation treatment areas SC_5 and SC_7.	22
	03/15/2023	Hogwallow starfish (*Hesperevax caulescens*; Priority Group 4) was mapped. Fencing was proposed to protect the species being impacted by off-road vehicles.	
	03/26/2023	One individual Namaqualand daisy (*Dimorphotheca sinuata*) was mapped. This non-native species has not been previously documented within the parcels.	
Plants	02/07/2023	120 individuals of common plant, coast cholla, were mapped for potential salvage to restoration areas within the Preserve.	
	03/06/2023	One common plant blue elderberry (*Sambucus mexicana*) was mapped.	
	08/28/2023	One non-native gum tree (*Eucalyptus* sp.) was noted for potential future treatment.	
	06/21/2023, 07/25/2023	31 individual non-native plant mayweed (*Anthemis cotula*) were noted for potential future treatment.	
	07/03/2023	One tree tobacco (*Nicotiana glauca*; Cal-IPC Rating: Moderate) was noted for potential future treatment	
Wildlife	Multiple dates between 01/26/2023 & 12/05/2023	12 CAGN (Priority Group 1) detections were made.	
	Multiple dates between 02/16/2023 & 12/05/2023	20 coastal cactus wren (Priority Group 1) detections were made.	
	03/13/2023	One northern harrier (Priority Group 1) detection was made.	
	03/26/2023	One southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; Priority Group 2) detection was made.	
	04/02/2023, 07/03/2023	Two red diamond rattlesnake (Priority Group 3) detections were made	
	Multiple dates between 01/26/2023 & 04/02/2023	Eight San Diego black-tailed jackrabbit (Priority Group 3) detections were made.	
	02/16/2023, 03/09/2023	Three San Diego desert woodrat (*Neotoma lepida intermedia*; Priority Group 4) detections were made.	
	02/10/2023	One white-tailed kite (*Elanus leucurus*; Priority Group 4) detection was made.	
	03/06/2023, 03/09/2023, 03/26/2023, 07/03/2023 12/02/2023	Common animal observations included: 13 greater roadrunner individuals.	

San Ysidro Parcels

Table 38
Noteworthy Events Documented from Site Visits at San Ysidro
Date, Observations, and Corresponding Figure

Type	Date	Observations	Figure(s)
Access Issues	02/01/2023	A motor bike route was observed within Quino checkerspot occupied habitat. Subtask 5b below includes T-post fence repair in response to this.	23
	06/05/2023	A route formed by mountain bike tires was mapped in the northeastern section of the parcels. It was noted that the route had been used recently. The route is within QCB occupied habitat.	
	06/19/2023	Motor bike and foot routes were mapped in coastal sage scrub and native grassland.	
	07/27/2023	Unauthorized ATV routes were mapped.	
	10/24/2023	Unauthorized motor bike routes were mapped.	
Plants	06/19/2023	225 spiny redberry individuals were mapped. Spiny redberry is a host plant for Hermes copper butterfly.	
	06/19/2023	Three charlock (*Sinapsis arvensis*; Cal-IPC Rating: Limited) individuals were mapped.	
	06/19/2023	One olive tree (*Olea europaea*; Cal-IPC Rating: Limited) was mapped.	
Wildlife	06/15/2023	Two LBVI (Priority Group 1) detections were made.	
	06/15/2023 06/19/2023	Two red diamond rattlesnake (Priority Group 3) detections were made.	
	06/23/2023	Two monarch (Priority Group 2) observations were made.	
	08/25/2023	One southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; Priority Group 2) detection was made.	

Wolf Canyon and Western Wolf Canyon Parcels

Table 39
Noteworthy Events Documented from Site Visits at Western Wolf Canyon and Wolf Canyon
Date, Observations, and Corresponding Figure

Type	Date	Observations	Figure(s)
Access Issues	09/07/2023	Proposed "No Dumping" sign locations were mapped along the western parcel boundary where landscape cuttings have been dumped within the preserve.	38
Photo	03/07/2023	Photo monitoring locations were established to monitor erosion along the main drainage.	
Plants	06/16/2023	Approximately 30 common plant fascicled tarweed individuals were observed directly adjacent to Otay tarplant.	
	07/17/2023	Approximately one thousand bristly ox-tongue (*Helminthotheca echioides*; Cal-IPC Rating: Limited) individuals were noted for potential future treatment.	

Table 39 Noteworthy Events Documented from Site Visits at Western Wolf Canyon and Wolf Canyon Date, Observations, and Corresponding Figure			
Type	Date	Observations	Figure(s)
Plants (cont.)	08/01/2023	One saltcedar (*Tamarix ramosissima*; Cal-IPC Rating: High) was noted for potential future treatment.	38
	11/16/2023	Twelve tree tobacco (Cal-IPC Rating: Moderate) individuals were noted for potential future treatment	
Wildlife	05/23/2023, 08/30/2023, 09/07/2023, 11/16/2023	8 CAGN (Priority Group 1) detections were made.	
	04/10/2023, 05/23/2023	Three LBVI (Priority Group 1) detections were made.	
	07/24/2023, 08/30/2023	Two coastal cactus wren (Priority Group 1) detections were made.	
	07/19/2023	One Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*; Priority Group 2) observation was made.	

Task 3: Meetings and Coordination

The PSB attended various land manager meetings and workshops through December 31, 2023. Meeting topics and dates are described in detail below.

Subtask 3a. (FY 2022-23 and FY 2023-24): SDMMP & MSP Meetings

The PSB attended monthly SDMMP and quarterly MSP meetings to assure consistency with regional conservation efforts and plans. An SDMMP meeting was not held in September or November. On October 17, the PSB attended an in-person rare plant IMG tool training meeting hosted by SDMMP. Table 40 provides a list of the meetings attended and dates meeting notes were submitted.

Table 40 San Diego Management and Monitoring Program, SANDAG, and Management and Monitoring Strategic Plan Meetings: January 1, 2023 through December 31, 2023				
Meeting Date	Meeting	Presenter	Topic	Meeting Note Submittal Date
01/27/2023	SDMMP	Jessie Vinje (Conservation Biology Institute) Susan Wynn (USFWS) Michael Beck (Endangered Habitats Conservancy) Chris Manzuk (Endangered Habitats Conservancy)	Framework Management Plans	01/27/2023
02/22/2023	SDMMP	Kim Smith (SANDAG) Bill Raitter (Marine Corps Base Camp Pendleton) Jessie Vinje (CBI) Margie Mulligan (San Diego Natural History Museum)	Management and Monitoring Data to inform Regional Conservation Habitat Assessment Camp Pendleton Vernal Pool Management Status of Salt Marsh Bird's-beak in San Diego County, California and Baja California, Mexico in 2022	02/23/2023
02/28/2023	MSP	Emily Perkins (SDMMP) Jeremy Zagarella (Natural Resource Planner - Pala Band of Mission Indians) Codi Hale (Resource Conservation District of Greater San Diego County) Jonathan Snapp-Cook (USFWS)	Information and Feedback on the Next County-wide San Diego Vegetation Map Update Pala Forest Health Project: Oak Woodland Health and GSOB Detection Regional Efforts to Support Pollinator Habitat (Resource conservation district of greater San Diego county)	03/01/2023

Table 40 San Diego Management and Monitoring Program, SANDAG, and Management and Monitoring Strategic Plan Meetings: January 1, 2023 through December 31, 2023				
Meeting Date	Meeting	Presenter	Topic	Meeting Note Submittal Date
03/22/2023	SDMMP	Bryan Munson (Naval Base Coronado, Botany Program Manager)	Amazing recovery for plants and animals on San Clemente Island leads to the largest single delisting event in the history of the Endangered Species Act	03/22/2023
04/26/2023	SDMMP	Emily Perkins (SDMMP) Annabelle Bernabe (SDMMP) Chris Brown (SDMMP)	Overview and training of tools and information available through the SDMMP website and other software available for partners	04/26/2023
05/24/2023	SDMMP	Emily Perkins (SDMMP) Brooke Rose (UCR)	Vegetation Monitoring Plan Geography of Plant Exposure to Global Change in the California Floristic Province	05/31/2023
06/28/2023	SDMMP	Jyotsna Sharma (Texas Tech University)	A First Look at the Genetic Structure of a Narrow Endemic (*Chorizanthe orcuttiana*)	06/28/2023
07/26/2023	SDMMP	Pete Scully (Independent Consultant) Dan Marschalek (University of Central Missouri)	Brief Update on Fire Coordination and Resource Avoidance Area Mapping Database San Diego Pollinators and a Monitoring Plan	07/26/2023

Table 40 San Diego Management and Monitoring Program, SANDAG, and Management and Monitoring Strategic Plan Meetings: January 1, 2023 through December 31, 2023				
Meeting Date	Meeting	Presenter	Topic	Meeting Note Submittal Date
08/23/2023	SDMMP	Mendel Stewart (Natural Communities Coalition) Zack West (Reserve Management/ Monitoring Manager at Riverside Conservation Authority) Melody Aimar (WRC MSHCIP Biological Monitoring Program) Jonathan Reinig (Western Riverside County Regional Park and Open-Space District)	Orange County's Central and Coastal NCCP Overview Western Riverside County Multiple Species Habitat Conservation Program (WRC MSHCP) – A Brief Overview A Brief Description of the WRC MSHCP Biological Monitoring Program with 2022 Monitoring Updates Riverside County Parks MSHCP Land Management Unit 2022 Annual Summary	08/24/2023
10/25/2023	SDMMP	Kris Preston (USGS) Emily Perkins (USGS) Robert Fisher (USGS) Philip Gould (USGS)	Regional Coastal Sage Scrub and Chaparral Monitoring Program for Conserved Lands in Western San Diego County	10/25/2023

Table 40 San Diego Management and Monitoring Program, SANDAG, and Management and Monitoring Strategic Plan Meetings: January 1, 2023 through December 31, 2023				
Meeting Date	Meeting	Presenter	Topic	Meeting Note Submittal Date
12/13/2023	SDMMP End-of-Year	Amy Vandergast (USGS)	Cactus Wren Heterozygosity and Fitness Study	12/13/2023
		Barbara Kus (USGS)	Range-wide Surveys for California Gnatcatcher in 2024	
		Shirley Innecken (SWCA) and Joe DeWolf (San Diego Botanic Garden)	From Grass Roots to Native Roots, a Case Study in Urban Restoration and Community Partnership	
		Jennifer Price (County of San Diego)	County of San Diego, Targeted Monitoring Plan 2023 Highlights	
		Winston Vickers and Dr. Fernando Najera (UC Davis)	UC Davis Mountain Lion Project Update	
		Joe Davitt (San Diego Zoo Wildlife Alliance)	Native Plant Gene Bank 2023 Progress Report	
		Kim Smith (SANDAG)	EMP 2023 Highlights	
		Kris Preston, Emily Perkins, Chris Brown, Annabelle Bernabe, Beth Roesler, Jordyn Ochoa and Sarah McCutcheon (SDMMP)	SDMMP 2023 Review and 2024 Plan	

Subtask 3b. (FY 2022-23 and FY 2023-24): Land Manager Meetings

Additional meetings were attended by the PSB to coordinate with other agencies and land managers. The following includes a list of meetings attended by the PSB:

- The PSB corresponded with Dr. Dan Marschalek (University of Central Missouri) to discuss 2023 focused surveys for Harbison dun skipper.
- The PSB provided USFWS information regarding Otay tarplant within the preserve to assist with their 5-year status update for the species.

- The PSB attended the Fire Coordination Meeting for Land Managers hosted by SDMMP on March 23. Meeting notes were emailed to the POM on March 23. Pete Scully with Scully Consulting was hired by USGS as a Fire Coordinator. There are three tasks Mr. Scully will be leading:
    - Coordinating database creation and integration into a natural resource database for CalFIRE and County Fire suppression activities and suppression repair
    - Building up the USGS Resource Advisor program and training agency representatives
    - Facilitation and representation for regional fire management strategies and natural resource protection on conserved lands.

Subtask 3c. (FY 2022-23 and FY 2023-24): Meeting Notes

Meeting notes were prepared for submittal to the POM for SDMMP and MSP meetings described under Subtask 3a. Meeting note submittal dates are listed in Table 40 above.

Subtask 3d. (FY 2022-23 and FY 2023-24): POM

The POM and PSB coordinated Preserve monitoring and management tasks via phone, email, and meetings. Coordination included:

- The PSB and City met in January to discuss the recently conveyed parcel pieces within the Northern Salt Creek parcels.
- On January 20, the PSB met in the field with the City and Harris and Associates to look at sewer access routes at the Salt Creek parcels.
- The PSB gathered information to help determine if additional QCB survey areas could be added as suggested by USFWS and discussed the findings with the POM.
- The PSB prepared a table showing estimated budgets for preserve management and monitoring within the preserve as requested by SANDAG for their regional preserve efforts. The table was submitted to the City on February 13. The table was revised and submitted to the City on April 14.
- On August 28, the PSB coordinated with the City regarding access issues at the Western Wolf Canyon and Wolf Canyon parcels. A figure was prepared and submitted to the City on August 28 to show the access issues.

Task 4: Reporting

The following section describes reports that were submitted to the POM in support of the FY 2022–23 and FY 2023–24 annual work plans.

Subtask 4c. (FY 2022-23) and Subtask 4b. (FY 2023-24): Database Management and Contributions

Management and monitoring data collected between January 1, 2022 and December 31, 2022 were submitted to California Natural Diversity Database, San Diego Biological Information and Observation System, and South Coast Multi-taxa Database on February 22, 2023.

MSP IMG field forms, photographs, and spatial data collected in 2023 were finalized and submitted to Emily Perkins (SDMMP) on August 31, 2023.

Subtask 4d. (FY 2022-23) Baseline Survey Reports

One survey was conducted on August 22, 2023, to gather baseline biological information at Bonita Glen parcel. The survey consisted of vegetation mapping, a general plant and wildlife survey, and photographic monitoring. Sensitive species were observed incidentally, and suitable habitat for sensitive wildlife species was evaluated.

The Bonita Glen baseline survey report was submitted to the POM on October 19, 2023. The following summarized results are from the baseline survey:

Bonita Glen

- 4 photographic monitoring points were established.
- 5 unique types of vegetation stands were identified.
- 47 plant species were observed, 36 native and 11 non-native.
  - 2 sensitive plant species were observed.
  - 7 non-native plant species ranked by Cal-IPC were observed.
- 4 invertebrate species were observed.
- 8 bird species were observed.
  - 1 sensitive bird species was observed.
- 3 mammal species were observed.
  - 1 sensitive mammal species was observed.

Subtask 4g. (FY 2022-23) Annual Report

The 2022 Annual Report for the Otay Ranch Preserve was submitted to the POM on January 23, 2023 (RECON 2023d). The annual report summarized all Preserve monitoring and operations/ maintenance tasks performed between January 1 and December 31, 2022.

Subtask 4h. (FY 2022-23) FY 2023–24 Annual Work Plan

The FY 2023–24 Annual Work Plan was submitted to the POM on February 1, 2023 (RECON 2023b). The work plan proposed Preserve monitoring and operations/maintenance tasks to be performed between July 1, 2023 and June 30, 2024.

As requested by the POM, the PSB prepared an addendum to the FY 2022-23 Annual Work Plan. The addendum was prepared to document changes to tasks to increase the QCB survey area during the 2023 flight season, in response to USFWS request. The addendum to the work plan was submitted to the POM on March 16, 2023 (RECON 2023a).

Subtask 4i. (FY 2022-23) Quino Checkerspot Butterfly Pre-survey Notification Letter

The PSB submitted the QCB pre-survey notification letter to USFWS and the POM on January 31, 2023. USFWS approved of the proposed deviation on January 31 and asked if additional survey areas could be included as part of the County-wide surveys. A revised QCB pre-survey notification letter with additional survey areas was submitted to USFWS and the POM on February 8, 2023 (RECON 2023c). QCB surveys were conducted according to USFWS protocol (USFWS 2014) except where deviations were approved.

Subtask 4j. (FY 2022-23) Quino Checkerspot Butterfly Post-survey Report

The PSB submitted the QCB post-survey report to USFWS and the POM on May 31, 2023 (RECON 2023e). Figures 39 through 41 show the QCB host and nectar plants mapped in 2023. All QCB larva and adult observations made between February 9 and April 10, 2023 are shown on a USGS 7.5-minute topographic map on Figure 42. See Photographs 20 through 28 for representative photographs from the surveys.

Host plants dot-seed plantain and purple owl's-clover were found to occur within the Salt Creek, Ridge, and Proctor Valley Extension parcels (see Figures 39 through 41). In addition, potential host plant Parish's owl's clover was observed within the Salt Creek, Ridge, and Proctor Valley Extension parcels (see Figures 39 through 41).

A total of 986 butterfly and skipper observations were made during the focused surveys, representing 17 species (and 4 unidentified species) (RECON 2023e). Unidentified species included those that could not be identified to a species level when the individual flew by. These unidentified fly-bys included blue butterflies, white butterflies, lady butterflies, or duskywing skippers. The most common butterfly species observed were Behr's metalmark (*Apodemia mormo virgulti*), Pacific Sara orangetip (*Anthocharis sara sara*), QCB, common California ringlet (*Coenonympha california californ*ia), painted lady (*Vanessa cardui*), and duskywing (*Erynnis* sp.). A total of 280 QCB observations were made (see Figure 42):

- During the flight season surveys:
  - 136 QCB adult observations were made within the parcels;
- Additional incidental QCB were observed during other preserve management and monitoring activities:
  - 31 QCB adult incidental observations were made within the Preserve;
  - 84 QCB adult incidental observations were made off-site outside of the Preserve; and

- Prior to initiating flight surveys:
  - 9 QCB larva incidental observations were made within the Preserve;
  - 15 QCB larva incidental observations were made off-site outside of the Preserve; and
  - 5 QCB adult incidental observations were made within the Preserve.

Subtask 4k. (FY2022-23) Wet Season Fairy Shrimp Post-survey Report

The PSB submitted the wet season fairy shrimp post-survey report to USFWS and the POM on June 19, 2023 (RECON 2023f). The PSB submitted the fairy shrimp voucher specimens for accessioning at the Los Angeles Natural History Museum as required by the surveyors' USFWS permit on July 13. The results of the wet season fairy shrimp surveys are shown in Figure 43 and in Table 41. Four pools were ponded on April 4 during the ad hoc survey at Millenia. No fairy shrimp were observed. If fairy shrimp are present, they may have completed their life cycle before the ponding areas were examined on April 4. In summary:

- Federally endangered San Diego fairy shrimp were identified in 22 of the 39 ponding areas surveyed.
- Versatile fairy shrimp were identified in six of the 39 ponding areas surveyed.
- Of these observations, San Diego fairy shrimp and versatile fairy shrimp were found to co-occur in two ponding areas.
- At two ponding areas, only immature Branchinecta were observed and the species could not be identified.
- Western spadefoot (*Spea hammondii*) egg masses and tadpoles, a California Department of Fish and Wildlife species of special concern, were observed in 34 of the 39 ponding areas during the surveys.

Table 41
2022 2023 Wet Season Survey Results

Ponding Area Number	Description	San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)	Versatile Fairy Shrimp (*Branchinecta lindahli*)	Immature Fairy Shrimp (*Branchinecta* sp.)[1]	Western Spadefoot (*Spea hammondii*)
1	Road rut	Observed	–	–	–
2	Road rut	Observed	–	–	–
2b	Road rut	–	Observed	–	Observed
3	Road rut	Observed	–	–	Observed
4	Road rut	Observed	Observed	–	–
4b	Road rut	–	Observed	–	Observed
4c	Road rut	–	Observed	–	Observed
5	Road rut	–	Observed	–	Observed
38	Vernal pool established through grading	Observed	Observed	–	Observed
40	Vernal pool established through grading	–	–	–	Observed
41	Vernal pool established through grading	–	–	–	–

Table 41 2022 2023 Wet Season Survey Results					
Ponding Area Number	Description	San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)	Versatile Fairy Shrimp (*Branchinecta lindahli*)	Immature Fairy Shrimp (*Branchinecta* sp.)[1]	Western Spadefoot (*Spea hammondii*)
42	Vernal pool established through grading	–	–	–	Observed
43	Vernal pool established through grading	Observed	–	–	Observed
44	Vernal pool established through grading	Observed	–	–	Observed
45	Vernal pool established through grading	Observed	–	–	Observed
46	Vernal pool established through grading	Observed	–	–	Observed
47	Vernal pool established through grading	–	–	–	Observed
48	Vernal pool established through grading	Observed	–	–	Observed
49	Vernal pool established through grading	Observed	–	–	Observed
50	Vernal pool established through grading	–	–	–	–
51	Vernal pool established through grading	–	–	–	Observed
52	Vernal pool established through grading	–	–	Observed	Observed
53	Vernal pool established through grading	–	–	–	Observed
54	Vernal pool established through grading	–	–	Observed	Observed
55	Vernal pool established through grading	–	–	–	Observed
56	Vernal pool established through grading	–	–	–	Observed
57	Vernal pool established through grading	Observed	–	–	Observed
58	Vernal pool established through grading	Observed	–	–	Observed
59	Vernal pool established through grading	Observed	–	–	Observed
60	Vernal pool established through grading	Observed	–	–	Observed
61	Vernal pool established through grading	Observed	–	–	Observed
62	Vernal pool established through grading	Observed	–	–	Observed
63	Vernal pool established through grading	–	–	–	Observed
64	Vernal pool established through grading	Observed	–	–	Observed

Table 41 2022 2023 Wet Season Survey Results					
Ponding Area Number	Description	San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)	Versatile Fairy Shrimp (*Branchinecta lindahli*)	Immature Fairy Shrimp (*Branchinecta* sp.)[1]	Western Spadefoot (*Spea hammondii*)
65	Vernal pool established through grading	Observed	–	–	Observed
66	Vernal pool established through grading	Observed	–	–	Observed
67	Vernal pool established through grading	Observed	–	–	Observed
68	Vernal pool established through grading	Observed	–	–	Observed
69	Ponding area	–	–	–	Observed
[1]Immature fairy shrimp noted as observed only if the species could not be identified during the 2022–23 wet season.					

Subtask 4a. (FY 2023-24): Brown-headed Cowbird (*Molothrus ater*; BHCO) 2023 Trapping Report

One report detailing 2023 brown-headed cowbird (*Molothrus ater*; BHCO) removal activities was submitted to the POM on August 21, 2023 (SDNHM 2023a). The PSB reviewed the document prior to submittal. The 2023 mist netting locations are shown on Figure 44.

Five male and six female cowbirds were captured at the Preserve in 2023. This compares to sixteen cowbird captures, including seven females, during netting in 2022; three cowbird captures, all females, during netting in 2019; eleven cowbird captures, including five females, during netting in 2018; and twenty cowbird captures, including only four females, during three months of continuous trapping in 2014. Two of the males were banded and released. One male and six females were euthanized and taken to the SDNHM to be accessioned into the research collection (SDNHM 2023a).

No vireo nests were parasitized by cowbirds within the Northern Salt Creek, Salt Creek, and Wolf Canyon parcels and two vireo nests were parasitized by cowbirds within the Otay River Restoration Area during the 2023 breeding season (SDNHM 2023b). One cowbird egg was removed from each of these nests and the nests were ultimately successful (SDNHM 2023c). Cowbird mist-netting in 2018 and 2019 reduced the cowbird parasitism rate to an average of 12 percent across both years, while the lack of mist-netting in 2020 and 2021 resulted in an increase in the average rate to 48 percent. Reinstituting cowbird removals in 2022 dropped the rate back down to 12 percent, and then to 4 percent in 2023 (SDNHM 2023a).

Subtask 4c. (FY2023-23) Native Shrub Tissue Sampling, Tree Health, and Invasive Shot Hole Borer (ISHB)/Fusarium Letter

One letter detailing the 2023 native shrub tissue sampling, tree health surveys, and a 5-year summary of ISHB/Fusarium sampling was submitted to the POM on December 13, 2023 (RECON 2023g). The letter included management recommendations based on the results.

Results of the ISHB tree health surveys from December 2018 to May 2023 are included in Table 42 and shown on Figure 45. As shown in Table 42, no samples in 2023 tested positive for ISHB. The number of trees confirmed with ISHB has decreased from six trees in 2018 to zero trees in 2023. In 2023, the signs and symptoms of ISHB on native trees observed across the Wolf Canyon, Northern Salt Creek, and Salt Creek parcels were very weak. The most common sign was old exit holes in the bark which had healed. The trees that were sampled in 2023 had at least some holes with exudate, but it was not clear if this was caused by ISHB or other boring insects.

Table 42
December 2018 May 2023 ISHB Tree Health Survey Results

Sampling Date	Parcel	Location	Number of Trees Sampled with Potential ISHB[1]	Number of Trees Confirmed with ISHB
December 13, 2018	Salt Creek and Northern Salt Creek	Salt Creek drainage	6	5
	Salt Creek	Otay River	1	0
	Wolf Canyon	unnamed drainage	1	1
May 24 and 28, 2021	Salt Creek and Northern Salt Creek	Salt Creek drainage	6	-[2]
	Salt Creek	Otay River	2	-[2]
	Wolf Canyon	unnamed drainage	1	-[2]
June 3 and 6, 2022	Salt Creek and Northern Salt Creek	Salt Creek drainage	7	1
	Salt Creek	Otay River	1	0
	Wolf Canyon	unnamed drainage	0	0
May 10 and 23, 2023	Salt Creek and Northern Salt Creek	Salt Creek drainage	3	0
	Salt Creek	Otay River	2	0
	Wolf Canyon	unnamed drainage	1	0

[1]Trees sampled with potential signs of Invasive Shot Hole Borer (ISHB) infestation and Fusarium Dieback.
[2]No results were received from the May 2021 samples. The samples were lost in transit and never received at Dr. Akif Eskalen's lab.

On August 28, 2023, root and bark samples were collected from five lemonade berry shrubs that showed signs of stress and suspected fungal pathogen (Figure 46). Native shrub tissue sampling included a visual inspection of select shrubs for signs of dieback such as bark scaling or cracking, yellowing and browning foliage, and gum exudation. The sampled shrubs were mapped with a GPS unit and photographs of the symptoms and tissue sampled were collected. The PSB collected samples from Wolf Canyon (two sample locations), Northern Salt Creek (one sample location), and Salt Creek (two sample locations). The samples were mailed to the CDFA Plant Pest Diagnostics Center for disease identification. The sampling methods were confirmed by CDFA Plant Pest Diagnostics Center prior to collection.

On October 18, 2023 the CDFA Plant Pest Diagnostics Lab provided the results of the samples. Pistachio canker, *Fusarium* sp., and Phytophthora infections were not detected in any of the samples. Cytospora canker (*Cytospora* sp.) was detected in one of the samples from Salt Creek (see Figure 46).

Cytospora canker is a ubiquitous, opportunistic pathogen which usually affects stressed hosts and can be common in wildlands. Plants can persist and fight off Cytospora without intervention during favorable environmental conditions.

Subtask 4d. (FY 2023-24): Least Bell's Vireo and Yellow-billed Cuckoo 2023 Post-survey Report

A post-survey report detailing the results of the 2023 LBVI survey and nest monitoring and YBCU survey was submitted to the POM on November 14, 2023 (SDNHM 2023b and 2023c). The PSB reviewed the document prior to submittal. Figure 44 shows 2023 LBVI observations. Table 43 shows the 2023 LBVI survey results. YBCU was not observed in 2023 (SDNHM 2023c).

Table 43
2023 LBVI Survey Results: Salt Creek, Northern Salt Creek, Otay River Restoration Area, and Wolf Canyon

Locations	Pairs	Individuals	Transient	Undeter-mined	Territories	Total Completed Nests	Successful Nests
Northern Salt Creek and Salt Creek Parcels	12	1	2	-	13	9	9
Otay River Restoration Area (within and directly adjacent to Salt Creek Parcels)	17	-	5	2	19	28	16
Wolf Canyon Parcel	3	-	-	-	3	3	2

Subtask 4e. (FY 2023-24): Wet Season Fairy Shrimp Pre-survey Notification Letter

The PSB prepared and submitted the wet season fairy shrimp pre-survey notification letter to USFWS and the POM on October 23, 2023. The letter included a proposed deviation request to conduct up to five survey visits at the Millenia and Johnson Canyon (East) parcels (RECON 2023h). USFWS approved the deviation request on October 24 via email.

3.0 Operations/Maintenance

This chapter describes operations/maintenance tasks that occurred between January 1 and December 31, 2023. These tasks were proposed in the FY 2022–23 and FY 2023-24 annual work plans (RECON 2022a and 2023b).

Task 5: Access Control

Access control within the Preserve continues to be one of the highest priority tasks. Sensitive habitat, plants, and wildlife are being impacted by unauthorized foot and bicycle traffic, off-highway vehicle, target-shooting activities, and unauthorized route creation. The following sections detail work that was performed in an ongoing effort to minimize damage to the Preserve.

Subtask 5a. (FY 2022-23 and FY 2023-24): U.S. Customs and Border Protection/Agency Access Meetings & Coordination

- In mid-February, the PSB coordinated with CDFW for approval to use dirt roads on CDFW property to access the Proctor Valley Extension parcels. On February 24, Nicholas (Nick) Aponte (CDFW South San Diego Reserve Manager) provided the PSB with an access letter to cross through Rancho Jamul Ecological Reserve. The access letter expired December 31, 2023.

- In August, the PSB coordinated with the POM regarding an off-site unauthorized bike route that leads onto the Jamul Mountains parcels. Figures and a photo document were prepared and sent to the POM on August 2 and 28 to show the unauthorized bike route. Recommendations to address unauthorized access were presented. In November, the PSB coordinated with the City of San Diego to request a sign to deter use of the unauthorized mountain bike route that starts on City of San Diego property and continues onto the Preserve.

- In August, the PSB coordinated with the POM regarding access issues at Northern San Ysidro and San Ysidro parcels and adjacent CDFW property. The PSB prepared a photo document and figure demonstrating the access issues and recommended actions to address unauthorized access. In December, the PSB provided the POM with updated photographs demonstrating the status of the unauthorized motorbike routes on the Preserve at San Ysidro and Northern San Ysidro Parcels.

- In October, the PSB coordinated with the POM regarding access to the Ridge parcels being blocked by recently installed T-post fencing.

Subtask 5b. (FY 2022-23 and FY 2023-24): Fence and Sign Installation and Repair

Throughout 2023, the PSB observed a similar amount of trespass and habitat damage compared to past years. The following parcels have a higher observed amount of trespass and habitat damage in 2023: Salt Creek, Northern Salt Creek, Northern San Ysidro, San Ysidro, Dulzura, McMillin, Little Cedar Canyon, and Jamul Mountains. As discussed in Subtask 2a. above, native vegetation was damaged at Salt Creek and Northern Salt Creek due to all-terrain vehicle (ATV), motor bike, and mountain bike use; at Northern San Ysidro and San Ysidro due to ATV, motor bike, and mountain bike use; at Dulzura with off-road truck use and foot routes; at McMillin due to off-road truck and ATV use and foot routes; at Little Cedar Canyon with foot routes; and at Jamul Mountains with foot routes (see Figures 22, 23, 17, 20, and 18, respectively). Habitat damage was observed due to an increased

amount of trash deposited within primarily the following parcels: Northern San Ysidro, San Ysidro, Dulzura, and Little Cedar Canyon.

During 2023:

- The PSB reviewed recent Google Earth imagery and mapped obvious unauthorized ATV and bike routes. The routes were verified in the field and the type of trespass was noted.

- Contact information was gathered for the homeowners association (HOA) adjacent to the Western Wolf Canyon parcels to address landscape cuttings being dumped within the parcels. Sign templates stating "No Dumping" and "Danger – Keep Out" were prepared. Two "Danger – Keep Out" signs and six "No Dumping" signs were purchased for Western Wolf Canyon and Wolf Canyon parcels. Signs stating "No Dumping" were installed at Western Wolf Canyon on October 9, 2023, see Table 52 below.

Access control issues were addressed through December 31, 2023. Tables 44 through 52 summarize access control measures that were implemented per parcel between January 1 and December 31, 2023. Access control issues are described below the tables. Photographs 38 through 42 are representative photographs from access control activities. The following bullet point provides a summary of total POM property installations/repairs for fence, signs, and gates, and the total off-site adjacent to the Preserve repairs conducted during 2023:

- Total POM property installations/repairs conducted during 2023 include: 1,429 linear feet of fencing installed, 418 linear feet of fencing repaired, 6 signs installed, 2 signs replaced, and 2 signs repaired. Gates were repaired four times and secured as needed. Additional access control included T-post installation with concrete along 50 linear feet of fencing, 20 linear feet of rock barrier installation, 0.04 acre of fascicled tarweed (*Deinandra fasciculata*) vertical mulch, and installation of 0.12 acre of coast cholla.

- Total off-site (adjacent to the Preserve Northern San Ysidro parcels) CDFW property repairs conducted during 2023 include: 70 linear feet of fencing repaired.

Table 44
Dulzura Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Dulzura	01/25/2023	-	3	1	-	-	-	-
	02/08/2023	-	13	1	-	-	-	-
	04/05/2023	-	20	-	-	-	-	-
	04/19/2023	-	20	-	-	-	-	-
	08/30/2023	-	15	-	1	1	-	T-posts installed with concrete along 15 linear feet of fencing
	10/06/2023	-	20	-	-	-	-	-
	11/06/2023 through 11/09/2023	918	-	-	-	-	-	-
	11/09/2023	-	20	-	-	-	-	T-posts installed with concrete along 20 linear feet of fencing
TOTAL (POM Property)		**918**	**111**	**2**	**1**	**1**	**-**	**T-posts installed with concrete along 35 linear feet of fencing**

[1]Figure 17 shows access control data collected in 2023 at Dulzura Parcels.
[2]Ground length, not total materials used for repair.

Table 45
Jamul Mountain Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Jamul Mountains	01/25/2023	-	-	-	-	1	-	-
	04/05/2023	20	-	-	-	-	-	-
TOTAL (POM Property)		**20**	**-**	**-**	**-**	**1**	**-**	**-**

[1]Figure 18 shows access control data collected in 2023 at Jamul Mountains Parcels.
[2]Ground length, not total materials used for repair.

Table 46
Little Cedar Canyon Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Little Cedar Canyon	11/28/2023	-	-	-	1	-	-	20 linear feet of rock barrier
TOTAL (POM Property)		**-**	**-**	**-**	**1**	**-**	**-**	**20 linear feet of rock barrier**

[1]Figure 20 shows access control data collected in 2023 at Little Cedar Canyon Parcels.
[2]Ground length, not total materials used for repair.

Table 47
McMillin Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
McMillin	07/17/2023	44	-	1	-	-	-	-
	12/08/2023	100	-	-	-	-	-	-
TOTAL (POM Property)		**144**	**-**	**1**	**-**	**-**	**-**	**-**

[1]Figure 20 shows access control data collected in 2023 at McMillin Parcels
[2]Ground length, not total materials used for repair.

Table 48
Northern Salt Creek Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Northern Salt Creek	01/09/2023	-	-	-	-	-	-	-
	08/24/2023	-	15	-	-	-	1	T-posts installed with concrete along 15 linear feet of fencing
	10/13/2023	-	-	-	-	-	1	-
	12/08/2023	-	-	-	-	-	1	-
TOTAL (POM Property)		**-**	**15**	**-**	**-**	**-**	**3**	**T-posts installed with concrete along 15 linear feet of fencing**

[1]Figure 22 shows access control data collected in 2023 at Northern Salt Creek Parcels
[2]Ground length, not total materials used for repair.

Table 49
Northern San Ysidro Parcels and Adjacent CDFW Property: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Northern San Ysidro (off-site CDFW property)	04/12/2023	-	70	-	-	-	-	-
TOTAL (Off-site CDFW Property)		**-**	**70**	**-**	**-**	**-**	**-**	**-**

[1]Figure 23 shows access control data collected in 2023 at Northern San Ysidro Parcels
[2]Ground length, not total materials used for repair.

Table 50
Salt Creek Parcels: Fencing, Sign, and Gate Installation and Repairs[1]

Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Salt Creek	04/05/2023	-	10	-	-	-	-	-
	06/07/2023	-	-	-	-	-	1	-
	07/17/2023	82	15	-	-	-	-	-
	08/24/2023 08/25/2023	200	15	-	-	-	-	-
	09/07/2023 09/08/2023	-	15	-	-	-	-	*Deinandra fasciculata* vertical mulch (0.04 acre)
	09/22/2023	65	-	-	-	-	-	-
	10/06/2023	-	-	-	-	-	-	0.12 acre of coast cholla cuttings
	12/08/2023	-	50	-	-	-	-	-
TOTAL (POM Property)		**347**	**105**	**-**	**-**	**-**	**1**	**0.16 acre of vertical mulch & coast cholla cuttings**

[1]Figure 22 shows access control data collected in 2023 at Salt Creek Parcels
[2]Ground length, not total materials used for repair.

Table 51 San Ysidro Parcels: Fencing, Sign, and Gate Installation and Repairs[1]								
Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
San Ysidro	04/12/2023	-	190	-	-	-	-	-
TOTAL (POM Property)		**-**	**190**	**-**	**-**	**-**	**-**	**-**

[1]Figure 23 shows access control data collected in 2023 at San Ysidro Parcels
[2]Ground length, not total materials used for repair.

Table 52 Wolf Canyon Parcels: Fencing, Sign, and Gate Installation and Repairs[1]								
Parcel	Date	Fencing Installed (linear feet)[2]	Fencing Repaired (linear feet)[2]	Signs Installed	Signs Replaced	Signs Repaired	Gate Repaired	Other Access Control Installed
Wolf Canyon	10/09/2023	-	-	3	-	-	-	-
TOTAL (POM Property)		**-**	**-**	**3**	**-**	**-**	**-**	**-**

[1]Figure 38 shows access control data collected in 2023 at Wolf Canyon Parcels
[2]Ground length, not total materials used for repair.

Dulzura Parcels

Figure 17 shows access control data collected in 2023.

- On January 25,
    - 3 linear feet of barbless wire T-post fence was repaired along the eastern parcel boundary that separates the Dulzura parcels from Thousand Trails Pio Pico RV Resort and Campground.
    - One preserve sign stating 'No Trespassing' was attached to the barbless wire T-post fence.
- On February 8,
    - 3 linear feet of barbless wire T-post fence was repaired along the eastern boundary near the Thousand Trails Pio Pico RV Resort and Campground basketball courts.
    - 10 linear feet of barbless wire T-post fence was repaired near the northern boundary leading to CDFW land.
    - One preserve sign stating 'No Trespassing' was installed.
- On April 5, 20 linear feet of barbless wire T-post fence was repaired to block vehicles from damaging coastal sage scrub habitat and a drainage.
- On April 19, 20 linear feet of barbless wire T-post fence was repaired to block vehicles from further damaging coastal sage scrub habitat and a drainage.
- On August 30, a preserve sign was replaced along the Minnewawa Truck Trail. One preserve sign along the Minnewawa Truck Trail was repaired by replacing a bolt to make it upright. A section of 15 linear feet of T-post barbless wire fence was repaired and the T-posts were embedded in concrete.
- On October 6, 20 linear feet of T-post barbless wire fence was repaired along the northern boundary of the parcels.
- On November 6 through 9, the RECON restoration crew installed approximately 918 linear feet of T-post barbless wire fence for the SANDAG TransNet EMP grant for QCB short-term threat reduction project. The fencing was installed to protect QCB and its habitat from vehicle damage.
- On November 9, 20 linear feet of T-post barbless wire fence was repaired along the northern boundary of the parcels. The T-posts were installed in concrete.

Jamul Mountains Parcels

Figure 18 shows access control data collected in 2023.

- On January 25, one preserve sign stating 'No Trespassing' was attached to an existing T-post along the southwestern parcel boundary.
- On April 5, 20 linear feet of barbless wire T-post fence was installed to block mountain bikes from damaging coastal sage scrub habitat.

Little Cedar Canyon Parcels

Figure 20 shows access control data collected in 2023.

- On November 28,
    - A sign stating Area 'Closed to Vehicle Traffic' was replaced.
    - A rock barrier was placed to discourage use of an unauthorized truck route.

McMillin Parcels

Figure 20 shows access control data collected in 2023.

- On July 17, 44 linear feet of barbless wire T-post fence and one 'Off-road Vehicle Activities Prohibited' sign were installed to protect QCB habitat.
- On December 8, 100 linear feet of T-post barbless wire fence was installed to block an unauthorized ATV route through QCB habitat.

Northern Salt Creek Parcels

Figure 22 shows access control data collected in 2023.

- On January 9, a combination lock was added to a gate along the northern parcel boundary to secure the gate.
- On August 24, the gate just south of Olympic Parkway along the northern boundary of the parcels was repaired. Fifteen linear feet of T-post barbless wire fence was repaired, and the T-posts were embedded in concrete.
- On October 13, the gate along the northern parcel boundary was repaired by fixing and tightening the hinges. The City of Chula Vista combo lock had been previously cut. The lock was replaced.
- On December 8, the northern gate was repaired and secured.

Northern San Ysidro Parcels

Figure 23 shows access control data collected in 2023.

- On April 12, 70 linear feet of barbed wire T-post fence was repaired to block motorcycles from damaging QCB habitat. Fence repairs were conducted within CDFW property, east of the parcel boundary.

Salt Creek Parcels

Figure 22 shows access control data collected in 2023.

- On April 5, 10 linear feet of barbless wire T-post fence was repaired to block an unauthorized bicycle route.
- On June 7, a City lock was placed on the gate south of Hunte Parkway and the existing chain was shortened so that it could no longer be slipped over the gate post.
- On July 17, 32 linear feet of barbless wire T-post fence was installed, extended from existing fencing, to protect coastal cactus wren habitat and QCB habitat.
- On July 17, 15 linear feet of barbless wire T-post fence was repaired at two adjacent locations near the red gate along the eastern boundary.
- On July 17, 50 linear feet of barbless wire T-post fence was installed to protect coastal cactus wren habitat.
- On August 24, 15 linear feet of T-post barbless wire fence was repaired adjacent to the red fence west of Wueste Road along the eastern boundary of the parcels.
- On August 24 and 25, 200 linear feet of T-post barbless wire fence was installed to protect hogwallow starfish (*Hesperevax caulescens*; Priority Group 4).
- On September 7 and 8, 0.04 acre of an unauthorized bike route near vegetation treatment area SC_8 were covered with fascicled tarweed vertical mulch collected from vegetation treatment area SC_16. The purpose of the vertical mulch is to visually hide the route, make the route harder to traverse, and restore the route with native annual seed. In addition, 15 linear feet of T-post barbless wire fence was repaired adjacent to the red fence west of Wueste Road along the eastern boundary of the parcels.
- On September 22, 65 linear feet of T-post barbless wire fence was installed to block an unauthorized bike route.
- On October 6, 0.12 acre of coast cholla was planted to close an unauthorized bike trail.
- On December 8, 50 linear feet of T-post barbless wire fence was repaired near the Wueste gate.

San Ysidro Parcels

Figure 23 shows access control data collected in 2023.

- On April 12, 190 linear feet of barbless wire T-post fence was repaired to block motorcycles from damaging QCB habitat.

Western Wolf Canyon and Wolf Canyon Parcels

Figure 38 shows access control data collected in 2023.

- On October 9, three signs stating 'No Dumping' were installed along the existing western boundary T-post wire fence to protect Otay tarplant during HOA brush management activities.

Subtask 5c. Trash Removal

To prioritize additional QCB survey areas, Subtask 5c. Trash Removal at the San Ysidro, Northern San Ysidro, and Little Cedar Canyon parcels was removed from the Work Plan in consultation with the POM. Trash removal at the San Ysidro, Northern San Ysidro, and Little Cedar Canyon parcels will be discussed with the POM and may be proposed in a future work plan.

Task 6: Invasive Species Treatment

Subtask 6a. (FY 2022-23 and FY 2022-24): Vegetation Treatment and Removal

Vegetation treatment and removal occurred January through December 2023. The RECON crew removed weeds within a variety of habitats described below. RECON biologists coordinated vegetation treatment and removal work, and qualitatively monitored treatment areas to determine proper timing for weed treatment. Otay tarplant and QCB host and nectar plants were flagged for avoidance prior to applying herbicide. Weed species treated with glyphosate herbicide included primarily short-pod mustard (*Hirschfeldia incana;* Cal-IPC Rating: Moderate), tocalote (*Centaurea melitensis*; Cal-IPC Rating: Moderate), non-native annual grasses (*Bromus* spp. and *Avena* spp.; Cal-IPC Rating: Moderate to High), and other species such as horehound (*Marrubium vulgare*), common poison hemlock (*Conium maculatum*), non-sweetclover (*Melilotus* sp.), California burclover (*Medicago polymorpha*), and filaree (*Erodium* sp.). Non-native plants removed by line trimmer consisted primarily of tocalote, oats, and other various grasses. Stinkwort (*Dittrichia graveolens*) was primarily treated by hand removal. The long-term goals of vegetation treatment are to decrease non-native plant cover to (1) maintain and enhance foraging habitat for coastal cactus wren, (2) increase bare ground cover for QCB, (3) increase habitat quality for vernal pool wildlife and plant species, and (4) reduce non-native competition for Otay tarplant. Table 53 provides a summary of the total vegetation treatment acreage at each parcel per focal sensitive species resource. Table 54 lists vegetation treatment and removal dates, locations, and focal species. Vegetation treatment and

removal areas are shown in Figures 47 through 53. Photographs 42 through 47 are representative photographs from vegetation treatment and removal activities.

The PSB coordinated with Target Specialty Products for a Pest Control Adviser Recommendation as requested by the County of San Diego Department of Parks and Recreation Agricultural Scientist. The Pest Control Adviser was submitted to the POM on November 13, 2023.

Table 53
Otay Ranch Preserve Vegetation Treatment Locations by Parcel, Acreage, and Focal Sensitive Species Resource

Parcel(s)	Acreage	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	0.25	Vernal pool habitat	Sweetclover sand-spurrey (*Spergularia* sp.)
Millenia	14.29	Potential vernal pool habitat	Various
Salt Creek	35.42	CACW	Various
Northern Salt Creek	1.0	CACW	Various
Millenia	1.42	CACW	Various
County of San Diego	3.36	CACW	Stinkwort, fennel, and broom baccharis
Western Wolf Canyon	1.70	CACW	Lemonade berry, black mustard, sweetclover, tocalote
Salt Creek	14.28	QCB	Filaree, oats
San Ysidro	6.35	QCB	Non-native grasses and tocalote
Dulzura	0.73	QCB	Various
Millenia	4.36	Otay tarplant	Black mustard, non-native grasses
Western Wolf Canyon	1.64	Otay tarplant	Tocalote and short-pod mustard
Johnson Canyon Otay Tarplant Preserve	2.84	Otay tarplant	Non-native grasses and tocalote
Salt Creek	0.73 and TWE	Various	Stinkwort
Northern Salt Creek	TWE	Various	Stinkwort
Millenia	TWE	Various	Stinkwort
Northern San Ysidro and San Ysidro	5.09	Various	Stinkwort
Wolf Canyon	TWE	Various	Stinkwort
Dulzura	0.47	Various	Various
TWE = Treated when encountered			

Table 54
Otay Ranch Preserve Vegetation Treatment Locations, Treatment Dates, and Acreage

Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_16	Herbicide	01/23/2023	N/A	7754	Quino Checkerspot Butterfly Recovery Program	Summer 2016	1 year	QCB Vernal Pools	Tocalote, filaree, brome, short-pod mustard
Salt Creek	SC_23	Herbicide	01/24/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Tocalote, filaree, brome, short-pod mustard
Salt Creek	SC_22	Herbicide	01/24/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Tocalote, filaree, brome, short-pod mustard
Dulzura	DLZ_1 DLZ_2	Herbicide	01/25/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal sage scrub/Erosion Control	Tocalote, short-pod mustard, brome, filaree
Dulzura	DLZ_3 DLZ_4	Herbicide	01/25/2023	557744	10055	Otay Ranch Preserve Enhancement Project	Ongoing Estimated Fall 2024	1 year	Quino checkerspot butterfly	Tocalote, short-pod mustard, brome, filaree
Salt Creek	SC_21	Herbicide	01/26/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Tocalote, filaree, brome, short-pod mustard
Salt Creek	SC_22	Herbicide	01/26/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Tocalote, filaree, brome, short-pod mustard
Salt Creek	SC_16	Herbicide	01/27/2023 02/02/2023 02/03/2023	N/A	7754	Quino Checkerspot Butterfly Recovery Program	Summer 2016	1 year	QCB Vernal Pools	Tocalote, filaree, brome, short-pod mustard
Salt Creek	SC_17 SC_18 SC_19	Herbicide	02/09/2023 02/10/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Tocalote, filaree, brome
Salt Creek	SC_3	Herbicide	03/06/2023 03/07/2023	5004943	8340	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	18 months	Coastal cactus wren	Tocalote, short-pod mustard, filaree
Salt Creek	SC_33	Herbicide application, Removed by hand	03/13/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Brome, filaree, short-pod mustard, prickly sow thistle, tocalote

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_11	Herbicide, Removed by hand	03/13/2023	5004943	8340	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	18 months	Coastal cactus wren	Short-pod mustard, tocalote, filaree, prickly sow thistle
Salt Creek	SC_25	Herbicide, Removed by hand	03/14/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Short-pod mustard, tocalote, filaree, brome, sourclover
Salt Creek	SC_23	Herbicide application, Removed by hand	03/14/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Short-pod mustard, tocalote, filaree, brome
Salt Creek	SC_6	Herbicide Line trim	04/05/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Short-pod mustard, tocalote, filaree, brome
Salt Creek	SC_7	Herbicide Line trim	04/05/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Short-pod mustard, tocalote, filaree, brome
Millenia	MLLN_3	Herbicide, Line trim	04/12/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Potential QCB and potential vernal pool habitat	Brassica, oats, filaree
Millenia	MLLN_2 MLLN_1	Herbicide, Line trim	04/10/2023 04/10/2023 04/11/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Otay tarplant	Filaree, black mustard, purple false brome
Millenia	MLLN_8	Herbicide, Line trim	04/24/2023 04/25/2023 04/26/2023 04/27/2023 04/28/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Potential QCB and potential vernal pool habitat	Rye grass, prickly sow thistle, Crete weed, filaree, slender wild oat, small-flower catchfly
Millenia	MLLN_5	Line trim	05/15/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren Otay tarplant	black mustard, fescue, common catchfly, soft chess, purple
Millenia	MLLN_6	Line trim	05/15/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Otay tarplant	black mustard, fescue, common catchfly, soft chess, purple

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Millenia	MLLN_7	Line trim	05/16/2023	5004731	5256	Otay Ranch Preserve	Fall 2018	3 years	Otay tarplant	Tocalote, black mustard, fescue, soft chess, purple false brome, common catchfly, stork's bill, oat
Johnson Canyon Otay Tarplant Preserve	JCOTP_1	Line trim, Herbicide	05/22/2023 05/23/2023	N/A	5256	Johnson Canyon Otay Tarplant Preserve	N/A	N/A	Otay Tarplant	Slender oat (*Avena Barbara*), brome (*Bromus* sp.), tocalote (*Centaurea melitensis*)
Western Wolf Canyon	WWC_2	Line trim	05/30/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Short-pod mustard, tocalote
Western Wolf Canyon	WWC_2 WWC_4	Line trim	05/31/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Short-pod mustard, tocalote
Western Wolf Canyon	WWC_4 WWC_5	Line trim	06/01/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Tocalote
Western Wolf Canyon	WWC_5	Line trim	06/02/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Tocalote
San Ysidro	SY_1	Line trim	06/19/2023	CDFW Local Area Assistance Grant	8406	Quino Checkerspot Butterfly Habitat Restoration and Enhancement Project	Spring 2019	2 years	Quino checkerspot butterfly	Brome, oat, tocalote, smooth cats ear, common catchfly
San Ysidro	SY_1 SY_2	Line trim	06/20/2023	CDFW Local Area Assistance Grant	8406	Quino Checkerspot Butterfly Habitat Restoration and Enhancement Project	Spring 2019	2 years	Quino checkerspot butterfly	Brome, oat, tocalote, smooth cats ear, common catchfly
Salt Creek	SC_20	Line trim	06/21/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Tocalote, oat, brome, short-pod mustard, fescue

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_32	Line trim	06/21/2023	5004943	8340	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	18 months	Coastal cactus wren	Short-pod mustard, oat, fescue, tocalote, black mustard
Salt Creek	SC_32	Line trim	06/23/2023	5004943	8340	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	18 months	Coastal cactus wren	Short-pod mustard, oat, fescue, tocalote, black mustard
Salt Creek	SC_Dittrichia_1	Removed by hand	06/27/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Northern Salt Creek	NSC_Dittrichia	Removed by hand	06/27/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Millenia	MLLN_Dittrichia	Removed by hand	07/03/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_2	Removed by hand	07/03/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_2	Removed by hand	07/14/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Northern Salt Creek	NSC_Dittrichia	Herbicide application	07/17/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort, short-pod mustard
Wolf Canyon	WC_Dittrichia	Herbicide application	07/17/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Western Wolf Canyon	WWC_6	Herbicide application, removed by hand	7/18/2023, 07/19/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, lemonade berry, tocalote, sweetclover (*Melilotus indicus*)
Western Wolf Canyon	WWC_3	Herbicide application, removed by hand	07/19/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, lemonade berry, sweetclover, tocalote
Western Wolf Canyon	WWC_1	Cut with line trimmers, herbicide application	07/31/2023 08/01/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, lemonade berry, tocalote
Western Wolf Canyon	WC_Dittrichia	Herbicide application	07/31/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Millenia	MLLN_Dittrichia	Removed by hand	08/11/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_4	Line trim	08/24/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	tocalote
Salt Creek	SC_5	Line trim	08/24/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	tocalote
Salt Creek	SC_6	Line trim	08/24/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	tocalote
Salt Creek	SC_7	Line trim	08/24/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	tocalote
Northern San Ysidro	SY_NSY_Dittrichia	Removed by hand	08/25/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
San Ysidro	SY_NSY_Dittrichia	Removed by hand	08/25/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	stinkwort
Salt Creek	SC_8	Line trim	08/30/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Tocalote, brome (*Bromus* sp.)
Western Wolf Canyon	WWC_1	Line trim	08/31/2023 09/01/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, tocalote
Western Wolf Canyon	WWC_6	Line trim	08/31/2023 09/01/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, tocalote
Wolf Canyon	WC_Camino	Line trim	09/01/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	QCB, Various	Castor bean (*Ricinus communis*)
Western Wolf Canyon	WWC_3	Line trim	09/01/2023	N/A	3173	Otay Ranch Habitat Restoration/Wolf Canyon Habitat Restoration	Summer 2009	10 years	Coastal cactus wren	Black mustard, tocalote

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_16	Line trim and collect cuttings by hand	09/07/2023 09/08/2023	N/A	7754	Quino Checkerspot Butterfly Recovery Program	Summer 2016	1 year	Vernal Pools	Fascicled tarweed (*Deinandra fasciculata*), tocalote, short-pod mustard
County APN 646-010-06	County_1	Herbicide application	09/18/2023 09/19/2023 09/20/2023	5004730	8116	Otay River Valley Cactus Wren EMP Grant	Fall 2018	3 years	Coastal cactus wren	Stinkwort, broom baccharis (*Baccharis sarothroides*), fennel (*Foeniculum vulgare*)
Salt Creek	SC_24.1	Line trim Herbicide application	09/21/2023 09/22/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Brome (*Bromus* sp.), filaree (*Erodium* sp.), tocalote, short-pod mustard
Salt Creek	SC_25	Line trim Herbicide application	09/21/2023 09/22/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Brome (*Bromus* sp.), filaree (*Erodium* sp.), tocalote, short-pod mustard
Northern San Ysidro	SY_NSY_Dittrichia	Removed by hand	09/25/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
San Ysidro	SY_NSY_Dittrichia	Removed by hand	09/25/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Dulzura	DLZ_3 DLZ_4 DLZ_5 DLZ_6 DLZ_7	Line trim Herbicide application	10/04/2023 10/05/2023	557744	10055	Otay Ranch Preserve Enhancement Project	Ongoing Estimated Fall 2024	1 year	QCB	Short-pod mustard (*Hirschfeldia incana*), brome (*Bromus* sp.), tocalote (*Centaurea melitensis*), Russian thistle (*Salsola tragus*), filaree (*Erodium* sp.)
Dulzura	DLZ_1	Line trim Herbicide application	10/05/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal sage scrub/Erosion Control	Brome, short-pod mustard, filaree
Salt Creek	SC_Dittrichia_2	Removed by hand	10/06/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Western Wolf Canyon	WWC_7	Line trim Herbicide application	10/09/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Otay tarplant	Brome, black mustard, short-pod mustard, tocalote
Millenia	MLLN_5	Line trim Herbicide application	10/10/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Habitat Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Broom baccharis (*Baccharis sarothroides*), prickly lettuce, black mustard

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Millenia	MLLN_6	Line trim Herbicide application	10/10/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Otay tarplant	Rye grass (*Festuca perennis*), prickly lettuce (*Lactuca serriola*), brome, black mustard (*Brassica nigra*)
Salt Creek	SC_1 SC_3	Line trim	10/11/2023 10/12/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Broom baccharis, short-pod mustard, tocalote
Salt Creek	SC_2	Line trim	10/11/2023 10/12/2023	5001133	N/A	Salt Creek Coastal Cactus Wren Habitat Restoration Project (County of San Diego Parks and Recreation Department & Merkel & Associates)	Summer 2014	5 years	Coastal cactus wren	Broom baccharis, short-pod mustard, tocalote
Salt Creek	SC_3	Line trim	10/11/2023 10/12/2023	5004943	8340	SC_2010_POM_DITGR A	Fall 2018	18 months	Coastal cactus wren	Broom baccharis, short-pod mustard, tocalote
Northern Salt Creek	NSC_SC_1	Line trim	10/11/2023 10/12/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Broom baccharis, short-pod mustard, tocalote
Northern Salt Creek	NSC_1	Line trim	10/13/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Broom baccharis, short-pod mustard, stinkwort, black mustard
Northern Salt Creek	NSC_Dittrichia	Removed by hand	10/13/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_2	Removed by hand	10/13/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_2	Removed by hand	10/31/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_1	Removed by hand	10/31/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Northern Salt Creek	NSC_Dittrichia	Removed by hand	10/31/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Salt Creek	SC_Dittrichia_2	Removed by hand	11/15/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort
Northern Salt Creek	NSC_1	Line trim Herbicide application	11/20/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Coastal cactus wren	Short-pod mustard, black mustard, tocalote
Salt Creek	SC_4	Line trim Herbicide application	11/20/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Black mustard, short-pod mustard, broom baccharis, tocalote
Salt Creek	SC_Dittrichia_2	Removed by hand	11/20/2023	N/A	5256	Otay Ranch Preserve	N/A	N/A	Various	Stinkwort

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Parcel(s)	Polygon Number	Treatment Type	Treatment Date(s)	Previous SANDAG Grant No.	Previous RECON Project No.	Previous Project Name	Previous Project End Date	Length of Previous Project	Focal Sensitive Species Resource	Focal Plant Species Treated
Salt Creek	SC_4	Line trim Herbicide application	11/21/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Black mustard, short-pod mustard, broom baccharis, tocalote
Salt Creek	SC_6	Line trim Herbicide application	12/04/2023 12/05/2023	5001970	6649	Otay Ranch Coastal Cactus Wren Restoration and Enhancement Program	Summer 2015	3 years	Coastal cactus wren	Black mustard, short-pod mustard, tocalote, non-native grasses
Salt Creek	SC_7	Line trim Herbicide application	12/04/2023 12/05/2023	5004731	7682	Otay Ranch Coastal Cactus Wren Restoration and Enhancement Program	Fall 2018	3 years	Coastal cactus wren	Black mustard, short-pod mustard, tocalote, non-native grasses

Vernal Pool Habitat (Salt Creek and Millenia)

The long-term goal within vernal pool habitat vegetation treatment areas is to increase habitat quality for vernal pool wildlife and plant species. Non-native species such as tocalote, filaree, brome, and short-pod mustard, as well as fascicled tarweed, were removed with hand tools within the 30 vernal pools established through grading in 2015 within approximately 0.25 acre at the Salt Creek parcels (see Figure 47).

Within the Millenia parcels, per the Work Plans (FY 22-23 and FY 23-24), various non-native grasses and annual weeds were cut with line trimmers and treated with herbicide within upland habitat in the Non-native Plant Treatment Area east of SR-125 (see Figure 48; MLLN_8). Weeds were removed with hand tools from the depression and vernal pool within the treatment area. Weeds were also treated with herbicide and line trimmed in the Non-native Plant Treatment Area west of SR-125 where there is potential vernal pool habitat (see Figure 48; MLLN_3). Approximately 14.29 acres of weeds were treated within the Millenia parcels potential vernal pool habitat.

Cactus Wren Habitat Enhancement (Salt Creek, Northern Salt Creek, Millenia, County of San Diego Property, and Western Wolf Canyon)

In 2023, vegetation within cactus wren habitat enhancement areas was treated with herbicide and removed by hand and line trimmer. Long-term control of weeds and shrubs around coast cholla habitat patches will reduce the risk of catastrophic fires that have the potential to cause loss of coastal cactus wren habitat. Previous coastal cactus wren SANDAG grant areas have continued to be maintained through CFD 97-2 funding after the grant projects ended. A coastal cactus wren grant project (previous SANDAG grant number 5001970; see Figure 47) planted cholla cuttings on approximately 15 acres during the fall/winter of 2012-13. These planting areas have had weed control efforts funded by the CFD 97-2 since 2016. The plants are slowly maturing and are within about 2 to 3 years of becoming tall enough for coastal cactus wren to nest in. The blue elderberry trees planted for this previous SANDAG grant have continued to grow, flower, and set seeds. Weeding was conducted within the elderberry area (SC_25), High Tech Middle coast cholla planting area (SC_6), and SC_17, SC_18, SC_19, SC_20, SC_21, and SC_22, totaling 24.49 acres of this previous coastal cactus wren grant project. One elderberry polygon was assessed for weed treatment and no treatment was necessary in 2023. This elderberry polygon is shown on Figure 30 of the FY 2022-23 Work Plan (RECON 2022a).

Short-pod mustard, tocalote, filaree, and various non-native annual grasses were also removed within SC_4, SC_5, SC_7, and SC_8 totaling 4.71 acres at the Salt Creek parcels (see Figure 47; previous SANDAG grant number 5004731). Patches 1a, 1b, 1c, 2, 5, 6, and 7 were assessed for weed treatment and no treatment was necessary in 2023. These patches are shown on Figure 30 of the FY 2022-23 Work Plan (RECON 2022a). Broom baccharis (*Baccharis sarothroides)*, short-pod mustard, and tocalote were removed within 1.15 acres at the Salt Creek parcels (see Figure 47; previous SANDAG grant number 5001133; SC_2). Short-pod mustard, tocalote, filaree, sow thistle, broom baccharis and non-native grasses were treated within SC_3, SC_11, and SC_32 within the previous SANDAG grant number 5004943 (2.78 acres; see Figure 47). Patches 4 and 5 were assessed for weed treatment and no treatment was necessary in 2023. These patches are shown on Figure 30 of the FY 2022-23 Work Plan (RECON 2022a).

An additional 0.86 acre of cactus wren habitat was treated for weeds at the Salt Creek parcels (see Figure 47; SC_24.1). This area was initially treated for weeds in 2015. The 0.72-acre shrub thinning effort from January/February 2017 and the 0.93-acre Salt Creek Cactus Wren Habitat Restoration/Erosion Control/Illegal Road Closure Area were assessed for weed treatment and no treatment was necessary in 2023. These areas are shown on Figure 30 of the FY 2022-23 Work Plan (RECON 2022a).

Non-native annuals and broom baccharis within the areas thinned of shrubs in 2021 at the Northern Salt Creek and Salt Creek parcels were treated with herbicide and line trimmed, per the Work Plan (FY 22-23 and FY 23-24; Cactus Wren Habitat – Shrubs Thinned in January/February 2021). Locations treated in 2023 included NSC_1, NSC_SC_1, SC_1, SC_33 at the Northern Salt Creek and Salt Creek parcels totaling 1.67 acres (see Figure 47). Patch 2021a was assessed for weed treatment and no treatment was necessary in 2023. This patch is shown on Figure 30 of the FY 2022-23 Work Plan (RECON 2022a). Additionally, short-pod mustard, tocalote, filaree, and various non-native annual grasses were removed within SC_23 at the Salt Creek parcels totaling 0.76 acre, per the Work Plan (FY 22-23; Cactus Wren Habitat – Cholla Cactus Cuttings Planted in December 2021; see Figure 47).

Per the Work Plan (FY 22-23), broom baccharis, black mustard, tocalote, and various non-native annual grasses were removed within 1.42 acres at the Millenia parcels MLLN_5 and MLLN_7 (see Figure 48; previous SANDAG grant number 5004731). Patch 10 was assessed for weed treatment and no treatment was necessary in 2023. This patch is shown on Figure 31 of the FY 2022-23 Work Plan (RECON 2022a).

Stinkwort, fennel (*Foeniculum vulgare*), and broom baccharis were removed from within 3.36 acres of the previous SANDAG grant number 5004730 at the County of San Diego parcel (see Figure 49).

Non-native plants within the areas thinned of shrubs in winter 2020/2021 at the Western Wolf Canyon parcels were treated with herbicide and removed by hand and line trimmers, per the Work Plan (FY 22-23; Cactus Wren Habitat – Shrubs Thinned in December/January 2020-21). Black mustard and tocalote and resprouting lemonade berry were removed within WWC_1, WWC_3, and WWC_6 at the Western Wolf Canyon parcels totaling 1.58 acres (see Figure 50). In addition, 0.12 acre of non-natives were treated along the road edge at the Wolf Canyon parcels, per the Work Plan (FY 2022-23; see Figure 50; WC_Camino).

Although the Work Plan (FY 22-23) states that within the Northern Salt Creek/Salt Creek, Millenia, and Western Wolf Canyon parcels and County of San Diego APN 646-010-06, approximately 57.32 acres, 1.38 acres, 1.70 acres, and 3.36 acres respectively, of coastal cactus wren habitat will be treated for weeds one time, as needed, as mentioned above, several areas did not require treatment. Therefore, a total of 36.42 acres, 1.42 acres, 1.70, and 3.36 acres of coastal cactus wren habitat were treated at the Northern Salt Creek/Salt Creek, Millenia, Western Wolf Canyon parcels, and County of San Diego parcel in 2023. Several areas required multiple treatments throughout the year.

Quino Checkerspot Butterfly Habitat (Salt Creek and San Ysidro)

QCB habitat enhancement continued within approximately 14.28 acres at the Salt Creek parcels during 2023 (see Figure 47; SC_16). The primary weeds removed were tocalote, filaree, short-pod mustard, and non-native annual grasses, as well as fascicled tarweed.

QCB habitat enhancement continued within approximately 6.35 acres at the San Ysidro parcels during 2023 (see Figure 53; SY_1 and SY_2), per the Work Plan (FY 22-23; QCB Habitat Restoration Area (County of San Diego CDFW Local Assistance Grant; ended spring 2019). Primary weeds treated included tocalote and non-native annual grasses.

Quino Checkerspot Butterfly Habitat (SANDAG TransNet EMP Grant Matching/Complementary Work, Dulzura)

QCB habitat enhancement was commenced within approximately 0.73 acre at the Dulzura parcels during 2023 (see Figure 51; DLZ_3, DLZ_4, DLZ_5, DLZ_6, and DLZ_7). The primary weeds treated were tocalote, short-pod mustard, brome, filaree, Russian thistle (*Salsola tragus*), and filaree.

Otay Tarplant Habitat (Millenia, Western Wolf Canyon, and Johnson Canyon Otay Tarplant Preserve)

The long-term goal at the Otay tarplant habitat treatment sites is to decrease non-native plant cover to maintain and enhance habitat for Otay tarplant. Black mustard, filaree, and non-native grasses were treated/removed within 4.36 acres of Otay tarplant habitat at MLLN_1, MLLN_2, and MLLN_6 within the Millenia parcels, in accordance with the Work Plan (FY 22-23) (see Figure 48). These areas required multiple treatments throughout the year.

Tocalote and short-pod mustard were removed within 1.42 acres of Otay tarplant habitat at WWC_2, WWC_4, and WWC_5 within the Western Wolf Canyon parcels, in accordance with the Work Plan (FY 22-23) (see Figure 50). In addition, mustards, tocalote, and non-native grasses were treated within 0.22 acre of Otay tarplant habitat along the western boundary of Western Wolf Canyon parcels (WWC_7 on Figure 50).

Tocalote and non-native grasses were trimmed and sprayed with herbicide within approximately 2.84 acres at Johnson Canyon Otay Tarplant Preserve, in accordance with the Work Plan (FY 22-23) (Figure 52; JCOTP_1).

Early Detection Rapid Response (Salt Creek, Northern Salt Creek, Millenia, County of San Diego Property, Northern San Ysidro, and San Ysidro)

Stinkwort (CAL-IPC Rating: Moderate/Alert) is sparsely distributed within the treatment survey areas at Salt Creek, Northern Salt Creek, Millenia, the previous SANDAG grant number 5004730 on County property, San Ysidro, and Northern San Ysidro. An 'Alert' designation indicates that it has high potential for invasion into wildlands (Cal-IPC 2023). Stinkwort is removed by hand where encountered on the Preserve. Stinkwort was treated when encountered throughout the 784.5-acre

Salt Creek parcels and 148.6-acre Northern Salt Creek parcels, in accordance with the Work Plan (FY 22-23) (see Figure 47).

Stinkwort was removed by hand at several locations within Millenia parcels, in accordance with the Work Plan (FY 22-23) (see Figure 48). Stinkwort was also removed within the previous EMP Grant 5004730 on County of San Diego property (3.36 acres; see Figure 49). Within the Northern San Ysidro and San Ysidro parcels, stinkwort was removed from within the 5.09-acre treatment survey area, in accordance with the Work Plan (FY 22-23) (see Figure 53).

Stinknet (CAL-IPC Rating: High) has only been observed at two locations within the Preserve in the past. One individual was previously observed and removed from the Millenia parcels on March 15, 2015 (see Stinknet Survey Location on Figure 48). One individual was observed and removed from the Salt Creek parcels on April 29, 2019 (see Stinknet Survey Location on Figure 47). This species typically germinates in spring and flowers from March through July (Jepson Flora Project 2023). On July 3 and 14, the previously mapped stinknet location west of SR-125 at MLLN_Oncosiphon at the Millenia parcels and SC_Oncosiphon at the Salt Creek parcels were visited, respectively, per the Work Plan (FY 23-24). No stinknet individuals were observed at either location.

Minnewawa Revegetation Area

Herbicide was applied to primarily tocalote, short-pod mustard, filaree, and non-native grasses within 0.47 acres of the Non-native Treatment Areas to assist with erosion control at the Dulzura parcels (see Figure 51; DLZ_1 and DLZ_2).

Herbicide Application

For all herbicide activities, a field crew with annual pesticide training—under the supervision of a Qualified Applicator and project biologist—sprayed weeds.

Subtask 6b. (FY 2022-23): Brown-headed Cowbird 2023 Removal

BHCO mist-net trapping was conducted by subcontractor SDNHM at the Northern Salt Creek, Salt Creek, and Wolf Canyon parcels to manage LBVI and reduce the rate of BHCO parasitism of LBVI nests. BHCO is an obligate brood parasite. Parasitized LBVI nests typically fail to fledge any LBVI. Other species are also subject to lowered reproductive rates due to BHCO parasitism. In 2023, a 12-meter mist-net was used to trap BHCO at four locations (see Figure 44). Mist-netting started on April 4, 2023 and ended on June 29, 2023.

4.0 Future Tasks to be Performed

Anticipated tasks to occur between January 1 and June 30, 2024 are listed below (RECON 2023b). Tasks to be performed between July 1 and December 31, 2024 will be proposed in the draft FY 2024–25 Annual Work Plan, which will be submitted to the POM by February 1, 2024.

- Seed collection and redistribution to support Quino checkerspot butterfly habitat within Salt Creek parcels and to support cactus wren habitat at Salt Creek, Northern Salt Creek, Millenia, and Western Wolf Canyon parcels (Subtask 1a).
- One Hermes copper butterfly survey at Proctor Valley Extension (Subtask 1b).
- ISHB tree health surveys at Salt Creek, Northern Salt Creek, and Wolf Canyon parcels (Subtask 1d).
- Wet season fairy shrimp surveys within Millenia and Johnson Canyon (East) parcels (Subtask 1e).
- Focused rare plant surveys focusing on annual and herbaceous perennial species at Bonita Glen, Proctor Valley (North), and San Ysidro; and conspicuous perennial species at Bonita Glen, Northern Salt Creek, Proctor Valley, and Proctor Valley (North) (Subtask 1f).
- Focused rare plant MSP IMG surveys at Dulzura, Jamul Mountains, Little Cedar Canyon, McMillin, Ridge, Salt Creek, San Ysidro, Johnson Canyon Otay Tarplant Preserve, Millenia, Northern Salt Creek, Western Wolf Canyon (Subtask 1f).
- Golden eagle camera surveys at Ridge, McMillin, and Dulzura parcels (Subtask 1g).
- QCB surveys at Proctor Valley parcels (Subtask 1h).
- Vegetation mapping at Millenia and Proctor Valley (South) parcels (Subtask 1i).
- Photographic monitoring at Millenia and Proctor Valley (South) parcels (Subtask 1j).
- Coastal cactus wren surveys at Millenia and Salt Creek parcels (Subtask 1k).
- Vegetation rapid assessment (potential SANDAG TransNet EMP grant matching/complementary work) (Subtask 1l).
- Vernal pool plant monitoring at Millenia and Johnson Canyon (East) parcels (Subtask 1n).
- Least Bell's Vireo and Yellow-billed Cuckoo surveys at Salt Creek, Northern Salt Creek, and Wolf Canyon parcels (Subtask 1o).
- Gold-spotted oak borer monitoring at Dulzura parcels (Subtask 1p).

The following deliverables from the FY 2023–24 Annual Work Plan are anticipated to be submitted between January 1 and June 30, 2024:

- Database management and contributions for data collected between January 1, 2023 and December 31, 2023 (Subtask 4b).
- 2023 Annual report (Subtask 4f).

- FY 2024–25 annual work plan for all tasks to be completed within the Otay Ranch Preserve between July 1, 2024 and June 30, 2025 (Subtask 4g).
- QCB pre-survey notification letter (Subtask 4h).
- QCB post-survey report (Subtask 4i).
- Wet season fairy shrimp post-survey report (Subtask 4j).

All Land Stewardship (Subtask 2a), Meetings and Coordination (Subtasks 3a–3d), Access Control (Subtasks 5a and 5b), and Invasive Species Treatment (Subtasks 6a and 6b) tasks are considered ongoing and will continue through the end of FY 2023–24.

5.0 Climate Change Adaptation Strategy

Climate change adaptation is defined by the National Wildlife Federation as "'initiatives and measures to reduce the vulnerability of natural or human systems against actual or expected climate change effects" (National Wildlife Federation 2014). The monitoring strategies conducted in 2023 were intended to provide the PSB and POM with information regarding the responses of species populations to the effects of climate change, as well as early detection of threats to sensitive populations. Management actions, such as invasive species control, were used to improve the resiliency of populations of sensitive vegetation communities, plants, and animals that are considered the most susceptible to these effects.

Following the MSP approach to climate change, the goal of the climate change adaptation strategy for Otay Ranch Preserve is to:

- Maintain and enhance the long-term ecological integrity, resilience and viability of ecosystems, RMP Phase 2 Priority Group species, and vegetation communities on conveyed lands;
- Facilitate range shifts in species and vegetation communities as necessary for long-term persistence in Otay Ranch Preserve within the constraints of the current preserve design.

In 2017, the SDMMP began developing habitat suitability models for plant and animal species and vegetation communities under current and future climate change scenarios. The SDMMP intends to extend the modeling to consider the influence of other types of threats, such as changing fire regimes, land use, and invasive species. They proposed to evaluate potential future conditions across the Management and Monitoring Strategic Plan Area to identify where species and vegetation communities may be expected to persist, where they may shift in response to changing environmental conditions, and where threats may be greatest. They also proposed to identify climate refugia and areas where climate change impacts may be the greatest. The SDMMP will consider the results of these modeling efforts when developing species and vegetation monitoring and management plans (SDMMP 2021). The POM and PSB will coordinate with the SDMMP once their climate modeling has been completed to discuss the climate forecast for Otay Ranch Preserve. Tables 1 through 3 in Attachment 10 of the FY 2023-24 work plan provide a list of plant and animal species and vegetation communities with specific climate change management and monitoring

objectives identified in the MSP that occur or have potential to occur in Otay Ranch Preserve (RECON 2023b). The POM and PSB will coordinate with the SDMMP regarding these species and how Otay Ranch Preserve management and monitoring actions can support the SDMMP regional climate change goals and objectives.

Management strategies and monitoring approaches that can be used to respond to the threat of climate change at Otay Ranch Preserve include the following:

1. As funding allows, manage and monitor Priority Group species and vegetation communities identified by MSP to have climate change objectives (see Tables 1 through 3 in Attachment 10 of the FY 2023-24 Work Plan [RECON 2023b]).
2. Coordinate with SDMMP to determine which management and monitoring objectives are of the highest priority based on their modeling studies. Use SDMMP modeling to find areas of potential refugia in Otay Ranch Preserve and potentially assist with the migration of vulnerable species.
3. As funding allows, manage Priority Group species and vegetation communities to increase resilience by reducing threats from other sources such as non-native species, enhancing food webs, and improving pollinator services (SDMMP and The Nature Conservancy 2017).

Long-term climate predictions for California vary from warmer and drier to warmer and wetter, depending on which models are consulted. Identifying and predicting specific outcomes and changes in climate, attributable to human activities, are difficult because of the inherent natural variation in climate patterns that already exists, regardless of human intervention. The one aspect of climate change that does exhibit a consensus in climate models is that temperatures will be warmer overall. In a warmer environment, there will be greater evaporation. When higher evaporation is combined with a pattern of less rainfall, the negative effects of drought on native habitat systems may be compounded.

Table 55 identifies discrete tasks that were implemented between January 1 and December 31, 2023 to manage for the threat of climate change. By reducing competition for resources, weeding efforts are likely the most efficient way to mitigate potentially adverse effects of climate change and increase resilience in habitat that supports sensitive species. Photographic monitoring may also provide a means for more easily observing changes in vegetation over a prolonged period.

The current management methods used for vegetation control and shrub thinning on Otay Ranch Preserve increases available water in the habitat which mitigates the threat of climate change. Without vegetation control and shrub thinning, non-native annual grasses reduce the amount of available water, particularly earlier in the growing season, which decreases the available water for native cactus, native annual flowers, and shrubs. Controlling non-native plant species makes more water available for native plant species. By reducing competition for water, native plants and seeds respond favorably. The PSB has observed the positive effects of weeding and shrub removal when seasonal rain totals were below normal. Native plant species have fared well during drier than average conditions. Native plants are adapted to survive drier periods; therefore, they usually fare well even in suboptimal conditions. Cactus in areas where vegetation management has occurred tend to be vibrant green with sufficient water reserves in each segment during late summer/fall compared to cactus in adjacent areas where vegetation management has not occurred that tend to be diminished in color with segments that have begun to desiccate.

Controlling the amount of fuel present is another management method used on Otay Ranch Preserve to reduce the threat of climate change, the negative effects of fire, and the potential loss of habitat, such as cactus habitat. By controlling weeds and implementing shrub thinning programs the amount of fuel available to carry fire and the potential for a fire to become intense is reduced. Vegetation management areas can serve as refugia for wildlife when intense fires burn surrounding areas. By removing shrubs from certain vegetation communities such as cactus patches, coast cholla and other native plant species are more likely to survive a passing fire, since even if some of the shrubs burn, the intensity of the heat produced is lessened.

The PSB has observed variability in the presence of native annual species as well as the presence of native grasses after shrub thinning. Some shrub-thinned sites display an increase of native annual flower species and abundance the next rainy season, like after intact habitat has burned. There are seemingly "fire follower" effects, were native annuals such a popcornflower (*Plagiobothrys* spp.), cryptantha (*Cryptantha* spp.), and other native annuals and bunch grasses can be quite common after shrub thinning is complete. This increase in native annual species and bunch grasses benefits wildlife species that have been identified in the MSP as having specific climate change management and monitoring objectives such as coastal cactus wren. As part of the long-term monitoring efforts, available climate data, including rainfall and temperature, were reviewed and included in this 2023 annual report to aid in determining how observed changes in species dominance, diversity, and distribution may relate to climate change.

Table 55
Cross walk of 2023 Annual Report Tasks with Climate Change Adaptation Strategies

Monitoring Task	Purpose
Botanical Resources	
Seed Collection and Redistribution (Task 1a)	Management actions, such as seed collection and redistribution, were used to improve the resiliency of populations of sensitive plants and animals that are vulnerable to climate change.
Vegetation Rapid Assessment Monitoring, Photographic Monitoring, and Baseline Surveys (Tasks 1e and 1b)	Vegetation rapid assessment monitoring, photographic monitoring, and baseline surveys provide biological data for vegetation communities and plant species present within the Preserve at the time the monitoring is conducted. By conducting repeat surveys, these data can be used to track changes in vegetation community and/or plant species diversity or abundance due to the effects of climate change, as well as provide a baseline for recovery should a climate-related catastrophic event, such as fire or severe flooding, occur.
Focused Surveys for Rare Plants and Vernal Pool Plant Monitoring (Tasks 1f and 1k)	Focused surveys monitored the response of sensitive plant species populations and vernal pool plants that are susceptible to the effects of climate change (e.g., increased drought, proliferation of non-native plant species). The 2023 monitoring effort will inform management actions to reduce threats and improve the resiliency of high-priority populations. Management actions may include habitat enhancement and weed control in areas with high-priority sensitive plant populations.
Invasive Species Treatment: Non-native Plants (Task 6a)	Management actions, such as invasive species control, were used in 2023 to improve the resiliency of populations of sensitive vegetation communities, plants, and animals that are considered the most susceptible to these effects.

Table 55 Cross walk of 2023 Annual Report Tasks with Climate Change Adaptation Strategies	
Monitoring Task	Purpose
Zoological Resources	
Focused Surveys for Sensitive Wildlife: Fairy Shrimp, Golden Eagle, Quino Checkerspot Butterfly, Least Bell's Vireo, Yellow-billed Cuckoo, Harbison Dun Skipper, and Hermes Copper Butterfly (Tasks 1d, g, h, l, m, and n)	Focused surveys monitored the response of sensitive wildlife species populations that are susceptible to the effects of climate change (e.g., reduced food availability, type conversion of suitable habitat). The 2023 monitoring effort will inform management actions to reduce threats and improve the resiliency of high-priority populations. Management actions may include habitat restoration and enhancement to expand the amount of suitable habitat available, create refugia, increase potential food sources, and connect fragmented or isolated habitat patches.
Invasive Species Treatment: Shot Hole Borer Monitoring, Native Shrub Tissue Sampling, Gold-spotted Oak Borer Monitoring, and Brown-headed Cowbird Trapping (Tasks 1b, 1c, 1o, and 6b)	Invasive species monitoring provided information regarding new and emerging threats to sensitive habitats and species. The 2023 monitoring effort will inform management actions (e.g., trapping and other control methods) to reduce threats to high-priority populations of sensitive wildlife species, as well as to prevent the establishment of new populations of high-priority invasive species.

6.0 Additional Habitat Restoration Projects within the Otay Ranch Preserve

This chapter describes additional habitat restoration projects that occurred within the Preserve between January 1 and December 31, 2023. These projects did not use funds generated by CFD 97-2.

6.1 Otay 2nd Pipeline Emergency Repair Project

From the Revegetation Plan Otay 2nd Pipeline Emergency Repair Project (Sequoia Ecological Consulting 2022):

> The [Otay 2nd Pipeline Emergency Repair] Project consists of emergency repairs to an undermined 36-inch-diameter potable water transmission pipeline within a City of San Diego easement. Construction for the emergency Project initiated on January 4, 2022.
>
> A portion of the Project footprint occurs within a City of San Diego water utility easement, while the remainder is located within the City of Chula Vista and the associated Otay Ranch Preserve [Wolf Canyon parcels]; therefore, regulatory jurisdiction is split between these two municipalities. A total of 0.178 acres of Project-related temporary disturbance, comprised of 0.172 acre of Diegan coastal sage scrub (DCSS) and 0.006 acre of non-native grassland, will be revegetated within the City of San Diego's jurisdiction. The remaining revegetation, totaling 0.318 acre comprised of 0.150 acre of DCSS and 0.168 acre of non-native grassland, will occur outside of the City of San Diego easement within the jurisdiction of the City of Chula Vista. Restoration as mitigation for Project-related impacts to DCSS and non-native grassland is required pursuant to the City of Chula Vista Multiple Species

> Conservation Program (MSCP) Subarea Plan (Subarea Plan) (City of Chula Vista 2003) and Habitat Loss and Incidental Take (HLIT) Ordinance (City of Chula Vista 2005), as well as the City of San Diego Environmentally Sensitive Lands (ESL) and Land Development Code (LDC) Biology Guidelines (City of San Diego 1999) which uphold the City of San Diego MSCP Subarea Plan (City of San Diego 1997). A detailed discussion of mitigation is provided in the Project Biological Technical Report (Sequoia 2021) and Post-Construction Report.
>
> Following the acceptance of the 120-day Plant Establishment Period (PEP) by City of San Diego/City of Chula Vista representatives, long-term maintenance and monitoring shall begin and continue for 25 months. Long-term maintenance activities will generally be consistent with those conducted during the PEP. Weed abatement will be the primary or most-frequent activity and will be implemented through hand weeding during site visits and/or larger-scale mowing or string-trimming events. Trash should be removed from the revegetation areas on a regular basis as part of general site cleanup. Erosion control Best Management Practices (BMPs) shall be maintained until the 25-month monitoring period is complete.
>
> The Project biologist shall submit quarterly monitoring memos to the City of San Diego/City of Chula Vista representative. At the end of 25 months, the biologist and the City of San Diego/City of Chula Vista will meet at the site for a final walk-through, and a final report will be submitted to within 14 days of the completion of the long-term monitoring period. If success criteria have not been met, the maintenance and monitoring period may be extended.

From the Notification of Completion of Plant Establishment Period at the Otay 2nd Pipeline Revegetation Site (RECON 2023i):

> Implementation activities occurred in 2022, during which time the site was planted with native container stock followed by a hydroseed application, in order to stabilize the approximately 30,528 square feet (0.70 acre) of disturbed areas.
>
> The 120-day PEP began on October 22, 2022, and was originally scheduled to end on February 22, 2023. However, due to heavy rain events, the final weed control maintenance visit was postponed and was not able to be performed until March 6, 2023; therefore, PEP activities were extended through March 2023. Tasks completed during the 120-day PEP included supplemental irrigation, erosion control installation and maintenance, weed control, trash removal, and monitoring. Maintenance activities were performed by a RECON field crew under the direction and guidance of a RECON restoration biologist. All PEP activities followed the guidelines and specifications outlined in the Final Revegetation Plan for the Otay 2nd Pipeline Emergency Repair Project (Plan; Sequoia Ecological Consulting 2022).

6.2 Quino Checkerspot Butterfly Recovery Program at Otay Ranch Preserve Salt Creek Parcels

The following is a summary from the 2023 Annual Report for the Quino Checkerspot Butterfly Recovery Program at Otay Ranch Preserve Salt Creek parcels (RECON 2023j).

Maintenance and monitoring activities were conducted from October 21, 2022, through October 20, 2023, for the federally endangered QCB within a 14.28-acre mesa top in the southeastern portion of the Salt Creek parcels. Maintenance and monitoring activities included weed control, seed bulking, seed collection and dispersal, photo monitoring, QCB flight surveys, vernal pool plant monitoring, and wet season fairy shrimp surveys. Eleven weed control visits were conducted. Several methods were used to control weeds in 2022/2023, including spraying non-natives with glyphosate herbicide, hand pulling of non-natives in the vernal pools, and using line trimmers to clear non-natives surrounding the vernal pools. QCB host and nectar plant locations were flagged by the project biologist prior to the application of herbicide. Seed was bulked at Native West Nursery to increase the amount of QCB host and nectar plants at the site. Vernal pool plant seed was collected from pools with adequate vernal pool plant cover and dispersed into pools with minimal vernal pool plant cover.

Repeat photo monitoring at established locations was conducted. A QCB habitat assessment and five QCB flight surveys were carried out. Surveys were conducted as part of Otay Ranch Preserve monitoring. This effort and results are included in Section 2.0, Subtask 1h, and Section 4.0, Subtask 4i and 4j, above. One QCB butterfly was observed within the site.

Focused vernal pool plant surveys documenting flora were conducted twice, during inundation and after the features dried. Sensitive species were mapped with a submeter-accurate GPS unit. Surveys were conducted as part of Otay Ranch Preserve monitoring. This effort and results are included in Section 2.0, Subtask 1k, above. Woollyheads grew well in most of the established pools. Listed plant species, Otay mesa mint, California Orcutt grass, and San Diego button-celery, and non-listed vernal pool indicator species were mapped within the site.

Five wet season fairy shrimp surveys were conducted. Surveys were conducted as part of Otay Ranch Preserve monitoring. This effort and results are included in Section 2.0, Subtask 1d, and Section 4.0, Subtask 4k, above. Federally endangered San Diego fairy shrimp were identified in 18 of the 30 ponding areas surveyed. Versatile fairy shrimp were identified in one of the 30 ponding areas surveyed. Western spadefoot egg masses and tadpoles were observed in 28 of the ponding areas during the surveys. Voucher specimens of San Diego fairy shrimp and versatile fairy shrimp were collected, accessioned, and hand delivered to the Natural History Museum of Los Angeles County.

6.3 Otay River Restoration

The Otay River Restoration Project is located in the lower Otay River Watershed. The project has two primary components, the first is a 40-acre restoration area referred to as the pre-bank which also includes an additional mile of invasive species control below Savage Dam. The second component is the pending mitigation bank, covering an additional 150+ acres of restoration immediately

downstream of the pre-bank. For both components, a mosaic of floodplain, riparian, grassland, sage scrub, and vernal pool habitats will be restored as compensatory mitigation for a series of public and private developments planned within the City and surrounding watersheds. The project is within the San Diego County MSCP and furthers the goals and objectives of the MSCP through restoration of riverine habitats for the least Bell's vireo, southwestern willow flycatcher (*Empidonax traillii extimus*), and other listed species. The project is also within the City's Greenbelt Master Plan and County's Otay Valley Regional Park and will design and implement more than 5 miles of these trail systems.

In 2023, primary activities included ongoing maintenance and monitoring at the pre-bank and continuing the advancement of the permitting and authorization of the mitigation bank. The Pre-Bank transitioned from Year 4 to Year 5 of the post-restoration program and continues to track toward meeting ecological goals and project success standards. Restoration activities included qualitative site monitoring visits to evaluate general health, cover of native plant species, and identify any issues negatively impacting the success of the project, such as the presence of non-native plants, pests, soil conditions, erosion, off-road-vehicle activity, as well as vandalism and trespassing. In addition, annual quantitative monitoring of restoration areas was performed to evaluate the project relative to success standards. Quantitative monitoring included vegetation transect survey to characterize vegetation composition, geomorphological surveys of the channel and floodplain, as well as an assessment of wetland condition using the California Rapid Assessment Method. General wildlife use of restoration areas was monitored via camera traps, while the specific activities of bats and least Bell's vireo were recorded with formal protocol surveys. The results of monitoring activities were analyzed to determine the site's progress toward meeting restoration performance standards and to inform adaptive management decisions to support restoration project success. As a result of high rainfall experienced during the winter and spring of 2023, extensive site maintenance was undertaken with a focus on non-native plant removal and control through mechanical and chemical methods. Targeted supplemental planting and seeding were performed with nearly 700 container plants, several hundred cuttings and transplants installed along with 75 pounds of seed consisting of an assortment of native riparian and coastal sage scrub plant species. The teams focus remains on the floodplain where clay content and sodic soils are limiting plant growth. Additionally, signage and fencing were maintained and installed to prevent traffic through environmentally sensitive areas. Exciting observations in 2023 included tarantula, numerous horned lizards, and bald eagle pair. In addition, the heavy rains resulted in a minor spill from Savage Dam that filled the channel for an extended period of time and supported the ongoing flow of water offsite and further into the mainstem river system. The Year 4 Annual Report will be submitted for agency review in January of 2024 with Year 5 monitoring planned for July 2025.

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U.S. Department of Commerce (USDC)

2023a Chronological RTP Listings by Station (May 1998 – Present). Brown Field Station. http://www.wrh.noaa.gov/sgx/obs/rtp/brown.html.

2023b 1991-2020 Station Monthly Normals of Average Temperature, Precipitation, and Snowfall. Brown Field Station. National Centers for Environmental Information. National Oceanic and Atmospheric Administration. https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-monthly&timeframe=30&location=CA&station=USW00003178.

U.S. Fish and Wildlife Service (USFWS)

2001 Least Bell's Vireo Survey Guidelines. Carlsbad, California. January 19.

2014 Quino Checkerspot Butterfly Survey Protocol. February.

2017 Survey Guidelines for the Listed Large Branchiopods. Revised November 13.

ATTACHMENTS

ATTACHMENT 1

Figures 4–53

Image source: Nearmap (flown 2023)

Conveyed Land Under POM Management

ISHB Tree Health Survey Area*

Otay River Restoration Survey Area (SWCA) **

*Surveys were coordinated with Otay River Restoration Project being managed by SWCA.

**Not Part of the RECON Survey Area

Riparian Photo Monitoring Points

Sampling Locations for Fusarium

RECON

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FIGURE 4

ISHB Monitoring Location,

Salt Creek, Northern Salt Creek, and Wolf Canyon Parcels

Image Source: Nearmap (flown September 2023)

Conveyed Land Under POM Management

Sampling Locations for Potential Fungus

0 Feet 2,000

RECON

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FIGURE 5

Native Shrub Tissue Sampling for Pathogen Analysis: Northern Salt Creek, Salt Creek, and Wolf Canyon Parcels

Image source: Nearmap (flown September 2023)

*Surveys were coordinated with Otay River Restoration Project being managed by SWCA.

FIGURE 6

Vernal Pool Wildlife Survey Area,
Salt Creek Parcels

RECON

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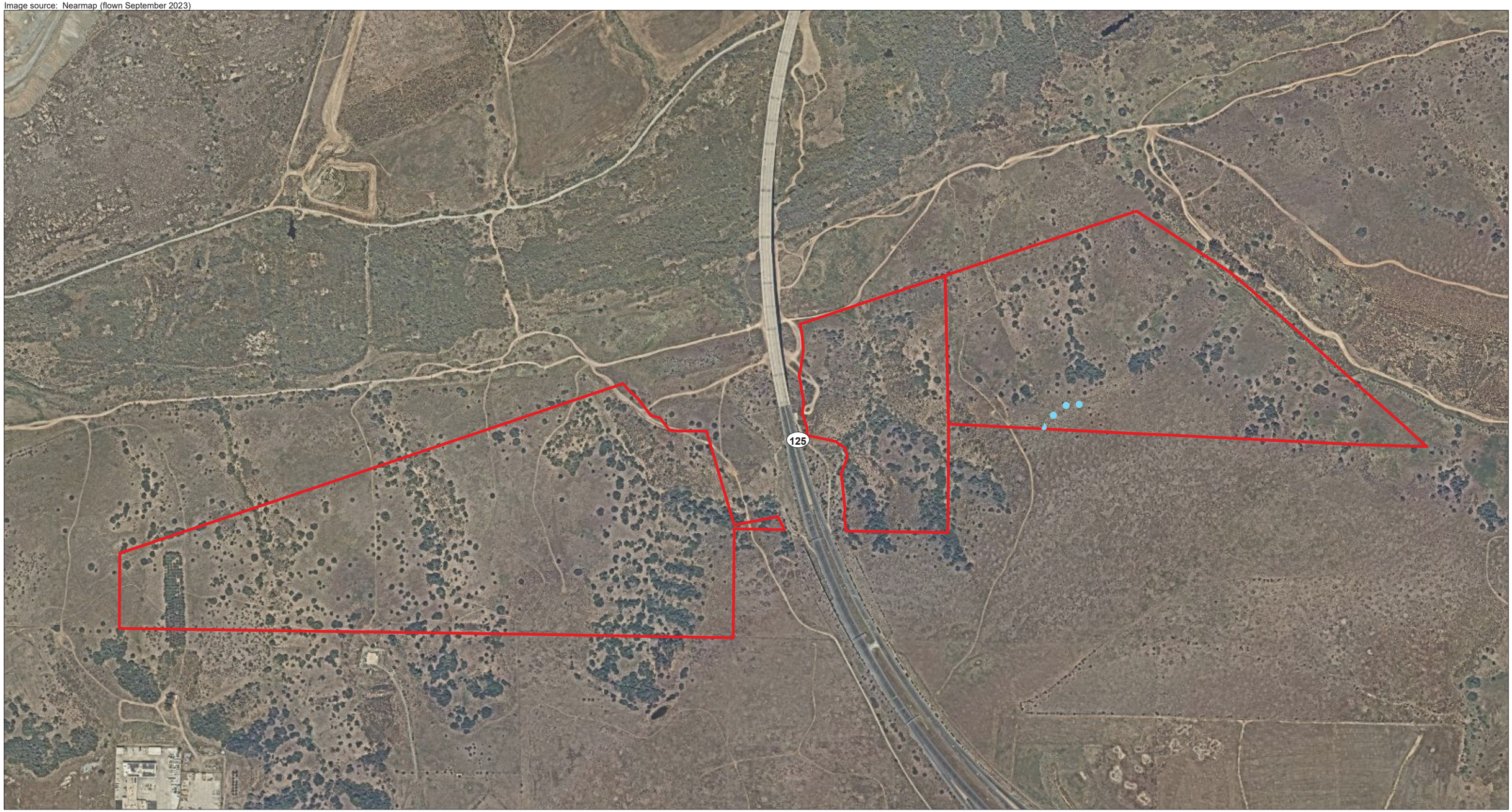
Image source: Nearmap (flown September 2023)



0 Feet 600

Conveyed Land Under POM Management

Ponding Areas: Ad Hoc Visual Sampling

FIGURE 7

Ad Hoc Vernal Pool Wildlife Survey Area,
Millenia Parcels

RECON

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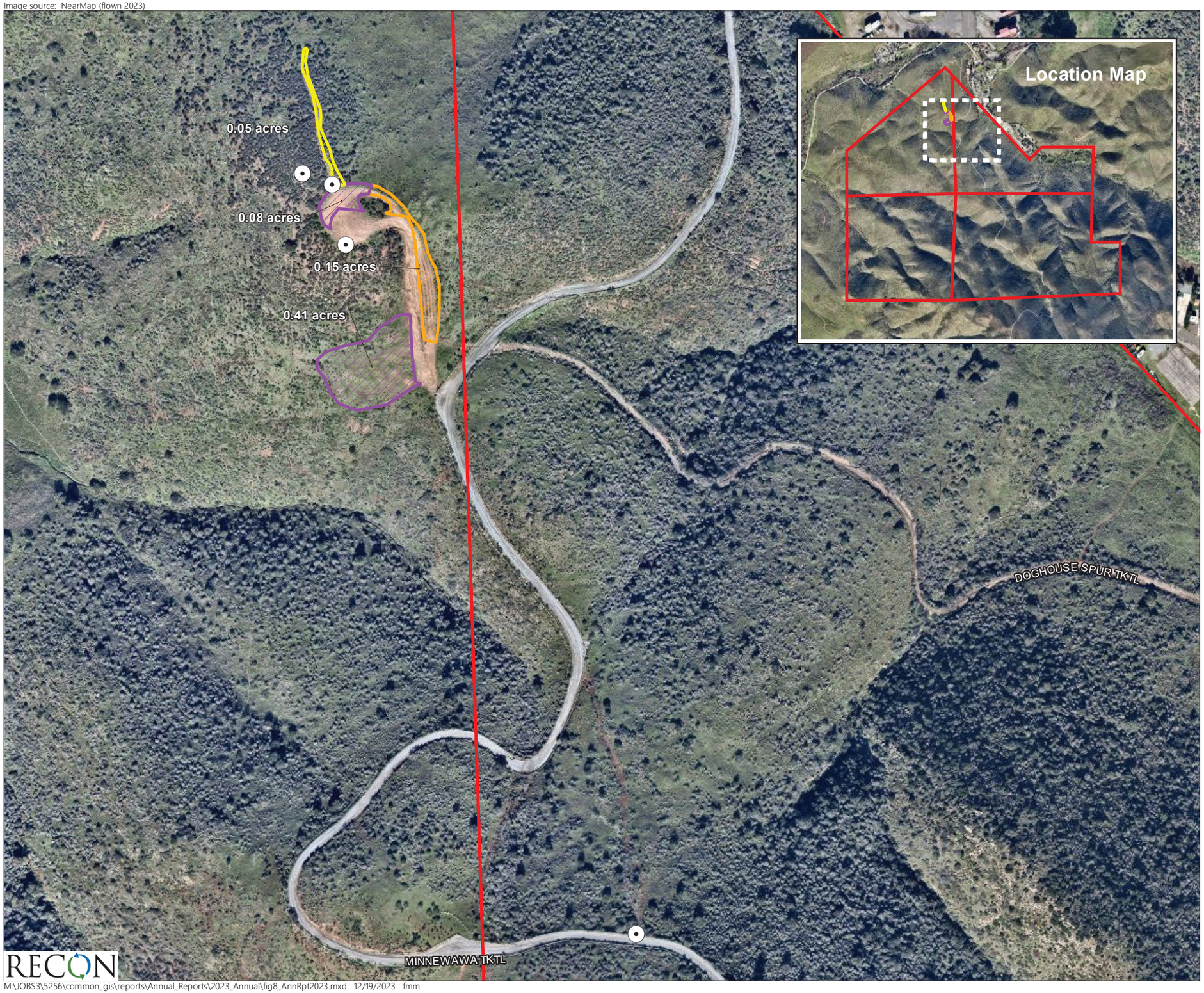
Image source: NearMap (flown 2023)



Conveyed Land Under POM Management

Proposed Seed by Hand

Proposed Container Plants

Proposed Hydroseed

Photo Monitoring Locations

0 Feet 200

RECON

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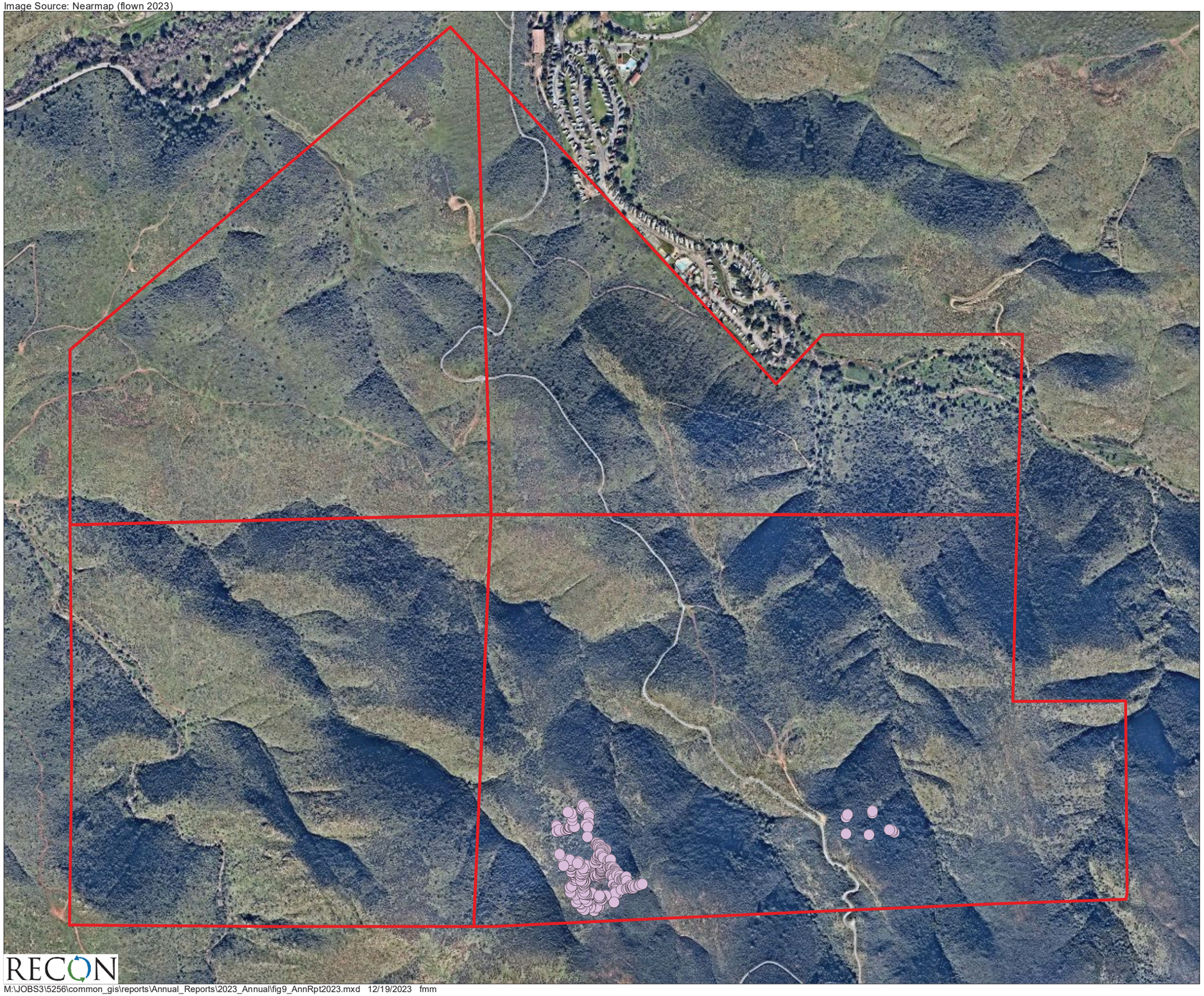
FIGURE 8

Quantitative Monitoring Areas,
Dulzura Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

Gander's Pitcher Sage
(*Lepechinia ganderi*)

0 Feet 700

RECON

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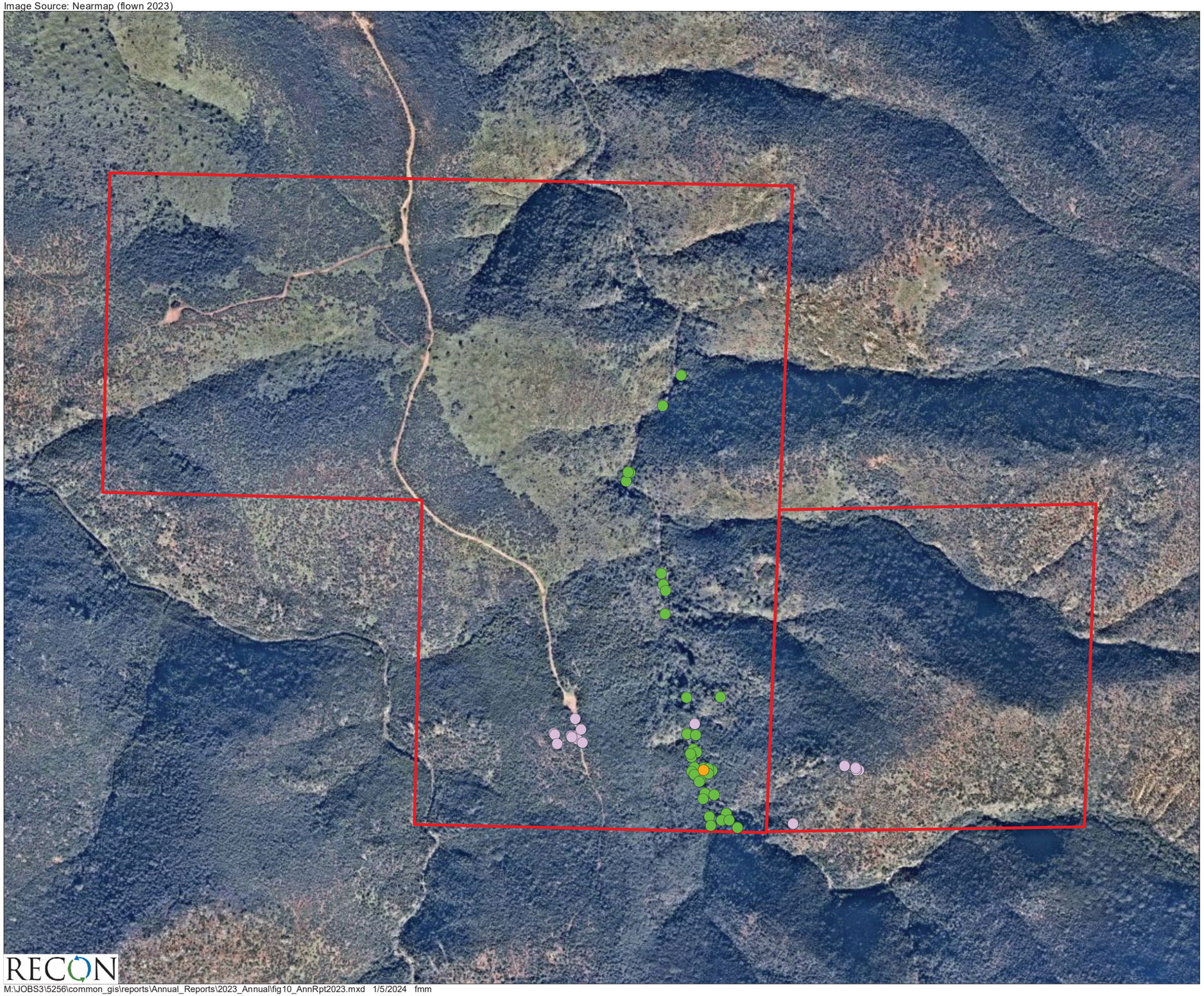
FIGURE 9

Focused Rare Plant Survey Results,
Dulzura Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- Felt-leaved Monardella (*Monardella hypoleuca* ssp. *lanata*)
- Mexican Flannelbush (*Fremontodendron mexicanum*)
- Gander's Pitcher Sage (*Lepechinia ganderi*)

0 Feet 400

RECON

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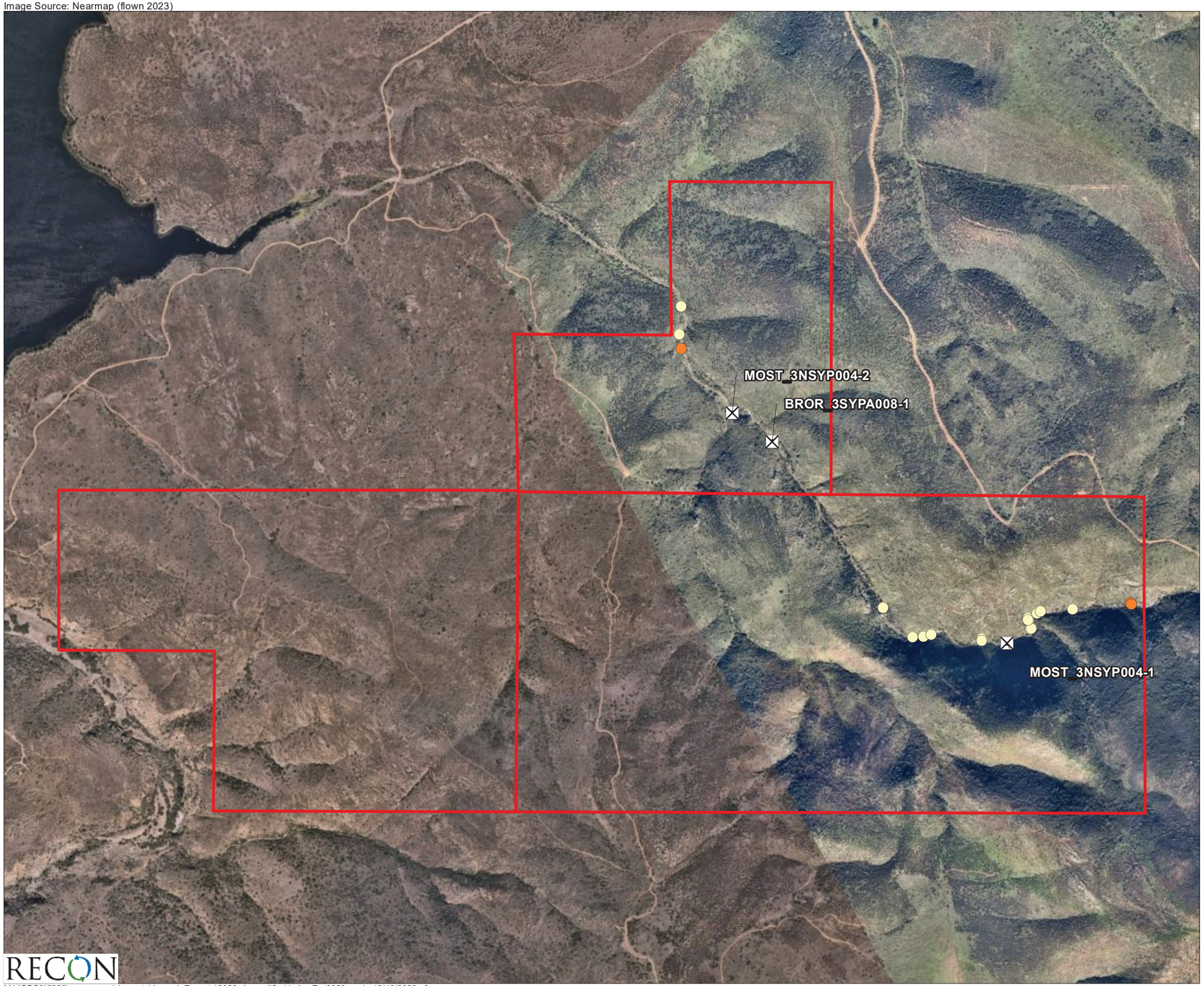
FIGURE 10

Focused Rare Plant Survey Results, Little Cedar Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

IMG MSP/Priority Group 1

Rare Plant Monitoring Locations

Orcutt's Brodiaea
(*Brodiaea orcuttii*)

Jennifer's Monardella
(*Monardella stoneana*)

0 Feet 1,000

FIGURE 11

MSP IMG Rare Plant Survey Results,
Northern San Ysidro and San Ysidro Parcels

RECON

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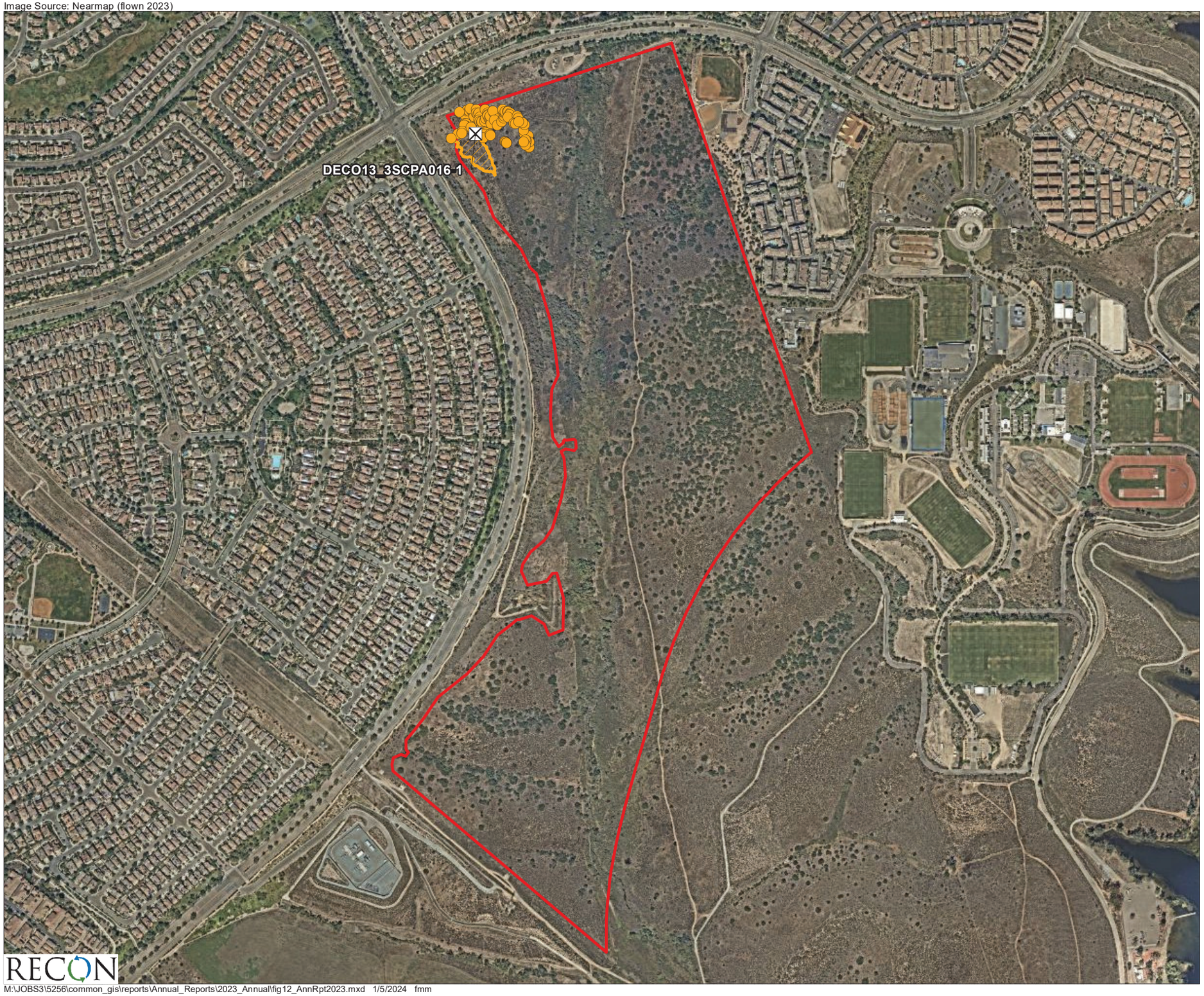
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

IMG MSP/Priority Group 1

Rare Plant Monitoring Locations

Otay Tarplant
(*Deinandra conjugens*)

0 Feet 600

FIGURE 12

MSP IMG Rare Plant Survey Results,
Northern Salt Creek Parcels

RECON

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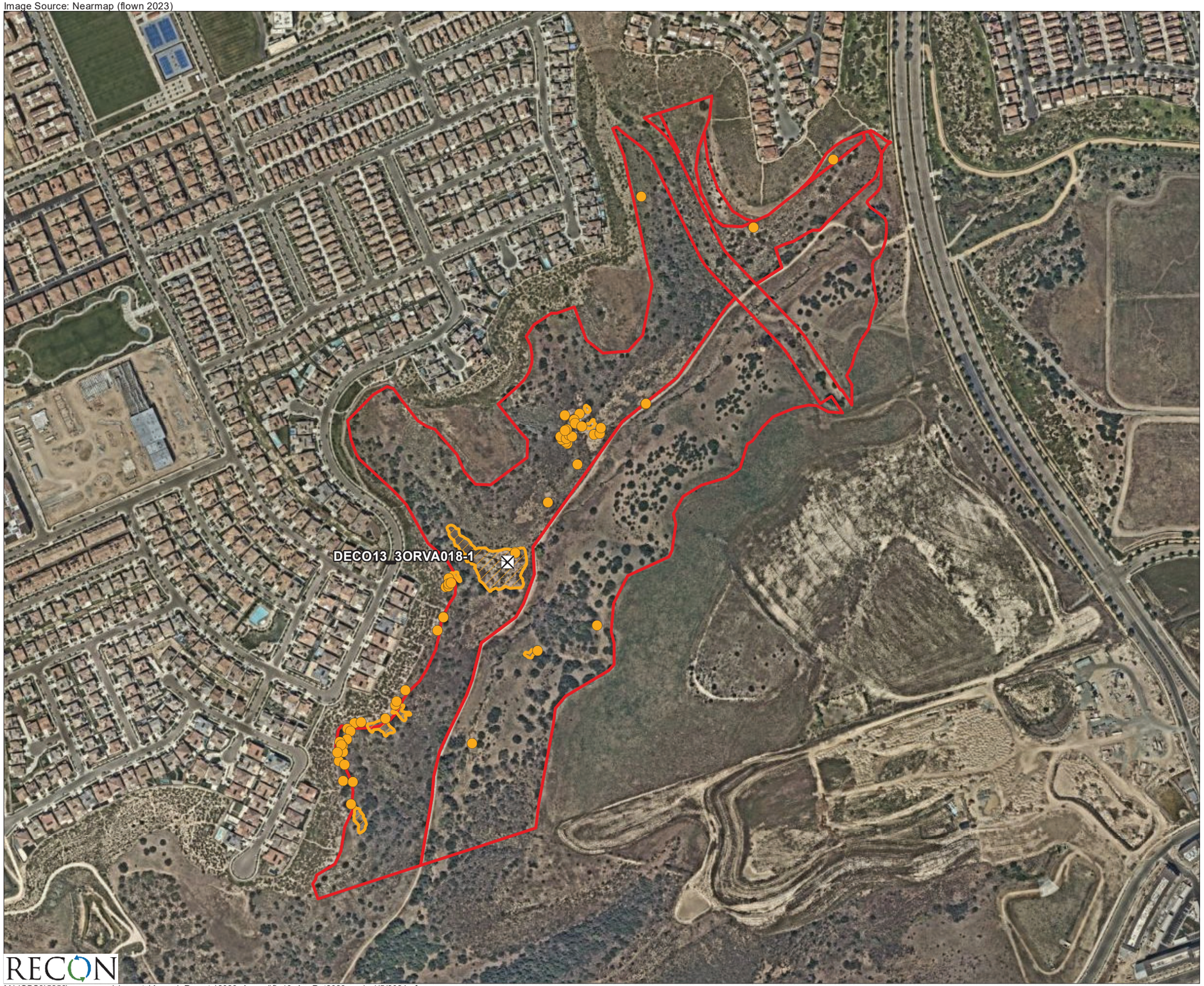
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

IMG MSP/Priority Group 1

Rare Plant Monitoring Locations

Otay Tarplant
(*Deinandra conjugens*)

0 Feet 400

RECON

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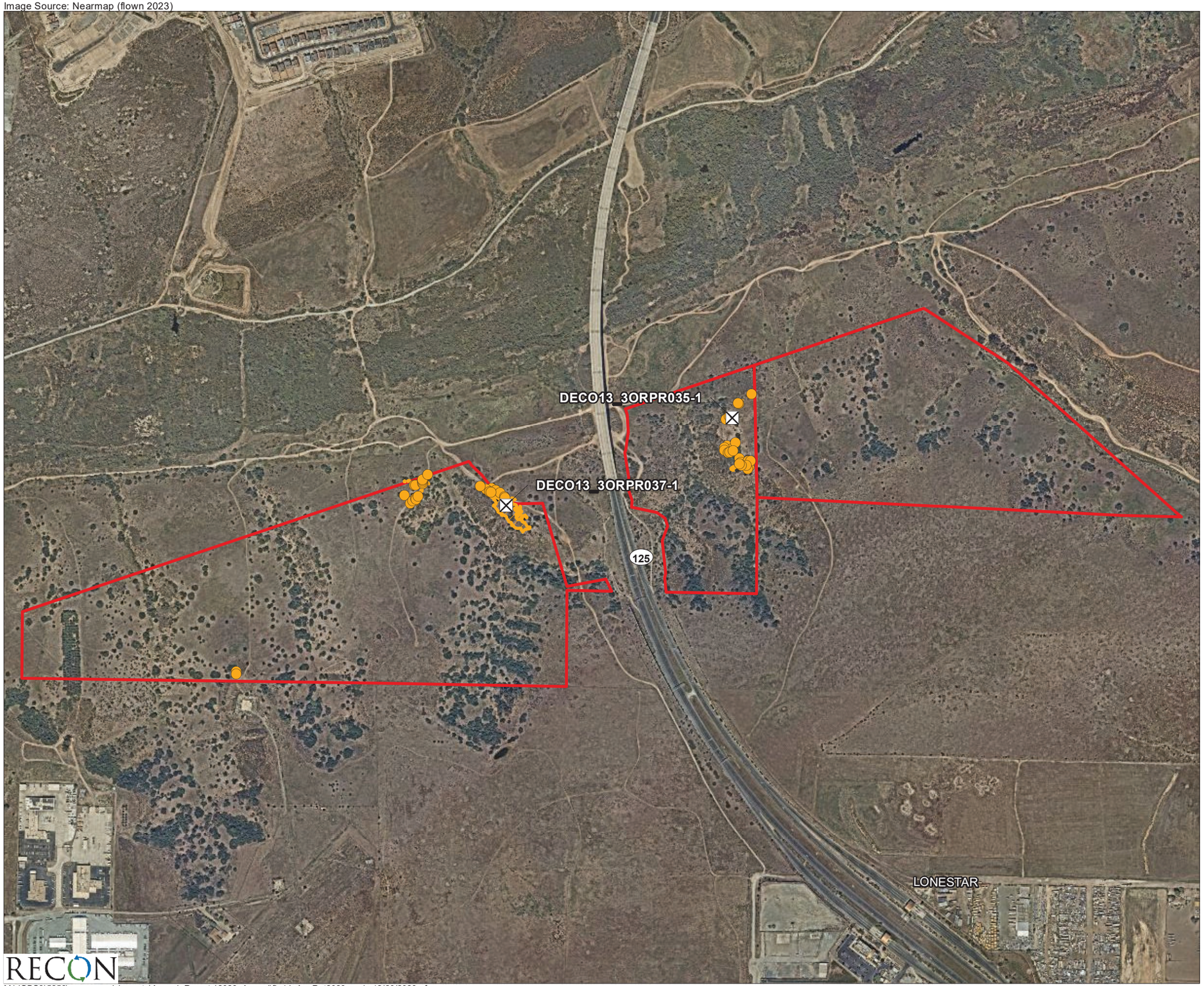
FIGURE 13
MSP IMG Rare Plant Survey Results,
Western Wolf Canyon
and Wolf Canyon Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

IMG MSP/Priority Group 1

Rare Plant Monitoring Locations

Otay Tarplant
(*Deinandra conjugens*)

0 Feet 700

FIGURE 14

MSP IMG Rare Plant Survey Results,
Millenia Parcels

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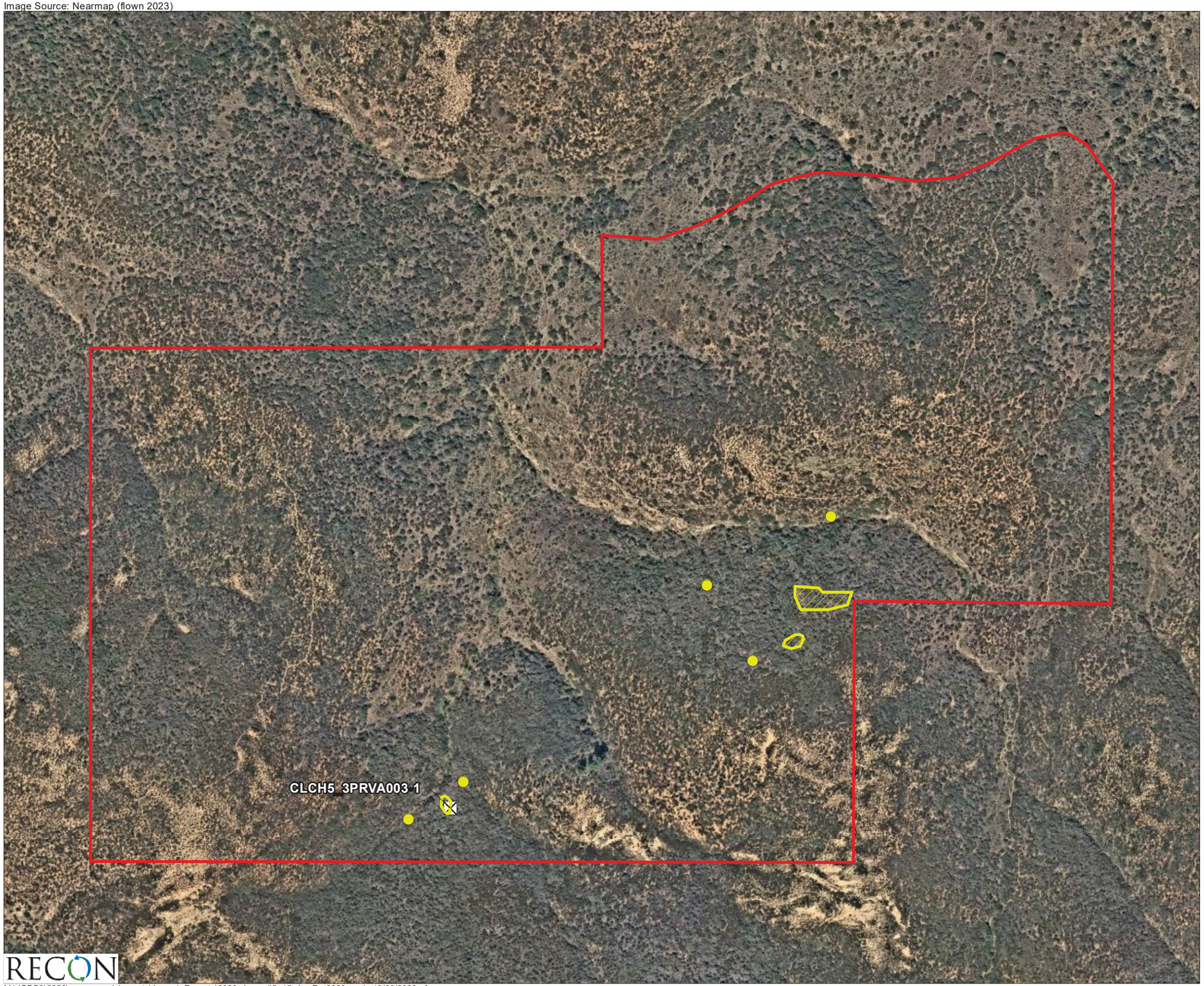
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

IMG MSP/Priority Group 1

Rare Plant Monitoring Locations

San Miguel Savory
(*Clinopodium chandleri*)

0 Feet 250

FIGURE 15

MSP IMG Rare Plant Survey Results,
Proctor Valley (North) Parcels

RECON

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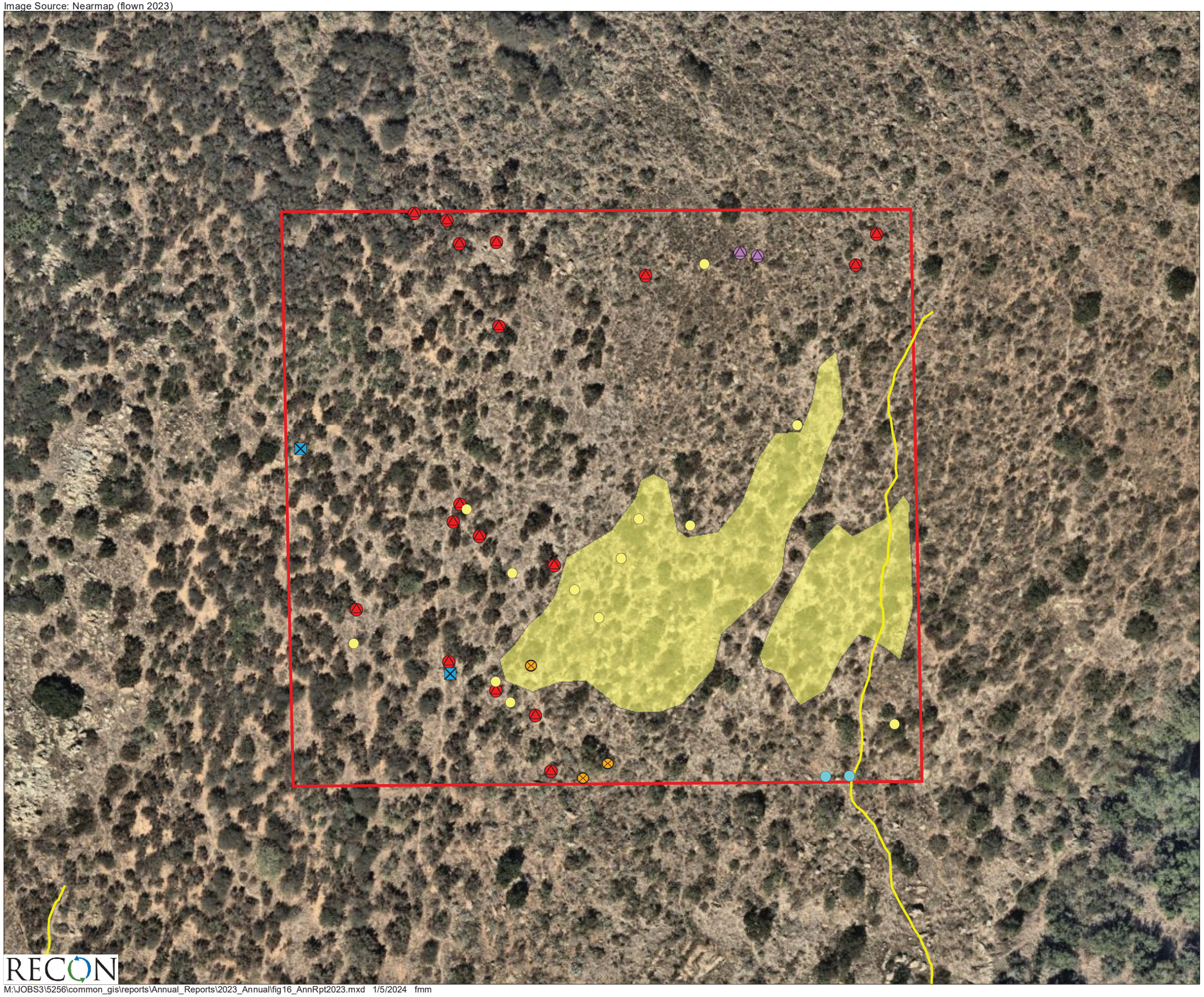
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 4

San Diego Viguiera
Bahiopsis laciniata

Ashy Spike-moss
(*Selaginella cinerascens*)

Host Plants

Purple Owl's-clover
(*Castilleja exserta* ssp. *exserta*)

Spiny Redberry
(*Rhamnus crocea*)

Invasive Plants

Charlock
(*Sinapis arvensis*)

Wildlife

Southern Mule Deer
(*Odocoileus hemionus fuliginata*)

Unauthorized Foot Route

0 Feet 50

RECON

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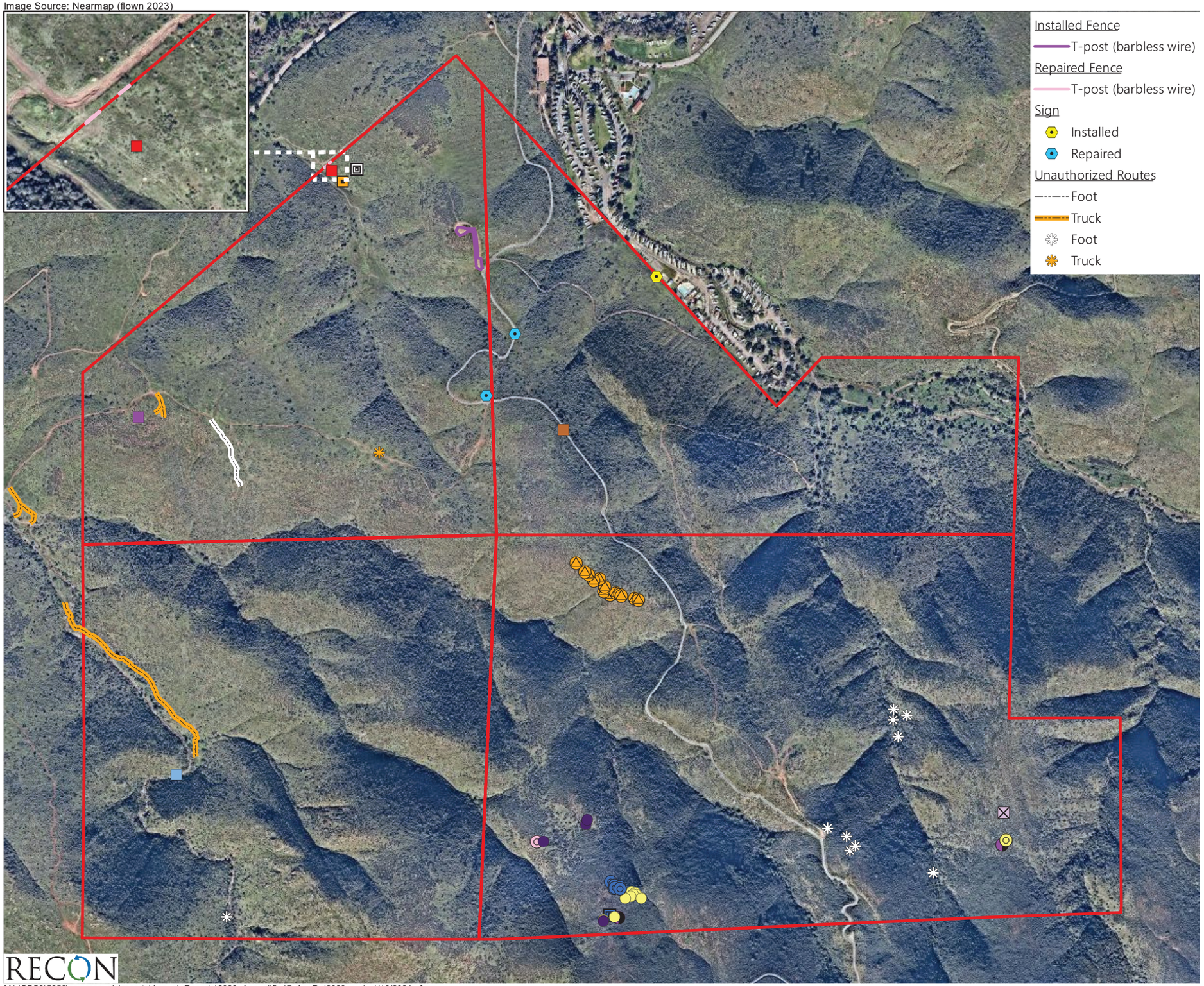
FIGURE 16

Noteworthy Plants and Wildlife,
and Access Issues, Bonita Glen Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- Dunn's Mariposa Lily (*Calochortus dunnii*)
- San Diego Goldenstar (*Bloomeria clevelandii*)

Priority Group 4

- San Diego Needle Grass (*Stipa diegoensis*)
- Chaparral Rein-orchid (*Piperia cooperi*)
- Golden-ray Pentachaeta (*Pentachaeta aurea* ssp. *aurea*)

Host Plants

- Dot-seed Plantain (*Plantago erecta*)

Common Plants

- Chocolate Lily (*Fritillaria biflora*)

Sensitive Wildlife

Priority Group 1

- Northern Harrier (*Circus hudsonius*)
- Quino Checkerspot (*Euphydryas editha quino*)

Priority Group 2

- Blainville's [=Coast] Horned Lizard (*Phrynosoma blainvillii*)

Priority Group 3

- San Diego Black-tailed Jackrabbit (*Lepus californicus bennettii*)

Priority Group 4

- Coast Patch-nosed Snake (*Salvadora hexalepis virgultea*)
- White-tailed Kite (*Elanus leucurus*)

Common Wildlife

- Greater Roadrunner (*Geococcyx californianus*)
- Gabb's Checkerspot (*Chlosyne gabbii*)

0 Feet 650

RECON

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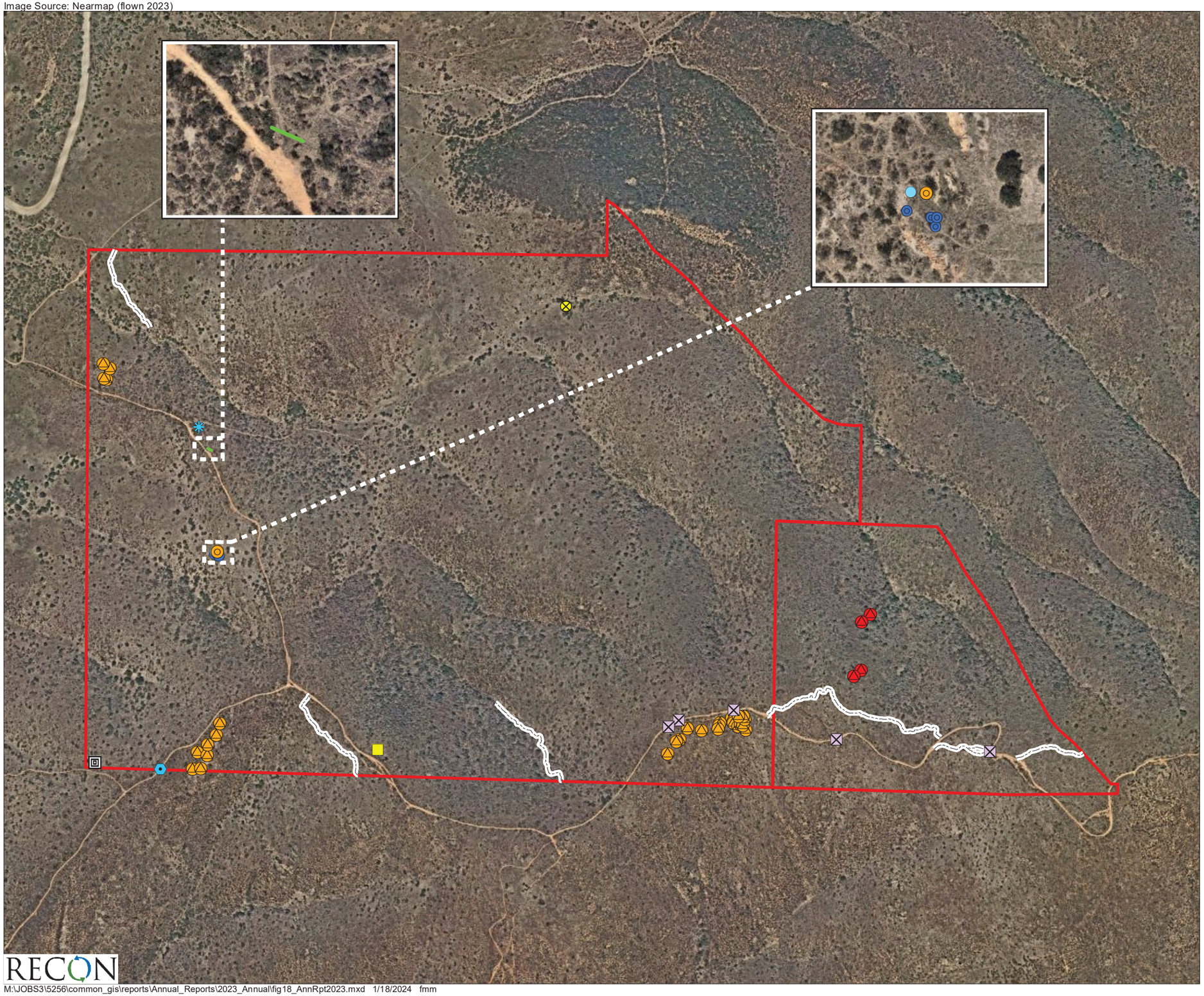
FIGURE 17

Noteworthy Plants and Wildlife, and Access Issues, Dulzura Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- Variegated Dudleya (*Dudleya variegata*)

Priority Group 2

- San Diego Barrel Cactus (*Ferocactus viridescens*)

Priority Group 4

- Ashy Spike-moss (*Selaginella cinerascens*)

Host Plants

- Dot-seed Plantain (*Plantago erecta*)
- Spiny Redberry (*Rhamnus crocea*)

Invasive Plants

- Artichoke Thistle (*Cynara cardunculus* ssp. *flavescens*)

Sensitive Wildlife

Priority Group 1

- Coastal California Gnatcatcher (*Polioptila californica californica*)

Priority Group 2

- Blainville's [=Coast] Horned Lizard (*Phrynosoma blainvillii*)

Priority Group 4

- White-tailed Kite (*Elanus leucurus*)

Installed Fence

- T-post (barbless wire)

Sign

- Repaired

Unauthorized Routes

- Foot
- Mountain Bike

0 Feet 500

RECON

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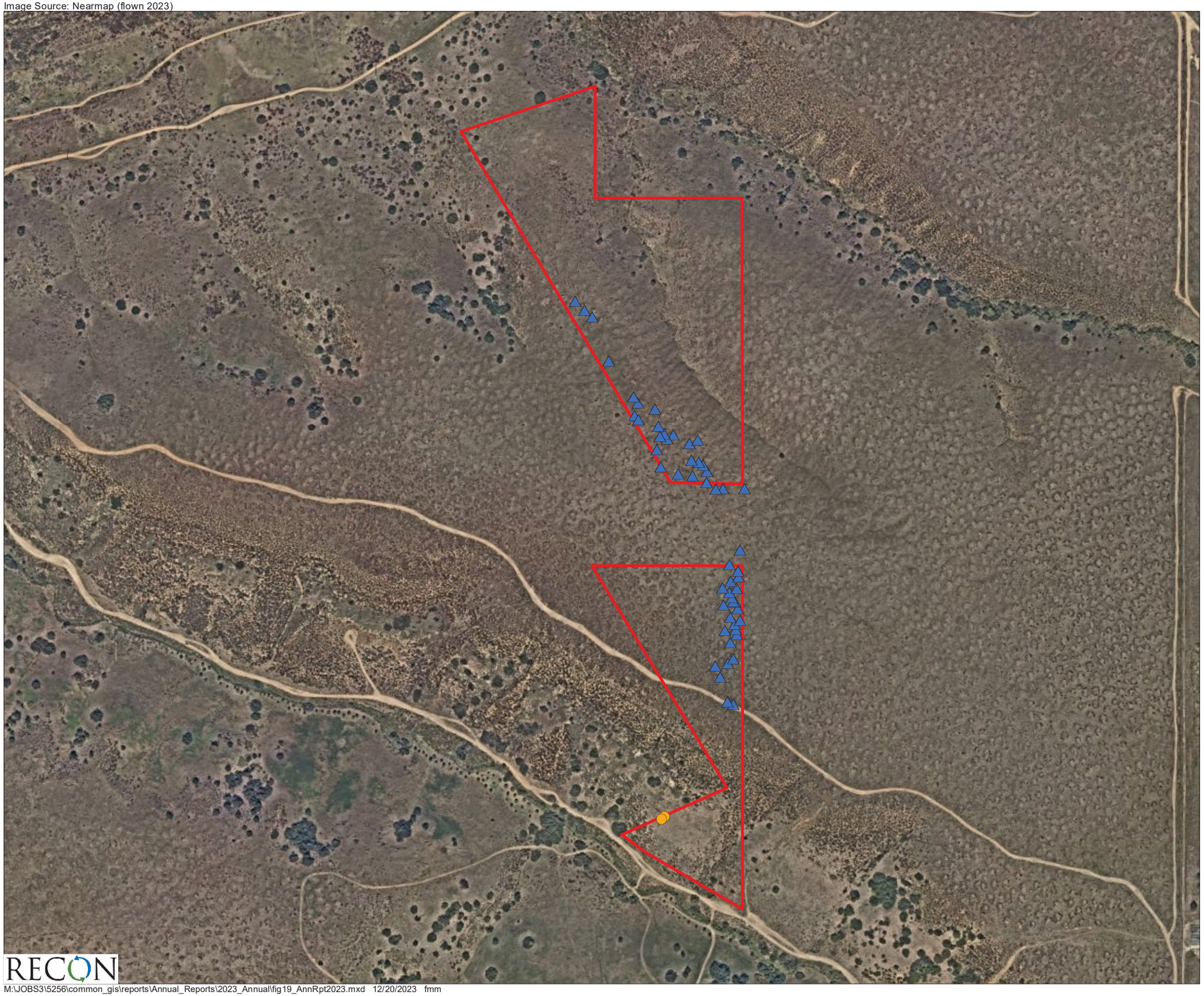
FIGURE 18

Noteworthy Plants and Wildlife, and Access Issues, Jamul Mountains Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Ponded Depression

Sensitive Plants

Priority Group 1

Otay Tarplant
(*Deinandra conjugens*)

0 Feet 400

FIGURE 19

Noteworthy Plants and Ponded Depressions,
Johnson Canyon (East) and Johnson Canyon
Otay Tarplant Preserve Parcels

RECON

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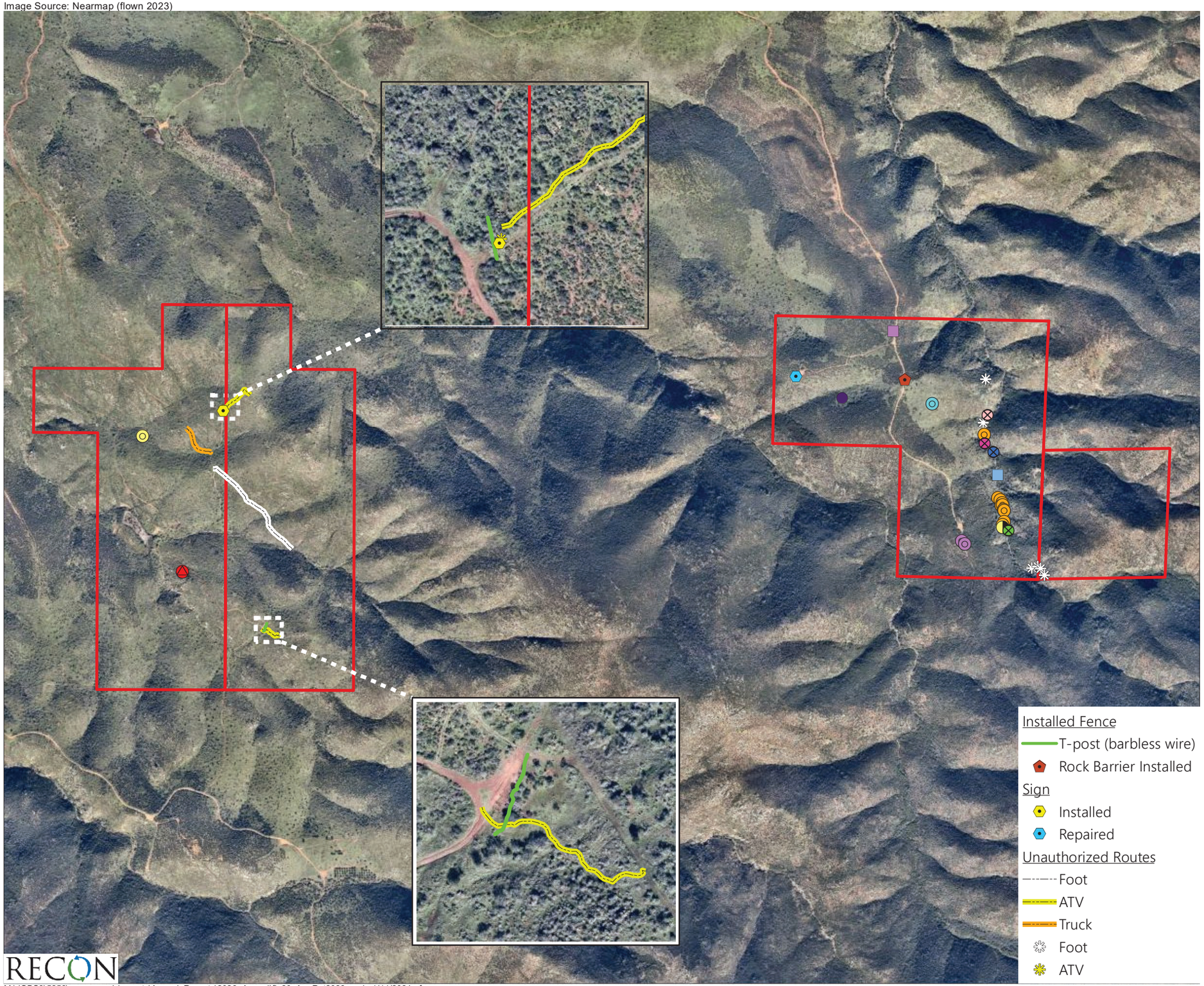
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- Dunn's Mariposa Lily (*Calochortus dunnii*)

Priority Group 4

- California Adder's-tongue (*Ophioglossum californicum*)
- Ocellated Humboldt Lily (*Lilium humboldtii* ssp. *ocellatum*)
- Chaparral Rein-orchid (*Piperia cooperi*)
- Golden-ray Pentachaeta (*Pentachaeta aurea* ssp. *aurea*)

Host Plants

- Spiny Redberry (*Rhamnus crocea*)

Invasive Plants

- Fennel (*Foeniculum vulgare*)
- Pampas Grass (*Cortaderia selloana*)
- Stinkwort (*Dittrichia graveolens*)
- False Hawkbit (*Urospermum picroides*)

Common Plants

- Jesuit Flower (*Venegasia carpesioides*)

Sensitive Wildlife

Common Wildlife

- Versatile Fairy Shrimp (*Branchinecta lindahli*)
- Gabb's Checkerspot (*Chlosyne gabbii*)

0 Feet 1,000

FIGURE 20

Noteworthy Plants and Wildlife, and Access Issues, McMillin and Little Cedar Canyon Parcels

RECON

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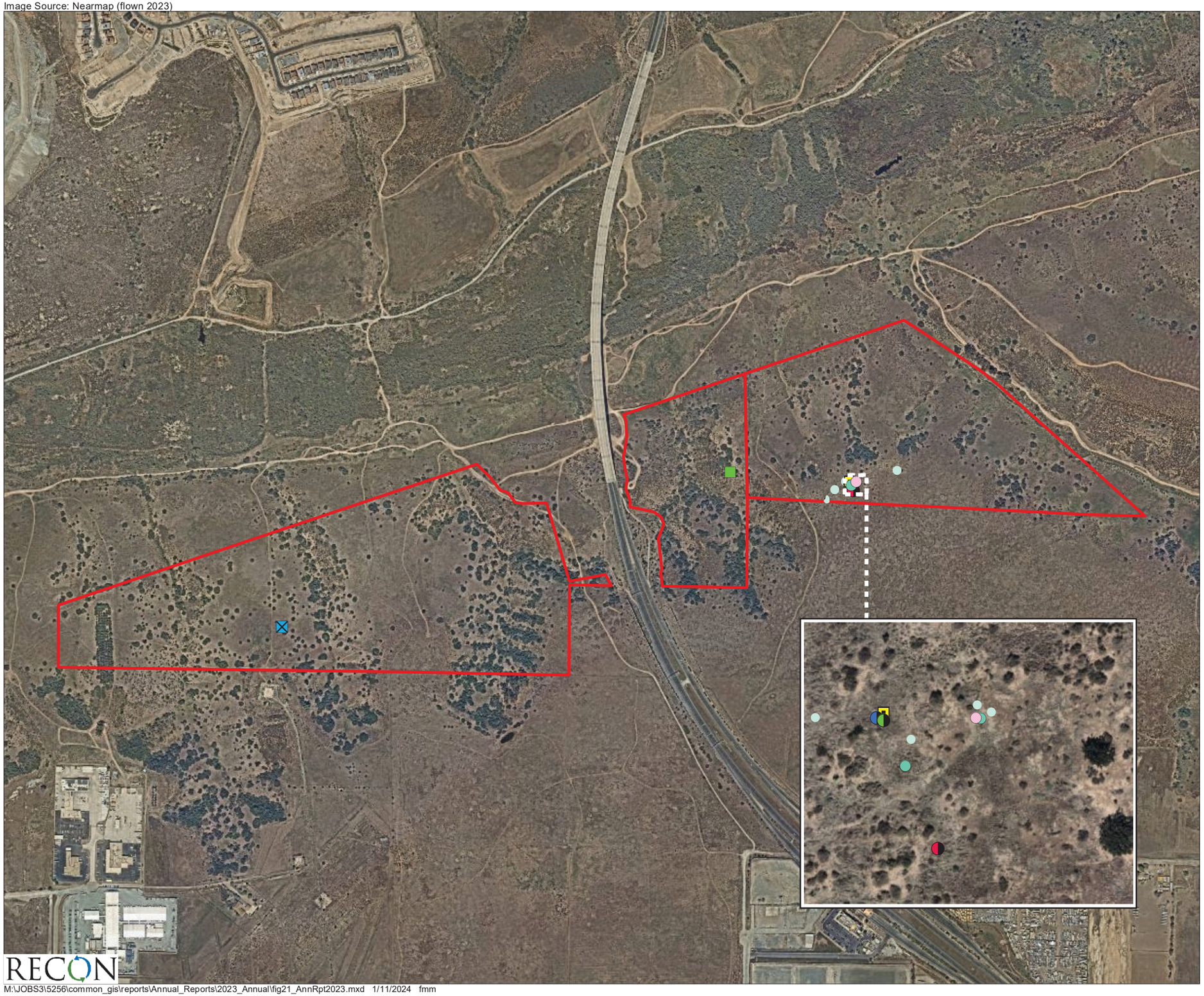
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Ponded Depression

Sensitive Plants

Priority Group 1

- Otay Mesa Mint (*Pogogyne nudiuscula*)
- San Diego Button-celery (*Eryngium aristulatum* var. *parishii*)

Common Plants

- Waterwort (*Elatine* sp.)
- Water-starwort (*Callitriche* sp.)
- Western Sea-purslane (*Sesuvium verrucosum*)

Sensitive Wildlife

Priority Group 1

- Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*)

Priority Group 2

- Southern Mule Deer (*Odocoileus hemionus fuliginata*)

Priority Group 3

- Western Spadefoot (*Spea hammondii*)

0 Feet 800

FIGURE 21

Noteworthy Plants and Wildlife, and Ponded Depressions

Millenia Parcels

RECON

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Image Source: Nearmap (flown 2023)

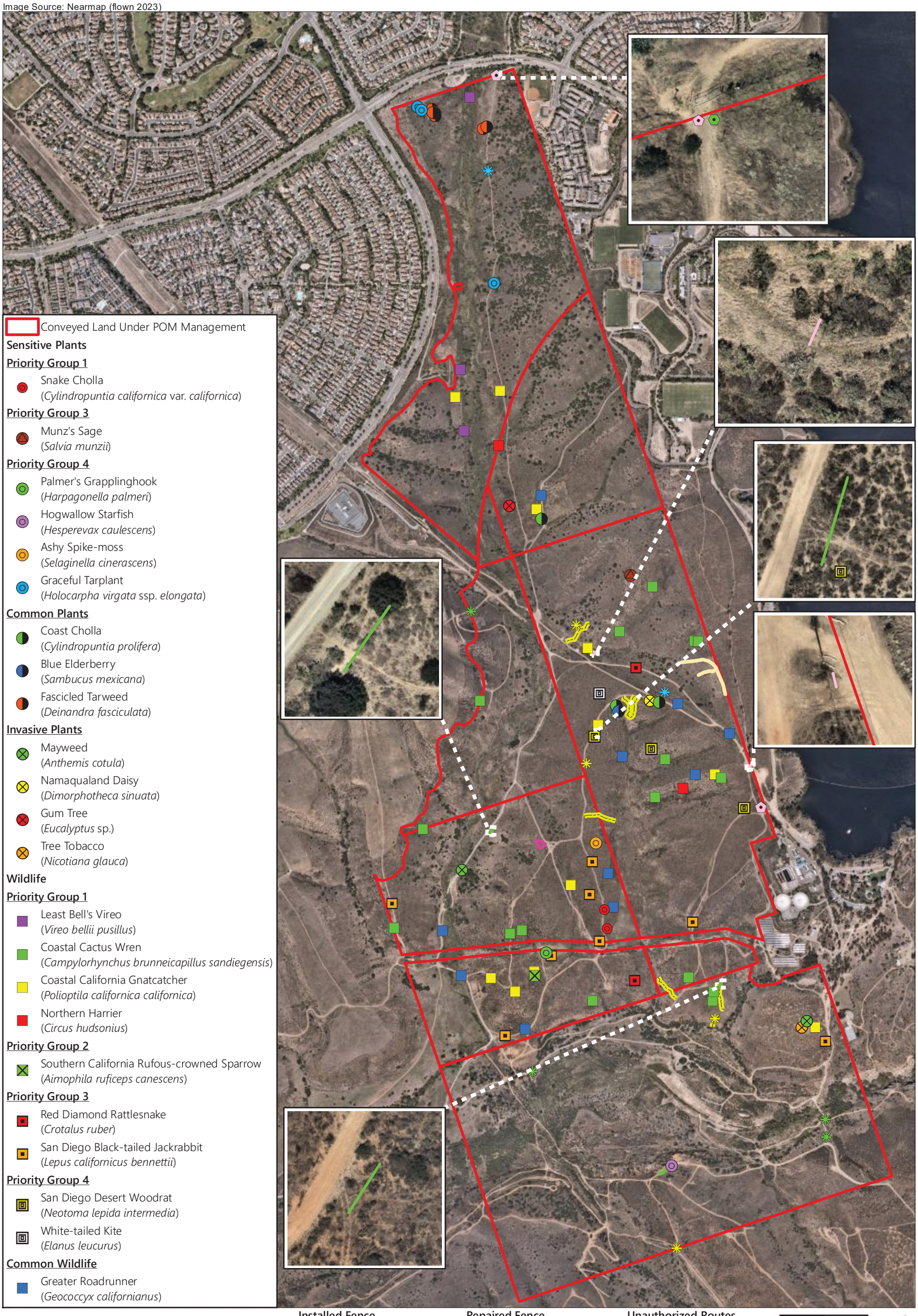

FIGURE 22
Noteworthy Plants and Wildlife, and Access Issues, Northern Salt Creek and Salt Creek Parcels

RECON

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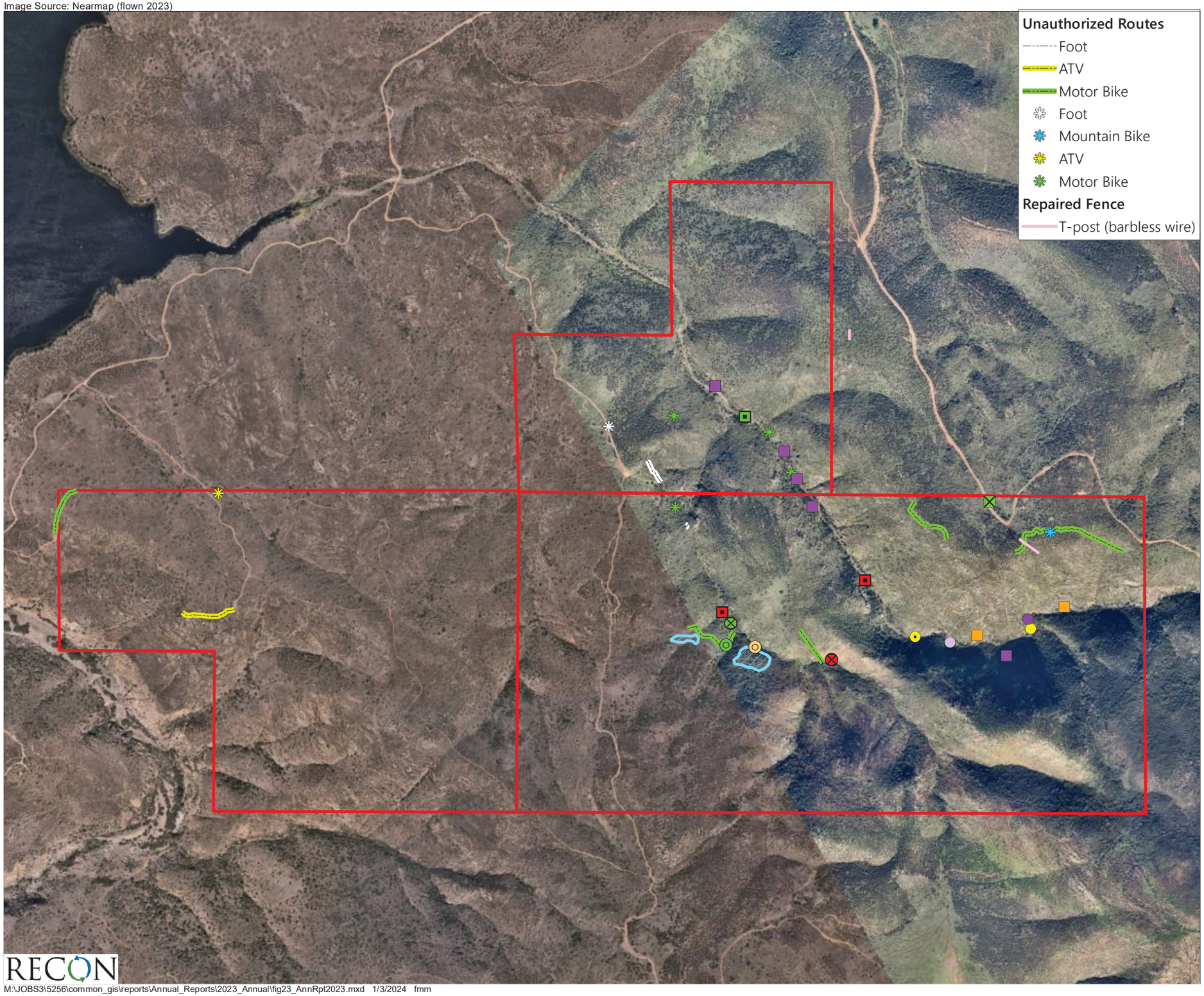
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- Dunn's Mariposa Lily (*Calochortus dunnii*)
- Gander's Pitcher Sage (*Lepechinia ganderi*)
- San Diego Goldenstar (*Bloomeria clevelandii*)

Priority Group 3

- Purple Stemodia (*Stemodia durantifolia*)

Priority Group 4

- Fish's Milkwort (*Rhinotropis cornuta* var. *fishiae*)
- Small-flowered Morning-glory (*Convolvulus simulans*)

Host Plant

- Spiny Redberry (*Rhamnus crocea*)

Invasive Plants

- Charlock (*Sinapis arvensis*)
- Olive (*Olea europaea*)

Sensitive Wildlife

Priority Group 1

- Least Bell's Vireo (*Vireo bellii pusillus*)

Priority Group 2

- Monarch (*Danaus plexippus*)
- Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)

Priority Group 3

- Red Diamond Rattlesnake (*Crotalus ruber*)
- Yellow-breasted Chat (*Icteria virens*)

0 Feet 1,000

FIGURE 23
Noteworthy Plants and Wildlife, and Access Issues, Northern San Ysidro and San Ysidro Parcels

RECON

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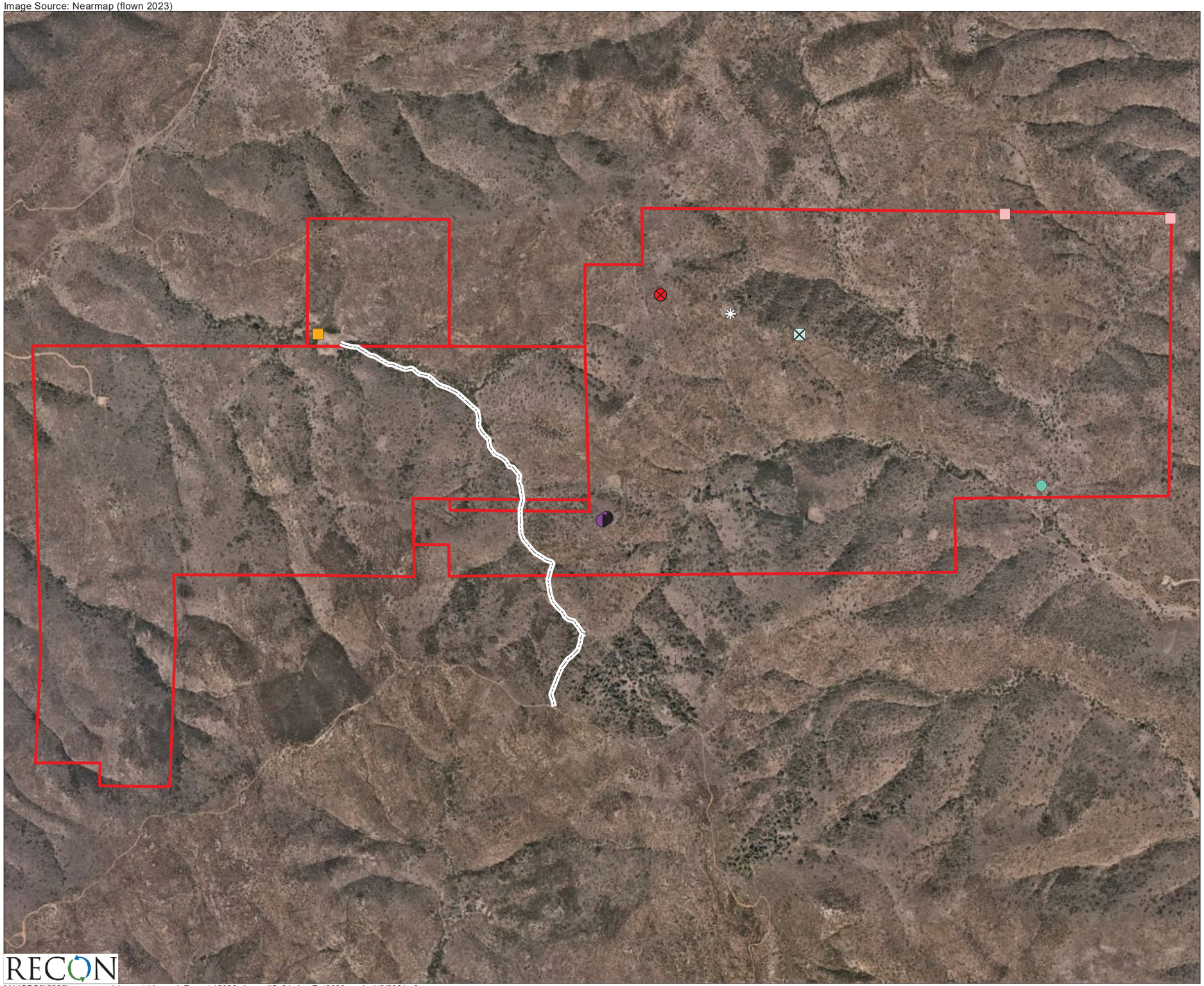
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 4

California Adder's-tongue (*Ophioglossum californicum*)

Common Plants

Chocolate Lily (*Fritillaria biflora*)

Invasive Plants

Crimson Fountain Grass (*Pennisetum setaceum*)

Sensitive Wildlife

Priority Group 2

Monarch (*Danaus plexippus*)

Southern Mule Deer (*Odocoileus hemionus fuliginata*)

Common Wildlife

Rosy Boa (*Lichanura orcuttii*)

Unauthorized Routes

Foot

Foot

0 Feet 900

RECON

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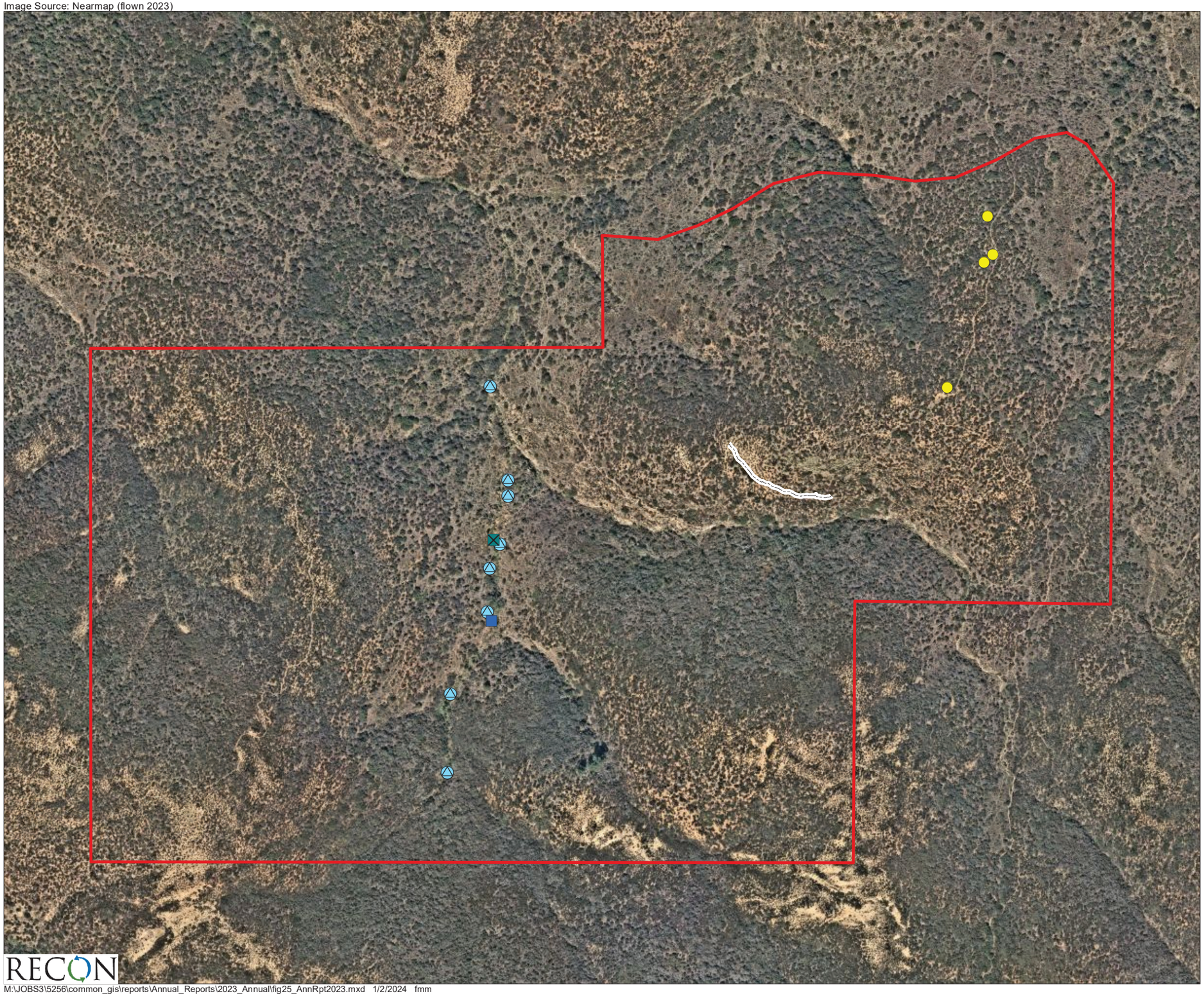
FIGURE 24

Noteworthy Plants and Wildlife, and Access Issues, Proctor Valley, Proctor Valley (South), and Proctor Valley Extension Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

Dunn's Mariposa Lily
(*Calochortus dunnii*)

Host Plants

Spiny Redberry
(*Rhamnus crocea*)

Sensitive Wildlife

Priority Group 2

Blainville's [=Coast] Horned Lizard
(*Phrynosoma blainvillii*)

Common Wildlife

Gabb's Checkerspot
(*Chlosyne gabbii*)

Unauthorized Routes

Foot

0 Feet 250

FIGURE 25

Noteworthy Plants and Wildlife,
and Access Issues,
Proctor Valley (North) Parcels

RECON

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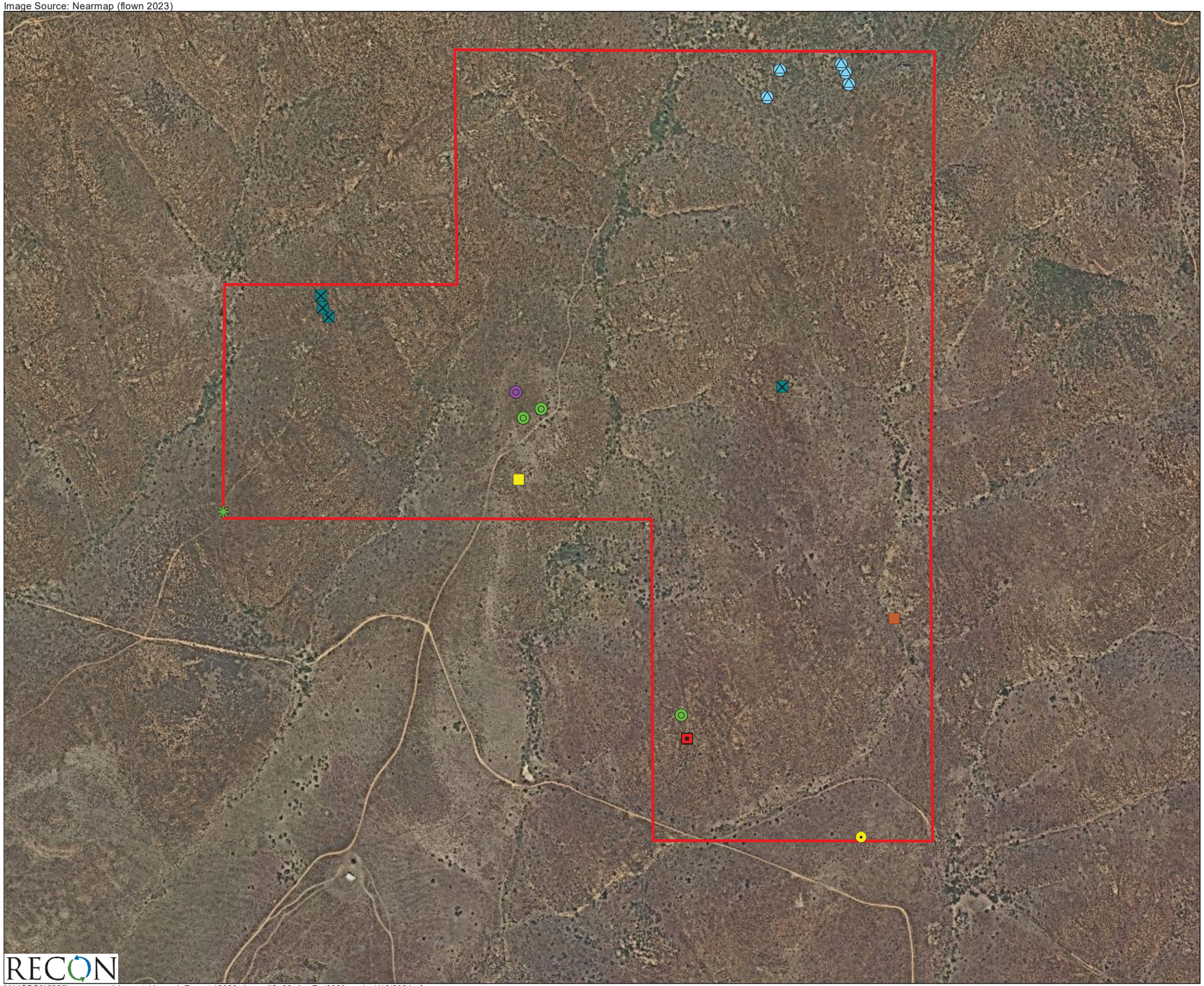
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Plants

Priority Group 1

- San Diego Goldenstar (*Bloomeria clevelandii*)

Priority Group 4

- Palmer's Grapplinghook (*Harpagonella palmeri*)
- Western Dichondra (*Dichondra occidentalis*)

Host Plants

- Spiny Redberry (*Rhamnus crocea*)

Sensitive Wildlife

Priority Group 1

- Coastal California Gnatcatcher (*Polioptila californica californica*)

Priority Group 2

- Blainville's [=Coast] Horned Lizard (*Phrynosoma blainvillii*)

Priority Group 3

- Red Diamond Rattlesnake (*Crotalus ruber*)

Common Wildlife

- American Parastrelle (*Parastrellus hesperus*)

Unauthorized Routes

- Motor Bike

0 Feet 550

FIGURE 26

Noteworthy Plants and Wildlife, and Access Issues, Ridge Parcels

RECON

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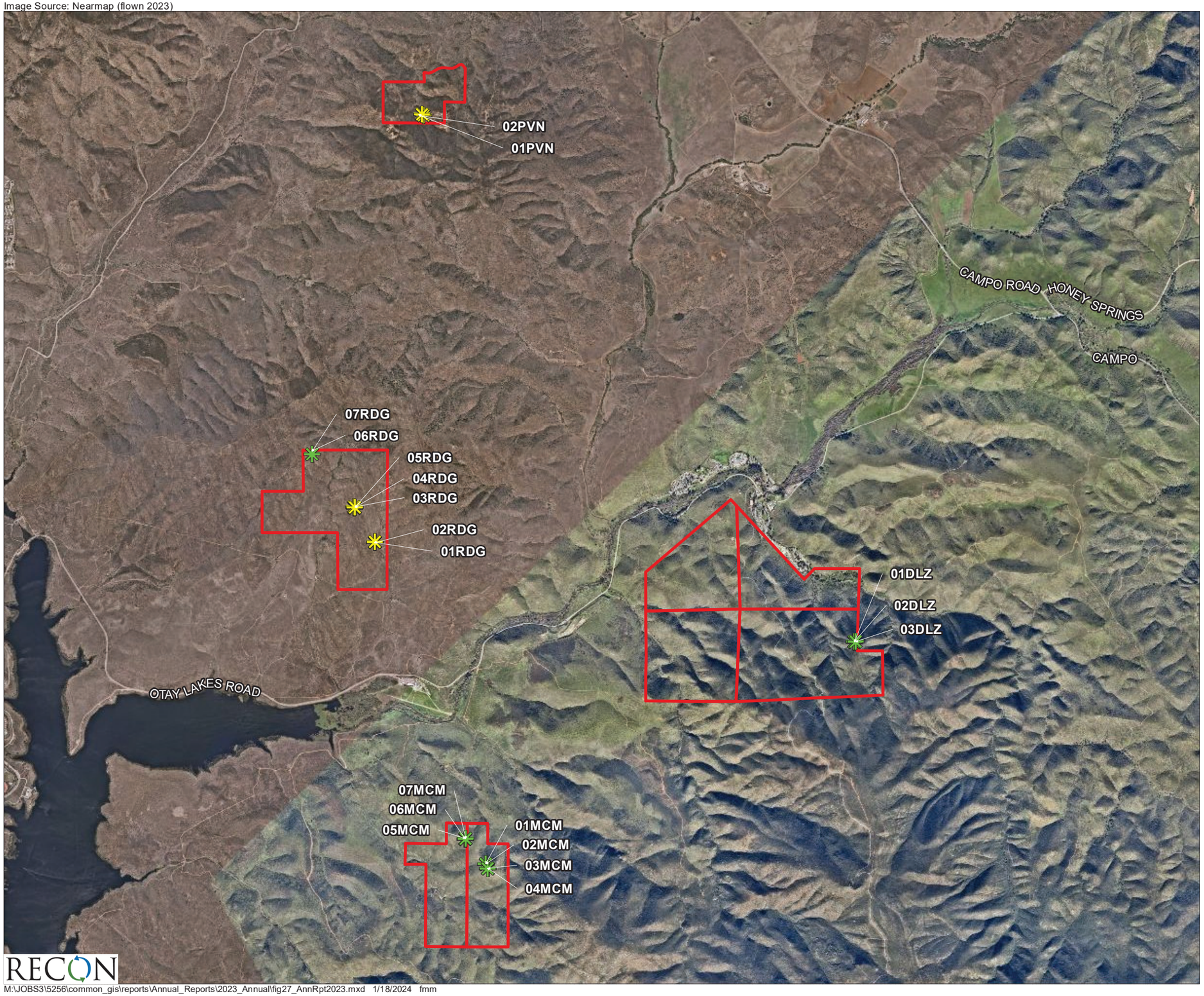
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Golden Eagle Camera Locations

Golden Eagle Cameras Removed from Service in 2023

0 Feet 3,000

RECON

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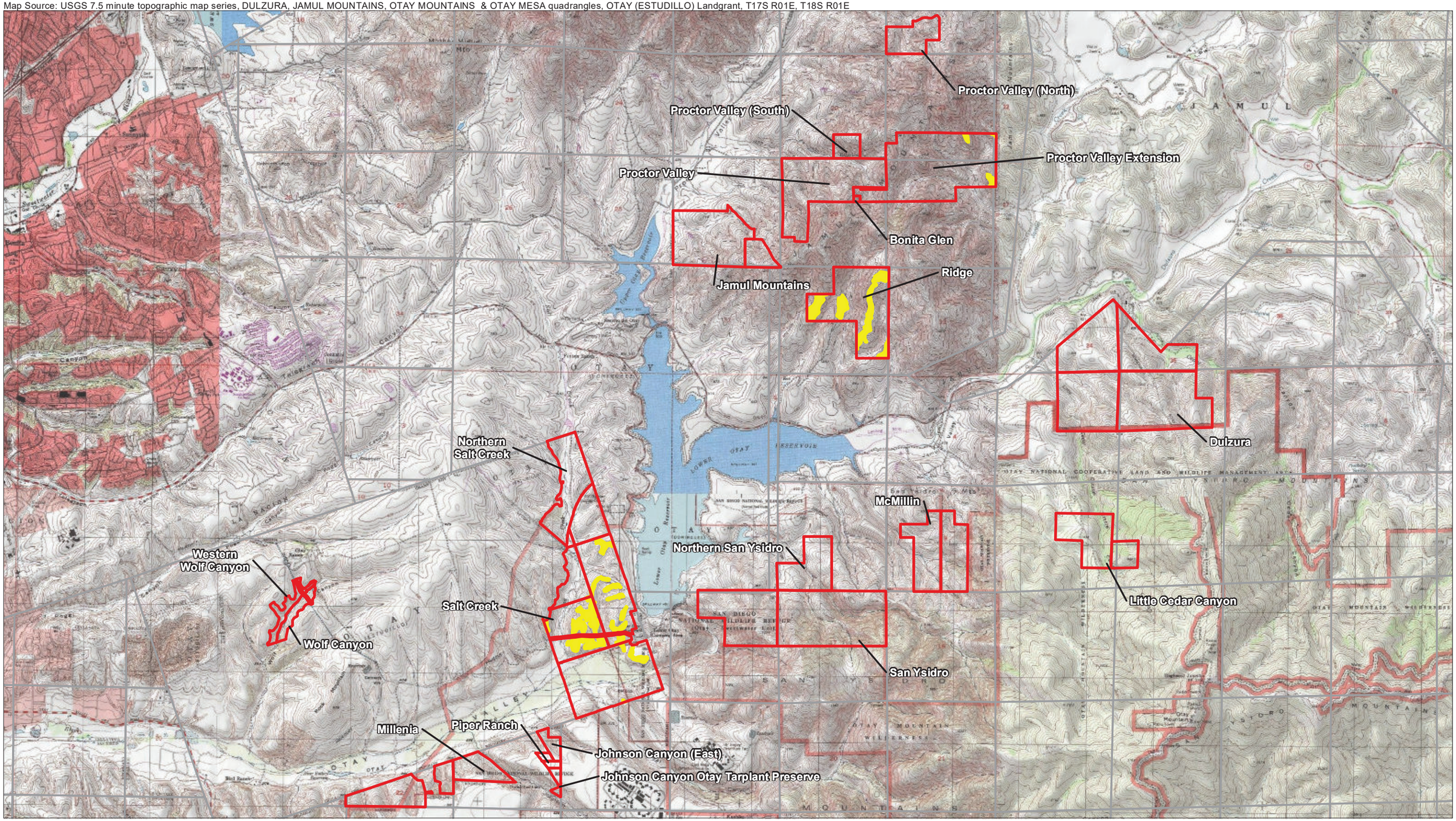
FIGURE 27

Golden Eagle Camera Survey Locations: Dulzura, McMillin, and Ridge Parcels

Map Source: USGS 7.5 minute topographic map series, DULZURA, JAMUL MOUNTAINS, OTAY MOUNTAINS & OTAY MESA quadrangles, OTAY (ESTUDILLO) Landgrant, T17S R01E, T18S R01E



Conveyed Land Under POM Management

2023 QCB Survey Area

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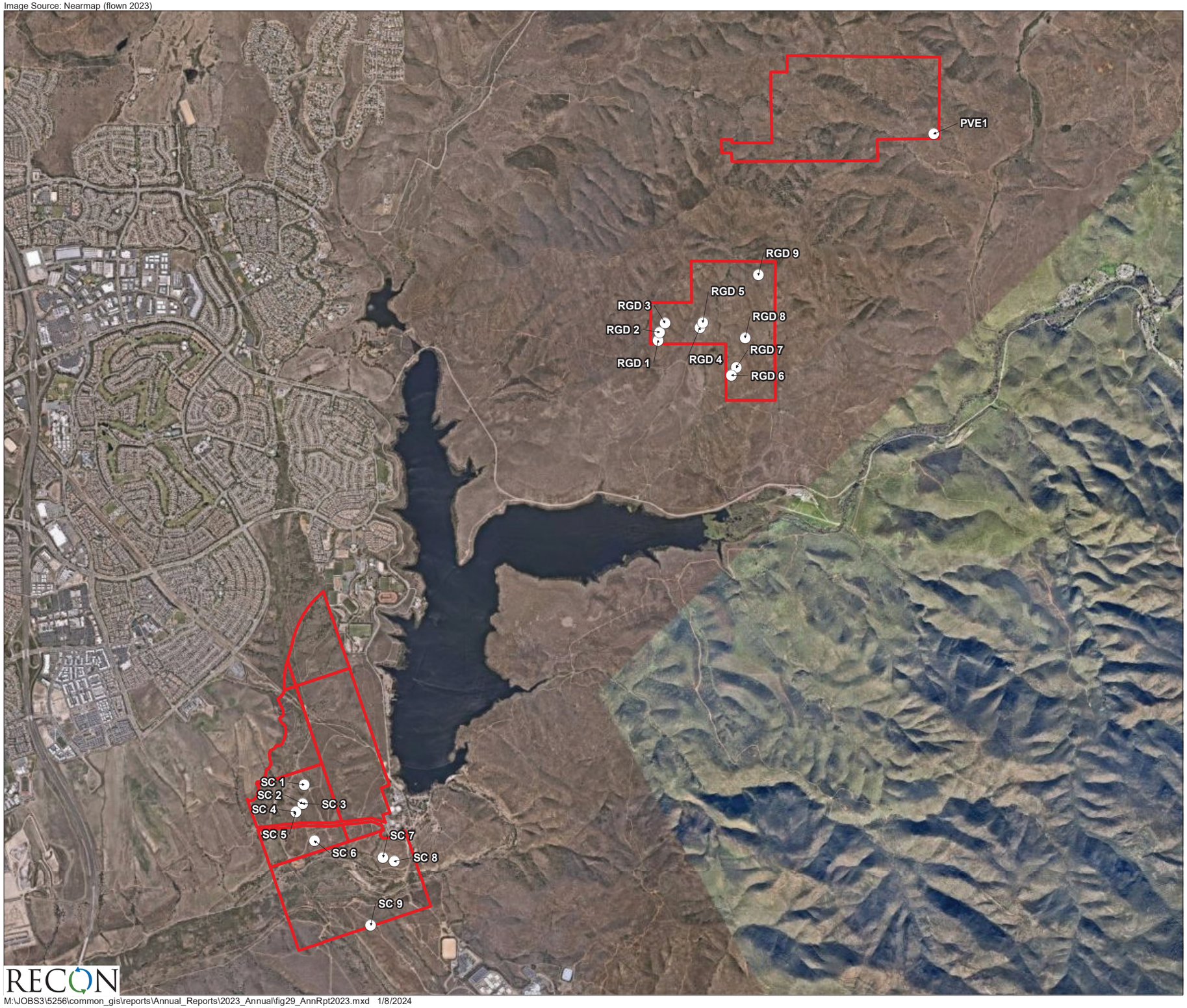
FIGURE 2

2023 QCB Survey Area on USGS Map:

Proctor Valley Extension, Ridge, and Salt Creek Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

QCB Photo Monitoring Locations

0 Feet 2,500

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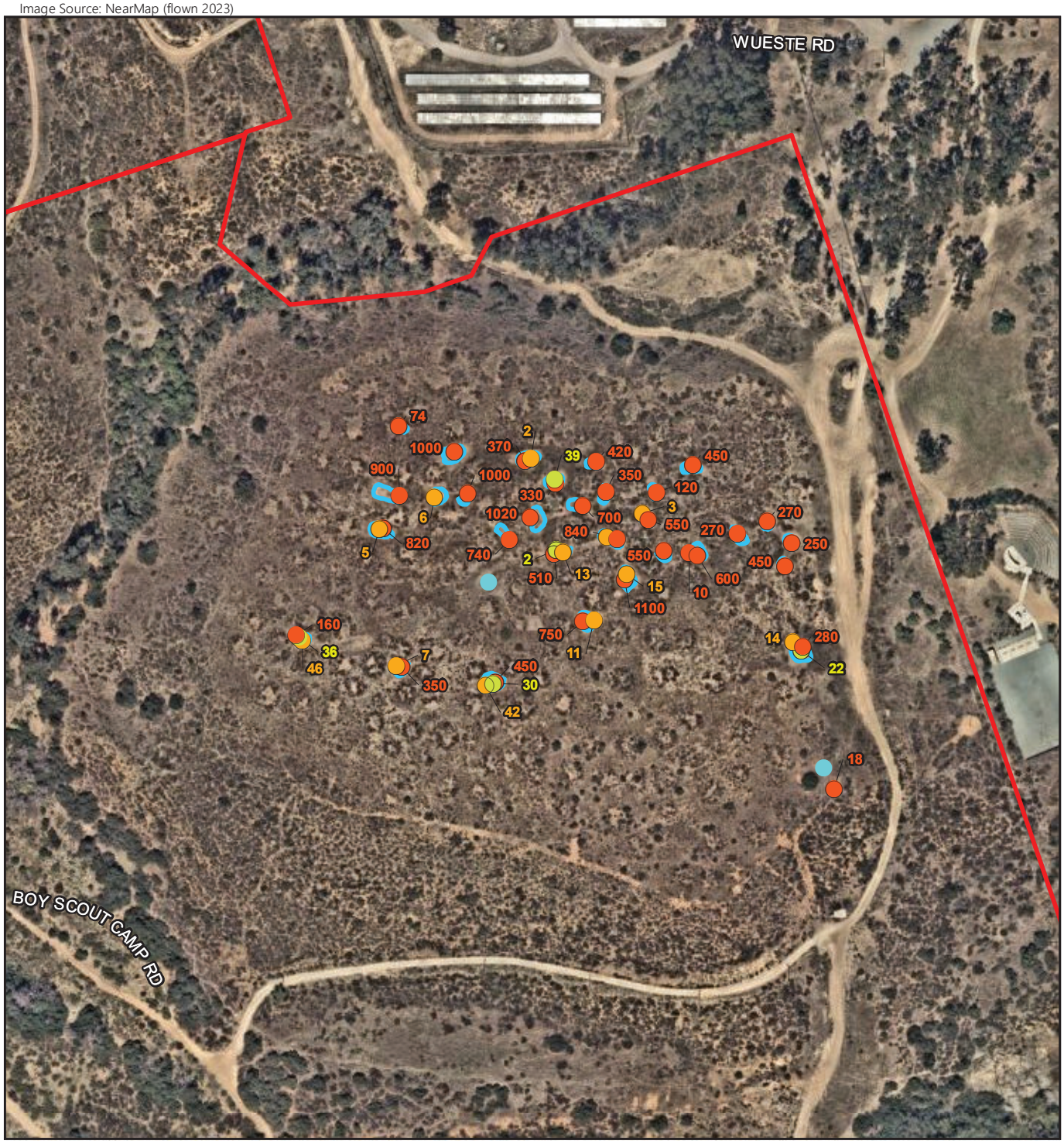
FIGURE 29

2023 QCB Photo Monitoring Locations: Proctor Valley Extension, Ridge, and Salt Creek Parcels

Image Source: NearMap (flown 2023)



Conveyed Land Under POM Management

Established Pools

Potential Ponding Areas (PPA)

Sensitive Plant Species

Priority Group 1

California Orcutt Grass (*Orcuttia californica*)

Otay Mesa Mint (*Pogogyne nudiuscula*)

San Diego Button-celery (*Eryngium aristulatum* var. *parishii*)

Number of Individuals

0 Feet 200

FIGURE 30
2023 Federally and State Listed Vernal Pool Plant Species Results: Salt Creek Parcels

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Image source: Nearmap (flown 2023)

Non-listed Vernal Pool Indicator Species

- Adobe Popcornflower (*Plagiobothrys acanthocarpus*)
- American Pillwort (*Pilularia americana*)
- Annual Hair Grass (*Deschampsia danthonioides*)
- Chaffweed (*Lysimachia minima*)
- Dwarf Woollyheads (*Psilocarphus brevissimus* var. *brevissimus*)
- Flowering-quillwort (*Triglochin scilloides*)
- Hairy Clover Fern (*Marsilea vestita* ssp. *vestita*)
- Toad Rush (*Juncus bufonius*)
- Water Pygmy-weed (*Crassula aquatica*)

#1 #2 #2b #3 #4 #4b #4c #5 PPA4 PPA1 #69 #25 #30

#63 #62 #54 #55 #53 #56 #51 #50 #64 #61 #52 #42 #58 #43 #41 #65 #60 #49 #59 #48 #44 #66 PPA2 #57 #45 #40 #46 #47 #67 #38 #68 PPA3

Conveyed Land Under POM Management

Ponding Areas

0 Feet 900

*Surveys were coordinated with Otay River Restoration Project being managed by SWCA.

FIGURE 31

2023 Non-listed Vernal Pool Indicator Species Results: Salt Creek Parcels

RECON

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Image source: Nearmap (flown 2023)

Conveyed Land Under POM Management

Yellow-billed Cuckoo (*Coccyzus americanus*; YBCU) Survey Area*

Least Bell's Vireo (*Vireo bellii pusillus*; LBVI) Survey Area*

Otay River Restoration Survey Area (ICF) **

*Surveys were coordinated with Otay River Restoration Project being managed by ICF.

** Not Part of the RECON Survey Area

0 Feet 1,000

FIGURE 32

Focused LBVI and YBCU Survey Areas: Salt Creek and Northern Salt Creek Parcels

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Image Source: Nearmap (flown 2023)

Conveyed Land Under POM Management

Least Bell's Vireo (*Vireo bellii pusillus*; LBVI) Survey Area

0 Feet 350

RECON

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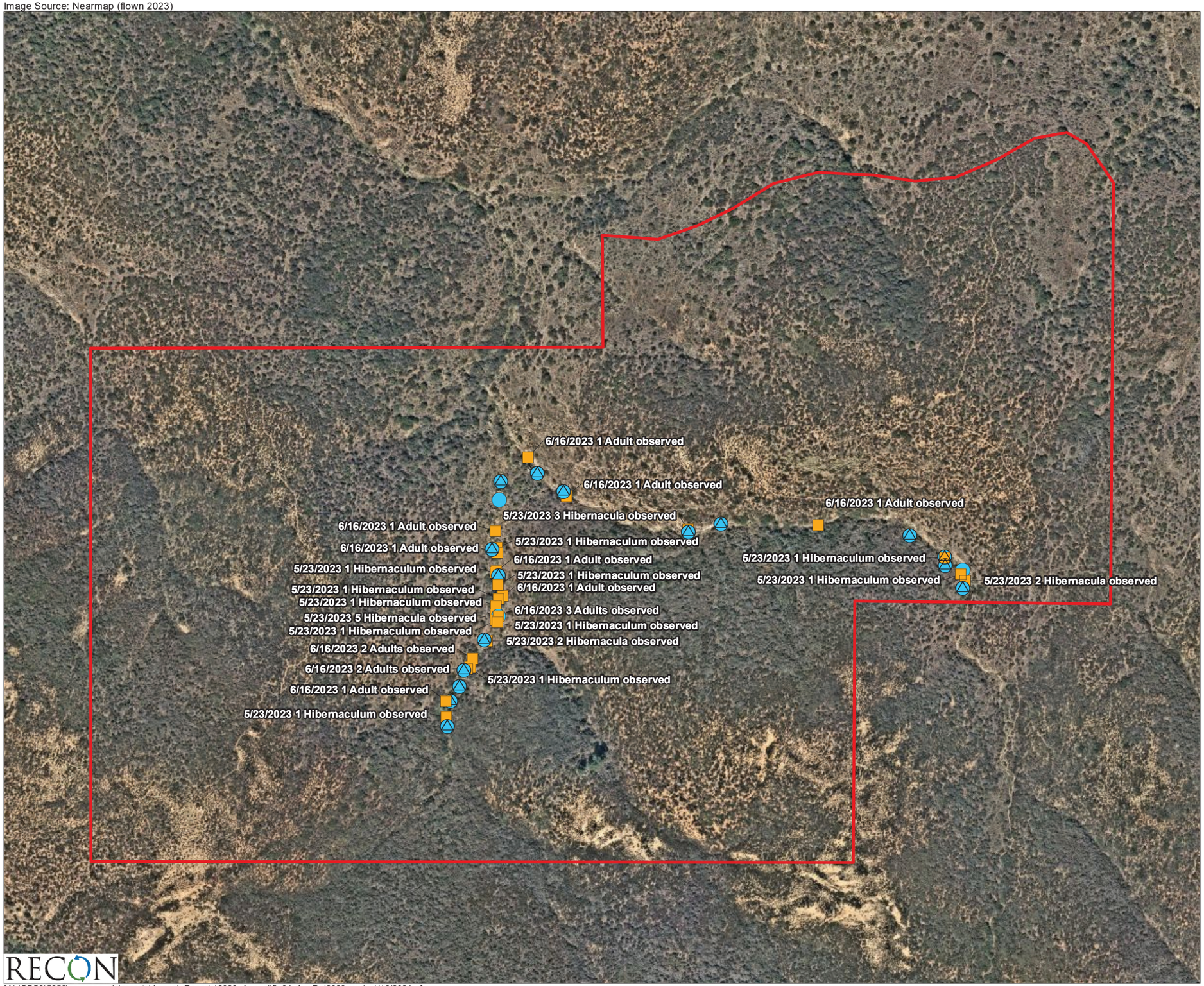
FIGURE 33
Focused LBVI Survey Area:
Wolf Canyon Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Wildlife

Harbison Dun Skipper
(*Euphyes vestris harbisoni*)

Host Plants

San Diego Sedge
(*Carex spissa*)

0 Feet 250

FIGURE 34

Harbison Dun Skipper Survey Results,
Proctor Valley (North) Parcels

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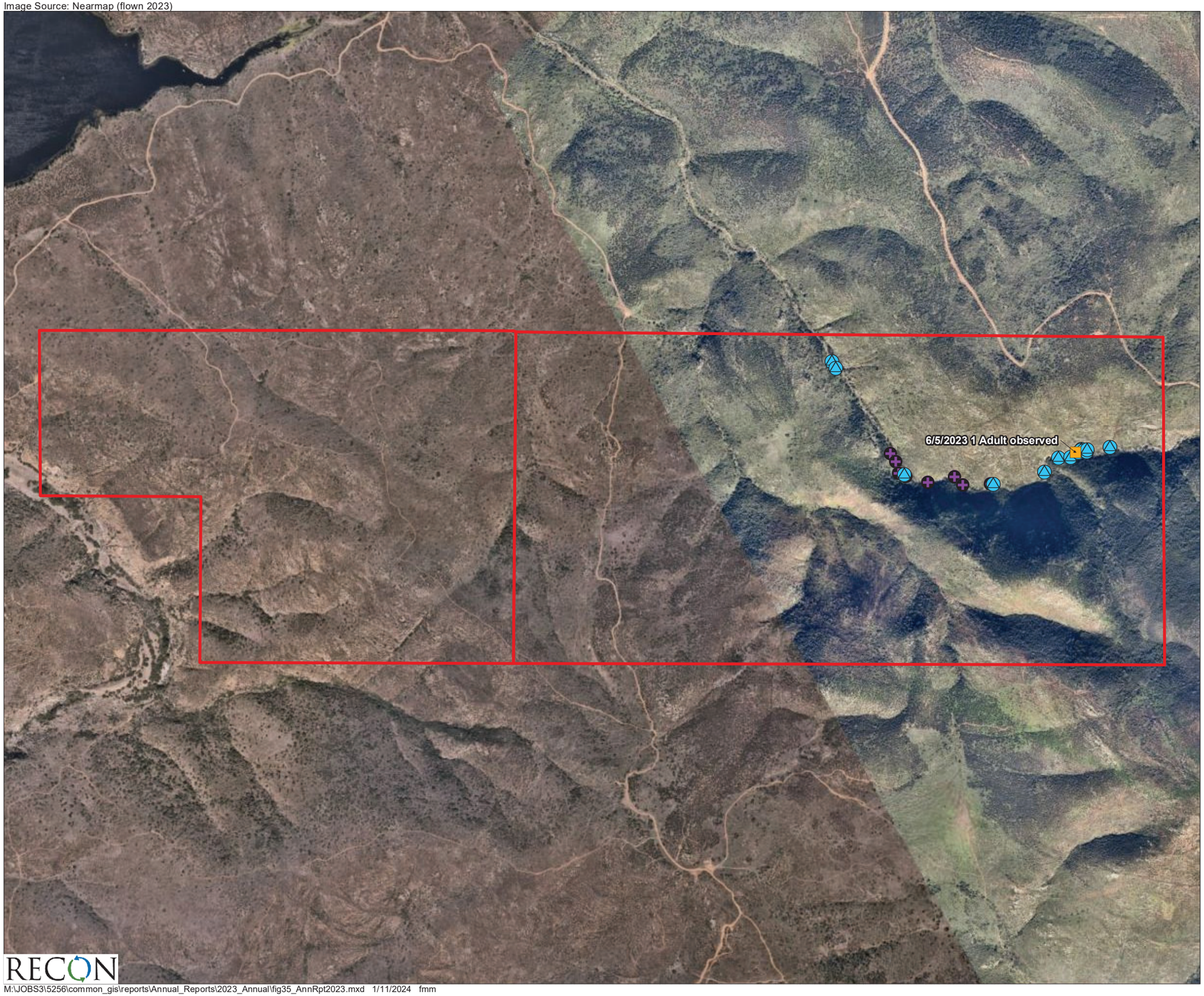
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Sensitive Wildlife

Harbison Dun Skipper
(*Euphyes vestris harbisoni*)

Host Plants

San Diego Sedge
(*Carex spissa*)

Nectar Plants

Narrow-leaf Milkweed
(*Asclepias fascicularis*)

0 Feet 800

FIGURE 35

Harbison Dun Skipper Survey Results,
San Ysidro Parcels

RECON

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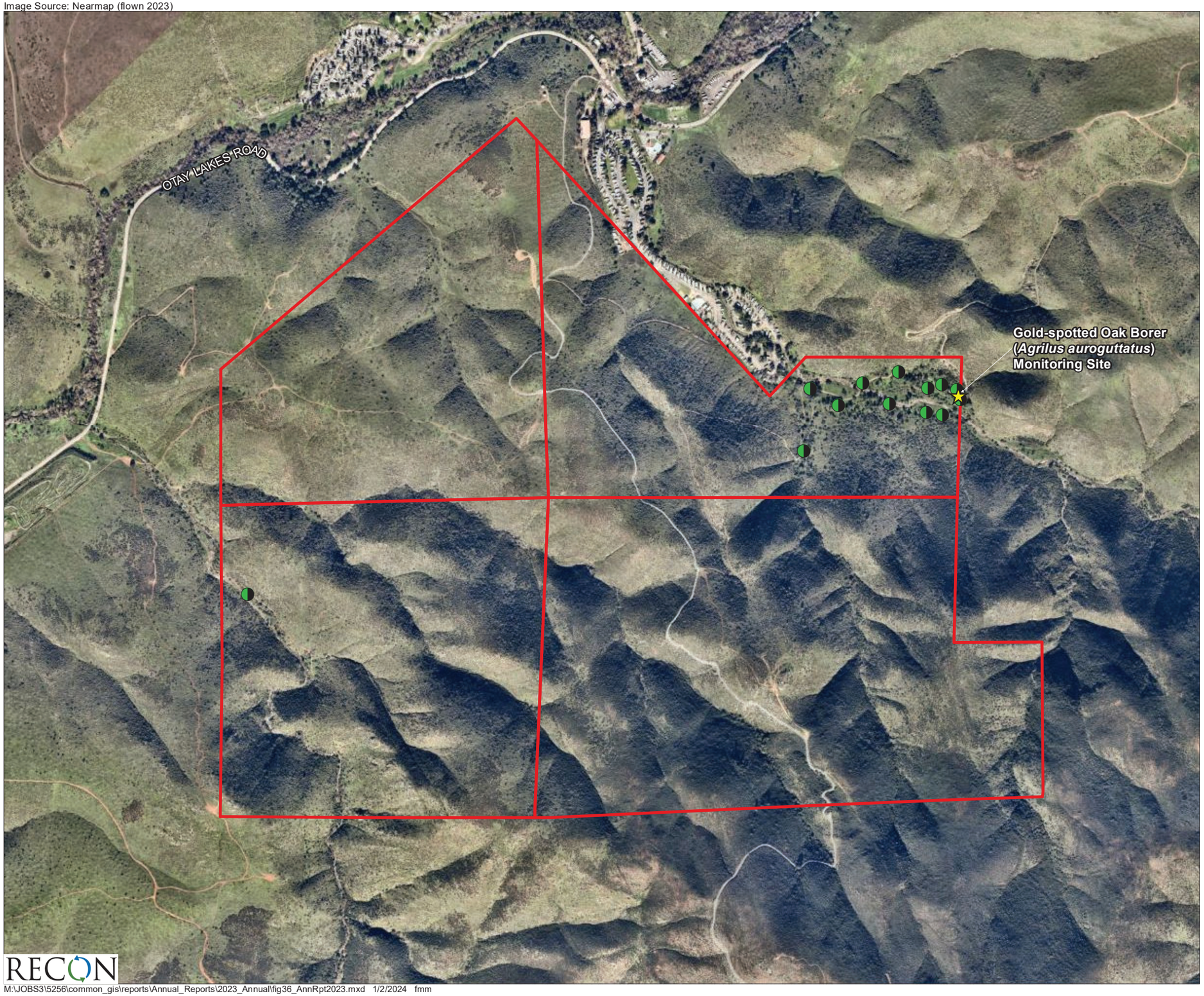
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Gold-spotted Oak Borer (*Agrilus auroguttatus*) Monitoring Site

Coast Live Oak (*Quercus agrifolia*)

0 Feet 900

RECON

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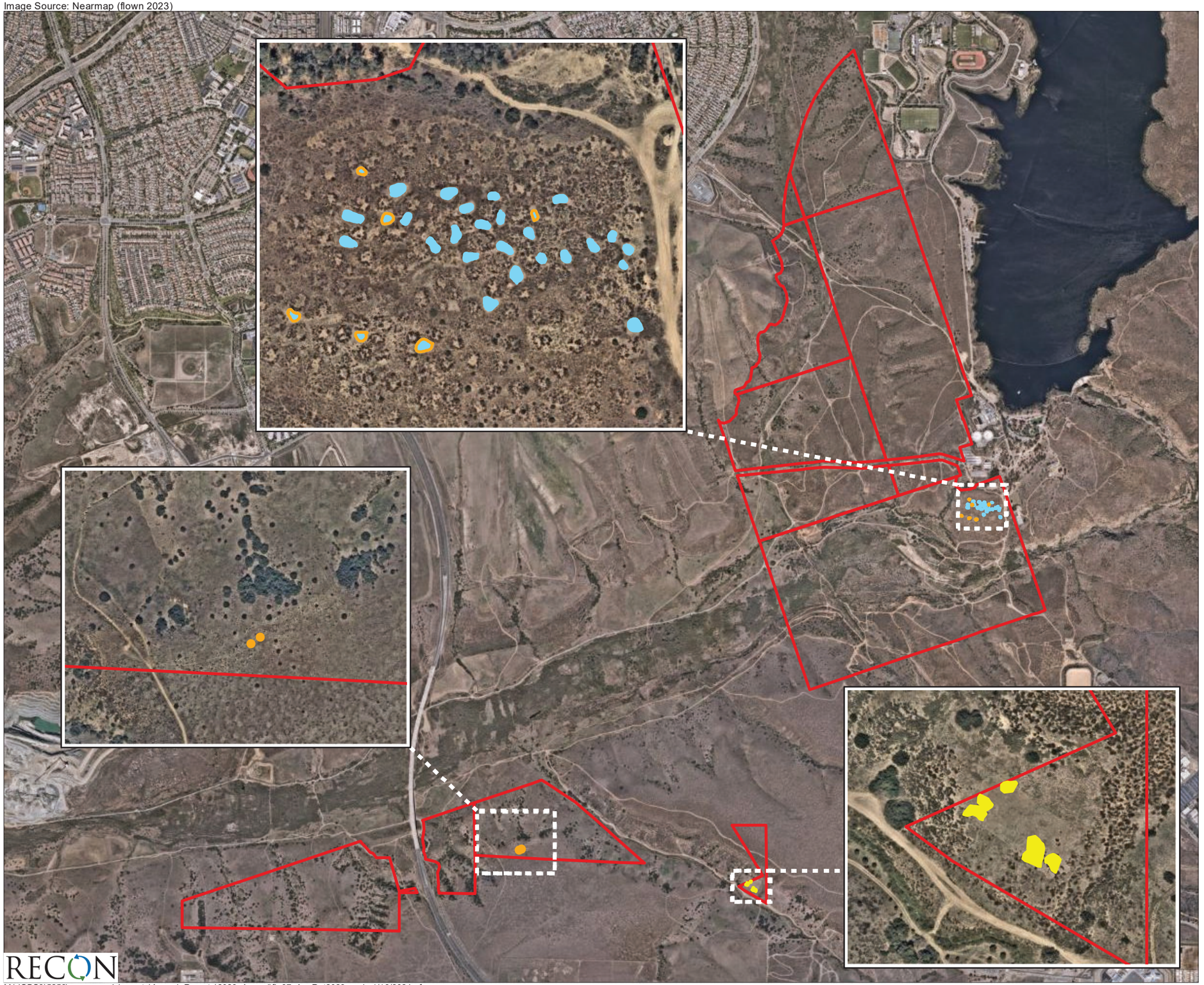
FIGURE 36
GSOB Monitoring Location:
Dulzura Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management
Established Pools
Vernal Pool Plant Seed Redistribution
Otay Tarplant Redistribution Locations

0 Feet 1,500

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FIGURE 37

Seed Redistribution Locations, Millenia, Johnson Canyon Otay Tarplant Preserve, and Salt Creek Parcels

Image Source: Nearmap (flown 2023)

- Conveyed Land Under POM Management
- Photo Monitoring - Erosion
- Installed Sign

Common Plants

- Fascicled Tarweed (*Deinandra fasciculata*)

Invasive Plants

- Castor Bean (*Ricinus communis*)
- Saltcedar (*Tamarix ramosissima*)
- Bristly Ox-tongue (*Helminthotheca echioides*)
- Tree Tobacco (*Nicotiana glauca*)

Sensitive Wildlife

Priority Group 1

- Least Bell's Vireo (*Vireo bellii pusillus*)
- Coastal Cactus Wren (*Campylorhynchus brunneicapillus sandiegensis*)
- Coastal California Gnatcatcher (*Polioptila californica californica*)

Priority Group 2

- Belding's Orange-throated Whiptail (*Aspidoscelis hyperythra beldingi*)

0 Feet 350

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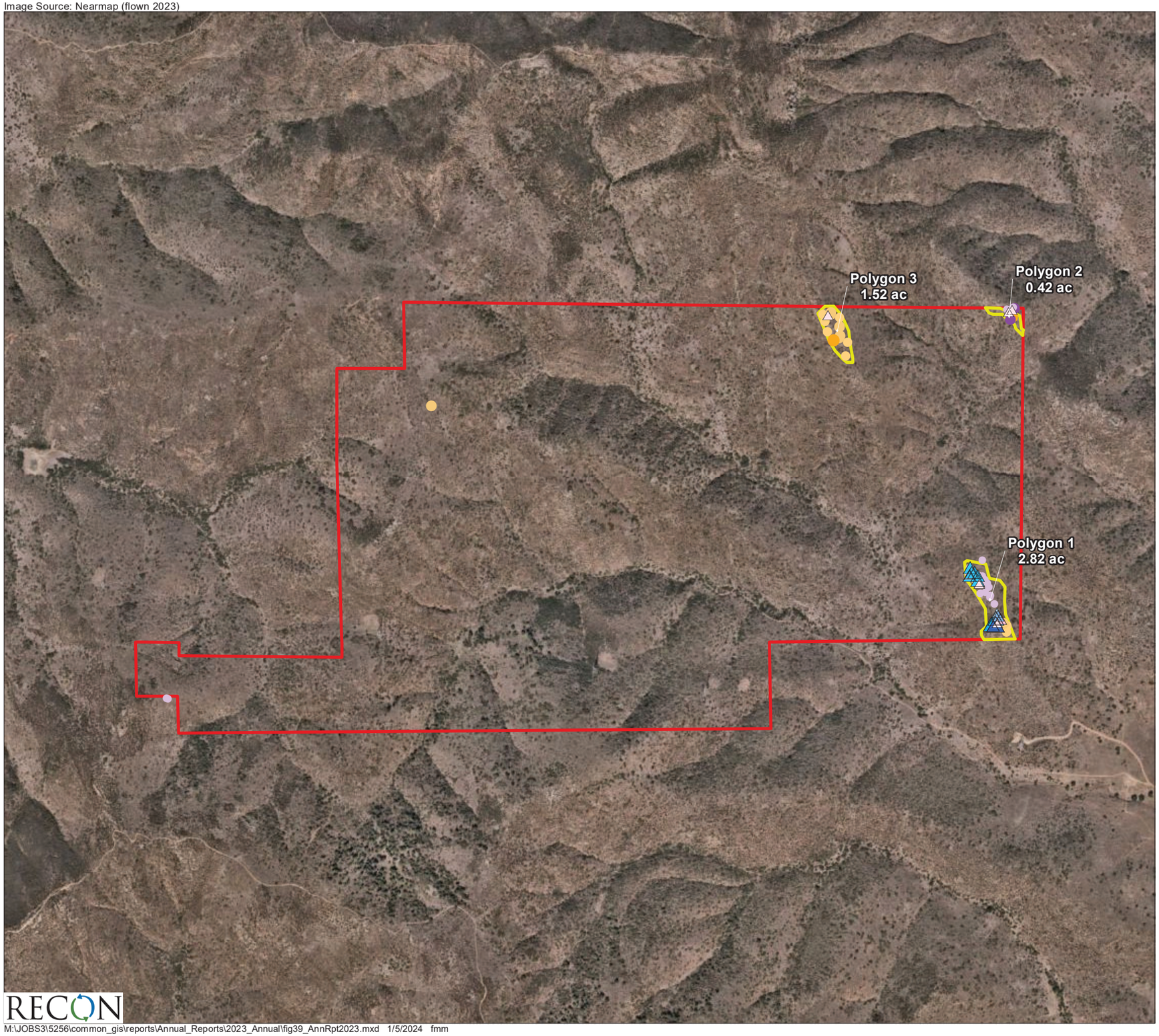
FIGURE 38
Noteworthy Plants and Wildlife,
and Access Issues,
Western Wolf Canyon and Wolf Canyon Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

QCB Survey Area

Host Plants

Dot-seed Plantain (*Plantago erecta*)

- 1-49
- 50-99
- 100-499
- 500-999

Purple Owl's-clover (*Castilleja exserta* ssp. *exserta*)

- 1-49
- 100-499

Nectar Plants

Common Goldfields (*Lasthenia gracilis*)

- 1-49
- 50-99
- 100-499
- 500-999
- 1,000-5,000

Farinose Ground Pink (*Linanthus dianthiflorus*)

- 1-49
- 50-99

0 Feet 800

FIGURE 39
2023 QCB Host and Nectar Plants,
Proctor Valley Extension Parcels

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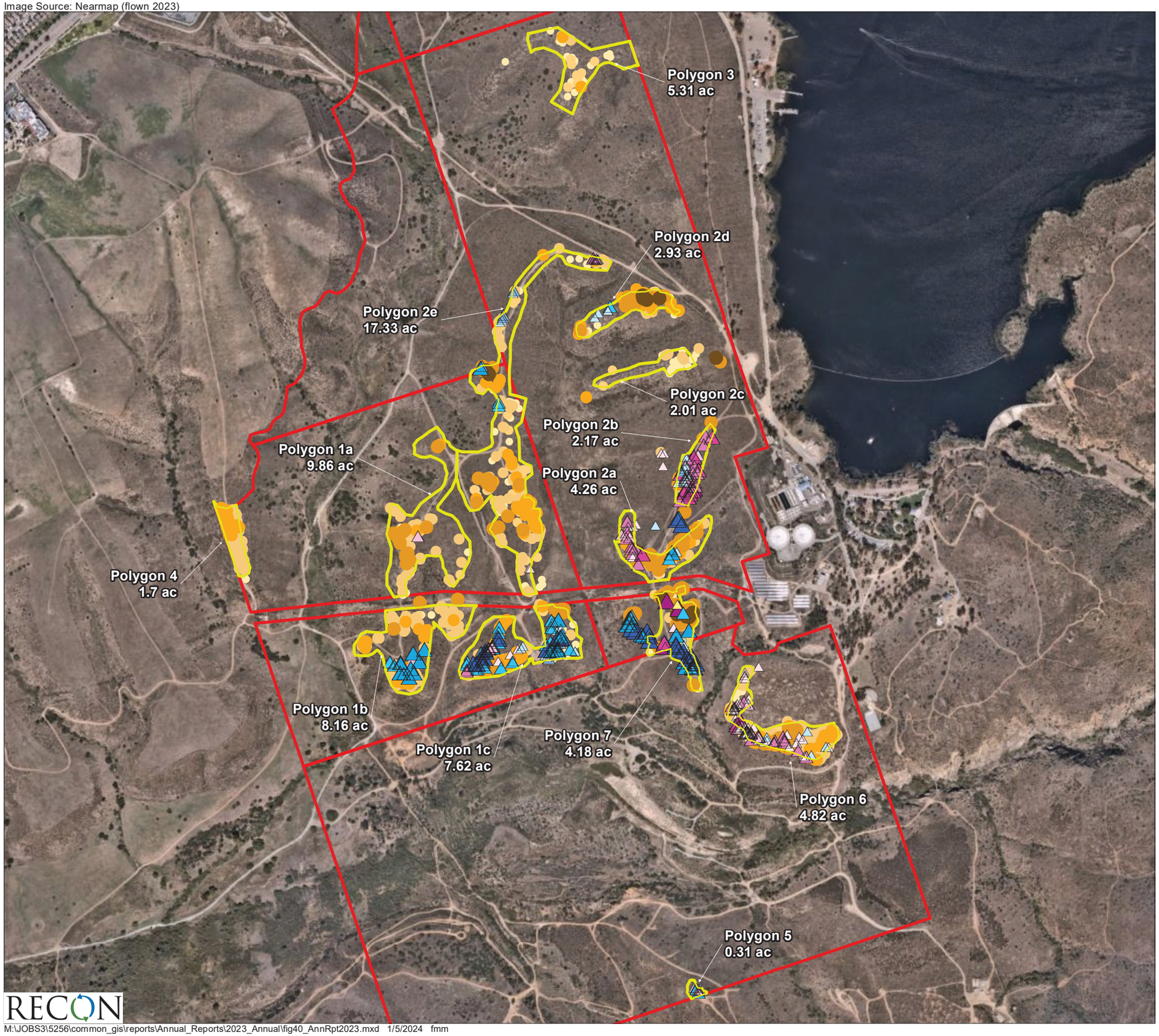
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

QCB Survey Area

Host Plants

Dot-seed Plantain (*Plantago erecta*)

- 1-49
- 50-99
- 100-499
- 500-999
- 1,000-4,999
- 5,000-10,000

Parish's Owl's-clover (*Castilleja densiflora* ssp. *gracilis*)

- 1-49

Purple Owl's-clover (*Castilleja exserta* ssp. *exserta*)

- 1-49
- 50-99
- 100-499

Nectar Plants

Common Goldfields (*Lasthenia gracilis*)

- 1-49
- 50-99
- 100-499
- 500-999
- 1,000-5,000
- 10,000

Crowned Goldfields (*Lasthenia coronaria*)

- 1-49

Farinose Ground Pink (*Linanthus dianthiflorus*)

- 1-49
- 50-99
- 100-499
- 500-999
- 1,000-5,000

0 Feet 1,000

FIGURE 40

2023 QCB Host and Nectar Plants,
Salt Creek Parcels

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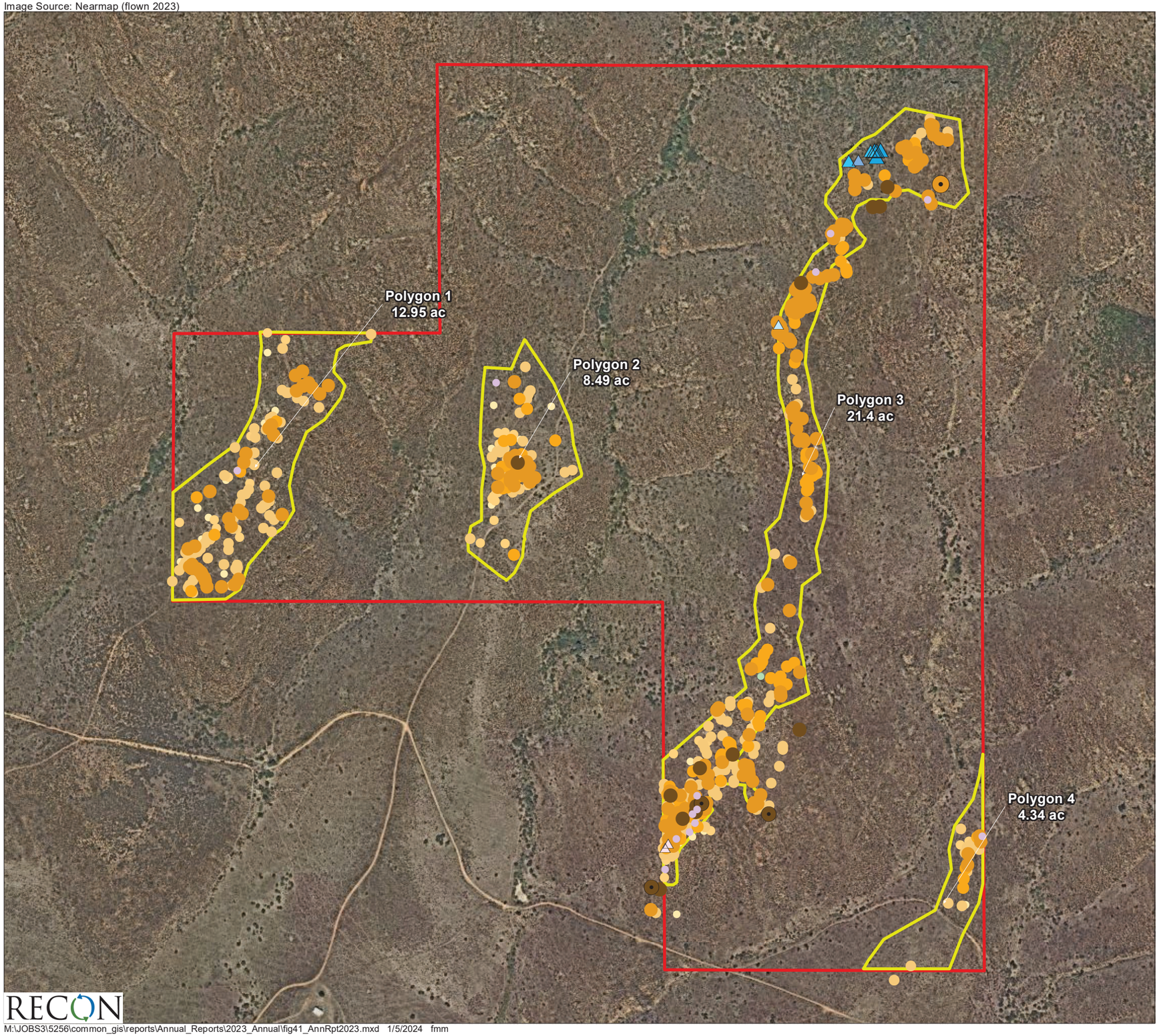
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

QCB Survey Area

Host Plants

Dot-seed Plantain (*Plantago erecta*)

- 1-49
- 50-99
- 100-499
- 500-999
- 1,000-4,999
- 5,000-10,000
- 100,000
- 2,000,000

Parish's Owl's-clover (*Castilleja densiflora* ssp. *gracilis*)

- 1-49

Purple Owl's-clover (*Castilleja exserta* ssp. *exserta*)

- 1-49

Nectar Plants

Common Goldfields (*Lasthenia gracilis*)

- 1-49
- 50-99
- 100-499
- 500-999

Farinose Ground Pink (*Linanthus dianthiflorus*)

- 1-49

0 Feet 500

RECON

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FIGURE 41
2023 QCB Host and Nectar Plants,
Ridge Parcels

Map Source: USGS 7.5 minute topographic map series, DULZURA, JAMUL MOUNTAINS, OTAY MOUNTAINS & OTAY MESA quadrangles, OTAY (ESTUDILLO) Landgrant, T17S R01E, T18S R01E

Ridge

Dulzura

Northern Salt Creek

McMillin

Northern San Ysidro

Little Cedar Canyon

Salt Creek

San Ysidro

Conveyed Land Under POM Management

Quino Checkerspot (*Euphydryas editha quino*)

Larva

Adult

0 Feet 2,000

FIGURE 42

2023 QCB Locations on USGS 7.5′ Topographic Map:
Otay Ranch Preserve

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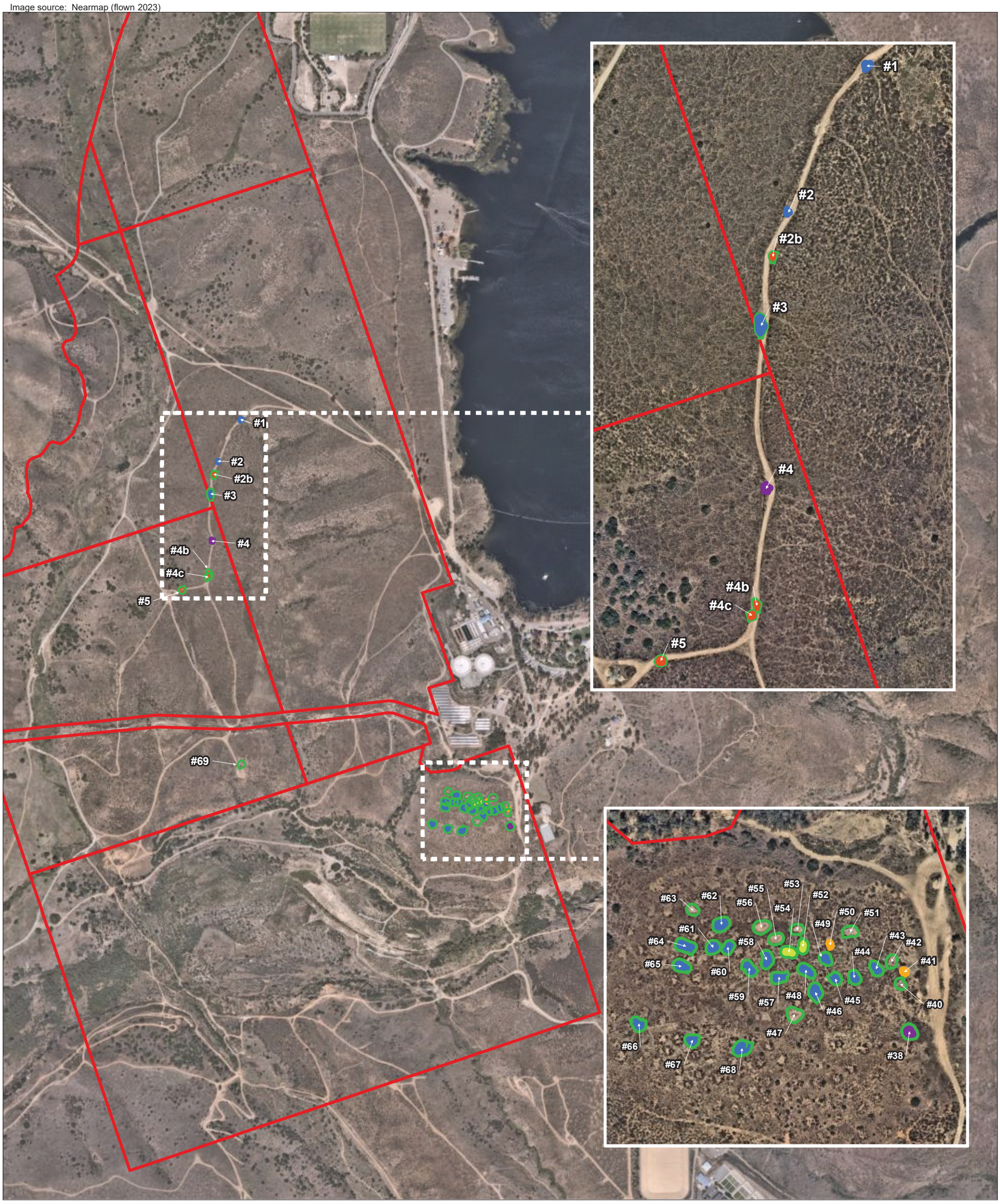
Image source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Survey Results

- San Diego Fairy Shrimp Observed - 20 Ponding Areas
- Versatile Fairy Shrimp Observed - 4 Ponding Areas
- Versatile Fairy Shrimp and San Diego Fairy Shrimp Observed - 2 Ponding Areas
- Immature Branchinecta Observed - 2 Ponding Areas
- Ponded - No Fairy Shrimp or Western Spadefoot Observed - 2 Ponding Areas
- Western Spadefoot Observed - 34 Ponding Areas

FIGURE 43

2023 Wet Season Fairy Shrimp Survey Results
for Otay Ranch Preserve: Salt Creek Parcels

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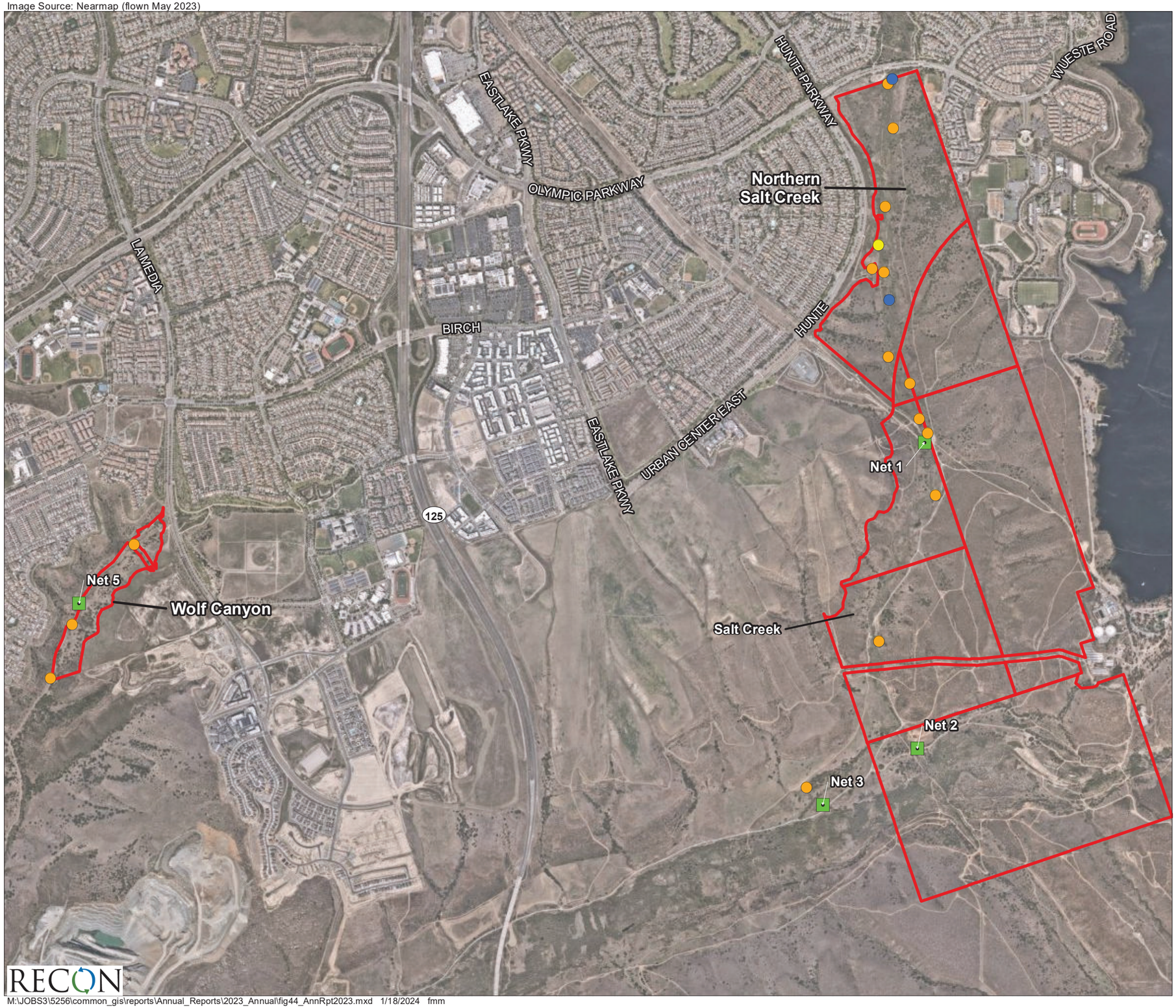
Image Source: Nearmap (flown May 2023)



Conveyed Land Under POM Management

Least Bell's Vireo (*Vireo bellii pusillus*) Pair

Least Bell's Vireo (*Vireo bellii pusillus*) Single

Least Bell's Vireo (*Vireo bellii pusillus*) Transient

*2023 Least Bell's Vireo data from Otay River Restoration Area not shown on this figure.

0 Feet 2,000

RECON

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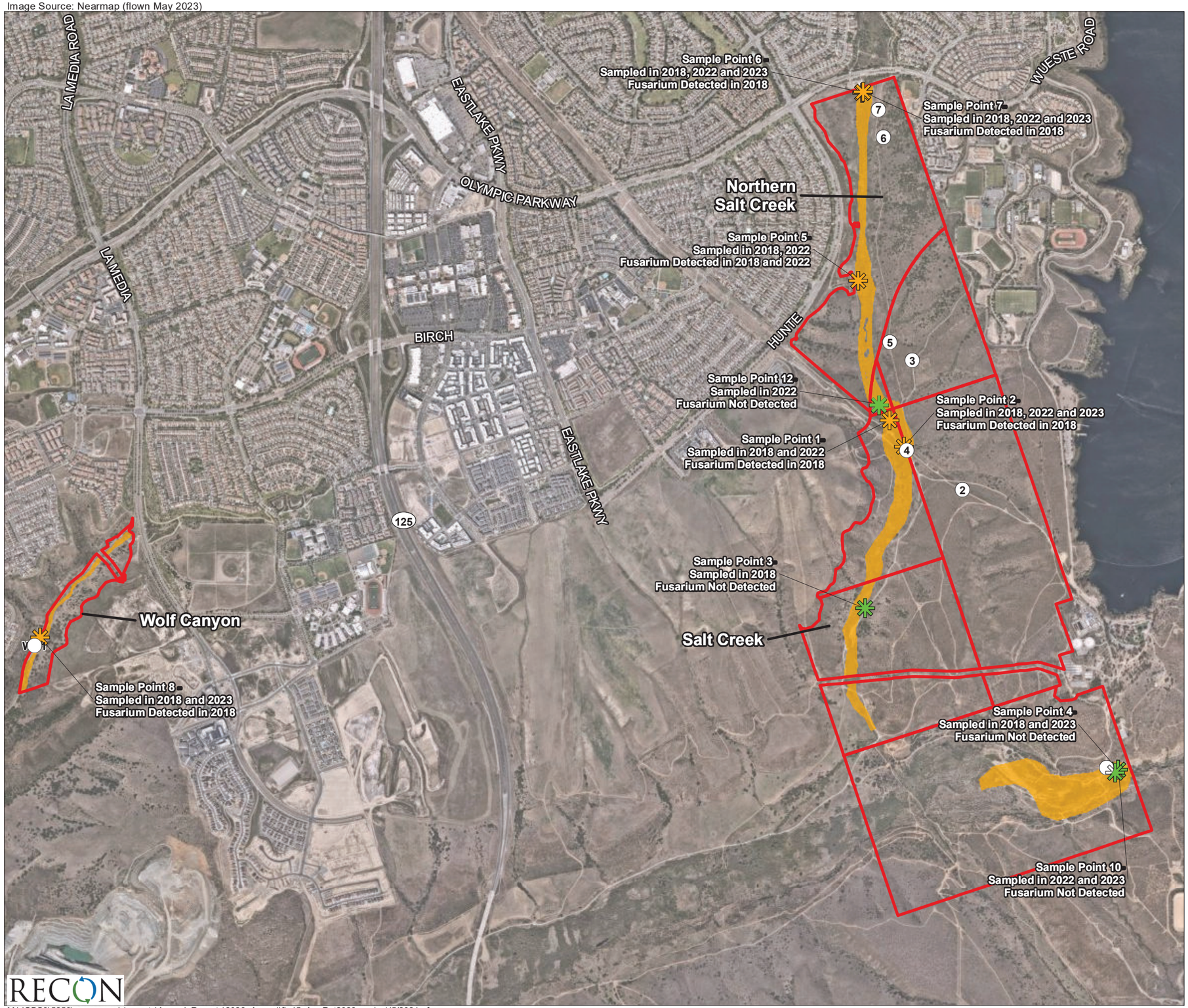
FIGURE 44

2023 BHCO Trapping and LBVI and YBCU Survey Results, Wolf Canyon, Northern Salt Creek, and Salt Creek

Image Source: Nearmap (flown May 2023)



Conveyed Land Under POM Management

SHB Tree Health Survey Area

Riparian Photo Monitoring Points

Sampling Locations for Fusarium

Fusarium Detected

Fusarium Not Detected

0 Feet 2,000

FIGURE 45

ISHB Monitoring Results and Potential Fusarium Fungus Sampling Locations from December 2018 to May 2023, Northern Salt Creek, Salt Creek, and Wolf Canyon Parcels

RECON

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Image Source: Nearmap (flown 2023)

Conveyed Land Under POM Management

Sampling Locations for Potential Fungus

- Positive for *Cytospora* sp.
- No Fungus Detected

0 Feet 2,000

FIGURE 46

Lemonade Berry Potential Fungus Sampling Locations and Results from August 2023, Northern Salt Creek, Salt Creek, and Wolf Canyon Parcels

RECON

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Image source: Nearmap (flown 2023)

- Conveyed Land Under POM Management
- Cactus Wren Habitat Restoration Area (City of Chula Vista EMP Grant 5001970; ended summer 2015)
- Cactus Wren Habitat Restoration Area (County of San Diego Parks and Recreation Department EMP Grant 5001133; ended summer 2014)
- Cactus Wren Habitat – Shrubs Thinned in January/February 2021 (Community Facility District 97-2 funded CACW habitat restoration)
- QCB Habitat – Non-native Plant Treatment Area
- Cactus Wren Habitat Restoration Area (City of Chula Vista EMP Grant 5004943; ended August 2018)
- Otay River Valley and Salt Creek Cactus Wren 3 Project (City of Chula Vista EMP Grant 5004731; ended fall 2018)
- Cactus Wren Habitat – Cholla Cactus Cuttings Planted in December 2021 (Community Facility District 97-2 funded CACW habitat restoration)
- Cactus Wren Habitat – Non-native Plant Treatment Area
- Stinkwort (*Dittrichia graveolens*) Treatment Location
- Stinknet (*Oncosiphon piluliferum*) Survey Location
- Vernal Pools Established through Grading in 2015 (Previous RECON Project No. 7754) – 0.25 acre

Note: Surveys were coordinated with Otay River Restoration Project being managed by SWCA

FIGURE 47

2023 Vegetation Removal and Treatment Areas,
Salt Creek and Northern Salt Creek Parcels

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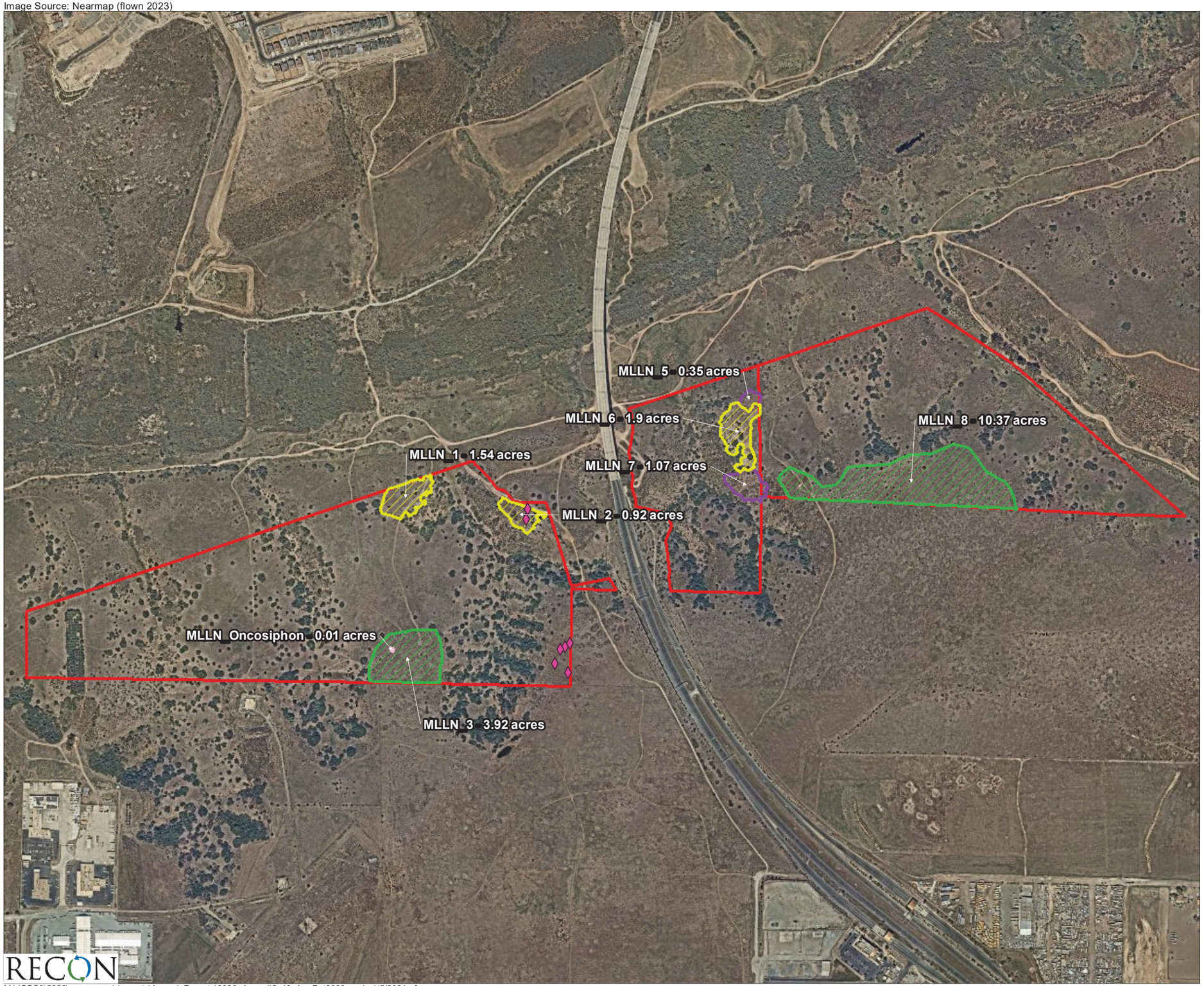
Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Non-native Plant Treatment Area

Otay Tarplant Habitiat -
Non-native Plant Treatment Area

Otay River Valley and Salt Creek
Cactus Wren 3-year Project
(City of Chula Vista EMP Grant 5004731;
ended fall 2018)

Stinknet (*Oncosiphon piluliferum*)
Survey Location

Stinkwort (*Dittrichia graveolens*)
Treatment Location

0 Feet 750

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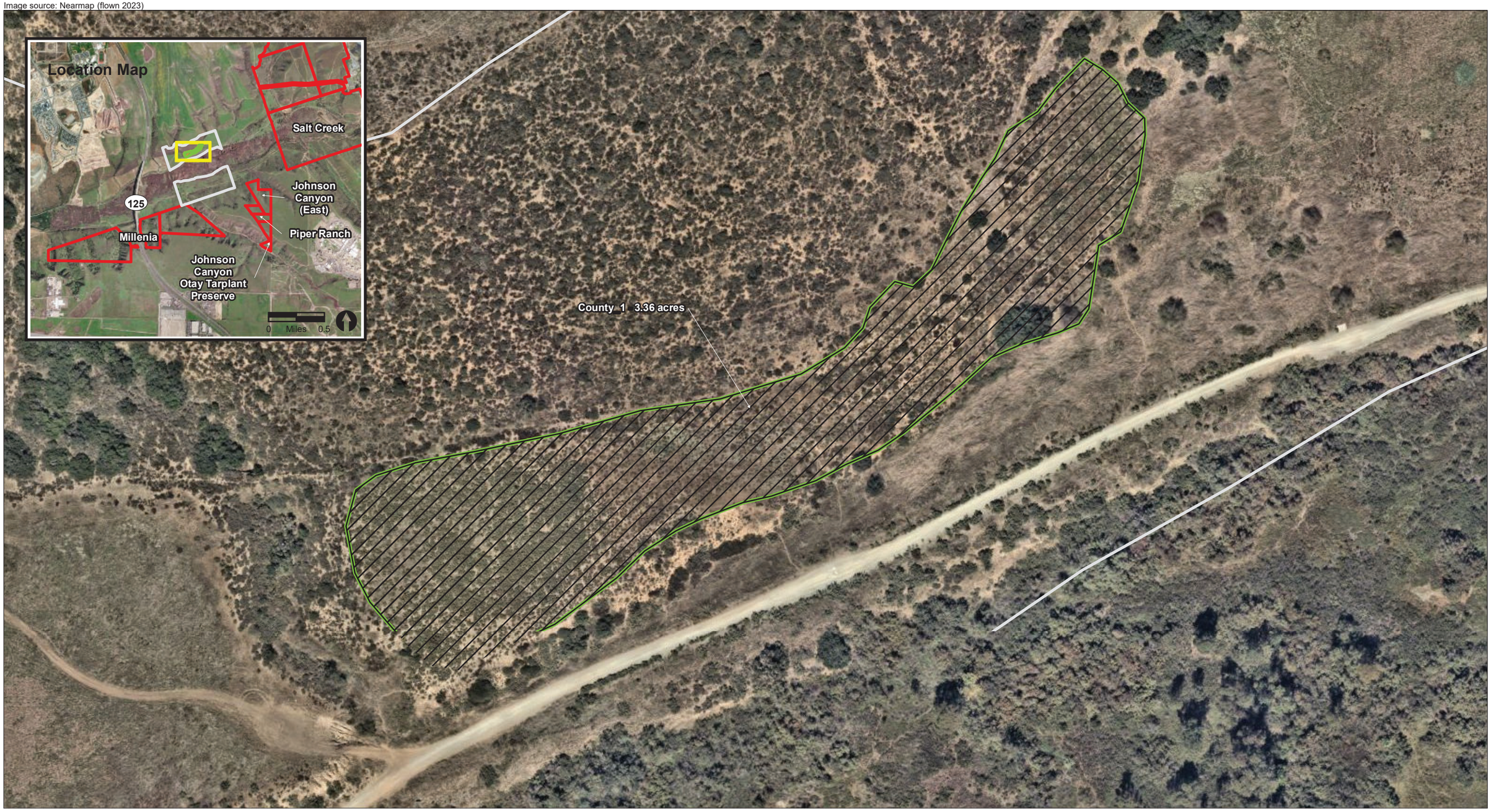
FIGURE 48

2023 Vegetation Removal and
Treatment Areas, Millenia Parcels

Image source: Nearmap (flown 2023)



APN 646-010-06

Cactus Wren Habitat Restoration Area
(County of San Diego Parks and Recreation Department
EMP Grant 5004730; ended fall 2018)

Stinkwort (*Dittrichia graveolens*) Treatment Area

RECON

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FIGURE 49

2023 Vegetation Treatment Areas,
County of San Diego Parcel

Image Source: Nearmap (flown 2023)

Conveyed Land Under POM Management

Cactus Wren Habitat – Shrubs Thinned in December 2020/January 2021 (Community Facility District 97-2 funded CACW habitat restoration)

Otay Tarplant Habitat – Non-native Plant Treatment Area

Stinkwort (*Dittrichia graveolens*) Survey Location

Non-native Removal Area

0 Feet 350

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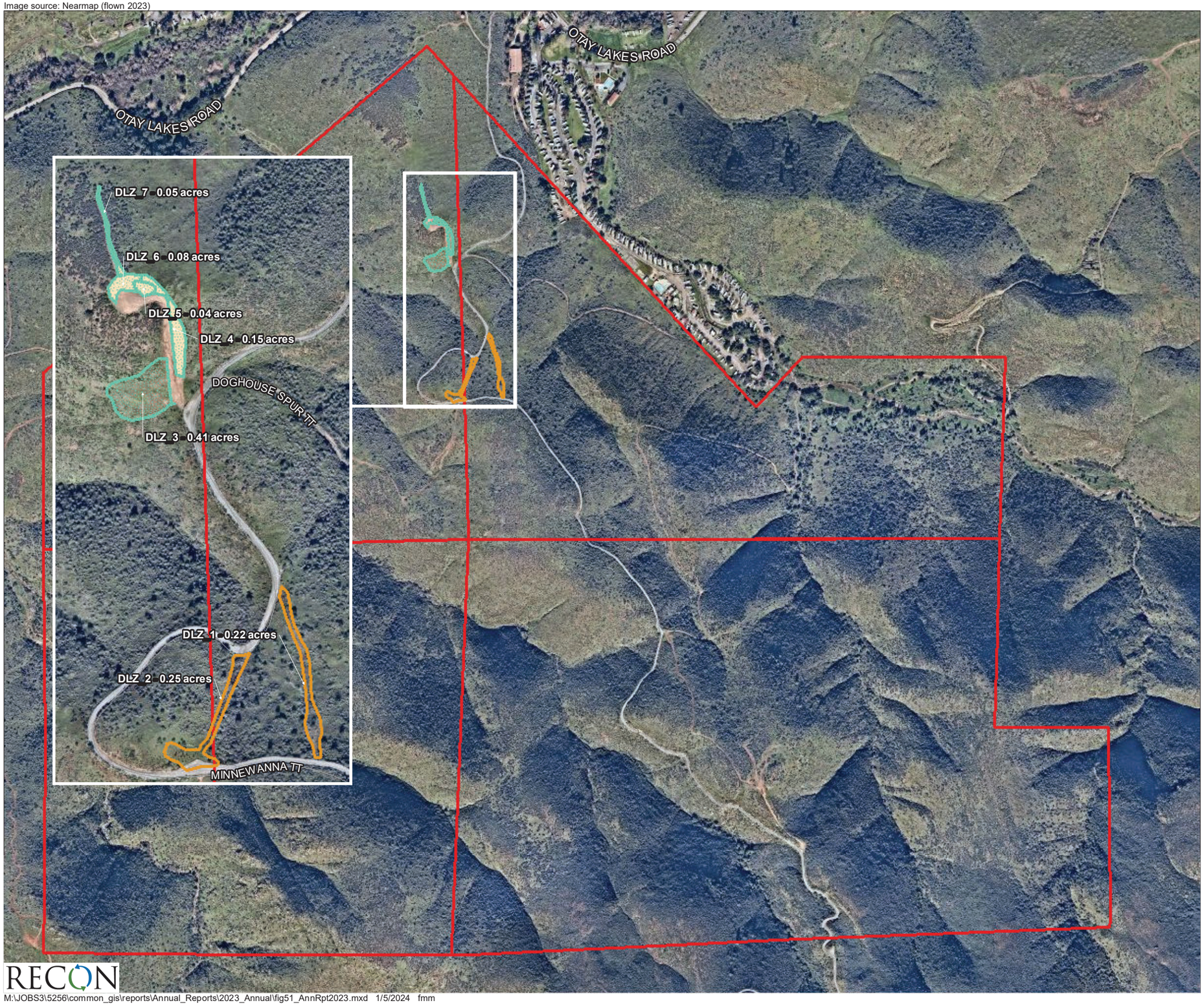
FIGURE 50

2023 Vegetation Removal and Treatment Areas, Western Wolf Canyon and Wolf Canyon Parcels

Image source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Non-native Plant Treatment Area

Proposed Weed Treatment Area

0 Feet 700

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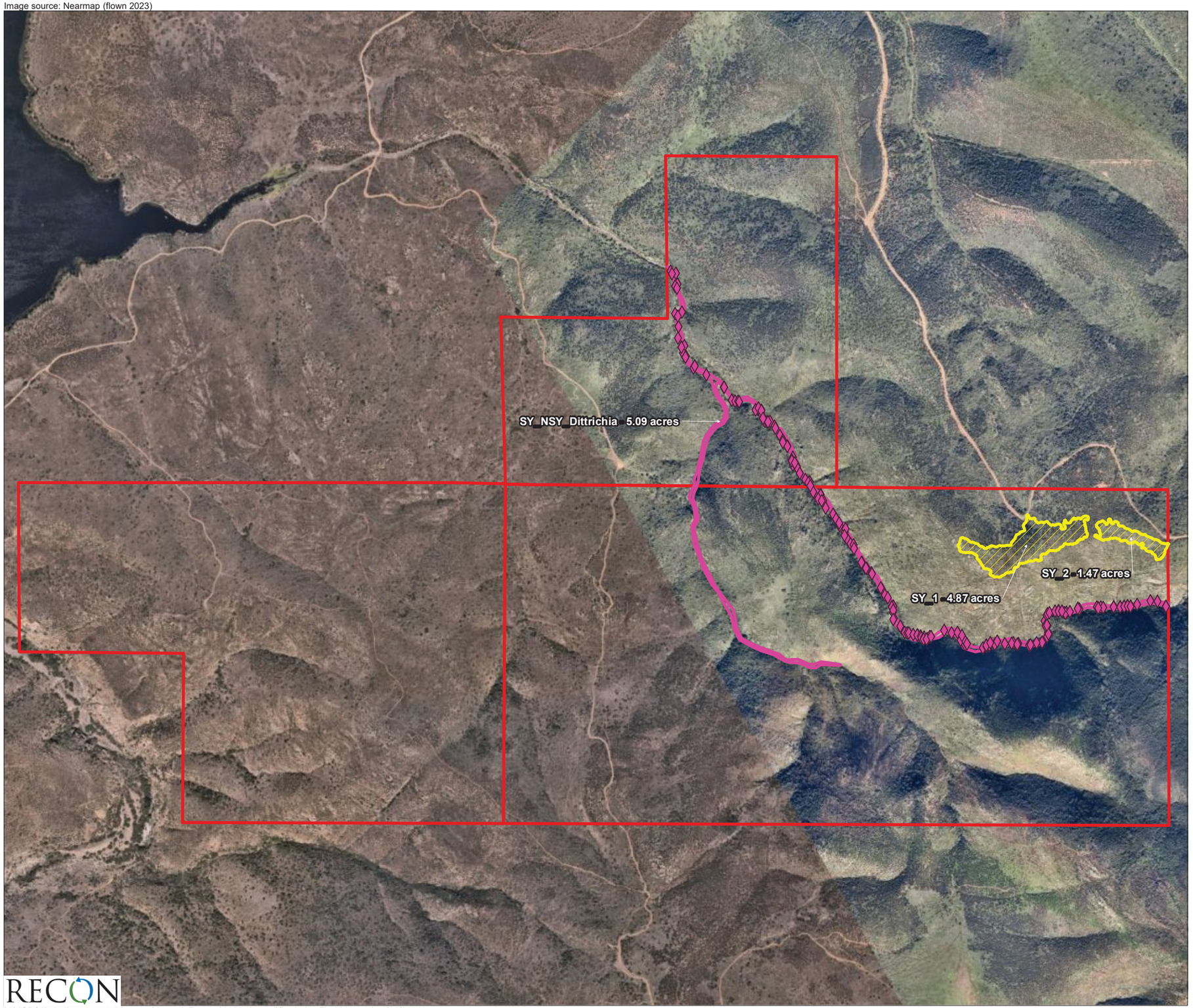
FIGURE 51

2023 Vegetation Removal and Treatment Areas, Dulzura Parcels

Image source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Stinkwort (*Dittrichia graveolens*) Treatment Location

QCB Habitat Restoration Area (County of San Diego CDFW LAG Grant; ended spring 2019)

0 Feet 800

RECON

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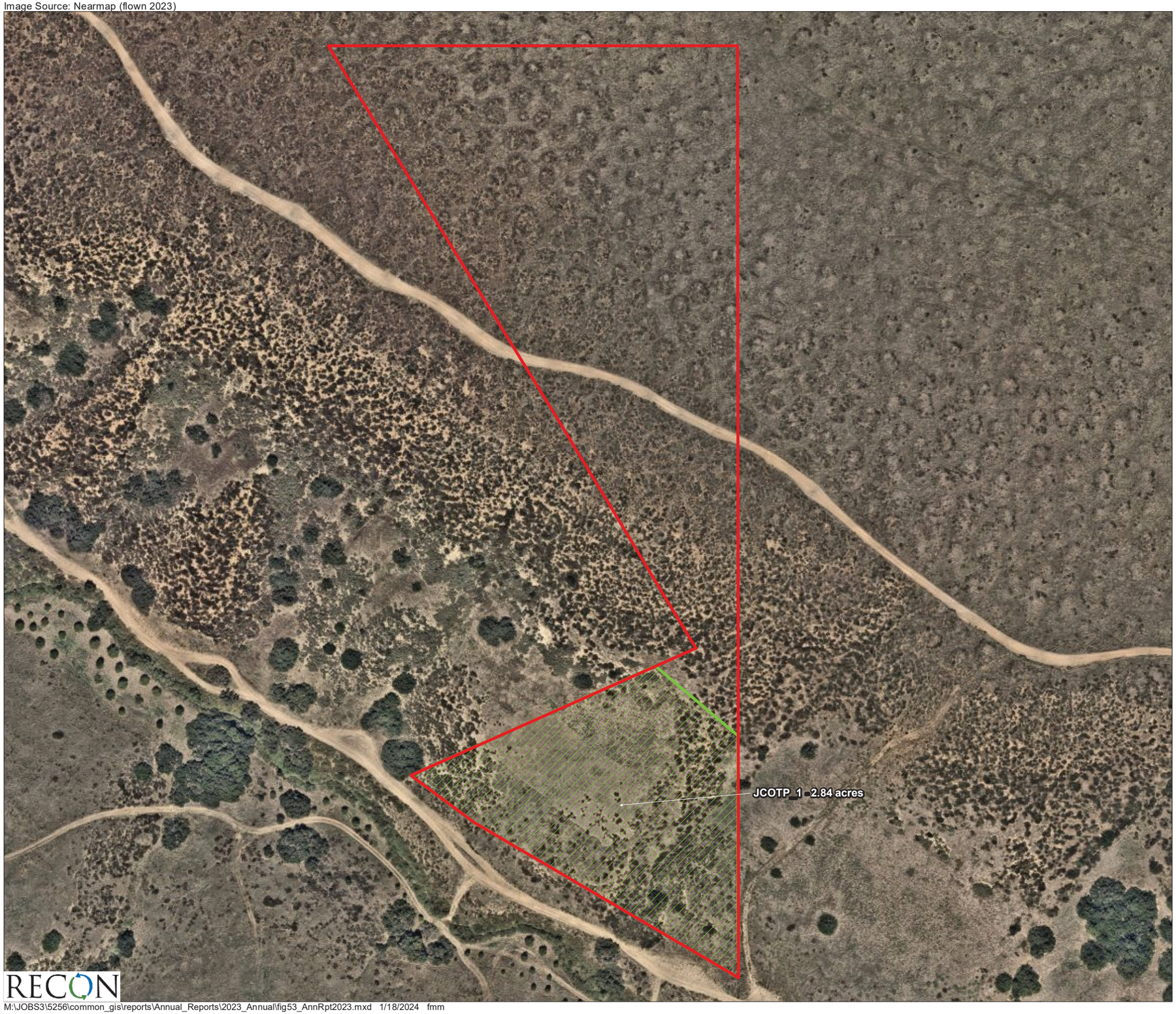
FIGURE 52

2023 Vegetation Removal and Treatment Areas, San Ysidro and Northern San Ysidro Parcels

Image Source: Nearmap (flown 2023)



Conveyed Land Under POM Management

Otay Tarplant Habitat –
Non-native Plant Treatment Area

0 Feet 150

RECON

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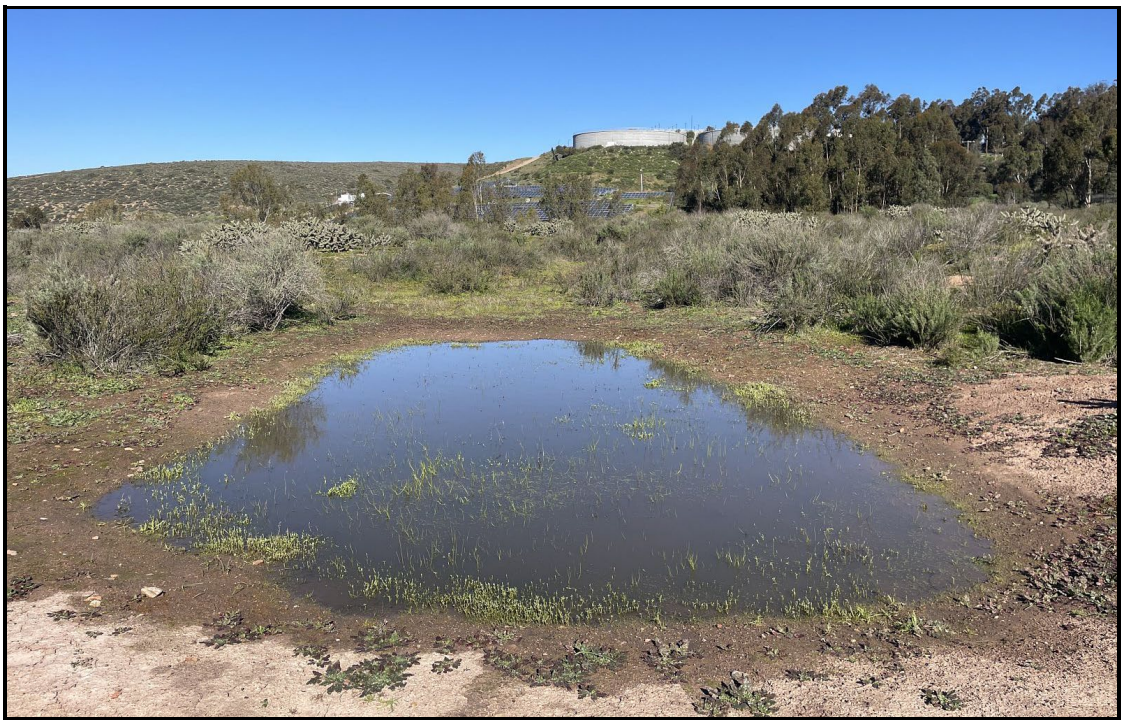
FIGURE 53
2023 Vegetation Removal and Treatment Areas,
Johnson Canyon Otay Tarplant Preserve

ATTACHMENT 2

Photographs 1–47

PHOTOGRAPH 1
Riparian Photo Monitoring Location, 1a, Salt Creek Parcels, May 10, 2023

PHOTOGRAPH 2
Surveyor Taking Depth Measurements During a Focused Fairy Shrimp Survey, Salt Creek Parcels, January 26, 2023



PHOTOGRAPH 3
Ponding within Salt Creek Parcels, January 26, 2023

PHOTOGRAPH 4
Gander's Pitcher Sage, Dulzura Parcels, May 2, 2023

PHOTOGRAPH 5
Mexican Flannelbush, Little Cedar Canyon Parcels, April 27, 2023

PHOTOGRAPH 6
Otay Tarplant Closeup, Millenia Parcels, June 13, 2023

PHOTOGRAPH 7
View of Dense Otay Tarplant Cover within an IMG Plot, Millenia Parcels,
June 13, 2023

PHOTOGRAPH 8
Orcutt's Brodiaea, San Ysidro Parcels,
June 15, 2023

PHOTOGRAPH 9
San Miguel Savory, Proctor Valley (North) Parcel,
May 9, 2023

PHOTOGRAPH 10
Dunn's Mariposa Lily, Dulzura Parcels,
May 2, 2023

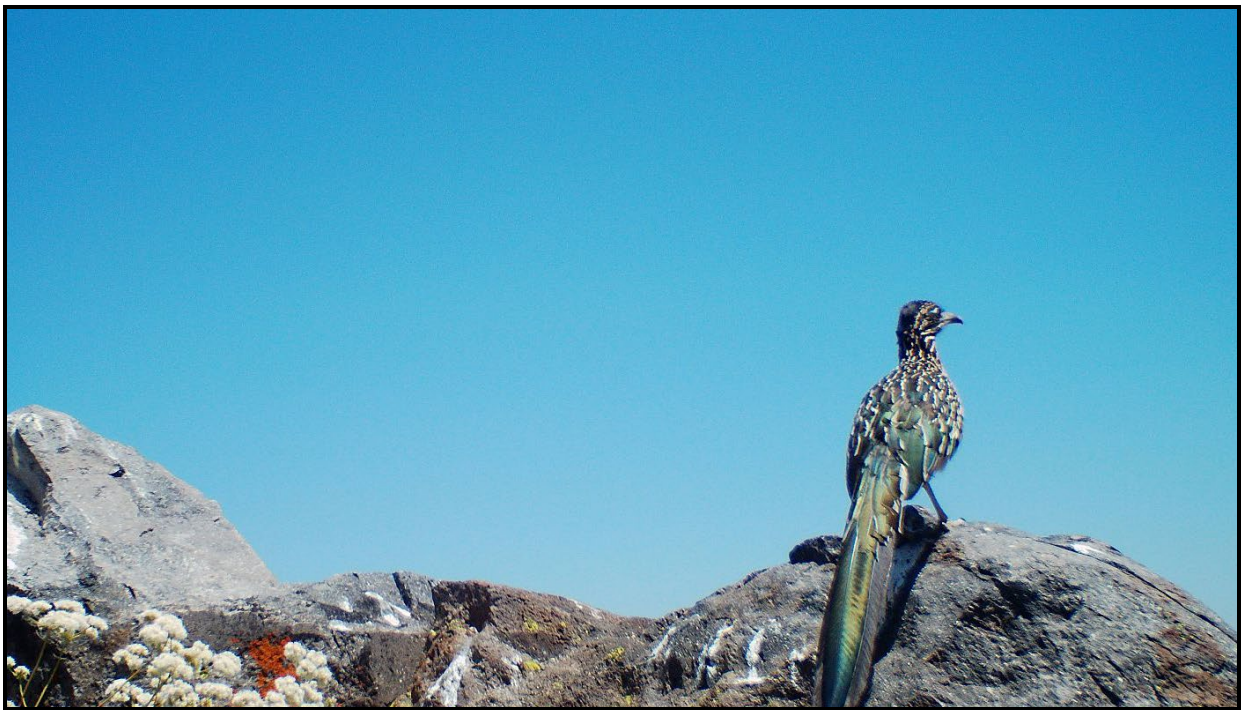
PHOTOGRAPH 11
Golden Eagle Camera Set Up, McMillin Parcels,
March 29, 2023

PHOTOGRAPH 12
Cellular Service-connected Solar-powered Wildlife Camera,
Dulzura Parcels, September 12, 2023

PHOTOGRAPH 13
Golden Eagle Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, March 20, 2023

PHOTOGRAPH 14
Golden Eagle Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, March 23, 2023

PHOTOGRAPH 15
Great Horned Owls Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, October 31, 2023



PHOTOGRAPH 16
Greater Roadrunner Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, June 21, 2023

PHOTOGRAPH 17
American Robins Photographed at Golden Eagle Camera Survey Location, Ridge Parcels, January 18, 2023

PHOTOGRAPH 18
Bobcat Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, July 26, 2023

PHOTOGRAPH 19
Coyote Photographed at Golden Eagle Camera Survey Location, McMillin Parcels, June 21, 2023

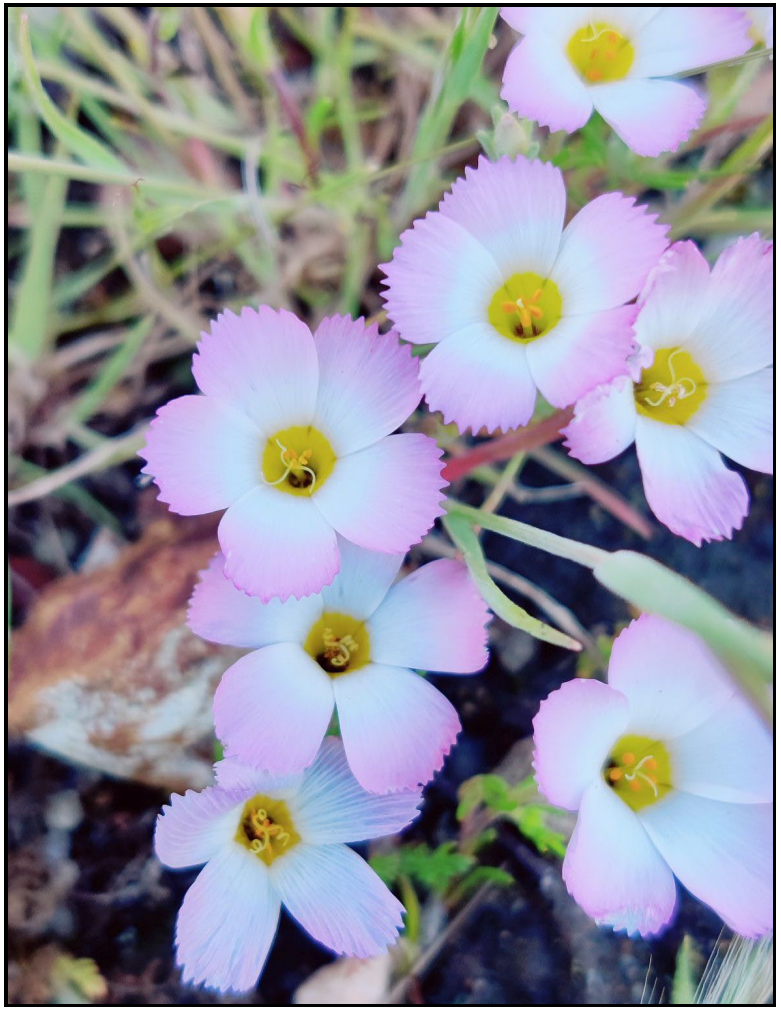
PHOTOGRAPH 20
Quino Checkerspot Butterfly Larvae,
Little Cedar Canyon Parcels, February 3, 2023

PHOTOGRAPH 21
Quino Checkerspot Butterfly Pair Mating,
Ridge Parcels, March 13, 2023

PHOTOGRAPH 22
Quino Checkerspot Butterfly, McMillin Parcels, March 17, 2023

PHOTOGRAPH 23
Quino Checkerspot Butterfly, Ridge Parcels, March 13, 2023

PHOTOGRAPH 24
Quino Checkerspot Butterfly Landscape Photo Monitoring Location,
Salt Creek Parcels, April 6, 2023



PHOTOGRAPH 25
Quino Checkerspot Butterfly Nectar Plant,
Farinose Ground Pink, Salt Creek Parcels,
March 26, 2023

PHOTOGRAPH 26
Quino Checkerspot Butterfly Potential Host Plant,
Purple Owl's clover, Proctor Valley Extension Parcels,
March 13, 2023

PHOTOGRAPH 27
Immaculate Bramble Hairstreak, Proctor Valley Extension Parcels,
March 13, 2023

PHOTOGRAPH 28
Common California Ringlet, Salt Creek Parcels,
April 2, 2023

PHOTOGRAPH 29
Harbison Dun Skipper, Proctor Valley (North) Parcels,
June 16, 2023

PHOTOGRAPH 30
Otay Tarplant Seed Collection, Millenia Parcels,
August 11, 2023

PHOTOGRAPH 31
Rosy Boa, Proctor Valley Extension Parcels,
March 27, 2023

PHOTOGRAPH 32
Coast Patch-nosed Snake, Dulzura Parcels,
May 2, 2023

PHOTOGRAPH 33
Blainville's Horned Lizard, Jamul Mountains Parcels,
August 22, 2023

PHOTOGRAPH 34
Bivouac Site with Abundant Trash, Dulzura Parcels,
December 12, 2023

PHOTOGRAPH 35
Bivouac Site with Abundant Trash, Dulzura Parcels,
December 12, 2023

PHOTOGRAPH 36
Ash from a Small Fire at a Bivouac Site,
Little Cedar Canyon Parcels, April 27, 2023

RECON

PHOTOGRAPH 37
Bivouac Site with Abundant Trash, Little Cedar Canyon
Parcels, April 27, 2023

PHOTOGRAPH 38
Conducting Fence Repair, Salt Creek Parcels, July 17, 2027

PHOTOGRAPH 39
Conducting Fence Installation, McMillin Parcels, December 8, 2023

PHOTOGRAPH 40
Collecting Coast Cholla Cuttings for Access Control,
County of San Diego Parcel, October 6, 2023

PHOTOGRAPH 41
Planting Coast Cholla Cuttings to Block an Unauthorized Bike Route,
Salt Creek Parcels, October 6, 2023

PHOTOGRAPH 42
Cutting Fascicled Tarweed from Vernal Pools to Place Vertical Mulch to Block an Unauthorized Bike Route, Salt Creek Parcels, September 7, 2023

PHOTOGRAPH 43
Fascicled Tarweed Cleared from Vernal Pools, Salt Creek Parcels,
September 7, 2023

PHOTOGRAPH 44
Conducting Line Trimming for Vernal Pool Habitat, Millenia Parcels,
April 24, 2023

PHOTOGRAPH 45
Hand Pulling Weeds from Ponded Depressions and Line Trimming Weeds at MLLN_8, Millenia Parcels, April 26, 2023

PHOTOGRAPH 46
Completed Line Trimming for Coastal Cactus Wren Habitat, Northern Salt Creek and Salt Creek Parcels, October 13, 2023

PHOTOGRAPH 47
Applying Herbicide for Coastal Cactus Wren Habitat, Salt Creek Parcels,
March 6, 2023

ATTACHMENT 3

Vernal Pool Plant Survey List

Attachment 3 Vernal Pool Plant Survey List											
Major Plant Group	Family	Scientific Name / Common Name	Federal Status	State Status	CNPS Rare Plant Rank	County of San Diego	City of Chula Vista	Management and Monitoring Strategic Plan: Species Management Category	Otay Ranch Preserve Resource Management Plan Phase 2 Update: Priority Group	Vernal Pool Indicator	Occupied Established Pools and Road Ruts	Origin
Leptosporangiate Ferns	Marsileaceae / Marsilea Family	*Marsilea vestita* ssp. *vestita* / hairy clover fern								Yes	25	N
		Pilularia americana / American pillwort								Yes	2	N
Angiosperms: Monocots	Agavaceae / Agave Family	*Chlorogalum pomeridianum* var. *pomeridianum* / wavy-leaf soap-plant, amole									PPA2, PPA3, 64	N
	Alliaceae / Onion Family	*Allium* sp. / onion, garlic									PPA3	N
	Cyperaceae / Sedge Family	*Eleocharis* sp. / spike-rush									38,44,45,46,47,48,49,53,55,56,59,61,63,65,66,68	N
	Juncaceae / Rush Family	*Juncus bufonius* / toad rush								Yes	2, 4	N
	Juncaginaceae / Arrow-Grass Family	*Triglochin scilloides* [=*Lilaea scilloides*] / flowering-quillwort								Yes	43,44,48,59,60	N
	Poaceae (Gramineae) / Grass Family	*Bromus hordeaceus* / soft chess									50	I
		Deschampsia danthonioides / annual hair grass								Yes	PPA3, 30, 38, 40, 41, 43, 45, 46, 47, 48, 49, 51, 53, 55, 56, 57, 58, 59, 60, 61, 64, and 65	N
		Festuca myuros [=*Vulpia myuros*] / rattail sixweeks grass									1,2,2b, PPA4, 4,4c,5	I
		Festuca perennis [=*Lolium multiflorum* and *Lolium perenne*] / rye grass									PPA2, 2,3, PPA4, 4, 4c,5, 41,44,48,49,54,57,58,69	I
		Orcuttia californica / California Orcutt grass	FE	SE	1B.1	SCMSCP, List A	MSCP	SL	1—Annuals & Herbaceous Perennials	Yes	38,55,57,66,68	N
Angiosperms: Eudicots	Apiaceae (Umbelliferae) / Carrot Family	*Eryngium aristulatum* var. *parishii* / San Diego button-celery	FE	SE	1B.1	SCMSCP, List A	MSCP	VF	1—Annuals & Herbaceous Perennials	Yes	38,46,47,48,49,56,57,61,65,66,67,68	N
	Asteraceae / Sunflower Family	*Baccharis sarothroides* / broom baccharis									4	N
		Centaurea melitensis / tocalote, Maltese star-thistle									1	I
		Deinandra fasciculata [=*Hemizonia fasciculata*] / fascicled tarweed									PPA1, 38,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56, 57,58,59,60,61,62,63,64,65,66,67,68,69	N
		Hypochaeris glabra / smooth cat's-ear									3, PPA4, 4,4c, 40,41,66	I
		Isocoma menziesii / coastal goldenbush									42,64	N
		Logfia gallica [=*Filago gallica*] / daggerleaf cottonrose									PPA1, 2, PPA3, 4,4c,42,43,49,59,60,62,64,68	I
		Psilocarphus brevissimus var. *brevissimus* / dwarf woollyheads								Yes	PPA1, 1, 2, 2b, 3, 4, 4c, 5, PPA2, 2, 2b, PPA3, 3, PPA4, 4, 4c, 5, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68	N
	Boraginaceae / Borage Family	*Plagiobothrys acanthocarpus* / adobe popcornflower								Yes	PPA1, 1, PPA3	N
		Plagiobothrys sp. / popcornflower									PPA3, 5,42,50	N
	Brassicaceae (Cruciferae) / Mustard Family	*Lepidium nitidum* / shining peppergrass									PPA2, PPA3, 38,40,41,45,46,47,48,50,51,52,53,54,55,56,57,58, 59,60,61,62,63,64,65,66,67,68,69	N
	Cactaceae / Cactus Family	*Cylindropuntia prolifera* [=*Opuntia prolifera*] / coast cholla									PPA3,69	N
	Caryophyllaceae / Pink Family	*Silene gallica* / small-flower catchfly, windmill pink									58	I
		Spergularia bocconi / Boccone's sand-spurrey									1,2,2b,3,4,4c,5	I
	Crassulaceae / Stonecrop Family	*Crassula aquatica* / water pygmy-weed, stone-crop								Yes	2, 4, PPA2, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 53, 57, 58, 59, 60, 61, 64, 64, 65, 66, 67, 68	N
		Crassula connata / pygmy-weed									PPA2, 2, 2b, PPA3, 38,43,44,45,49,50,51,52,53,54,55,56,59, 60,61,64,65	N
	Fabaceae (Leguminosae) / Legume Family	*Acmispon glaber* [=*Lotus scoparius*] / deerweed, California broom									47	N
		Medicago polymorpha / California burclover									41	I

Attachment 3 Vernal Pool Plant Survey List												
Major Plant Group	Family	Scientific Name / Common Name	Federal Status	State Status	CNPS Rare Plant Rank	County of San Diego	City of Chula Vista	Management and Monitoring Strategic Plan: Species Management Category	Otay Ranch Preserve Resource Management Plan Phase 2 Update: Priority Group	Vernal Pool Indicator	Occupied Established Pools and Road Ruts	Origin
Angiosperms: Eudicots (cont.)	Geraniaceae / Geranium Family	*Erodium* sp. / filaree, storksbill									PPA1, 1, PPA2, 2,2b, PPA3, PPA4, 4,4c,5,38,40,41,42,43,44,45, 46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67, 68,69	I
	Lamiaceae / Mint Family	*Pogogyne nudiuscula* / Otay mesa mint	FE	SE	1B.1	SCMSCP, List A	MSCP	SL	1—Annuals & Herbaceous Perennials	Yes	PPA3, 38,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56, 57,58,59,60,62,63,64,65,66,67,68	N
	Lythraceae / Loosestrife Family	*Lythrum hyssopifolia* / grass poly, hyssop loosestrife									38,41,60,61,64	I
	Montiaceae / Montia Family	*Calandrinia breweri* / Brewer's calandrinia			4.2	List D			4		38	N
	Myrsinaceae / Myrsine Family	*Lysimachia minima* [=*Anagallis minima*] / chaffweed								Yes	38, 45, 60	N
	Plantaginaceae / Plantain Family	*Callitriche* sp. / water-starwort									43,44,45,48,49,55,59,60,61,65	N
		Plantago erecta / dot-seed plantain									62,69	N
	Polygonaceae / Buckwheat Family	*Eriogonum fasciculatum* / California buckwheat									PPA1, 42,55,63,67,69	N
		Rumex crispus / curly dock									38,41,69	I

NOTE: Scientific and common names were primarily derived from Jepson eFlora (Jepson Flora Project 2020). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Federal and state listing status is based on California Department of Fish and Wildlife, Natural Diversity Database (CDFW) 2023. Species noted as vernal pool indicator plants were obtained from Bauder et al. (1998).

STATUS CODES

Federal Status
FE = Listed as endangered by the federal government

State Status
SE = Listed as endangered by the state of California

California Native Plant Society (CNPS): California Rare Plant Ranks (CRPR)
1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.
0.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).
0.2 = Species fairly threatened in California (20%-80% occurrences threatened; moderate degree and immediacy of threat).

County of San Diego
SCMSCP = Multiple Species Conservation Program County of San Diego Subarea Plan (South County Plan) covered species.
List A = Plants rare, threatened or endangered in California and elsewhere.
List D = Plants of limited distribution and are uncommon, but not presently rare or endangered.

City of Chula Vista
MSCP = City of Chula Vista MSCP Subarea Plan covered species.

Management and Monitoring Strategic Plan: Species Management Category
SL = Species at risk of loss from the Management Strategic Plan Area.
VF = Species with limited distribution in the Management Strategic Plan Area or needing specific vegetation characteristics requiring management.

Otay Ranch Preserve Resource Management Plan 2 Update: Priority Group
1 = Species listed by state and federal agencies as threatened, endangered, or a candidate for listing, classified as a narrow endemic by the City and/or County's MSCP Subarea Plans, and/or have a Species Management Category of 'SL', 'SO', or 'SS'. Priority Group 1 species are considered the highest priority for monitoring and should be funded and monitored every designated monitoring period.
4 = Species classified by CDFW as a species of special concern, fully protected, or watch list species. Priority Group 4 species are distinguished from Priority Group 3 species as they have not been identified as regionally sensitive and prioritized for monitoring and/or management activities by the Management and Monitoring Strategic Plan. Priority Group 4 species should be monitored incidentally during other tasks as funding allows.

Occupied Established Pools
PPA = Potential Ponding Area

ORIGIN
N =Native to locality.
I = Introduced species from outside locality.

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APPENDIX N

MSCP Covered Species on County Preserves and Current Status

The following table indicates the status of the MSCP covered species that are found within County parks and preserves. A status update for each species is provided with information for the species that is specific to the County park, preserve or preserves within which each species is found (County Preserve). A status update is also provided for the species from a regional MSCP preserve perspective, indicating overall status across the region (Regional Preserve).

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
Plants		
1. Del Mar manzanita	Lusardi Creek Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved southern maritime chaparral habitat. REGIONAL PRESERVE: 90% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 91% of the known locations.
2. Dunn's mariposa lily	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved chaparral and closed-cone coniferous forest habitats. REGIONAL PRESERVE: 84% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.
3. Encinitas baccharis	Del Dios Highlands Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved southern maritime chaparral habitat. Monitoring and species protection efforts maintain the stable population at Del Dios Highlands Preserve. Regional monitoring efforts are on-going. REGIONAL PRESERVE: 79% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.
4. Felt-leaved monardella	Boulder Oaks Preserve El Capitan Preserve Otay Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral habitat. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 88% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
5. Gander's pitcher sage	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved chaparral, coastal scrub, and closed-cone coniferous forest habitats. REGIONAL PRESERVE: 80% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.
6. Heart-leaved pitcher sage	Iron Mountain Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved granitic southern mixed chaparral habitat. REGIONAL PRESERVE: 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 85% of the known locations.
7. Lakeside ceanothus	Boulder Oaks Preserve El Capitan Preserve Louis A. Stelzer Park Oakoasis Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral habitat. Monitoring and species protection efforts maintain stable populations at Boulder Oaks Preserve, El Capitan Preserve, Louis A. Stelzer Park, and Oakoasis Preserve. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 75% of the known locations.
8. Orcutt's bird's beak	Otay Valley Regional Park Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved maritime succulent scrub habitat. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 75% of the known locations.
9. Orcutt's brodiaea	Boulder Oaks Preserve Los Peñasquitos Canyon Preserve Otay Ranch Preserve Santa Fe Valley Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved of chaparral habitat. REGIONAL PRESERVE: Approximately 69% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
10. Otay manzanita	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved chaparral habitat. REGIONAL PRESERVE: Approximately 48% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 95% of the known locations.
11. Otay mesa mint	Otay Lakes County Park Otay Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved vernal pools habitat. REGIONAL PRESERVE: Approximately 91% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 91% of the known locations.
12. Otay tarplant	Furby-North Property Otay Ranch Preserve Otay Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved maritime succulent scrub habitat. REGIONAL PRESERVE: Approximately 14% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 66% of the known locations.
13. Palmer's goldenbush	Lawrence and Barbara Daley Preserve Otay Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral and coastal sage scrub habitats. REGIONAL PRESERVE: Approximately 48% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 66% of the known locations.
14. San Diego barrel cactus	Dictionary Hill Preserve Furby-North Property Lusardi Creek Preserve Otay Ranch Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved coastal sage scrub habitat. REGIONAL PRESERVE: Approximately 69% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 81% of the known locations.
15. San Diego button celery	Louis A. Stelzer Park Otay Ranch Preserve Otay Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved vernal pool and marsh habitats. REGIONAL PRESERVE: Approximately 67% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 82% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
16. San Diego goldenstar	Dictionary Hill Preserve Los Peñasquitos Canyon Preserve Louis A. Stelzer Park Otay Ranch Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral, coastal scrub, and grassland habitats. REGIONAL PRESERVE: Approximately 52% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 73% of the known locations.
17. San Diego thornmint	Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved coastal sage scrub and chaparral habitats. Monitoring and species protection efforts maintain a stable population at Sycamore Canyon and Goodan Ranch Preserve. REGIONAL PRESERVE: Approximately 62% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 85% of the known locations.
18. San Miguel savory	Boulder Oaks Preserve Otay Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved coastal sage scrub and chaparral habitats. Monitoring and species protection efforts maintain stable populations at Boulder Oaks Preserve and Otay Ranch Preserve. REGIONAL PRESERVE: Between 25% and 75% of known species locations within the MSCP Plan boundaries have been conserved[b] The substantial range is given because regional monitoring data is not available for this species. MSCP goal is to conserve 80 to 100% of the identified species locations.
19. Snake cholla	Furby-North Property Otay Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved maritime succulent scrub habitat. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 75% of the known locations.
20. Spreading (prostrate) navarretia	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved vernal pool habitat. Species protection efforts maintain a stable population at Otay Ranch Preserve. REGIONAL PRESERVE: Approximately 80% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 63% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
21. Tecate cypress	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved southern interior cypress forest habitat. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 98% of the known locations.
22. Torrey pine	Tijuana River Valley Regional Park	COUNTY PRESERVE: Species distribution was enhanced via the County's Tree Planting Program and is found within preserved coastal sage scrub habitat. REGIONAL PRESERVE: Approximately 100% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.
23. Variegated dudleya	Dictionary Hill Preserve Lusardi Creek Preserve Otay Lakes Regional Park Otay Ranch Preserve Otay Valley Regional Park Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral and vernal pool habitats. Monitoring and species protection efforts maintain stable populations at Lusardi Creek and Sycamore Canyon/Goodan Ranch Preserves. Species protection efforts maintain stable populations at Dictionary Hill Preserve, Otay Lakes Regional Park, Otay Ranch Preserve, Otay Valley Regional Park. REGIONAL PRESERVE: Approximately 67% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 75% of the known locations.
24. Wart-stemmed ceanothus	Del Dios Highlands Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved coastal chaparral habitat. REGIONAL PRESERVE: Greater than 75% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 64% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
25. Willowy monardella	Otay Ranch Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral, coastal sage scrub, riparian scrub, riparian forest, and woodland habitats. Monitoring and species protection efforts maintain stable populations Sycamore Canyon and Goodan Ranch Preserve and Otay Ranch Preserve. REGIONAL PRESERVE: Between 25% and 75% of known species locations within the MSCP Plan boundaries have been conserved[b] The substantial range is given because regional monitoring data is not conclusive about the population size of this species. MSCP goal is to conserve 100% of the known locations.
Birds		
26. American peregrine falcon	Del Dios Highlands Otay Ranch Preserve Peutz Valley Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved foraging coastal wetland, riparian, and lake habitats. REGIONAL PRESERVE: Approximately 55% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 61% of the known locations.
27. Burrowing owl	Otay Ranch Preserve Sycamore Canyon and Goodan Ranch Preserve Ramona Grasslands Preserve[a]	COUNTY PRESERVES: Species populations have been conserved and are found within preserved grassland habitat. Regional monitoring and species protection efforts are on-going. REGIONAL PRESERVE: Approximately 8% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 100% of the known locations.
28. Coastal (San Diego) cactus wren	El Capitan Preserve Furby-North Property Lakeside Linkage Preserve Otay Ranch Preserve Otay Valley Regional Park Sweetwater Regional Park Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved maritime succulent scrub. Monitoring, species protection efforts, and habitat restoration and enhancement maintain a stable population at Lakeside Linkage Preserve. Regional monitoring and species protection efforts are on-going. REGIONAL PRESERVE: Greater than 75% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 80% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
29. Coastal California gnatcatcher	Boulder Oaks Preserve Del Dios Highlands Preserve Dictionary Hill Preserve Furby-North Property Lakeside Linkage Preserve Louis A. Stelzer Park Lusardi Creek Preserve Otay Lakes Regional Park Otay Ranch Preserve Otay Valley Regional Park Ramona Grasslands Preserve Santa Fe Valley Preserve Stoneridge Preserve Sweetwater Regional Park Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved coastal sage scrub habitat. Species protection efforts on County properties have been successful and are on-going. Regional monitoring and species protection efforts are on-going REGIONAL PRESERVE: Approximately 48% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 65% of the known locations.
30. Cooper's hawk	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve Dictionary Hill Preserve El Capitan Preserve Iron Mountain Preserve Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Lusardi Creek Preserve Oakoasis Preserve Otay Ranch Preserve Skyline Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved riparian and wooded habitats. REGIONAL PRESERVE: Approximately 38% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 57% of the known locations.
31. Ferruginous hawk	Del Dios Highlands Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved foraging grassland habitat. REGIONAL PRESERVE: Approximately 71% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
32. Golden eagle	Barnett Ranch Preserve Del Dios Highlands Preserve El Capitan Preserve Otay Ranch Preserve Ramona Grasslands Preserve Skyline Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved foraging grassland, chaparral, and coastal sage scrub habitat and nesting cliff habitat. Monitoring and species protection efforts ensure successful fledging at Ramona Grasslands Preserve and El Capitan Preserve. Regional monitoring and species protection efforts are on-going. REGIONAL PRESERVE: Approximately 64% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.
33. least Bell's vireo	Furby-North Property Los Peñasquitos Canyon Preserve Lusardi Creek Preserve Otay Lakes Regional Park Otay Ranch Preserve Otay Valley Regional Park Sweetwater Regional Park Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved riparian habitat. Regional monitoring and species protection efforts have been successful and are on-going. REGIONAL PRESERVE: Approximately 40% of populations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 82 to 100% of major populations.
34. Light-footed Ridgway's rail (Clapper rail)	Tijuana River Valley Regional Park	COUNTY PRESERVE: Species populations have been conserved and are found within preserved freshwater marsh and riparian habitats. Monitoring and species protection efforts enhance a population at Tijuana River Valley Regional Park. Regional species protection efforts are on-going. REGIONAL PRESERVE: Approximately 54% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.
35. Northern harrier	Del Dios Highlands Preserve Furby-North Property Lawrence and Barbara Daley Preserve Louis A. Stelzer Preserve Lusardi Creek Preserve Otay Ranch Preserve Skyline Preserve Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved foraging and nesting wetland, marsh, marshy meadow, grassland, and riparian woodland habitats. REGIONAL PRESERVE: Approximately 54% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
36. Southern California rufous-crowned sparrow	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve Dictionary Hill Preserve El Capitan Preserve El Monte Park Furby-North Preserve Iron Mountain Preserve Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Louis A. Stelzer Park Lusardi Creek Preserve Oakoasis Preserve Otay Ranch Preserve Peutz Valley Preserve Ramona Grasslands Preserve Skyline Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved coastal sage scrub habitat. REGIONAL PRESERVE: Approximately 45% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 71% of the known locations.
37. Southwestern willow flycatcher	Tijuana River Valley Regional Park	COUNTY PRESERVE: Species populations have been conserved and are found within preserved riparian habitat. Regional monitoring and species protection efforts are on-going. REGIONAL PRESERVE: Approximately 33% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 88% of the known locations.
38. Swainson's hawk	Barnett Ranch Preserve Skyline Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved foraging grassland habitat. REGIONAL PRESERVE: Approximately 71% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.
39. Tricolored blackbird	Barnett Ranch Preserve Ramona Grasslands Preserve[a] Tijuana River Valley Regional Park	COUNTY PRESERVES: Species populations have been conserved and are found within preserved foraging grassland habitat. Monitoring and species protection efforts ensure that the population adjacent to Ramona Grasslands Preserve is stable. Species protection efforts maintain populations at Barnett Ranch Preserve and Tijuana River Valley Regional Park. REGIONAL PRESERVE: Approximately 33% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 59% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
40. Western bluebird	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve El Capitan Preserve El Monte Park Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Oakoasis Preserve Peutz Valley Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved grassland, coastal sage scrub, and riparian woodland habitats. REGIONAL PRESERVE: Approximately 51% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.
41. White-faced ibis	Del Dios Highlands Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved freshwater wetland habitat. REGIONAL PRESERVE: Approximately 31% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.
Reptiles		
42. Belding's orange-throated whiptail	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve Dictionary Hill Preserve El Capitan Preserve Furby-North Property Iron Mountain Preserve Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Louis A Stelzer Park Lusardi Creek Preserve Otay Ranch Preserve Peutz Valley Preserve Ramona Grasslands Preserve Skyline Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral and scrub habitats. REGIONAL PRESERVE: Approximately 47% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 62% of the known locations.

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
43. Blainville's horned lizard	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve Dictionary Hill Preserve El Capitan Preserve Furby-North Property Iron Mountain Preserve Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Louis A. Stelzer Park Lusardi Creek Preserve Oakoasis Preserve Otay Ranch Preserve Peutz Valley Preserve Ramona Grasslands Preserve Skyline Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve Tijuana River Valley Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved chaparral and scrub habitats. REGIONAL PRESERVE: Approximately 42% of known species locations within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 63% of the known locations.
Mammals		
44. Mountain Lion	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve El Capitan Preserve Iron Mountain Preserve Otay Ranch Preserve Peutz Valley Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within diverse preserved habitats. Regional monitoring, species protection, and increasing habitat connectivity efforts are on-going. REGIONAL PRESERVE: Approximately 60% of core areas within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 81% of the core areas.
45. Southern mule deer	Barnett Ranch Preserve Boulder Oaks Preserve Del Dios Highlands Preserve El Capitan Preserve El Monte Park Iron Mountain Preserve Lakeside Linkage Preserve Lawrence and Barbara Daley Preserve Louis A. Stelzer Preserve Lusardi Creek Preserve Oakoasis Preserve Otay Ranch Preserve Peutz Valley Preserve Ramona Grasslands Preserve Stoneridge Preserve Sycamore Canyon and Goodan Ranch Preserve	COUNTY PRESERVES: Species populations have been conserved and are found within preserved grassland, scrub, and chaparral habitats. Regional monitoring, species protection, and increasing habitat connectivity efforts are on-going. REGIONAL PRESERVE: Approximately 60% of core areas within the MSCP Plan boundaries have been conserved[b] MSCP goal is to conserve 81% of the core areas

MSCP Covered Species and Habitats	County Preserve or Park	Status of Species
Invertebrates		
46. San Diego fairy shrimp	Otay Ranch Preserve Ramona Grasslands Preserve[a]	COUNTY PRESERVES: Species populations have been conserved and are found within preserved vernal pool habitat. Monitoring and species protection efforts maintain stable populations at Ramona Grasslands Preserve and Otay Ranch Preserve. REGIONAL PRESERVE: Approximately 54% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 88% of known habitat.
47. Thorne's hairstreak butterfly	Otay Ranch Preserve	COUNTY PRESERVE: Species populations have been conserved and are found within preserved foraging chaparral habitat and larval host Tecate cypress habitat. REGIONAL PRESERVE: Approximately 100% of habitat within the MSCP Plan boundaries has been conserved[b] MSCP goal is to conserve 100% of known habitat.

[a] Species was observed on draft North County MSCP portion of the County Preserve and is presumed to utilize the South County MSCP area of the County Preserve.

[b] Conservation status of the MSCP covered species within the MSCP Plan Area's boundaries is from the 2012 San Diego Multiple Species Conservation Program Status Report: 1997-2011, which summarized monitoring results for all three South County MSCP Subarea Plan Areas.

Reference:

U.S. Fish and Wildlife Service Carlsbad Field Office, California Department of Fish and Game South Coast Region Office, and San Diego Management and Monitoring Program. 2012. San Diego Multiple Species Conservation Program Status Report: 1997-2011.

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APPENDIX O

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Updated Final

TARGETED MONITORING PLAN RESOURCE-SPECIFIC MONITORING & MANAGEMENT

2023 Annual Report

Prepared for
Department of Parks and Recreation
County of San Diego
5500 Overland Avenue, Suite 410
San Diego, CA 92123
Contact: Ms. Jennifer Price

March 2024

ESA

Updated Final

TARGETED MONITORING PLAN RESOURCE-SPECIFIC MONITORING & MANAGEMENT

2023 Annual Report

Prepared for
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ACRONYMS AND OTHER ABBREVIATIONS

Acronym or Abbreviation	Definition
Blackhawk	Blackhawk Environmental, Inc.
Cal-IPC	California Invasive Plant Council
CBI	Conservation Biology Institute
CDFW	California Department of Fish and Wildlife (2013 and after)
cm	centimeter
County	County of San Diego
DPR	Department of Parks and Recreation
ESA	Environmental Science Associates
FESA	federal Endangered Species Act
Field Maps	ArcGIS Field Maps mobile application
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HDS	Harbison's dun skipper
lb/acre	pounds per acre
MBC	Mulligan Biological Consulting
MSCP	Multiple Species Conservation Program
MSP	Management and Monitoring Strategic Plan
NCCP	Natural Community Conservation Plan
RDM	residual dry matter
ROE	Right-of-Entry
SDMMP	San Diego Management and Monitoring Program
SKR	Stephens' kangaroo rat
SR	State Route
TMP	Targeted Monitoring Plan
UCANR	University of California Agriculture and Natural Resources
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Wildlife Agencies	CDFW and USFWS

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EXECUTIVE SUMMARY

The County of San Diego (County) monitors and adaptively manages habitats and species covered by the Multiple Species Conservation Program (MSCP) to ensure MSCP biological conservation goals and conditions for species coverage are being met, as a requirement of the MSCP and the adopted South County MSCP Subarea Plan. The monitoring and adaptive management program is guided by the Targeted Monitoring Plan (TMP) (ESA and ICF 2015) and its subsequent update (ESA and ICF 2022).

The TMP was prepared by the County Department of Parks and Recreation (DPR), with review and input by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) (collectively known as the Wildlife Agencies), along with review and input from the San Diego Management and Monitoring Program (SDMMP) resources experts. The TMP includes focused goals and objectives for target resources and detailed monitoring protocols, and it is intended to achieve the management directives for species per the adopted South County MSCP Subarea Plan Framework Management Plan (County of San Diego 2001). The TMP addresses monitoring and adaptive management within 20 DPR parks and preserves for 22 plant and wildlife species and two habitat types, located in the South County Subarea Plan and draft North County MSCP Plan Areas.

TMP implementation in 2023 included habitat and resource-specific monitoring and adaptive management. Resource-specific monitoring was conducted in 12 DPR parks and preserves: Tijuana River Valley Regional Park, and Boulder Oaks, Del Dios Highlands, Furby-North, Hellhole Canyon, Lusardi Creek, Mount Olympus, Ramona Grasslands, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves. Resource-specific adaptive management was conducted in nine DPR parks and preserves: Tijuana River Valley Regional Park and Boulder Oaks, Furby-North, Hellhole Canyon, Lakeside Linkage, Lusardi Creek, Ramona Grasslands, Santa Margarita, and Sycamore Canyon/Goodan Ranch County Preserves.

Monitoring was conducted by Environmental Science Associates (ESA) for the following 15 species and habitats covered in 2023 for the MSCP or draft North County MSCP:

- Vernal pool and alkali playa habitats
- San Diego thornmint (*Acanthomintha ilicifolia*)
- Encinitas baccharis (*Baccharis vanessae*)
- San Miguel savory (*Clinopodium chandleri*)
- Otay tarplant (*Deinandra conjugens*)
- Orcutt's bird's-beak (*Dicranostegia orcuttiana*)

- Variegated dudleya (*Dudleya variegata*)
- Willowy monardella (*Monardella viminea*)
- Harbison's dun skipper (*Euphyes vestris harbisoni*)
- Arroyo toad (*Anaxyrus californicus*)
- Northern harrier (*Circus hudsonius*)
- Least Bell's vireo (*Vireo bellii pusillus*)
- Stephens' kangaroo rat (*Dipodomys stephensi*)
- Pallid bat (*Antrozous pallidus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)

Golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) monitoring also occurred in 2023 consistent with the TMP. Results are included under separate cover in the *Ramona Grasslands Preserve 2022–2023 Raptor Surveys Summary Report* (ESA 2023a).

Adaptive management was conducted for the following 11 MSCP or draft North County MSCP-covered species and habitats in 2023:

- Vernal pool and alkali playa habitats
- San Diego thornmint
- San Miguel savory
- Otay tarplant
- Orcutt's bird's-beak
- Variegated dudleya
- Willowy monardella
- Harbison's dun skipper
- San Diego cactus wren
- Least Bell's vireo
- Stephens' kangaroo rat

Table ES-1 provides a summary of 2023 TMP monitoring results, and **Table ES-2** provides a summary of 2023 TMP management results.

TABLE ES-1
2023 TMP MONITORING RESULTS

Species	County Preserve	Monitoring Results
Vernal pools/Alkali playas: Hydrological monitoring	Ramona Grasslands	17 vernal pools and one alkali playa monitored. All pools inundated.
Vernal pools/Alkali playas: Qualitative monitoring	Ramona Grasslands	19 vernal pools and one alkali playa monitored. All monitored pools supported at least one faunal vernal pool indicator species, except pools e82 and raap17. All monitored pools supported at least one floral vernal pool indicator species. All monitored pools supported invasive non-native plant species.
San Diego thornmint	Simon	IMG plot: 6,000 individuals Total On-site Population: 6,000 individuals
	Sycamore Canyon/Goodan Ranch	IMG plots: 12,877 individuals Total On-site Population: 46,032 individuals
Encinitas baccharis	Del Dios Highlands	IMG plots: 40 individuals Total On-site Population: 177 individuals
San Miguel savory	Boulder Oaks	IMG plots: 132 individuals Total On-site Population: 607 individuals
Otay tarplant[1]	Furby-North 1	IMG plot: 43 individuals Total On-site Population: 555 individuals
	Furby-North 2	IMG plot: 468 individuals Total On-site Population: 3,112 individuals
Orcutt's bird's-beak[2]	Tijuana River Valley Regional Park 1	IMG plot: 298 individuals Total On-site Population: 6,298 individuals[3]
	Tijuana River Valley Regional Park 2	IMG plot: 0 individuals Total On-site Population: 3,000 individuals[3]
	Tijuana River Valley Regional Park 3	Total On-site Population: 370 individuals[3]
Variegated dudleya	Lusardi Creek	IMG plot: 1 individual Total On-site Population: 9 individuals
	Sycamore Canyon/ Goodan Ranch	IMG plots: 588 individuals Total On-site Population: 1,348 individuals
Willowy monardella[4]	Sycamore Canyon/ Goodan Ranch 1	IMG plot: 58 individuals Total On-site Population: 444 individuals
	Sycamore Canyon/ Goodan Ranch 2	IMG plot: 4 individuals Total On-site Population: 4 individuals
	Sycamore Canyon/ Goodan Ranch 3	IMG plot: 6 individuals Total On-site Population: 47 individuals
Harbison's dun skipper	Hellhole Canyon	Total individuals: 4 adults (0 adults)[5]
Arroyo toad	Ramona Grasslands	Adult/Juveniles: 0 (0)[6] Larvae: 8,565 individuals (14)[6]
Tricolored blackbird	Ramona Grasslands	(Individuals: 12)[7]
Burrowing owl[8]	Ramona Grasslands	Burrowing owl sign (i.e., whitewash, pellet, potential burrows) incidentally detected during Stephens' kangaroo rat surveys (no sign detected)

Species	County Preserve	Monitoring Results
Northern harrier	Tijuana River Valley	Territories: 2–5 Pairs: 2 Total Individuals: 4 adults, 2 juveniles
Least Bell's vireo	Santa Margarita	Territories: 13 Pairs: 7 Single males: 6
Stephens' kangaroo rat	Ramona Grasslands	Habitat assessment: 8 of 28 sample plots with high potential 14 sample plots considered occupied based on sign
	Hellhole Canyon	Habitat assessment: 1 of 3 sample plots with high potential[9] 2 considered occupied based on sign[9]
Pallid bat	Hellhole Canyon	Roosting habitat assessment: suitable roosting habitat present (i.e., rocky outcrops, boulders, under bark or in tree cavities).
	Mount Olympus	Roosting habitat assessment: suitable roosting habitat present (i.e., rocky outcrops, boulders, under bark or in tree cavities, abandoned human-made structures).
	Wilderness Gardens	Roosting habitat assessment: suitable roosting habitat present (i.e., historic and unused buildings, rocky outcrops, under bark or in tree cavities).
Townsend's big-eared bat	Hellhole Canyon	Roosting habitat assessment: suitable roosting habitat present (i.e., boulder, rocky outcrops, tree hollows and cavities).
	Wilderness Gardens	Roosting habitat assessment: suitable roosting habitat present (i.e., historic and unused buildings, rocky outcrops, under bark or in tree cavities).

NOTES:

MU = Management Unit. N/A = not applicable.

1. Furby-North 1 = MSP Occurrence ID DECO13_3OMEA026_1. Furby-North 2 = MSP Occurrence ID DECO13_3OMEA040_1.
2. Tijuana River Valley Regional Park 1 = MSP Occurrence ID COOR7_1TIRI009. Tijuana River Valley Regional Park 2 = MSP Occurrence ID COOR7_SMGU006. Tijuana River Valley Regional Park 3 = MSP Occurrence ID COOR7_1ESGU010_1.
3. Orcutt's bird's beak MSP rare plant monitoring maximum extent results incorporate results from Mulligan Biological Consulting (MBC).
4. Sycamore Canyon/Goodan Ranch 1 = MSP Occurrence ID MOLIV_4SYCA006. Sycamore Canyon/Goodan Ranch 2 = MSP Occurrence ID MOLIV_4SYCA002. Sycamore Canyon/Goodan Ranch 3 = MSP Occurrence ID MOLIV_4SPCA006.
5 Harbison's dun skipper monitoring results from Dr. Daniel Marschalek are provided in parentheses.
6. Arroyo toad monitoring results from the U.S. Geological Survey (USGS) are provided in parentheses.
7. Tricolored blackbird monitoring results from AECOM are provided in parentheses. These tricolored blackbirds were observed on the adjacent Ramona Municipal Water District property and not on the Ramona Grasslands County Preserve.
8. Burrowing owl monitoring results from the San Diego Zoo Institute for Conservation Research are provided in parentheses.9 SKR occupancy at Hellhole Canyon County Preserve in fall 2023 was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 in fall 2020 live-trapping surveys, positive kangaroo rat sign in plots 2 and 3 during fall 2023 monitoring, the proximity of the two plots (within 150 feet of one another), and no factors that could reasonably be expected to entirely preclude SKR movement between the two plots.

TABLE ES-2
2023 TMP MANAGEMENT RESULTS

Species	County Preserve	Management
Vernal pools/ Alkali playas	Ramona Grasslands	Management area: 15 pools and 4 alkali playas, totaling 2.64 acres
San Diego thornmint	Sycamore Canyon/ Goodan Ranch	Management area: 1.10 acres within and surrounding 8 monitoring plots
San Miguel savory	Boulder Oaks	Management area: 0.55 acre within and surrounding 1 monitoring plot
Otay tarplant	Furby-North	Management area: 0.11 acre within and surrounding 1 monitoring plot
Orcutt's bird's-beak	Tijuana River Valley	Management area: 0.35 acre within and surrounding 2 monitoring plots
Variegated dudleya	Lusardi Creek	Management area: 0.09 acre within and surrounding 1 monitoring plot
	Sycamore Canyon/ Goodan Ranch	Management area: 0.05 acre within and surrounding 2 monitoring plots
Willowy monardella	Sycamore Canyon/ Goodan Ranch	Management area: 0.0003 acre within 1 monitoring plot
Harbison's dun skipper	Hellhole Canyon	Management area: 0.36 acres
San Diego cactus wren	Lakeside Linkage	Management area: 0.63 acres
Least Bell's vireo[1]	Santa Margarita	BHCO trapped: 7 individuals
Stephens' kangaroo rat	Hellhole Canyon	Management area: 5.86 acres within and surrounding the 3 SKR monitoring plots

NOTES:

BHCO = brown-headed cowbird. SKR = Stephens' kangaroo rat.
1. Two BHCO traps were installed at Santa Margarita County Preserve in 2023.

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CHAPTER 1
Introduction

1.1 Purpose of the Project

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted South County MSCP Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered by the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. The County Department of Parks and Recreation (DPR) prepared a Targeted Monitoring Plan (TMP) (ESA and ICF 2015) to provide detailed specifications for implementation of monitoring and adaptive management within 10 County-owned and managed conserved lands (DPR parks and preserves) (Preserve Group 1) overseen by DPR. The TMP was revised in December 2022 (ESA and ICF 2022) to incorporate 10 additional DPR parks and preserves (Preserve Group 2). These 10 additional DPR parks and preserves include 5 in the South County MSCP Subarea Plan Area and 5 in the draft North County MSCP Plan Area. The draft North County MSCP Plan Area preserves are included at this time due to the number of sensitive on-site resources that require their conservation and management. In total, the TMP addresses monitoring and adaptive management within 20 DPR parks and preserves for 22 plant and wildlife species and two habitat types.

The TMP is an adaptive implementation plan that includes focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Subarea Plan Framework Management Plan (County of San Diego 2001). The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) (collectively known as the Wildlife Agencies), MSCP jurisdictions, and outside scientific experts. It is understood by all stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods.

The TMP addresses monitoring and management within the following 20 DPR parks and preserves: Louis A. Stelzer County Park, El Monte County Park, and Tijuana River Valley Regional Park, and Barnett Ranch, Boulder Oaks, Del Dios Highlands, El Capitan, Furby-North, Hellhole Canyon, Lakeside Linkage, Lawrence and Barbara Daley, Lusardi Creek, Mount Olympus, Oakoasis, Ramona Grasslands, Santa Margarita, Simon, Stoneridge, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves.

In 2023, resource-specific monitoring and management was conducted in 13 parks and preserves identified in the TMP: Tijuana River Valley Regional Park, and Boulder Oaks, Del Dios Highlands, Furby-North, Hellhole Canyon, Lakeside Linkage, Lusardi Creek, Mount Olympus, Ramona Grasslands, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves.

Table 1 presents the monitoring conducted by Environmental Science Associates (ESA) for the following 15 MSCP- or draft North County MSCP-covered species and habitats in 2023.

TABLE 1
TMP SPECIES AND HABITATS MONITORED IN 2023

TMP Species/Habitat	Covered by		Monitored
	MSCP	Draft North County MSCP	
Vernal pool and alkali playa habitat	✓	✓	✓
San Diego thornmint *Acanthomintha ilicifolia*	✓	✓	✓
Encinitas baccharis (*Baccharis vanessae*)	✓	✓	✓
San Miguel savory (*Clinopodium chandleri*)	✓		✓
Otay tarplant (*Deinandra conjugens*)	✓		✓
Orcutt's bird's-beak (*Dicranostegia orcuttiana*)	✓		✓
Variegated dudleya (*Dudleya variegata*)	✓		✓
Willowy monardella (*Monardella viminea*)	✓		✓
Harbison's dun skipper (*Euphyes vestris harbisoni*)			✓
Arroyo toad (*Anaxyrus californicus*)	✓	✓	✓
Northern harrier (*Circus hudsonius*)	✓	✓	✓
Least Bell's vireo (*Vireo bellii pusillus*)	✓	✓	✓
Stephens' kangaroo rat (*Dipodomys stephensi*)		✓	✓
Pallid bat (*Antrozous pallidus*)		✓	✓
Townsend's big-eared bat (*Corynorhinus townsendii*)		✓	✓

The goal of resource-specific monitoring is to collect high-quality data to inform trends in occurrences and populations, evaluate the current habitat conditions, assess threats, and provide adaptive management recommendations to ensure that the conservation goals of the MSCP and draft North County MSCP are being met. The goal of focused adaptive management is to enhance suitable habitat and support the persistence of MSCP- and draft North County MSCP-covered species and habitats.

1.2 Multiple Species Conservation Program Context

The MSCP is a comprehensive habitat conservation planning document and one of several subregional habitat conservation programs in San Diego County that contribute to the preservation of regional biodiversity. Agencies participating in the MSCP include the County,

other local jurisdictions within San Diego County (e.g., City of San Diego, City of Chula Vista), and the Wildlife Agencies. The County and other local jurisdictions implement the MSCP through subarea plans, which describe specific implementing mechanisms for the MSCP. The MSCP Plan and subarea plans serve as a multiple species HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act (FESA) and a Natural Community Conservation Plan (NCCP) pursuant to the California NCCP Act of 1991 (amended in 2001) and the state Endangered Species Act.

The South County MSCP Subarea Plan was adopted in October 1997 and covers 23 vegetation communities and 85 species (County of San Diego 1997). The County is preparing the draft North County MSCP for the northwestern unincorporated areas of the county and the draft East County MSCP for the eastern unincorporated areas of the county.

Species-specific management and monitoring requirements for the MSCP are summarized in Table 3-5 of the MSCP Plan. In addition, the assurances and obligations to implement the South County MSCP Subarea Plan have been established in the Implementing Agreement (County of San Diego 1998), signed by the County and the Wildlife Agencies.

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CHAPTER 2
Study Area Description

2.1 Overview

During the 2023 reporting period, ESA performed resource-specific monitoring and management in the following 13 parks and preserves identified in the TMP: Tijuana River Valley Regional Park and Boulder Oaks, Del Dios Highlands, Furby-North, Hellhole Canyon, Lakeside Linkage, Lusardi Creek, Mount Olympus, Ramona Grasslands, Santa Margarita, Simon, Sycamore Canyon/Goodan Ranch, and Wilderness Gardens County Preserves (**Figure 1**).

Boulder Oaks, Furby-North, Lakeside Linkage, Lusardi Creek, and Sycamore Canyon/Goodan Ranch County Preserves and Tijuana River Valley Regional Park are located entirely within the South County MSCP Subarea Plan Area and are monitored and managed in accordance with the Implementing Agreement (County of San Diego 1998). Del Dios Highlands and Ramona Grasslands County Preserves are located within the MSCP and draft North County MSCP Plan Area. Hellhole Canyon, Simon, Mount Olympus, Santa Margarita, and Wilderness Gardens County Preserves are located completely within the draft North County MSCP Plan Area. These preserve areas will be monitored and managed in accordance with the draft North County MSCP Plan upon adoption and are included in the TMP at this time due to the number of sensitive on-site resources that require their conservation and management.

2.2 Project Location

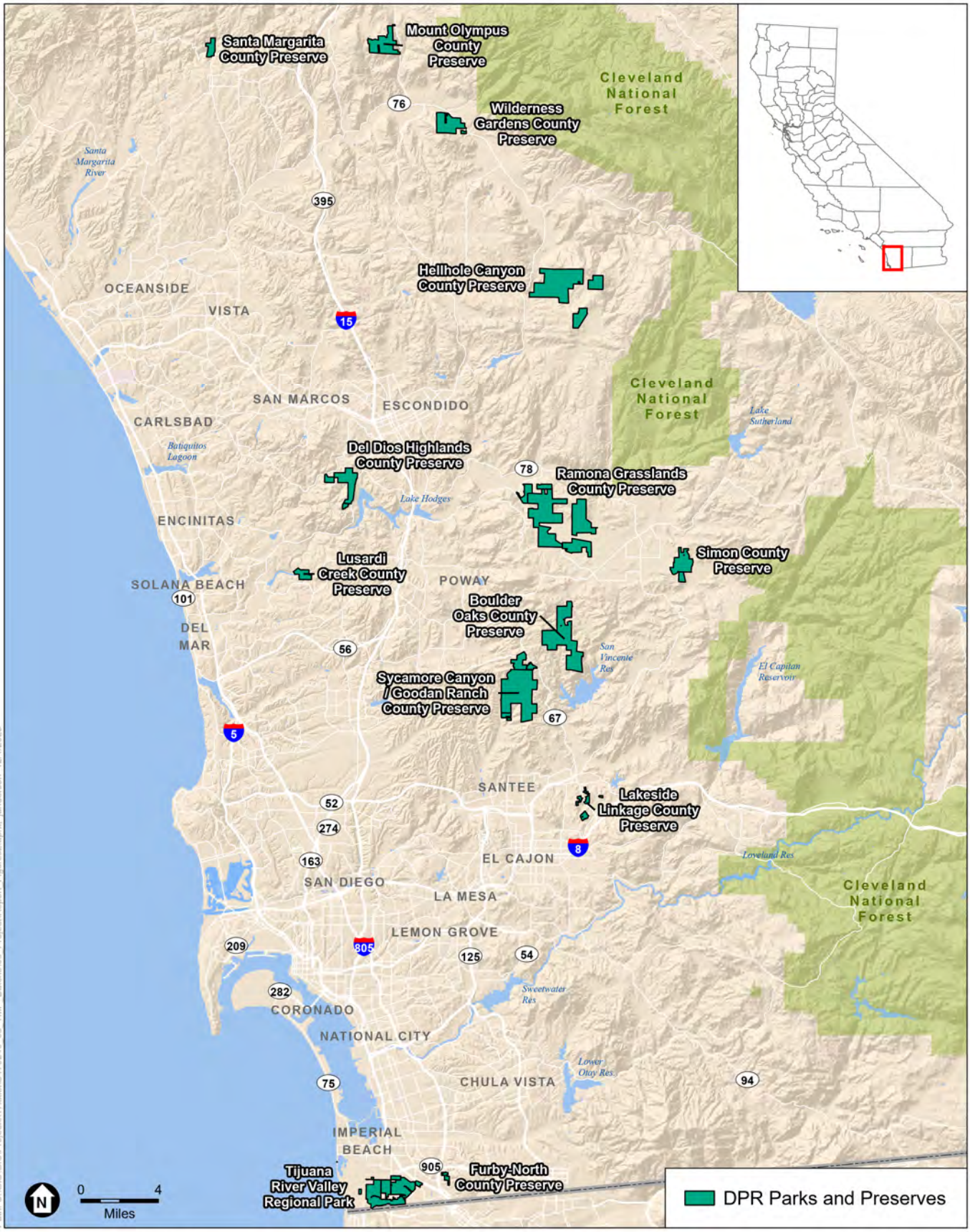
Descriptions of the 13 DPR park and preserve locations monitored and managed in 2023 are provided below.

2.2.1 Boulder Oaks County Preserve

Boulder Oaks County Preserve is located south of the unincorporated township of Ramona, between State Route (SR) 67 and Mussey Grade Road, in central San Diego County. It is located just north of the San Vicente Reservoir, extending east from Iron Mountain and north of Fosters Canyon, and is bisected by Foster Truck Trail.

2.2.2 Del Dios Highlands County Preserve

Del Dios Highlands County Preserve is located southwest of the city of Escondido, west of Del Dios Highway, and northwest of Lake Hodges, within an unincorporated area of San Diego County. It is located at 9860 Del Dios Highway, Escondido, adjacent to Lake Hodges, within the coastal foothills of the Peninsular Ranges of Southern California.



SOURCE: ESRI; SanGIS, 2023.

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 1

Project Location

ESA

2.2.3 Furby-North County Preserve

Furby-North County Preserve is located in the southern portion of the city of San Diego MSCP Subarea Plan, near the U.S.–Mexico border in Otay Mesa, directly south of SR 905 and east of Interstate 805.

2.2.4 Hellhole Canyon County Preserve

Hellhole Canyon County Preserve is located northeast of Escondido within Valley Center, an unincorporated community of San Diego County. This acreage consists of the contiguous Preserve, as well as five non-contiguous additions. It is in northeastern San Diego County in the Peninsular Geomorphic Range and consists of two main mountains, Rodriguez Mountain and an unnamed mountain, as well as Hell Creek.

2.2.5 Lakeside Linkage County Preserve

Lakeside Linkage County Preserve is a preserve composed of four non-contiguous properties: (1) western property, located west of Los Coches Road between Calle Lucia Terrace on the south and a private drive south of Rock Crest Lane on the north; (2) central property, located east of Los Coches Road between Ha Hana Road on the south and extending slightly north of Casa Vista Road on the north; (3) eastern property, located approximately one block northwest of the junction of Lakeview and East Lakeview Roads; and (4) southwest property, located directly south of the western property. The Preserve is located along both sides of Los Coches Road between SR 67 and Interstate 8 within Lakeside, Lakeview, and Winter Gardens, which are unincorporated communities of San Diego County.

2.2.6 Lusardi Creek County Preserve

Lusardi Creek County Preserve is located along the northern boundary of the city of San Diego, slightly southeast of Rancho Santa Fe, an unincorporated community of San Diego County. It is in western San Diego County in the Lusardi Creek Valley, just north of San Dieguito Road, west of Del Sur and South of Artesian Road, within the San Dieguito River Watershed.

2.2.7 Mount Olympus County Preserve

Mount Olympus County Preserve is comprised of two non-contiguous parcels. It is located south of Temecula, just east of Rainbow, an unincorporated community of San Diego County. It is located north of SR 76, south of SR 79, east of Interstate 15, and west of the Cleveland National Forest.

2.2.8 Ramona Grasslands County Preserve

Ramona Grasslands County Preserve is comprised of 56 near contiguous parcels. The Preserve is located west of Ramona, an unincorporated community of San Diego County. It is in west-central San Diego County in the western portion of Santa Maria Valley within the San Dieguito Watershed.

2.2.9 Santa Margarita County Preserve

Santa Margarita County Preserve is located in northern San Diego County, west of Interstate 15 and north of SR 76. The Preserve is located just east of the northeastern portion of Camp Pendleton Marine Corps Base and is directly west of Sandia Creek Drive and the southern portion of the Preserve is bisected by De Luz Road.

2.2.10 Simon County Preserve

Simon County Preserve is located within Ramona, an unincorporated community of San Diego County and within the San Dieguito and San Diego River Watersheds.

2.2.11 Sycamore Canyon/Goodan Ranch County Preserve

Sycamore Canyon/Goodan Ranch County Preserve is located just east of Marine Corps Air Station Miramar and approximately 2 miles north of Santee within an unincorporated area of San Diego County. It is in the coastal foothills of the Peninsular Ranges in south-central San Diego County within the Peñasquitos and San Diego Watersheds.

2.2.12 Tijuana River Valley Regional Park

Tijuana River Valley Regional Park is located in the southern portion of the city of San Diego MSCP Subarea Plan, within the southwestern portion of San Diego County. It is bounded by Sunset Avenue to the north, the U.S.–Mexico Border to the south, Border Field State Park and the Tijuana River National Estuarine Research Preserve to the west, and Dairy Mart Road and the San Ysidro community to the east.

2.2.13 Wilderness Gardens County Preserve

Wilderness Gardens County Preserve is comprised of six contiguous parcels and one separate parcel. It is located at 14209 Highway 76, Pala, an unincorporated community of San Diego County. It is immediately south of SR 76/Pala Road, between Pauma Ridge Road and Pala Mission Road, within northwestern San Diego County in the San Luis Rey River Valley adjacent to Pala Mountain.

CHAPTER 3
Methods

3.1 Overview

Specific monitoring and management methods are described below. Areas monitored and/or managed are depicted in figures provided in Chapter 4, *Results and Discussion*. All data was collected using the ArcGIS Field Maps mobile application (Field Maps); data sheets for all surveys can be found in referenced resource-specific appendices. The final report and collected data will be submitted to the San Diego Management and Monitoring Program (SDMMP), consistent with the reporting requirements in the TMP (ESA and ICF 2022).

For the purposes of this report, non-native plant species are species that were introduced to California after European contact and as a direct or indirect result of human activity, as defined by the California Invasive Plant Council (Cal-IPC). Invasive non-native plant species are species rated by Cal-IPC in the Invasive Plant Inventory Database (Cal-IPC 2023) because they are not native, and once introduced can establish, quickly reproduce and spread, and cause harm to native vegetation communities, the environment, economy, and/or human health. Once invasive non-native plant species spread into wildland ecosystems, they can hybridize with native plant species, displace native plant and wildlife species, alter biological communities, and/or alter ecosystem processes (Cal-IPC n.d.).

3.2 Vernal Pools and Alkali Playas

3.2.1 Hydrological Monitoring

Hydrological monitoring followed the methodology outlined in the TMP. Quantitative hydrological monitoring consisted of measuring water depth, total number of days inundated at the deepest point; maximum number of days continuously inundated at deepest point; coefficient of variation of water depth at deepest point; mean water depth at deepest point; and number of times drained completely during the wet season. In addition, hydrological and ecological functions were investigated as part of the hydrological monitoring study, which was analyzed to assess the relative functionality and integrity of the pools. Water depth measurements were to be initiated 24 hours after the end of a significant rain event (0.5 inches or more of precipitation) and subsequently repeated every 3 to 5 days until the study location was completely drained. The first significant rain event occurred between December 11 and December 12, 2022; however, due to contract timing, ESA's first hydrological monitoring visit was conducted on February 27, 2023, 72 days after the first major storm event. Once a vernal pool or playa was fully drained, surveys were discontinued for the remainder of the study unless a measurable rain event occurred and refilled the vernal pool or playa.

ESA biologists conducted a total of 13 hydrological monitoring surveys within the Ramona Grasslands County Preserve between February 27, 2023, and May 1, 2023 (**Table 2**). Based on above average precipitation, the vernal pools remained wet for longer periods of time, requiring adjustments to frequency of follow-up visits to every 3–7 days. Hydrological monitoring was conducted at 17 vernal pools (p7, p13, p14, e59, e63, e56, e58, e61, c20, e82, e62, e53, e77, e52, e48, e45, and ev3) and one alkali playa (raap17). Vernal pool c3e, which occurs outside of the Ramona Grasslands County Preserve boundary, was not surveyed until April 17, 2023. The Cagney Swale was initially included in the hydrological monitoring surveys; however, it was observed to be functioning as an ephemeral aquatic feature serving as a tributary to the Santa Maria Creek rather than a vernal pool. After discussion with DPR, it was agreed that the Cagney Swale would not be included as part of this hydrological monitoring methodology approach. The Cagney Swale was surveyed during five hydrological monitoring visits and was removed from the hydrological study after March 17, 2023.

TABLE 2
VERNAL POOLS AND ALKALI PLAYA HYDROLOGICAL MONITORING SUMMARY

2023 Monitoring Date	Reason for Visit	Names of Biologists
February 27–28	Initial inundation check after rain event Hydrological monitoring	Brenda McMillan, Rachel Le
March 3	Inundation check after rain event Hydrological monitoring	Brenda McMillan, Bailey Setzler
March 7	Follow-up hydrological monitoring	Brenda McMillan, Jack Quinzon
March 10	Follow-up hydrological monitoring	Brenda McMillan, Bailey Setzler
March 13	Inundation check after rain event Hydrological monitoring	Brenda McMillan, Bailey Setzler
March 17	Inundation check after rain event Hydrological monitoring	Brenda McMillan, Karla Alcaraz
March 24	Inundation check after rain event Hydrological monitoring	Brenda McMillan, Bailey Setzler
March 28	Follow-up hydrological monitoring	Brenda McMillan, Karla Alcaraz
April 4	Inundation check after rain event Follow-up hydrological monitoring	Brenda McMillan, Karla Alcaraz
April 10	Follow-up hydrological monitoring	Brenda McMillan, Bailey Setzler
April 17	Follow-up hydrological monitoring	Brenda McMillan, Karla Alcaraz
April 24	Follow-up hydrological monitoring	Brenda McMillan, Karla Alcaraz
May 1	Follow-up hydrological monitoring	Brenda McMillan, Bailey Setzler

Biologists used an extension pole with a ruler attached at its end to dip into each study location to identify and measure the deepest point at each of the study locations. Many of the pools had PVC pipe installed at the deepest point and were used when found for consistency. To avoid walking in the pools during the inundation period, no rulers were installed within the vernal pool basins. Pool margins were difficult to locate at times due to extensive ponding throughout the Preserve in 2023 (e.g., vernal pools e58, e61, and e62 located in the vernal swale were difficult to separate

until inundation receded and the individual pool margins were more easily discernable). Depth measurement points shifted over time as the vernal pool boundaries became more visible, and some points were moved to the deepest point that was previously marked by a white PVC pipe whenever possible. The decision to shift points was made to capture the hydrological features of the pool consistently. In vernal pools that did not have an existing depth point marked with PVC pipe, the deepest point was estimated based on the pool topography and did not include hoof prints or other topographical disturbances.

Length and width measurements were collected during each visit at the edge of inundation at the time of the survey. Qualitative features such as dominant plant species or significant change in the vernal pool functionality were noted.

Representative photographs at each pool/playa were taken facing north during each hydrological monitoring visit to document inundation. Vernal pool boundaries were adjusted in the field as needed using a Global Positioning System (GPS) to capture maximum inundation areas and areas that best represented ecologically functioning vernal pools.

3.2.2 Qualitative Monitoring

ESA biologists conducted two qualitative monitoring surveys of vernal pools/alkali playas within the Ramona Grasslands County Preserve (**Table 3**). The first survey was conducted during the wet season when pools were inundated with water. The second survey was conducted during the dry season when most pools had stopped holding water. Qualitative monitoring was performed within the subset of 20 vernal pools within the Ramona Airport mitigation, Cagney, Oak Country, and Cumming Ranch vernal pools as described in the TMP (ESA and ICF 2022).

TABLE 3
VERNAL POOLS AND ALKALI PLAYA QUALITATIVE MONITORING SUMMARY

2023 Monitoring Date	Reason for Visit	Names of Biologists
February 27–28	Qualitative site visit #1	Brenda McMillan, Rachel Le
May 17	Qualitative site visit #2	Brenda McMillan, Bailey Setzler

Qualitative monitoring consisted of a pedestrian survey of the pools and immediate upland areas around the pool perimeters. The survey included inspections of the pools to determine water quality, edge effects, topographic disturbance, trespass, as well as recording a species list of observed vernal pool fauna (visual only, no netting), invasive non-native plant species, sensitive plant species, and vernal pool indicator species. Vernal pool indicator species followed those listed in the City of San Diego Vernal Pool Habitat Conservation Plan (City of San Diego 2017).

3.2.3 Focused Management

The control of invasive non-native plant species is a primary concern for vernal pool and alkali playa habitat in Ramona Grasslands County Preserve. The TMP recommends invasive non-native plant cover be maintained to less than 20 percent (ESA and ICF 2022). Focused invasive non-native plant management was conducted at a total of 19 vernal pool/alkali playa features within

Ramona Grasslands County Preserve in 2023 based on 2021 TMP monitoring results and 2022 incidental observations and adaptive management recommendations (ESA 2023b). Management was conducted at the 15 previously managed vernal pools (p13, p14, p7, e56, e58, e61, e82, e62, e53, e77, e52, e48, e45, ev3, e59) and one alkali playa (raap17), as well as the 3 alkali playas that supported Parish's brittlescale (*Atriplex parishii*) (raap4, raap6, and raap14).

ESA subconsultant Habitat West conducted two focused invasive non-native plant management visits for vernal pools and alkali playas within Ramona Grasslands County Preserve. The first management visit was conducted between June 1 and June 7, 2023, and the second management visit was conducted between September 5 and September 6, 2023. The first management visit was conducted after vernal pool and alkali playa features were no longer holding water and the soil substrate was firm. Vernal pool and alkali playa plant species were still growing during this visit; however, ESA biologist Mark Dodero met Habitat West staff on June 1, 2023, to orient staff and flag sensitive native plant species to avoid, and on June 6, 2023, to check on management progress. Management consisted of hand weeding invasive non-native plant species within the vernal pool basins and line trimming a 3-foot buffer around the pools, for a total management area of 2.64 acres. The second management visit was conducted later in the season to remove any new invasive non-native plant species that had grown since the first visit. Management consisted of hand weeding standing invasive non-native plant biomass. Line trimmers were also used within the pool basins to cut up to 2 inches above ground where there was limited native plant growth. Additional line trimming was used to touch up the 3-foot buffer where needed. Biomass was then manually collected, bagged, and properly disposed of at an approved off-site facility. Herbicide was not used within vernal pool basins or within 10 feet of basin margins.

3.3 Rare Plant Monitoring

ESA biologists and volunteers conducted resource-specific monitoring in 2023 for seven of the eight TMP rare plant species. Rare plant monitoring followed the most current Management and Monitoring Strategic Plan (MSP) Rare Plant Monitoring Protocol prepared by SDMMP (SDMMP 2022). Additional data was collected for Encinitas baccharis (*Baccharis vanessae*) at Del Dios Highlands County Preserve and willowy monardella (*Monardella viminea*) at Sycamore Canyon/Goodan Ranch County Preserve, as required by the TMP. A reconnaissance survey for Otay tarplant (*Deinandra conjugens*) was conducted at Furby-North County Preserve, as described by the TMP (ESA and ICF 2022), and a new monitoring plot was established. Incidental observations of MSCP or other special-status species observed outside monitoring plots were recorded. Monitoring details, including species, dates, number of monitoring plots, preserve name, and field personnel, are listed in **Table 4**.

Established permanent monitoring plots were monitored for each species. The history of monitoring plot establishment is as follows:

- **San Diego thornmint** (*Acanthomintha ilicifolia*). One permanent monitoring plot was established for San Diego thornmint within Simon County Preserve by the Conservation Biology Institute (CBI) in 2016. Ten permanent monitoring plots were established for San Diego thornmint within Sycamore Canyon/Goodan Ranch County Preserve by ICF in 2016, and an eleventh permanent monitoring plot was added by ICF in 2017.

TABLE 4
MSP RARE PLANT MONITORING SURVEY SUMMARY

Species	Plot Establishment Date	2023 Monitoring Date	# of Permanent Monitoring Plots	County Preserve	Names of Biologists (and volunteers)[a]
San Diego thornmint	April 26, 2016	May 8	1	Simon	Brenda McMillan and Dillon Travis
San Diego thornmint	April 22, May 4–5, 2016; and May 4, 2017	May 11, 12, and 15	11	Sycamore Canyon/ Goodan Ranch	Sonya Vargas, Brenda McMillan, Dillon Travis, Bailey Setzler, (Robert Laudy and Maureen Abare-Laudy)
Encinitas baccharis	July 24 and 30, 2015	July 18[b] and August 8	3	Del Dios Highlands	Brenda McMillan and Dillon Travis
San Miguel savory	April 6 and 16, 2016	April 26	2	Boulder Oaks	Sonya Vargas and Karla Alcaraz
Otay tarplant	June 29, 2016, and June 2, 2023	May 19[b], 26[b], and June 2	2	Furby-North	Adrienne Lee, Brenda McMillan, and Bailey Setzler
Orcutt's bird's-beak	June 29, 2016; and June 5, 2017	May 26[b] and June 14	2	Tijuana River Valley Regional Park	Brenda McMillan and Bailey Setzler
Variegated dudleya	April 27, 2016	April 7[b], 24[b], and 28	1	Lusardi Creek	Adrienne Lee, Brenda McMillan, and Dillon Travis
Variegated dudleya	June 23, 2017, and April 14, 2021	April 7[b] and 14	2	Sycamore Canyon/ Goodan Ranch	Adrienne Lee and Dillon Travis
Willowy monardella	July 7, 2015; June 22, 2016; June 9, 2021	June 15 and 27	3	Sycamore Canyon/ Goodan Ranch	Adrienne Lee, Sonya Vargas, Amy Orduño-Baez, (Robert Laudy and Maureen Abare-Laudy)

NOTES:

a. Names in parentheses are of volunteers from the Friends of Goodan Ranch and Sycamore Canyon Open Space who participated and were trained during the survey.
b. This monitoring date was to conduct a bloom check to determine appropriate timing of monitoring.

- **Encinitas baccharis.** Three permanent monitoring plots were established for Encinitas baccharis within Del Dios Highlands County Preserve by ICF in 2015.
- **San Miguel savory** (*Clinopodium chandleri*). Two permanent monitoring plots were established for San Miguel savory within Boulder Oaks County Preserve by ICF in 2016.
- **Otay tarplant**. One permanent monitoring plot was established for Otay tarplant within Furby-North County Preserve by CBI in 2016, and a second permanent monitoring plot was established by ESA in 2023.
- **Orcutt's bird's-beak** (*Dicranostegia orcuttiana*). One permanent monitoring plot was established for Orcutt's bird's-beak within Tijuana River Valley Regional Park by CBI in 2016, and a second permanent monitoring plot was added by CBI in 2017.

- **Variegated dudleya** (*Dudleya variegata*). One permanent monitoring plot was established for variegated dudleya within Lusardi Creek County Preserve by ICF in 2016. One permanent monitoring plot was established for variegated dudleya within Sycamore Canyon/Goodan Ranch County Preserve by ICF in 2017, and a second permanent monitoring plot was established by ESA in 2021.
- **Willowy monardella**. One permanent monitoring plot was established for willowy monardella within Sycamore Canyon/Goodan Ranch County Preserve by ICF in 2015, a second permanent monitoring plot was established by CBI in 2016, and a third permanent monitoring plot was established by ESA in 2021.

Monitoring of special-status plant occurrence status within the permanent monitoring plots followed the MSP 2023 Rare Plant Monitoring Protocol (SDMMP 2022), which included the following steps:

- Mapping the perimeter of the current extent of the occurrence with submeter-accuracy GPS and Field Maps and estimating or counting and recording the number of plants within the current mapped extent. If the previously mapped current extent was still an accurate representation of the 2023 extent of the occurrence, no remapping occurred.
- Conducting photo monitoring by taking a picture from the previously established permanent photo point facing toward the center point of the plot. The photo followed the angle and direction of the previous year's photograph, when applicable.
- Conducting a habitat assessment within the permanent monitoring plot using the MSP – 2023 Rare Plant Occurrence Monitoring Form to identify and record number of target plants per plot; phenological stages of plants; evidence of herbivory, disease, and stunted growth; and associated species.
- A threats assessment was conducted within the current maximum extent of the occurrence and adjacent 10-meter buffer, and management recommendations were provided for the site using the MSP – 2023 Rare Plant Occurrence Monitoring Form.

Additional data specified in the TMP was collected for two rare plant species: Encinitas baccharis and willowy monardella.

- **Encinitas baccharis**. The sex and age of each shrub within each plot was identified and recorded to determine the male-to-female ratio within each plot.
  - Seedling: 4 inches tall or less
  - Adult: more than 4 inches tall
- **Willowy monardella**. The height, width, and length in meters of each willowy monardella cluster within the monitoring plot was recorded. A cluster is defined as plants within 0.5 meters of each other (Rebman and Dossey 2006). The plants were then classified as a seedling, juvenile, mature, or adult based on the following categories:
  - Seedling: lacks multiple stems and is less than 4 inches tall
  - Juvenile: lacks multiple stems and is more than 4 inches tall
  - Mature: more than 4 inches tall and has less than 20 stems
  - Adult: more than 4 inches tall and has more than 20 stems

A reconnaissance survey was conducted for Otay tarplant at Furby-North County Preserve to determine presence/absence of the species and establish a permanent monitoring plot and associated permanent photo point.

3.4 Rare Plant Focused Management

ESA biologists and volunteers conducted resource-specific management in 2023 for six of the eight TMP rare plant species. Rare plant focused management followed TMP management recommendations (ESA and ICF 2022). Management details, including species, dates, preserve name, and approximate acreage managed, are listed in **Table 5**. Additional details are included in the following sections.

TABLE 5
MSP RARE PLANT MANAGEMENT SUMMARY

Species	2023 Management Date	County Preserve	Acres Managed
San Diego thornmint	July 20–21, 24–26, and 31; August 1 and 10	Sycamore Canyon/Goodan Ranch	1.10
San Miguel savory	April 28	Boulder Oaks	0.55
Otay tarplant	July 6	Furby-North	0.11
Orcutt's bird's-beak	July 14	Tijuana River Valley Regional Park	0.35
Variegated dudleya	May 1	Lusardi Creek	0.09
Variegated dudleya	April 26–27	Sycamore Canyon/Goodan Ranch	0.05
Willowy monardella	June 27	Sycamore Canyon/Goodan Ranch	0.0003

3.4.1 San Diego Thornmint Focused Management

The control of invasive non-native plant species is a primary concern for San Diego thornmint. The TMP recommends invasive non-native purple false brome (*Brachypodium distachyon*) cover be maintained to less than 10 percent and all other non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Focused management was conducted in response to 2022 TMP monitoring results and adaptive management recommendations for Sycamore Canyon/Goodan Ranch County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for San Diego thornmint at Sycamore Canyon/Goodan Ranch County Preserve on July 20–21, July 24–26, July 31, August 1, and August 10, 2023, within 8 of the 11 established monitoring plots prioritized for management (ESA 2023b). ESA biologist Mark Dodero met Habitat West staff on July 20, 2023, to orient staff, identify and discuss San Diego thornmint avoidance strategies, and provide management recommendations. ESA biologist Mark Dodero conducted follow-up visits on July 24 and 25, 2023, to provide further direction and document management work progress. Management consisted of carefully hand-pulling target invasive non-native plant species, predominantly purple false brome, within the population maximum extents at plots SYGOACIL01, 02, 04, 05, 07, 08, 09, and 10 with a focus on areas where San Diego thornmint populations were previously detected, for a total of an 1.10-acre management area. Clustered tarweed (*Deinandra fasciculata*)

grew quite large this season and was prolific within the San Diego thornmint populations this year. Where necessary, staff also removed clustered tarweed in order to facilitate removal of non-native grasses and open up space for San Diego thornmint. Once hand-pulling was completed, Habitat West staff used line trimmers to dethatch remaining non-native plant species surrounding San Diego thornmint occurrences within 12-meter radius circles around three established monitoring plot center points (SYGOACIL05, 07, and 08). All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.2 San Miguel Savory Focused Management

The control of invasive non-native plant species is a primary concern for San Miguel savory management. The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent cover (ESA and ICF 2022). Focused management was conducted in response to 2022 TMP adaptive management recommendations for Boulder Oaks County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for San Miguel savory at the Boulder Oaks County Preserve within the BOCLCH2 monitoring plot maximum extent and an additional area northwest of the monitoring plot's maximum extent for a total of an 0.55-acre management area on April 28, 2023. To prevent the encroachment of invasive non-native perennial veldtgrass (*Ehrharta calycina*) on the San Miguel savory population, an additional management area northwest of the monitoring plot was delineated around a dense population of perennial veldtgrass. ESA biologist Sonya Vargas met Habitat West staff on-site to orient staff, identify and discuss San Miguel savory avoidance strategies, and provide management recommendations. Target invasive non-native plants included perennial veldtgrass and annual fescue (*Festuca myuros*). Non-native plants within 12 inches of San Miguel savory plants and the additional management area were carefully removed by hand. All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.3 Otay Tarplant Focused Management

The control of invasive non-native plant species is a primary concern for Otay tarplant management. The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and thatch to be removed (ESA and ICF 2022). Focused management was conducted in response to 2022 TMP monitoring results and adaptive management recommendations for Furby-North County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for Otay tarplant at the Furby-North County Preserve within the DECO13_3OMEA026_1 monitoring plot maximum extent for an 0.11-acre management area on July 6, 2023. ESA biologist Brenda McMillan met Habitat West staff on-site to orient staff, identify and discuss Otay tarplant avoidance strategies, and provide management recommendations. Management consisted of carefully hand-pulling invasive non-native grasses directly adjacent to Otay tarplant individuals. Once hand-pulling was completed, Habitat West staff removed thatch and invasive non-native grasses with line trimmers to 2 inches from the ground within the monitoring plot's maximum extent. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.4 Orcutt's Bird's-Beak Focused Management

The control of invasive non-native plant species is a primary concern for Orcutt's bird's-beak management. The TMP recommends invasive non-native grasses and forbs control within suitable Orcutt's bird's-beak habitat (ESA and ICF 2022), and SDMMP recommends controlling invasive non-native plant species to less than 20 percent cover. Focused management was conducted in response to 2022 TMP monitoring results and adaptive management recommendations for Tijuana River Valley Regional Park (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for Orcutt's bird's-beak at the Tijuana River Valley Regional Park within the COOR7_1TIRI009_1 and COOR7_1SMGU006_1 monitoring plot maximum extents for a total of an 0.35-acre management area on July 14, 2023. ESA biologist Brenda McMillan met Habitat West staff on-site to orient staff, identify and discuss Orcutt's bird's-beak avoidance strategies, and provide management recommendations. Management consisted of carefully hand-pulling invasive non-native grasses directly adjacent to Orcutt's bird's-beak individuals. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.5 Variegated Dudleya Focused Management

The control of invasive non-native plant species is a primary concern for variegated dudleya management. The TMP recommends maintaining less than 20 percent ground cover of invasive non-native plant species in the vicinity of the variegated dudleya population (ESA and ICF 2022). Focused management was conducted in response to 2022 TMP adaptive management recommendations for Lusardi Creek County Preserve and Sycamore Canyon/Goodan Ranch County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for variegated dudleya at Lusardi Creek County Preserve within the LCDUVA01 monitoring plot maximum extent and within all three herbivory enclosures for a total of an 0.09-acre management area. ESA biologist Brenda McMillan met Habitat West staff on May 1, 2023, to orient staff, identify and discuss variegated dudleya avoidance strategies, and provide management recommendations. Variegated dudleya plants were flagged prior to maintenance as part of MSP rare plant monitoring. Invasive non-native plant species within the previously installed herbivory fencing were carefully removed by hand to reduce the amount of standing biomass from invasive non-native plants and encourage native plant recruitment. Per the TMP, invasive non-native plants within 18 inches of the variegated dudleya were carefully pulled by hand. All biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was applied during maintenance. Previously installed herbivory fencing was also repaired with spare wire during focused management.

Habitat West conducted focused management for variegated dudleya at Sycamore Canyon/Goodan Ranch County Preserve within the SYGODUVA01 and SYGODUVA02 monitoring plot maximum extents and a 12-meter radius circle around the center point of both monitoring plots, for a total of an 0.05-acre management area on April 26 and 27, 2023. ESA biologist Mark Dodero met Habitat West staff on April 26, 2022, to orient staff, identify and

discuss variegated dudleya avoidance strategies, and provide management recommendations. Variegated dudleya plants were flagged in key locations to assist with identification and avoidance prior to management. Management consisted of carefully hand-pulling target invasive non-native plant species within the population maximum extents with a focus on areas where variegated dudleya populations were previously detected. Once hand-pulling was completed, Habitat West staff used line trimmers to cut and remove remaining non-native plant species surrounding variegated dudleya occurrences within 12-meter radius circles around both established monitoring plot center points. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.4.6 Willowy Monardella Focused Management

Focused management was conducted in response to 2022 TMP monitoring results and adaptive management recommendations for Sycamore Canyon/Goodan Ranch County Preserve (ESA 2023b). DPR park rangers conducted focused management for willowy monardella within the SYC201602 permanent monitoring plot by hand-pulling invasive non-native grasses (i.e., slender oat [*Avena barbata*], purple false brome, ripgut brome [*Bromus diandrus*], and annual fescue) and thinning native California buckwheat (*Eriogonum fasciculatum*) around the willowy monardella plants for an 0.0003-acre management area. The biomass was manually collected and disposed of by DPR park rangers. Management was supervised by ESA biologists Adrienne Lee and Amy Orduño-Baez.

3.5 Harbison's Dun Skipper

3.5.1 Harbison's Dun Skipper Adult Flight Surveys

ESA and Blackhawk Environmental, Inc. (Blackhawk) biologists conducted two adult surveys for Harbison's dun skipper (*Euphyes vestris harbisoni*) (HDS) during the 2023 flight season (between May 15 through June 30) (**Table 6**). Surveys were conducted at the two locations previously surveyed in 2021 and 2022. Surveys focused on immediate areas surrounding host plant San Diego sedge (*Carex spissa*) patches and worked outward to nearby potential nectar sources. Surveys were conducted in appropriate weather (sunny or partly sunny, 20–35˚C, and modest wind speeds of less than 15 mph) (Marschalek and Deutschman 2015). Potential nectar sources and all butterfly species observed during surveys were recorded. A habitat and threats assessment was conducted concurrently with the first adult flight survey, following the *Rare Butterfly Management and Conservation Planning* report (Marschalek and Deutschman 2016) to assess tree species, composition of tree canopy, percent of canopy that is thinning, percent of dead trees, and percent of trees with fire damage; general health conditions of San Diego sedge were also documented (if leaves were green, green with brown tips, or mostly brown); presence of flowing and standing water; and threats to habitat such as drought, climate change, human intrusion, pesticide use, altered hydrology, altered fire regime, invasive non-native plant species and competition from native cattail (*Typha* spp.), and tree pests such as gold-spotted oak borer (*Agrilus auroguttatus*) and shothole borer (*Euwallacea* sp.).

TABLE 6
HARBISON'S DUN SKIPPER SURVEY SUMMARY

Survey Type	2023 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
Adult Flight Surveys	May 26	1120–1335	Temp: 66°F 30% Cloud Cover Wind Speed: 2 mph	Temp: 83°F 10% Cloud Cover Wind Speed: 2 mph	Kris Alberts*, Dillon Travis
	June 16	1130–1430	Temp: 83°F 0% Cloud Cover Wind Speed: 2 mph	Temp: 82°F 0% Cloud Cover Wind Speed: 5 mph	Kris Alberts*, Brennan Mulrooney

NOTE:
* Blackhawk Environmental, Inc. staff.

3.5.2 Harbison's Dun Skipper Focused Management

Focused management for HDS was conducted in response to 2022 TMP adaptive management recommendations for Hellhole Canyon County Preserve (ESA 2023b). ESA subconsultant Habitat West conducted focused management for HDS by enhancing habitat through dethatching of non-native grasses and seeding with native nectar sources along Hell Creek near Survey Location 2 within Hellhole Canyon County Preserve. Appropriate nectar source seed species were selected based on source and availability.

ESA biologist Mark Dodero met Habitat West staff on October 18, 2023, to orient the staff, delineate seeding areas, discuss native habitat avoidance strategies, and identify appropriate native mulch material. Management activities during this visit included walking the enhancement locations and clearly delineating the final enhancement areas based on proximity to San Diego sedge and presence of grassy, open habitat where seed could establish, totaling 0.36 acres. Once areas were delineated, Habitat West prepared the seeding areas by removing non-native grasses and forbs via hand tools and line-trimmers. Native plants were carefully avoided and left in place. Habitat West returned on October 19, 2023, to continue site preparation. ESA biologist Mark Dodero and Habitat West staff returned to the enhancement area on October 25, 2023, to complete the dethatching and site preparation and broadcast the seed by hand. Seed was lightly raked into the top quarter-inch of soil. Once seed was applied, the seed was covered with light natural organic mulch (less than 80 percent cover) sourced from the surrounding habitat.

3.6 Arroyo Toad

ESA conducted surveys for arroyo toad (*Anaxyrus californicus*) along the Santa Maria Creek within the Ramona Grasslands County Preserve. The surveys were conducted in accordance with the U.S. Geological Survey (USGS) Aquatic Species and Habitat Assessment Protocol Rivers, Streams and Creeks-Paper (USGS 2020), and timed to fall within the accepted range outlined in the Survey Protocol for the Arroyo Toad (USFWS 1999). Incidental observations of MSCP-covered species or other special-status species were recorded. Survey dates and field personnel are listed in **Table 7**.

TABLE 7
ARROYO TOAD SURVEY SUMMARY

2023 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
May 16	0828–1813	Temp: 63°F Partly cloudy	Temp: 64°F Clear/few clouds	Robert Sweet, Brennan Mulrooney
May 17	0817–1458	Temp: 59°F Cloudy	Temp: 77°F Clear	Robert Sweet, Brennan Mulrooney
May 18	1343–1525	Temp: 72°F Clear	Temp: 72°F Partly cloudy	Robert Sweet, Brennan Mulrooney
May 19	0747–1604	Temp: 55°F Cloudy	Temp: 77°F Clear	Brennan Mulrooney, Bailey Setzler

ESA biologists conducted habitat assessment and presence/absence surveys along previously established USGS survey reaches within the Santa Maria Creek on May 16–19, 2023. ESA surveyed 18 of the 23 reaches (i.e., 22–24, 26–30, 33, 35–38, 40–42, 45, 52, and 53) along the Santa Maria Creek (survey area), while USGS surveyed the remaining 5 reaches (i.e., 25, 29, 34, 39, and 44). Each survey reach measures a total of 250 meters in length, and is separated into two smaller segments (i.e., A and B) each measuring 125 meters in length. The habitat assessment and presence/absence survey documented the quality and extent of suitable arroyo toad habitat and the total number/life stage of arroyo toad clutches observed along each reach. All suitable habitat (i.e., potential breeding pools) was documented in accordance with the USGS protocol and inspected for the presence and quantity of arroyo toad clutches as well as the presence and quantity of any potential predator species such as the American bullfrog (*Lithobates catesbeianus*; larvae, sub-adults, and/or adults), red swamp crayfish (*Procambarus clarkii*), and red-eared slider turtle (*Trachemys scripta* ssp. *elegans*). Perennial invasive non-native vegetation observed along each reach (e.g., tamarisk [*Tamarix ramosissima*]) was also mapped.

For each segment along each survey reach, survey start information (i.e., date, weather, surveyors, and locational coordinates) was documented and upstream/downstream photographs were taken. Suitable habitat was characterized and included the documentation of substrate along the bed and banks, the presence and extent of aquatic and emergent vegetation/algae along the bed and banks, the vegetation community type (including the presence and extent of an overhead canopy), dominant plant species, etc. An assessment of potential disturbances, natural and man-made (e.g., high flows, livestock), observed within each survey area was noted as well. Water quality measurements were taken along each segment that included temperature (°F), pH, conductivity, channel width and depth (meter), transparency, channel surface water velocity (meters/second), etc.

While conducting the habitat assessment, ESA biologists traversed the survey area sufficiently to achieve full-visual coverage of suitable habitat and to document the presence/absence and prevalence of arroyo toad. For each arroyo toad detection, the estimated number and size of individuals, including size class (i.e., adult, juvenile, metamorphs, larvae, or egg strand) were recorded. Any special-status aquatic wildlife species (e.g., two-striped garter snake [*Thamnophis*

hammondii], western pond turtle [*Emys marmorata*], arroyo chub [*Gilia orcuttii*]) observed during surveys were noted and recorded, as well.

3.7 San Diego Cactus Wren Focused Management

The control of herbaceous, often invasive non-native plant species and removal of laddering of plants within the established cacti restoration sites (R1 and R2) are primary concerns for San Diego cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) management. The TMP recommends restored habitat be managed by controlling invasive non-native plant species and removing thatch (ESA and ICF 2022). Focused management was conducted in response to the 2022 TMP monitoring results and adaptive management recommendations for Lakeside Linkage County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for San Diego cactus wren within a portion of the northern restoration area (R1), totaling 0.63 acres, on October 30, 2023. ESA biologist Jaclyn Catino-Davenport was present during habitat maintenance to orient the staff, identify cactus wren roost sites (if present), and discuss native habitat avoidance strategies, provide management recommendations, and ensure that maintenance crews did not encroach into areas outside of the restoration areas.

Management of suitable habitat for San Diego cactus wren consisted of line-trimming taller-growing ruderal invasive non-native vegetation (e.g., non-native grasses, tocalote [*Centaurea melitensis*], and shortpod mustard [*Hirschfeldia incana*]) and native vegetation (e.g., California buckwheat and California sagebrush [*Artemisia californica*]) to reduce the overall height of standing biomass and disarticulation of plant material. All vegetation (native and non-native) was removed by hand if it was laddering in any cacti patches. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.8 Northern Harrier

ESA biologists conducted four nesting surveys, once a month for 4 months, within the Tijuana River Valley Regional Park to document northern harrier (*Circus hudsonius*) individuals and breeding behavior. If nest sites were detected, the habitat was characterized and the presence and abundance of prey (i.e., small mammals) were noted. Incidental observations of MSCP-covered species or other special-status species were recorded on Field Maps and the Fulcrum mobile applications. Survey dates, weather conditions, and field personnel names are provided in **Table 8**.

Surveys were conducted during the morning hours and under weather conditions conducive for raptor surveys (e.g., no heavy fog, high winds, or precipitation). ESA biologists focused on survey areas with low scrub and/or vegetation and previously documented northern harrier usage areas within the Tijuana River Valley Regional Park. ESA biologists scanned these areas with binoculars before walking along trails or dirt access roads to cover as much of the Tijuana River Valley Regional Park as feasible. ESA biologists reviewed the 2022 TMP Annual Report to ensure all known northern harrier locations were recorded and documented in 2023 (ESA 2023b).

TABLE 8
NORTHERN HARRIER SURVEY SUMMARY

2023 Survey Date	Survey Number	Survey Times	Start Weather Conditions	End Weather Conditions	Names of Biologists
March 24	1	0700–1100	Temp: 51.2°F, 60% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0 mph; Wind Direction: N/A	Temp: 60.5°F, 15% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 3.4 mph; Wind Direction: SW	Jaclyn Catino-Davenport, Brennan Mulrooney
April 25	2	0716–1143	Temp: 60.6°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 2.7 mph; Wind Direction: SW	Temp: 69.9°F, 40% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.8 mph; Wind Direction: SW	Jaclyn Catino-Davenport, Adrienne Lee
May 25	3	0722–1119	Temp: 63.7°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0.6 mph; Wind Direction: W	Temp: 67.5°F, 95% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 2.4 mph; Wind Direction: W	Jaclyn Catino-Davenport, Bailey Setzler
June 27	4	0628–1100	Temp: 63.3°F, 100% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0 mph; Wind Direction: N/A	Temp: 67.6°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 3.6 mph; Wind Direction: W	Jaclyn Catino-Davenport, Brennan Mulrooney

ESA biologists conducted the threats assessment monitoring during the last survey. Since neither SDMMP nor other regional entities have developed a species-specific threats assessment for the northern harrier, the threats assessment form from Section VI of the 2020 Rare Plant Occurrence Monitoring Form and the 2020 Management Needs and Notes Form was completed (SDMMP 2020). The threats assessment survey included an evaluation of potential threats to northern harrier nest success, breeding and foraging habitat, and/or prey sources.

3.9 Least Bell's Vireo

3.9.1 Least Bell's Vireo Surveys

ESA biologists conducted presence/absence monitoring surveys in April through June to locate least Bell's vireo (*Vireo bellii pusillus*) territories and determine breeding status of males in the Santa Margarita County Preserve (**Table 9**). Comprehensive surveys were conducted specifically for least Bell's vireo following modified USFWS Least Bell's Vireo Survey Guidelines (USFWS 2001). Surveys were conducted by qualified biologists familiar with the vocalization and plumage of adult and juvenile individuals to maximize detection. (Recovery permits pursuant to Section 10(a)(1)(A) of the FESA are not required for presence/absence surveys as long as protocol is followed, and vocalization tapes are not used).

TABLE 9
LEAST BELL'S VIREO SURVEY SUMMARY

2023 Survey Date	Time (start/end)	Wind (mph) (start/end)	Temperature (F) (start-end)	Cloud Cover Percentage (start/end)	Names of Biologists
April 11	0630–1100	0/0	50°–58°	100–80	Brennan Mulrooney, Florence Chan
April 21	0629–1103	2/0	58°–70°	100–40	Florence Chan, Dillon Travis
May 2	0644–1115	0/2	55°–65°	95–45	Florence Chan, Jaclyn Catino-Davenport
May 12	0642–1107	1/1	56°–65°	100–60	Florence Chan, Mary Cozy
May 25	0630–1131	1/3	55°–75°	100–90	Brenda McMillan, Karla Alcaraz
June 6	0600–1100	1/1	58°–64°	60–100	Brennan Mulrooney, Florence Chan
June 19	0559–1100	0/0	56°–67°	100–100	Florence Chan, Amy Orduño-Baez
June 30	0555–1100	0/1	57°–79°	100–0	Brennan Mulrooney, Bailey Setzler

Riparian areas and potential vireo habitat were surveyed eight times (eight survey passes) at Santa Margarita County Preserve between April 11 and June 30, at least 10 days apart to maximize detection. Santa Margarita County Preserve was surveyed in its entirety over 1 day for each survey pass.

In accordance with the USFWS Least Bell's Vireo Survey Guidelines (USFWS 2001), observations of brown-headed cowbirds (*Molothrus ater*) were recorded and GPS locations taken for any individuals detected within vireo territory during each survey, and incidental observations of southwestern willow flycatcher (*Empidonax trallii extimus*) and yellow-billed cuckoo (*Coccyzus americanus*) were recorded.

All vireo detections were recorded and plotted to estimate the location and extent of habitats utilized and mapped on the appropriate USGS quadrangle map. Data pertaining to vireo status, GPS location, distribution, age, and sex of the bird, as well as any leg bands, were noted and recorded. Passive nest monitoring was conducted through the presence/absence surveys. Biologists did not approach nests directly. Nest success was inferred by nesting behavior during presence/absence surveys. The results of the survey passes were reviewed and territories assigned for each pair or solitary male. A central point was used to indicate the territory. Any threats detected during surveys were documented.

3.9.2 Brown-Headed Cowbird Trapping

A brown-headed cowbird trapping program was implemented on Santa Margarita County Preserve in 2022 to reduce the threat and impact of brown-headed cowbird brood parasitism on least Bell's vireo. The trapping program was initiated in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 TMP surveys (ESA 2022) and was recommended to continue in 2023 based on 2022 brown-headed cowbird trapping results (ESA 2023b). TW Biological Services, LLC, personnel installed and assembled two traps on March 23, 2023, in the same locations as those in 2022, along the Santa Margarita River within riparian

habitat that provides suitable nesting habitat for least Bell's vireo within the Preserve. Trap 1 was located approximately 0.2 km northwest of the intersection of De Luz Road and Sandia Creek Drive. This trap was placed adjacent to a trail at the north end of the Preserve's staging area. Trap 2 was placed approximately 0.8 km north of the De Luz Road/Sandia Creek Drive intersection a short distance west of the road. Both traps were placed behind brush to obscure view by the public, but in easily accessible locations by vehicle.

TW Biological Services, LLC, personnel activated traps on April 1, 2023. On activation, the traps were furnished with fresh water, seed, perches, shade, and live decoy cowbirds. The right primary wing feathers of both male and female decoy cowbirds were clipped for identification and prevention of accidental escape or release back into the wild. This practice also greatly diminishes their likelihood of survival in the wild should they escape. A sign was placed on each trap providing trap information and contact phone numbers. GPS coordinates for trap locations were recorded.

Traps were checked daily, during daylight hours, from April 1 to June 30, 2023. This was done to record trap capture events, release non-target wildlife species incidentally captured, add or remove cowbirds to maintain the 2:3 (male:female) decoy ratio, provide fresh seed and water, and repair trap damage if needed. Information recorded for all newly captured cowbirds included capture location, date, sex, and age. Newly captured cowbirds not utilized as decoys, were removed daily and humanely euthanized off-site. All other non-target birds captured were released unharmed at the trap sites. On June 30, 2023, both traps were deactivated and on July 12, 2023, traps were dismantled and removed from the Preserve.

3.10 Stephens' Kangaroo Rat

3.10.1 Habitat Assessments

Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) habitat monitoring at Ramona Grasslands County Preserve and Hellhole Canyon County Preserve was conducted in October 2023. Specific monitoring protocols followed those outlined in the TMP for SKR monitoring at Ramona Grasslands County Preserve and Hellhole Canyon County Preserve (ESA and ICF 2022). This methodology follows the methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). Incidental observations of MSCP-covered species or other special-status species were recorded.

- **Ramona Grasslands County Preserve.** SKR monitoring areas were originally determined based on potentially suitable SKR habitat. Within the Preserve, specific management areas are referred to as Grazing Management Units (i.e., 1A, 1B, 1C, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, 4B, 4C, and 5) and SKR Management Areas (i.e., 1, 2, and 3). Grazing Management Units that provide potentially suitable SKR habitat (i.e., that which consists of flat terrain and/or gentle slopes that support open, low-growing grasslands) were included within the SKR monitoring area; however, only portions of the associated Grazing Management Units are within SKR Management Areas. The current TMP-selected SKR monitoring areas include Grazing Management Units 1A, 1C, 2A (portions of SKR Management Unit 1), 2B (portions of SKR Management Areas 1 and 2), 3B (SKR Management Area 3), 3C, 3D, 3E, and 4A, as these areas provide suitable SKR habitat. Additional SKR discovery areas are

located within Grazing Management Units 3B and 4C. It is important to note that Grazing Management Unit 3A is not located within an SKR Management Area but is included in the monitoring effort based on previously determined SKR suitability.

Monitoring plots were initially established within SKR core habitat areas on the Preserve in 2016, following an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). A 50- x 50-meter grid pattern was overlain onto a georeferenced aerial map over each of the core SKR monitoring areas, and 28 plots were established. Of these 28 plots, 16 were determined to be permanent sampling plots that have been monitored since 2016: A1-1 to A1-6, A2-1, A2-6, A2-7, 3A-1, 3A-6, 3A-7, 3A-8, A3-1, A3-2, and A3-3. The 2023 SKR monitoring effort sampled these 16 permanent sampling plots for consistency with previous monitoring efforts, and 12 randomly selected plots—6 within the SKR monitoring areas and 6 within the SKR discovery areas—for a total of 28 sampling plots (ESA and ICF 2022).

- **Hellhole Canyon County Preserve.** Baseline SKR trapping surveys were conducted in 2020 within the northeastern portion of the Sierra Verde Addition of Hellhole Canyon County Preserve and confirmed SKR presence in one of the three trapping plots (ESA 2021). Per the updated TMP (ESA and ICF 2022), the 2023 SKR monitoring effort sampled the same three sampling plots established during 2020 baseline trapping surveys due to the limited size of suitable SKR habitat within Hellhole Canyon County Preserve. In accordance with the TMP, monitoring protocols followed an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016).

Upon arrival at each sample plot, biologists installed pin flags at the corners of each plot and took representative photographs from the southeast corner of each plot, facing northwest. The biologists then walked systematic transects through each plot, searching for kangaroo rat sign (e.g., burrows, scat, tracks, runways, and dust-bathing sites) until 100 percent coverage of the plot was achieved. All kangaroo rat sign were recorded on electronic survey forms using the Survey123 application. SKR presence or absence within a given plot was determined solely on whether or not kangaroo rat sign was observed within the plot.

Habitat assessment forms were completed on the Survey123 application for each plot, specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance, and land use. These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008). Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned an SKR-potential rating (e.g., High Potential, Moderate Potential, Low Potential, or No Potential). Survey dates, times, weather conditions, and field personnel names for these surveys are included in **Table 10**.

TABLE 10
SKR HABITAT ASSESSMENT SURVEY SUMMARY

Preserve	2023 Survey Date	Survey Times	Start Weather Conditions	End Weather Conditions	Name of Biologists
Ramona Grasslands	October 24	0805–1530	Temp: 59°F 10% Cloud Cover Wind Speed: 0–3 mph	Temp: 73°F 5% Cloud Cover Wind Speed: 3–8 mph	Kris Alberts* Hayley Milner* Dillon Travis
	October 25	0815–1400	Temp: 59°F 100% Cloud Cover Wind Speed: 0–1 mph	Temp: 64°F 90% Cloud Cover Wind Speed: 1–4 mph	Kris Alberts* Hayley Milner* Dillon Travis
Hellhole Canyon	October 23	0915–1135	Temp: 61°F 100% Cloud Cover Wind Speed: 0–2 mph	Temp: 63°F 80% Cloud Cover Wind Speed: 1–3 mph	Kris Alberts* Hayley Milner* Dillon Travis

NOTE:
* Blackhawk Environmental, Inc. staff.

3.10.2 Stephens' Kangaroo Rat Focused Management

The control of invasive non-native plant species and maintaining the sparse cover of annual forbs and grasses suitable for SKR habitat are primary concerns for SKR management. The TMP recommends maintaining less than 20 percent ground cover of invasive non-native plant species in areas identified as suitable habitat for SKR and maintaining SKR habitat through targeted mowing and/or invasive non-native plant treatment (ESA and ICF 2022). Focused management was conducted in response to 2022 TMP monitoring results and adaptive management recommendations for Hellhole Canyon County Preserve (ESA 2023b).

ESA subconsultant Habitat West conducted focused management for SKR at Hellhole Canyon County Preserve within an 5.86-acre management area within suitable habitat for SKR on September 25 and 26, 2023. This habitat-focused management occurred in an area of high archaeological sensitivity (ESA 2019a). ESA cultural resources specialists Kyle Garcia, M.A., RPA, and Joel Aspeytia, B.A., delineated exclusionary areas on September 22, 2023, prior to the start of maintenance activities. ESA cultural resources specialist Joel Aspeytia and ESA biologist Jaclyn Catino-Davenport were present during habitat maintenance to orient the staff, identify and discuss SKR avoidance strategies, provide management recommendations, and ensure the maintenance crews did not encroach into the exclusionary areas.

Management of suitable habitat for SKR consisted of line trimming taller-growing ruderal invasive non-native vegetation (e.g., non-native grasses, tocalote, and shortpod mustard to reduce the overall height of standing biomass to a desired level and assist with disarticulation of herbaceous weeds). Invasive non-native vegetation was cut to the ground in most areas; however, vegetation was left to 2 inches from the ground in areas where burrows were present. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility.

3.11 Pallid Bat

3.11.1 Roosting & Foraging Habitat Threat Assessment

ESA biologists determined potential roosting and foraging areas (e.g., tree cavities, rocky cliffs, outcrops, and natural caves) for pallid bats (*Antrozous pallidus*) within Hellhole Canyon, Mount Olympus, and Wilderness Gardens County Preserves, based on review of aerial maps and daytime visual threat assessments, while conducting transect acoustic monitoring. The daytime visual threat assessment of potential roosting and foraging habitat was conducted prior to and coinciding with the setup of transect acoustic equipment. Visual roosting and foraging habitat threat assessment surveys were conducted in June 2023 (**Table 11**).

TABLE 11
BAT SURVEY SUMMARY

Survey Type	2023 Survey Date	Start Weather Conditions	End Weather Conditions	Names of Biologists
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	June 20	Temp: 74.6°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed:2.9 mph; Wind Direction: SW	Temp: 66.5°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.0 mph; Wind Direction: S	Jaclyn Catino-Davenport, Karla Alcaraz
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	June 24	Temp: 66.0°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 1.9 mph; Wind Direction: W	Temp: 63.1°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0.8 mph; Wind Direction: W	Jaclyn Catino-Davenport, Dillon Travis
Roosting and Foraging Habitat Threat Assessment / Transect Acoustic Survey	June 26	Temp: 76.3°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 3.7 mph; Wind Direction: SW	Temp: 60.5°F, 0% cloud cover; Visibility: Good; Precipitation: None; Avg. Wind Speed: 0 mph; Wind Direction: N/A	Jaclyn Catino-Davenport, Karla Alcaraz

Transect acoustic monitoring was conducted using one Wildlife Acoustics Inc. SM4 bat echolocation detector with a SMM-U2 microphone mounted 8 to 10 feet above the ground and secured onto a backpack and one Wildlife Acoustics Inc. Echo Meter Touch Pro 2 echolocation detector carried at hand-level by the biologist. The SM4 detector was programmed to turn on at solar sunset and default settings were modified to trigger recording at 5 kilohertz. The Echo Meter Touch Pro 2 detector was manually turned on at solar sunset and set to record and identify bat acoustics for North American species. Transect routes were selected during the day, recorded on Field Maps, and began up to 30 minutes after solar sunset. Transect routes and data collection occurred for up to 1 hour. Bat calls were automatically recorded by the units during the transect monitoring period.

The recorded bat calls were processed using Sonobat Version 30 and the region and subregion classifiers for southwest California. Manual vetting of automatically identified calls consisted of reviewing subsets of calls for each species, as well as reviewing individual calls and comparing them to a reference library of bat calls. Where initial manual review indicated automated misclassifications of call groups (e.g., groupings by minimum frequency, species, season, or

time of night), these groups were manually reviewed and identified to most likely species. Many bat species have overlapping call repertoires; therefore, not all bat calls can be conclusively identified to a species. Identifications for inconclusive calls were deferred to the most likely species based on a combination of automatic species identification, survey-specific trends noted during manual call review, and species expected to occur based on known seasonal and geographic distribution.

3.12 Townsend's Big-Eared Bat

3.12.1 Roosting and Foraging Habitat Threat Assessment

ESA biologists determined potential roosting and foraging areas (e.g., tree cavities, rocky cliffs, outcrops, and natural caves) for Townsend's big-eared bats (*Corynorhinus townsendii*) within Hellhole Canyon and Wilderness Gardens County Preserves, based on review of aerial maps and daytime visual threat assessments while conducting transect acoustic monitoring. The daytime visual threat assessment of potential roosting and foraging habitat was conducted prior to and coinciding with the setup of transect acoustic monitoring. Visual roosting and foraging habitat threat assessment surveys were conducted in June 2023 (Table 11).

Transect acoustic monitoring was conducted using one Wildlife Acoustics Inc. SM4 bat echolocation detector with a SMM-U2 microphone mounted 8 to 10 feet above the ground and secured onto a backpack and one Wildlife Acoustics Inc. Echo Meter Touch Pro 2 echolocation detector carried at hand-level by the biologist. The SM4 detector was programmed to turn on at solar sunset and default settings were modified to trigger recording at 5 kilohertz. The Echo Meter Touch Pro 2 detector was manually turned on at solar sunset and set to record and identify bat acoustics for North American species. Transect routes were selected during the day, recorded on Field Maps, and began up to 30 minutes after solar sunset. Transect routes and data collection occurred for up to 1 hour. Bat calls were automatically recorded by the units during the transect monitoring period.

The recorded bat calls were processed using Sonobat Version 30 and the region and subregion classifiers for southwest California. Manual vetting of automatically identified calls consisted of reviewing subsets of calls for each species, as well as reviewing individual calls and comparing them to a reference library of bat calls. Where initial manual review indicated automated misclassifications of call groups (e.g., groupings by minimum frequency, species, season, or time of night), these groups were manually reviewed and identified to most likely species. Many bat species have overlapping call repertoires; therefore, not all bat calls can be conclusively identified to a species. Identifications for inconclusive calls were deferred to the most likely species based on a combination of automatic species identification, survey-specific trends noted during manual call review, and species expected to occur based on known seasonal and geographic distribution.

3.13 Peak Forage Production and Residual Dry Matter Monitoring

3.13.1 Peak Forage Production Monitoring

Ramona Grasslands County Preserve

Measuring peak forage production assesses the amount of forage available for grazing and informs stocking rates. At Ramona Grasslands County Preserve samples were collected, and peak production was measured following the University of California Agriculture and Natural Resources' (UCANR's) *Rangeland Management Series Annual Range Forage Production* (UCANR 2016) recommendations and *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* (Bartolome et al. 2002). Peak forage production at Ramona Grasslands County Preserve was monitored at 58 monitoring plots within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B.

Sampling was conducted on April 7 and 10, 2023, by ESA biologists Amanda French, Jaclyn Catino-Davenport, Karla Alcaraz, and Mary Cozy. A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each monitoring plot. All aboveground biomass, including vegetation and thatch, were collected within the hoop (samples) using gardening shears or by gathering manually. These samples were stored in paper bags. Samples did not include tree leaves (e.g., oaks [*Quercus* spp.]), as referenced in the residual dry matter (RDM) methodology (Bartolome et al. 2002). Woody shrubs (e.g., scrub oak [*Quercus berberidifolia, xacutidens*]), perennial plant species, and summer annuals were also excluded from collection. Dominant plant species observed within and in the vicinity of the monitoring plots were recorded, as were special-status species or invasive non-native species incidentally observed by biologists while traveling to and from monitoring plots.

ESA biologists processed the samples in the ESA office located at 626 Wilshire Boulevard #1100, Los Angeles, California 90017. All samples were air-dried and weighed in grams using a digital scale. ESA biologists excluded the weight of the paper bags. The weights of the three samples from each monitoring plot were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was calculated by averaging all monitoring plots within a management unit. The averaged value is the peak forage production for the management unit for the year.

3.13.2 Residual Dry Matter Monitoring

Ramona Grasslands County Preserve

Ramona Grasslands County Preserve is managed under the *Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan* (Grazing Management Plan) (ESA 2019b). The Grazing Management Plan designates grazing management units and associated target RDM values within the Preserve to monitor the effects of cattle grazing on the land to support the conservation management goals and objectives. RDM acts as soil protection from the compacting and erosive effects of rains and can help conserve initial rainfall soil moisture to facilitate germination of the next season's annual plants. Annual RDM monitoring is a method

used to quantify the impact of cattle grazing on grasslands from year to year, to determine if natural community or species-specific RDM targets are achieved, and to provide land managers with information that allows them to make grazing management adjustments to maintain a sustainable rangeland. Samples were collected and RDM was measured following the UCANR's *Rangeland Management Series Annual Range Forage Production* recommendations (UCANR 2016) and *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* (Bartolome et al. 2002). RDM was monitored at 58 monitoring plots within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B.

Sampling was conducted on September 11 and 12, 2023, by ESA biologists Adrienne Lee, Amanda French, Bailey Setzler, and Dillon Travis. A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each monitoring plot. All aboveground biomass, including vegetation and thatch, were collected within the hoop (samples) using gardening shears or by gathering manually. These samples were stored in paper bags. Samples did not include tree leaves (e.g., oaks, as referenced in the RDM methodology (Bartolome et al. 2002). Woody shrubs (e.g., scrub oak, perennial plant species, and summer annuals were also excluded from collection. Dominant plant species observed within and in the vicinity of the monitoring plots were recorded, as were special-status species or invasive non-native species incidentally observed by biologists while traveling to and from monitoring plots.

ESA biologists processed the samples in the ESA office located at 626 Wilshire Boulevard #1100, Los Angeles, California 90017. All samples were air-dried and weighed in grams using a digital scale. ESA biologists excluded the weight of the paper bags. The weights of the three samples from each monitoring plot were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was calculated by averaging all monitoring plots within a management unit. The average lb/acre for a given management unit was compared to the target RDM values established for each management unit.

3.14 Regional Monitoring Efforts

DPR coordinated with regional monitoring partners regarding monitoring activities to reduce duplication of efforts and to minimize impacts on the species. Through DPR-issued Right-of-Entry (ROE) Permits, conservation partners—including AECOM and Mulligan Biological Consulting (MBC) contracted by SANDAG, Dr. Daniel Marschalek from the University of Central Missouri, USGS, and the San Diego Zoo Institute for Conservation Research—performed monitoring activities for species included in the TMP on DPR parks and preserves in 2023. Monitoring details, including species, preserve name, dates, methodology, and monitoring entity, are listed in **Table 12**.

TABLE 12
ADDITIONAL MONITORING SURVEY SUMMARY

Species	County Preserve	2023 Survey Date	Methodology	Monitoring Entity
Parish's brittlescale	Ramona Grasslands	June 27	MSP Rare Plant Monitoring Protocol	AECOM
Orcutt's brodiaea	Boulder Oaks	June 19	MSP Rare Plant Monitoring Protocol	AECOM
	Simon	June 16	MSP Rare Plant Monitoring Protocol	AECOM
	Mount Olympus	June 2	MSP Rare Plant Monitoring Protocol	AECOM
Orcutt's bird's-beak	Tijuana River Valley Regional Park	June 29	MSP Rare Plant Monitoring Protocol	MBC
Mexican flannelbush	Tijuana River Valley Regional Park	June 8–9	MSP Discovery Survey	AECOM and MBC
Baja California oatgrass	Simon	May 16	MSP Discovery Survey	MBC
	Sycamore Canyon/Goodan Ranch	May 9, 13, 16, and 19	MSP Discovery Survey	MBC
Parish's brittlescale	Ramona Grasslands	June 27, July 21	MSP Discovery Survey	AECOM
Encinitas baccharis	Del Dios Highlands	September 5	MSP Discovery Survey	MBC
Harbison's dun skipper	Hellhole Canyon	June 8, 17, and July 5	Adult Flight Surveys	Dr. Daniel Marschalek (University of Central Missouri)
Arroyo toad	Ramona Grasslands	May 18–June 23	USGS Aquatic Species and Habitat Assessment Protocol	USGS
Burrowing owl	Ramona Grasslands	May 25, June 1, and June 9	CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012)	San Diego Zoo Institute for Conservation Research
Tricolored blackbird	Ramona Grasslands	May 25	SDMMP San Diego County Tricolored Blackbird Breeding Surveys and Habitat and Threat Assessments Protocol	AECOM

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CHAPTER 4
Results and Discussion

4.1 Vernal Pools and Alkali Playas

4.1.1 Hydrological Monitoring

Hydrological monitoring was conducted in Ramona Grasslands County Preserve during an above-average rainfall year. The hydrological monitoring methodology included five variables. The first measurable rain event occurred on December 11 and 12, 2022, which resulted in 0.72 inches and 0.45 inches of rain, respectively (NOAA 2023). Due to contract timing, ESA's first hydrological monitoring visit was conducted on February 27, 2023, 72 days after the first major storm event. The total number of days inundated at the deepest point is variable by rain year and is assumed to be higher than what is shown in the results due to the study period initiating after the first rain event. Hydrological monitoring results and discussion are based on analysis using the maximum number of days continuously inundated at deepest point, coefficient of variation of water depth at deepest point, mean water depth at deepest point, and number of times drained completely during the wet season. ESA collected data on vernal pool and alkali playa size (i.e., length and width in feet); the maximum lengths and widths and average lengths and widths, along with all hydrological monitoring results, are provided in **Table 13** and shown in **Figure 2**. Observed pool boundaries in 2023 that differed from original pool boundary mapping were re-mapped and are depicted in Figure 2. Additional raw data measurements, rain event data, and hydrological monitoring photographs are provided in **Appendix A**, *Vernal Pools and Alkali Playas Monitoring & Representative Photographs*.

The vernal pools and alkali playas are sensitive to varying rainfall. In 2023, they were inundated and overflowed after the March rain events, providing a unique monitoring opportunity throughout the wet season. Four vernal pools (i.e., e59, e61, c20, and ev3) were observed to have a relatively low coefficient of variation, indicating functioning and hydrologically stable vernal pools. These pools were observed to pond water long enough to support vernal pool indicator plant and wildlife species suggesting that the pool basins were hydrologically relatively undisturbed. Vernal pool e82 and alkali playa raap17 drained fully twice within the survey period and had the shallowest mean water depth at the deepest point; they also had the lowest vernal pool indicator plant species richness. Overall, longer inundation periods may have influenced how many vernal pool indicator plant species expressed themselves this year. There was a slow change over time in the length and width, but depth varied as additional storm events occurred well into April, which continued to keep pools inundated. Many pools showed a steady rate of evaporation, while some of the largest pools were reduced to smaller ponded areas that held water into late spring. Hydrological monitoring results showed a diversity in vernal pool types (e.g., shallow vs. deep) across the Preserve, and is reflected in a range of plant distributions and inundation lengths. Hydrological monitoring results for the vernal pools and playa are discussed below and grouped based on a shared local watershed.

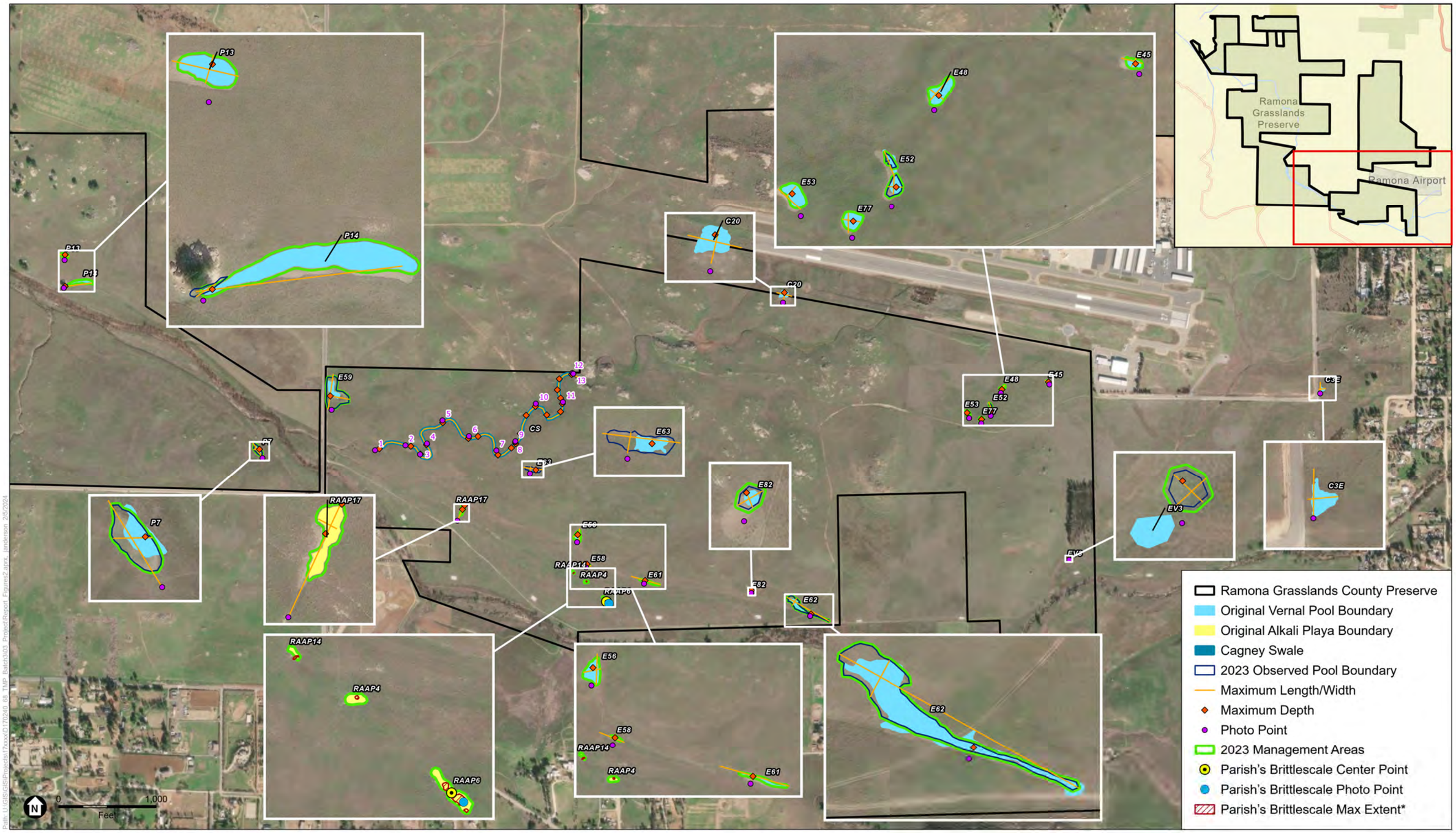
TABLE 13
VERNAL POOLS AND ALKALI PLAYA HYDROLOGICAL MONITORING RESULTS

Pool/Playa	Maximum Length (ft)	Average Length (ft)	Maximum Width (ft)	Average Width (ft)	Total # of Days Inundated at the Deepest Point*	Maximum # of Days Continuously Inundated at Deepest Point*	Coefficient of Variation of Water Depth at Deepest Point	Mean Water Depth at Deepest Point (cm)	# of Times Drained Completely During the Wet Season**
p7	182.93	128.54	68.89	55.44	57	57	51%	14.19	1
p13	97.66	84.30	41.54	33.79	50	50	55%	9.86	1
p14	333.74	117.95	32.89	14.43	43	43	73%	8.21	1
e59	354.67	312.32	224.00	208.11	64	64	34%	21.03	0
e63	195.24	163.72	72.44	45.32	43	43	83%	5.53	1
e56	130.17	112.25	72.74	60.55	43	43	71%	6.57	1
e58	112.77	85.98	26.04	18.10	50	50	54%	10.04	1
e61	306.63	143.72	24.69	15.51	64	64	33%	26.14	0
c20	154.76	105.57	105.54	93.81	57	57	44%	17.66	1
e82	25.90	23.49	16.73	14.64	6	5	162%	0.87	2
e62	491.65	201.53	74.78	16.65	43	43	66%	14.59	1
e53	72.86	64.80	33.47	28.47	50	50	59%	12.37	1
e77	46.51	34.04	41.98	31.99	30	30	109%	3.73	1
e52	109.35	59.62	34.15	27.65	50	50	59%	9.29	1
e48	69.94	61.73	38.28	33.26	43	43	67%	7.88	1
e45	51.31	42.26	26.73	22.02	37	37	72%	5.48	1
ev3	25.38	20.95	24.63	21.46	64	64	33%	21.22	1
raap17	338.55	136.59	27.97	10.60	17	12	150%	1.36	2

NOTES: ft = feet; cm = centimeters

* Total number of days inundated is assumed to be higher due to the study period initiating after the first rain events of the wet season.

** The first measurable rain event occurred on December 11 and 12, 2022; however, the start of the wet season for 2023 monitoring purposes is defined as the first day of hydrological monitoring. Vernal pool e59 was the only pool to remain ponded beyond the survey period.



SOURCE: ESRI, 2021; ESA 2023; AECOM, 2023
NOTE: Results provided by AECOM

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management
Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 2
Vernal Pools and Alkali Playas Monitoring and Management Results
Ramona Grasslands County Preserve

ESA

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p7

Vernal pool p7 is an isolated pool located on the south side of the Santa Maria Creek floodplain. It has a moderate coefficient of variation with an average depth of 14.19 centimeters (cm). It had an average length of 128.54 cm and an average width of 55.94 cm with a maximum length measured at 182.93 cm and a maximum width of 68.89 cm. Vernal pool p7 held water throughout the monitoring period and was fully drained by the final monitoring visit on May 1, 2023. This vernal pool was mostly bare in the middle with a narrow band of non-native vegetation along the margins.

p13 and p14

Vernal pools p13 and p14 are located on the north side of the Santa Maria Creek floodplain with p13 located north of p14 in a shared local watershed. Vernal pool p13 is relatively shallow throughout with a moderate coefficient of variation indicating a hydrologically stable vernal pool with a slow and steady draining period. Vernal pool p13 had an average length of 84.30 cm, an average width of 33.79 cm, and an average depth of 9.86 cm. When fully drained, it was covered with grass poly (*Lythrum hyssopifolia*), toad rush (*Juncus bufonius*), and longbeak stork's bill (*Erodium botrys*). Vernal pool p14 is located at the base of a boulder outcropping with a coast live oak (*Quercus agrifolia*) tree overhanging the deepest part of the pool and draining into the Santa Maria Creek at peak inundation. Vernal pool p14 has been mapped as a long, narrow vernal pool; however, based on site conditions, including vernal pool indicator plant species distribution, abundance, and cover, the pool boundary was refined during the study. The refined mapping area consisted of a small, deep pool (Figure 2). The remainder of the previously mapped boundary is characterized by a gently sloping vernal swale with deep furrows from previous land uses. The ponded area had an average length of 117.95 cm and an average width of 14.43 cm. The maximum length was measured at 333.74 cm with a maximum width of 32.89 cm based on the maximum inundation boundary observed in 2023. The average depth was 8.21 cm. It held water for 43 days with a moderate to high coefficient of variation indicating higher changes in water depths following rain events. This could be attributed to the additional input from the coast live oak tree overhang and runoff from the boulders. When fully drained, p14 was bare in the center with a narrow band of vernal pool indicator plant species intermixed with non-native grasses.

e59

Vernal pool e59 is a large, isolated pool located directly east of Rangeland Road, north of Santa Maria Creek. It was one of two pools that remained inundated during the entire monitoring period and had a low coefficient of variation indicating a hydrologically stable vernal pool. Due to the prolonged inundation period, it is anticipated that much of the pool would be bare when fully drained. It had an average length of 312.32 cm with an average width of 208.11 cm and maintained an average depth of 21.03 cm. At the end of the monitoring period, a narrow band of vernal pool indicator plant species intermixed with invasive non-native plant species was found around the pool margin.

e63

Vernal pool e63 is an isolated vernal pool located on the southside of Cagney Swale in a low-lying area within the Preserve. It was inundated for 43 days, reaching a peak depth at the end of March. It had a moderate to high coefficient of variation indicating slightly higher variations in depth. It sustained an average depth of 5.53 cm with an average length of 163.72 cm and an average width of 41.20 cm. After a substantial rain event on March 15, 2023, pool e63 showed an increase in non-native grass cover within the pool (Appendix A).

e56, e58, e61, e62, and e82

Vernal pools e56, e58, e61, e62, and e82 have a shared local watershed and are discussed together for the purposes of this hydrological study. These vernal pools are found within a vernal swale which acts as a tributary to the Santa Maria Creek in years of heavy rainfall and flooding such as in 2023. In more dry years, these pools are individual basins and not connected via surface hydrology; however, in wet years they form an interconnected chain of pools and share a local watershed. After a substantial rain event on March 15, 2023, pools e56 and e62 showed an increase in non-native grass cover (Appendix A).

Vernal pool e56 is located adjacent to vernal pool e58 in a low-lying area within the Preserve. It was inundated for 43 days, reaching a peak depth in early March and a steady draining pattern with a moderate coefficient of variation, indicating it is moderately stable hydrologically. It has an average length of 112.25 cm, an average width of 60.55 cm, and an average depth of 6.57 cm. The eastern pool margin is bordered by a berm. It is uncertain whether this feature impacts the hydrological function of vernal pool e56.

Vernal pools e58 and e61 are located close together within an ephemeral swale where e61 drains west towards e58. They were fully inundated and flooded in March with pool margins blending into the swale. Another peak inundation period occurred after an April rain event and the pools remained inundated until late April. Vernal pool e61 had an average depth of 26.14 cm and was one of two pools that remained inundated throughout the entire monitoring period. It had an average length of 143.72 cm and an average width of 15.51 cm with an average depth of 26.15 cm. Vernal pool e61 had the lowest coefficient of variation, indicating a hydrologically stable vernal pool. Vernal pool e61 consistently had the highest depth of all pools; except for April 17 where two pools had slightly higher depths. It is surrounded by dense non-native grasses which have encroached into the shallow areas of the vernal pool. However, the ponded area held water too long to support vegetation other than floating vegetation such as winged water starwort (*Callitriche marginata*). Vernal pool e58 was dominated by non-native grasses. Vernal pool e58 had a moderate to low coefficient of variation indicating a hydrologically stable vernal pool that supported vernal pool indicator plant species and wildlife life cycles (Appendix A). The average depth was 8.81 cm, the average length was 85.98 cm, and the average width was 18.10 cm.

Vernal pool e82 is a small, shallow vernal pool located adjacent to the ephemeral swale that connects vernal pools e58, e61, and e62. Vernal pool e82 was difficult to locate and could not be defined by a distinct pool edge and basin configuration; therefore, length and width measurements were taken from the existing mapped polygon and the edge of ponding during the

first qualitative monitoring visit. It had an average length of 23.49 cm and an average width of 14.64 cm. The average depth was 0.87 cm, and it was one of two vernal pools that fully drained twice during the monitoring period (two wetting and drying cycles), remaining dry after March 28, 2023, despite additional measurable rain events that filled most pools. It had the highest coefficient of variation indicating low functionality as a result of the shallow topography and numerous wetting and drying periods.

Vernal pool e62 is the easternmost pool within this local watershed and swale. It drains west towards vernal pools e61 and e58. Vernal pool e62 has a large, mapped boundary that floods but does not pond water and a deeper portion that ponds water long enough to support vernal pool indicator species at the eastern edge of the pool. During the 2023 monitoring study, the maximum boundary was refined based on vernal pool plant indicator plant species distribution (i.e., toad rush, winged water-starwort) as shown in Figure 2. The refined mapped area consisted of a smaller ponding area that was observed to function like a vernal pool compared to the more swale-like conditions found in the original mapped pool boundary. Vernal pool e62 had a moderate coefficient of variation and remained inundated until mid-April, indicating a moderately functional vernal pool hydrologically, with a barren center as a result of an average depth of 14.59 cm and prolonged inundation at that depth. It had an average length of 201.53 cm (including the swale areas to the west) and an average width of 16.65 cm.

c20

Vernal pool c20 is an isolated vernal pool located south of the Ramona Airport runway and north of Cagney Swale. It is not connected to other vernal pools and has a small local watershed that gets additional input from runway runoff. It remained inundated for most of the monitoring period with an average depth of 17.66 cm and was fully drained by May 1, 2023. It supported vegetative cover throughout the entire basin. This vernal pool has a low coefficient of variation indicating a hydrologically stable vernal pool that ponds long enough to support vernal pool plant and wildlife species. It had an average length of 105.78 cm and an average width of 93.81 cm.

e53, e77, e52, e48, and e45

Vernal pools e53, e77, e52, e48, and e45 have a shared local watershed and are in close proximity to each other, sharing a similar mima mound topography, resembling small irregularly shaped hills. They appear to be hydrologically connected with water flowing between them during flood events. These vernal pools are discussed together for the purposes of this hydrological study.

Vernal pool e53 is located on the southside of the Ramona Airport on the eastern side of the Preserve. It maintained an average depth of 12.37 cm and was fully drained by early May with a moderate coefficient of variation indicating a hydrologically stable vernal pool that ponds water for a long enough duration to support vernal pool plant and wildlife species. Vernal pool e53 had an average length of 64.80 cm and an average width of 28.47 cm.

Vernal pool e77 had a high coefficient as a result of a significant drop in depth within 3 days of maximum inundation twice during the monitoring period indicating a vernal pool with limited hydrological functionality; however, vernal pool indicator plant species and wildlife species were

still detected. It had an average length of 34.04 cm, an average width of 31.99 cm, and average depth of 3.73 cm. Vernal pool e77 reached a maximum depth twice but did not respond to the mid-April rain event, staying dry for the remainder of the monitoring period.

Vernal pool e52 is a crescent-shaped pool with two ponding areas that flow together in years of adequate and above-average rainfall; however, the north end drains into the deeper area at the southern end. Ponding was continuous with an average depth of 9.29 cm and had a moderate coefficient of variation indicating a hydrologically stable vernal pool that ponds water for a long duration to support vernal pool plant and wildlife species. The average length was 59.62 cm with an average width of 27.65 cm.

Vernal pool e48 is located above e52 within the same immediate watershed where in years of adequate or above-average rainfall, e48 would drain into e52. Vernal pool e48 had a moderate coefficient of variation with continuous inundation until it fully drained, indicating a hydrologically stable vernal pool with a ponding duration long enough to support vernal pool plants and animals. Vernal pool e48 had an average length of 61.73 cm, an average width of 33.26 cm, and an average depth of 7.88 cm. It had a steady evaporation rate throughout the monitoring period, which provided native vernal pool species an opportunity to reproduce.

Vernal pool e45 is located south of the Ramona Airport runway and is 450 feet from the other pools in this group. It is located below e48 between mima mounds and drains towards the southeast side of the Preserve and away from the other vernal pools discussed in this group. It is discussed in this group because it is part of the larger vernal pool complex that exists within this section of the Preserve. It was inundated until early April when it drained 6.00 cm in 7 days after maintaining an average depth of 5.48 cm. Vernal pool e45 had an average length of 42.26 cm and an average width of 22.02 cm. It had a moderate coefficient of variation as a result of rapid draining indicating a moderately stable pool hydrologically that drains quickly and may not support water for a long enough duration to support vernal pool plant and wildlife species.

ev3

Vernal pool ev3 is a small, isolated pool located on the north side of the floodplain and found next to a small unnamed tributary to Santa Maria Creek. The tributary flooded the area and vernal pool ev3 was part of the flow for several weeks in 2023. Vernal pool ev3 was continuously inundated throughout the monitoring period with an average depth of 21.22 cm until it dropped 7 cm between April 17 and April 24. The average length was 20.95 cm and the average width was 20.46 cm. It has a low coefficient of variation indicating a hydrologically stable vernal pool; however, due to the prolonged inundation, it is anticipated that the center would be bare when fully drained.

c3e

Vernal pool c3e is an isolated pool that is fenced on all sides, located outside of the Preserve boundary on the east side of Ramona Airport Road. It receives additional water input from road runoff. Though weekly hydrological monitoring data was not collected, ESA observed continuously ponded water until April 24, 2023, at which point it was fully drained. The April 17,

2023, visit recorded a depth of 4.80 cm, an average length of 78.89 cm, and an average width of 40.61 cm. Because this pool was visually observed only, it is not summarized in Table 13.

raap17

Alkali playa raap17 is a long, narrow playa bisected by a cattle trail that creates conditions for ponding that is restricted to the width of the trail. This alkali playa drains via a trail into a vernal swale that drains into a tributary to the Santa Maria Creek. It is located on the southside of the ephemeral swale in the Santa Maria Creek floodplain. It is shallow with a barren center caused by the trail which also acts as a path for water to flow out of the basin. It fully drained and filled twice during the monitoring period. The high coefficient of variation for raap17 indicates that this feature has a variable inundation and rapid draining period, which supports the alkali playa classification. The average length of raap17 was 117.08 cm and the average width was 10.60 cm with an average depth of 1.36 cm.

Cagney Swale

The Cagney Swale is an aquatic feature which runs through the Preserve from Ramona Airport towards the Santa Maria Creek. It is functioning as an incised ephemeral channel and supported a continuous flow of water throughout the monitoring period. Length, width, and depth data were not routinely documented as part of 2023 hydrological monitoring as this feature does not function like a vernal pool, vernal swale, or alkali playa. However, length, width, and depth data were collected five times during the monitoring period with the average length at 3.57 meters and the average width at 12.39 cm. The maximum depth recorded on March 3, 2023, was 40.00 cm and still supported a depth of 15.50 cm with continuous flowing water on May 1, 2023. Because Cagney Swale was not included in the hydrological monitoring study, it is not summarized in Table 13.

4.1.2 Qualitative Monitoring

Qualitative monitoring was conducted to assess and record functions and threats to the Ramona Grasslands County Preserve vernal pools and alkali playas in spring 2023. Vernal pools are considered sensitive because of the unique character of the habitat and plants and wildlife found only in and around vernal pools. The Preserve's vernal pools supported several vernal pool indicator plant species, such as woolly marbles (*Psilocarphus brevissimus*), winged water-starwort, toothed downingia (*Downingia cuspidata*), and Howell's quillwort (*Isoetes howellii*), as well as other native and non-native grasses and forbs. Aquatic invertebrates, including fairy shrimp (*Branchinecta* spp.), seed shrimp (*Ostracoda*), copepods (*Acanthocyclops* sp.), and amphibian tadpoles and toadlets, including western spadefoot toad (*Spea hammondii*) and California toad (*Anaxyrus boreas halophilus*), were observed in the vernal pools. Seed shrimp are an important part of the food web in vernal pools because they specialize in feeding on the organic detritus, helping decompose algal crusts and plant biomass accumulation on the bottom of the pool. The presence of seed shrimp in the vernal pools indicates that the pool is ponding long enough to support plant and wildlife life cycles.

In 2023, the Preserve received an above-average amount of rainfall and vernal pool basins appeared to have filled to their maximum capacity. This provided an opportunity for several

plants and wildlife to express themselves, but also gave ample time for non-native grasses to grow and become abundant. Some pools held water for a prolonged inundation period, which may have influenced vernal pool plant survival, richness, and/or abundance. The vernal pools are subjected to grazing to reduce non-native grass cover. The overall vernal pool habitat and vernal pool complex conditions are moderate to low with most pools exhibiting a moderate to high functionality. Many pools remain self-sustaining with some adaptive management; however, some pools require more intensive management to maintain the vernal pool and alkali playa plants and wildlife that inhabit them such as p7, p13, p14, e58, e63, e61, e45, and raap17.

The Preserve also supports alkali playas. These playas are not considered true vernal pools as they consist of small barren alkaline openings surrounded by grasslands that inundate less frequently and for a shorter duration than vernal pools, causing a habitat comprising unique flora. The Preserve's alkali playas support Parish's brittlescale, Coulter's saltbush (*Atriplex coulteri*), dwarf peppergrass (*Lepidium latipes*), and southern tarplant (*Centromadia parryi* ssp. *australis*). The alkali playas also support an abundance of non-native Boccone's sand spurrey (*Spergularia bocconi*), which outcompetes Parish's brittlescale and Coulter's saltbush for resources and growing space. Qualitative monitoring was conducted only on alkali playa raap17, which occurs as part of a subtle low-gradient swale on the north side and runs parallel to the Santa Maria Creek. The overall habitat condition of raap17 is low to moderate primarily due to the invasion of Boccone's sand spurrey. Alkali playa raap17 is discussed in more detail below.

Cagney Swale is an ephemeral feature that flows and ponds water in scour pools during the wet season and is dry during the summer months in a typical rainfall year. However, in years of average and above-average rainfall, the Cagney Swale can flow for several months and acts as a tributary to the Santa Maria Creek. In 2023, the Cagney Swale was swiftly moving and did not support isolated scour pools that could support fairy shrimp. Plant species such as grass poly and toad rush were found along the bank above the waterline.

A list of observed vernal pool indicator species along with other native plants, non-native plants, and incidental wildlife observations of any sensitive wildlife species, including fairy shrimp and western spadefoot toad is presented in Appendix A. Additional representative photographs are provided in Appendix A. Qualitative monitoring results are presented in **Table 14**.

The presence of non-native vegetation in a vernal pool generally deteriorates the quality, value, and integrity of a vernal pool. Decaying upland vegetation (e.g., longbeak stork's bill) that is submerged in pools when they are inundated can cause a buildup of tannins (the color left in water from decaying vegetation) in the water, which can affect water quality and result in a reduction in plant species diversity in the vernal pools. Suspended solids and turbid conditions reduce the amount of light penetration to the pool bottom where seeds and seedlings are found and may result in a low abundance and cover of vernal pool indicator species or a high mortality in the center of pools (e.g., p7, e59, and e61). Removal of non-native vegetation can improve the functionality of a vernal pool or alkali playa.

TABLE 14
VERNAL POOLS AND ALKALI PLAYA QUALITATIVE MONITORING RESULTS

Vernal Pool/Alkali Playa	Water Quality/Edge Effects					Trespass/Topographic Disturbances							
	Turbidity	Algae	Tannins	Suspended Solids	Bird Waste	Invasive Non-Native Plant Species	Vehicular	Cattle Trails	Grazing	Erosion	Cow Patties	Trampling	Trash
p7	X	X	X	X	X	X		X	X	X	X	X	X
p13	X	X	X	X	X	X		X	X		X	X	
p14	X	X	X	X		X		X	X		X	X	
e59	X	X	X	X	X	X		X	X	X	X	X	X
e63	X	X	X		X	X		X	X		X	X	
e56		X	X		X	X		X	X		X	X	
e58	X	X	X	X	X	X		X	X		X	X	
e61	X	X	X	X	X	X		X	X		X	X	
c20	X	X	X			X	X[2]	X	X		X	X	
e82	X	X				X			X			X	
e62	X	X	X			X		X	X		X	X	
e53	X	X	X			X			X		X	X	
e77	X	X	X			X			X		X	X	
e52	X	X	X			X			X		X	X	
e48	X	X	X		X	X			X		X	X	
e45	X	X	X			X			X		X	X	
ev3	X	X	X			X		X	X		X	X	
c3e[1]	X	X	X			X	X[3]	X					
raap17	X	X	X	X	X	X		X	X	X	X	X	
Cagney Swale	X	X	X			X		X	X	X	X	X	X

NOTES:

Observations were collected throughout the entire vernal pool monitoring period.
X = present
1. Pool c3e is located outside of the Ramona Grasslands Conty Preserve boundary.
2. Sign of vehicular use was detected within two feet of the southern pool edge. Disturbance occurred when soil was dry.
3. Historical sign of vehicular use. Pool is currently fenced, and no new vehicular disturbance was detected.

Plants and animals found in individual vernal pools and alkali playas may change over time as a result of plant or wildlife dispersal, disturbances, drought, or other factors. Many of the pools within the study have been degraded by various stressors (e.g., cattle grazing, non-native plant species invasion) which have reduced their functionality and value. The results of the qualitative monitoring identified several trends and observations. Size did not appear to contribute significantly to higher function and value, as both the smallest and largest pool (e82 and e59, respectively) contained vernal pool indicator species. Turbidity was observed in all pools except vernal pool e56, and

tannins were detected in all pools except vernal pool e82. Algae is an important part of vernal pool processes and was detected in all vernal pools. Invasive non-native plant species were observed in all pools with Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*) being the dominant invasive non-native plant species encountered. Grazing effects, including evidence of trampling, were detected in all pools except vernal pool c3e. Cow patties were observed in all pools except vernal pools e82 and c3e and fresh cow patties were observed in vernal pools p7 and e59. Remnant cow patties were observed in vernal pool p13 and in the e53–e45 vernal pool complex on the eastern side and around vernal pool e63 and alkali playa raap17. Vernal pools p7, e59, and alkali playa raap17 were found to be affected by all factors listed in Table 14 except vehicular traffic. No vernal pool was found to support threatened or endangered plant species. The overall ecological function and value of each monitored feature is summarized below by feature or group/complex.

p7

This pool is relatively flat with a diffuse edge with the Santa Maria Creek to the northeast. Vernal pool p7 was impacted by grazing and trampling in the pool; cattle trails observed along the pool edge resulted in consistent turbid conditions as well as changes to the topography of the pool and pool edge, causing water to drain to the north. Solid waste (i.e., bird and cattle) accumulated in the water resulting in suspended solids and a buildup of tannins. Vernal pool indicator plant species were found along the edge during the first qualitative monitoring visit and include toad rush and winged water-starwort, but in future visits, trampling of the vegetation by cattle along the margin was detected along with an increase in grass poly and other invasive non-native grasses (i.e., Mediterranean barley and soft brome [*Bromus hordeaceus*]). Vernal pool p7 did not support vegetation throughout most of the pool basin, likely due to a long ponding duration and grazing during the wet phase. Vernal pool p7 was an important area for wading birds such as American wigeon (*Mareca americana*), which were observed resting and foraging in the vernal pool on several occasions.

p13

Vernal pool p13 is a large shallow pool supporting a high cover and abundance of vernal pool plant indicator species such as American pillwort (*Pilularia americana*), winged water-starwort, and toad rush as well as invasive non-native grass poly and longbeak stork's bill. Previous land use practices left scars on the landscape and within vernal pool p13, providing areas that pond water when other areas are in a drying phase, resulting in a pool that supports vernal pool indicator species. Upland plant species such as clustered tarweed, needle goldfields (*Lasthenia gracilis*), and common muilla (*Muilla maritima*) were found along the pool margins and invasive non-native plant species detected included Italian ryegrass (*Festuca perennis*) and longbeak stork's bill, which dominated the pool margins. It also supported aquatic wildlife species such as fairy shrimp, copepods, and seed shrimp.

p14

The vernal swale leading to vernal pool p14 is dominated by California goldfields (*Lasthenia californica*) and invasive non-native longbeak stork's bill with a few vernal pool indicator plant species (i.e., toad rush, water pygmyweed [*Crassula aquatica*]) found in the furrows where water is able to pond. The deepest point is located at the western end at the base of a boulder outcrop with a coast live oak tree growing in the center. The water was clear, with tannins present, which can be

attributed to coast live oak leaves and decaying longbeak stork's bill plant material. The ponded area of vernal pool p14 supported winged water-starwort and toad rush. Hoof prints were visible surrounding the ponded area of the pool and along the pool margins, which supports dense patches of invasive non-native Mediterranean barley, Italian ryegrass, and brome grasses (*Bromus* spp.).

e59

Vernal pool e59 is a large vernal pool adjacent to a berm along Rangeland Road and can be characterized by a meandering vegetative pool margin with a bare center due to prolonged inundation in 2023. It remained inundated during the entire monitoring period and had a fluctuating floral display that was affected by wading birds foraging and resting in the vernal pool and along the margins. The water conditions were clear with a buildup of tannins due to decaying vegetation and prolonged inundation. Suspended solids were observed in the water and are the result of wading birds foraging in the pool and some trash accumulation blown in from Rangeland Road. This vernal pool had deep cattle prints along the margins and cow patties observed in and along the edge of the vernal pool. Longbeak stork's bill was the dominant plant species in the upland areas along the pool margins. Vernal pool indicator species such as toad rush and prairie plantain (*Plantago elongata*) as well as western spadefoot toads, seed shrimp, and fairy shrimp were observed within vernal pool e59. During the spring of 2023, vernal pool e59 was an important area for resting and foraging wading birds such as American wigeon.

e63

Vernal pool e63 is an isolated pool found on the Cagney Swale floodplain in a low-lying area within the Preserve. During the wet season, winged water-starwort, flowering quillwort (*Triglochin scilioides*), and pale spike-rush (*Eleocharis macrostachya*) were observed with seed shrimp, copepods, and western spadefoot toad tadpoles. Invasive non-native plant species such as Italian ryegrass and Mediterranean barley were found mixed with toad rush, coast popcorn flower (*Plagiobothrys undulatus*), and American pillwort along the margins of the vernal pool as it began to dry down. Water conditions were clear with tannin buildup resulting from decaying upland vegetation, prolonged ponding, and some turbidity after rain events. Hoof prints were observed throughout the pool, and trails were observed leading toward Cagney Swale. This area of the Preserve was heavily flooded after winter rains and vernal pool e63 was inundated until mid-April. The inundation boundary was obscured by non-native grasses, which were found encroaching into the pool during the dry phase.

e56, e58, e61, e62, and e82

Vernal pools e56, e58, e61, and e82 are part of a vernal swale and have a shared local watershed and a similar shape and topography. They are discussed together for the purposes of this qualitative monitoring discussion. These pools are located in close proximity to and drain into each other during heavy precipitation and flooding events. Vernal pool e56 shares a local watershed with e58 and flooding was observed between pools along the vernal swale. The vernal swale has a cattle trail running from vernal pool e62 west toward and through vernal pools e61 and e58 down the center and is surrounded by non-native grassland. They were fully inundated and flooded in March with pool margins blending into the swale, making it difficult to discern individual pool boundaries.

Vernal pool e56 is a moderately sized vernal pool with a dirt berm forming the eastern edge, creating a triangular shape. It is located adjacent to e58 but outside the vernal swale. This vernal pool is dominated by encroaching invasive non-native Mediterranean barley and Italian ryegrass but still supports vernal pool indicator plant species, such as toad rush, pale spike-rush, Howell's quillwort, flowering quillwort, woolly marbles, and winged water-starwort, with small cover and abundance values, and aquatic fauna, including seed shrimp. Decaying grasses created tannins in the water and wading bird usage created suspended solids and turbid water conditions during a portion of the monitoring period. Evidence of cattle usage was detected by the presence of cow patties and a cow trail crossing through the pool basin.

Vernal pool e58 is located within the vernal swale at the southern end. It is a small, narrow vernal pool with clear water but with a buildup of tannins attributed to decaying upland vegetation. Ducks and wading birds were observed foraging in vernal pool e58, creating turbid conditions with suspended solids (i.e., floating vegetation and duck waste) in the water. The vernal pool edge was covered with algal matting and non-native grasses encroached into the pool; however, vernal pool indicator plant species such as woolly marbles, prairie plantain, toothed downingia, toad rush, and winged water-starwort were still detected. Despite an average depth of 8.81 cm, vernal pool e58 supported several upland plants, including clustered tarplant, southern tarplant, and doveweed (*Croton setiger*).

Vernal pool e61 is a long, narrow vernal pool located within a vernal swale. It supports winged water-starwort and pale spike-rush in low abundance and cover and toad rush and invasive non-native grass poly in low cover along the pool margins. Fairy shrimp and seed shrimp were observed in the pool. It was one of two pools to remain ponded and not completely dry during the monitoring period, resulting in a deep pool with steep sides. Water conditions were turbid, and tannin buildup created limited visibility in the water. Invasive non-native grasses including Mediterranean barley and Italian ryegrass and invasive non-native forbs such as African brass buttons (*Cotula coronopifolia*) and longbeak stork's bill were observed growing along the pool margin.

Vernal pool e62 water conditions were often turbid with algal mats as a result of ponding water for several months. This created a bare pool basin with a narrow band of vernal pool indicator plant species including woolly marbles, water pygmyweed, winged water-starwort, and invasive non-native grass poly with low cover and abundance along the pool margins. Within the larger mapped polygon, clustered tarweed, common peppergrass (*Lepidium densiflorum*), longbeak stork's bill, Italian ryegrass, and Boccone's sand spurrey were observed in high cover and abundance.

Vernal pool e82 is located between vernal pools e61 and e62. It is a small, shallow depression that was dominated by facultative (upland plants that can be found in mesic and wetland soils) plant species such as Mediterranean barley, longbeak stork's bill, dwarf brodiaea (*Brodiaea terrestris* ssp. *kernensis*), clustered tarweed, and grass poly, but did not pond water long enough to support vernal pool indicator plant species, which often indicate the high water mark for a vernal pool. When the water was ponded, conditions were clear. Cattle hoof prints and cow patties were observed within the mapped boundary.

c20

Vernal pool c20 is an isolated pool and has a man-made berm that forms the northern edge along the Ramona Airport runway frontage road, and a T-post and barbed wire fence that bisects the pool from east to west along with an established cow trail that runs parallel to the fence. It is a large pool with a shallow ponding area on the west side dominated by longbeak stork's bill, toad rush, and toothed downingia, and a deeper ponding area up against the berm to the east that is dominated by pale spike-rush and hairy water clover (*Marsilea vestitus*). As the pool dried down, American pillwort, toad rush, and adobe popcorn flower (*Plagiobothrys acanthocarpus*) covered the pool bottom. Water conditions were clear throughout the monitoring period. The nearly constant average depth of 17.66 cm provided habitat for a variety of aquatic invertebrates (i.e., fairy shrimp, seed shrimp, and western spadefoot tadpoles) and vernal pool indicator plant species such as winged water-starwort, waterwort (*Elatine* spp.), and water pygmy weed. Invasive non-native grass poly and longbeak stork's bill were the dominant plants along the pool margin. Wading birds such as greater yellowlegs (*Tringa melanoleuca*) and upland wildlife species such as California horned lark (*Eremophila alpestris*) were observed utilizing vernal pool c20 on several occasions. Vernal pool c20 has high functionality and value based on species diversity and stable hydrological conditions.

e53, e77, e52, e48, and e45

The vernal pool complex which includes vernal pools e53, e77, e52, e48, and e45 on the southside of the Ramona Airport tarmac and frontage road have a similar shape and are connected hydrologically by surface flows and mima mounds, which direct the flow of water between pools. The pools in this complex exhibited a steady drying phase and supported an abundance of vernal pool indicator plant species (i.e., toothed downingia, toad rush, and pale spike-rush). Fairy shrimp, seed shrimp, and western spadefoot tadpoles were observed in the pools throughout the monitoring period.

Vernal pool e53 is found between two mima mounds and was dominated by pale spike-rush and winged water-starwort during the wet phase, with an abundance of tadpoles, fairy shrimp, and seed shrimp present. During the dry phase, native toothed downingia, woolly marbles, annual hairgrass (*Deschampsia danthonioides*), and pale spike-rush were codominant with invasive non-native Mediterranean barley, Italian ryegrass, and longbeak stork's bill. Toad rush, grass poly, and adobe popcorn flower created a ring around the pool. Other unique vernal pool indicator plant species detected included waterwort, chaffweed (*Lysimachia minimus*), and American pillwort. Water conditions were clear with a buildup of tannins as a result of decaying upland vegetation species.

Vernal pool e77 is a circular pool surrounded by mima mounds within the drainage area of vernal pool e52. It supports pale spike-rush, toad rush, winged water-starwort, longbeak stork's bill and aquatic invertebrates including seed shrimp and copepods during the wet season. American pillwort, dwarf brodiaea, Mediterranean barley, Italian ryegrass, and longbeak stork's bill were dominant during the dry season. Water conditions were clear but encroaching upland plant species created a buildup of tannins which did not appear to affect vernal pool flora and fauna.

Vernal pool e52 had two ponding areas. The western basin had the deepest point and held water for almost two months with a steady rate of evaporation, creating conditions that support toothed downingia, winged water-starwort, pale spike-rush, flowering quillwort, grass poly, and aquatic invertebrates, including copepods and seed shrimp species. Invasive non-native Mediterranean barley, Italian ryegrass, and longbeak stork's bill were abundant along the pool margins and within the northern pool basin. Water conditions were clear throughout the monitoring period.

Vernal pool e48 supported a diverse suite of vernal pool indicator plant species including winged water-starwort, pale spike-rush, purslane speedwell (*Veronica peregrina* ssp. *xalapensis*), grass poly, toothed downingia, woolly marbles, and prairie plantain. Aquatic fauna such as fairy shrimp and western spadefoot toad tadpoles were observed throughout the vernal pool during the wet season. There was an abundance of invasive non-native plant species such as longbeak stork's bill, Italian ryegrass, and Mediterranean barley along the pool margins with African brass buttons and scarlet pimpernel (*Lysimachia arvensis*) intermixed with native plant species such as blue-eyed grass (*Sisyrinchium bellum*), balloon-sack clover (*Trifolium depauperatum*), adobe popcorn flower, and annual hairgrass. Water conditions were clear and vernal pool species were able to complete their full life cycle.

Vernal pool e45 is a shallow pool that supports a mix of vernal pool indicator species and more common wetland species such as iris leaved juncus (*Juncus xiphioides*) as well as clustered tarweed and longbeak stork's bill, which were found along the pool margin and inside the pool basin. Vernal pool indicator plant species detected include woolly marbles, balloon-sack clover, chaffweed, winged water-starwort, toad rush, and adobe popcorn flower. Aquatic fauna observations include seed shrimp and western spadefoot tadpoles. Water conditions were clear with a buildup of tannins as a result of decaying vegetation in the pool basin.

ev3

Vernal pool ev3 is a small, round, deep, isolated pool located in the floodplain of an ephemeral tributary to the Santa Maria Creek. Due to the above-average rainfall, vernal pool ev3 became part of the water flow through the tributary and did not become a distinct basin until late April; therefore, the length and width measurement were taken based on the revised mapping (Figure 2). Vernal pool ev3 does not support a diverse suite of plant and wildlife species, but supported an abundance of woolly marbles, western spadefoot tadpoles, and small patches of hairy water clover and pale spike-rush within the basin. Non-native grasses surrounded the pool and were found in the basin, including Mediterranean barley, oats (*Avena* spp.), and bromes. Water conditions were clear, with algae forming and eventually taking over the surface of the water, inhibiting woolly marbles from reaching the water surface and clinging to pale spike-rush stems as the water evaporated. Cattle hoof prints, observed throughout the vernal pool and along the pool edges, allow non-native grasses an opportunity to further encroach into the vernal pool. Edge effects, including trampling during the wet season, may result in soil disturbance and may crush vernal pool plant species, creating favorable conditions for invasive non-native plant species to encroach into the vernal pool and degrade the quality of habitat that supports vernal pool indicator species (Zedler 1987; City of San Diego 2017).

c3e

Vernal pool c3e is an isolated pool found on the northeast side of Ramona Airport Road. It is fenced on all sides and has old ruts along the northern edge that ponds water long enough to support vernal pool indicator plant species such as toad rush, woolly marbles, and pale spike-rush, intermixed with invasive non-native Mediterranean barley and Italian ryegrass. This pool was ponded for most of the monitoring period and supported a population of stonewort algae (*Nitella clavata*), a type of green algae species that can take over a vernal pool, depleting it of oxygen, diversity, and resources. The water quality was turbid with algal matting and an abundance of non-native grasses.

raap17

Alkali playa raap17 fully drained and filled twice during the monitoring period indicating rapid draining and maximum soil saturation as evidenced by the alkali playa remaining dry after the April rain events which filled most of the pools. Raap17 supports Coulter's saltbush, which was found growing with Scribner's grass (*Scribneria bolanderi*), southern tarplant, and salt grass (*Distichlis spicata*) along the edge of the trail in open areas between dense patches of Boccone's sand spurrey and Mediterranean barley. Italian ryegrass was found closer to the trail edge which also supported grass poly, longbeak stork's bill, toad rush, and a few small patches of winged water-starwort that quickly germinated during inundation. However, the playa did not pond long enough for the patches to elongate and create floating leaves. Invasive non-native plant species such as Boccone's sand spurrey and Mediterranean barley appeared to be outcompeting Couter's saltbush for resources and crowding it where it was growing.

Cagney Swale

Cagney Swale is a deep, ephemeral channel with high flows that create undercutting, erosion, and deep scour pools. During the spring of 2023, Cagney Swale had fast-moving currents and small waterfalls in several areas along the length from Ramona Airport to Santa Maria Creek. Flooded conditions were persistent along the floodplain, including at the end where it becomes a vernal swale before flowing into deep pools and eventually into the creek. Water conditions were turbid as a result of the fast-moving currents, turning clear toward the end of April, when flows slowed down and flooded areas dried out. The channel supported sparse patches of grass poly, toad rush, western ragweed (*Ambrosia psilostachya*), southern tarplant, and the non-native mayweed (*Anthemis cotula*). Banks were steep and bare and the channel bottom was sandy and did not support vegetation.

4.1.3 Focused Management

Based on 2022 adaptive management recommendations, focused invasive non-native plant management was conducted at 15 vernal pools (p13, p14, p7, e56, e58, e61, e82, e62, e53, e77, e52, e48, e45, ev3, and e59) and one alkali playa (raap17) as well as 3 additional alkali playas that are not currently part of regular monitoring: raap4, raap6, and raap1 within Ramona Grasslands County Preserve in 2023 (Figure 2). Management consisted of carefully hand-pulling target invasive non-native plant species within the pool boundaries and line trimming a 3-foot

buffer around the pool margins, totaling a 2.64-acre management area. Representative management photographs are provided in Appendix A.

4.1.4 Adaptive Management Recommendations

The TMP recommends overall invasive non-native plant cover within vernal pool basins to be kept to less than 20 percent (ESA and ICF 2022). Based on qualitative monitoring observations made during the 2023 surveys, vernal pool and alkali playa habitat suitability for vernal pool indicator plant and wildlife species has declined. This is likely due to variable climatic conditions such as drought and flooding, a lack of year-to-year natural recruitment of native plant species and high invasive non-native grass cover, resulting in less complex vegetation composition and structure, and a decline in species abundance and species distribution within the pools and playas.

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Adjust monitored vernal pools and playas.** Quantitative and qualitative monitoring should continue for 19 study locations (i.e., p13, p14, p7, e56, e58, e61, e62, e77, e52, e48, e45, ev3, e59, e53, c20, c3e, e63 Cagney Swale, and raap17). Based on the results of fairy shrimp surveys conducted in 2022 and hydrological and qualitative monitoring conducted in 2023, vernal pool e82 did not pond water long enough to support vernal pool indicator plant and wildlife species; therefore, this pool is thus recommended to be removed from monitoring as it is no longer functioning as a vernal pool and is unlikely to support vernal pool species based on conditions observed in an above-average rainfall year. Because alkali playa management is being conducted at the three alkali playas (i.e., raap4, raap6, and raap14), it is recommended that these study locations be added to future monitoring. Quantitative and qualitative monitoring frequency should follow the TMP-recommended frequencies (ESA and ICF 2022).
- **Conduct a hydrological study of the Cagney Swale.** Potential altered hydrology (e.g., erosion and undercutting of the banks) within the Cagney Swale continued to be observed during 2023 surveys (see representative photographs in Appendix A). This change in hydrology may be contributing to the drying of adjacent vernal pool and alkali playa habitats. A hydrological study of the Cagney Swale is recommended to determine if altered hydrology is occurring and inform adaptive management strategies (e.g., implement erosion control, stormwater/road runoff control, minor grading to help dissipate water and reduce flow velocity, and/or restrict access to portions of the swale to allow for a natural recovery of the banks and bed).
- **Continue focused invasive non-native plant management.** Focused invasive non-native plant management should continue at p13, p14, p7, e56, e58, e61, e62, e53, e77, e52, e48, e45, ev3, e59, and raap17, and the 3 alkali playas raap4, raap6, and raap14 that are not currently part of qualitative or quantitative monitoring. Based on the results of previous fairy shrimp surveys and 2023 hydrological monitoring and qualitative monitoring, vernal pool e82 did not function like a vernal pool and is no longer recommended to be included in focused management. Management should continue to occur twice a year, once just after pool and playa basins have dried and the soil surface becomes firm, and again later in the season before invasive non-native plants have set seed. Invasive non-native grasses should be manually cut at the base and removed by hand to minimize soil disturbance. Sensitive plants

or vernal pool/alkali playa indicator plant species should be flagged prior to the start of maintenance. A follow-up maintenance visit should be performed during the dry phase, after native plant species have set seed to fully remove any invasive non-native plant biomass remaining by hand. At the County's discretion, an aquatic-safe herbicide may be used after the first maintenance visit in accordance with the TMP (ESA and ICF 2022).

- **Implement fencing pilot study.** Many vernal pools and alkali playas continued to have numerous hoof prints and noticeable changes in size, depth, and shape, in addition to a decline in vernal pool species during the 2023 surveys. A fencing pilot study is recommended to determine the effects of cattle grazing on existing vernal pool and alkali playa habitats. The pilot study would consist of installing exclusionary fencing around one vernal pool (e59) and one alkali playa (raap17) within the Ramona Grasslands County Preserve. Vernal pool e59 is proposed because it has been documented to support high abundance, cover, and composition of vernal pool indicator plant species year over year. It is also located adjacent to existing fencing surrounding the boundary of the Ramona Grasslands County Preserve, which would reduce fencing cost and effort. Alkali playa raap17 is proposed because it has been documented to support three special-status plant species (Parish's brittlescale, Coulter's saltbush, and southern tarplant). Exclusionary fencing may help decrease impacts to hydrology, reduce erosion and sedimentation, and increase native plant species presence and distribution within a vernal pool. Ground disturbance caused by the installation of fencing posts for this pilot study should be anticipated, and proper avoidance and minimization measures should be taken to avoid potential impacts to biological and cultural resources.
- **Strategize cattle rotations.** Close coordination with the current rancher is recommended to strategize cattle rotation patterns that best protect existing vernal pool and alkali playa habitat during conditions when they are most vulnerable to soil and sensitive plant and wildlife disturbance. As stated in the Grazing Management Plan, grazing shall occur after the vernal pool inundation period is complete and soils are firm (anticipated as April to June) (ESA 2019b). Working with the rancher to minimize cattle grazing within management units containing vernal pool and alkali playa resources (particularly management unit 2A) during the wet season could benefit native vernal pool species richness, improve the overall hydrology and functionality of the vernal pool and alkali playa complexes, and assist in meeting conservation and RDM goals and metrics.
- **Seed vernal pool/alkali playa indicator plant species.** Hand-seeding of vernal pool or alkali playa indicator plant species is recommended in pools with low non-native cover that have demonstrated sufficient ponding periods to support vernal pool plant species across the pool gradient to increase and enhance native species richness, diversity, and natural recruitment year-to-year. Seeding should be conducted with the goal of capturing a natural rainfall pattern and should be implemented in late fall and early winter prior to a rain event. Weed control efforts in the summer would prepare the vernal pool basins and alkali playas to receive native seed through thatch removal and invasive non-native plant species control while leaving the soil surface undisturbed.

4.2 Rare Plant Monitoring and Focused Management

Rare plant monitoring was conducted at 27 permanent monitoring plots at seven preserves in 2023. Rare plant monitoring consisted of one San Diego thornmint monitoring plot at Simon County Preserve, eleven San Diego thornmint monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve, three Encinitas baccharis monitoring plots at Del Dios Highlands County Preserve, two San Miguel savory monitoring plots at Boulder Oaks County Preserve, two Otay

tarplant monitoring plots at Furby-North County Preserve, two Orcutt's bird's-beak monitoring plots at Tijuana River Valley Regional Park, one variegated dudleya monitoring plot at Lusardi Creek County Preserve, two variegated dudleya monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve, and three willowy monardella monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve. One new Otay tarplant monitoring plot was established in 2023; all other rare plant monitoring was conducted at previously established permanent monitoring plots.

A summary of the monitoring plots, monitoring results, and management recommendations are provided in **Table 15**. Photographic monitoring and representative photographs of the monitored and managed plots are provided in **Appendix B**, *MSP Rare Plant Monitoring – Permanent Photographic Monitoring & Representative Photographs*. MSP Rare Plant Occurrence Monitoring Forms, which include Rare Plant Habitat and Threats Assessments, are provided in **Appendix C**, *MSP Rare Plant Occurrence Monitoring Forms*.

4.2.1 San Diego Thornmint

Simon County Preserve

The one monitoring plot within the San Diego thornmint population in Simon County Preserve was monitored by ESA in 2023. A total of 6,000 San Diego thornmint plants were estimated within the monitoring plot. The entire population of San Diego thornmint within Simon County Preserve in 2023 is estimated at 6,000 plants. Monitoring plot, center point, photo point, and maximum extent are shown in **Figure 3**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species detected inside and outside the monitoring plot included Palmer's grappling hook (*Harpagonella palmeri*) (Figure 3). The San Diego thornmint habitat contained invasive non-native grasses and herbs, particularly slender oat, tocalote, and annual fescue.

Monitoring Plot Number ACIL_4SIPR026_1

Monitoring plot ACIL_4SIPR026_1 is in the central portion of the San Diego thornmint population. Approximately 6,000 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were flowering, the remaining were vegetative or dead. Total vegetative cover within the plot was 53.6 percent, with 48.2 percent native plant cover and 5.4 percent non-native plant cover (non-native plant cover includes invasive non-native plant species). The dominant native plant species within the monitoring plot was Mission manzanita (*Xylococcous bicolor*). Invasive non-native plant species included slender oat, soft brome, red brome (*Bromus rubens*), tocalote, redstem stork's bill (*Erodium cicutarium*), annual fescue, shortpod mustard, and smooth cat's ear (*Hypochaeris glabra*). Non-native plant species included foothill filaree (*Erodium brachycarpum*), small fescue (*Festuca microstachys*), cretanweed (*Hedypnois magadioloides*), narrowleaf cottonrose (*Logfia gallica*), annual yellow sweetclover (*Melilotus indicus*), and spiny sowthistle (*Sonchus asper*). Special-status plant species detected outside the plot included Palmer's grappling hook (Figure 3).

TABLE 15
MSP 2023 RARE PLANT MONITORING SUMMARY

Species	County Preserve	Plot #; MSP Occurrence ID[a]	Center Point Coordinates	Monitoring Plot Population		Native Plant Cover		Non-Native Plant Cover[b]		Management Recommendations
				# individuals	% cover	# species	% cover	# species	% cover	
San Diego thornmint *Acanthominth a ilicifolia*	Simon	_ ACIL_4SIPR026_1	E 516451 N 3654129	6,000	12.0	18	48.2	15	5.4	Continue MSP rare plant monitoring of population.
San Diego thornmint *Acanthominth a ilicifolia*	Sycamore Canyon/ Goodan Ranch	SYGOACIL01 ACIL_4SYCA027_1	E 501592 N 3644272	1,035	0.2	20	27.0	11	37.8	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly purple false brome and tocalote. Continue thatch removal.
		SYGOACIL02 ACIL_4SYCA027_2	E 501522 N 3644277	72	0.2	16	10.6	10	32.8[c]	
		SYGOACIL03 ACIL_4SYCA027_3	E 501546 N 3644380	800	1.0	27	38.4[d]	13	5.2	
		SYGOACIL04 ACIL_4SYCA027_4	E 502555 N 3643683	0	0	14	13.4[e]	9	28.6	
		SYGOACIL05 ACIL_4SYCA027_5	E 502915 N 3643523	193	0.2	24	50.8[f]	7	21.2[g]	
		SYGOACIL06 ACIL_4SYCA027_6	E 502252 N 3644084	6,457	2.0	18	38.8	11	2.2	
		SYGOACIL07 ACIL_4SYCA027_7	E 502375 N 3644068	549	1.0	17	22.6	7	31.2	
		SYGOACIL08 ACIL_4SYCA027_8	E 502267 N 3644249	1,262	1.0	26	13.0	10	26.8	
		SYGOACIL09 ACIL_4SYCA027_9	E 501735 N 3644404	1,336	1.0	19	24.0	9	27.4	
		SYGOACIL10 ACIL_4SYCA027_10	E 501927 N 3644370	850	3.0	20	38.2[h]	8	2.4	
		SYGOACIL11 ACIL_4SYCA027_11	E 502683 N 3643722	323	0.2	22	31.0[i]	7	20.0	
Encinitas baccharis *Baccharis vanessae*	Del Dios Highlands	DD201501 BAVA3_6DDHP004_1	E 488075 N 3658452	4	0.2	23	53.0[j]	2	0.4	Continue MSP rare plant monitoring of population. Thin native vegetation to reduce trampling during monitoring.
		DD201502 BAVA3_6DDHP004_2	E 488143 N 3658472	3	0.2	18	61.0[k]	3	0.6	
		DD201503 BAVA3_6DDHP004_3	E 488033 N 3658465	33	3.0	21	49.4[l]	3	0.6	

Species	County Preserve	Plot #; MSP Occurrence ID[a]	Center Point Coordinates	Monitoring Plot Population		Native Plant Cover		Non-Native Plant Cover[b]		Management Recommendations
				# individuals	% cover	# species	% cover	# species	% cover	
San Miguel savory *Clinopodium chandleri*	Boulder Oaks	BOCLCH01 CLCH5_4BOPR002_1	E 505067 N 3646951	80	2.0	24	65.2[m]	4	0.8	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly perennial veldtgrass at BOCLCH02.
		BOCLCH02 CLCH5_4BOPR002_2	E 505422 N 3647075	52	2.0	21	66.8[n]	5	1.0	
Otay tarplant *Deinandra conjugens*	Furby-North	– DECO13_3OMEA026_1	E 496809 N 3602882	43	0.2	20	20.0[o]	11	25.8	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly brome grasses, annual fescue, tocalote, and crown daisy. Continue thatch removal.
		– DECO13_3OMEA040_1	E 496890 N 3602295	468	0.2	17	24.4	8	10.8	
Orcutt's bird's-beak *Dicranostegia orcuttiana*	Tijuana River Valley Regional Park	– COOR7_1TIRI009_1	E 490646 N 3600256	298	2.0	36	45.4[p]	12	5.8	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly red brome and tocalote.
		– COOR7_1SMGU006_1	E 491709 N 3600493	0	0	33	43.2[q]	14	10.0	
Variegated dudleya *Dudleya variegata*	Lusardi Creek	LCDUVA01 DUVA_6LUCR023_1	E 484873 N 3652555	1	0.2	17	15.4[r]	8	41.2[s]	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly purple false brome. Continue thatch removal. Continue to monitor and maintain herbivory fencing.

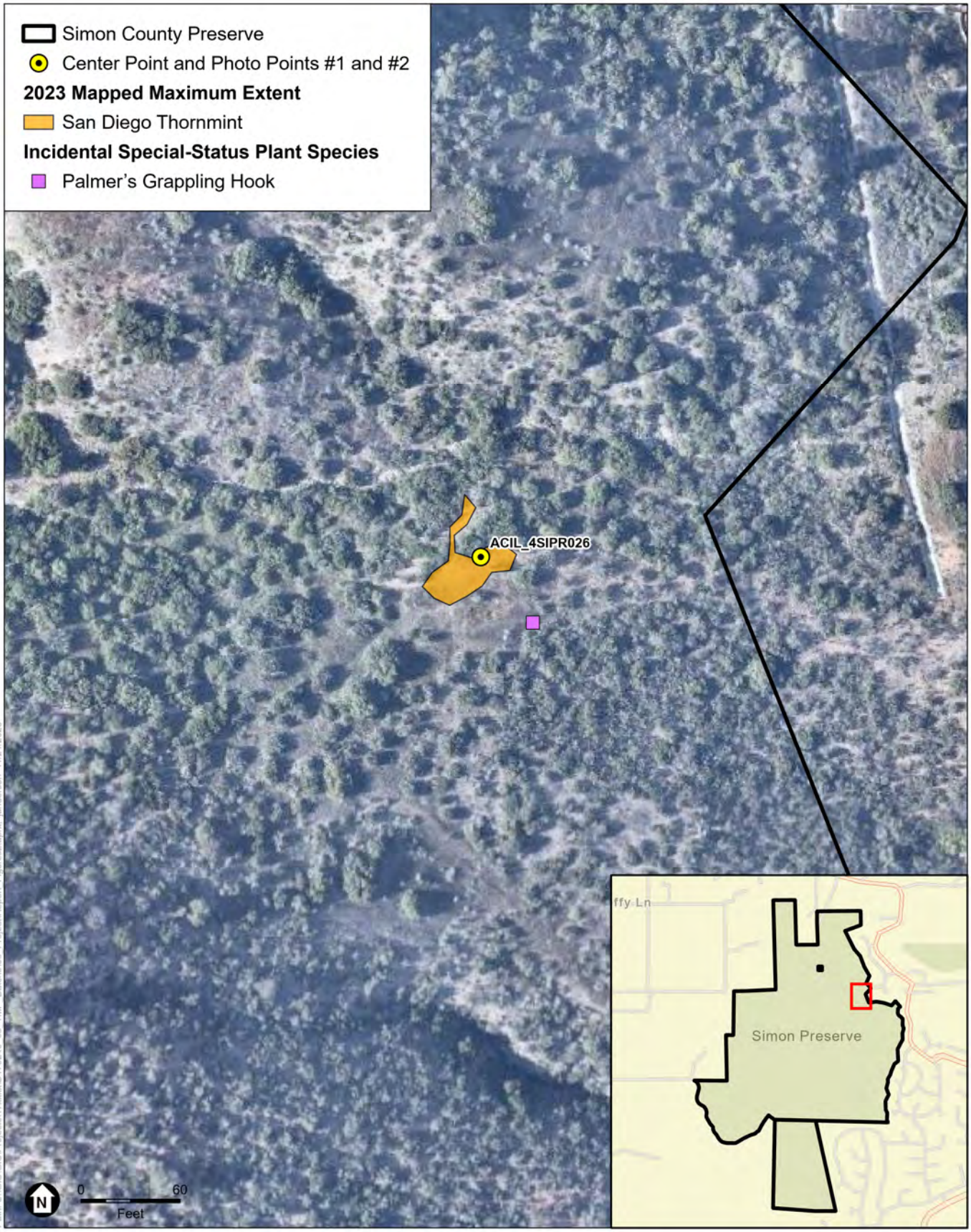
Species	County Preserve	Plot #; MSP Occurrence ID[a]	Center Point Coordinates	Monitoring Plot Population		Native Plant Cover		Non-Native Plant Cover[b]		Management Recommendations
				# individuals	% cover	# species	% cover	# species	% cover	
	Sycamore Canyon/ Goodan Ranch	SYGODUVA01 DUVA_4SYCA019_1	E 52936 N 3643516	144	0.2	25	20.0	9	39.6[t]	Continue MSP rare plant monitoring of population. Continue management of invasive non-native grasses and forbs, particularly purple false brome. Continue thatch removal.
		SYGODUVA02 DUVA_4SYCA019_2	E 502891 N 3643611	444	0.2	25	21.6[u]	7	37.0	
Willowy monardella *Monardella viminea*	Sycamore Canyon/ Goodan Ranch	SYC201501 MOLIV_4SYCA006_1	E 502412 N 3642218	58	3.0	23	27[v]	10	11.8[w]	Continue MSP rare plant monitoring of population. Conduct invasive non-native plant treatment for grasses and herbs, particularly slender oat, purple false brome, brome grasses, annual fescue, and tocalote. Trimming of California buckwheat within SYC201602 can be considered to reduce potential native competition to willowy monardella plants.
		SYC201602 MOLIV_4SYCA002_1	E 501045 N 3642551	4	0.2	12	14.4[x]	13	17.8[y]	
		SYC202103 MOLIV_4SPCA006_2	E 501657 N 3640638	6	1.0	18	22.4[z]	10	12.0	

NOTES:

a. Plot # code was assigned during plot establishment by the establishing plot biologist and is used throughout this report when available. However, some monitoring plots do not have a plot # code associated with them as the establishing plot biologist used only the MSP occurrence ID (assigned by SDMMP) to establish and document the plot. In these instances, the MSP occurrence ID is used throughout this report.
b. Non-native plant cover calculation includes invasive non-native plant species.
c. *Phalaris* spp. was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.
d. *Delphinium* sp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
e. *Allium* spp. and *Chlorogalum* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
f. *Allium* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
g. *Lepidium* spp. was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.
h. *Acmispon* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
i. *Allium* spp. and *Chlorogalum* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
j. *Nuttallanthus* sp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
k. *Cryptantha* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
l. *Nuttallanthus* sp. and *Claytonia* sp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
m. *Calochortus* spp. and *Gilia* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
n. *Calochortus* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
o. *Allium* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
p. *Lepidium* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
q. *Solanum* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
r. *Cryptantha* spp. and *Pseudognaphalium* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
s. *Salsola* spp. was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.

Species	County Preserve	Plot #; MSP Occurrence ID[a]	Center Point Coordinates	Monitoring Plot Population		Native Plant Cover		Non-Native Plant Cover[b]		Management Recommendations
				# individuals	% cover	# species	% cover	# species	% cover	

t. *Lepidium* spp. and *Logfia* sp. were detected at 0.2 percent each and were categorized as non-native during vegetation cover calculations.
u. *Selaginella* spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
v. *Cirsium* sp. and *Galium* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.
w. Unknown grass was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.
x. *St*ephanomeria spp. was detected at 0.2 percent and was categorized as native during vegetation cover calculations.
y. *Er*odium spp. was detected at 0.2 percent and was categorized as non-native during vegetation cover calculations.
z. *Calochortus* spp. and *Stephanomeria* spp. were detected at 0.2 percent each and were categorized as native during vegetation cover calculations.



SOURCE: Nearmap, 4/18/2021; ESA, 2023.

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 3

San Diego Thornmint Monitoring Results
Simon County Preserve

ESA

Adaptive Management Recommendations

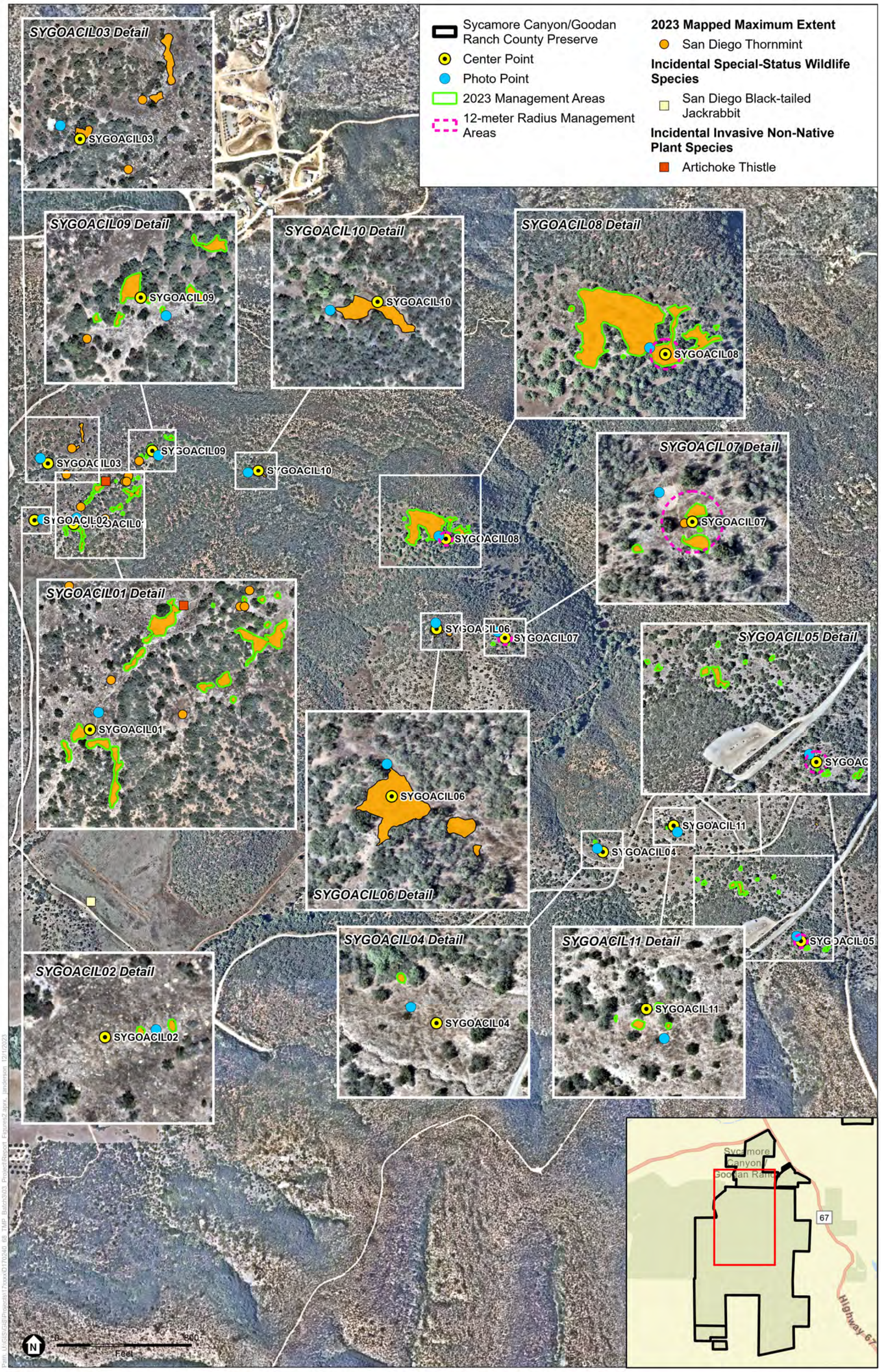
Based on the results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP, no management is recommended for 2023. Focused invasive non-native plant species management occurred in 2022 and while non-native plant cover increased from 4.0 percent in 2022 to 5.4 percent in 2023, this increase is likely due to the increased rainfall in 2023. Monitoring in 2024 should continue to track non-native plant cover within and around the San Diego thornmint population at Simon County Preserve and determine if focused invasive non-native plant species management is required.

Sycamore Canyon/Goodan Ranch County Preserve

The 11 monitoring plots within the San Diego thornmint population in Sycamore Canyon/Goodan Ranch County Preserve were monitored by ESA in 2023. A total of 12,877 San Diego thornmint plants were estimated within the monitoring plots. The entire population of San Diego thornmint within Sycamore Canyon County Preserve in 2023 is estimated at 46,032 plants. Monitoring plots, center points, photo points, maximum extent, and invasive non-native plant management areas are shown in **Figure 4**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species detected included small-flowered bindweed (*Convolvulus simulans*) at 10 of the 11 monitoring plots, Palmer's grappling hook at 8 of the 11 monitoring plots, and variegated dudleya at 1 of the 11 monitoring plots. Incidental special-status wildlife species observed outside of the monitoring plots included San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (Figure 4). Across all 11 monitoring plots, San Diego thornmint habitat contained invasive non-native grasses and herbs, particularly purple false brome and tocalote.

Monitoring Plot Number SYGOACIL01

Monitoring plot SYGOACIL01 is in the northwestern portion of the San Diego thornmint population. A total of 1,035 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were in flower, the remaining were vegetative. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 64.8 percent, with 27.0 percent native plant cover and 37.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included purple false brome, compact brome (*Bromus madritensis*), tocalote, annual fescue, smooth cat's ear, and canary grass (*Phalaris canariensis*). Non-native plant species included longbeak stork's bill, nit grass (*Gastridium phleoides*), narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Artichoke thistle (*Cynara cardunculus*) was detected north of this plot's maximum extent. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.



SOURCE: Nearmap, 2023; ESA, 2023.

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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 4

San Diego Thornmint Monitoring and Management Results
Sycamore Canyon/Goodan Ranch County Preserve

ESA

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Monitoring Plot Number SYGOACIL02

Monitoring plot SYGOACIL02 is in the northwestern portion of the San Diego thornmint population. A total of 72 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 43.4 percent, with 10.6 percent native plant cover and 32.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included slender oat, purple false brome, soft brome, compact brome, tocalote, annual fescue, and canary grass. Non-native plant species included longbeak stork's bill, smooth cat's ear, and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook. Incidental special-status wildlife species detected outside the monitoring plot included San Diego black-tailed jackrabbit (Figure 4).

Monitoring Plot Number SYGOACIL03

Monitoring plot SYGOACIL03 is in the northwestern portion of the San Diego thornmint population. A total of 800 San Diego thornmint plants were estimated within the monitoring plot; over 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 43.6 percent, with 38.4 percent native plant cover and 5.2 percent non-native plant cover. The dominant native plant species within the monitoring plot were black sage (*Salvia mellifera*), California sagebrush, laurel sumac (*Malosma laurina*), and clustered tarweed. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, annual fescue, and smooth cat's ear. Non-native plant species included small fescue, narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL04

Monitoring plot SYGOACIL04 is in the southeastern portion of the San Diego thornmint population. San Diego thornmint was not detected within the monitoring plot in 2023. Total vegetative cover within the plot was 42.0 percent, with 13.4 percent native plant cover and 28.6 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included slender oat, purple false brome, black mustard (*Brassica nigra*), tocalote, and smooth cat's ear. Non-native plant species included narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Small-flowered bindweed was the only special-status plant species detected within the monitoring plot.

Monitoring Plot Number SYGOACIL05

Monitoring plot SYGOACIL05 is in the southeastern portion of the San Diego thornmint population. A total of 193 San Diego thornmint plants were estimated within the monitoring plot; over 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 62.4 percent, with 50.8 percent native plant cover and 11.6 percent non-native plant cover. The dominant native plant species within the monitoring plot was Mission manzanita. Invasive non-native plant species included purple false brome, soft brome, tocalote, redstem stork's bill, annual fescue, and smooth cat's ear. Non-native plant species included pepperweed,

narrowleaf cottonrose, and spiny sowthistle. Special-status plant species detected within the monitoring plot included variegated dudleya and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL06

Monitoring plot SYGOACIL06 is in the central-northern portion of the San Diego thornmint population. A total of 6,457 San Diego thornmint plants were estimated within the monitoring plot; over 75 percent were flowering, the remaining were vegetative. Total vegetative cover within the plot was 41.0 percent, with 38.8 percent native plant cover and 2.2 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, redstem stork's bill, annual fescue, and canary grass. Non-native plant species included scarlet pimpernel and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL07

Monitoring plot SYGOACIL07 is in the central-northern portion of the San Diego thornmint population. A total of 549 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were flowering, the remaining were vegetative. Potential sign of stunted growth was detected in 10 to 25 percent of all plants. Total vegetative cover within the plot was 53.8 percent, with 22.6 percent native plant cover and 31.2 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included purple false brome, tocalote, and smooth cat's ear. Non-native plant species included cretanweed, narrowleaf cottonrose, scarlet pimpernel, and common sowthistle (*Sonchus oleraceus*). Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL08

Monitoring plot SYGOACIL08 is in the central-northern portion of the San Diego thornmint population. A total of 1,262 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were in flower, the remaining were vegetative. Potential sign of stunted growth was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 39.8 percent, with 13.0 percent native plant cover and 26.8 percent non-native plant cover. The dominant native plant species within the monitoring plot were mock parsley (*Apiastrum angustifolium*), Torrey's hybrid oak (*Quercus x acutidens*), and lemonadeberry (*Rhus integrifolia*). Invasive non-native plant species included slender oat, purple false brome, soft brome, tocalote, annual fescue, and smooth cat's ear. Non-native plant species included petty spurge (*Euphorbia peplus*), scarlet pimpernel, spiny sowthistle, and common sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL09

Monitoring plot SYGOACIL09 is in the northwestern portion of the San Diego thornmint population. A total of 1,336 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 51.4 percent, with 24.0 percent native plant cover and 27.4 percent non-native plant cover. The dominant native plant species within the monitoring plot was Torrey's hybrid oak. Invasive non-native plant species included slender oat, purple false brome, compact brome, tocalote, annual fescue, and smooth cat's ear. Non-native plant species included narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL10

Monitoring plot SYGOACIL10 is in the northwestern portion of the San Diego thornmint population. A total of 850 San Diego thornmint plants were estimated within the monitoring plot; 50 to 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 40.6 percent, with 38.2 percent native plant cover and 2.4 percent non-native plant cover. The dominant native plant species within the monitoring plot was black sage. Invasive non-native plant species included compact brome, tocalote, redstem stork's bill, and smooth cat's ear. Non-native plant species included petty spurge, narrowleaf cottonrose, scarlet pimpernel, and spiny sowthistle. Special-status plant species detected within the monitoring plot included small-flowered bindweed and Palmer's grappling hook.

Monitoring Plot Number SYGOACIL11

Monitoring plot SYGOACIL11 is in the southeastern portion of the San Diego thornmint population. A total of 323 San Diego thornmint plants were estimated within the monitoring plot; 10 to 25 percent were in flower, the remaining were either vegetative or fruiting. Total vegetative cover within the plot was 51.0 percent, with 31.0 percent native plant cover and 20.0 percent non-native plant cover. The dominant native plant species within the monitoring plot was clustered tarweed. Invasive non-native plant species included purple false brome, black mustard, tocalote, and smooth cat's ear. Non-native plant species included narrowleaf cottonrose and spiny sowthistle. Small-flower bindweed was the only special-status plant species detected within the monitoring plot.

Focused Management

Focused management occurred in 2023 in response to the high thatch and invasive non-native plant cover observed in 2022. Focused management was conducted at monitoring plots 1, 2, 4, 5, 7, 8, 9, and 11. As previously described, management consisted of carefully hand-pulling target invasive non-native plant species within an 1.10-acre management area where San Diego thornmint populations were previously detected. Line trimmers were then used to dethatch remaining non-native plant species surrounding San Diego thornmint occurrences within 12-meter radius circles around three established monitoring plot center points (Plots 5, 7, and 8), as shown in Figure 4. Invasive non-native plant species consisted predominantly of purple false brome. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Continue focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and cover of purple false brome be kept to less than 10 percent cover (ESA and ICF 2022). To ensure the persistence of San Diego thornmint at Sycamore Canyon/Goodan Ranch County Preserve, it is recommended that invasive non-native plant control be continued by a qualified restoration specialist within at least eight of the monitoring plots: plots 1, 2, 4, 5, 7, 8, 9, and 11, and the surrounding areas, as needed, to reduce encroachment and competition from invasive non-native plant species and allow expansion opportunities for the San Diego thornmint population. Total invasive non-native plant cover and purple false brome percent cover for all monitoring plots in 2023 are provided in **Table 16** with recommended management priority levels. The invasive non-native plant species removal protocol within the TMP, which includes hand-clipping, hand-pulling, and herbicide use, should be followed. Care should be taken when management or monitoring is performed to not trample San Diego thornmint plants. Artichoke thistle was also detected north of monitoring plot 1; these individuals should be removed and treated with herbicide during focused management to prevent future spread and encroachment into the San Diego thornmint population.

TABLE 16
SAN DIEGO THORNMINT INVASIVE NON-NATIVE PLANT CONTROL MANAGEMENT PRIORITIES: SYCAMORE CANYON/GOODAN RANCH COUNTY PRESERVE

Monitoring Plot	Total Non-Native Plant Cover (%)	Purple False Brome Cover (%)[a]	Priority for Invasive Non-Native Plant Management[b]
1	37.8	35.0	High
2	32.8	25.0	High
3	5.2	2.0	Low
4	28.6	27.0	High
5	11.6	10.0	Moderate
6	2.2	0.2	Low
7	31.2	30.0	High
8	26.8	25.0	High
9	27.4	25.0	High
10	2.4	0.0	Low
11	20.0	18.0	High

NOTES:

a. Invasive non-native purple false brome percent cover is included in the total non-native plant cover percentage.
b. Management priority was determined based on total non-native plant cover and purple false brome cover.
High = If total non-native plant cover was greater than 20 percent, and/or purple false brome cover was 10 percent or greater.
Moderate = If total non-native plant cover was 10 to 20 percent, and/or purple false brome cover was 5 to 10 percent.
Low = If total non-native plant cover was under 10 percent, and/or purple false brome cover was under 5 percent.

4.2.2 Encinitas Baccharis

Del Dios Highlands County Preserve

The three monitoring plots within the Encinitas baccharis population in Del Dios Highlands County Preserve were monitored by ESA in 2023. A total of 40 Encinitas baccharis plants were estimated within the monitoring plots. The entire population of Encinitas baccharis plants within Del Dios Highlands County Preserve in 2023 is estimated at 177 plants. Monitoring plot, center point, photo point, and maximum extent are shown in **Figure 5**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species detected within the monitoring plot included wart-stemmed ceanothus (*Ceanothus verrucosus*). Incidental special-status wildlife species detected outside the monitoring plot included Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*) and Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) (Figure 5). The Encinitas baccharis habitat contained invasive non-native plant species, particularly brome grasses. Additional monitoring data, including sex, male-to-female ratio, and age of the plants in each monitoring plot, were collected in **Table 17**.

Monitoring Plot Number DD201501

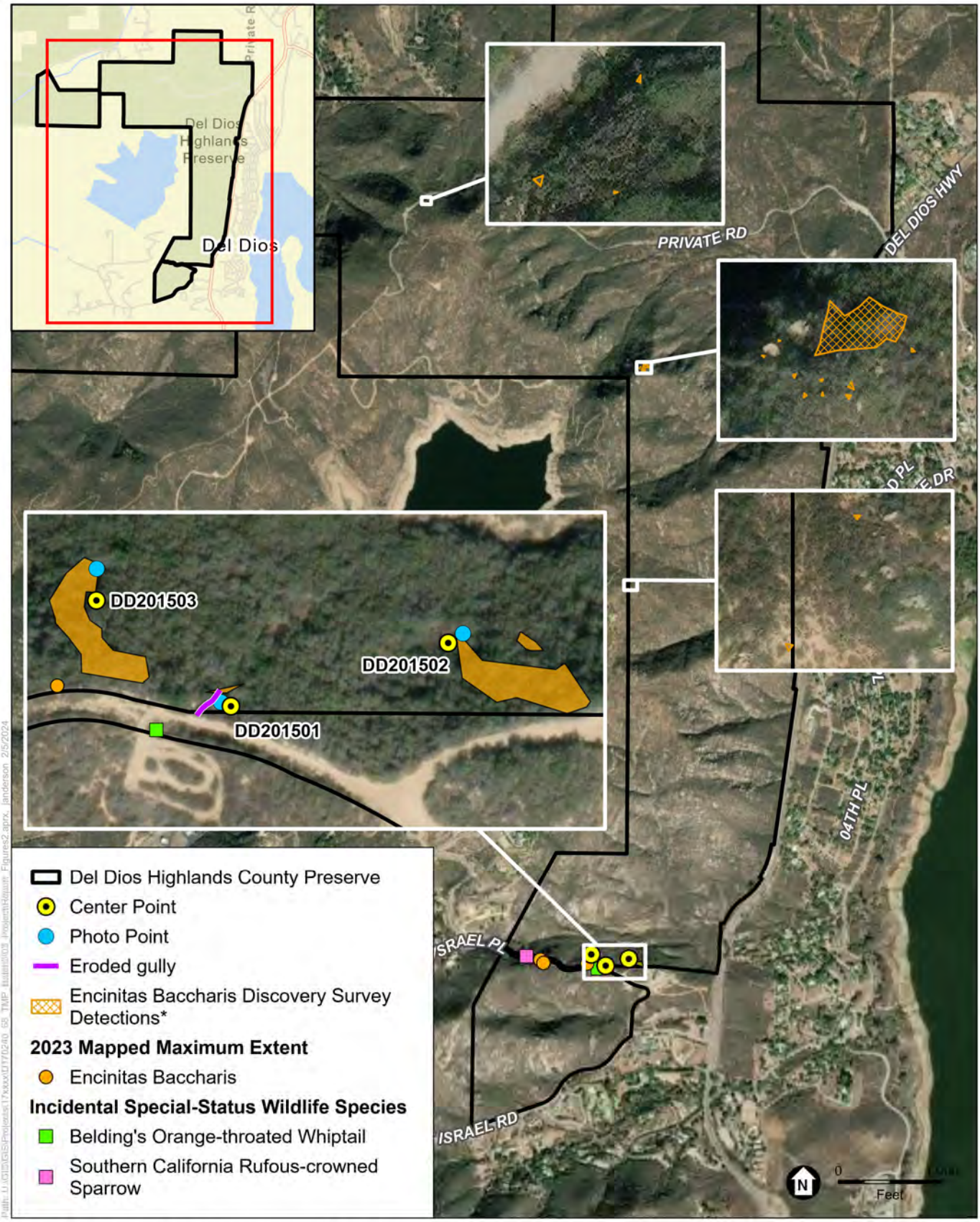
Monitoring plot DD201501 is located in the south-central portion of the Encinitas baccharis population. A total of 4 Encinitas baccharis plants were detected within the monitoring plot; 25 to 50 percent were flowering, the remaining were vegetative. Total vegetative cover within the plot was 53.4 percent, with 53.0 percent native plant cover and 0.4 percent non-native plant cover. The dominant native plant species within the monitoring plot was wart-stemmed ceanothus. Invasive non-native plant species included compact brome and red brome. Special-status plant species detected within the monitoring plot included wart-stemmed ceanothus.

Monitoring Plot Number DD201502

Monitoring plot DD201502 is located in the eastern portion of the Encinitas baccharis population. A total of 3 Encinitas baccharis plants were detected within the monitoring plot; 25 to 50 percent were flowering, the remaining were vegetative. Total vegetative cover within the plot was 61.6 percent, with 61.0 percent native plant cover and 0.6 percent non-native plant cover. The dominant native plant species within the monitoring plot was woolyleaf ceanothus (*Ceanothus tomentosus*). Invasive non-native plant species included compact brome; non-native plant species included small fescue and nit grass. Special-status plant species detected within the monitoring plot included wart-stemmed ceanothus.

Monitoring Plot Number DD201503

Monitoring plot DD201503 is located in the western portion of the Encinitas baccharis population. A total of 33 Encinitas baccharis plants were estimated within the monitoring plot; over 75 percent were vegetative. Total vegetative cover within the plot was 50.0 percent, with 49.4 percent native plant cover and 0.6 percent non-native plant cover. The dominant native plant species within the monitoring plot were Mission manzanita and wart-stemmed ceanothus. Invasive non-native plant species included purple false brome and red brome; non-native plant species included small fescue. Special-status plant species detected within the monitoring plot included wart-stemmed ceanothus.



SOURCE: ESRI, 2022; Mulligan Biological Consulting, 2023; ESA, 2023.
NOTE: Results provided by Mulligan Biological Consulting

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Figure 5
Encinitas Baccharis Monitoring Results
Del Dios Highlands County Preserve

ESA

TABLE 17
ENCINITAS BACCHARIS ADDITIONAL MONITORING DATA: DEL DIOS HIGHLANDS COUNTY PRESERVE

Monitoring Plot	# of individuals	Sex	Male-to-Female Ratio	Age
DD201501	4	3 vegetative 1 female	NA	4 adults
DD201502	3	2 vegetative 1 female	NA	3 adults
DD201503	33	17 vegetative 8 female 8 male	1:1	32 adults 1 seedling

Adaptive Management Recommendations

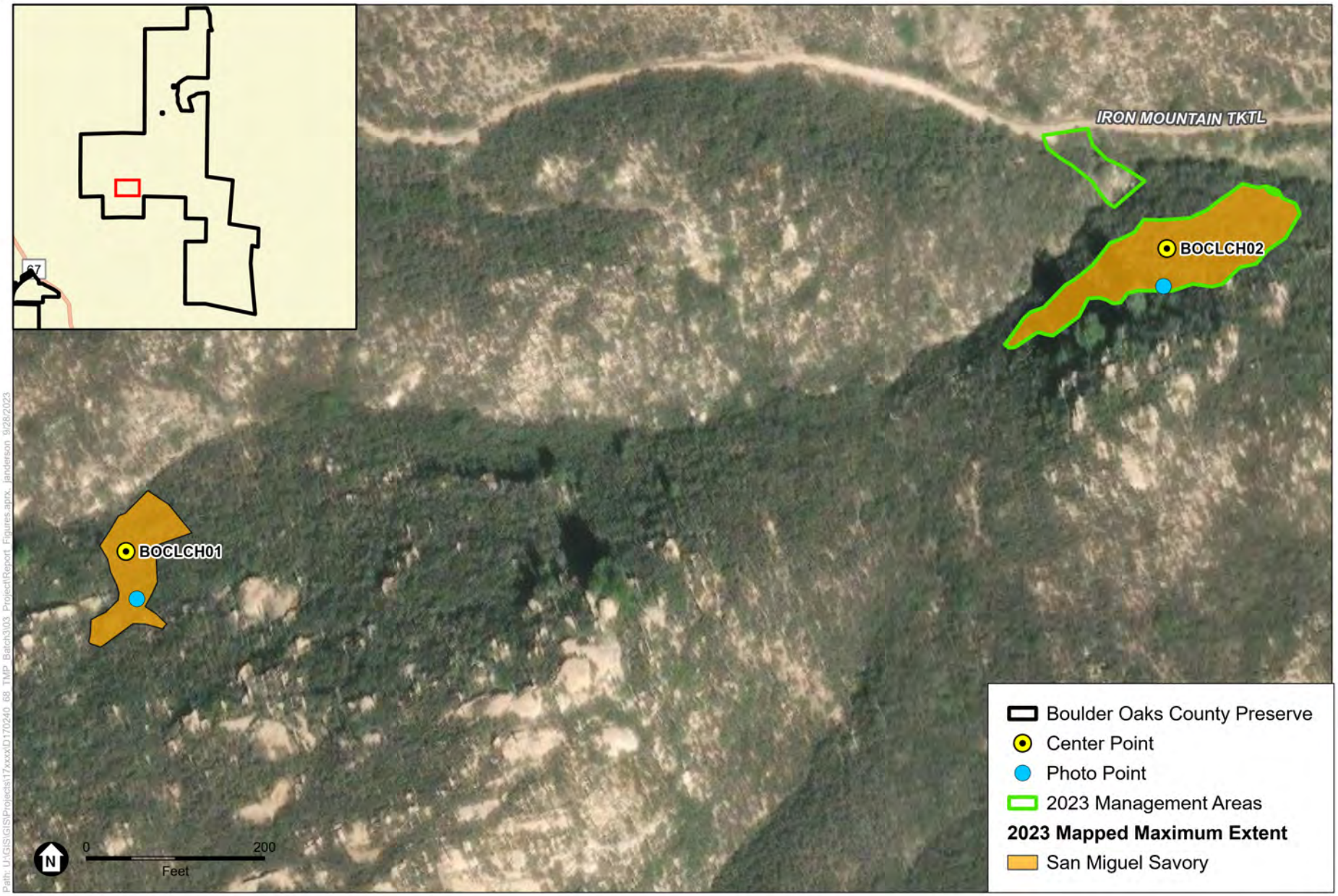
The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Thin native vegetation to reduce competition and improve access to monitoring plots.** Vegetation canopy in and around the monitoring plots is very dense. Thinning of native shrub canopy, including chamise (*Adenostoma fasciculata*) and woolyleaf ceanothus, should be considered to reduce potential native competition to Encinitas baccharis plants and improve access to monitoring plots.
- **Conduct reconnaissance surveys to identify additional Encinitas baccharis populations.** New detections of Encinitas baccharis within the northern portion of Del Dios Highlands County Preserve were reported as a result of discovery surveys by Mulligan Biological Consulting (MBC) in 2023 and are shown in Figure 5. A reconnaissance survey is recommended to determine presence and establish baseline conditions of the Encinitas baccharis population. If a population is present, a monitoring plot should be established, and MSP rare plant monitoring should be conducted.

4.2.3 San Miguel Savory

Boulder Oaks County Preserve

The two monitoring plots within the San Miguel savory population in Boulder Oaks County Preserve were monitored by ESA in 2023. A total of 132 San Miguel savory plants were estimated within the monitoring plots. The entire population of San Miguel savory plants within Boulder Oaks County Preserve in 2023 is estimated at 607 plants. Monitoring plot, center point, photo point, maximum extent, and invasive non-native plant management areas are shown in **Figure 6**. Photo monitoring and representative photographs are provided in Appendix B. One special-status plant, southern mountain misery (*Chamaebatia australis*), was observed at BOCLCH02. Across both monitoring plots, San Miguel savory habitat contained invasive non-native grasses and herbs, particularly annual fescue and smooth cat's ear.



SOURCE: ESRI, 2022; ESA, 2023.

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Figure 6

San Miguel Savory Monitoring and Management Results
Boulder Oaks County Preserve

ESA

Monitoring Plot Number BOCLCH01

Monitoring plot BOCLCH01 is located in the western portion of the San Miguel savory population. A total of 80 San Miguel savory plants were detected to be within the monitoring plot; over 75 percent were in flower, the remaining were vegetative. Total vegetative cover within the plot was 66.0 percent, with 65.2 percent native plant cover and 0.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was chamise. Invasive non-native plant species included annual fescue and smooth cat's ear; non-native plant species included narrowleaf cottonrose. No special-status plant species were detected within the plot.

Monitoring Plot Number BOCLCH02

Monitoring plot BOCLCH02 is located in the eastern portion of the San Miguel savory population. A total of 52 San Miguel savory plants were detected within the monitoring plot; 50 to 75 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 67.8 percent, with 66.8 percent native plant cover and 1.0 percent non-native plant cover. The dominant native plant species within the monitoring plot was chamise. Invasive non-native plant species included foxtail brome (*Bromus madritensis*), perennial veldtgrass, annual fescue, and smooth cat's ear; non-native plant species included narrowleaf cottonrose. Southern mountain misery was the only special-status plant species detected within the plot.

Focused Management

Focused management occurred in 2023 in response to the presence of invasive non-native plant species detected in 2022. As previously described, management consisted of carefully removing invasive non-native plants by hand within 12 inches of the San Miguel savory plants in the 0.55-acre management areas around monitoring plot BOCLCH02 shown in Figure 6. Management targeted removal of foxtail brome and high-priority invasive perennial veldtgrass. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species removal within and around BOCLCH02.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Although non-native plant cover was 0.8 percent and 1.0 percent, respectively, within the monitoring plots, on-site observations demonstrated that high-priority invasive non-native perennial veldtgrass was still detected within monitoring plot BOCLCH02, with increased cover adjacent to the monitoring plot. To limit the expansion of perennial veldtgrass and ensure the persistence of San Miguel savory at Boulder Oaks County Preserve, it is recommended that invasive non-native plant control be continued within monitoring plot BOCLCH02 by a qualified restoration specialist, with a focus on treatment of perennial veldtgrass populations. In addition, treatment should continue to include areas around monitoring plot BOCLCH02, just west of the dirt access road, to prevent encroachment of perennial veldtgrass. Herbicide applications should be conducted when invasive non-native grasses have reached 2 to 3 inches in height during the peak of the growing season.

4.2.4 Otay Tarplant

Furby-North County Preserve

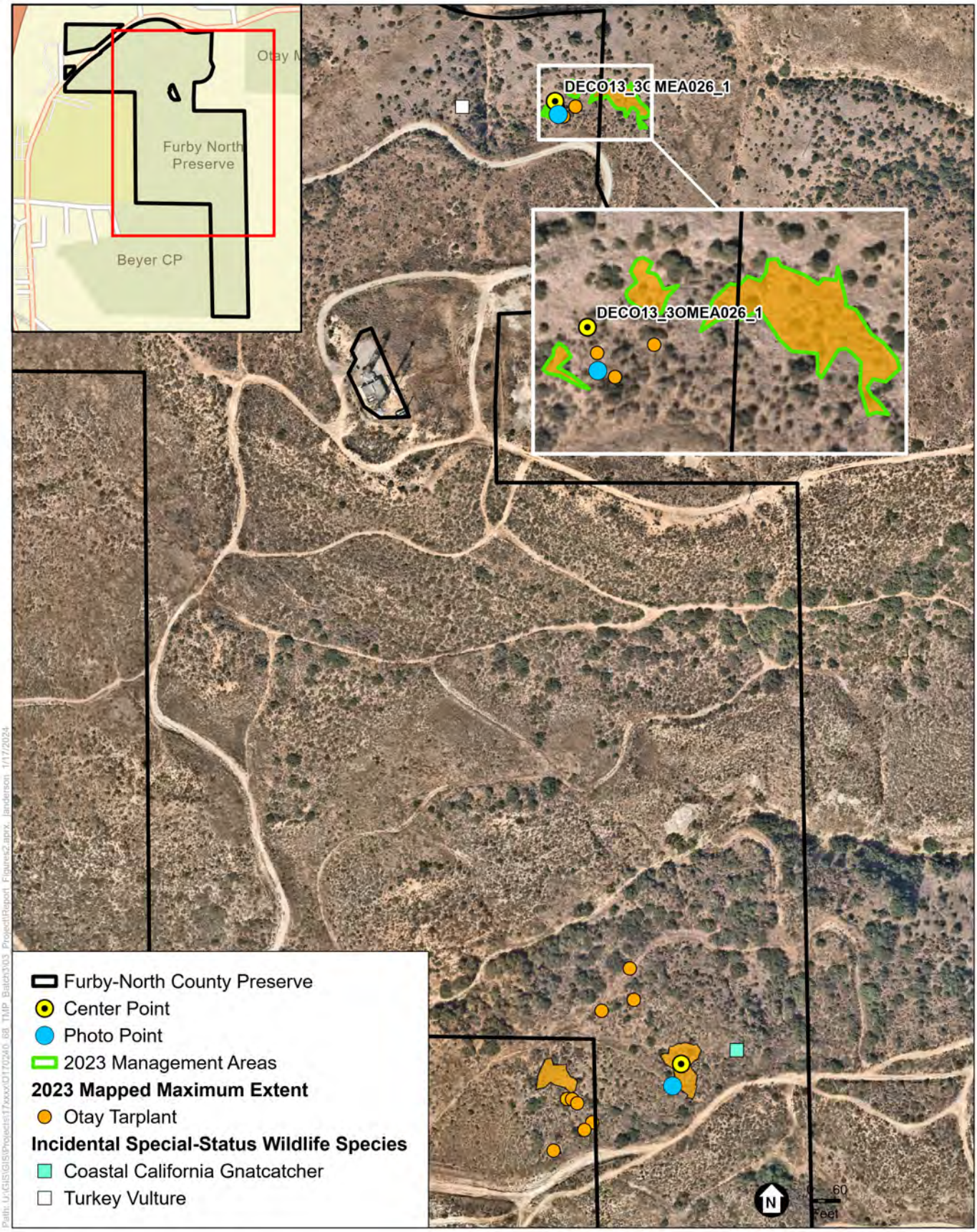
The one previously established monitoring plot and the new 2023 established monitoring plot within the Otay tarplant population in Furby-North County Preserve were monitored by ESA in 2023. A total of 511 Otay tarplant plants were estimated within the monitoring plots. The entire population of Otay tarplant within Furby-North County Preserve in 2023 is estimated at 3,667 plants. Monitoring plot, center point, photo point, maximum extent, and invasive non-native plant management area are shown in **Figure 7**. Photo monitoring and representative photographs, including pre- and post-management conditions, are provided in Appendix B. Special-status plant species detected within the monitoring plot included San Diego bursage (*Ambrosia chenopodifolia*), San Diego sunflower (*Bahiopsis laciniata*), common goldenstar (*Bloomeria crocea*), small-flowered bindweed, and Palmer's grappling hook. Incidental special-status wildlife species observed outside of the monitoring plot included coastal California gnatcatcher (*Polioptila californica californica*) and turkey vulture (*Cathartes aura*) (Figure 7). The Otay tarplant habitat contained invasive non-native grasses and herbs, particularly compact brome, tocalote, annual fescue, and crown daisy (*Glebionis coronaria*).

Monitoring Plot Number DECO13_3OMEA026_1

Monitoring plot DECO13_3OMEA026_1 is in the western portion of the Otay tarplant population. A total of 43 Otay tarplant plants were estimated within the monitoring plot; 25 to 50 percent were flowering, the remaining were either vegetative or dead. Potential signs of herbivory were detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 45.8 percent, with 20.0 percent native plant cover and 25.8 percent non-native plant cover. The dominant native plant species within the monitoring plot were California sagebrush and jojoba (*Simmondsia chinensis*). Invasive non-native plant species included purple false brome, black mustard, ripgut brome, soft brome, compact brome, tocalote, annual fescue, Italian rye grass, crown daisy, and rabbitsfoot grass (*Polypogon monspeliensis*); non-native plant species included scarlet pimpernel. Common goldenstar was the only special-status plant species detected within the monitoring plot. Incidental special-status wildlife species observed outside of the monitoring plot included turkey vulture (Figure 7).

Monitoring Plot Number DECO13_3OMEA040_1

Monitoring plot DECO13_3OMEA040_1 is in the southern portion of the Otay tarplant population. A total of 468 Otay tarplant plants were estimated within the monitoring plot; 25 to 50 percent were flowering, the remaining were vegetative. Total vegetative cover within the plot was 35.2 percent, with 24.4 percent native plant cover and 10.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was California sagebrush. Invasive non-native plant species included black mustard, compact brome, tocalote, annual fescue, crown daisy, and shortpod mustard; non-native plant species included scarlet pimpernel and spiny sowthistle. Special-status plant species detected within the monitoring plot included San Diego bursage, San Diego sunflower, common goldenstar, small-flowered bindweed, and Palmer's grappling hook. Incidental special-status wildlife species observed outside of the monitoring plot included coastal California gnatcatcher (Figure 7).



SOURCE: Nearmap, 9/21/2020; ESA, 2023.

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Figure 7

Otay Tarplant Monitoring and Management Results
Furby-North County Preserve

ESA

Focused Management

Focused management occurred in 2023 in response to the high thatch and invasive non-native plant cover observed in 2022. As previously described, management within DECO13_3OMEA026_1 plot maximum extent consisted of carefully hand-pulling invasive non-native grasses directly adjacent to Otay tarplant individuals, followed by line trimming invasive non-native grasses and thatch removal within the monitoring plot maximum extent, surrounding the hand-pulled areas within an 0.11-acre management area, as shown in Figure 7. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

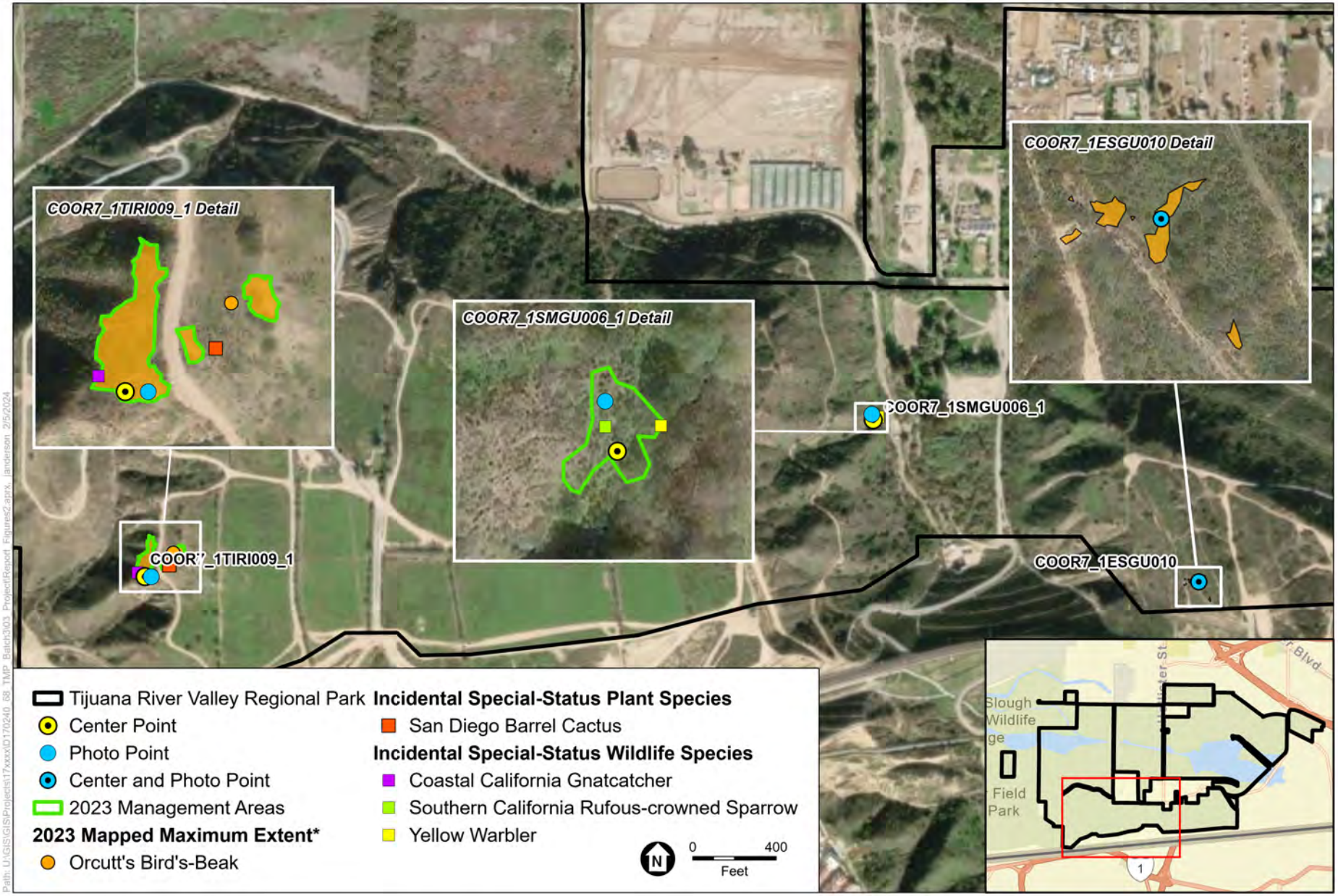
The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species and thatch removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent and thatch to be removed (ESA and ICF 2022). Total non-native plant cover within the monitoring plots in 2023 were 25.8 and 10.8 percent, respectively. To ensure the persistence of Otay tarplant at Furby-North County Preserve, it is recommended that thatch removal and invasive non-native plant control be continued by a qualified restoration specialist. Thatch removal should be implemented with weedeaters and rakes; debris should be hauled out and disposed of off-site at a county landfill.

4.2.5 Orcutt's Bird's-Beak

Tijuana River Valley Regional Park

The two monitoring plots within the Orcutt's bird's-beak population in Tijuana River Valley Regional Park were monitored by ESA in 2023. A total of 298 Orcutt's bird's-beak plants were estimated within the monitoring plots. The entire population of Orcutt's bird's-beak plants within Tijuana River Valley Regional Park in 2023 is estimated at 9,668 plants. Monitoring plot, center point, photo point, maximum extent, and invasive non-native plant management areas are shown in **Figure 8**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species detected within the monitoring plots included San Diego sunflower, western dichondra (*Dichondra occidentalis*), and ashy spike-moss (*Selaginella cinerascens*). Incidental special-status species observed outside of the monitoring plot included San Diego barrel cactus (*Ferocactus viridescens*), coastal California gnatcatcher, Southern California rufous-crowned sparrow, and yellow warbler (*Setophaga petechia*) (Figure 8). The Orcutt's bird's-beak habitat contained invasive non-native grasses and herbs, particularly red brome.



SOURCE: ESRI, 2022; ESA, 2023.
NOTE: Results for COOR7_1ESGU010 are provided by Mulligan Biological Consulting.

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Figure 8
Orcutt's Bird's-Beak Monitoring and Management Results
Tijuana River Valley Regional Park

ESA

Monitoring Plot Number COOR7_1TIRI009_1

Monitoring plot COOR7_1TIRI009_1 is in the southern portion of the Orcutt's bird's-beak population. A total of 298 Orcutt's bird's-beak plants were estimated within the monitoring plot; 25 to 50 percent were flowering, the remaining were vegetative or dead. Potential sign of herbivory was detected in 0 to 10 percent of all plants. Total vegetative cover within the plot was 51.2 percent, with 45.4 percent native plant cover and 5.8 percent non-native plant cover. The dominant native plant species within the monitoring plot were California sagebrush and ashy spike-moss. Invasive non-native plant species included Australian saltbush (*Atriplex semibaccata*), red brome, tocalote, annual fescue, crown daisy, shortpod mustard, smooth cat's ear, and Russian thistle (*Salsola tragus*). Non-native plant species included narrowleaf cottonrose, scarlet pimpernel, common catchfly (*Silene gallica*), and common sowthistle. Special-status plant species detected within the plot included San Diego sunflower, western dichondra, and ashy spike-moss. Incidental special-status species observed outside of the monitoring plot included San Diego barrel cactus and coastal California gnatcatcher (Figure 8).

Monitoring Plot Number COOR7_1SMGU006_1

Monitoring plot COOR7_1SMGU006_1 is in the northwest portion of the Orcutt's bird's-beak population. No Orcutt's bird's-beak plants were detected within the monitoring plot in 2023. Total vegetative cover within the plot was 53.2 percent, with 43.2 percent native plant cover and 10.0 percent non-native plant cover. The dominant native plant species within the monitoring plot were bladderpod spiderflower (*Peritoma arborea*) and California brittlebush (*Encelia californica*). Invasive non-native plant species included wild oat (*Avena fatua*), purple false brome, red brome, tocalote, sweet fennel (*Foeniculum vulgare*), crown daisy, shortpod mustard, and smooth cat's ear. Non-native plant species included flax-leaved horseweed (*Erigeron bonariensis*), prickly lettuce (*Lactuca serriola*), narrowleaf cottonrose, scarlet pimpernel, spiny sowthistle, and common sowthistle. Incidental special-status wildlife species observed outside of the monitoring plot included Southern California rufous-crowned sparrow and yellow warbler (Figure 8).

Focused Management

Focused management occurred in 2023 in response to high thatch cover detected in 2022. As previously described, management consisted of carefully hand-pulling invasive non-native grasses directly adjacent to Orcutt's bird's-beak individuals within the COOR7_1TIRI009_1 and COOR7_1SMGU006_1 plot maximum extents, for an approximately 0.35-acre management area, as shown in Figure 8. Management consisted of carefully hand-pulling invasive non-native grasses, primarily red brome and tocalote directly adjacent to Orcutt's bird's-beak individuals. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Conduct reconnaissance surveys and establish new monitoring plots.** Additional Orcutt's bird's-beak plants were detected during 2021 discovery survey performed by AECOM and CBI through a DPR-issued ROE permit. Reconnaissance surveys should be conducted in these areas

to determine population status and if new monitoring plots are warranted. Up to two new monitoring plots could be established for the Preserve.

- **Conduct focused invasive non-native plant species removal.** The TMP recommends invasive non-native grasses and forbs control within suitable habitat (ESA and ICF 2022) and SDMMP recommends controlling invasive non-native plant species to less than 20 percent cover. Although non-native plant cover was 5.8 percent and 10.0 percent, respectively, within the monitoring plots, on-site observations demonstrated the non-native plant cover adjacent to both monitoring plots to be higher, with increased percentages of invasive non-native grasses. To ensure the persistence of Orcutt's bird's-beak at the Tijuana River Valley Regional Park, invasive non-native plant control by a qualified restoration specialist is recommended at both monitoring plots and extend into the maximum extent to reduce invasive non-native grass and forb species.
- **Limit unauthorized human access.** The TMP recommends controlling unauthorized human access within and adjacent to suitable habitat for Orcutt's bird's-beak, including closing and restoring unauthorized trails and roads resulting from U.S. Border Patrol activities (ESA and ICF 2022). To ensure the persistence of Orcutt's bird's-beak and suitable habitat for the species at the Tijuana River Valley Regional Park, coordination with Border Patrol to limit unauthorized access within and adjacent to suitable habitat for Orcutt's bird's-beak is recommended.

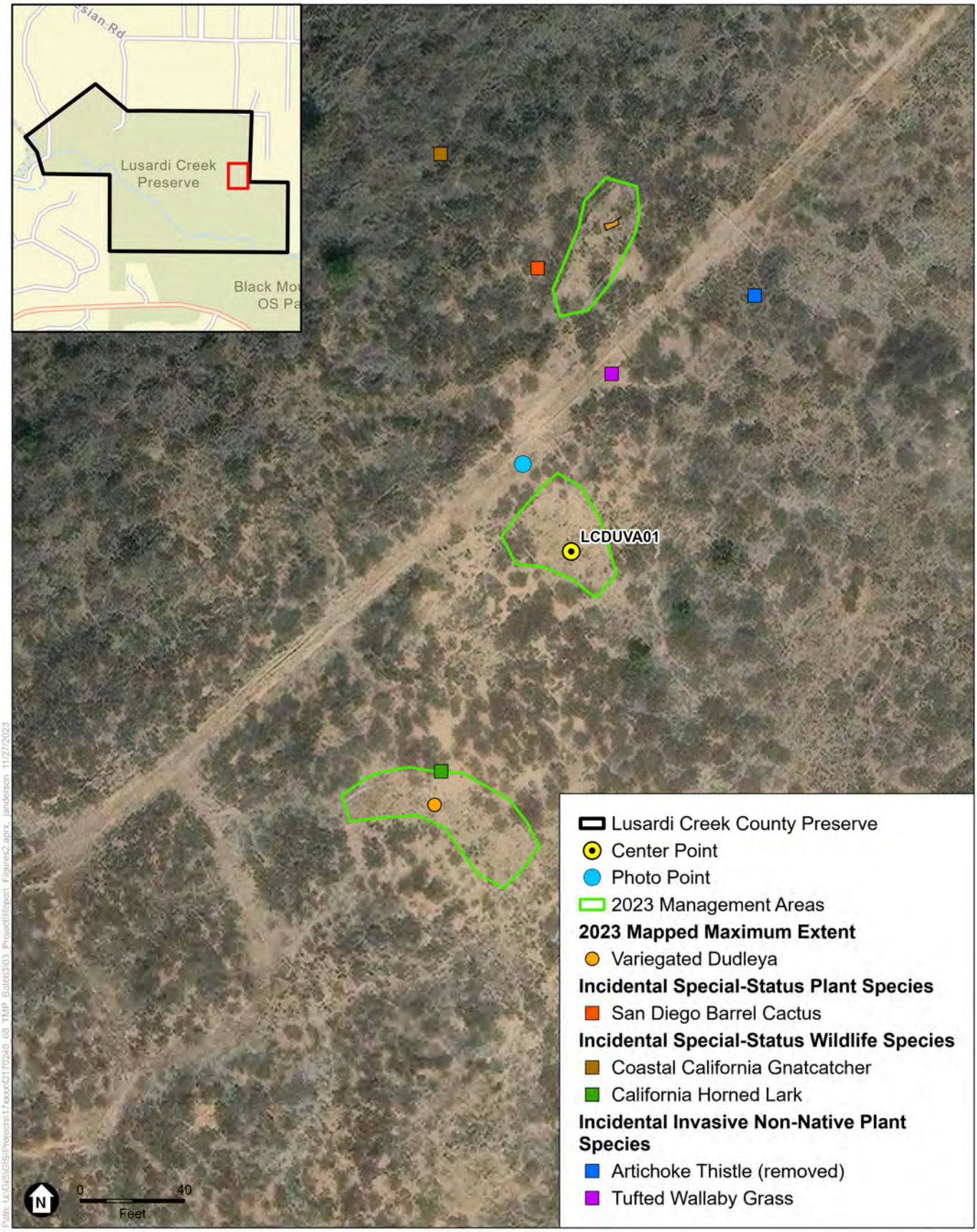
4.2.6 Variegated Dudleya

Lusardi Creek County Preserve

The one monitoring plot within the variegated dudleya population in Lusardi Creek County Preserve was monitored by ESA in 2023. One variegated dudleya plant was detected within the monitoring plot. The entire population of variegated dudleya within Lusardi Creek County Preserve in 2023 is estimated at nine plants. Monitoring plot, center point, photo point, maximum extent, and invasive non-native plant management areas are shown in **Figure 9**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species ashy spike-moss was observed within the monitoring plot. Incidental special-status species observed outside of the monitoring plot included San Diego barrel cactus, coastal California gnatcatcher, and California horned lark (Figure 9). The variegated dudleya habitat contained invasive non-native grasses and herbs, particularly purple false brome.

Monitoring Plot Number LCDUVA01

Monitoring plot LCDUVA01 is located in the eastern portion of the variegated dudleya population. One variegated dudleya plant was detected within the monitoring plot and was vegetative. Total vegetative cover within the plot was 56.6 percent, with 15.4 percent native plant cover and 41.2 percent non-native plant cover. The dominant native plant species within the monitoring plot was purple needle grass (*Stipa pulchra*). Invasive non-native plant species included purple false brome, soft brome, foxtail brome, annual fescue, Italian rye grass, smooth cat's ear, and Russian thistle; non-native plant species included longbeak stork's bill. One special-status plant species was detected within the plot, ashy spike-moss. Incidental special-status wildlife species detected outside of the monitoring plot included San Diego barrel cactus, coastal California gnatcatcher, and California horned lark (Figure 9). Two new invasive non-native plant species, tufted wallaby grass (*Rytidosperma caespitosum*) and artichoke thistle, were detected outside of the monitoring plot.



SOURCE: ESRI, 2022; ESA, 2023.

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Figure 9

Variegated Dudleya Monitoring and Management Results
Lusardi Creek County Preserve

ESA

Focused Management

Focused management occurred in 2023 in response to the moderate thatch cover consisting of invasive non-native plant species incidentally detected in 2022 during focused management. Management consisted of carefully removing by hand invasive non-native plants within the herbivory fencing surrounding the monitoring plot. Focused management for variegated dudleya was conducted within an 0.09-acre management area, shown in Figure 9. Invasive non-native plant cover consisted primarily of purple false brome and other non-native grasses and herbs. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Herbivory fencing around plot LCDUVA01 was repaired, and the artichoke thistle individual outside the enclosures was cut and removed. Representative photographs of focused management are provided in Appendix B.

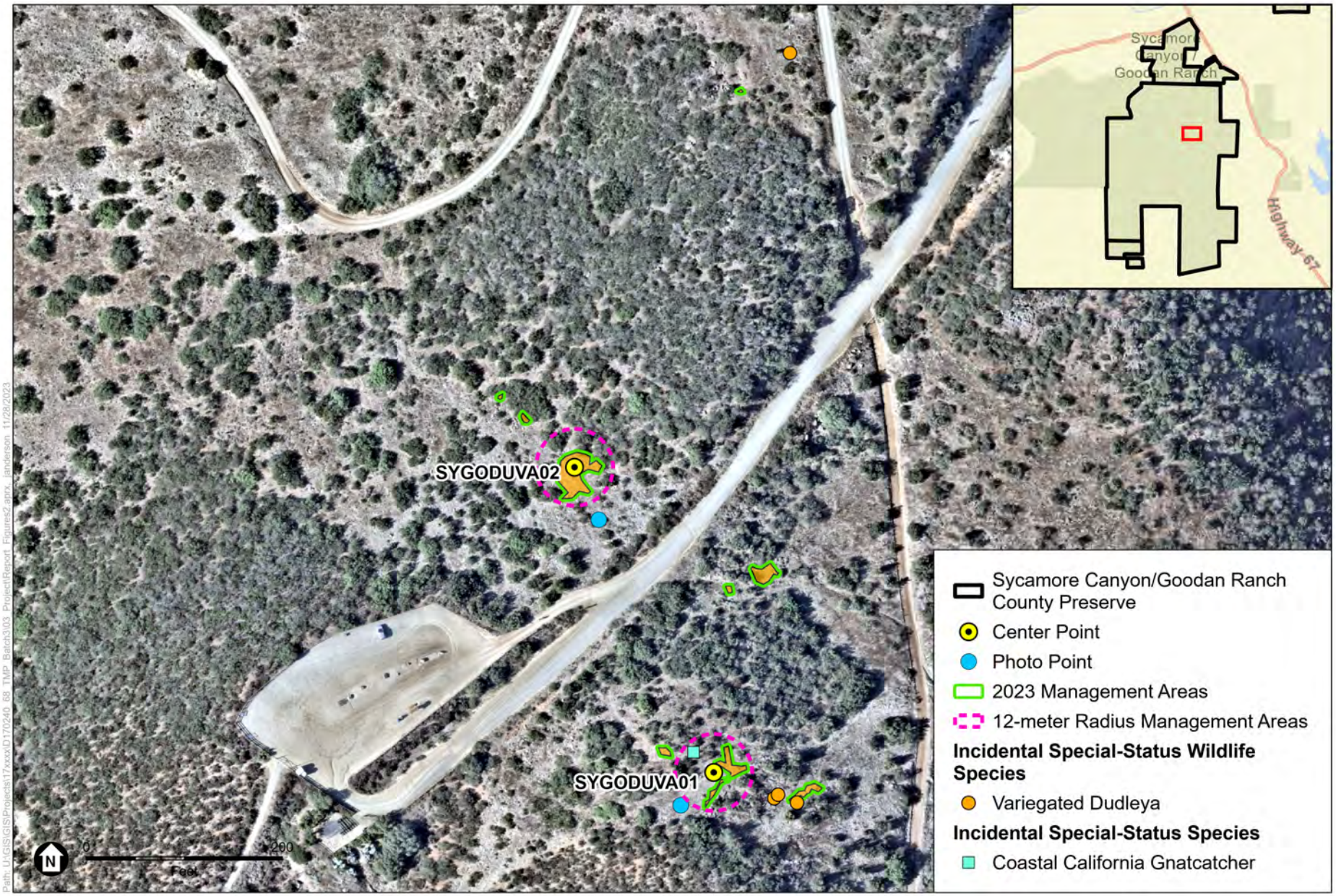
Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Total non-native plant cover within the monitoring plot in 2023 was 41.2 percent and thatch cover was estimated to be 3.0 percent. To ensure the persistence of variegated dudleya at Lusardi Creek County Preserve, it is recommended that invasive non-native plant control and thatch removal be continued by a qualified restoration specialist. Invasive non-native plant species within the previously installed herbivory fencing and any invasive non-native plants within 18 inches of variegated dudleya plants should be carefully pulled by hand. Invasive non-native plants within the management area, but outside of the herbivory fencing, can be trimmed with a mechanical weed trimmer to 1–2 inches from the ground. All biomass should be manually collected, bagged, and properly disposed of at an approved off-site facility. Conditions of the previously installed herbivory fencing and fence posts should be checked and repaired as necessary during management. Artichoke thistle and tufted wallaby grass should continue to be targeted for removal and treatment to prevent future spread and encroachment into the variegated dudleya population.

Sycamore Canyon/Goodan Ranch County Preserve

The two monitoring plots within the variegated dudleya population in Sycamore Canyon/Goodan Ranch County Preserve we monitored by ESA in 2023. A total of 588 variegated dudleya plants were estimated within the monitoring plots. The entire population of variegated dudleya within Sycamore Canyon/Goodan Ranch County Preserve in 2023 is estimated at 1,348 plants. Monitoring plot, center point, photo point, maximum extent, and invasive non-native plant management areas are shown in **Figure 10**. Photo monitoring and representative photographs are provided in Appendix B. Special-status plant species, San Diego thornmint, Palmer's grappling hook, and ashy spike-moss were observed within the monitoring plots. Incidental special-status wildlife species observed outside the monitoring plot included coastal California gnatcatcher (Figure 10). The variegated dudleya habitat contained invasive non-native grasses and herbs, particularly purple false brome and tocalote.



SOURCE: Nearmap, 2023; ESA, 2023.

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Figure 10

Variegated Dudleya Monitoring and Management Results
Sycamore Canyon/Goodan Ranch County Preserve

ESA

Monitoring Plot Number SYGODUVA01

Monitoring plot SYGODUVA01 is located in the southeastern portion of the variegated dudleya population. A total of 144 variegated dudleya plants were detected within the monitoring plot; over 75 percent were vegetative. Total vegetative cover within the plot was 59.6 percent, with 20.0 percent native plant cover and 39.6 percent non-native plant cover. The dominant native plant species within the monitoring plot were laurel sumac and spiny redberry (*Rhamnus crocea*). Invasive non-native plant species included purple false brome, soft brome, tocalote, redstem stork's bill, and smooth cat's ear. Non-native plant species included pepperweed (*Lepidium* spp.), cottonrose (*Logfia* sp.), scarlet pimpernel, and spiny sowthistle. Special-status plant species detected within the plot were San Diego thornmint, Palmer's grappling hook, and ashy spike-moss. Incidental special-status wildlife species observed outside the monitoring plot included coastal California gnatcatcher (Figure 10).

Monitoring Plot Number SYGODUVA02

Monitoring plot SYGODUVA02 is located in the northwestern portion of the variegated dudleya population. A total of 444 variegated dudleya plants were detected within the monitoring plot; over 75 percent were vegetative. Total vegetative cover within the plot was 58.6 percent, with 21.6 percent native plant cover and 37.0 percent non-native plant cover. The dominant native plant species within the monitoring plot was spiny redberry. Invasive non-native plant species included purple false brome, ripgut brome, soft brome, tocalote, and redstem stork's bill; non-native plant species included spiny sowthistle and common sowthistle. Palmer's grappling hook was the only special-status plant species detected within the plot.

Focused Management

Focused management occurred in 2023 in response to the greater than 20 percent invasive non-native plant cover incidentally estimated in 2022. As previously described, management consisted of carefully removing invasive non-native plants by hand within 18 inches of variegated dudleya individuals throughout the previously mapped population maximum extents. Focused management occurred in a 0.05-acre management area (Figure 10), with a focus on areas where variegated dudleya were actively growing. Once hand-pulling was completed, line trimmers were used to cut and remove remaining invasive non-native grasses surrounding the variegated dudleya populations within 12-meter radius circles around both established center points. Invasive non-native plant cover consisted primarily of tocalote, purple false brome, and other non-native grasses. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Conduct focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 20 percent (ESA and ICF 2022). Total non-native plant cover within the monitoring plots in 2023 was 39.6 and 37.0 percent and thatch cover was estimated to be 1.0 and 2.0 percent, respectively. To ensure the

persistence of variegated dudleya at Sycamore Canyon/Goodan Ranch County Preserve, it is recommended that invasive non-native plant control and thatch removal be continued by a qualified restoration specialist. Invasive non-native plants within 18 inches of variegated dudleya plants should be carefully pulled by hand. Mechanical weed trimmers can be used to dethatch remaining invasive non-native plant species to 1 to 2 inches from the ground surrounding variegated dudleya occurrences within 12-meter radius circles around each of the established plot center points. All biomass should be manually collected, bagged, and properly disposed of at an approved off-site facility.

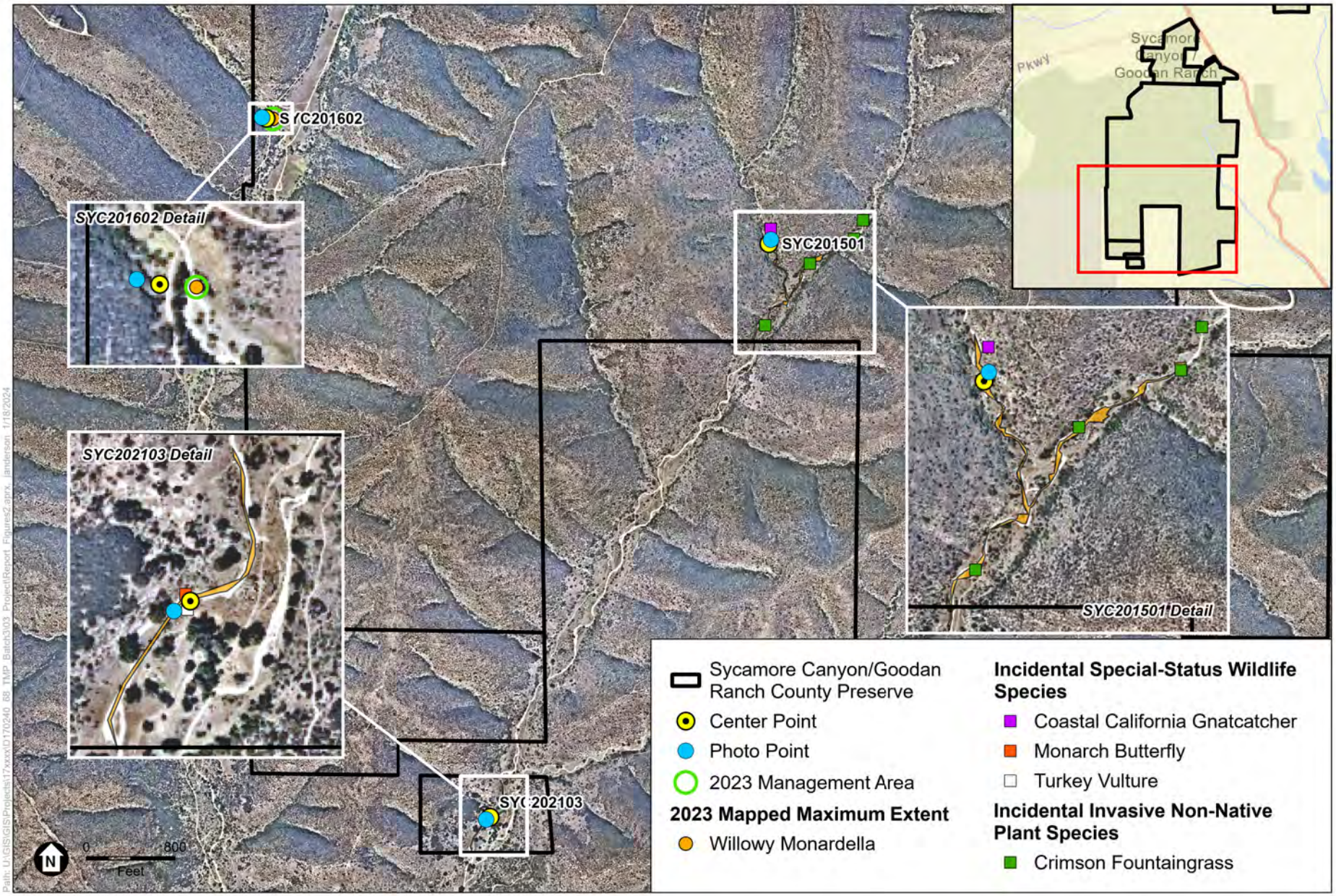
4.2.7 Willowy Monardella

Sycamore Canyon/Goodan Ranch County Preserve

The three monitoring plots within the willowy monardella population in Sycamore Canyon/Goodan Ranch County Preserve were monitored by ESA in 2023. A total of 68 willowy monardella plants were estimated within the monitoring plots. The entire population of willowy monardella within Sycamore Canyon/Goodan Ranch County Preserve is estimated at 444 individual plants. Monitoring plots, center points, photo points, maximum extent, and plant management area are shown in **Figure 11**. Photo monitoring and representative photographs, including pre- and post-management conditions, are provided in Appendix B. No special-status plant species were observed within the three monitoring plots. Incidental special-status wildlife species observed outside of the monitoring plots included coastal California gnatcatcher, turkey vulture, and monarch butterfly (*Danaus plexippus*) (Figure 11). Across all monitoring plots, willowy monardella habitat contained invasive non-native grasses and herbs, particularly slender oat, purple false brome, brome grasses, tocalote, and annual fescue. Invasive non-native crimson fountain grass (*Pennisetum setaceum*) was detected within the willowy monardella population associated with monitoring plot number SYC201501. Additional monitoring data, including number of patches, area covered by patches, volume of patches, and growth stages of the plants in each patch, were collected (**Table 18**).

Monitoring Plot Number SYC201501

Monitoring plot SYC201501 is in the central portion of the willowy monardella population. A total of 58 willowy monardella plants were estimated within the monitoring plot; 0 to 10 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 38.8 percent, with 27.0 percent native plant cover and 11.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, and annual fescue; non-native plant species included prickly lettuce, common catchfly, and an unknown grass. Crimson fountain grass was detected at multiple locations within the maximum extent associated with this monitoring plot. Incidental special-status wildlife species observed outside the monitoring plot included coastal California gnatcatcher (Figure 11).



SOURCE: Nearmap, 4/18/2021; ESA, 2023.

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Figure 11

Willowy Monardella Monitoring and Management Results
Sycamore Canyon/Goodan Ranch County Preserve

ESA

TABLE 18
WILLOWY MONARDELLA ADDITIONAL MONITORING DATA: SYCAMORE CANYON/ GOODAN RANCH COUNTY PRESERVE

Monitoring Plot	Patch Number	Width (m)	Length (m)	Height (m)	Area (width x length)	Volume (width x length x height)	# of Individuals within Patch	Growth Stage
SYC201501	1	0.5	2.0	0.75	1.0	0.75	3	3 Adults
	2	1.0	1.25	0.5	1.25	0.625	2	2 Adults
	3	0.4	0.6	0.5	0.24	0.12	2	1 Mature 1 Adult
	4	1.4	1.5	0.5	2.1	1.2	5	5 Adults
	5	2.2	2.0	0.75	4.4	3.3	6	6 Adults
	6	0.75	1.0	0.75	0.75	0.5625	2	2 Adults
	7	1.3	1.2	0.5	1.56	0.78	1	1 Adult
	8	0.75	1.5	0.5	1.125	0.5625	2	2 Adults
	9	0.8	1.0	0.5	0.8	0.4	1	1 Adult
	10	1.4	1.2	0.8	1.68	1.344	1	1 Adult
	11	1.3	2.2	0.6	2.86	1.716	1	1 Adult
	12	0.8	2.0	0.5	1.6	0.8	2	2 Adults
	13	0.5	0.8	0.6	0.4	0.24	3	2 Juveniles 1 Adult
	14	1.0	2.0	0.9	2.0	1.8	3	3 Adults
	15	1.5	2.3	0.8	3.45	2.76	3	3 Adults
	16	1.5	3.2	0.9	4.8	4.32	3	3 Adults
	17	1.0	1.0	0.6	1.0	0.6	1	1 Adult
SYC201602	1	1.2	1.5	0.7	1.8	1.26	4	2 Juvenile 1 Mature 1 Adult
SYC202103	1	1.4	1.2	0.6	1.68	1.008	1	1 Adult
	2	1.0	1.5	0.6	1.5	0.9	2	2 Adults
	3	1.2	1.3	0.7	1.56	1.092	3	3 Adults
	4	1.3	1.6	0.5	2.08	1.04	1	1 Adult

Monitoring Plot Number SYC201602

Monitoring plot SYC201602 is in the western portion of the willowy monardella population. A total of four willowy monardella plants were estimated within the monitoring plot, 25 to 50 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 32.2 percent, with 14.4 percent native plant cover and 17.8 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, Italian plumeless thistle (*Carduus pycnocephalus*), tocalote, filaree, annual fescue, Italian rye grass, shortpod mustard, and smooth cat's ear; non-native plant species

included common catchfly. No special-status species were detected within or outside the monitoring plot.

Monitoring Plot Number SYC202103

Monitoring plot SYC202103 is in the southern portion of the willowy monardella population. A total of six willowy monardella plants were estimated within the monitoring plot; 0 to 10 percent were flowering and the remaining were vegetative. Total vegetative cover within the plot was 34.4 percent, with 22.4 percent native plant cover and 12.0 percent non-native plant cover. The dominant native plant species within the monitoring plot was California buckwheat. Invasive non-native plant species included slender oat, purple false brome, ripgut brome, soft brome, compact brome, tocalote, annual fescue, shortpod mustard, and smooth cat's ear; non-native plant species included common catchfly. Incidental special-status wildlife species observed outside of the monitoring plot included turkey vulture and monarch butterfly (Figure 11).

Focused Management

Focused management occurred at monitoring plot number SYC201602 in 2023 in response to the potential native competition from California buckwheat observed in 2022. ESA biologists coordinated with and oversaw County Operations Division park ranger staff trim California buckwheat branches intermixed with willowy monardella plants. Ranger staff also hand-pulled invasive non-native grass species within the willowy monardella plants. Focused management occurred in an 0.0003-acre management area (Figure 11). Invasive non-native plant species consisted predominantly of slender oat, purple false brome, ripgut brome, soft brome, compact brome, annual fescue, and Italian rye grass. The biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management are provided in Appendix B.

Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Thin native vegetation to reduce competition.** For monitoring plot number SYC201602 specifically, thinning of California buckwheat should be considered to reduce potential native competition to the willowy monardella plants.

- **Conduct focused invasive non-native plant species removal.** The TMP recommends overall invasive non-native plant cover be kept to less than 10 percent (ESA and ICF 2022) around willowy monardella plants. Total non-native plant cover was 11.8 percent within monitoring plot number SYC201501, 17.8 percent within monitoring plot number SYC201602, and 12.0 percent within monitoring plot number SYC202103. Invasive non-native crimson fountain grass was also observed at multiple locations within the willowy monardella population associated with monitoring plot number SYC201501 and is recommended to be treated and removed prior to seeding to prevent further spread into the willowy monardella population. To ensure the persistence of willowy monardella at Sycamore Canyon/Goodan Ranch County Preserve, it is recommended that invasive non-native plant control and thatch removal be continued by a qualified restoration specialist. High-intensive management areas, 2- to 3-foot buffers around willowy monardella plants, should be delineated with submeter GPS units and flagged. Within each high-intensive

management area, invasive non-native plants should be carefully pulled by hand. Areas outside the high-intensive management area can be treated with an appropriate aquatic-safe herbicide. All biomass should be manually collected, bagged, and properly disposed of at an approved off-site facility.

4.2.8 Regional MSP Rare Plant Monitoring & Discovery Surveys

Through ROE permits issued by DPR, AECOM and MBC (contracted by SANDAG) conducted MSP rare plant monitoring for Parish's brittlescale at one permanent monitoring plot at Ramona Grasslands County Preserve; for Orcuttt's brodiaea (*Brodiaea orcuttii*) at one permanent monitoring plot at Boulder Oaks, Simon, and Mount Olympus County Preserves, respectively; and for Orcutt's bird's-beak at one monitoring plot at Tijuana River Valley Regional Park in 2023. Results of MSP rare plant monitoring by AECOM and MBC are provided in **Table 19**. MSP rare plant monitoring results for Parish's brittlescale at Ramona Grasslands County Preserve are depicted on Figure 2 and Orcutt's bird's-beak at Tijuana River Valley Regional Park are depicted on Figure 8.

TABLE 19
REGIONAL MSP 2023 RARE PLANT MONITORING RESULTS

Species	County Preserve	Plot #; MSP Occurrence ID	Monitoring Plot Population[a]	Maximum Extent Population Estimate[b]	Threats
Parish's brittlescale	Ramona Grasslands	ATPA2_5RAGR001	230	606	Non-native grasses and forbs.
Orcutt's brodiaea	Boulder Oaks	BROR_4BOPR029	5,088	12,833	Non-native grasses and forbs.
	Simon	BROR_4SIPR013	97	2,500	Non-native grasses and forbs.
	Mount Olympus	BRPR_8MTOL023	270	850	Non-native grasses and forbs; illegal trails.
Orcutt's bird's-beak	Tijuana River Valley Regional Park	COOR7_1ESGU010_1	122	370	Non-native grasses and forbs, trampling, erosion, soil compaction.

NOTES:

a. Monitoring plot population is the number of plants identified in the monitoring plot.
b. Maximum extent population is the total number of plants identified in the preserve, including the plants identified in the monitoring plot.

Through ROE permits issued by DPR, AECOM and MBC (contracted by SANDAG) conducted discovery surveys for Mexican flannelbush (*Fremontodendron mexicanum*) at Tijuana River Valley Regional Park, Baja California oatgrass (*Sphenopholis interrupta* ssp. *californica*) at Simon and Sycamore Canyon/Goodan Ranch County Preserves, Parish's brittlescale at Ramona Grasslands County Preserve, and Encinitas baccharis at Del Dios Highlands County Preserve in 2023.The purpose of these discovery surveys was to locate new or additional undiscovered rare plant populations outside of known monitored rare plant populations. Results of discovery surveys by AECOM and MBC are provided in **Table 20**. Species that were not located during discovery surveys received a population estimate of zero. Discovery survey results for Encinitas baccharis at Del Dios Highlands County Preserve are depicted on Figure 5.

TABLE 20
REGIONAL MSP 2023 DISCOVERY SURVEY RESULTS

Species	County Preserve	Population Estimation[a]	Incidental Species Detected
Mexican flannelbush	Tijuana River Valley Regional Park	0	NA
Baja California oatgrass	Simon	0	NA
	Sycamore Canyon/Goodan Ranch	517	San Diego thornmint, variegated dudleya
Parish's brittlescale	Ramona Grasslands	0	Southern tarplant
Encinitas baccharis	Del Dios Highlands	42	NA

NOTE:

NA = not applicable

a. The purpose of these discovery surveys was to locate new or additional undiscovered rare plant populations outside of known monitored rare plant populations. The population estimation reflects the results of the discovery surveys only, not the Regional MSP Rare Plant Monitoring Results for known occurrences.

4.3 Harbison's Dun Skipper

4.3.1 Adult Flight Surveys

HDS adult flight surveys were conducted at two locations around large patches of San Diego sedge within suitable habitat along Hell Creek and its southern tributary in Hellhole Canyon County Preserve. During the first adult flight survey on May 26, 2023, one HDS was observed at survey location 1, where an individual of unknown sex was seen only briefly. No HDS were observed at survey location 2 during the first survey. During the second adult flight survey on June 16, 2023, one HDS female was observed at survey location 1, where it was seen nectaring on shortpod mustard. Additionally, a male and female were observed interacting at survey location 2 and the female was seen nectaring on Indian hemp (*Apocynum cannabinum*). All butterfly species and potential nectar sources observed during the two adult flight surveys are presented in **Table 21**. Monitoring locations and HDS detections are depicted in **Figure 12**. Representative photographs from adult surveys, including HDS observations, are provided in **Appendix D**, *Harbison's Dun Skipper Representative Photographs and Field Forms*.

TABLE 21
OBSERVED BUTTERFLY AND POTENTIAL NECTAR SOURCES: HELLHOLE CANYON COUNTY PRESERVE

Common Name	Scientific Name
Butterflies Observed	
California sister	*Adelpha californica*
Orange sulphur	*Colias eurytheme*
San Bernardino blue	*Euphilotes bernardino*
Harbison's dun skipper	*Euphyes vestris harbisoni*
Silvery blue	*Glaucopsyche lygdamus*
Marine blue	*Leptotes marina*
Dainty sulphur	*Nathalis iole*
Mourning cloak	*Nymphalis antiopa*
Western tiger swallowtail	*Papilio rutulus*
Acmon blue	*Plebejus acmon*
Umber skipper	*Poanes melane*
Checkered white	*Pontia protodice*
California dogface	*Zerene eurydice*
Potential Nectar Sources Observed	
Foothill deervetch	*Acmispon brachycarpus*
Hemp dogbane[a]	*Apocynum cannabinum*[a]
Italian thistle*	*Carduus pycnocephalus*[*]
Canyon clarkia	*Clarkia epilobioides*
Wine-cup clarkia	*Clarkia purpurea*
Blue dicks	*Dipterostemon capitatus*
Seep monkeyflower	*Erythranthe guttata*
Narrow-leaf bedstraw	*Galium angustifolium*
Shortpod mustard[a*]	*Hirschfeldia incana*[a*]
Indian sweetclover[*]	*Melilotus indica*[*]
Caterpillar phacelia	*Phacelia cicutaria*
California rose	*Rosa californica*
Black sage	*Salvia mellifera*
Vetch sp.	*Vicia sp.*

NOTES:

a Harbison's dun skipper was observed nectaring on this species during 2023 adult flight surveys.
* Non-native plant species.

Hellhole Canyon County Preserve
Harbison's Dun Skipper
Flowlines
HDS Adult Flight Survey Locations
2023 Management Areas

*Survey Location 1 observations on 5/26/23 and 6/16/23.
Survey Location 2 observation on 6/16/23.

Escondido Canal

Hell Creek

S6

Hellhole Canyon Preserve

Klavo Dr

0 800 Feet

N

Path: U:\GIS\GIS\Projects\17xxxx\D170240_68_TMP_Batch3\03_Project\Report_Figures2.aprx, ianderson 1/18/2024

SOURCE: Nearmap, 2020; ESA, 2023.
NOTE: Management results will be updated during screencheck

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Figure 12
Harbison's Dun Skipper Monitoring and Management Results
Hellhole Canyon County Preserve

ESA

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Habitat assessments were conducted at both adult flight survey locations concurrently with the second adult flight survey. The woodland habitat at survey location 1 consisted of 5 percent oaks, 15 percent sycamores, 35 percent willows and 5 percent cottonwoods. The woodland habitat at survey location 2 consisted of 20 percent oaks, 10 percent sycamores, and 50 percent willows. The condition of San Diego sedge host plant populations at both survey locations ranged from all green (healthy) to mostly brown (dead), but most were seen to be green with brown tips, suggesting only minor drought or water stress. Drought was the main threat detected at the survey locations during the threats assessment as other plant species within the habitat, such as willows and oaks, showed signs of drought stress. Additional threats detected at the survey locations included tree pests such as gold-spotted oak borer and Kuroshio shot hole borer (*Euwallacea kuroshio*). These tree pests have led to oak mortality at the survey locations. While San Diego sedge is not restricted to oak woodlands, this species is commonly found inhabiting partially shaded riparian oak woodlands (Brown 1991). The full habitat assessment data matrix can be found in Appendix D.

4.3.2 Focused Management

Focused management for HDS occurred in 2023 in response to 2022 adaptive management recommendations. As previously described, preparation of seeding areas adjacent to Survey Location 2 consisted of removing non-native grasses via hand tools and line trimmers within an 0.36-acre management area, as shown in Figure 12. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used.

Once the seeding areas were prepared, native nectar source seeds were broadcast by hand. A list of seed species and quantities is provided in **Table 22**. The seed was lightly raked into the top quarter-inch of soil. Once seed was applied, the seed was covered with light natural organic mulch (less than 80 percent cover) sourced from the surrounding habitat, which primarily consisted of coast live oak and California sycamore (*Platanus racemosa*) leaves. Representative photographs of focused management are provided in Appendix D.

TABLE 22
HARBISON'S DUN SKIPPER HABITAT ENHANCEMENT SEED

Scientific Name	Common Name	Source	Purity% / Germination%	Bulk Quantity (pounds)
Asclepias fascicularis	Narrowleaf milkweed	Camp Pendelton	88.22 / 71	1.76
Calystegia macrostegia intermedia	Wild morning glory	Lake Elsinore	99 / 68	0.70
Malacothamnus fasciculatus	Chaparral bushmallow	Camp Pendelton	34.54 / 72	0.88
Stachys rigida	Hedge nettle	Vista	No test	0.88
Stephanomeria virgata	Rod wirelettuce	Escondido	9.49 / 23	0.88
Total				**5.10**

4.3.3 Adaptive Management Recommendations

The results of the 2023 surveys, TMP management goals and objectives, and adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Monitor/maintain nectar source seeded areas adjacent to Survey Location 2.** Areas that were seeded with potential native nectar sources in 2023, adjacent to Survey Location 2 (Figure 12), should be monitored to assess seeding success, document site conditions and potential nectaring HDS individuals, and implement as needed follow-up management activities, such as hand weeding and additional seeding.
- **Seed with potential native nectar sources adjacent to Survey Location 1.** The San Diego sedge host plant population within Hell Creek and its southern tributary remained abundant in 2023, but drought conditions can impact the health of the larval host plant as it requires relatively higher soil moisture. Based on 2023 adult flight surveys, HDS adults continued to have very limited nectar sources immediately adjacent to San Diego sedge plants. Seeding of potential native nectar sources should be implemented around Survey Location 1 (Figure 12). Seeding considerations include:
  - Potential native nectar sources can include hedge nettle (*Stachys rigida*), cobweb thistle (*Cirsium occidentale*), California loosestrife (*Lythrum californicum*), and chaparral bushmallow (*Malacothamnus fasciculatus*) (Marschalek and Deutschman 2015, Marschalek and Deutschman 2016).
  - Document the seed source (collection location) and confirm it is ecologically appropriate for Hellhole Canyon County Preserve. Seed may be rejected based on its source.
  - Document seed purity and germination percentages to determine pure live seed quantity.
  - Apply seed in the fall, prior to first rains (e.g., November). Seed applied at other times of the year are more likely to be lost to predation and/or not receive sufficient rainfall to support germination and survival of seedlings.
  - Prepare seeding areas in willow riparian and oak riparian woodland areas by thinning thatch and reducing weed presence/competition, as needed. The optimal seeding condition is to provide seed direct contact with the soil and space to grow while retaining some organic debris (e.g., organic mulch) and existing native plant growth in place.
  - Apply seed by hand. Select method (e.g., selective hand application or use of "belly spreader") based on the quantity of seed and size of seeding areas. Lightly rake seed into the top quarter-inch of soil and provide "light" natural organic mulch cover (less than 80 percent cover to provide light and space for germinates).
  - Apply species in ecologically appropriate areas (e.g., closer or further from the creek) within willow riparian and oak riparian woodland areas. Depending on the species and habitat conditions, species may be seeded together or in separate locations.
  - Document date of application, species and quantities of seed applied, and locations via GPS coordinates.
  - Conduct follow-up maintenance and monitoring to assess seeding success, site conditions, and implement as needed follow-up management activities.
- **Coordinate with other entities prior to conducting management or monitoring.** Future monitoring for HDS should be coordinated with Dr. Daniel Marschalek with the University of Central Missouri to implement consistent monitoring protocols, limit duplication of efforts,

provide cumulative adaptive management recommendations, and provide transparency on any implemented management activities.

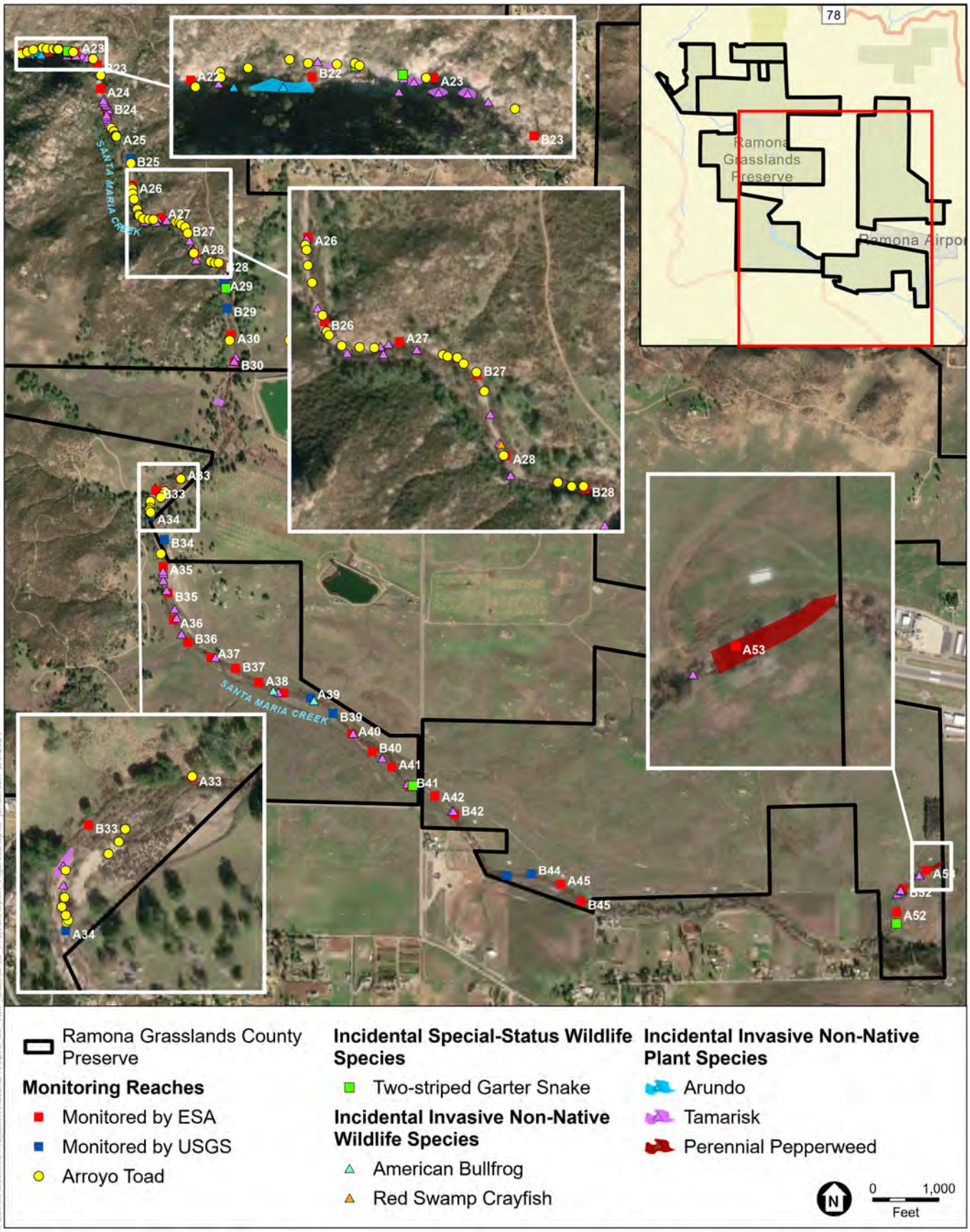
4.4 Arroyo Toad

ESA monitored the status of occupancy and breeding arroyo toads, habitat conditions, and threats to inform management needs within 18 reaches of Santa Maria Creek in the Ramona Grasslands County Preserve. Arroyo toad occurrence data is depicted in **Figure 13** and presented in **Table 23**. Representative photographs of the survey area are provided in **Appendix E**, *Arroyo Toad Representative Photographs*.

Of the 18 reaches surveyed, a total of 12 reach segments supported breeding and larval toad development. These include reach segments A22, B22, A23, B23, B24, A26, B26, A27, B27, A28, A33, and B33, concentrated within areas with suitable habitat in the northwestern, downstream extent of the survey area. Larvae were all observed prior to metamorphosis and were categorized into two size classes: 10–20 millimeters (mm) and 15–25 mm. Representative photographs of larvae observed within reach segments are provided for reference in Appendix E. Special-status wildlife species, two-striped garter snake, was incidentally observed during the surveys along reach segments B22, B41, and immediately downstream of reach 52 (Figure 13).

Vegetation along the Santa Maria Creek generally consists of riparian forest/riparian woodland, characterized by a prominence of mule fat (*Baccharis salicifolia*), black willow (*Salix nigra*), and red willow (*Salix laevigata*). The overstory within the southeastern upstream extent of the survey area (i.e., reaches 36–38, 40 and 41) is particularly dense and supports up to 75 percent cover along the channel in many areas. Much of the northwestern downstream extent of the creek is less dense (i.e., reaches 22–24 and 26–27) and exhibits more open channel. Flowing water was observed within the channel throughout the survey period and pool depth ranged between shallow, medium, and deep. A greater concentration of shallow pooling was documented between reach segments B24 and A27; medium pooling between reach segments B27 and A35; and deep pooling between reach segments A22 and 24, B27 and B28, B33 and B36. Aquatic algae was observed throughout the survey area and was particularly dense along reach segments A35, A40, and B40. In general, substrate observed along the bed and banks of the creek generally varied between a dominance of sand or gravel, with clay, cobble, pebble, and silt periodically mixed in. It should be noted that between reaches 22 and 24, the channel is formed by large boulders that are lined with various concentrations of substrate, dominated by sand and gravel.

The southeastern upstream extent of the survey area (i.e., reaches 35–38, 40–42, 52, and 53) is generally characterized by moderate- to low-quality habitat for arroyo toad. This can be attributed to the presence of a dense overstory that provides sub-optimal conditions for male toads to call and attempt to initiate breeding. The northeastern downstream extent of the survey area (i.e., reaches 22–24, 26–28, 30, and 33) provides a much higher concentration of suitable habitat for arroyo toad. This portion of the creek supports a relatively high concentration of sand and gravel, shallow pooling, and reduced overstory density, all of which are habitat characteristics necessary for supporting breeding behavior and successful larval development.



SOURCE: ESRI; ESA, 2023; USGS, 2023

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Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 13

Arroyo Toad Monitoring Results
Ramona Grasslands County Preserve

ESA

TABLE 23
ARROYO TOAD HABITAT ASSESSMENT RESULTS: RAMONA GRASSLANDS COUNTY PRESERVE

Survey Reach	Segment	Start/End Time	Start/End Air Temperature (°F)	Start/End Cloud Cover	Channel Width/ Flood Prone Width (m)	Entrenchment Ratio	Plunge Pools (#)	Overhead Canopy (%)	Dominant Plant Species*	Portion Wet (%)	Pooling (%)			Aquatic Vegetation			Substrate (%)									Arroyo toad (larvae)	
											Sh	Med	De	Su/Flo	Em	Al	Cla	S	Sa	G	P	Co	B	LL	FL	10-20 mm	15-25 mm
22	A	14:35/ 15:51	77/--	Cl / --	12.5/13.5	1.08	10	25	*Salix laevigata, Populus spp., Platanus spp.*	100	10	25	25	10	10	25	0	10	50	10	0	0	50	10	10	180	300
22	B	15:54/ --	82/82	Cl / Cl	1.2/4.1	3.42	5	10	*Salix laevigata*	100	10	10	50	0	10	25	0	10	75	10	0	10	10	10	10	15	140
23	A	16:42/ 17:29	80/80	Cl / Cl	9.8/13.1	1.2	5	10	*Salix laevigata, Populus spp.*	100	10	10	25	10	10	50	0	10	10	10	0	0	10	10	0	--	100
23	B	17:32/ 18:13	77/73	Cl / Cl	3.9/4.3	1.1	5	10	*Salix laevigata, Platanus spp.*	100	10	25	10	10	0	10	0	10	75	10	10	10	10	10	10	25	--
24	A	08:17/ 08:44	59/--	Clo / --	5.1/9.52	1.9	10	25	*Cyperaceae, Salix laevigata, Baccharis salicifolia*	100	10	25	25	50	25	25	0	10	75	10	10	25	10	10	0	--	--
24	B	08:46/ 9:30	61/61	Clo / Clo	9.7/13.7	1.4	0	10	*Cyperaceae, Salix laevigata, Baccharis salicifolia*	100	50	10	10	10	25	25	0	10	75	25	10	10	10	10	10	--	1,400
26	A	09:40/ 10:17	59/64	Clo / Cl	10.9/12.3	1.12	0	10	*Salix laevigata, Salix nigra, Baccharis salicifolia*	100	50	10	10	10	10	25	0	10	75	25	10	10	10	10	0	500	2,825
26	B	10:18/ 10:54	64/66	Cl / Cl	6.1/7.2	1.2	5	10	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	50	25	10	0	10	25	0	10	100	25	10	10	10	10	10	--	1,450
27	A	10:56/ 11:31	68/68	Cl / Cl	9.2/10.6	1.2	0	10	*Baccharis salicifolia, Salix laevigata*	100	50	10	10	0	10	25	0	10	50	50	10	10	10	10	0	400	200
27	B	11:33/ --	68/--	Cl / --	9.9/16.4	1.7	0	10	*Cyperaceae, Salix laevigata, Salix nigra*	100	10	25	25	0	10	25	0	10	50	50	10	10	10	10	N/A	--	35
28	A	12:03/ 12:38	70/75	Cl / Cl	19.5/22	1.12	0	50	*Salix laevigata, cyperaceae*	100	10	25	25	10	75	75	0	10	50	50	10	10	10	10	10	--	160
28	B	12:42/ 13:24	75/73	Cl / Cl	2.66/4.9	1.84	5	50	*Cyperaceae, Salix laevigata, Baccharis salicifolia*	100	10	25	50	0	50	50	0	10	50	10	10	10	25	10	10	--	--
30	A	13:53/ --	75/--	Cl / --	4.3/16.6	1.16	0	0	*Cyperaceae, Baccharis salicifolia*	100	50	50	10	0	50	50	0	10	50	50	0	0	10	10	10	--	--
30	B	14:20/ 14:58	75/77	Cl / Cl	9.1/11.4	1.25	0	25	*Cyperaceae, Salix laevigata*	100	50	50	10	0	50	50	0	10	75	10	10	10	10	10	0	--	--
33	A	13:43/ 14:29	72/72	Cl / Cl	24.1/26	1.08	0	50	*Salix laevigata, Salix nigra, Baccharis salicifolia*	100	50	25	10	0	10	25	0	10	75	25	10	0	10	10	10	--	15
33	B	14:31/ 15:25	79/75	Cl / PC	13.9/16	1.15	0	10	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	50	25	0	10	25	0	10	50	50	10	0	10	10	0	--	320
35	A	07:47/ 08:10	55/57	Clo / Clo	19.2/35.5	1.85	0	10	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	25	25	0	25	100	0	10	50	50	0	0	10	10	0	--	--
35	B	08:31/ 08:55	57/61	Clo / Clo	24/44	1.83	0	5	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	10	25	0	75	50	0	10	50	75	N/A	N/A	N/A	N/A	N/A	--	--
36	A	08:57/ 09:26	63/64	Clo / Clo	46/50	1.09	0	50	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	0	10	25	0	50	75	0	10	10	0	0	0	0	0	10	--	--
36	B	09:55/ 10:15	64/66	Clo / Clo	21/52	2.48	0	25	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	10	75	0	10	75	N/A	10	10	10	N/A	N/A	N/A	N/A	N/A	--	--
37	A	10:25/ 10:50	64/66	Clo / Clo	62/65	1.04	0	50	*Baccharis salicifolia, Salix nigra, Salix laevigata*	75	10	10	10	0	25	25	0	10	25	25	N/A	N/A	N/A	N/A	N/A	--	--

Survey Reach	Segment	Start/End Time	Start/End Air Temperature (°F)	Start/End Cloud Cover	Channel Width/ Flood Prone Width (m)	Entrenchment Ratio	Plunge Pools (#)	Overhead Canopy (%)	Dominant Plant Species*	Portion Wet (%)	Pooling (%)			Aquatic Vegetation			Substrate (%)									Arroyo toad (larvae)	
											Sh	Med	De	Su/Flo	Em	Al	Cla	S	Sa	G	P	Co	B	LL	FL	10-20 mm	15-25 mm
37	B	10:54/ 11:21	66/70	Clo / PC	32/42	1.31	0	50	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	10	10	0	0	50	75	N/A	10	10	10	N/A	N/A	N/A	N/A	N/A	--	--
38	A	11:27/ --	66/70	PC / Cl	28.1/31.4	1.12	0	50	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	25	10	10	0	25	75	0	10	10	N/A	N/A	N/A	N/A	10	N/A	--	--
38	B	11:56/ 12:14	73/75	Cl / Cl	19.3/25.4	1.32	0	75	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	10	0	0	0	50	75	N/A	10	10	N/A	N/A	N/A	N/A	10	N/A	--	--
40	A	12:39/ 12:51	75/75	Cl / Cl	13.5/46.5	3.44	0	75	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	10	10	10	0	10	100	N/A	10	10	10	N/A	N/A	N/A	N/A	N/A	--	--
40	B	13:06/ 13:26	75/77	Cl / Cl	18.6/24.2	1.3	0	75	*Salix laevigata, Salix nigra, Baccharis salicifolia*	100	10	10	25	0	25	100	N/A	10	10	10	N/A	N/A	N/A	N/A	N/A	--	--
41	A	13:30/ 13:59	77/77	Cl / Cl	24.1/31.2	1.29	0	75	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	25	0	0	0	25	10	N/A	10	25	10	N/A	N/A	N/A	N/A	N/A	--	--
41	B	40:06/ 14:28	77/77	Cl / Cl	13.2/30.2	2.29	0	10	*Salix nigra, Baccharis salicifolia*	100	50	10	25	0	25	25	N/A	10	50	50	N/A	N/A	N/A	N/A	N/A	--	--
42	A	14:37/ 14:56	77/77	Cl / Cl	7.8/9.8	1.26	0	10	*Baccharis salicifolia., Salix nigra, Salix laevigata*	100	50	10	10	0	10	10	0	10	50	10	N/A	N/A	N/A	N/A	N/A	--	--
42	B	14:58/ 15:22	77/77	Cl / Cl	7.8/32.3	4.41	0	10	*Salix nigra, Salix laevigata, Populus fremontii*	100	10	10	10	10	10	25	N/A	10	25	25	10	N/A	N/A	N/A	N/A	--	--
45	A	15:35/ 15:49	77/77	Cl / Cl	15.7/30.4	1.94	0	50	*Baccharis salicifolia, Salix nigra, Salix laevigata*	100	25	10	10	10	25	10	N/A	10	50	50	N/A	N/A	N/A	N/A	N/A	--	--
45	B	15:50/ 16:04	77/77	Cl / Cl	14.4/31.7	2.2	0	75	*Salix laevigata, Salix nigra, Baccharis salicifolia*	100	25	10	0	10	10	10	N/A	10	50	50	N/A	N/A	N/A	N/A	N/A	--	--
52	A	08:28/ --	63/64	PC / Cl	5.4/10.7	1.98	0	10	*Baccharis, Salix gooddingii*	100	25	10	0	25	10	10	0	10	100	10	10	0	0	10	N/A	--	--
52	B	09:28/ --	64/70	Cl / Cl	3.8/11.6	3.05	0	25	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	10	0	25	10	10	0	10	50	25	0	0	0	10	10	--	--
53	A	10:25/ 10:57	70/73	Cl / Cl	4.4/10.3	2.34	0	25	*Baccharis salicifolia, Salix laevigata, Salix nigra*	100	10	0	0	10	0	10	0	10	100	10	0	0	0	10	10	--	--
Total																										**1,120**	**7,445**

NOTES:

F = Fahrenheit; Cl = Clear, Clo = Cloudy, PC = Partly Cloudy; m = meters; Sh = Shallow, Med = Medium Depth, De = Deep; Su/Flo = Submerged/Floating, Em = Emergent, Al = Algae; Cla = Clay, S = Silt, Sa = Sand, G = Gravel, P = Pebbles, Co = Cobble, B = Boulder, LL = Leaf Litter, FL = Fallen Logs; -- = no value; mm = millimeters

* Dominant plant species within the canopy overstory.

4.4.1 Habitat and Threats Assessment

Threats and habitat were assessed during surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. The following threats were assessed.

- **Invasive non-native plant species.** One invasive non-native plant species, tamarisk, occurs at low to moderate densities throughout the Santa Maria Creek, increasing in density downstream of reach 36 (i.e., reaches 22–24, 26–28, 30, 33, 35–36) (Figure 13). Tamarisk has a Cal-IPC rating of "High" due to its severe impacts on physical processes and plant and wildlife communities (Cal-IPC 2023). Arundo (*Arundo donax*) and perennial pepperweed (*Lepidium latifolium*), also Cal-IPC "High" rated species, were mapped in low densities along the Santa Maria Creek; arundo was observed within reach segment A22 and perennial pepperweed was observed along reach segment A53 (Figure 13).
- **Exotic predators.** Exotic predators have been noted in abundance during previous monitoring efforts; however, were observed in low numbers during the 2023 surveys. One red swamp crayfish and one American bullfrog were observed along reach segments B27 and A38, respectively (Figure 13).

4.4.2 Adaptive Management Recommendations

Santa Maria Creek supports adequate instream habitat for breeding arroyo toad; however, threats such as invasive non-native plant species and exotic predators may diminish the success of the species over time without effective management. The following adaptive management actions are recommended.

- **Treat invasive non-native plant species.** The invasive non-native plant species documented along the Santa Maria Creek have the potential to reduce available breeding habitat along the channel over time and should be treated to prevent their spread throughout the survey area. All treatment activities should take place outside of the arroyo toad breeding season. Vegetation should be treated as follows:
  - *Tamarisk and arundo*: Hand removal is recommended as the primary control method for these two species due to their proximity to arroyo toad breeding habitat. Care should be taken to remove underground rhizomes while limiting disturbance to the channel and breeding margins. Larger individuals (e.g., greater than 10 feet in height) may be removed using cut-and-daub practices with an aquatic-safe herbicide on a case-by-case basis, as necessary.
  - *Perennial pepperweed*: This species was observed in upland areas, immediately adjacent to the stream channel. As such, herbicide may be used to treat the species and prevent its spread elsewhere within the survey area.
- **Control exotic predators.** Few exotic predators were observed during the 2023 surveys; however, it is expected that both American bullfrog and red swamp crayfish still occur in abundance within the Santa Maria Creek and should be controlled to some extent. This should be accomplished through targeted removal of breeding-size adult bullfrogs to avoid and minimize impacts to aquatic species and habitats. Red-swamp crayfish should be removed concurrently.

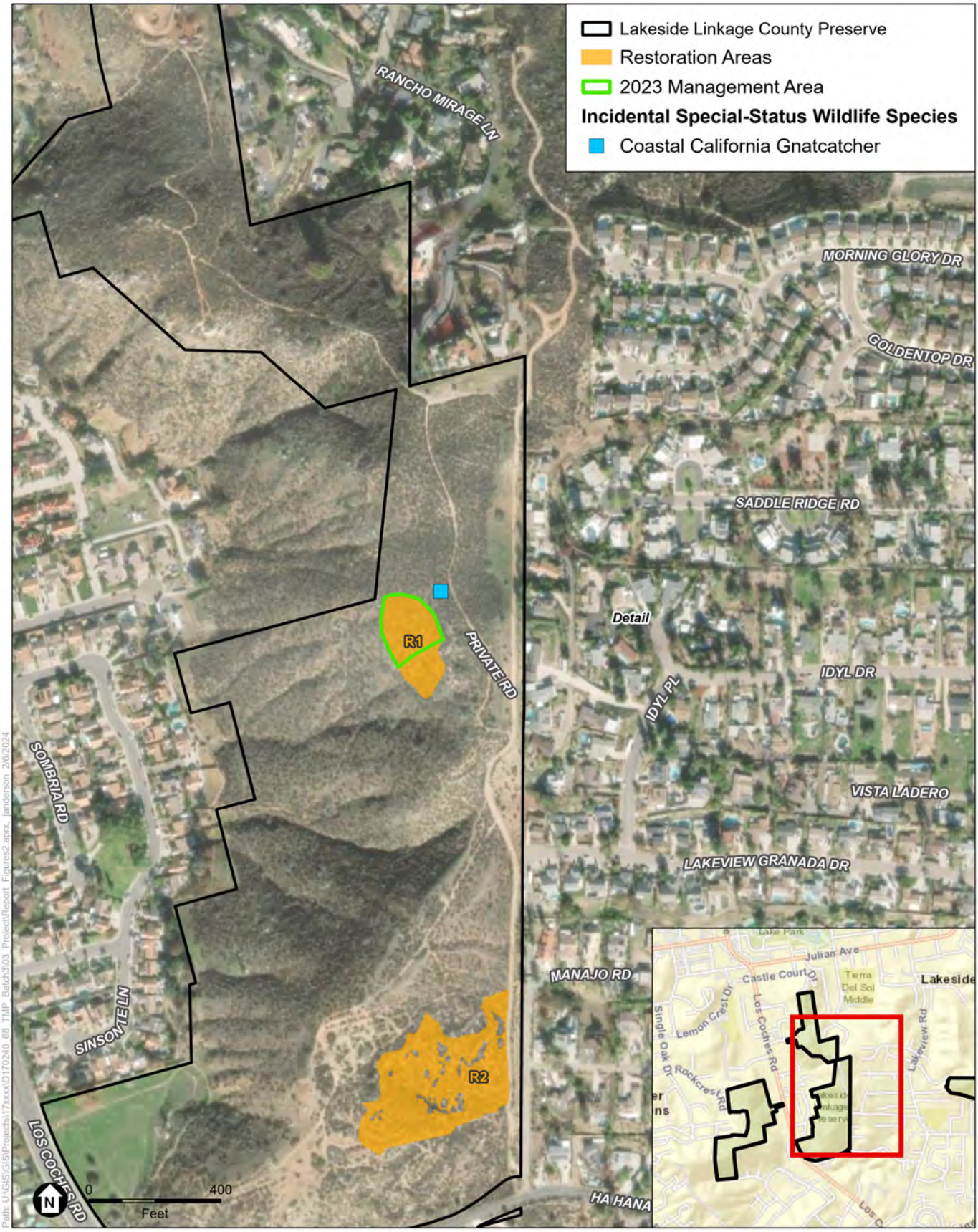
4.5 San Diego Cactus Wren Focused Management

Focused management occurred in 2023 in response to the invasive non-native plant cover and laddering of vegetation observed in 2022 within suitable and restored cactus patches at Lakeside Linkage County Preserve. Management activities were conducted within 0.63 acres of the northern restored cacti patch (R1) (**Figure 14**). Invasive non-native vegetation consisted primarily of non-native grasses, tocalote, and shortpod mustard. The majority of laddering vegetation within the cacti patches consisted of native vegetation, primarily California buckwheat and California sagebrush. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. No herbicide was used. Representative photographs of focused management activities are provided in **Appendix F**, *San Diego Cactus Wren Representative Management Photographs*.

4.5.1 Adaptive Management Recommendations

The TMP management goal for San Diego cactus wren is to restore, enhance, and maintain suitable nesting habitat for San Diego cactus wren on the Lakeside Linkage County Preserve (ESA and ICF 2022). The results of the 2022 surveys, 2023 adaptive management actions, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendation:

- **Remove native vegetation within established cacti patches at restoration sites (R1 and R2) installed in 2012.** Removing ladder plants can reduce predation threats to San Diego cactus wren nest sites. Priority should be to remove ladder plants at restoration site R1 because San Diego cactus wren and their nests have been documented previously in this location during the nesting season. This would be a continuation of 2023 adaptive management actions. Vegetation removal should focus on established, larger cacti patches and not the *Opuntia* patches that are currently too small to support San Diego cactus wren nests. The native vegetation is well established and will take time to remove from in between the cacti. Care should be taken to ensure no damage occurs to established cacti and San Diego cactus wren nests during vegetation removal activities. Vegetation removal activities should occur outside of the nesting season (February 15–August 15) (County of San Diego 2010).
- **Remove vegetation surrounding established cacti patches at restoration sites (R1 and R2).** Prioritize removing non-native vegetation surrounding cacti patches, especially near their bases to ensure cacti patches are more wildfire hardy. This would be a continuation of 2023 adaptive management actions. Native vegetation should also be trimmed back to ensure further wildfire hardiness and prevent laddering from adjacent vegetation. Care should be taken to ensure no damage occurs to established cacti and San Diego cactus wren nests during vegetation removal or trimming activities. Vegetation removal activities should occur outside of the nesting season (February 15–August 15) (County of San Diego 2010).
- **Remove cochineal scale if found on healthy, established cacti patches.** Remove cochineal scale (*Dactylopius* sp.) infected cactus pads or segments to ensure the viability and health of the established cacti patches. Infected cactus pads or segments must be properly removed and disposed of off-site to reduce the spread of the infestation to other cacti patches in the immediate area.



SOURCE: ESRI; ESA, 2022

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Figure 14

San Diego Cactus Wren Management Results
Lakeside Linkage County Preserve

ESA

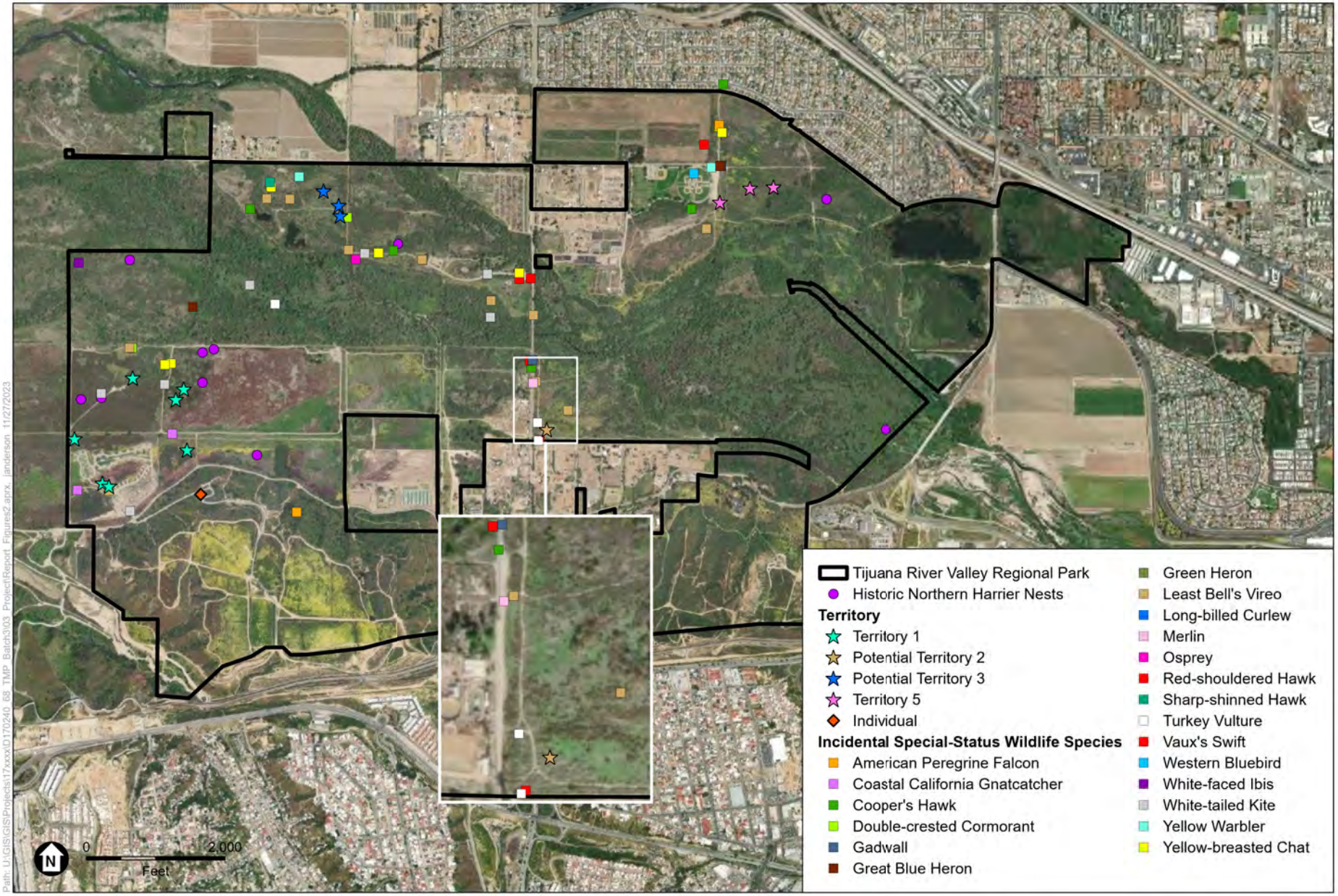
4.6 Northern Harrier

The 2023 northern harrier nesting surveys focused on areas with low scrub and/or vegetation cover and areas with previously documented northern harrier use in Tijuana River Valley Regional Park. These areas include the coastal sage scrub vegetation community in the western portion of the Park north of Monument Road and west of Hollister Street, the southern willow scrub vegetation community in the northwestern portion of the Park near the intersection of Saturn Boulevard and Sunset Avenue, the Diegan coastal sage scrub vegetation community northeast of the Hollister Street and Monument Road intersection, the mule fat/southern willow scrub habitat east of the Tijuana River Valley Sports Complex, the abandoned agricultural habitat north of the Tijuana River Valley Sports Complex, and the riparian vegetation community along the eastern Park boundary. The area along the eastern Park boundary was not surveyed in 2023. Representative photographs of the survey areas and completed field forms are provided in **Appendix G**, *Northern Harrier Representative Photographs and Field Forms*.

Northern harriers were observed during all surveys with the highest observations during the month of April. Fledglings were observed during the May survey. Territorial behavior documented by northern harriers during the survey included courtship display flights, a female seen visiting a probable nest site location, and fledglings seen/heard begging and following the adult pair. All nesting behavior was predominantly detected within Territory 1; courtship display flights were also observed in Territory 5. Territory 1 continues to be highly sought after because multiple adults were seen and suitable nesting habitat is still present. While up to five northern harrier territories could be present within the Park, only two appeared to be occupied and only one was successful in 2023 (**Figure 15** and **Table 24**). Incidentally observed special-status wildlife species included gadwall, double-crested cormorant (*Nannopterum auritum*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), white-faced ibis (*Plegadis chihi*), long-billed curlew (*Numenius americanus*), turkey vulture, osprey (*Pandion haliaetus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk, red-shouldered hawk, white-tailed kite (*Elanus leucurus*), merlin (*Falco columbarius*), American peregrine falcon, Vaux's swift (*Chaetura vauxi*), least Bell's vireo, coastal California gnatcatcher, western bluebird, yellow-breasted chat, and yellow warbler (Figure 15).

One territory (Territory 1) was confirmed within the Park (Table 24 and Figure 15). Territory 1 fledged and the nest site was located in close proximity to a public trail and a known historic nest location. Potential Territory 5's nest site was not located and assumed to have failed given the lack of nesting behavior and fledgling observations. Up to three other territories (Territories 2, 3, and 4) have potential to occur in the Park but were not confirmed due to the lack of breeding behavior including the observation of two adult birds. These potential territories should still be noted due to territorial distance and evidence during previous year's surveys.

There was one observation of a successful prey capture attempt within Potential Territory 2, but the adult male flew off to the northeast in the direction of Territory 5. One individual not associated with a territory was observed foraging in the scrublands south of Monument Road, indicating that the Park likely supports foraging habitat for non-breeding individuals. Overall, there were a similar number of northern harrier observations in 2023 compared to 2022, but less compared to 2021. More individuals were observed foraging in the scrub habitat south of Sunset Avenue and west of Saturn Boulevard in Potential Territory 3 in 2023 compared to 2022.



SOURCE: ESRI, 2022; ESA, 2023.

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Figure 15
Northern Harrier Monitoring Results
Tijuana River Valley Regional Park

ESA

TABLE 24
NORTHERN HARRIER NESTING SURVEY RESULTS

Territory	Type	Nest Success	Location	Observation Summary
1	Pair	Fledged	North of the newly constructed TRVRP campground. Likely same location of historic nesting.	No March visit due to trail closures and road flooding. Pair was seen in April near historic nest site. One additional adult was seen in April south of Monument Rd. Adult pair and 2 fledglings seen in May. Adult female seen in June.
2*	Individual	Not Occupied	Northeast of the Hollister St/Monument Rd Intersect	A single adult male was seen in April capturing a mammalian prey item. No other observations in this potential territory were documented in 2023.
3*	Individuals	Not Occupied	West of the TRVRP Bird & Butterfly Garden	Adult female and an unknown, aged and sexed individual were observed in March. Adult male seen foraging in May. No observations in April or June.
4*	None	Not Occupied	Northwest of the newly constructed TRVRP campground. Likely not nesting on the Preserve.	No observations in this potential territory were documented in 2023.
5	Pair	Unknown	East of Tijuana River Valley Sports Complex	Adult pair seen in courtship display in March. Additional subadult male seen in March. No observations in April or May. Subadult male seen again in June.

NOTE:
TRVRP = Tijuana River Valley Regional Park
* Potential territories due to territorial distance from other territories and evidence during previous year's surveys.

4.6.1 Habitat and Threats Assessment

Habitat and threats were assessed during surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented.

Suitable foraging habitat for northern harrier includes low-height and sparsely covered vegetation such as non-native grassland, coastal sage scrub, mule fat scrub, abandoned agriculture, and disturbed habitat. Suitable nesting habitat for northern harrier include dense scrub habitats that limit predation or predator harassment such as mule fat scrub, coastal sage scrub, marsh, and cattail habitat. Overall, the Park provides high-quality suitable foraging and nesting habitat for northern harriers as demonstrated by observed foraging behavior and the Park being occupied by up to five northern harrier territories in 2023. The following threats were observed:

- **Nest disturbance.** Northern harrier is a ground-nesting species. Territory 1's nest site is close to an authorized public trail. Territory 1 successfully fledged in 2023; however, increase in public use (e.g., campground users) and U.S. Border Patrol activities could affect future nesting success if trail usage encroaches on nesting harriers.
- **Predator harassment.** Predator harassment was observed in 2021; however, it was not observed in 2022 or 2023. An expected increase of trash from the recently opened campground could encourage increased park usage by northern harrier nesting predators (e.g., coyotes, raccoons, ravens) in the future.

4.6.2 Adaptive Management Recommendations

The Park supports suitable foraging and nesting habitat; however, threats such as nest disturbance and predator harassment, without effective management, may diminish the success of the species over time. The results of the 2023 surveys, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Monitor trail use in vicinity of the Territory 1 nest site.** Install a trail counter on the trail in the vicinity of Territory 1's nest site to track trail use. This will provide baseline trail use information and inform if seasonal trail closure is warranted to prevent nest disturbance. Trail closure is not recommended at this time.
- **Clean up trash.** Regularly maintain trash cans and remove trash around the campground to prevent attraction of nest predators. Trash removal is especially important during the nesting season due to the campground proximity to Territory 1.
- **Conduct habitat and threat assessment using regional protocol.** SDMMP developed a habitat and threat assessment protocol and Survey123 form for northern harrier in 2021. TMP habitat and threat assessment surveys for northern harrier moving forward will follow the regional protocol developed by SDMMP and use the associated Survey123 form.

4.7 Least Bell's Vireo

ESA monitored the status of breeding least Bell's vireo populations and habitat conditions and threats to inform management needs in the Santa Margarita County Preserve. The submitted 45-day report is provided in **Appendix H**, *Least Bell's Vireo USFWS 45-Day Report and Brown-Headed Cowbird Trapping Annual Report*. Due to the still present threat of nest parasitism by brown-headed cowbirds on least Bell's vireo, the cowbird trapping program established in 2022 was continued in 2023. The brown-headed cowbird trapping annual report is also provided in Appendix H.

4.7.1 Least Bell's Vireo Surveys

The survey area encompasses a portion of the Santa Margarita River and adjacent upland areas, recreational trails and access roads, and the Preserve's staging area on the north side of De Luz Road. All vegetation communities within the Santa Margarita channel were surveyed. Potentially suitable nesting habitat for least Bell's vireo occurs only in southern riparian woodland (20.41 acres), southern riparian forest (13.41 acres), southern willow scrub (4.94 acres), southern cottonwood-willow riparian forest (2.71 acres), southern riparian scrub (0.67 acres), southern sycamore-alder riparian woodland (0.47 acres), and southern coast live oak riparian forest (0.43 acres), all together totaling 43.04 acres.

Survey results are summarized in **Table 25** below and depicted on **Figure 16**. Least Bell's vireos were detected during all 2023 focused surveys. Based on the results of the protocol-level least Bell's vireo surveys, the survey area contains suitable least Bell's vireo habitat occupied by up to 13 least Bell's vireo territories. At least six of those territories produced young. Nest searching was not part of this survey protocol; however, one nest was incidentally discovered. The nest was subsequently parasitized by brown-headed cowbirds and abandoned by the least Bell's vireo pair. Brown-headed cowbirds were observed during two surveys and no juvenile brown-headed cowbirds were observed during any survey (**Table 26**). Incidentally observed special-status

wildlife species included Belding's orange-throated whiptail, great blue heron, turkey vulture, Cooper's hawk, red-shouldered hawk (*Buteo lineatus*), yellow-breasted chat, and yellow warbler (Figure 16). A complete list of all wildlife observed during the surveys is included in Appendix H.

TABLE 25
LEAST BELL'S VIREO TERRITORY SURVEY RESULTS: SANTA MARGARITA COUNTY PRESERVE

	Territories		
Species	**Pairs**	**Single Males**	**Total**
Least Bell's Vireo	7	6	13

TABLE 26
BROWN-HEADED COWBIRD DETECTIONS: SANTA MARGARITA COUNTY PRESERVE

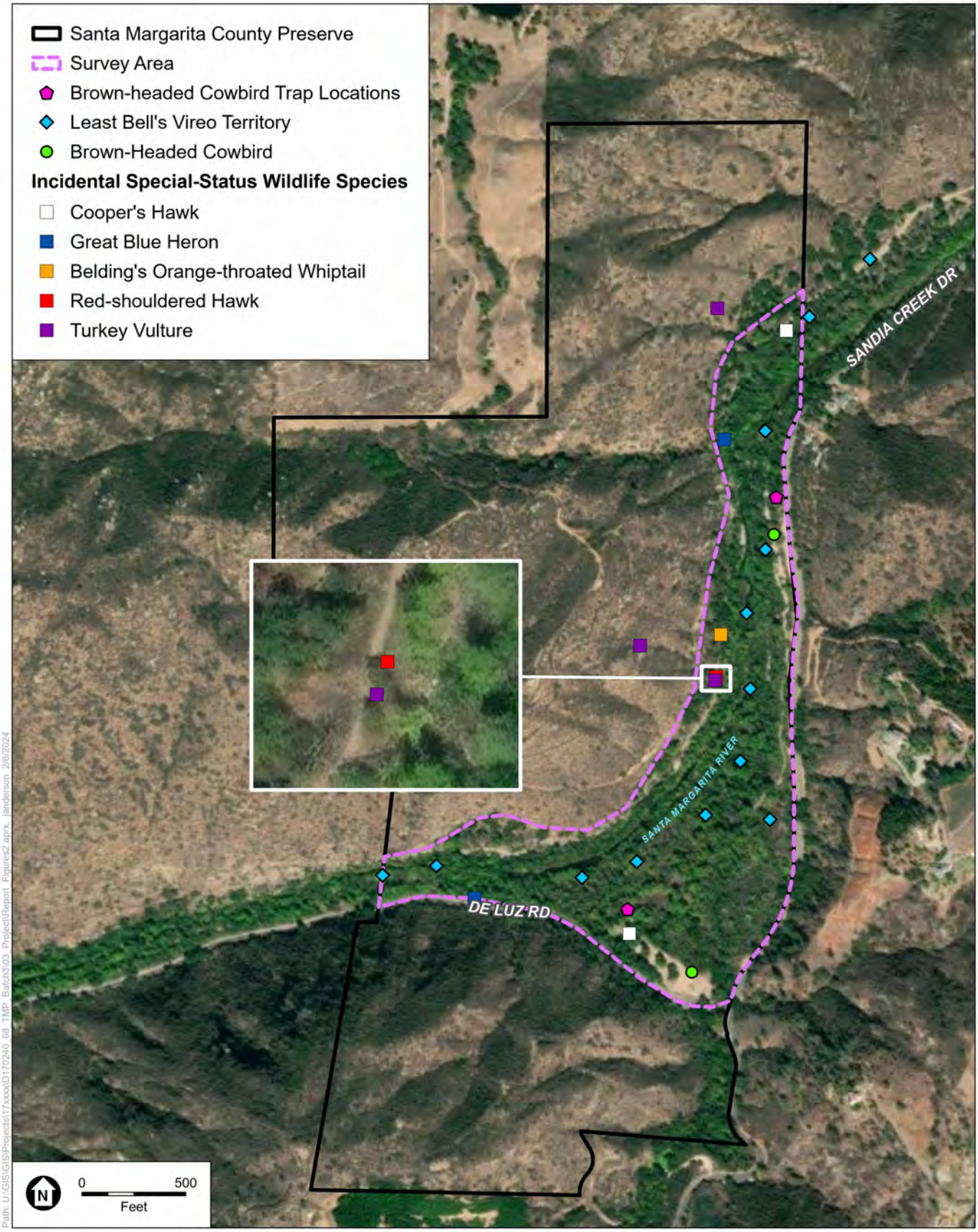
Date	Count
5/02/2023	2
6/30/2023	2

4.7.2 Habitat and Threats Assessment

Threats and habitat were assessed during species surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented.

Suitable breeding habitat for least Bell's vireo includes riparian woodlands, particularly those dominated by willows. Overall, Santa Margarita County Preserve provides high-quality suitable breeding habitat as demonstrated by the Preserve being occupied by up to 13 least Bell's vireo territories in 2023. The following threats were observed:

- **Nest parasitism by brown-headed cowbird.** The observations of adult brown-headed cowbirds within Santa Margarita County Preserve are indicative of the continued threat of brood parasitism. Cowbirds were observed on two out of the eight protocol surveys. One least Bell's vireo nest was incidentally discovered during a protocol survey and was found to have been parasitized by brown-headed cowbirds and was subsequently abandoned. The continued presence of cowbirds and nest parasitism detection in the Preserve is indicative of a continued threat.
- **Invasive non-native plant species.** Invasive non-native plant species occur on the Preserve in scattered locations; however, several of these species have the ability to become established in a short period of time. Tamarisk, an invasive non-native plant species is rated "High" by Cal-IPC for the severe impacts it can have on hydrological processes and plant and wildlife communities (Cal-IPC 2023). This invasive non-native plant species can outcompete and displace native plant species, resulting in degraded riparian habitats. Mature trees and seedlings of tamarisk were observed in riparian habitats throughout the Preserve. Arundo and perennial pepperweed, both rated "High" by Cal-IPC are present in small numbers on the Preserve. Italian thistle and poison hemlock are fairly widespread in the Preserve and are both rated "Moderate" by Cal-IPC. Similar to tamarisk, these invasive non-native plant species can quickly become established in disturbed soils along the river and outcompete native plant species. Displacement of native vegetation can negatively impact vireo prey availability and nesting habitat.



SOURCE: ESRI, 2023; ESA, 2023

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Figure 16

Least Bell's Vireo Monitoring and Management Results
Santa Margarita County Preserve

ESA

4.7.3 Brown-Headed Cowbird Trapping

The two trap locations are depicted in Figure 16. A total of seven brown-headed cowbirds were captured within Santa Margarita County Preserve from April 1 to June 30, 2023. This included four adult males, two adult females, and one juvenile. There were 182 actual trap days out of a potential 182. Total trap days are calculated by multiplying the number of traps by the number of days they are in operation, then subtracting the number of days individual traps are inactive for various reasons such as vandalism. There were 0.03 cowbirds captured per trap day. The ratio of male to female captures was 2:1. Trapping results for each trap location are summarized below in **Table 27**. Six non-target species were captured in Trap 1 and were released from the trap site unharmed on the same day they were captured. Non-target captures included three California scrub jays (*Aphelocoma californica*), two song sparrows (*Melospiza melodia*), and one California thrasher (*Toxostoma redivivum*). No incidences of vandalism occurred during the 2023 trapping period. Detailed trapping methods and results are provided in Appendix H.

TABLE 27
BROWN-HEADED COWBIRD TRAPPING RESULTS: SANTA MARGARITA COUNTY PRESERVE

	Brown-Headed Cowbirds Captured			
Trap Number	**Adult Male**	**Adult Female**	**Juvenile**	**Total**
1	1	0	0	**1**
2	3	2	1	**6**
Total	**4**	**2**	**1**	**7**

4.7.4 Adaptive Management Recommendations

The results of 2023 surveys, 2023 adaptive management actions, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

- **Implement brown-headed cowbird trapping program.** The brown-headed cowbird trapping effort in 2023 successfully captured 7 cowbirds, including one juvenile cowbird, suggesting nest parasitism still occurred within the Preserve in 2023. Continued implementation of brown-headed cowbird trapping within the Santa Margarita County Preserve during the breeding season is recommended alongside least Bell's vireo nest monitoring to determine the effectiveness of the trapping program. The trapping program should be evaluated annually over a 2- to 5-year period to determine trends in (1) cowbird captures, (2) brood parasitism, and (3) least Bell's vireo nesting success. Thresholds for the density of cowbird females and the allowable level of parasitism for least Bell's vireo should be established to guide the cowbird trapping program (Parker et al. 2022). Partnering with adjacent land managers in the area to provide trapping in suitable habitat will improve catch rates and decrease parasitism impacts to vireo and songbird species in the area.
  - **Adjust Trap 1 location in 2024.** The current Trap 1 location is overgrown with grapevine. Relocating this trap to a more open area may help improve capture numbers and decrease nest parasitism. Vegetation should be evaluated prior to trap placement in 2024 and adjust the specific placement of Trap 1 as necessary.

- **Conduct least Bell's vireo nest monitoring.** The continued presence of brown-headed cowbirds, including juveniles, within Santa Margarita County Preserve suggests nest parasitism is still a threat to the least Bell's vireo population on-site. Brown-headed cowbird trapping has been implemented on the Preserve since 2022 to help increase the success rate of least Bell's vireo breeding, but without focused nest monitoring, it is difficult to determine how effective trapping is on supporting successful breeding. Implementing least Bell's vireo nest monitoring following Pike et al. (1999) would determine accurate territory numbers and breeding status and enhance breeding output through nest management. Nest monitoring should occur weekly, at a minimum, from the third week of March to the end of July, or until all nesting outcomes have been determined. Data should be collected on bird location, movement, behavior, nest placement, sex, and age. Nests should be visited once every 7 to 8 days during incubation to check for brown-headed cowbird eggs. If found, brown-headed cowbird eggs and nestlings should be removed from nests ("manipulated").
- **Conduct habitat restoration and habitat enhancement.** Removal of invasive non-native plant species through mechanical or chemical methods is recommended outside of the avian nesting season (March–September). Hand tools and herbicide (aquatic-safe) could be used during the nesting season if a biologist is present to clear the impact areas in front of the restoration crew. This may be needed for annual and perennial invasive non-native plant species that grow and seed out during nesting season. Poison hemlock and fennel are annual invasive non-native plant species with growing seasons that coincide with nesting season. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season. The current distribution and density of invasive non-native plants is low on the Preserve, which would make it an ideal time to control these small populations before they increase substantially. Furthermore, removal or treatment of invasive non-native plants creates an opportunity for habitat enhancement and restoration in areas that have low plant diversity.
- **Collaborate with partner agencies and land managers.** Coordination with adjacent land managers is essential to managing brown-headed cowbirds and non-native plant populations in the area. Partnering with land managers upstream and downstream of the Preserve will vastly increase the efficiency of the cowbird trapping program and spread of invasive non-native plants from upstream properties. Brown-headed cowbird traps are generally spaced at least a mile apart for trap efficiency, as traps placed closer together do not equate to higher trap rates.

4.8 Stephens' Kangaroo Rat

ESA and Blackhawk (ESA subconsultant) conducted a burrow/sign search and habitat characterization to inform SKR management needs in Ramona Grasslands County Preserve and Hellhole Canyon County Preserve. ESA and Habitat West (ESA subconsultant) conducted focused management within suitable SKR habitat of Hellhole Canyon County Preserve. The habitat assessment memorandums for both Preserves, cultural resources memorandum for focused SKR habitat management at Hellhole Canyon County Preserve, and representative photographs of focused management at Hellhole Canyon County Preserve are included in **Appendix I**, *Stephens' Kangaroo Rat Monitoring and Maintenance Memorandums and Representative Photographs.*

4.8.1 Ramona Grasslands County Preserve

Habitat Assessment

Habitat assessments were conducted at 28 monitoring plots within Ramona Grasslands County Preserve. Of these plots, 14 were determined to be occupied by SKR and 14 were determined to

be unoccupied (**Figure 17, Table 28**). Each plot was rated for SKR potential and, in total, 8 monitoring plots were characterized as having a high potential, 10 were characterized as having a medium potential, 10 were characterized as having a low potential, and none were characterized as having no potential for SKR (**Table 29**). Sign of special-status wildlife species burrowing owl (*Athene cunicularia*) (i.e., whitewash, pellet, and potential burrows) was incidentally detected during surveys and depicted on Figure 17.

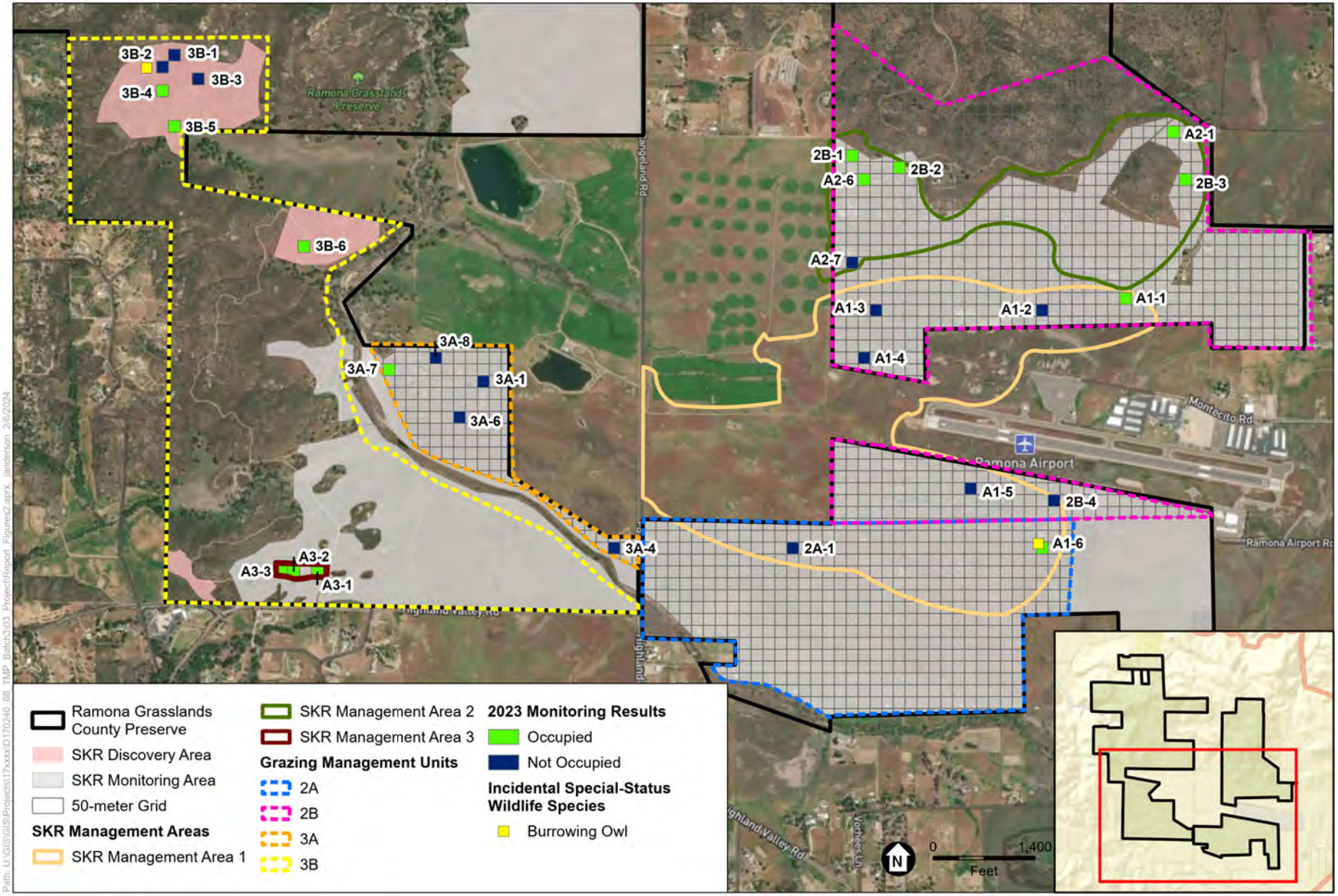
TABLE 28
SKR MONITORING RESULTS: RAMONA GRASSLANDS COUNTY PRESERVE

Occupancy/Potential		# of Monitoring Plots
SKR Occupancy	Occupied	14
	Unoccupied	14
SKR Potential	High	8
	Medium	10
	Low	10
	No	0

NOTE:
SKR = Stephens' kangaroo rat.

The 2023 results indicate slight shifts in overall SKR suitability that can increase or decrease at given sites between monitoring years due to variables such as randomized assignment of non-permanent monitoring plots that varies between monitoring years, annual grazing practices, and drought/precipitation. Generally, there was an overall decrease in SKR potential in 2023, and the following variables influenced the survey results:

- **Precipitation.** Heavy rainfall was observed in the greater San Diego region between fall 2022 and fall 2023. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall are likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2022 and fall 2023 monitoring efforts was marked by significantly above-average rainfall in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.
- **Grazing.** Much of the SKR Monitoring Areas are actively grazed, thereby helping to reduce significant vegetative growth during years of above-average rainfall. However, grazing was reduced in 2022—cattle were on-site from January through April 2022 until the original grazing lessee, Tellam and Tellam Cattle, no longer had a grazing agreement with DPR. After April 2022, cattle were removed from the Preserve for the remainder of 2022. Grazing resumed in January 2023 through a new grazing agreement with Marcus Battaglia, James Greer, and Remy Greer. Areas in which grazing was not observed within the past 3 to 6 months, or that are not grazed at all, were correlated with low or medium SKR potential. The majority of the annual vegetation present in the high- or medium-potential SKR monitoring plots consisted of longbeak stork's bill, a low-growing annual plant that facilitates SKR movement and is a potential food source. Taller growths of annual vegetation such as shortpod mustard, as well as dense perennial vegetation such as western ragweed and vinegar weed (*Trichostema lanceolatum*) and dense annual grasses were observed in several low- and medium-potential plots, which may preclude or reduce SKR movement.



SOURCE: Mapbox; ESA, 2023

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Figure 17

Stephens' Kangaroo Rat Monitoring Results
Ramona Grasslands County Preserve

ESA

TABLE 29
SKR HABITAT ASSESSMENT SUMMARY: RAMONA GRASSLANDS COUNTY PRESERVE

Fall 2023										Fall 2022
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	**Potential K-Rat Sign***	**SKR Occupancy Determination**	**Rating†**	**Rating†**
A1-1	0–5	Low	0	50–75	Low/Medium	Low	B, TD	Occupied	Medium**	High**
A1-2	0–5	High	0	50–75	Low/Low	High	None	Not Occupied	Low	None
A1-3	0–5	Medium	0	50–75	Low/High	Low	None	Not Occupied	Medium	High**
A1-4	0–5	High	0	50–75	Low/Low	High	None	Not Occupied	Low	Low
A1-5	0–5	Low	0–5	50–75	Medium/Medium	Medium	None	Not Occupied	Low	Medium
A1-6	0–5	Low	0–5	50–75	Low/Low	Medium	S	Occupied	Medium**	High**
A2-1	5–25	Low	0–5	50–75	Low/High	Low	B, S, O	Occupied	High**	High**
A2-6	0–5	High	0–5	50–75	Low/Medium	Medium	B, S	Occupied	High**	High**
A2-7	0–5	Medium	0–5	50–75	Low/Low	High	None	Not Occupied	Low	High**
A3-1	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	High**
A3-2	5–25	Medium	0	50–75	Low/High	Low	B, S, TD	Occupied	High**	High
A3-3	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	High**
2A-1	5–25	Medium	0–5	50–75	Medium/Medium	High	None	Not Occupied	Low	Low
2B-1	0–5	Low	0–5	50–75	Low/Medium	Medium	B, S	Occupied	High**	Low
2B-2	0–5	High	0–5	50–75	Low/Medium	Medium	B, S, TD	Occupied	Low**	Low
2B-3	0–5	Medium	0–5	50–75	Low/Low	Medium	B, S	Occupied	High**	High**
2B-4	0–5	Low	0	50–75	Low/Medium	Medium	None	Not Occupied	Low	Medium**
3A-1	0–5	Medium	0	50–75	Low/Low	High	None	Not Occupied	Low	Low
3A-4	0–5	Medium	0	50–75	Low/Low	High	None	Not Occupied	Low	N/A
3A-6	0–5	Medium	0	50–75	Low/Low	Low	None	Not Occupied	Medium	High
3A-7	0–5	Medium	0	50–75	Medium/Low	Medium	B, S	Occupied	Medium**	High**
3A-8	0–5	Medium	0–5	50–75	Low/Medium	Low	None	Not Occupied	Medium	High**

Fall 2023										Fall 2022
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	**Potential K-Rat Sign***	**SKR Occupancy Determination**	**Rating†**	**Rating†**
3B-1	0–5	Low	0	50–75	High/Low	Medium	None	Not Occupied	Low	Medium
3B-2	0–5	Medium	0–5	50–75	Medium/Low	Medium	None	Not Occupied	Medium	Medium
3B-3	0–5	Medium	0	50–75	Low/High	Low	None	Not Occupied	Medium	Medium
3B-4	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	Medium
3B-5	0–5	Medium	0–5	50–75	Low/High	Medium	B, S, TV	Occupied	Medium**	Medium**
3B-6	0–5	Medium	0–5	50–75	Low/Medium	Medium	B, S	Occupied	Medium**	High**

NOTES:

SKR = Stephens' kangaroo rat
^ Active gopher excavation density ratings used; inactive excavations excluded.
* Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** Exhibited habitat conditions and observed sign indicates plot is likely occupied by SKR.
† Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.

Detailed monitoring methods and results, including plot photographs and habitat assessment forms, are included in Appendix I.

Adaptive Management Recommendations

The following are the adaptive management recommendations to ensure persistence of SKR at Ramona Grasslands County Preserve:

- **Coordinate with new grazing lessees on cattle grazing practices.** Coordinate with the new grazing lessees to provide information on the conservation goals to be fulfilled by grazing on the Preserve, including those for SKR, and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the Preserve. Recent 2023 RDM monitoring reports should be utilized to inform 2024 grazing practices to meet RDM targets for SKR.
- **SKR live-trapping.** In the event new grazing practices are implemented within the southwest portion of the Preserve, live- trapping should be considered for SKR Management Area 3 to document changes in SKR presence in response to the new grazing practices.

4.8.2 Hellhole Canyon County Preserve

Habitat Assessment

Habitat assessments were conducted at three monitoring plots within the Sierra Verde Addition of Hellhole Canyon County Preserve. Two of the three plots were determined to be occupied or potentially occupied by SKR (**Figure 18**, **Table 30**). Each plot was rated for SKR potential; one plot was rated high, one was rated medium, and one was rated low SKR potential (**Table 31**).

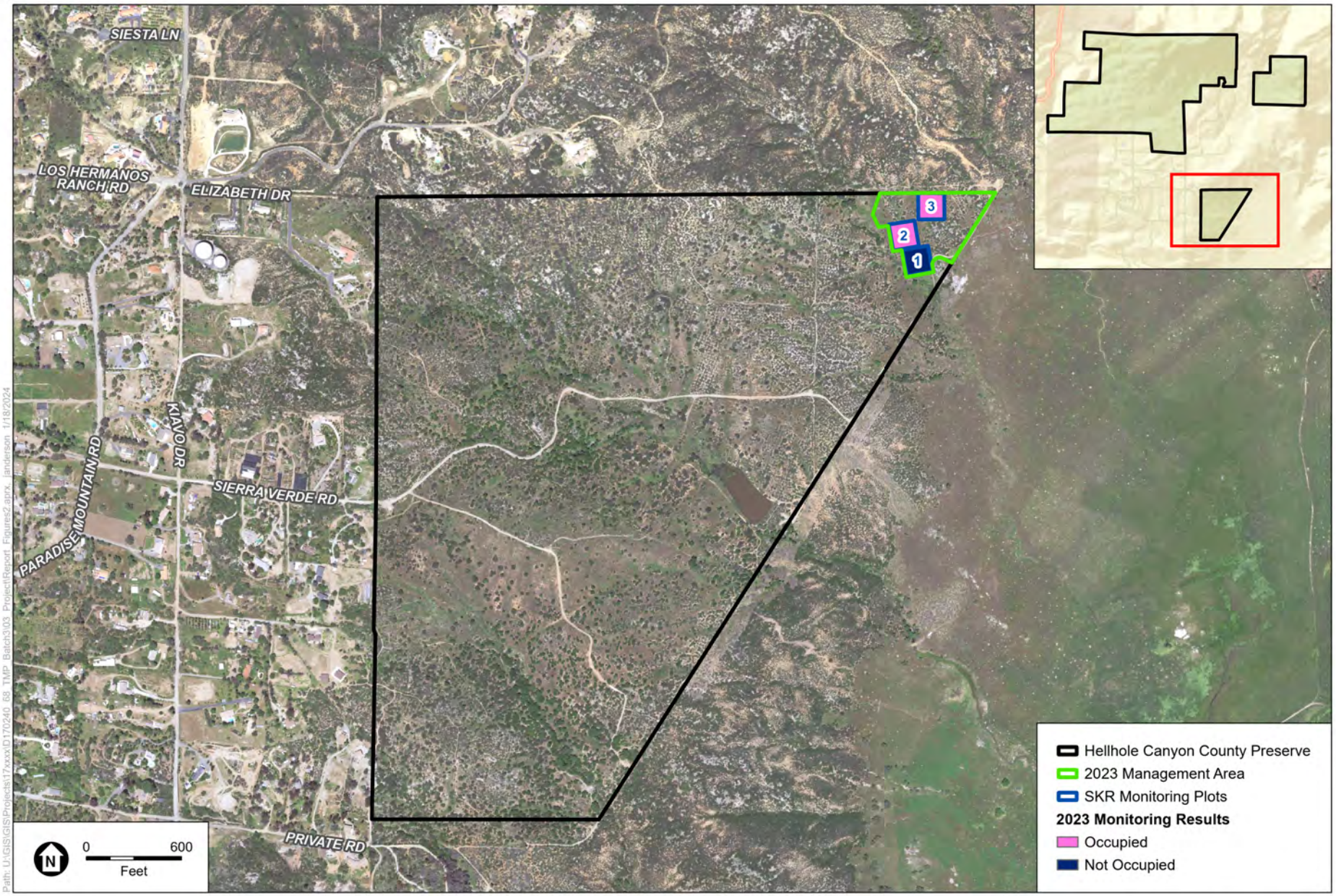
TABLE 30
SKR MONITORING RESULTS: HELLHOLE CANYON COUNTY PRESERVE

Occupancy/Potential		# of Monitoring Plots
SKR Occupancy*	Occupied	2
	Unoccupied	1
SKR Potential	High	1
	Medium	1
	Low	1
	No	0

NOTES:

SKR = Stephens' kangaroo rat.

* Occupancy status was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 during fall 2020 live-trapping surveys, positive kangaroo rat sign during fall 2023 monitoring, the proximity of all three plots (within 150 feet of one another), and no factors that could reasonably be expected to entirely preclude SKR movement between the three plots.



SOURCE: NAIP, 2020; SanGIS, 2023; ESA, 2023.

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Figure 18

Stephens' Kangaroo Rat Monitoring and Management Results
Hellhole Canyon County Preserve

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SKR occupancy potential decreased for two of the three monitoring plots in fall 2023 compared to fall 2022 monitoring. SKR was found present at only one of the three monitoring plots during the fall 2020 live-trapping effort, but Dulzura kangaroo rat (*Dipodomys simulans*) (DKR) was also found present during the live-trapping effort. Based on sign detected during the fall 2023 habitat assessment monitoring effort, SKR presence was only potentially detected at two of the three monitoring plots; however, habitat assessment monitoring cannot conclusively differentiate between SKR and DKR. Based on the fall 2020 live-trapping effort, SKR and DKR are both present on-site and there are no obstruction factors that could preclude the possibility of SKR from any of the three monitoring plots, especially considering the proximity of the three plots (all within 150 feet of one another). Therefore, SKR was considered to be potentially present at only two monitoring plots (Table 31). Habitat suitability for SKR decreased from High to Low and Medium for plots 1 and 3, respectively. These results indicate seasonal SKR occupancy can increase or decrease at given sites between monitoring years due to variables such as drought/precipitation, survey timing, food availability, and competition among sympatric species. The following variables influenced survey results:

- **Precipitation.** Heavy rainfall was observed in the greater San Diego region between fall 2022 and fall 2023. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall are likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2022 and fall 2023 monitoring efforts was marked by significantly above-average rainfall in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.
- **Vegetation composition.** During the 2023 monitoring effort, all three plots were observed to have had mowing conducted in portions of the plots within the last 6 months. Despite this, an increase in living/standing herb density and overall vegetation coverage, as well as a decrease in bare ground, was observed in plots 1 and 3. Plot 2 presented similar findings as previous years, with more open areas primarily vegetated with low-growing filarees (*Erodium* spp.) that facilitates SKR movement and is a potential food source. Comparatively, plots 1 and 3 presented with higher percentages of taller-growing ruderal species (i.e., tocalote and shortpod mustard) that increase obstruction factors and may preclude or reduce SKR movement. Obstruction factors were thus increased for plots 1 and 3, compared to findings in 2022 and 2021, reducing the potential for SKR.

Detailed monitoring methods and results, including plot photographs and habitat assessment forms are included in Appendix I.

Stephens' Kangaroo Rat Focused Management

Focused management occurred in 2023 in response to the invasive non-native plant cover observed in 2022 within suitable SKR habitat at Hellhole Canyon County Preserve. The management area, excluding the culturally sensitive areas, consists of 5.86 acres (Figure 18). Non-native vegetation consisted primarily of non-native grasses, tocalote, and shortpod mustard.

TABLE 31
SKR HABITAT ASSESSMENT SUMMARY: HELLHOLE CANYON COUNTY PRESERVE

	Fall 2023						Fall 2022			
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/ Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	**Potential K-Rat Sign***	**SKR Occupancy Determination+**	**Rating†**	**Rating†**
1	0–5	Medium	5–25	50–75	Low/Low	Medium	None	Not Occupied	Low	High**
2	5–25	Low	0–5	25–50	Low/Low	Low	B, S, T	Occupied	High**	High**
3	0–5	Medium	25–50	25–50	Low/Low	Medium	B, S	Occupied	Medium**	High**

NOTES:

SKR = Stephens' kangaroo rat
^ Active gopher excavation density ratings used; inactive excavation density ratings excluded.
* Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** Exhibited habitat conditions and observed sign indicates plot is likely or potentially occupied by SKR.
† Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.
+ Occupancy status in fall 2023 was determined as "potentially occupied" as described in the footnote on Table 30.

As a result of the establishment of the 20-foot exclusionary areas and the presence of a cultural resources specialist during ground-disturbing activities, no elements of the four archaeological sites were impacted during the habitat maintenance activities. All cut biomass was manually collected, bagged, and properly disposed of at an approved off-site facility. ESA cultural specialist Joel Aspeytia was on site on September 25, 2023, to remove pin flags. ESA biologist Jaclyn Catino-Davenport was on site the same day to document site conditions after management activities and confirm that cut biomass was collected and removed from the site for proper disposal off-site. No herbicide was used. Representative photographs of focused management activities are provided in Appendix I.

Adaptive Management Recommendations

The following are the adaptive management recommendations to ensure persistence of SKR at Hellhole Canyon County Preserve. The incidental observations of thatch and non-native plant species in 2023, TMP management goals and objectives, and the adaptive management actions outlined in the TMP were used to develop the following recommendations:

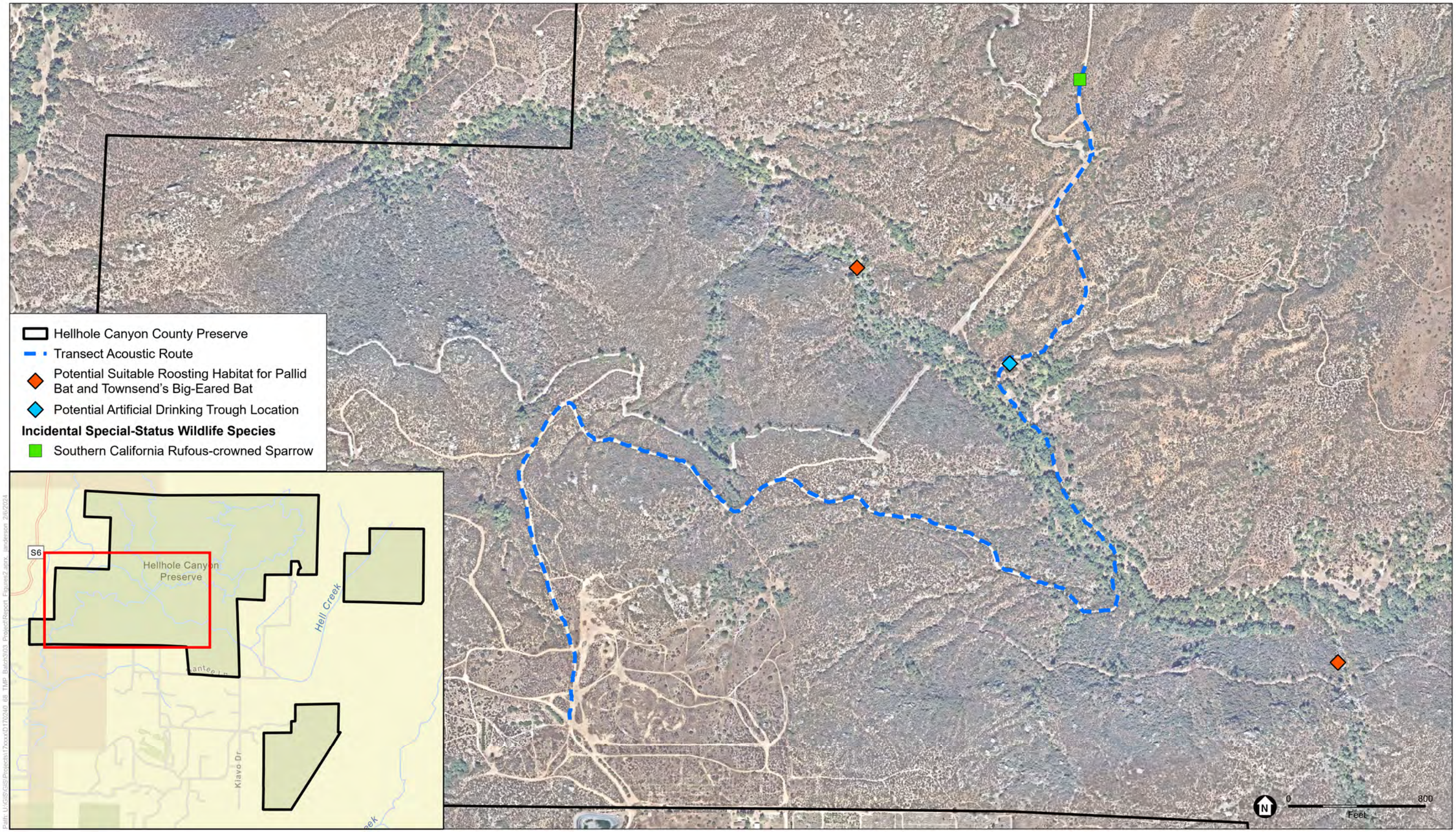
- **Habitat enhancement.** Continued focused SKR management is necessary to maintain suitable SKR habitat within the Sierra Verde Addition of Hellhole Canyon County Preserve. Focused management within the 5.8-acre management area is recommended to ensure persistence of suitable SKR habitat. Focused SKR management can include targeted dethatching, mowing, and/or scraping. Targeted dethatching and mowing can reduce the overall height of the existing vegetation to a desired level and assist with disarticulation of herbaceous weeds. Scraping can reduce vegetation density and increase open ground, maximizing the ability of SKR to move across the landscape.

4.9 Pallid Bat

ESA conducted surveys to monitor the status of pallid bat occupancy and roosting and foraging habitat and document current distribution and threat data to inform management needs in Hellhole Canyon County Preserve (**Figure 19**), Mount Olympus County Preserve (**Figure 20**), and Wilderness Gardens County Preserve (**Figure 21**). Field forms, including the habitat and threats assessment form, are included in **Appendix J**, *Bat Survey & Habitat Assessment Field Forms*. Transect acoustic monitoring was conducted to provide supplemental information and to document if pallid bat was potentially roosting on-site. Pallid bat was not detected during transect acoustic monitoring surveys (**Table 32**). Incidentally observed special-status wildlife species included Southern California rufous-crowned sparrow at Hellhole Canyon County Preserve (Figure 19); barn owl (*Tyto alba*) at Mount Olympus County Preserve (Figure 20); and barn owl, red-shouldered hawk (*Buteo lineatus*), turkey vulture, and red diamond rattlesnake (*Crotalus ruber*) at Wilderness Gardens County Preserve (Figure 21).

4.9.1 Roosting and Foraging Habitat Assessment

Pallid bat is a multiple-habitat roosting species and forages on terrestrial arthropods in oak savannah-type habitats, grassy oak and sycamore-lined river terraces, native grasslands, and sparsely vegetated scrublands. Suitable foraging habitat also includes dirt trails, roads, and staging areas especially when it cuts through dense scrubland habitat like chaparral. It has an affinity for roosting in human-made structures but can also be found roosting in a variety of natural crevice and cavity situations, such as rock crevices, natural caves, mines, under tree bark, and in tree cavities and hollows.



SOURCE: Nearmap, 2020; ESA, 2023.

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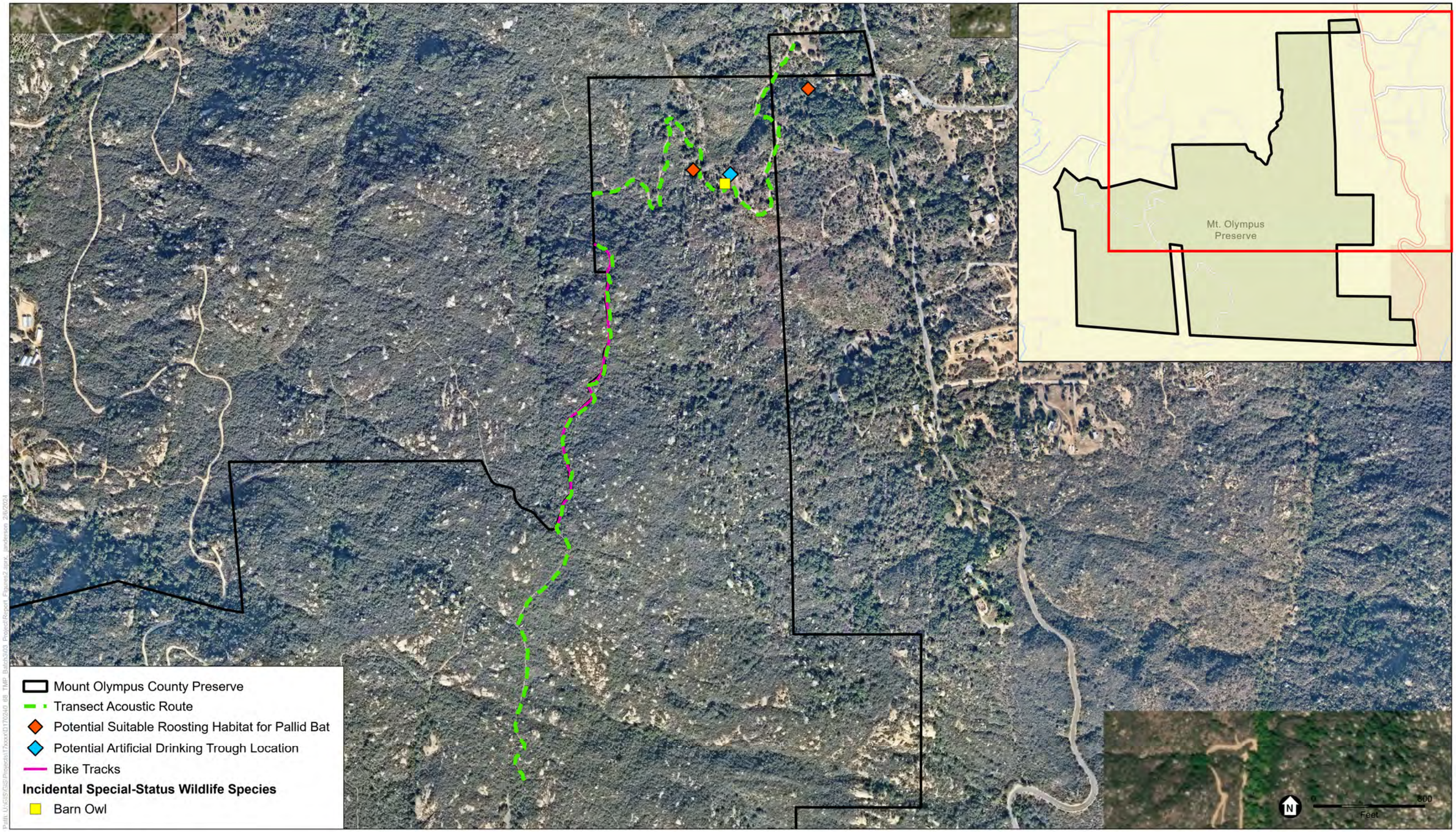
Figure 19
Bat Monitoring Results
Hellhole Canyon County Preserve

ESA



SOURCE: Nearmap, 2021; ESA, 2023.

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Figure 20
Bat Monitoring Results
Mount Olympus County Preserve

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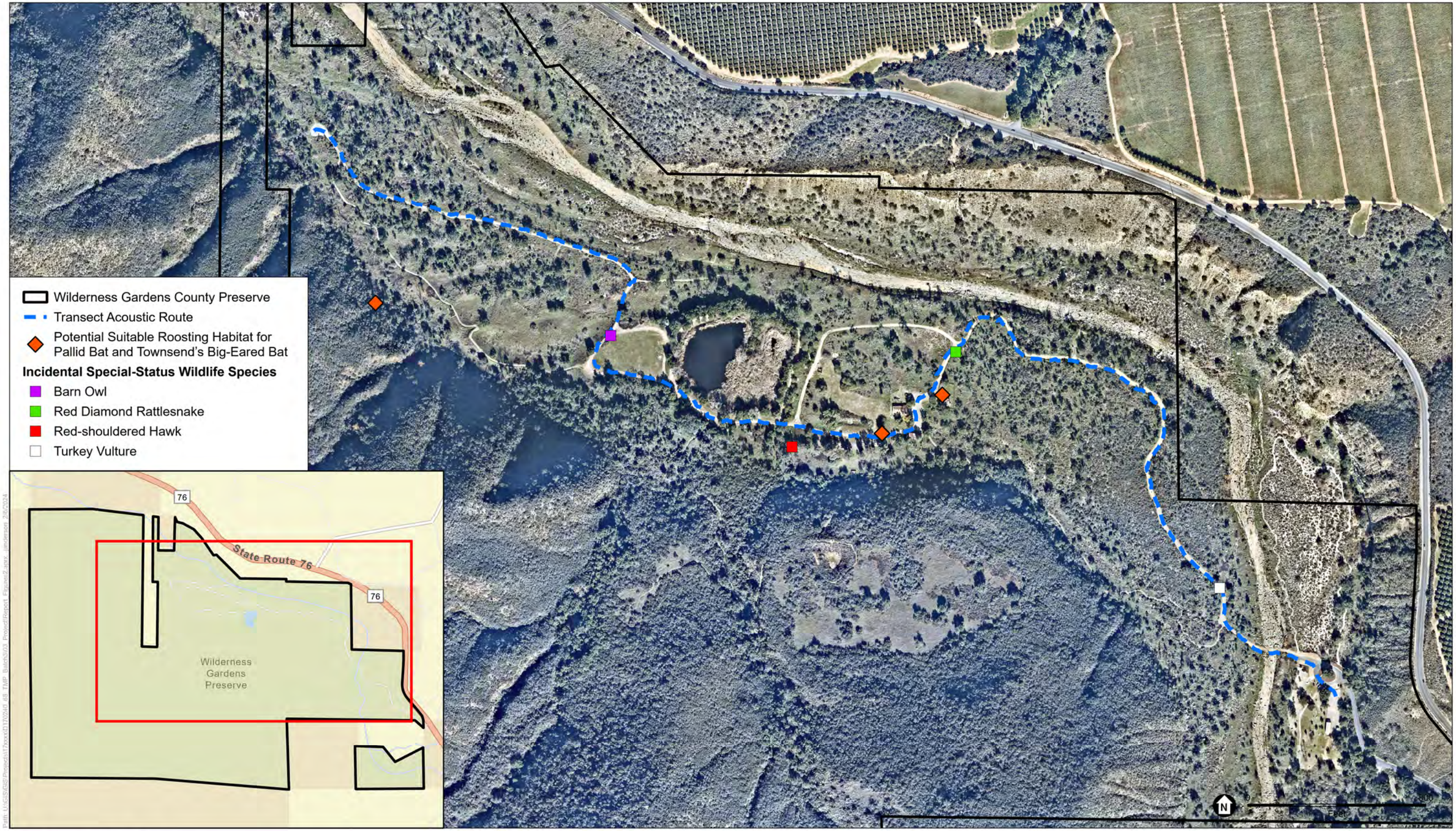

SOURCE: Nearmap, 2021; ESA, 2023.

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Figure 21
Bat Monitoring Results
Wilderness Gardens County Preserve

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TABLE 32
TRANSECT ACOUSTIC BAT SURVEY RESULTS

Bat Species Detected	Mount Olympus County Preserve (06/20/2023)	Wilderness Gardens County Preserve (06/23/2023)	Hellhole Canyon County Preserve (06/26/2023)	Total
Big brown bat *Eptesicus fuscus*	–	50	12	62
Hoary bat *Lasiurus cinereus*	–	2	–	2
Silver-haired bat *Lasionycteris noctivagans*	–	18	–	18
California myotis *Myotis californicus*	–	8	1	9
Western small-footed myotis[a] *Myotis ciliolabrum*	1	2	–	3
Yuma myotis[a] *Myotis yumanensis*	–	20	–	20
Canyon bat *Parastrellus hesperus*	–	10	8	18
Mexican free-tailed bat *Tadarida brasiliensis*	–	2	–	2
Total	**1**	**112**	**21**	**134**

NOTES:
a. County of San Diego Sensitive Animal Group 2 Species.

Hellhole Canyon County Preserve

There is an abundance of rocky outcrops and boulders that could provide suitable roosting habitat for pallid bats in Hellhole Canyon County Preserve. The rocky and boulder-strewn areas that appear most suitable for pallid bat and other crevice- and cavity-roosting bat species include the rocky/boulder draw near the "grotto" and along Hell Creek from the beginning of significant boulder habitat to the western end of Hell Creek within the Preserve (Figure 19). There are also a number of oaks and other tree species on-site that have the potential for providing pallid bat roosting opportunities under bark and/or in tree hollows and cavities. Most of the suitable trees are found along Hell Creek within the Preserve. There are no human-made structures that could serve as roosting habitat for pallid bats in Hellhole Canyon County Preserve.

Suitable foraging habitat on Hellhole Canyon County Preserve include the sycamore-lined Hell Creek and the sparsely vegetated scrubland. The numerous dirt trails and roads that run through chaparral and coastal sage scrub habitats on the Preserve also provide suitable foraging habitat for pallid bat.

Mount Olympus County Preserve

There is an abundance of rocky outcrops and boulders throughout the Mount Olympus County Preserve that could provide suitable roosting habitat for pallid bats. There are oaks and other tree species on-site that have the potential for providing pallid bat roosting opportunities under bark

and/or in tree hollows and cavities. Most of the suitable trees are found in the forested eastern portion of the Preserve along Pala Temecula Road. There are abandoned human-made structures that could also serve as roosting habitat for pallid bats in Mount Olympus County Preserve (Figure 20).

Suitable foraging habitat on Mount Olympus County Preserve is limited to the rocky outcrops, dirt trails, and roads through the Preserve. While there is oak and sycamore woodland, they are densely vegetated and lack openings for foraging pallid bats.

Wilderness Gardens County Preserve

The historic and unused buildings near the center of Wilderness Gardens County Preserve and the exposed rocky habitat such as the rocky outcrops near the northern boundary of the Preserve provide potential pallid bat roosting habitat (Figure 21). Additional potential roosting habitat for pallid bat occurs in suitable trees that could have loose bark, cavities, and hollows along the San Luis Rey River, along the base of and in the draws of the chaparral-covered hillside that dominate the Preserve, and near the two ponds on-site.

Suitable foraging habitat on Wilderness Gardens County Preserve include the sycamore-lined San Luis Rey River, native grassland, and the sparsely vegetated scrubland. The numerous dirt trails and roads that run through chaparral and coastal sage scrub habitats on the Preserve also provide suitable foraging habitat for pallid bats.

4.9.2 Threats Assessment

Threats and suitable roosting and foraging habitat were assessed during the species surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. The following threats were observed:

- **Invasive non-native plant species.** Invasive non-native plant species alter vegetation structure, which affects foraging success. Invasive non-native plant cover at all three Preserves presents a potentially significant threat to pallid bat foraging habitat. Invasive non-native plant cover and associated thatch cover vary across each Preserve but are generally dense. Invasive non-native plant cover is particularly dense on dirt trails and roads on-site which may be the only source of foraging habitat for pallid bats within the Preserve, as is the case for Mount Olympus County Preserve. Pallid bats require open and sparsely vegetated areas for foraging such that they can easily access terrestrial arthropods; therefore, dense invasive non-native plant cover reduces suitable foraging habitat (Krutzsch 1948).
- **Illegal trail use.** Illegal trail/unauthorized off-trail usage was detected at the top of Mount Olympus County Preserve starting at approximately (33.419484°, -117.094807°) and continuing south along an unauthorized dirt trail on the ridgeline. Continued illegal trail usage could potentially degrade foraging habitat for pallid bats.

4.9.3 Adaptive Management Recommendations

The following are adaptive management recommendations to maintain and enhance suitable roosting and foraging habitat for pallid bat:

- **Foraging habitat enhancement.** Focused pallid bat foraging habitat management can include targeted dethatching, mowing, and/or herbicide treatment for non-native plant species within and along trails, roads, disturbed areas, and sparsely vegetated habitats that provide openings for foraging pallid bats. Targeted dethatching and mowing can reduce the overall height of the existing vegetation to a desired level and increase open ground, maximizing the ability of pallid bats to forage. Herbicide treatment can be used to maintain open ground areas and trail widths. Focused management should occur outside of the avian nesting season (March–September) at Hellhole Canyon County Preserve and Wilderness Gardens County Preserve. Mechanical methods and herbicide could be used during the avian nesting season if a biologist is present to clear the impact areas in front of the restoration crew. Thatch and vegetation removal should be implemented with weedeaters and rakes; debris should be hauled out and disposed of off-site at a county landfill. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season.
- **Install and enhance drinking sources.** Install drinking sources for pallid bats at Hellhole Canyon County Preserve and Mount Olympus County Preserve. Spring- and/or water-table-fed artificial drinking troughs should be installed in the preserves where such aquatic features are present and logistically feasible (i.e., near roads and/or trails). Potential artificial drinking trough locations for Hellhole Canyon and Mount Olympus County Preserves are included in Figure 19 and Figure 20, respectively. Both locations are near access roads and are assumed to have access to potential wells that could fill the drinking troughs. On Wilderness Gardens County Preserve, the existing pond can be enhanced by clearing cattails and other wetland vegetation to provide better opportunities for pallid bats to drink while in flight.
- **Create roost structures.** Create and install artificial roost structures in Hellhole Canyon, Mount Olympus, and Wilderness Gardens County Preserves. Artificial roosts that are large, thermally stable, and provide roosting opportunities for crevice- and cave-roosting bats are recommended. This can include cinderblock style “combat town” structures typically found on military bases. Artificial roost locations that are near foraging habitat such as riparian areas, oak woodlands, and near water sources are ideal, but they should be put in areas where they would not be subject to disturbance and vandalism.
- **Conduct mist-netting to determine pallid bat occupancy.** Pallid bats are most readily detected by mist-net capture and by finding their guano and culled insect parts in their night roosts. In absence of mist-netting or obvious roosts to detect pallid bat sign, the alternative is to use electronic bat detectors. Pallid bats echolocation calls can resemble other more common species such as the big brown bat (*Eptesicus fuscus*). Future pallid bat monitoring should implement a combination of acoustic monitoring (either passive or transect) and mist-netting to confirm presence of species and document individual bat information to inform population dynamics, as recommended in the TMP (ESA and ICF 2022).

4.10 Townsend’s Big-Eared Bat

ESA conducted surveys to monitor the status of Townsend’s big-eared bat occupancy and roosting and foraging habitat to document current distribution and threat data to inform management needs in Hellhole Canyon County Preserve and Wilderness Gardens County Preserve. Field forms, including the habitat and threats assessment form, are included in

Appendix J. Transect acoustic monitoring was conducted to provide supplemental information and to document if Townsend's big-eared bat was potentially roosting on-site. Townsend's big-eared bat was not detected during transect acoustic monitoring surveys; however, this species has a low detection rate due to their call frequency (Table 32). Incidentally observed special-status wildlife species include Southern California rufous-crowned sparrow at Hellhole Canyon County Preserve (Figure 19); and barn owl, red-shouldered hawk, turkey vulture, and red diamond rattlesnake at Wilderness Gardens County Preserve (Figure 21).

4.10.1 Roosting and Foraging Habitat Assessment

Townsend's big-eared bat is an obligate cave-roosting species that depends on caves and cave-analogs for its roosting requirements. Roosting situations include natural caves, including boulder caves, mines, tree hollows, and human-made structures that provide cave-like environments. Townsend's big-eared bat is a Lepidopteran (small to medium moths) specialist and forages in edge habitats along streams and wooded habitats.

Hellhole Canyon County Preserve

There is an abundance of boulder habitat that could provide suitable roosting habitat in Hellhole Canyon County Preserve. The boulder strewn areas that appear most suitable for the Townsend's big-eared bat include the boulder draw near the "grotto" and along Hell Creek from the beginning of significant boulder habitat to the western end of Hell Creek (Figure 19). On-site trees with tree hollows and cavities also have the potential for providing Townsend's big-eared bat roosting opportunities but is not the preferred roosting location for this species. Most of the suitable trees are found along Hell Creek in the Preserve. There are no human-made structures that could serve as roosting habitat for the Townsend's big-eared bat in the Preserve.

Suitable foraging habitat on Hellhole Canyon County Preserve is limited to the woodland edge habitats around Hell Creek.

Wilderness Gardens County Preserve

The historic and unused buildings near the center of Wilderness Gardens County Preserve and the exposed rocky habitat such as the rocky outcrops near the northwest boundary of the Preserve provide potential Townsend's big-eared bat roosting habitat (Figure 21). Exposed rocky habitat such as the rocky outcrops near the northern boundary of the Preserve serve as potential roosting habitat for Townsend's big-eared bat as well. Additional potential roosting habitat for Townsend's big-eared bat occurs in suitable trees that could have loose bark, cavities, and hollows along the San Luis Rey River, along the base of and in the draws of the chaparral-covered hillside that dominates the Preserve, and near the two ponds on-site.

Suitable foraging habitat on Wilderness Gardens County Preserve include the woodland area surrounding the pond and the woodland edge habitats around San Luis Rey River.

4.10.2 Threats Assessment

Threats to roosting and foraging habitat were assessed during species surveys to determine: (1) if identified threats are having a direct negative effect on the species or habitat, and (2) if adaptive management actions need to be implemented. Dumping/trash that was previously detected at Hellhole Canyon County Preserve in 2022 was not present during 2023 surveys. No signs of illegal trail/unauthorized off-trail usage were detected as well; therefore, no threats were identified during the species surveys.

4.10.3 Adaptive Management Recommendations

The following are adaptive management recommendations to maintain and enhance suitable roosting and foraging habitat for Townsend's big-eared bat:

- **Foraging habitat enhancement.** Focused Townsend's big-eared bat foraging habitat management can include targeted mowing and/or herbicide treatment for non-native plant species along edge habitats adjacent to Hell Creek and San Luis Rey River and adjacent to and within woodland habitat areas. Targeted mowing can increase native plant diversity by reducing invasive non-native plants, increasing prey abundancy, and maximizing the ability of Townsend's big-eared bats to forage in intact native habitat. Herbicide treatment can be used to reduce invasive non-native plants and increase prey abundance. Focused management should occur outside of the avian nesting season (March–September) at Hellhole Canyon County Preserve and Wilderness Gardens County Preserve and away from recreation areas such as trails and staging areas. Mechanical methods and herbicide could be used during the avian nesting season if a biologist is present to clear the impact areas in front of the restoration crew. Vegetation removal should be implemented with weedeaters and rakes; debris should be hauled out and disposed of off-site at a county landfill. Ideally, herbicide should be applied before seed sets on plants, which may involve multiple treatment visits throughout the season.
- **Install and enhance drinking sources.** Install drinking sources for Townsend's big-eared bats at Hellhole Canyon County Preserve. Spring- and/or water-table-fed artificial drinking troughs should be installed in the Preserve where such aquatic features are present and logistically feasible (i.e., near roads and/or trails). Potential artificial drinking trough locations for Hellhole Canyon County Preserve are included on Figure 19, respectively. The location is near an access road and assumed to have access to potential wells that could fill the drinking troughs. On Wilderness Gardens County Preserve, the existing pond can be enhanced by clearing cattails and other wetland vegetation to provide better opportunities for Townsend's big-eared bats to drink while in flight.
- **Create roost structures.** Create and install artificial roost structures in Hellhole Canyon and Wilderness Gardens County Preserves. Artificial roosts that are large, thermally stable, and provide roosting opportunities for cave-roosting bats are recommended. This can include cinderblock style "combat town" structures typically found on military bases. Artificial roost locations that are near foraging habitat such as riparian areas, oak woodlands, and near water sources are ideal, but they should be put in areas where they would not be subject to disturbance and vandalism.
- **Conduct mist-netting to determine Townsend's big-eared bat occupancy.** Townsend's big-eared bats are most readily detected by mist-net capture and by finding their guano and culled insect parts in their night roosts. In absence of mist-netting or obvious roosts to detect Townsend's big-eared bat sign, the alternative is to use electronic bat detectors. Townsend's

big-eared bats appear to have low detection rates. Future Townsend's big-eared bat monitoring should implement a combination of acoustic monitoring (either passive or transect) and mist-netting to confirm presence of species and document individual bat information to inform population dynamics, as recommended in the TMP (ESA and ICF 2022).

4.11 Regional MSP Wildlife Monitoring Results

Through ROE permits issued by DPR, Dr. Daniel Marschalek with the University of Central Missouri conducted HDS genetic sampling at Hellhole Canyon County Preserve; USGS conducted arroyo toad monitoring at Ramona Grasslands County Preserve; AECOM conducted tricolored blackbird monitoring at Ramona Grasslands County Preserve; and the San Diego Zoo Institute for Conservation Research conducted burrowing owl surveys at Ramona Grasslands County Preserve. Results are provided below.

4.11.1 Harbison's Dun Skipper

Regional monitoring efforts for HDS included monitoring surveys performed by Dr. Daniel Marschalek with the University of Central Missouri. Dr. Marschalek and his team conducted adult flight surveys for HDS within Hellhole Canyon County Preserve on June 8, 17, and July 5, 2023. No HDS were detected during surveys.

4.11.2 Arroyo Toad

Regional monitoring efforts for arroyo toad included monitoring surveys performed by USGS permitted biologists (recovery permit TE-045991-19.1) along reaches 25, 29, 34, 39, and 44 in Santa Maria Creek within Ramona Grasslands County Preserve. Of the 10 reach segments surveyed, a total of 6 reach segments supported breeding and larval toad development. These include reach segments A25, B25, A29, B29, A34, and B34 (Figure 13). Special-status wildlife species, two-striped garter snake, was incidentally observed during the surveys along reach segment A29, and invasive non-native wildlife species, American bullfrog, was incidentally observed during the surveys along reach segment A39 (Figure 13).

4.11.3 Tricolored Blackbird

AECOM, on behalf of SANDAG, performed tricolored blackbird (*Agelaius tricolor*) surveys at Ramona Grasslands County Preserve. AECOM observed 12 tricolored blackbirds flying overhead and perched on powerlines on Ramona Municipal Water District lands adjacent to the Ramona Grasslands County Preserve. Primarily males were detected foraging along the road and into the grassland. The main colony resides on the adjacent Ramona Municipal Water District lands. No birds were observed carrying food back to the nest and very few birds were observed in the foraging area, suggesting the colony was in incubation phase during the time of the survey.

4.11.4 Burrowing Owl

The San Diego Zoo Institute for Conservation Research conducted burrowing owl surveys within Ramona Grasslands County Preserve roughly following the CDFW 2012 Staff Report on Burrowing Owl Mitigation guidelines (CDFG 2012) on May 25, June 1, and July 9, 2023. No sign of burrowing owl was detected during the surveys.

4.12 Peak Forage Production and Residual Dry Matter Monitoring

4.12.1 Peak Forage Production Monitoring

The average lb/acre of peak forage for a given management unit at Ramona Grasslands County Preserve is presented in **Table 33** and **Figure 22**. The results of the average peak forage production values from each monitoring plot in 2023 can be found in **Appendix K**, *Peak Forage Production and Residual Dry Matter Monitoring Reports*. This is the second time that peak production monitoring was conducted at the Preserve. Over time, DPR will use monitoring results to detect year-to-year fluctuations in forage production. Peak production targets are not established for the Preserve or per management unit; rather, peak production monitoring results inform stocking rates for the year.

TABLE 33
PEAK FORAGE PRODUCTION MONITORING SUMMARY: RAMONA GRASSLANDS COUNTY PRESERVE

Management Unit	Managed Resources	Average Peak Forage Production (lb/acre)	
		2022	2023
1A	Riparian pastures and arroyo toad habitat	5,522	1,667
2A	SKR habitat	3,119	2,526
2B	SKR habitat	2,171	2,505
3A	SKR habitat	3,453	2,100
3B	Species diversity, fire hazard reduction, and soil conservation	3,767	1,640
3C	Vernal pool habitat	3,389	2,889
3D	Vernal pool habitat	2,722	3,444
3E	Restoration	4,458	1,825
4A	Species diversity, fire hazard reduction, and soil conservation	1,389	2,478
4B	Species diversity, fire hazard reduction, and soil conservation	1,144	1,317
4C	Not grazed	N/A	N/A
5	Not grazed	N/A	N/A

NOTES:

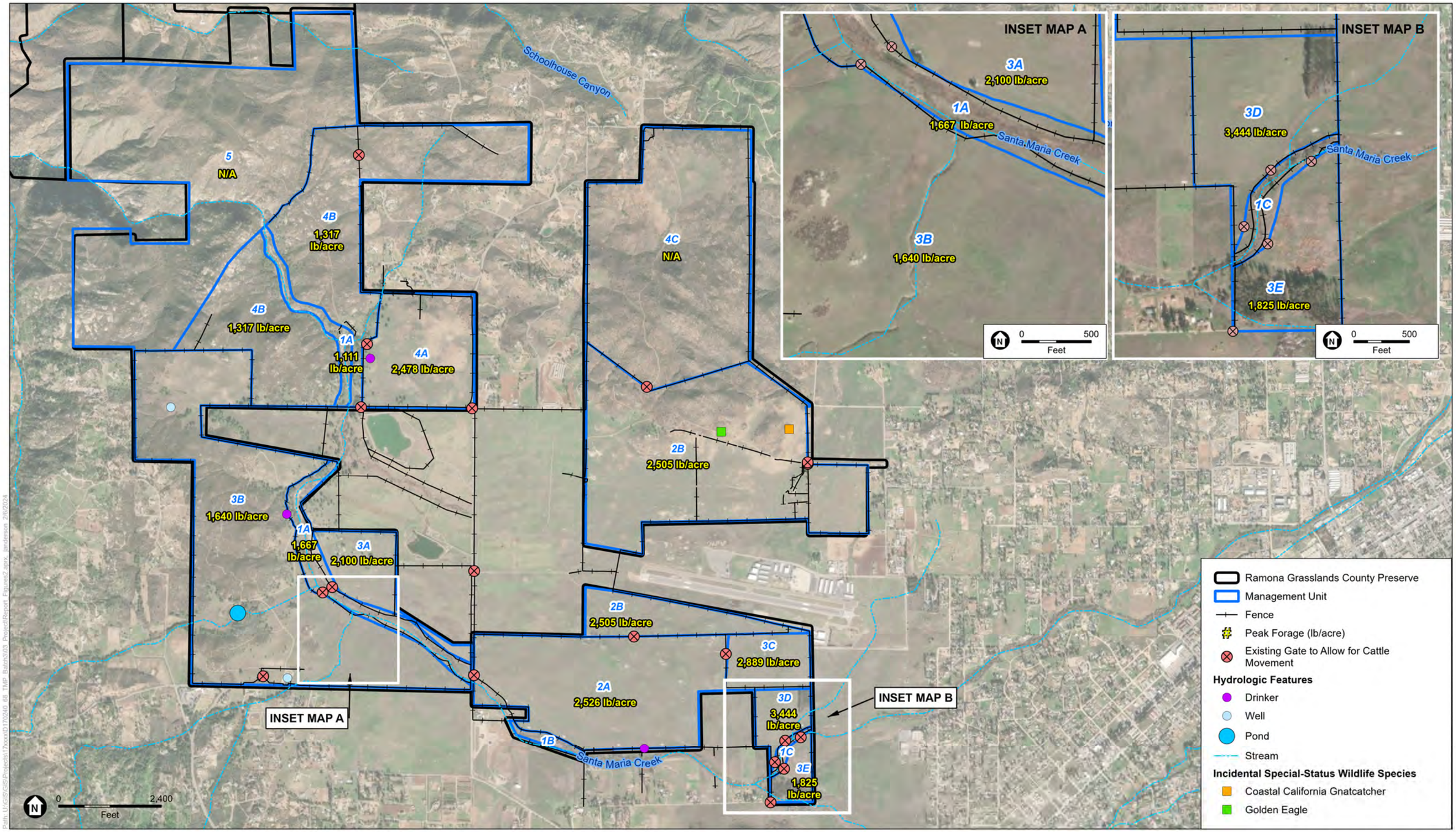
lb/acre = pounds per acre; N/A = not applicable, no monitoring plots established for these management units; SKR = Stephens' kangaroo rat.

These results are an average of the peak production values of all monitoring plots per management unit from 2023.

4.12.2 Residual Dry Matter Monitoring

The results of vegetation sampling within each management unit at Ramona Grasslands County Preserve are discussed below, and 2023 RDM values are summarized in **Table 34** and **Figure 23**. The results of the average RDM values from each of the individual RDM plots from 2011 through 2023 can be found in Appendix K. All RDM values, with the exception of management units 1A and 4B, were above the target RDM values. Management units 4A and 4B had RDM values within their target RDM value range.

The majority of management units were above their target RDM values in 2023. Results were likely influenced by the increased annual rainfall in 2023, including the late-season rainstorm event in August 2023 that initiated vegetative growth. Extreme fluctuations in rainfall in recent years (e.g., drought conditions in 2018, above-average rainfall in 2019, below-average to average rainfall in 2020, and drought conditions in 2021 and 2022) drive substantial variability in vegetative cover from year to year. Ramona Airport reported 21.1 inches of accumulated rainfall from January to September 2023 compared to 6.5 inches of accumulated rainfall from January to September 2021 and 4 inches of accumulated rainfall from January to September 2022 (NOAA 2023).



SOURCE: ESRI, AECOM 2017; ESA 2023

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Figure 22

Peak Forage Production Monitoring Results

Ramona Grasslands County Preserve

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TABLE 34
SUMMARY OF 2023 RAMONA GRASSLANDS COUNTY PRESERVE RDM RESULTS

Management Unit	Target RDM Value	Average RDM (lb/acre)													2023 Results
		2011*	2012*	2013*	2014*	2015*	2016*	2017*	2018*	2019*	2020	2021	2022	2023	
1A	800 to 2,000 lb/acre	4,900	2,137	586	453	350	843	679	233	2,522	4,178	1,833	2,478	1,333	Meets grazing requirements.
2A	400 to 800 lb/acre	6,241	3,381	1,728	517	1,137	1,479	1,085	394	3,071	3,352	2,348	2,186	3,886	Does not meet grazing requirements.
2B	400 to 800 lb/acre	3,957	1,844	933	301	1,124	747	798	338	3,167	3,786	2,962	1,400	2,881	Does not meet grazing requirements.
3A	400 to 800 lb/acre	3,688	2,796	384	136	238	282	1,521	20	1,767	2,600	2,540	1,627	2,447	Does not meet grazing requirements.
3B	800 to 1,500 lb/acre	2,450	2,405	635	402	385	880	803	27	2,420	2,587	2,413	1,933	2,193	Does not meet grazing requirements.
3C	800 to 1,500 lb/acre	4,055	2,890	1,013	810	403	1,543	919	233	2,622	2,100	3,711	2,456	3,600	Does not meet grazing requirements.
3D	800 to 1,500 lb/acre	6,855	3,740	1,406	1,450	370	1,190	709	167	489	1,800	2,622	2,522	2,667	Does not meet grazing requirements.
3E	800 to 1,500 lb/acre	0	123	2,540	1,547	1,330	5,883	4,923	5,908	925	1,025	2,675	5,608	6,858	Does not meet grazing requirements.
4A	800 to 1,500 lb/acre	4,122	2,407	2,086	100	513	890	876	78	2,522	1,889	1,267	911	1,800	Does not meet grazing requirements.
4B	800 to 1,500 lb/acre	2,688	1,140	1,210	400	1,053	633	573	244	1,417	1,594	2,039	1,272	1,294	Meets grazing requirements.
4C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.

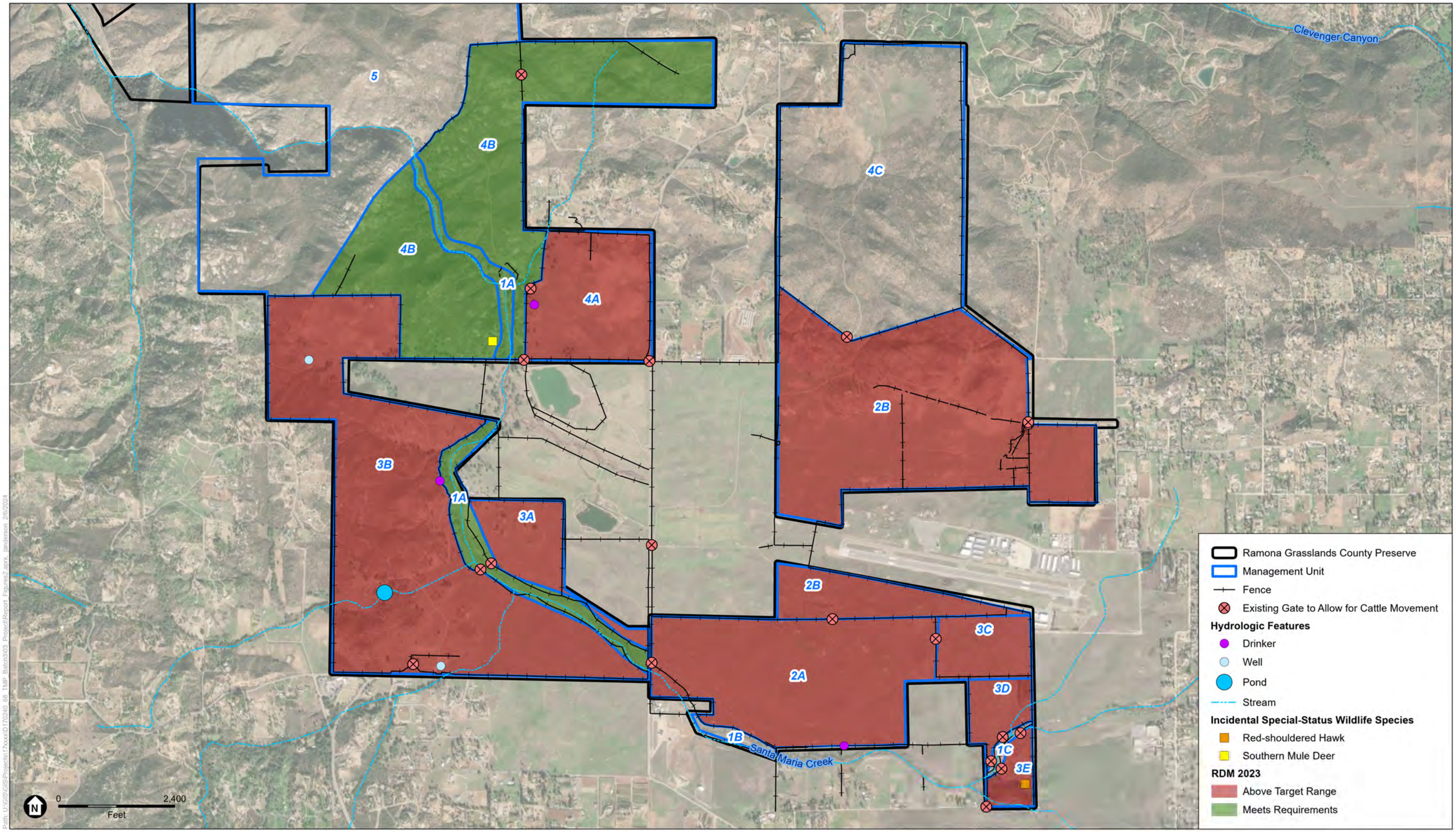
NOTES:

RDM = residual dry matter; lb/acre = pounds per acre; N/A = not applicable.
* RDM values from 2011–2019 were compared to previous target RDM values as described in the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012).
These results are an average of the RDM values of all monitoring plots per management unit 2011 through 2023.

4.12.3 Adaptive Management Recommendations

The following are adaptive management recommendations based on the annual RDM monitoring results for all management units:

- **Coordinate with new grazing lessees on cattle grazing practices.** Provide information on the conservation goals to be fulfilled by grazing on the Preserve and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the Preserve. Cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season (typically November through March for Southern California), as well as when clay soils are still moist and malleable.
- **Continue spring peak forage monitoring in all units (except 4C and 5).** This monitoring assesses the amount of forage available for grazing in a given year, allowing the grazing lessee to adjust their grazing regime (e.g., stocking density and grazing duration) with the RDM target values in mind to meet management targets.
- **Continue long-term RDM monitoring in all units (except 4C and 5).** This is important to ensure that RDM values do not exceed or drop below the range needed to meet the management targets and increase biodiversity.
- **Conduct invasive non-native plant mapping.** Invasive non-native plant mapping should be conducted throughout the Preserve every 10 years to assess new invasions or re-invasions, per the monitoring recommendations in the TMP (ESA and ICF 2022).
- **Continue active restoration of management unit 3E.** Remove non-native plant species by a combination of mowing, herbicide treatment, and/or targeted grazing. Quantitative vegetation monitoring, such as Relevé assessment, is recommended within this management unit to document pre-restoration and post-restoration conditions.
- **Seed bare ground surrounding water troughs.** Extensive areas of bare ground were observed surrounding the water troughs during 2018–2023 surveys. Native grass seed should be planted around water troughs and in bare ground near water troughs to improve soil quality. Seed should be from a local, credible source or collected within the Preserve by hired seed collectors or DPR rangers who have been taught by a consultant how to collect native plant seeds. Plant species that could be distributed in areas with bare ground, such as those around the troughs, include purple needlegrass (*Stipa pulchra*), nodding needlegrass (*Stipa cernua*), wild rye (*Elymus triticoides*), and Lemmon's canary grass (*Phalaris lemmonii*). These species have been verified as native grasses found within the Preserve, according to the San Diego Natural History Museum Plant Atlas Database. Seeds should not come from outside of San Diego County.
- **Conduct rare plant surveys throughout the Preserve.** Rare plant surveys should be conducted every 10 years in the spring and late summer, per the monitoring recommendations in the TMP (ESA and ICF 2022). Rare plants have been incidentally observed during RDM monitoring; however, these incidental observations are not representative of comprehensive rare plant surveys. Rare plant surveys should focus on areas with rare soils and sensitive habitats, and areas where rare plants have been recorded in the past. The rare plant surveys should be used to update the sensitive plant maps from the Vegetation Management Plan (ICF 2012), identify populations of sensitive species for more intensive monitoring, and determine if any new sensitive species are present. Following the completion of rare plant surveys, monitoring plots located within sensitive plant populations should be adjusted to avoid impacts to the species.



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SOURCE: ESRI, AECOM 2017; ESA 2023

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management

Targeted Monitoring Plan Resource-Specific Monitoring and Management 2023 Annual Report

Figure 23

Residual Dry Matter Monitoring Results
Ramona Grasslands County Preserve

ESA

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CHAPTER 5
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Appendix A

Vernal Pools and Alkali Playas Monitoring & Representative Photographs

A-1 Hydrological Monitoring Raw Data

Hydrological Monitoring Raw Data

DEPTH AT DEEPEST POINT (CM)

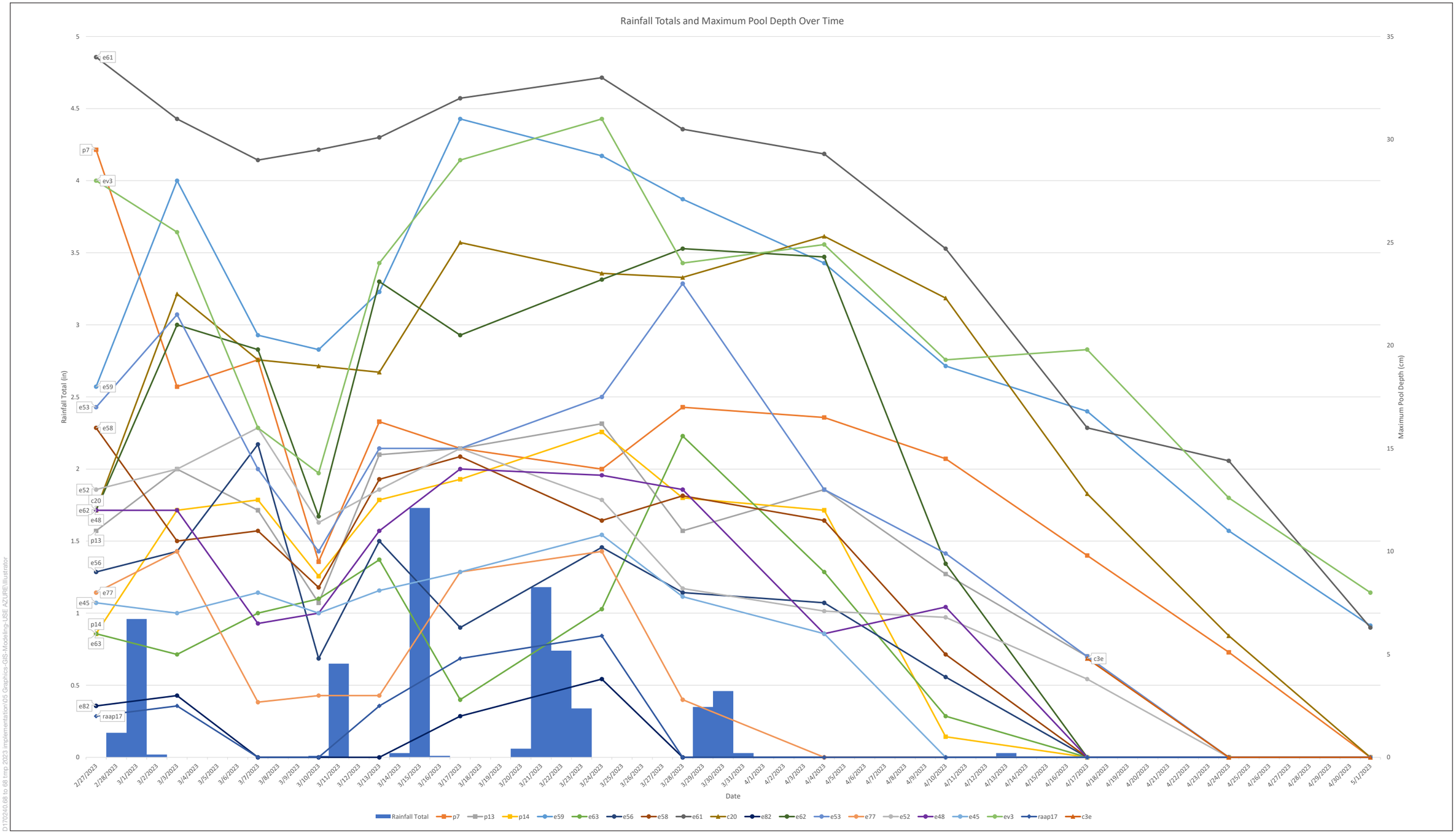
Survey Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Survey Date	**27-Feb**	**3-Mar**	**7-Mar**	**10-Mar**	**13-Mar**	**17-Mar**	**24-Mar**	**28-Mar**	**4-Apr**	**10-Apr**	**17-Apr**	**24-Apr**	**1-May**
Pool #	**Depth at Deepest Point (cm)**												
p7	29.50	18.00	19.3	9.50	16.30	15.00	14.00	17.00	16.50	14.50	9.80	5.10	0.00
p13	11.00	14.00	12.0	7.50	14.70	15.00	16.20	11.00	13.00	8.90	4.90	0.00	0.00
p14	6.00	12.00	12.5	8.80	12.50	13.50	15.80	12.60	12.00	1.00	0.00	0.00	0.00
e59	18.00	28.00	20.5	19.80	22.60	31.00	29.20	27.10	24.00	19.00	16.80	11.00	6.40
e63	6.00	5.00	7.0	7.70	9.60	2.80	7.20	15.60	9.00	2.00	0.00	0.00	0.00
e56	9.00	10.00	15.2	4.80	10.50	6.30	10.20	8.00	7.50	3.90	0.00	0.00	0.00
e58	16.00	10.50	11.0	8.25	13.50	14.60	11.50	12.70	11.50	5.00	0.00	0.00	0.00
e61	34.00	31.00	29.0	29.50	30.10	32.00	33.00	30.50	29.30	24.70	16.00	14.40	6.30
c20	12.00	22.50	19.3	19.00	18.70	25.00	23.50	23.30	25.30	22.30	12.80	5.90	0.00
e82	2.50	3.00	0.0	0.00	0.00	2.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00
e62	12.00	21.00	19.8	11.70	23.10	20.50	23.20	24.70	24.30	9.40	0.00	0.00	0.00
e53	17.00	21.50	14.0	10.00	15.00	15.00	17.50	23.00	13.00	9.90	4.90	0.00	0.00
e77	8.00	10.00	2.68	3.00	3.00	9.00	10.00	2.80	0.00	0.00	0.00	0.00	0.00
e52	13.00	14.00	16.00	11.40	13.00	15.00	12.50	8.20	7.10	6.80	3.80	0.00	0.00
e48	12.00	12.00	6.50	7.00	11.00	14.00	13.70	13.00	6.00	7.30	0.00	0.00	0.00
e45	7.50	7.00	8.00	7.00	8.10	9.00	10.80	7.80	6.00	0.00	0.00	0.00	0.00
ev3	28.00	25.50	16.00	13.80	24.00	29.00	31.00	24.00	24.90	19.30	19.80	12.60	8.00
c3e	X	X	X	X	X	X	X	X	X	X	4.80	0.00	0.00
raap17	2.00	2.50	0.00	0.00	2.50	4.80	5.90	0.00	0.00	0.00	0.00	0.00	0.00
Cagney Swale	X	40.00	36.00	35.50	38.00	X	X	X	X	X	X	15.50	X

VERNAL POOL AND PLAYA LENGTH AND WIDTH (FT) BY DATE

Feature	27-Feb	3-Mar	7-Mar	10-Mar	13-Mar	17-Mar	24-Mar	28-Mar	4-Apr	10-Apr	17-Apr	24-Apr	1-May	Max	Average
p7															
Length	137.90	135.86	133.03	144.70	136.43	182.93	150.57	-	140.99	103.44	84.10	63.96	-	182.93	128.54
Width	63.64	62.51	64.26	62.33	60.97	53.17	68.89	-	53.46	46.11	44.12	35.84	-	68.89	55.94
p13															
Length	90.32	97.66	89.58	77.39	89.87	92.58	96.82	86.11	80.23	68.24	58.49	-	-	97.66	84.30
Width	36.04	41.28	33.92	30.01	40.29	41.42	41.54	34.05	29.18	23.93	20.00	-	-	41.54	33.79
p14															
Length	297.95	333.74	34.55	22.51	38.08	246.06	55.79	27.38	-	5.48	-	-	-	333.74	117.95
Width	21.24	31.59	8.92	7.54	7.83	9.25	11.88	9.50	32.89	3.72	-	-	-	32.89	14.43
e59															
Length	332.04	321.05	317.99	322.43	323.71	354.67	333.50	336.80	337.98	324.02	301.07	252.05	202.86	354.67	312.32
Width	196.44	201.23	196.11	215.71	222.91	215.45	224.00	206.48	216.85	215.68	-	-	178.32	224.00	208.11
e63															
Length	149.60	170.99	181.30	137.26	193.78	195.24	175.77	172.03	161.87	99.32	-	-	-	195.24	163.72
Width	40.93	47.47	43.49	72.44	46.99	50.18	46.28	37.38	38.99	29.04	-	-	-	72.44	45.32
e56															
Length	111.36	111.78	122.72	98.51	114.93	122.46	130.17	113.17	121.43	75.94	-	-	-	130.17	112.25
Width	61.55	62.23	51.15	51.68	64.57	65.73	64.41	53.02	72.74	58.45	-	-	-	72.74	60.55
e58															
Length	70.59	100.94	112.77	61.98	100.92	79.54	103.39	101.71	100.15	27.82	-	-	-	112.77	85.98
Width	24.54	19.97	24.17	10.75	19.87	25.32	26.04	9.07	14.43	6.88	-	-	-	26.04	18.10
e61															
Length	243.49	238.09	141.08	72.61	220.08	306.63	259.97	124.50	138.90	42.95	32.92	25.62	21.53	306.63	143.72
Width	24.69	23.61	15.06	13.16	14.09	17.43	20.33	13.87	13.41	11.82	13.14	11.51	9.48	24.69	15.51
c20															
Length	84.02	110.03	96.65	88.16	93.75	154.76	125.63	104.89	145.85	97.01	104.10	64.55	-	154.76	105.78
Width	79.77	92.79	94.55	92.38	92.25	105.54	104.57	91.44	100.75	90.34	87.49	-	-	105.54	93.81
e82															
Length	25.90	25.04	-	-	-	19.04	23.96	-	-	-	-	-	-	25.90	23.49
Width	16.73	12.60	-	-	-	15.17	14.06	-	-	-	-	-	-	16.73	14.64
e62															
Length	491.65	486.31	285.53	18.69	93.58	426.53	53.18	43.06	102.72	14.06	-	-	-	491.65	201.53
Width	74.78	12.97	10.93	6.05	11.77	15.41	11.27	7.16	11.14	5.01	-	-	-	74.78	16.65
e53															
Length	71.18	71.19	72.46	62.07	71.21	71.56	72.86	60.69	66.13	49.75	43.69	-	-	72.86	64.80
Width	28.89	31.17	33.47	29.51	31.52	32.51	31.39	23.51	26.99	25.87	18.30	-	-	33.47	28.47

Feature	27-Feb	3-Mar	7-Mar	10-Mar	13-Mar	17-Mar	24-Mar	28-Mar	4-Apr	10-Apr	17-Apr	24-Apr	1-May	Max	Average
e77															
Length	40.87	45.33	22.67	-	22.98	43.32	46.51	16.57	-	-	-	-	-	46.51	34.04
Width	33.82	34.13	29.99	-	25.52	41.98	40.00	18.47	-	-	-	-	-	41.98	31.99
e52															
Length	104.21	109.27	109.35	43.30	53.98	49.64	48.40	41.50	44.92	30.51	20.78	-	-	109.35	59.62
Width	30.22	29.30	30.04	28.13	30.96	34.15	30.42	25.82	28.86	20.98	15.29	-	-	34.15	27.65
e48															
Length	67.23	65.50	66.39	63.44	67.05	69.94	66.38	51.42	66.39	33.56	-	-	-	69.94	61.73
Width	35.37	34.71	36.14	30.65	35.78	38.28	35.83	27.35	31.62	26.88	-	-	-	38.28	33.26
e45															
Length	39.07	50.25	-	39.04	51.31	48.52	38.90	33.88	37.08	-	-	-	-	51.31	42.26
Width	23.86	23.90	-	19.13	26.73	25.64	24.35	13.77	18.76	-	-	-	-	26.73	22.02
ev3															
Length	23.89	18.86	25.38	16.48	19.84	23.50	20.43	22.66	-	19.61	20.22	24.02	16.49	25.38	20.95
Width	23.19	21.83	17.78	17.56	22.88	23.59	24.63	16.44	23.19	21.29	21.33	18.80	13.43	24.63	20.46
raap17															
Length	99.58	127.84	-	-	13.86	338.55	123.99	115.74	-	-	-	-	-	338.55	136.59
Width	5.41	9.16	-	-	-	5.65	4.81	27.97	-	-	-	-	-	27.97	10.60
c3e															
Length	-	-	-	-	-	-	-	-	-	-	157.78	-	-	-	-
Width	-	-	-	-	-	-	-	-	-	-	81.21	-	-	-	-
Cagney Swale															
Length	3,574.34	-	-	-	-	-	-	-	-	-	-	-	-	3574.34	3574.34
Width	30.55	136.58	67.28	22.28	139.79	z	-	-	-	-	-	-	-	139.79	79.30

A-2 2023 Rainfall Totals and Maximum Pool Depth Over Time



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SOURCE: ESA, 2023

Appendix A-2
2023 Rainfall Totals and Maximum Pool Depth Over Time

ESA

A-3 Hydrological and Representative Photographs

Pool p7

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23; representative
				IMAGE NOT AVAILABLE
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
				LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool p13

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

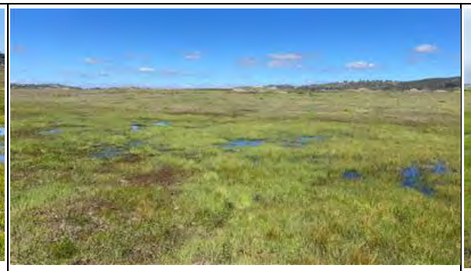
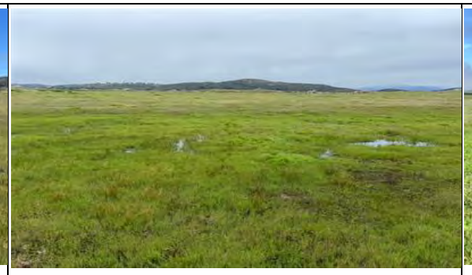
Pool p14

				IMAGE NOT AVAILABLE
Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23, facing southwest	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e59

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
			IMAGE NOT AVAILABLE	LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e63

				
Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e56

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
			IMAGE NOT AVAILABLE	
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e58

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
	IMAGE NOT AVAILABLE			
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	IMAGE NOT AVAILABLE	LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e61

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
				LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool c20

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
		NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e82

			NOT INUNDATED NO IMAGE TAKEN	
Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
			NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

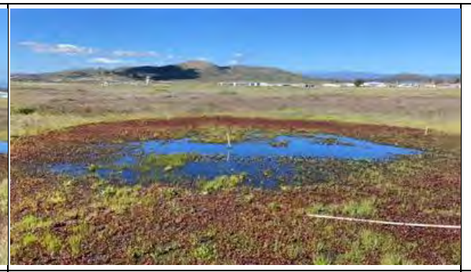
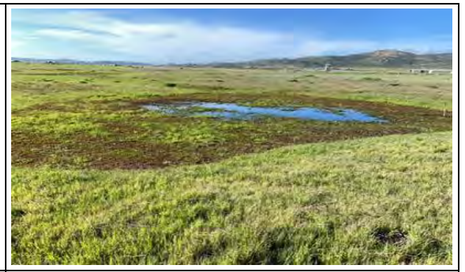
Pool e62

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 15:** 5/17/23; Qualitative Monitoring	

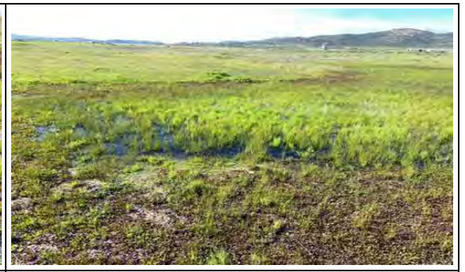
Pool e53

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23, representative
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/5/23	**Photo 15:** 5/17/23; Qualitative Monitoring

Pool e77

				
Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
				NOT INUNDATED NO IMAGE TAKEN
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN		NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e52

				
Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
		NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e48

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23, representative	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN		NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool e45

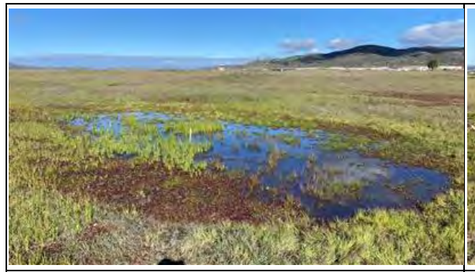
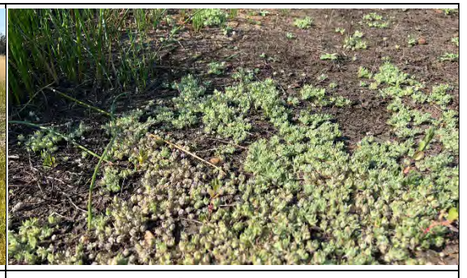


Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
			IMAGE NOT AVAILABLE	
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 15:** 5/17/23; Qualitative Monitoring	

Pool ev3

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23, representative	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
Photo 6: 3/17/23	**Photo 7:** 3/24/23, representative	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
				LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Pool c3e

				
Photo 1:4/17/23	**Photo 2:** 4/17/23	**Photo 3:** 4/17/23	**Photo 4:** 5/17/23	**Photo 5:** 5/17/23

Alkali Playa raap17

Photo 1: 2/27/23; Qualitative Monitoring	**Photo 2:** 3/3/23	**Photo 3:** 3/7/23	**Photo 4:** 3/10/23	**Photo 5:** 3/13/23
			NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN
Photo 6: 3/17/23	**Photo 7:** 3/24/23	**Photo 8:** 3/28/23	**Photo 9:** 4/4/23	**Photo 10:** 4/10/23
NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN	NOT INUNDATED NO IMAGE TAKEN		LEFT INTENTIONALLY BLANK
Photo 11: 4/17/23	**Photo 12:** 4/24/23	**Photo 13:** 5/1/23	**Photo 14:** 5/17/23; Qualitative Monitoring	

Cagney Swale

Photo 1: 3/3/23	**Photo 2:** 3/3/23	**Photo 3:** 3/3/23	**Photo 4:** 3/3/23	**Photo 5:** 3/3/23
Photo 6: 3/3/23	**Photo 7:** 3/3/23	**Photo 8:** 3/3/23	**Photo 9:** 3/3/23	**Photo 10:** 3/3/23
Photo 11: 3/3/23	**Photo 12:** 3/3/23	**Photo 13:** 3/3/23	**Photo 14:** 4/4/23	**Photo 15:** 2/27/23

Representative Photos

Photo 1: 5/17/23 Pool c3e; *Psilocarphus brevissimus*	**Photo 2:** 5/5/23 Pool e53; *Downingia cuspidata*	**Photo 3:** 5/1/23 Pool ev3; Spadefoot toad with *Psilocarphus brevissimus*	**Photo 4:** 4/24/23 Pool p13; *Elatine brachysperma*	**Photo 5:** 4/10/23 Pool e63; *Triglochin scilloides*
Photo 6: 4/17/23 Pool e58; *Cotula coronopifolia* with *Eleocharis macrostachya*	**Photo 7:** 2/27/23 Pool c20; Oligochaete worm	**Photo 8:** 5/17/23 Alkali playa raap17, *Atriplex coulteri*	**Photo 9:** 3/17/23 Pool c20; California clam shrimp carapace with egg clusters	**Photo 10:** 3/17/23 Pool e61; Seed shrimp
Photo 11: 3/28/23 Pool e59; Black-necked stilt	**Photo 12:** 3/10/23 Pool c20; Cow patty in middle of pool	**Photo 13:** 3/24/23 Pool e59; Representative photograph of suspended solids from wading birds.	**Photo 14:** 3/3/23 Pool e62; Representative photograph of turbidity and algal growth.	**Photo 15: 3/28/23** Pool p7; Representative photograph of water conditions and edge effects.

A-4 Qualitative Monitoring Species Occurrence Data

Qualitative Monitoring Species Occurrence Data

VERNAL POOL AND ALKALI PLAYA FLORA AND FAUNA DETECTED

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Vernal Pool Floral Indicators Observed																				
Atriplex coulteri Coulter's saltbush								X											X	
Brodiaea terrestris ssp. *kernensis* Dwarf brodiaea										X	X	X	X	X	X	X				X
Callitriche marginata Winged water-starwort	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crassula aquatica Water pygmy weed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		
Deschampsia danthonioides Annual hairgrass												X			X					
Downingia cuspidata Toothed downingia							X		X			X		X	X					
Elatine brachysperma Shortseed waterwort		X		X					X			X								
Elatine californica California waterwort		X		X					X			X								
Eleocharis acicularis Needle spike weed				X											X					
Eleocharis macrostachya Pale spikerush	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Isoetes howellii Howell's quillwort					X	X		X												
Juncus bufonius Toad rush	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X
Lepidium latipes Dwarf pepper grass			X	X			X			X									X	
Limosella acaulis Southern mudwort		X		X				X	X											
Lysimachia [Centuncullus] minimus Chaffweed				X							X	X				X				
Malvella leprosa Alkali mallow						X														
Marsilea vestita Hairy waterclover				X					X								X			
Pilularia americana American pillwort		X	X		X			X	X			X	X	X	X	X				
Plagiobothrys acanthocarpus Adobe popcornflower			X	X	X	X	X	X	X		X	X			X	X				
Plagiobothrys undulatus Coast popcornflower					X	X														
Plantago elongata Prairie plantain		X	X	X			X	X	X	X	X	X			X					X

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Psilocarphus brevissimus var. *brevissimus* Dwarf woolly marbles		X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		
Trifolium depauperatum Balloon-sack clover		X		X	X	X		X				X		X	X	X				
Triglochin [Lilea] scilloides Flowering-quillwort			X	X	X	X	X	X	X			X		X	X					
Veronica peregrina ssp. *xalapensis* Purslane speedwell				X		X	X		X	X	X	X		X	X	X		X		
Count:	**4**	**11**	**10**	**17**	**11**	**12**	**11**	**13**	**15**	**8**	**9**	**17**	**6**	**11**	**15**	**11**	**4**	**6**	**5**	**5**
Other Native Plant Species Detected																				
Acmispon americanus Spanish clover				X					X									X	X	X
Ambrosia psilostachya Western ragweed				X					X					X						X
Calandrinia breweri Brewer's calandrinia	X		X	X	X		X		X	X	X									
Camissoniopsis hirtella Field sun-cup										X										
Cardionema ramosissimum Sandmat		X																		
Castilleja exserta Purple owl's-clover		X										X		X	X	X				
Centromadia parryi ssp. *australis* Southern tarplant	X	X	X	X		X	X	X	X		X								X	X
Chlorogalum pomeridianum Wavy-leaf soap plant		X							X	X			X							
Corethrogyne filaginifolia var. *filaginifolia* California sand aster									X											
Cressa truxillensis Alkali weed		X								X										
Croton setiger Doveweed							X											X		
Deinandra fasciculata Fascicled tarweed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Distichlis spicata Salt grass			X	X	X	X	X			X	X	X	X	X	X				X	X
Erigeron [Conyza] canadensis Horseweed																		X		X
Euphorbia spathulata Reticulate-seed spurge									X											
Festuca microstachys Small fescue											X									
Gilia angelensis Grassland gilia									X											
Gnaphalium palustre Lowland cudweed																				X

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Greeneocharis circumscissa [Cryptantha circumscissa] Cushion greeneocharis									X											
Grindelia camporum Gumplant								X		X		X	X					X		X
Chlorogalum parviflorum [Hooveria parviflora] Smallflower soap plant										X										
Isocoma menziesii Goldenbush		X							X	X										
Juncus xiphioides Iris leaved rush								X						X		X		X		
Lasthenia gracilis [californica] Common goldfields		X	X												X					
Lepidium densiflorum Common peppergrass			X				X	X		X	X		X		X	X				
Logfia spp. Cottonrose		X	X							X								X	X	
Lupinus bicolor Miniature lupine		X																		X
Muilla maritima Common muilla		X	X		X					X			X		X	X				
Nitella clavata Stonewort algae																		X		X
Plagiobothrys collinus var. *fulvescens* Rough popcorn flower	X				X			X		X		X			X	X				
Plantago erecta Dot-seed plantain				X			X		X						X					
Quercus agrifolia Coast live oak			X																	
Scribneria bolanderi Scribner's grass																			X	
Sisyrinchium bellum Blue-eyed grass	X														X	X				
Trichostema lanceolatum Vinegarweed			X							X	X	X	X	X	X					
Vernal Pool Faunal Indicators Observed (Note: observations were visual only; no dip netting was conducted to confirm species)																				
Acanthocyclops sp. Copepods	X	X		X	X				X			X	X	X			X			X
Anax junius Green darner	X																			
Branchinecta sp. Fairy shrimp		X		X				X	X			X			X		X			X
Trichocorixa sp. Water boatmen																				X
Daphnia sp. Water fleas																				X
Dytiscidae sp. Predaceous diving beetles				X	X			X			X	X			X		X			X

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Ostracoda Seed shrimp	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X			X
Spea hammondii Western spadefoot toad			X	X	X				X			X			X	X	X	X		X
Other Faunal Species Observed																				
Ammodramus savannarum Grasshopper sparrow									X			X				X				
Anas platyrhynchos Mallard	X			X																
Anaxyrus boreas halophilus California toad			X	X					X			X					X			X
Baeolophus inornatus Oak titmouse			X																	
Bos taurus Domestic cattle	X								X											
Branta bernicla Brent goose																				X
Buteo jamaicensis Red-tailed hawk												X	X							X
Buteo regalis Ferruginous hawk												X								
Buteo regalis Greater white-fronted goose				X																
Canis latrans Coyote															X			X		X
Cassin's kingbird *Tyrannus vociferans*		X															X			
Cathartes aura Turkey vulture		X																		
Charadrius vociferus Killdeer				X																
Scolopendra polymorpha Common Desert Centipede													X							
Corvus corax Common raven		X	X	X					X								X	X	X	X
Crotalus oreganus helleri Southern pacific rattelsnake														X						
Culicidae sp. Mosquitos		X	X	X					X				X		X					
Egretta thula Snowy egret			X	X																
Eremophila alpestris Horned lark									X								X			
Grylloidea sp. Crickets															X					
Haemorhous mexicanus House finch																	X	X		
Himantopus mexicanus Black-necked stilt				X																

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Hirundo rustica Barn swallow										X										
Hydrachnidia Water mites																X				
Lithobates catesbeianus American bullfrog		X	X						X											
Mareca americana American wigeon	X			X															X	
Nathalis iole Dainty sulphur								X												
Oligochaeta Aquatic Earthworms				X					X								X		X	
Passerculus sandwichensis Savannah sparrow										X			X		X				X	X
Phoebis spp. Sulphurs																	X			
Pipilo maculatus Spotted towhee								X												
Platyhelminthes Flatworms									X			X								
Plegadis chihi White-faced ibis																			X	
Psaltriparus minimus Bushtit			X																	
Pseudacris regilla Pacific tree frog				X					X											X
Pyrocephalus obscurus Vermilion flycatcher																	X			
Quiscalus mexicanus Great-tailed grackle				X																
Regulus satrapa Golden-crowned kinglet																	X			
Sayornis nigricans Black phoebe																	X			
Sayornis saya Say's phoebe	X			X																
Setophaga coronata Yellow-rumped warbler	X	X															X			
Sialia mexicana Western bluebird													X				X			
Spatula clypeata Northern shoveler				X																
Spatula cyanoptera Cinnamon teal	X			X																
Spinus psaltria Lesser goldfinch																	X	X		
Sturnella neglecta Western meadowlark	X	X						X	X	X		X	X	X	X		X	X	X	X
Sturnus vulgaris European starling		X		X																

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Tachycineta thalassina Violet-green swallow	X								X										X	
Tipuloidea sp. Crane flies												X								
Tringa melanoleuca Greater yellowlegs				X					X											
Turdus migratorius American Robin		X																X		
Invasive Non-Native Plant Species Observed (Perennial species denoted by *)																				
Amaranthus albus Tumbleweed	X	X		X														X		
Anthemis cotula Stinkweed, Mayweed				X	X	X	X												X	X
Atriplex semibaccata[*2] Australian saltbush																			X	X
Avena spp.[2] Oats	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Brassica nigra[2] Black mustard																				X
Bromus diandrus[2] Ripgut brome			X	X	X	X										X	X	X		X
Bromus hordeaceus[3] Soft chess brome	X	X	X	X	X	X	X	X	X				X	X	X		X	X	X	X
Bromus madritensis[2] Foxtail brome			X		X				X			X				X	X		X	X
Centaurea melitensis[2] Tocolote																				X
Cotula australis Australian brass buttons		X	X	X		X		X	X	X	X				X	X				X
Cotula coronopifolia[3] African brass buttons	X			X		X	X	X				X			X					
Crypsis schoenoides Prickle grass	X	X		X			X				X						X		X	X
Cynodon dactylon[*2] Bermuda grass	X						X	X			X	X	X				X	X		X
Erodium botrys Longbeak filaree	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Erodium cicutarium[3] Redstem stork's bill	X		X																	
Festuca [Lolium] perennis[*2] Italian rye grass	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Festuca myuros[2] Rattail fescue		X	X	X			X	X	X	X	X	X	X	X				X		X
Hordeum marinum ssp. *gussoneanum*[2] Mediterranean barley	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hypochaeris glabra Smooth cat's-ear				X					X									X		
Lamarckia aurea Golden-top grass									X											

Pool #	p7	p13	p14	e59	e63	e56	e58	e61	c20	e82	e62	e53	e77	e52	e48	e45	ev3	c3e	raap17	Cagney Swale
Lysimachia [Anagallis] arvensis Scarlet pimpernel		X	X		X	X						X			X	X				X
Lythrum hyssopifolia[2] Grass poly	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Melilotus indicus Sweet clover					X	X	X	X			X								X	X
Polygonum aviculare ssp. *depressum* [Polygonum arenastrum]* Common knotweed	X	X	X		X	X														
Polypogon monspeliensis[3] Rabbits foot grass				X	X	X														
Portulaca oleracea Common purslane				X																
Rumex crispus[3] Curly dock	X	X	X	X	X	X			X								X	X		X
*Rumex pulcher** Fiddle dock				X		X						X								X
Silene gallica Common catchfly			X				X		X		X									
Sonchus asper Spiny sowthistle				X					X											
Sonchus oleraceus Common sowthistle						X							X	X						
Spergularia bocconii Boccone's sand spurry	X	X	X	X	X		X	X	X		X	X							X	X
Vicia villosa Hairy vetch																X				
Total Count:	**12**	**11**	**15**	**18**	**14**	**16**	**13**	**12**	**14**	**7**	**12**	**12**	**9**	**8**	**9**	**9**	**10**	**10**	**12**	**20**
Perennial Count:	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**1**	**1**	**2**	**3**	**2**	**1**	**1**	**1**	**2**	**2**	**2**	**4**

Cal-IPC rating

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

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

3 Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

A-5 Management Representative Photographs

PHOTOGRAPH 1: View of p7 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 2: View of p7 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 3: View of p13 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 4: View of p13 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 5: View of p14 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 6: View of p14 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 7: View of e59 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 8: View of e59 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 9: View of e56 before maintenance, taken June 1–6, 2023.

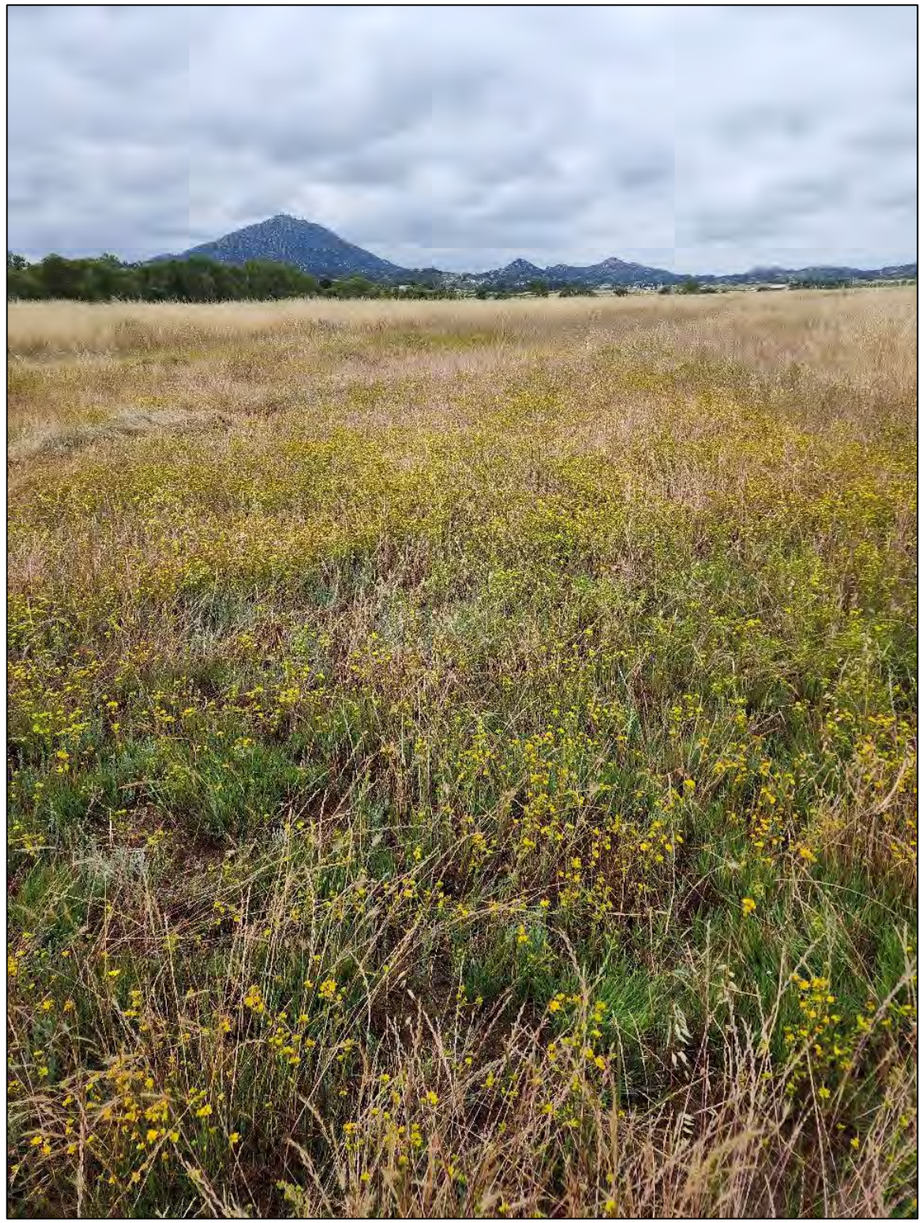
PHOTOGRAPH 10: View of e56 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 11: View of e58 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 12: View of e58 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 13: View of e61 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 14: View of e61 after maintenance, taken June 1–6, 2023.



PHOTOGRAPH 15: View of e82 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 16: View of e82 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 17: View of e62 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 18: View of e62 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 19: View of e53 during maintenance, taken June 1–6, 2023.

PHOTOGRAPH 20: View of e53 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 21: View of e77 during maintenance, taken June 1–6, 2023.

PHOTOGRAPH 22: View of e77 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 23: View of e52 during maintenance, taken June 1–6, 2023.

PHOTOGRAPH 24: View of e52 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 25: View of e48 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 26: View of e48 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 27: View of e45 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 28: View of e45 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 29: View of eV3 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 30: View of eV3 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 31: View of raap17 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 32: View of raap17 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 33: View of raap14 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 34: View of raap14 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 35: View of raap6 before maintenance, taken June 1–6, 2023.

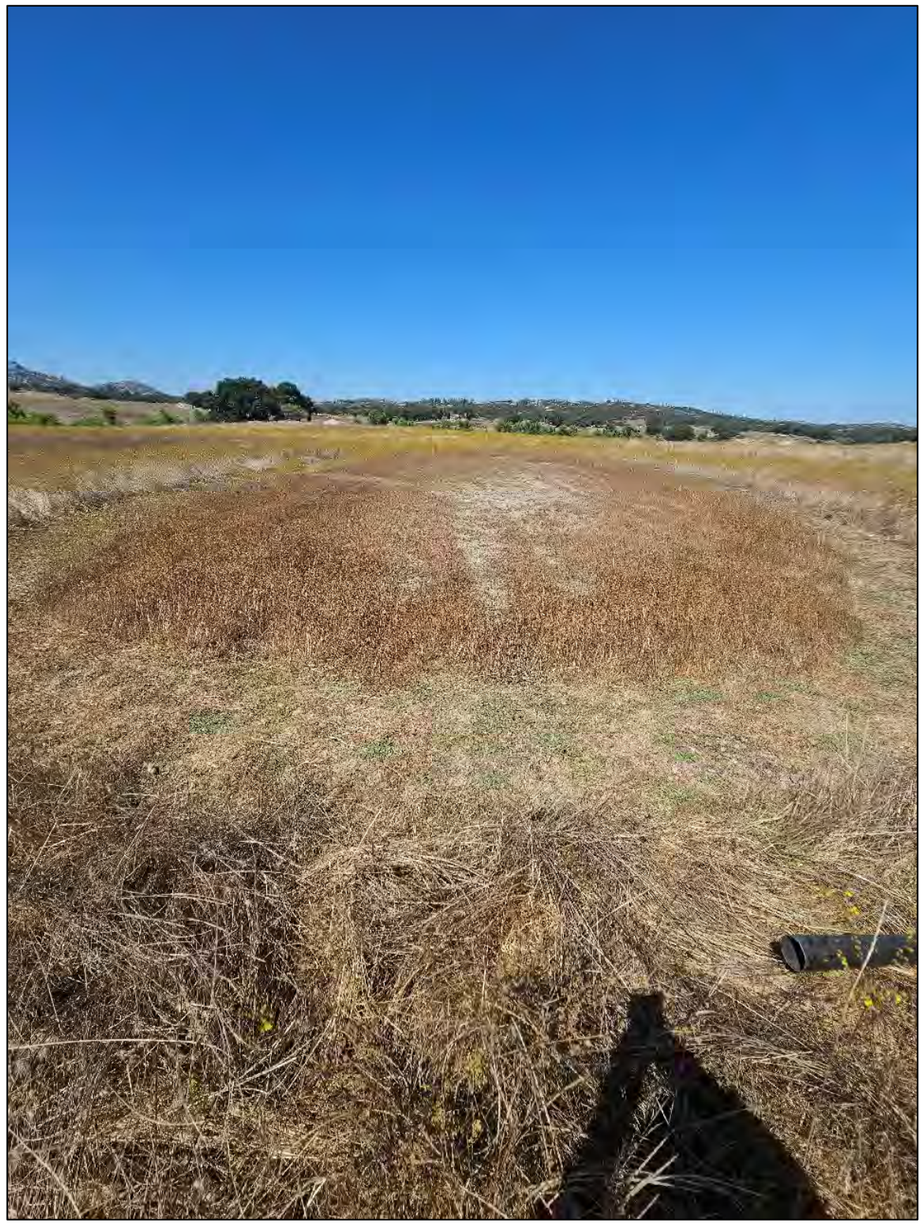
PHOTOGRAPH 36: View of raap6 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 37: View of raap4 before maintenance, taken June 1–6, 2023.

PHOTOGRAPH 38: View of raap4 after maintenance, taken June 1–6, 2023.

PHOTOGRAPH 39: View of p7 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 40: View of p7 after maintenance, taken September 5–6, 2023.



PHOTOGRAPH 41: View of p13 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 42: View of p13 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 43: View of p14 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 44: View of p14 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 45: View of e59 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 46: View of e59 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 47: View of e56 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 48: View of e56 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 49: View of e61 during maintenance, taken September 5–6, 2023.

PHOTOGRAPH 50: View of e61 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 51: View of e82 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 52: View of e82 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 53: View of e62 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 54: View of e62 after maintenance, taken September 5-–6, 2023.

PHOTOGRAPH 55: View of e53 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 56: View of e53 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 57: View of e77 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 58: View of e77 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 59: View of e52 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 60: View of e52 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 61: View of e48 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 62: View of e48 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 63: View of e45 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 64: View of e45 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 65: View of raap17 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 66: View of raap17 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 67: View of raap14 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 68: View of raap14 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 69: View of raap6 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 70: View of raap6 after maintenance, taken September 5–6, 2023.

PHOTOGRAPH 71: View of raap4 before maintenance, taken September 5–6, 2023.

PHOTOGRAPH 72: View of raap4 after maintenance, taken September 5–6, 2023.

Appendix B

MSP Rare Plant Monitoring – Permanent Photographic Monitoring & Representative Photographs

B-1 San Diego Thornmint

Simon County Preserve Permanent Photo Points

San Diego thornmint photo monitoring at **SIPRACIL01** (Photo Point 1).
ACIL_4SIPR026_1_Photo1_05082023

San Diego thornmint photo monitoring at **SIPRACIL01** (Photo Point 2).
ACIL_4SIPR026_1_Photo2_05082023

Simon County Preserve Representative Photographs

San Diego thornmint both vegetative and flowering at Simon County Preserve.

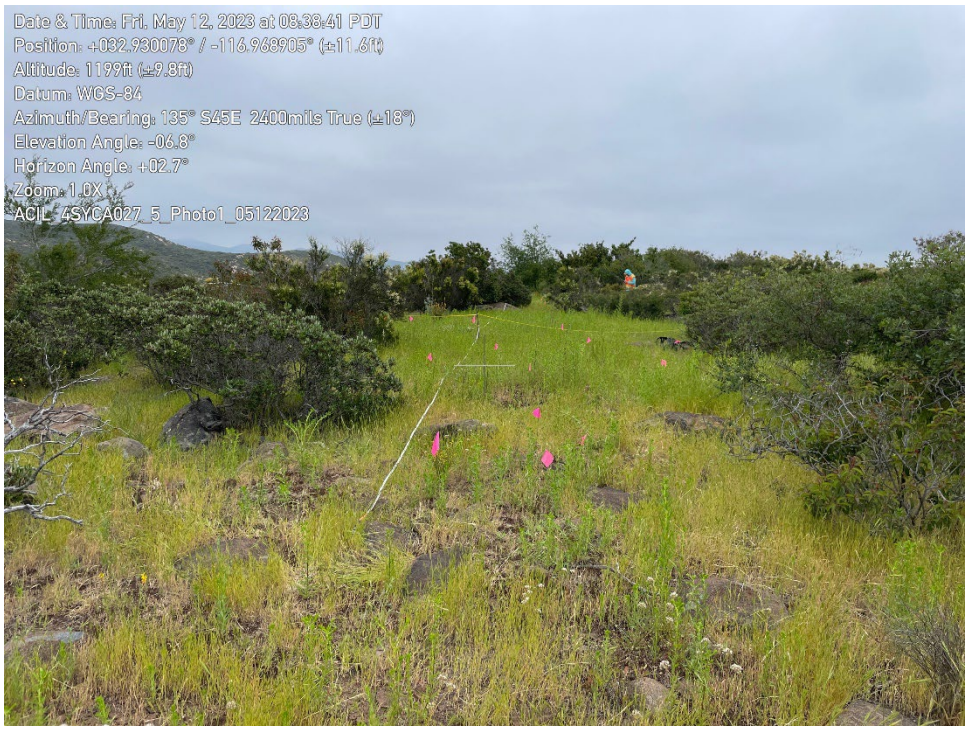
Sycamore Canyon/Goodan Ranch County Preserve Permanent Photo Points

San Diego thornmint photo monitoring at **SYGOACIL01**.
ACIL_4SYCA027_1_Photo1_05112023

San Diego thornmint photo monitoring at **SYGOACIL02**.
ACIL_4SYCA027_2_Photo1_05112023

San Diego thornmint photo monitoring at **SYGOACIL03**.
ACIL_4SYCA027_3_Photo1_05152023

San Diego thornmint photo monitoring at **SYGOACIL04**.
ACIL_4SYCA027_4_Photo1_05122023



San Diego thornmint photo monitoring at **SYGOACIL05**.
ACIL_4SYCA027_5_Photo1_05122023

San Diego thornmint photo monitoring at **SYGOACIL06**.
ACIL_4SYCA027_6_Photo1_05152023

San Diego thornmint photo monitoring at **SYGOACIL07**.
ACIL_4SYCA027_7_Photo1_05152023

San Diego thornmint photo monitoring at **SYGOACIL08**.
ACIL_4SYCA027_8_Photo1_05152023

San Diego thornmint photo monitoring at **SYGOACIL09**.
ACIL_4SYCA027_9_Photo1_05112023

San Diego thornmint photo monitoring at **SYGOACIL10**.
ACIL_4SYCA027_10_Photo1_05112023

San Diego thornmint photo monitoring at **SYGOACIL11**.
ACIL_4SYCA027_11_Photo1_05122023

Sycamore Canyon/Goodan Ranch County Preserve Representative Photographs

San Diego thornmint flowering amongst native clustered tarweed at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint population flowering amongst invasive non-native purple false brome at Sycamore Canyon/Goodan Ranch County Preserve.

Sensitive native small-flowered bindweed detected within San Diego thornmint monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve.

Sycamore Canyon/Goodan Ranch County Preserve Representative Management Photographs

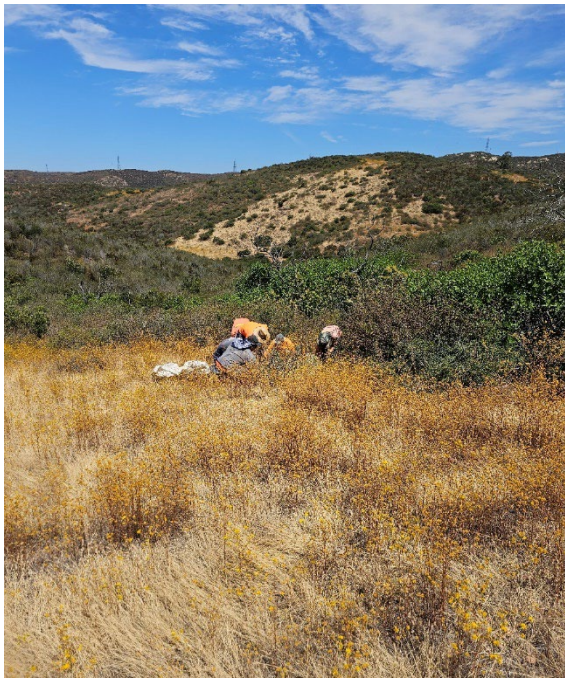
San Diego thornmint **SYGOACIL01** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL01** after management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL02** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL02** during management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL04** before management at Sycamore Canyon/Goodan Ranch County Preserve.



San Diego thornmint **SYGOACIL04** during management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL05** before management at Sycamore Canyon/Goodan Ranch County Preserve.

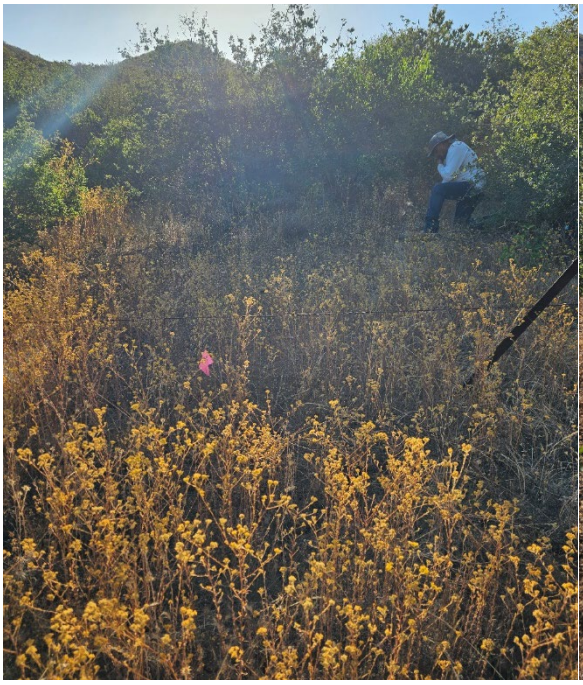
San Diego thornmint **SYGOACIL05** after management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL07** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL07** after management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL08** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL08** after management at Sycamore Canyon/Goodan Ranch County Preserve.



San Diego thornmint **SYGOACIL09** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL09** after management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL11** before management at Sycamore Canyon/Goodan Ranch County Preserve.

San Diego thornmint **SYGOACIL11** after management at Sycamore Canyon/Goodan Ranch County Preserve.

B-2 Encinitas Baccharis

Del Dios Highlands County Preserve Permanent Photo Points

Encinitas baccharis photo monitoring at **DD201501**.
BAVA3_6DDHP004_1_Photo1_08082023

Encinitas baccharis photo monitoring at **DD201502**.
BAVA3_6DDHP004_2_Photo1_08082023

Encinitas baccharis photo monitoring at **DD201503**.
BAVA3_6DDHP004_3_Photo1_08082023

Del Dios Highlands County Preserve Representative Photographs

Encinitas baccharis growing in the shade at Del Dios Highlands County Preserve.

Encinitas baccharis blooming with female flowers at Del Dios Highlands County Preserve.

Site conditions around pipe near monitoring plot DD201503.

B-3 San Miguel Savory

Boulder Oaks County Preserve Permanent Photo Points

San Miguel savory photo monitoring at **BOCLCH01**.
CLCH5_4BOPR002_1_Photo1_04262023

San Miguel savory photo monitoring at **BOCLCH02**.
CLCH5_4BOPR002_2_Photo1_04262023

Boulder Oaks County Preserve Representative Photographs

San Miguel savory starting to flower at Boulder Oaks County Preserve.

Boulder Oaks County Preserve Representative Management Photographs

Representative photo of San Miguel savory surrounded by scattered invasive non-native grasses at Boulder Oaks County Preserve.

Management (hand-pulling invasive non-native grasses) occurring around San Miguel savory at Boulder Oaks County Preserve.

B-4 Otay Tarplant

Furby-North County Preserve Permanent Photo Points

Otay tarplant photo monitoring at **DECO13_3OMEA026_1**.
DECO13_3OMEA026_1_Photo1_06022023

Otay tarplant photo monitoring at **DECO13 New Furby North South**.
DECO13_XXXXXXXX_1_Photo1_06022023

Furby-North County Preserve Representative Photographs

Otay tarplant flowering amongst invasive non-native grasses and forbs at Furby-North County Preserve.

Representative invasive non-native plant species present within Furby-North County Preserve in and around Otay tarplant populations.

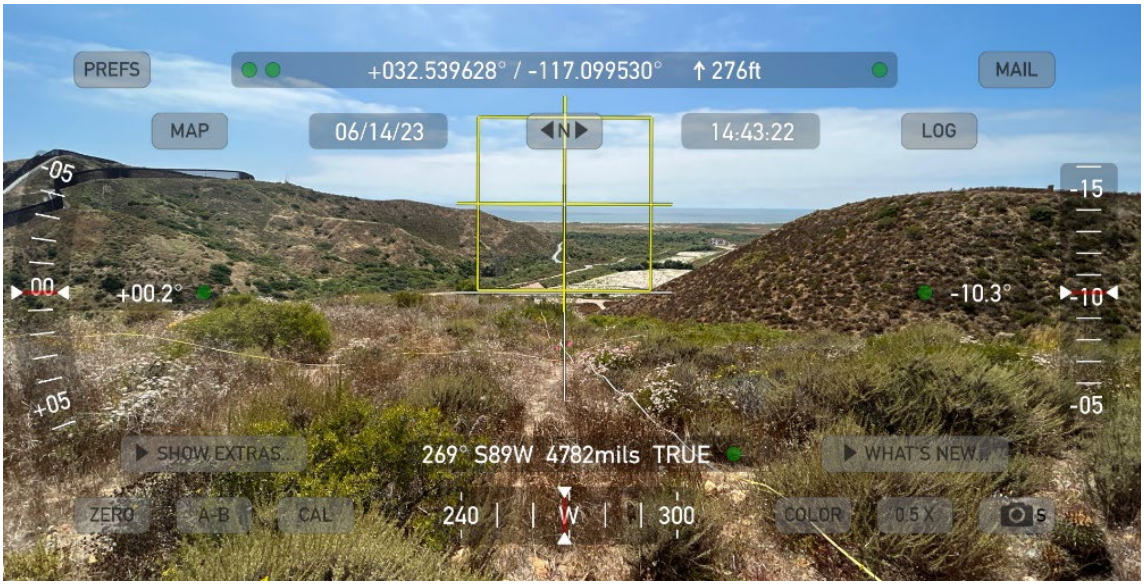
Furby-North County Preserve Representative Management Photographs

Management (hand-pulling invasive non-native grasses) occuring within the DECO13_3OMEA026_1 monitoring plot at Furby-North County Preserve.

Site conditions of the DECO13_3OMEA026_1 monitoring plot after management at Furby-North County Preserve.

B-5 Orcutt's Bird's-Beak

Tijuana River Valley Regional Park Permanent Photo Points



Orcutt's bird's-beak photo monitoring at **COOR7_1TIRI009_1**.
COOR7_1TIRI009_1_Photo1_06142023

Orcutt's bird's-beak photo monitoring at **COOR7_1SMGU006_1**.
COOR7_1SMGU006_1_Photo1_06142023

Tijuana River Valley Regional Park Representative Photographs

Orcutt's bird's-beak observed at Tijuana River Valley Regional Park

Orcutt's bird's-beak observed at Tijuana River Valley Regional Park

Orcutt's bird's-beak observed at Tijuana River Valley Regional Park

Orcutt's bird's-beak observed at Tijuana River Valley Regional Park

Tijuana River Valley Regional Park Representative Management Photographs

Management (hand-pulling invasive non-native grasses) occuring within the Orcutt's bird's-beak monitoring plot at Tijuana River Valley Regional Park.

Site conditions of the Orcutt's bird's-beak monitoring plot after management at Tijuana River Valley Regional Park.

B-6 Variegated Dudleya

Lusardi Creek County Preserve Permanent Photo Point

Variegated dudleya photo monitoring at **LCDUVA01**.
DUVA_6LUCR023_1_Photo1_04282023

Lusardi Creek County Preserve Representative Photographs

Variegated dudleya growing amongst invasive non-native grasses at Lusardi Creek County Preserve.

Variegated dudleya preparing to flower at Lusardi Creek County Preserve.

Lusardi Creek County Preserve Representative Management Photographs

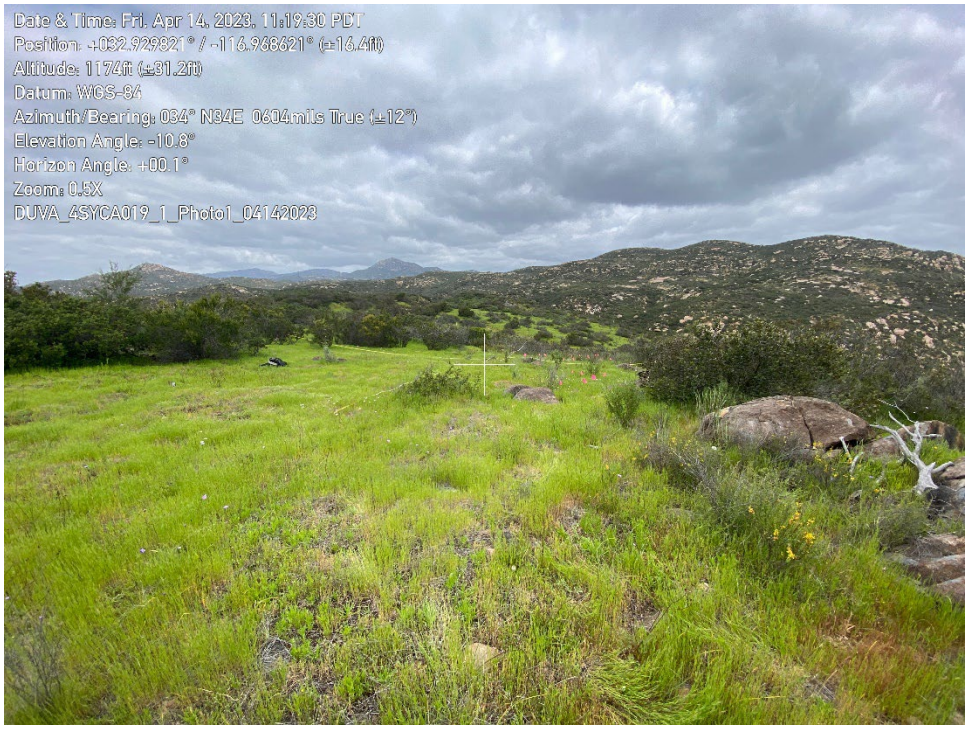
Representative photo of invasive non-native grass cover within the variegated dudleya herbivore exclusion fencing prior to management at Lusardi Creek County Preserve.

Representative photo within the variegated dudleya herbivore exclusion fencing after management at Lusardi Creek County Preserve.

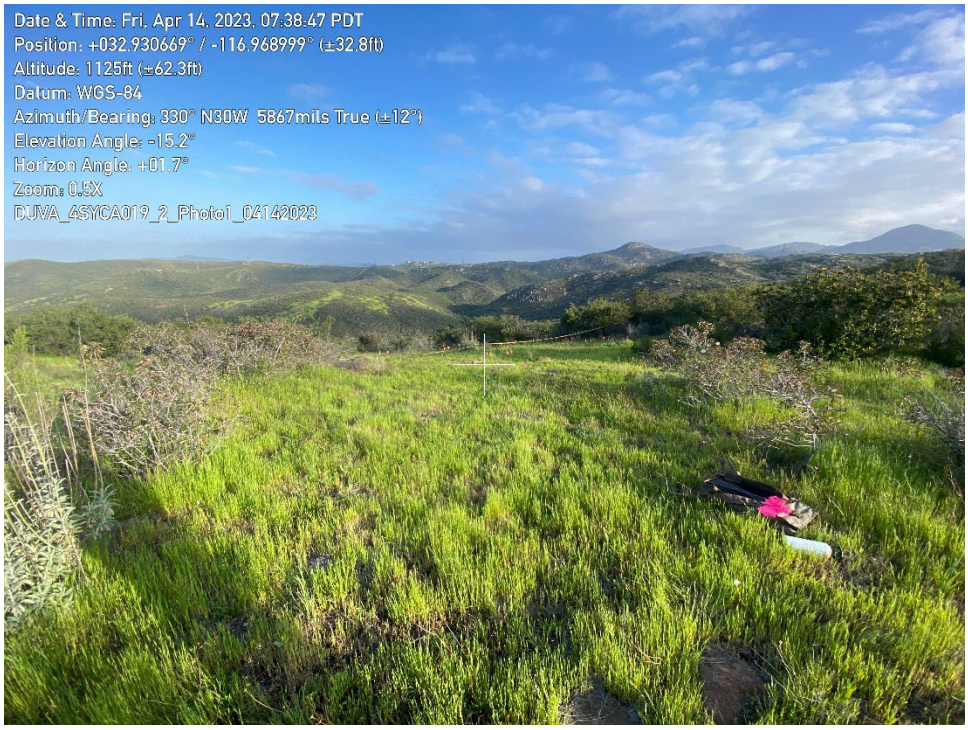
Repairing variegated dudleya herbivore exclusion fencing at Lusardi Creek County Preserve.

Site conditions after management adjacent to the variegated dudleya monitoring plot at Lusardi Creek County Preserve.

Sycamore Canyon/Goodan Ranch County Preserve Permanent Photo Points



Variegated dudleya photo monitoring at **SYGODUVA01**.
DUVA_4SYCA019_1_Photo1_04142023

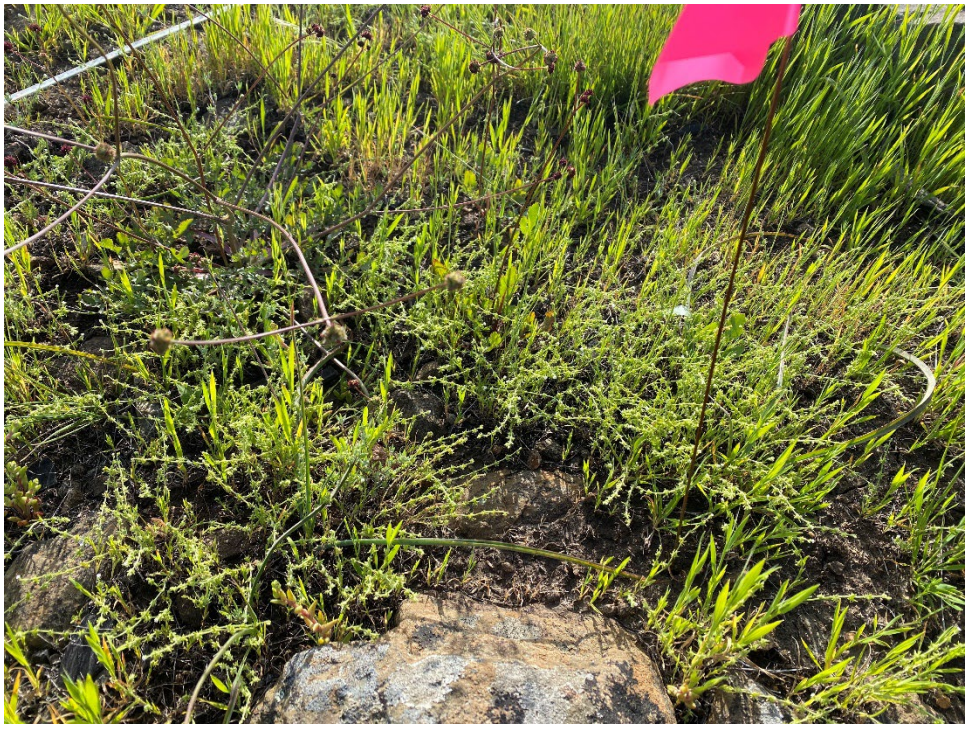


Variegated dudleya photo monitoring at **SYGODUVA02**.
DUVA_4SYCA019_2_Photo1_04142023

Sycamore Canyon/Goodan Ranch County Preserve Representative Photographs

Variegated dudleya growing along rock edges at Sycamore Canyon/Goodan Ranch County Preserve.

Variegated dudleya growing amongst high density of invasive non-native purple false brome at Sycamore Canyon/Goodan Ranch County Preserve.



Sensitive native Palmer's grapplinghook detected within variegated dudleya monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve.

Native dot-seed plantain detected within variegated dudleya monitoring plots at Sycamore Canyon/Goodan Ranch County Preserve.

Sycamore Canyon/Goodan Ranch County Preserve
Representative Management Photographs

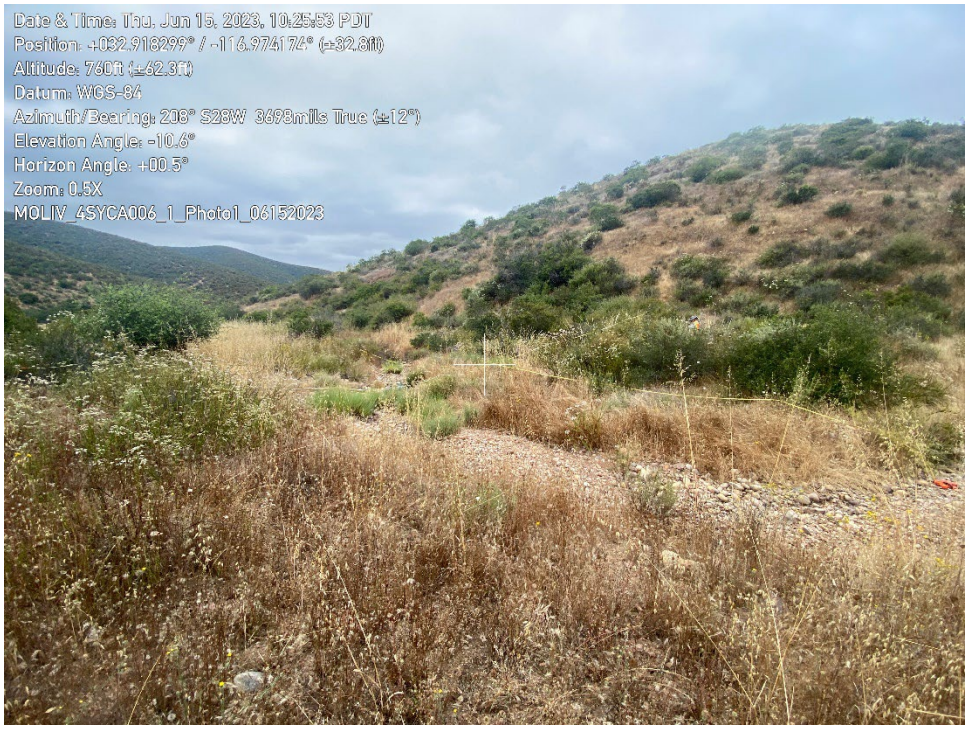
Management (hand-pulling invasive non-native grasses) occurring within the variegated dudleya monitoring plot **SYGODUVA01** at Sycamore Canyon/Goodan Ranch County Preserve.

Variegated dudleya **SYGODUVA02** before management at Sycamore Canyon/Goodan Ranch County Preserve.

Variegated dudleya **SYGODUVA02** during management at Sycamore Canyon/Goodan Ranch County Preserve.

B-7 Willowy Monardella

Sycamore Canyon/Goodan Ranch County Preserve Permanent Photo Points



Willowy monardella photo monitoring at **SYC201501**.
MOLIV_4SYCA006_1_Photo1_06152023

Willowy monardella photo monitoring at **SYC201602**.
MOLIV_4SYCA002_1_Photo1_06272023

Willowy monardella photo monitoring at **SYC202103**.
MOLIV_4SPCA006_2_Photo1_06152023

Sycamore Canyon/Goodan Ranch County Preserve Representative Photographs

Willowy monardella blooming amongst invasive non-native grasses at Sycamore Canyon/Goodan Ranch County Preserve.

Willowy monardella preparing to bloom at Sycamore Canyon/Goodan Ranch County Preserve.

Invasive non-native crimson fountaingrass detected upstream of monitoring plot **SYC201501** within Sycamore Canyon/Goodan Ranch County Preserve.

Sycamore Canyon/Goodan Ranch County Preserve
Representative Management Photographs

Representative photo of invasive non-native grass and competitive native California buckwheat cover within willowy monardella monitoring plot SYC201602 before management at Sycamore Canyon/Goodan Ranch County Preserve.

DPR park ranger hand-pulling invasive non-native grasses and competitive native California buckwheat around willowy monardella Sycamore Canyon/Goodan Ranch County Preserve.

Representative photo of willowy monardella plants within monitoring plot SYC201602 after management at Sycamore Canyon/Goodan Ranch County Preserve.

Appendix C

MSP Rare Plant Occurrence Monitoring Forms

C-1 San Diego Thornmint

MSP Occurr. ID & Sample point:	ACIL_4SIPR026_1
Preserve	Simon Preserve
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Can this survey be shared publicly?	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/8/2023
Time Start	10:06
Surveyors	Brenda McMillan, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	6,000
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	2
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	11.5
GPSAccurracyUnits	inch
PlotX	516451
PlotY	3654129
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	Phone11

MSP Occurr. ID & Sample point:	ACIL_4SIPR026_1
Photo1Dir	228
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SIPR026_1_Photo1_05082023
Photo2X	Photo2_E_UTM
Photo2Y	Photo2_N_UTM
Check your location of the PHOTO POINT 2 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo2Dir	29
Photo2Hei	CamHei_Photo2
Photo2Ang	CamAng_Photo2
UpdatePhoto2Info	no
PhotoNumPhoto2	ACIL_4SIPR026_1_Photo2_05082023
SANDAG2012_VegAllianceAssoc	Adenostoma fasciculatum-Xylococcus bicolor Association
CryptogamicCrustCover	2
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	9
DeadStandingBiomass_Presence	no
DeadStanding_CoverSpecies	NA
DeadStanding_CoverClass	NA
DeadStandingHeightAverage_cm	NA
FeralPigActivity	1
GroundSquirrelActivity	2
GopherActivity	2
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	12
Acmispon micranthus - San Diego bird's-foot trefoil	0.2
Adenostoma fasciculatum - chamise	5
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	0.2
Avena barbata - slender oat	1
Bloomeria crocea - common goldenstar	0.2
Bromus hordeaceus - soft brome	0.2
Bromus rubens - Red brome	0.2
Calochortus splendens - splendid mariposa lily	0.2

MSP Occurr. ID & Sample point:	ACIL_4SIPR026_1
Centaurea melitensis - Maltese star-thistle	1
Deinandra fasciculata - clustered tarweed	4
Erodium cicutarium - redstem stork's bill	0.2
Festuca microstachys - small fescue	0.2
Festuca myuros - annual fescue	1
Fritillaria biflora - chocolate lily	1
Harpagonella palmeri - Palmer's grappling-hook	1
Hedypnois cretica - Cretanweed	0.2
Hirschfeldia incana - shortpod mustard	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Marah macrocarpa - Chilicothe	0.2
Microseris douglasii - Douglas' silverpuffs	1
Sonchus asper - spiny sowthistle	0.2
Uropappus lindleyi - Silver puffs	0.2
Xylococcus bicolor - mission manzanita	22
Other Associated Species?	yes
othername1	Stebbinsoseris heterocarpa
otherper1	0.2
othername2	Clarkia epilobioides
otherper2	0.2
othername3	Stylocline gnaphaloides
otherper3	0.2
othername4	Euphorbia spathulata
otherper4	0.2
othername5	Melilotus indicus
otherper5	0.2
other	Erodium brachycarpum, 0.2
BareGround	40.2
CrypSoils	0.2
Rock	4
Litter	2
Water	0
Vegetation	53.6
DeadShrubs	0
TotalPercCover	100
Is the maximum extent information already entered?	no
Number of Plants per Current Mapped Extent	6,000
Exact or Estimate for Max Extent Number	estimate

MSP Occurr. ID & Sample point:	ACIL_4SIPR026_1
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve. Surrounded by residential development.
NonnativeForbs	5
NonnativeForbs_desc	Non-native forbs (Lysimachia arvensis, Centaurea melitensis, Erodium spp., Hedypnois cretica, Hirschfeldia incana, Hypochaeris glabra, Logfia gallica, Sonchus asper, Melilotus indicus)
NonnativeGrasses	3
NonnativeGrasses_desc	Non-native grasses (Avena barbata, Bromus spp., Festuca spp.)
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	4
CompetitiveNativePlts_desc	Deinandra fasciculata
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Minimal trampling as a result of IMG monitoring
Vandalism	1
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA

MSP Occurr. ID & Sample point:	ACIL_4SIPR026_1
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Hand weeding of competitive invasive non-native grasses (Avena, Bromus spp., Festuca spp.) and native plants (Deinandra fasciculata)
ManageActions_PastYr	Hand weeding of invasive non-native plant species (Bromus spp. and Centaurea melitensis)
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri
Notes	NA
Time Finish	11:18

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_1
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Can this survey be shared publicly?	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/11/2023
Time Start	14:46
Surveyors	Sonya Vargas, Brenda McMillan
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1035
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	3
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	2
GPSAccurracyUnits	ft
PlotX	501592
PlotY	3644272
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini
Photo1Dir	203 Degrees

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_1
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_1_Photo1_05112023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	2
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis, Artemisia californica
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	25
FeralPigActivity	1
GroundSquirrelActivity	4
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	0.2
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	0.2
Baccharis sarothroides - desertbroom	1
Brachypodium distachyon - purple false brome	35
Bromus madritensis - compact brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Chorizanthe fimbriata - fringed spineflower	0.2
Convolvulus simulans - field bindweed	0.2
Crassula connata - sand pygmyweed	0.2
Deinandra fasciculata - clustered tarweed	20
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium botrys - longbeak stork's bill	0.2
Festuca myuros - annual fescue	1
Gastridium phleoides - nit grass	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	1

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_1
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Malosma laurina - laurel sumac	1
Nassella pulchra - purple tussockgrass	0.2
Plantago erecta - California plantain	0.2
Rhamnus crocea - spiny redberry	1
Salvia mellifera - black sage	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Other Associated Species?	yes
othername1	Phalaris canariensis
otherper1	0.2
BareGround	27.2
CrypSoils	0
Rock	5
Litter	2
Water	0
Vegetation	64.8
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
Ifyes_whichsurvey	
Number of Plants per Current Mapped Extent	46,032
Exact or Estimate for Max Extent Number	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
AreaCurrentMappedExtent	Polygons submitted
Area_exact_or_estim	medium
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use.
NonnativeForbs	7
NonnativeForbs_desc	Erodium spp., Centaurea melitensis, Sonchus spp., Logfia gallica, Hypochaeris glabra, Cynara cardunculus, Brassica spp.
NonnativeGrasses	7
NonnativeGrasses_desc	Brachypodium distachyon, Bromus spp., Festuca myuros, Phalaris canariensis

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_1
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	6
CompetitiveNativePlts_desc	Deinandra fasciculata increased in cover from last year.
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_1**
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Dethatching non-native grasses and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Convolvulus simulans, Harpagonella palmeri
Notes	NA
Time Finish	15:52

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_2**
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/15/2023
Time Start	13:30
Surveyors	Brenda McMillan; Sonya Vargas; Bailey Setzler; Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	72
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3
GPSAccurracyUnits	ft
PlotX	501526
PlotY	3644274
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	IPhone11
Photo1Dir	259 Degrees

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_2**
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
PhotoNumPhoto1	ACIL_4SYCA027_2_Photo1_05152023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Rhamnus crocea, Deinandra fasciculata, Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	24
FeralPigActivity	1
GroundSquirrelActivity	4
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	0.2
Allium haematochiton - redskin onion	0.2
Apiastrum angustifolium - mock parsley	0.2
Avena barbata - slender oat	0.2
Brachypodium distachyon - purple false brome	25
Bromus hordeaceus - soft brome	1
Bromus madritensis - compact brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Calystegia macrostegia - island false bindweed	0.2
Castilleja exserta - exserted Indian paintbrush	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Convolvulus simulans - field bindweed	0.2
Crassula connata - sand pygmyweed	0.2
Deinandra fasciculata - clustered tarweed	5
Erodium botrys - longbeak stork's bill	1
Festuca myuros - annual fescue	2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hypochaeris glabra - smooth cat's ear	2
Isocoma menziesii - Menzies' goldenbush	2

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_2**
Nassella pulchra - purple tussockgrass	0.2
Phalaris spp. - canarygrass	0.2
Rhamnus crocea - spiny redberry	1
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	1
Other Associated Species?	no
BareGround	36.6
CrypSoils	0
Rock	17
Litter	2
Water	0
Vegetation	43.4
DeadShrubs	1
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Convolvulus simulans
Notes	NA
Time Finish	14:30

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_3
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/15/2023
Time Start	12:43
Surveyors	Brenda McMillan, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	800
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	3
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	4.5
GPSAccurracyUnits	ft
PlotX	501549
PlotY	3644379
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_3
CameraType	iPhone
Photo1Dir	134 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_3_Photo1_05152023
SANDAG2012_VegAllianceAssoc	Artemisia californica-Salvia mellifera Alliance
CryptogamicCrustCover	1
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Artemisia californica, Salvia apiana, Corethrogyne filaginifolia
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	60
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	1
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	8
Avena barbata - slender oat	0.2
Baccharis sarothroides - desertbroom	1
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	2
Bromus diandrus - ripgut brome	0.2
Bromus hordeaceus - soft brome	0.2
Bromus madritensis - compact brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Chorizanthe fimbriata - fringed spineflower	0.2
Convolvulus simulans - field bindweed	0.2
Cryptantha intermedia - Clearwater cryptantha	0.2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_3
Deinandra fasciculata - clustered tarweed	5
Dichelostemma capitatum - bluedicks	0.2
Eriogonum fasciculatum - California buckwheat	1
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca microstachys - small fescue	0.2
Festuca myuros - annual fescue	1
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hazardia squarrosa - sawtooth goldenbush	0.2
Heteromeles arbutifolia - toyon	2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata - southern honeysuckle	1
Malosma laurina - laurel sumac	6
Marah macrocarpa - Chilicothe	0.2
Plantago erecta - California plantain	0.2
Quercus X acutidens - Oak hybrid	0.2
Salvia apiana - white sage	1
Salvia mellifera - black sage	9
Sonchus asper - spiny sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Other Associated Species?	yes
othername1	Delphinium sp.
otherper1	0.2
othername2	Phalaris canariensis
otherper2	0.2
othername3	Cryptantha clevelandii
otherper3	0.2
BareGround	49.4
CrypSoils	0
Rock	5
Litter	1
Water	0
Vegetation	43.6
DeadShrubs	1
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring. Potential Deinandra fasciculata thinning.

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_3**
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Convolvulus simulans
Notes	NA
TimeFinish	13:24

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_4
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/12/2023
Time Start	11:15
Surveyors	Sonya Vargas, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	0
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	1
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	no
GPSAccurracy	2
GPSAccurracyUnits	ft
PlotX	502544
PlotY	3643691
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini
Photo1Dir	125 Degrees

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_4
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_4_Photo1_05122023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	32
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	no
If no, Note Differences:	Sample plot has no thornmint
Acmispon glaber - deerweed	0.2
Allium sp. - onion	0.2
Anagallis arvensis - scarlet pimpernel	0.2
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	27
Brassica nigra - black mustard	0.2
Calochortus splendens - splendid mariposa lily	0.2
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum spp. - Soap plant	0.2
Convolvulus simulans - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	10
Dichelostemma capitatum - bluedicks	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata - southern honeysuckle	0.2
Malosma laurina - laurel sumac	1
Salvia apiana - white sage	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_4**
Stipa pulchra - Purple needle grass	0.2
Other Associated Species?	yes
othername1	Hypochaeris radicata
otherper1	0.2
BareGround	49.8
CrypSoils	0.2
Rock	5
Litter	1
Water	0
Vegetation	42
DeadShrubs	2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment (Brachypodium distachyon and Brassica nigra).
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Convolvulus simulans
Notes	Adjacent to plot had 68 ACIL individuals.
Time Finish	12:49

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_5
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/12/2023
Time Start	08:34
Surveyors	Sonya Vargas, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	193
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	2
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	2
GPSAccurracyUnits	ft
PlotX	502915
PlotY	3643523
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini
Photo1Dir	150 Degrees

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_5
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_5_Photo1_05122023
SANDAG2012_VegAllianceAssoc	Adenostoma fasciculatum-Xylococcus bicolor Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	30
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	1
Adenostoma fasciculatum - chamise	5
Allium sp. - onion	0.2
Apiastrum angustifolium - mock parsley	0.2
Brachypodium distachyon - purple false brome	10
Bromus hordeaceus - soft brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Cercocarpus betuloides - birch-leaf mountain-mahogany	1
Deinandra fasciculata - clustered tarweed	12
Dichelostemma capitatum - bluedicks	0.2
Dudleya variegata - Variegated dudleya	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Festuca myuros - annual fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	1
Hypochaeris glabra - smooth cat's ear	0.2
Lepidium spp. - pepperweed	0.2
Logfia gallica - narrowleaf cottonrose	0.2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_5
Lonicera subspicata - southern honeysuckle	1
Malosma laurina - laurel sumac	5
Plantago erecta - California plantain	0.2
Quercus X acutidens - Oak hybrid	1
Rhamnus crocea - spiny redberry	3
Salvia apiana - white sage	0.2
Sanicula arguta - sharptooth blacksnakeroot	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Uropappus lindleyi - Silver puffs	0.2
Xylococcus bicolor - mission manzanita	18
Other Associated Species?	no
BareGround	26.2
CrypSoils	0.2
Rock	10
Litter	1
Water	0
Vegetation	62.4
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring. Invasive grass control (Brachypodium distachyon), thin native Deinandra fasciculata specifically around ACIL patches
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Dudleya variegata
Notes	NA
Time Finish	08:38

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_6
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/15/2023
Time Start	10:53
Surveyors	Sonya Vargas, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	6457
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	3
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	10
GPSAccurracyUnits	ft
PlotX	502262
PlotY	3644082
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini
Photo1Dir	333 Degrees

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_6
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_6_Photo1_05152023
SANDAG2012_VegAllianceAssoc	Deinandra fasciculata Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Bromus madritensis (~1ft), Hesperoyucca whipplei (~6ft)
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	35
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	2
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	2
Artemisia californica - coastal sagebrush	0.2
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	0.2
Bromus diandrus - ripgut brome	0.2
Bromus hordeaceus - soft brome	0.2
Bromus madritensis - compact brome	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Cneoridium dumosum - bush rue	0.2
Convolvulus simulans - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	12
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Festuca myuros - annual fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	3
Hirschfeldia incana - shortpod mustard	0.2
Malosma laurina - laurel sumac	6

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_6
Quercus X acutidens - Oak hybrid	1
Rhus integrifolia - lemonade sumac	4
Salvia apiana - white sage	0.2
Salvia mellifera - black sage	3
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	4
Other Associated Species?	yes
othername1	Cryptantha clevelandii
otherper1	0.2
othername2	Phalaris canariensis
otherper2	0.2
BareGround	55
CrypSoils	0
Rock	1
Litter	2
Water	0
Vegetation	41
DeadShrubs	1
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring. Invasive forb control (Centaurea melitensis), thin native Deinandra fasciculata specifically around ACIL patches.
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Convolvulus simulans
Notes	Deinandra fasciculata population appears to have increased directly over the San Diego thornmint population (potentially weedy native).
Time Finish	12:10

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_7
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/15/2023
Time Start	10:28
Surveyors	Brenda McMillan, Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	549
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	3
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	3
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	4
GPSAccurracyUnits	ft
PlotX	502376
PlotY	3644068
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone
Photo1Dir	116 Degrees

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_7
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_7_Photo1_05152023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	30
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	1
Acmispon glaber - deerweed	0.2
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	30
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Convolvulus simulans - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	15
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hedypnois cretica - Cretanweed	0.2
Heteromeles arbutifolia - toyon	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia arizonica - Arizona cottonrose	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata - southern honeysuckle	0.2
Malosma laurina - laurel sumac	2
Microseris douglasii - Douglas' silverpuffs	0.2
Rhamnus crocea - spiny redberry	2

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_7**
Salvia apiana - white sage	0.2
Salvia mellifera - black sage	0.2
Sonchus oleraceus - common sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Other Associated Species?	no
BareGround	43.8
CrypSoils	0.2
Rock	1
Litter	1
Water	0
Vegetation	53.8
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Convolvulus simulans
Notes	NA
Time Finish	11:30

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_8**
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	197
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/15/2023
Time Start	08:00
Surveyors	Brenda McMillan, Sonya Vargas, Dillon Travis, Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1,262
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	2
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	4
GPSAccurracyUnits	ft
PlotX	502267
PlotY	3644249
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_8
Photo1Dir	121 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_8_Photo1_05152023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Deinandra fasciculata
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	10
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	1
Allium haematochiton - redskin onion	0.2
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	2
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	25
Bromus hordeaceus - soft brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Ceanothus tomentosus - woolyleaf ceanothus	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Clarkia purpurea - winecup clarkia	0.2
Convolvulus arvensis - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Euphorbia peplus - petty spurge	0.2
Festuca microstachys - small fescue	0.2
Festuca myuros - annual fescue	0.2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_8
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Lonicera subspicata - southern honeysuckle	0.2
Lupinus succulentus - Hollowleaf annual lupine	0.2
Malosma laurina - laurel sumac	1
Marah macrocarpa - Chilicothe	0.2
Quercus X acutidens - Oak hybrid	2
Rhamnus crocea - spiny redberry	1
Rhus integrifolia - lemonade sumac	2
Salvia apiana - white sage	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Sonchus oleraceus - common sowthistle	0.2
Uropappus lindleyi - Silver puffs	0.2
Other Associated Species?	yes
othername1	Ribes indecorum
otherper1	0.2
othername2	Clarkia epilobioides
otherper2	0.2
BareGround	54
CrypSoils	0
Rock	1
Litter	5
Water	0
Vegetation	39.8
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Convolvulus simulans, Harpagonella palmeri
Notes	NA
Time Finish	10:00

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_9**
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	198
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/11/2023
Time Start	15:45
Surveyors	Brenda McMillan, Sonya Vargas, Dillon Travis, Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1336
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3
GPSAccurracyUnits	ft
PlotX	501736
PlotY	3644403
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	IPhone11

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_9
Photo1Dir	299 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_9_Photo1_05112023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Rhamnus crocea, Salvia apiana, Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	24
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	1
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Avena barbata - slender oat	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	25
Bromus madritensis - compact brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	1
Convolvulus simulans - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	2
Dichelostemma capitatum - bluedicks	0.2
Eriophyllum confertiflorum var. confertiflorum - yellow yarrow	0.2
Festuca myuros - annual fescue	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	3
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Malosma laurina - laurel sumac	0.2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_9
Microseris douglasii ssp. Platycarpha - Douglas' silverpuffs	0.2
Quercus X acutidens - Oak hybrid	8
Rhamnus crocea - spiny redberry	1
Rhus integrifolia - lemonade sumac	3
Rhus ovata - sugar sumac	2
Salvia apiana - white sage	1
Salvia mellifera - black sage	0.2
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	1
Other Associated Species?	no
BareGround	39.6
CrypSoils	0
Rock	2
Litter	6
Water	0
Vegetation	51.4
DeadShrubs	1
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring and invasive non-native grass and forb treatment.
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Harpagonella palmeri, Convolvulus simulans
Notes	NA
Time Finish	16:44

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_10
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	199
UpdateSampInfo	no
Public	yes
Scientific Name	Acanthomintha ilicifolia
Date	5/11/2023
Time Start	14:45
Surveyors	Brenda McMillan, Sonya Vargas, Bailey Setzler, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	850
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	medium
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3
GPSAccurracyUnits	ft
PlotX	501927
PlotY	3644367
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_10
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	IPhone11
Photo1Dir	093 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_10_Photo1_05112023
SANDAG2012_VegAllianceAssoc	Salvia mellifera-Malosma laurina Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Deinandra fasciculata
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	12
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	3
Acmispon spp. - Acmispon	0.2
Adenostoma fasciculatum - chamise	0.2
Antirrhinum nuttallianum - Island snapdragon	0.2
Apiastrum angustifolium - mock parsley	5
Bromus madritensis - compact brome	0.2
Ceanothus tomentosus - woolyleaf ceanothus	3
Centaurea melitensis - Maltese star-thistle	1
Cneoridium dumosum - bush rue	1
Convolvulus simulans - field bindweed	0.2
Cryptantha intermedia var. intermedia - common cryptantha	0.2
Deinandra fasciculata - clustered tarweed	6
Dichelostemma capitatum - bluedicks	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Euphorbia peplus - petty spurge	0.2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_10
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hesperoyucca whipplei - chaparral yucca	0.2
Heteromeles arbutifolia - toyon	2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lupinus succulentus - Hollowleaf annual lupine	0.2
Lysimachia arvensis - Scarlet pimpernel	0.2
Malosma laurina - laurel sumac	0.2
Quercus X acutidens - Oak hybrid	6
Salvia mellifera - black sage	8
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	2
Other Associated Species	no
BareGround	52.2
CrypSoils	0
Rock	1
Litter	6
Water	0
Vegetation	40.6
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring
ManageActions_PastYr	None
CNDDB_SppDetected	Acanthomintha ilicifolia, Convolvulus simulans, Harpagonella palmeri
Notes	NA
TimeFinish	15:30

MSP Occurr. ID & Sample point:	**ACIL_4SYCA027_11**
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	20173
UpdateSampInfo	no
Public	yes
Scientific_Name_Comm	
Date	5/12/2023
Time Start	12:10
Surveyors	Sonya Vargas, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	323
Exact or Estimate for Number in Sampling Area	estimate
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	3
Category for Percent Fruiting in Sampling Area	2
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	2
GPSAccurracyUnits	ft
PlotX	502684
PlotY	3643722
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_11
Photo1Dir	268
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	ACIL_4SYCA027_11_Photo1_05122023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	50
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	0.2
Allium sp. - onion	0.2
Apiastrum angustifolium - mock parsley	0.2
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	18
Brassica nigra - black mustard	0.2
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	1
Chlorogalum spp. - Soap plant	0.2
Convolvulus simulans - field bindweed	0.2
Deinandra fasciculata - clustered tarweed	12
Dichelostemma capitatum - bluedicks	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Heteromeles arbutifolia - toyon	2
Hypochaeris glabra - smooth cat's ear	0.2
Isocoma menziesii - Menzies' goldenbush	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata - southern honeysuckle	0.2
Rhamnus crocea - spiny redberry	2

MSP Occurr. ID & Sample point:	ACIL_4SYCA027_11
Rhus integrifolia - lemonade sumac	2
Rhus ovata - sugar sumac	8
Salvia apiana - white sage	1
Sanicula arguta - sharptooth blacksnakeroot	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Xylococcus bicolor - mission manzanita	1
Other Associated Species?	yes
othername1	Reseda luteola
otherper1	0.2
BareGround	41.8
CrypSoils	0
Rock	5
Litter	2
Water	0
Vegetation	51
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	ACIL_4SYCA027_1
ManageRecomm	Continued monitoring. Invasive grass control (Brachypodium distachyon), thin native Deinandra fasciculata specifically around ACIL patches
ManageActions_PastYr	Hand weeding non-native grasses and forbs and line trimming outside max extent in buffer.
CNDDB_SppDetected	Acanthomintha ilicifolia, Convolvulus simulans
Notes	NA
Time Finish	13:20

C-2 Encinitas Baccharis

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_1**
Preserve	Del Dios Highlands Open Space Preserve
MgtUnit	6
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	146
UpdateSampInfo	no
Public	yes
Scientific Name	Baccharis vanessae
Date	8/8/2023
Time Start	13:00
Surveyors	Dillon Travis, Brenda McMillan
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	4
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1.2
GPSAccurracyUnits	ft
PlotX	488075
PlotY	3658452
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11
Photo1Dir	East, 60 degrees

MSP Occurr. ID & Sample point:	BAVA3_6DDHP004_1
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	BAVA3_6DDHP004_1_Photo1_08082023
SANDAG2012_VegAllianceAssoc	Ceanothus verrucosus Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Marah spp., Ceanothus verrucosus, Salvia mellifera
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	80
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Adenostoma fasciculatum - chamise	0.2
Artemisia californica - coastal sagebrush	0.2
Baccharis vanessae - Encinitas baccharis	0.2
Bromus madritensis - compact brome	0.2
Bromus rubens - Red brome	0.2
Ceanothus tomentosus - woolyleaf ceanothus	0.2
Ceanothus verrucosus - Wart-stemmed ceanothus	25
Cneoridium dumosum - bush rue	5
Diplacus aurantiacus ssp. Aurantiacus - orange bush monkeyflower	0.2
Eriogonum fasciculatum - California buckwheat	1
Eriophyllum confertiflorum - golden-yarrow	0.2
Galium angustifolium - narrowleaf bedstraw	0.2
Hazardia squarrosa - sawtooth goldenbush	0.2
Malosma laurina - laurel sumac	4
Marah macrocarpa - Chilicothe	0.2
Melica imperfecta - smallflower melicgrass	0.2
Pentagramma triangularis - goldbeck fern	0.2
Pseudognaphalium bioletti - two-color rabbit-tobacco	0.2
Rhus integrifolia - lemonade sumac	1
Rhus ovata - sugar sumac	1
Salvia mellifera - black sage	3

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_1**
Scrophularia californica - California figwort	0.2
Selaginella bigelovii - bushy spikemoss	0.2
Xylococcus bicolor - mission manzanita	10
Other Associated Species?	yes
othername1	Nuttallanthus sp.
otherper1	0.2
BareGround	22.4
CrypSoils	0.2
Rock	7
Litter	12
Water	0
Vegetation	53.4
DeadShrubs	5
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	BAVA3_6DDHP004_2
ManageRecomm	Continued monitoring. Consider thinning native shrub and creating an access trail to plots to avoid trampling Baccharis vanessae
ManageActions_PastYr	None
CNDDB_SppDetected	Baccharis vanessae, Ceanothus verrucosus
Notes	NA
Time Finish	13:31

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_2**
Preserve	Del Dios Highlands Open Space Preserve
MgtUnit	6
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	145
UpdateSampInfo	no
Public	yes
Scientific Name	Baccharis vanessae
Date	8/8/2023
Time Start	8:33
Surveyors	Brenda McMillan, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	3
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	7.5
GPSAccurracyUnits	inch
PlotX	488143
PlotY	3658472
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 10
Photo1Dir	Southwest, 216 degrees

MSP Occurr. ID & Sample point:	BAVA3_6DDHP004_2
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	BAVA3_6DDHP004_2_Photo1_08082023
SANDAG2012_VegAllianceAssoc	Ceanothus verrucosus Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Bloomeria sp., Baccharis spp., Marah macrocarpa, Ceanothus spp.
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	30
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Baccharis vanessae - Encinitas baccharis	0.2
Bloomeria crocea - common goldenstar	0.2
Bromus madritensis - compact brome	0.2
Ceanothus tomentosus - woolyleaf ceanothus	30
Ceanothus verrucosus - Wart-stemmed ceanothus	4
Cneoridium dumosum - bush rue	0.2
Cryptantha spp. - cryptantha	0.2
Diplacus aurantiacus ssp. Aurantiacus - orange bush monkeyflower	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca microstachys - small fescue	0.2
Galium angustifolium ssp. angustifolium - narrowleaf bedstraw	0.2
Gastridium phleoides - nit grass	0.2
Hazardia squarrosa - sawtooth goldenbush	1
Malosma laurina - laurel sumac	7
Marah macrocarpa - Chilicothe	0.2
Prunus ilicifolia - hollyleaf cherry	2
Pterostegia drymarioides - woodland pterostegia	0.2
Rhus integrifolia - lemonade sumac	10
Salvia mellifera - black sage	2
Selaginella bigelovii - bushy spikemoss	0.2
Xylococcus bicolor - mission manzanita	3

MSP Occurr. ID & Sample point:	BAVA3_6DDHP004_2
Other Associated Species?	no
BareGround	6.4
CrypSoils	1
Rock	3
Litter	17
Water	0
Vegetation	61.6
DeadShrubs	11
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	177
ExactorEstimate_MaxExt	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	low
CurrentExtentPerimMethod	estimate
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, not open to public. Private homeowner onsite.
NonnativeForbs	1
NonnativeForbs_desc	NA
NonnativeGrasses	3
NonnativeGrasses_desc	Bromus spp., Brachypodium distachyon, Festuca microstachys, Gastridium phleoides
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Baccharis sarothroides grows in conjunction with Baccharis vanessae on trail
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3

MSP Occurr. ID & Sample point:	BAVA3_6DDHP004_2
Trampling_desc	Monitoring requires some vegetation trampling due to density of vegetation
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	3
Erosion_desc	Drainage pipe causing erosion onto trail
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	2
FuelModZone_FireBreak_desc	Road to private residence
RoadConst_Mainten	2
RoadConst_Mainten_descrip	Road to private residence
VegClearing	2
VegClearing_descript	Road to private residence
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_2**
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Consider thinning native shrub and creating an access trail to plots to avoid trampling Baccharis vanessae
ManageActions_PastYr	None
CNDDB_SppDetected	Baccharis vanessae, Ceanothus verrucosus
Notes	NA
Time Finish	9:43

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_3**
Preserve	Del Dios Highlands Open Space Preserve
MgtUnit	6
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	144
UpdateSampInfo	no
Public	yes
Scientific Name	Baccharis vanessae
Date	8/8/2023
Time Start	11:16
Surveyors	Dillon Travis, Brenda McMillan
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	33
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	7.2
GPSAccurracyUnits	inch
PlotX	488033
PlotY	3658485
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11
Photo1Dir	Southwest, 220 degrees

MSP Occurr. ID & Sample point:	BAVA3_6DDHP004_3
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	BAVA3_6DDHP004_3_Photo1_08082023
SANDAG2012_VegAllianceAssoc	Ceanothus verrucosus Association
CryptogamicCrustCover	2
ThatchCover	1
ThatchDepthAverage_cat	1
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Ceanothus tomentosus, Bloomeria crocea
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	45
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Adenostoma fasciculatum - chamise	1
Baccharis vanessae - Encinitas baccharis	3
Brachypodium distachyon - purple false brome	0.2
Bromus rubens - Red brome	0.2
Ceanothus tomentosus - woolyleaf ceanothus	1
Ceanothus verrucosus - Wart-stemmed ceanothus	10
Cercocarpus minutiflorus - smooth mountain-mahogany	2
Cneoridium dumosum - bush rue	0.2
Diplacus aurantiacus ssp. Aurantiacus - orange bush monkeyflower	0.2
Festuca microstachys - small fescue	0.2
Galium angustifolium - narrowleaf bedstraw	0.2
Hazardia squarrosa - sawtooth goldenbush	0.2
Helianthus gracilentus - slender sunflower	0.2
Muhlenbergia microsperma - littleseed muhly	2
Rhus integrifolia - lemonade sumac	12
Salvia mellifera - black sage	1
Selaginella bigelovii - bushy spikemoss	0.2
Xylococcus bicolor - mission manzanita	15
Other Associated Species?	yes
othername1	Dryopteris arguta
otherper1	0.2

MSP Occurr. ID & Sample point:	**BAVA3_6DDHP004_3**
othername2	Pentagramma viscosa
otherper2	0.2
othername3	Keckiella cordifolia
otherper3	0.2
othername4	Nuttallanthus sp.
otherper4	0.2
othername5	Eulobus californicus
otherper5	0.2
other	Claytonia sp.; 0.2
BareGround	14
CrypSoils	1
Rock	10
Litter	20
Water	0
Vegetation	50
DeadShrubs	5
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	BAVA3_6DDHP004_2
ManageRecomm	Continued monitoring. Consider thinning native shrub and creating an access trail to plots to avoid trampling Baccharis vanessae
ManageActions_PastYr	None
CNDDB_SppDetected	Baccharis vanessae, Ceanothus verrucosus
Notes	Traversing habitat causes trampling of species, including BAVA.
Time Finish	11:59

C-3 San Miguel Savory

MSP Occurr. ID & Sample point:	**CLCH5_4BOPR002_1**
Preserve	Boulder Oaks Preserve
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	275
UpdateSampInfo	no
Public	yes
Scientific Name	Clinopodium chandleri
Date	4/26/2023
Time Start	11:08
Surveyors	Sonya Vargas, Karla Alcaraz
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	80
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	3
Category for Percent Flowering in Sampling Area	6
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	8
GPSAccurracyUnits	ft
PlotX	505067
PlotY	3646951
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 12 mini

MSP Occurr. ID & Sample point:	CLCH5_4BOPR002_1
Photo1Dir	349 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	CLCH5_4BOPR002_1_Photo1_04262023
SANDAG2012_VegAllianceAssoc	Ceanothus tomentosus Alliance/Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Adenostema fasciculata
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	75
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Adenostoma fasciculatum - chamise	26
Arctostaphylos glandulosa - Adams' manzanita	11
Calochortus spp. - mariposa lily	0.2
Ceanothus tomentosus - woolyleaf ceanothus	9
Chlorogalum parviflorum - smallflower soap plant	0.2
Clinopodium chandleri - San Miguel savory	2
Dendromecon rigida - Tree poppy	3
Diplacus aurantiacus ssp. Aurantiacus - orange bush monkeyflower	1
Eriophyllum confertiflorum var. confertiflorum - yellow yarrow	1
Festuca myuros - annual fescue	0.2
Galium angustifolium ssp. angustifolium - narrowleaf bedstraw	1
Hazardia squarrosa - sawtooth goldenbush	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata - southern honeysuckle	0.2
Melica imperfecta - smallflower melicgrass	0.2
Muhlenbergia rigens - deergrass	2
Pentagramma triangularis - goldbeck fern	0.2
Rhus ovata - sugar sumac	1

MSP Occurr. ID & Sample point:	CLCH5_4BOPR002_1
Toxicoscordion venenosum var. venenosum - meadow deathcamas	0.2
Xylococcus bicolor - mission manzanita	4
Other Associated Species?	yes
othername1	Rhamnus ilicifolia
otherper1	1
othername2	Gilia sp.
otherper2	0.2
othername3	Ribes indecorum
otherper3	0.2
othername4	Pedicularis densiflora
otherper4	0.2
othername5	Quercus agrifolia
otherper5	1
other	Pellea mucronata, 0.2; Schismus barbatus, 0.2
BareGround	2
CrypSoils	1
Rock	20
Litter	10
Water	0
Vegetation	66
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	607
ExactorEstimate_MaxExt	estimate
uncertainty_MaxExt	medium
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	medium
CurrentExtentPerimMethod	estimate
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve. Land not open to public. Recreational use by Wildwood Camp approximately 1 mile NW. Access road approximately 545 ft North.
NonnativeForbs	1
NonnativeForbs_desc	NA
NonnativeGrasses	3

MSP Occurr. ID & Sample point:	CLCH5_4BOPR002_1
NonnativeGrasses_desc	Trace non-native grasses including Schismus barbatus, Festuca myuros.
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	no
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA

MSP Occurr. ID & Sample point:	**CLCH5_4BOPR002_1**
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	N/A
Trails_disturbance	3
Trails_authorized	both
TrailUse_Hiking	yes
TrailUse_Biking	no
TrailUse_Equestrian	no
TrailUse_Dog	no
TrailUse_ServiceVehicles	no
TrailUse_Other	yes
TrailUse_illegal_descript	Potential wildlife trail, also being used for monitoring and maintenance access (CLCHBO02).
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Recommend reducing frequency of monitoring. Populations are both stable and shrubs are more likely to be damaged for access. At CLCHBO2 recommend continued invasive grass (veldt grass, annual fescue) treatment.
ManageActions_PastYr	Non-native grass treatment within max extent on 2022. In 2023 only within CLCHBO02 and adjacent area for veldt grass. .
CNDDB_SppDetected	Clinopodium chandleri
Notes	NA
Time Finish	12:48

MSP Occurr. ID & Sample point:	CLCH5_4BOPR002_2
Preserve	Boulder Oaks Preserve
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	276
UpdateSampInfo	no
Public	yes
Scientific Name	Clinopodium chandleri
Date	4/26/2023
Time Start	17:31
Surveyors	Sonya Vargas, Karla Alcaraz
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	52
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	5
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	8
GPSAccurracyUnits	ft
PlotX	505422
PlotY	3647075
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	I-phone 12 mini

MSP Occurr. ID & Sample point:	**CLCH5_4BOPR002_2**
Photo1Dir	012 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	CLCH5_4BOPR002_2_Photo1_04262023
SANDAG2012_VegAllianceAssoc	Ceanothus tomentosus Alliance/Association
CryptogamicCrustCover	3
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	1
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Adenostoma fasciculata
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	121
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Adenostoma fasciculatum - chamise	28
Bromus madritensis ssp. Rubens - foxtail brome	0.2
Calochortus spp. - mariposa lily	0.2
Calystegia macrostegia - island false bindweed	0.2
Ceanothus tomentosus - woolyleaf ceanothus	12
Chamaebatia australis - Southern mountain misery	12
Chlorogalum parviflorum - smallflower soap plant	0.2
Clinopodium chandleri - San Miguel savory	2
Dendromecon rigida - Tree poppy	2
Dichelostemma capitatum - bluedicks	0.2
Diplacus aurantiacus ssp. Aurantiacus - orange bush monkeyflower	0.2
Ehrharta calycina - perennial veldtgrass	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca myuros - annual fescue	0.2
Galium angustifolium - narrowleaf bedstraw	1
Hypochaeris glabra - smooth cat's ear	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Pentagramma triangularis ssp. triangularis - goldback fern	0.2
Pseudognaphalium bioletti - two-color rabbit-tobacco	0.2

MSP Occurr. ID & Sample point:	CLCH5_4BOPR002_2
Sidalcea malviflora - Checker bloom	0.2
Toxicoscordion venenosum var. venenosum - meadow deathcamas	0.2
Xylococcus bicolor - mission manzanita	7
Other Associated Species?	yes
othername1	Melica frutesens
otherper1	0.2
othername2	Erigeron foliosus
otherper2	0.2
othername3	Rhamnus ilicifolia
otherper3	0.2
BareGround	19.2
CrypSoils	1
Rock	7
Litter	3
Water	0
Vegetation	67.8
DeadShrubs	2
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	CLCH5_4BOPR002_1
ManageRecomm	Continue monitoring and treatment for invasive grasses (perennial veldt grass, annual fescue, and bromes)
ManageActions_PastYr	Non-native weed control in 2022 within Max extent - manual removal. 2023 maintenance to be conducted within Max extent and adding the access area.
CNDDB_SppDetected	Clinopodium chandleri, Chamaebatia australis
Notes	NA
Time Finish	18:04

C-4 Otay Tarplant

MSP Occurr. ID & Sample point:	**DECO13_3OMEA026_1**
Preserve	Furby-North Property (Otay Mesa East)
MgtUnit	3
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	291
UpdateSampInfo	no
Public	yes
Scientific Name	Deinandra conjugens
Date	6/2/2023
Time Start	11:00
Surveyors	Adrienne Lee, Brenda McMillan, Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	43
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	2
Category for Percent Herbivory in Sampling Area	2
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3
GPSAccurracyUnits	ft
PlotX	496809
PlotY	3602882
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP Occurr. ID & Sample point:	DECO13_3OMEA026_1
Photo1Dir	334
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	DECO13_3OMEA026_1_Photo1_06022023
SANDAG2012_VegAllianceAssoc	Simmondsia chinensis Alliance
CryptogamicCrustCover	2
ThatchCover	1
ThatchDepthAverage_cat	1
ThatchDepthMax_cm	0
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Artemisia californica, Glebionis coronaria, Isocoma menziesii
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	70
FeralPigActivity	1
GroundSquirrelActivity	4
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Allium sp. - onion	0.2
Anagallis arvensis - scarlet pimpernel	1
Antirrhinum nuttallianum - Island snapdragon	0.2
Artemisia californica - coastal sagebrush	7
Bloomeria crocea - common goldenstar	0.2
Brachypodium distachyon - purple false brome	0.2
Brassica nigra - black mustard	2
Bromus diandrus - ripgut brome	0.2
Bromus hordeaceus - soft brome	1
Bromus madritensis - compact brome	3
Centaurea melitensis - Maltese star-thistle	3
Cryptantha intermedia - Clearwater cryptantha	0.2
Deinandra conjugens - Otay tarplant	0.2
Deinandra fasciculata - clustered tarweed	0.2
Dichelostemma capitatum - bluedicks	0.2
Eriophyllum confertiflorum - golden-yarrow	1
Festuca myuros - annual fescue	5
Festuca perennis - Italian rye grass	0.2
Glebionis coronaria - Crown daisy	10

MSP Occurr. ID & Sample point:	DECO13_3OMEA026_1
Isocoma menziesii - Menzies' goldenbush	1
Muhlenbergia microsperma - littleseed muhly	0.2
Peritoma arborea var. arborea - bladderpod spiderflower	0.2
Polypogon monspeliensis - annual rabbitsfoot grass	0.2
Simmondsia chinensis - jojoba	7
Sisyrinchium bellum - western blue-eyed grass	0.2
Stipa lepida - Foothill needle grass	0.2
Thalictrum fendleri - Fendler's meadow-rue	0.2
Zeltnera venusta - charming centaury	0.2
Other Associated Species?	yes
othername1	Linanthus dianthiflorus
otherper1	0.2
othername2	Psilocarphus tenellus
otherper2	0.2
othername3	Stachys rigida var. rigida
otherper3	1
BareGround	51
CrypSoils	0.2
Rock	1
Litter	1
Water	0
Vegetation	45.8
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	555
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
SurroundingLandUse	Conserved open space preserve, utility easement, residential roads and properties
NonnativeForbs	5
NonnativeForbs_desc	Glebionis coronaria, Centaurea melitensis, Brassica nigra

MSP Occurr. ID & Sample point:	DECO13_3OMEA026_1
NonnativeGrasses	6
NonnativeGrasses_desc	Bromus spp., Brachypodium distachyon, Festuca spp.
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	3
Dumping_trash_desc	Car, paper
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	2
Erosion_desc	Erosion on main access road
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1

MSP Occurr. ID & Sample point:	**DECO13_3OMEA026_1**
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, thatch removal, invasive plant management
ManageActions_PastYr	Thatch removal and invasive plant management
CNDDB_SppDetected	Deinandra conjugens, Bloomeria crocea, Turkey vulture
Notes	NA
Time Finish	16:46

MSP Occurr. ID & Sample point:	DECO13 New Furby North South
NewSampPt	yes
UpdateSampInfo	yes
Public	yes
Scientific Name	Deinandra conjugens
Translocated_occur	no
PreserveUpdate	Furby-North Property (Otay Mesa East)
MgmUnitUpdate	
LandOwnerUpdate	County of San Diego Department of Parks and Recreation
LandMangrUpdate	County of San Diego Department of Parks and Recreation
OccurrenceNameUpdate	
Date	6/2/2023
Time Start	15:48
Surveyors	Adrienne Lee, Brenda McMillan, Bailey Setzler
Affiliation	Environmental Science Associates
NumPlantsperSamplArea	468
ExactorEstimate_Samp	estimate
uncertainty_sample	low
Sample_Radius_m	10
Plants_clusters_vs_individ_sample	individ_plants
Flower_Veget_Sample	NA
Vegetative_percent_cat	5
Flowering_percent_cat	4
Fruiting_percent_cat	1
Dead_percent_cat	1
Herbivory_percent_cat	1
Disease_percent_cat	1
StuntedGrowth_percent_cat	1
SamplingArea_within_CurrentMappedExtent	yes
GPSAccurracy	4
GPSAccurracyUnits	ft
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	new_location
Datum	NAD83
CoordSystem	UTM
PlotXUpdate	496890
PlotYUpdate	3602295
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates	new_location

MSP Occurr. ID & Sample point:	DECO13 New Furby North South
match, select "no change". If the coordinates differ, select the reason.	
DatumPhoto1	NAD83
CoordSystemPhoto1	UTM
Photo1XUpdate	496884
Photo1YUpdate	3602282
CameraType	iPhone 11
UpdatePhotoInfo	yes
Dir_Photo1Update	NE, 014 Degrees
CamHei_Photo1Update	5 ft
PhotoNumPhoto1	DECO13_XXXXXXXX_1_Photo1_06022023
SANDAG2012_VegAllianceAssoc	Artemisia californica Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	3
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Artemisia californica, Lycium californicum, Erigonum fasciculatum
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	70
FeralPigActivity	1
GroundSquirrelActivity	4
GopherActivity	3
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Ambrosia chenopodiifolia - San Diego bur ragweed	4
Anagallis arvensis - scarlet pimpernel	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	13
Bahiopsis laciniata - torhleaf goldeneye	0.2
Bloomeria crocea - common goldenstar	0.2
Brassica nigra - black mustard	0.2
Bromus madritensis - compact brome	4
Calochortus splendens - splendid mariposa lily	0.2
Centaurea melitensis - Maltese star-thistle	2
Convolvulus simulans - field bindweed	0.2
Deinandra conjugens - Otay tarplant	0.2
Deinandra fasciculata - clustered tarweed	0.2
Eriogonum fasciculatum - California buckwheat	1

MSP Occurr. ID & Sample point:	DECO13 New Furby North South
Festuca myuros - annual fescue	3
Glebionis coronaria - Crown daisy	1
Harpagonella palmeri - Palmer's grappling-hook	0.2
Hirschfeldia incana - shortpod mustard	0.2
Lycium californicum - California desert-thorn	0.2
Navarretia hamata - hooked pincushionplant	0.2
Rhus integrifolia - lemonade sumac	3
Selaginella cinerascens - mesa spikemoss	0.2
Simmondsia chinensis - jojoba	1
Sonchus asper - spiny sowthistle	0.2
Stipa pulchra - Purple needle grass	0.2
Other Associated Species?	no
BareGround	58.6
CrypSoils	0.2
Rock	2
Litter	3
Water	0
Vegetation	35.2
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	3,112
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
SurroundingLandUse	Conserved open space preserve, utility easement, residential roads and properties
NonnativeForbs	7
NonnativeForbs_desc	Glebionis coronaria, Centaurea melitensis, Brassica nigra, Hirschfeldia incana, Sonchus asper, Carduus pycnocephalus
NonnativeGrasses	6
NonnativeGrasses_desc	Bromus spp., Festuca spp., Avena spp.
NonnativeWoodyPlts	2
NonnativeWoodyPlts_desc	Tamarisk, castor bean, tree tobacco, ivy

MSP Occurr. ID & Sample point:	DECO13 New Furby North South
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Deinandra fasciculata
Dumping_trash	3
Dumping_trash_desc	Clothes, paper, metal (car/appliance), old herp array
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Foot trails
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	2
AlteredHydrology_desc	Erosion on old trail and road cuts
Erosion	4
Erosion_desc	Deep erosion along old roads
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No

MSP Occurr. ID & Sample point:	DECO13 New Furby North South
YearBurned	NA
Trails_disturbance	2
Trails_authorized	No
TrailUse_Hiking	yes
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	yes
TrailUse_illegal_descript	Historic foot trails, highly eroded in some areas
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive plant management, thatch removal
ManageActions_PastYr	None
CNDDB_SppDetected	Bloomeria crocea, Deinandra conjugens, Ambrosia chenopodifolia, Bahiopsis laciniata, Harpagonella palmeri, Convulvulus simulans, coastal California gnatcatcher
Notes	NA
TimeFinish	16:43

C-5 Orcutt's Bird's-Beak

MSP Occurr. ID & Sample point:	**COOR7_1SMGU006_1**
Preserve	Tijuana River Valley Regional Park
MgtUnit	1
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	2017190
UpdateSampInfo	no
Public	yes
Scientific Name	Dicranostegia orcuttiana
Date	6/14/2023
Time Start	09:14
Surveyors	Brenda McMillan; Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	0
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	1
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1
GPSAccurracyUnits	m
PlotX	491709
PlotY	3600493
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone14

MSP Occurr. ID & Sample point:	COOR7_1SMGU006_1
Photo1Dir	101
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	COOR7_1SMGU006_1_Photo1_06142023
SANDAG2012_VegAllianceAssoc	Artemisia californica Association
CryptogamicCrustCover	1
ThatchCover	4
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Hirschfeldia incana, Centaurea melitensis
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	50
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	4
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Anagallis arvensis - scarlet pimpernel	0.2
Antirrhinum nuttallianum - Island snapdragon	0.2
Artemisia californica - coastal sagebrush	5
Avena fatua - wild oat	1
Bahiopsis laciniata - torhleaf goldeneye	1
Brachypodium distachyon - purple false brome	1
Bromus rubens - Red brome	5
Centaurea melitensis - Maltese star-thistle	0.2
Cneoridium dumosum - bush rue	1
Cuscuta californica var. californica - California dodder	0.2
Dudleya pulverulenta - chalk dudleya	0.2
Encelia californica - California brittlebush	6
Eriogonum fasciculatum - California buckwheat	5
Foeniculum vulgare - sweet fennel	0.2
Galium aparine - stickywilly	0.2
Glebionis coronaria - Crown daisy	0.2
Hirschfeldia incana - shortpod mustard	1
Hypochaeris glabra - smooth cat's ear	0.2
Lactuca serriola - prickly lettuce	0.2
Lasthenia gracilis - needle goldfields	0.2

MSP Occurr. ID & Sample point:	COOR7_1SMGU006_1
Logfia gallica - narrowleaf cottonrose	0.2
Lonicera subspicata var. denudata -	0.2
Malosma laurina - laurel sumac	2
Marah macrocarpa - Chilicothe	0.2
Mirabilis laevis var. crassifolia - California four o'clock	0.2
Pentagramma glanduloviscida - San Diego silverback fern	0.2
Peritoma arborea var. arborea - bladderpod spiderflower	8
Phacelia cicutaria - Caterpillar phacelia	0.2
Pseudognaphalium beneolens - Cudweed	0.2
Pseudognaphalium stramineum - cottonbatting plant	0.2
Pterostegia drymarioides - woodland pterostegia	0.2
Rhamnus crocea - spiny redberry	3
Rhus integrifolia - lemonade sumac	4
Scrophularia californica - California figwort	0.2
Solanum spp. - nightshade	0.2
Sonchus asper - spiny sowthistle	0.2
Sonchus oleraceus - common sowthistle	0.2
Yucca schidigera - Mojave yucca	1
Other Associated Species?	yes
othername1	Elymus condensatus
otherper1	1
othername2	Phacelia distans
otherper2	0.2
othername3	Erigeron bonariensis
otherper3	0.2
othername4	Eucrypta chrysanthemifolia
otherper4	0.2
othername5	Pholistoma racemosum
otherper5	0.2
other	Pellaea andromedifolia, 0.2; Camissoniopsis intermedia, 0.2; Amsinckia menziesii, 0.2; Sambucus nigra, 2
BareGround	39.8
CrypSoils	0
Rock	3
Litter	3
Water	0
Vegetation	53.2
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no

MSP Occurr. ID & Sample point:	COOR7_1SMGU006_1
NumPlantsperCurrentMappedExtent	0
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	not detected
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	no
Reason_IfNotFound	no plant expression in 2023
SurroundingLandUse	Open space preserve; area not open to public but unauthorized foot traffic present and Border Patrol
NonnativeForbs	2
NonnativeForbs_desc	Lysimachia arvensis, Centaurea melitensis, Foeniculum vulgare, Glebionis coronaria, Hirschfeldia incana, Hypochaeris glabra, Lactuca serriola, Logfia gallica, Sonchus spp.
NonnativeGrasses	3
NonnativeGrasses_desc	Avena fatua, Brachypodium distachyon, Bromus rubens
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	2
Trampling_desc	Unauthorized foot trails
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA

MSP Occurr. ID & Sample point:	COOR7_1SMGU006_1
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	2
SlopeMovement_desc	Loose soils sloughing off in frequently used unauthorized foot trails
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	2
Trails_authorized	no
TrailUse_Hiking	yes
TrailUse_Biking	no
TrailUse_Equestrian	no
TrailUse_Dog	no
TrailUse_ServiceVehicles	no
TrailUse_Other	yes
TrailUse_illegal_descript	Border Patrol
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Dethatch plot area plus 3 ft buffer; invasive non-native grass control
ManageActions_PastYr	None
CNDDB_SppDetected	Yellow warbler, Southern California rufous-crowned sparrow
Notes	Site is very weedy, shrubs over grown around 2022 pop; lots of gophers, very loose soils
Time Finish	11:31

MSP Occurr. ID & Sample point:	COOR7_1TIRI009_1
Preserve	Tijuana River Valley Regional Park
MgtUnit	1
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	285
UpdateSampInfo	no
Public	yes
Scientific Name	Dicranostegia orcuttiana
Date	6/14/2023
Time Start	13:27
Surveyors	Brenda McMillan; Bailey Setzler
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	298
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	2
Category for Percent Herbivory in Sampling Area	2
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	1
GPSAccurracyUnits	m
PlotX	490646
PlotY	3600256
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone14

MSP Occurr. ID & Sample point:	COOR7_1TIRI009_1
Photo1Dir	261
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	COOR7_1TIRI009_1_Photo1_06142023
SANDAG2012_VegAllianceAssoc	Artemisia californica-Eriogonum fasciculatum-Opuntia littoralis/Dudleya (edulis) Association
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	2
ThatchDepthMax_cm	0.5
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Centaurea melitensis, Hirschfeldia incana, Uropappus lindleyi
DeadStanding_CoverClass	3
DeadStandingHeightAverage_cm	50
FeralPigActivity	1
GroundSquirrelActivity	2
GopherActivity	3
SamplingAreaRepresent_of_mapped_occurr	yes
SamplingArea_diffs_from_mapped_occurr	
Acmispon glaber - deerweed	0.2
Antirrhinum nuttallianum - Island snapdragon	0.2
Artemisia californica - coastal sagebrush	15
Atriplex semibaccata - Australian saltbush	0.2
Bahiopsis laciniata - torhleaf goldeneye	2
Bromus rubens - Red brome	1
Calochortus splendens - splendid mariposa lily	0.2
Calystegia macrostegia - island false bindweed	0.2
Cardionema ramosissimum - sandcarpet	0.2
Centaurea melitensis - Maltese star-thistle	2
Cneoridium dumosum - bush rue	5
Crassula connata - sand pygmyweed	0.2
Cryptantha intermedia - Clearwater cryptantha	0.2
Daucus pusillus - American wild carrot	0.2
Deinandra fasciculata - clustered tarweed	1
Dichelostemma capitatum - bluedicks	0.2
Dichondra occidentalis - western ponysfoot	0.2
Dicranostegia orcuttiana - Orcutt's birds-beak	2
Dudleya edulis - fingertips	0.2

MSP Occurr. ID & Sample point:	COOR7_1TIRI009_1
Dudleya pulverulenta - chalk dudleya	0.2
Eriogonum fasciculatum - California buckwheat	3
Ferocactus viridescens - San Diego barrel cactus	0.2
Festuca myuros - annual fescue	1
Galium aparine - stickywilly	0.2
Glebionis coronaria - Crown daisy	0.2
Hirschfeldia incana - shortpod mustard	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Lasthenia gracilis - needle goldfields	0.2
Lepidium spp. - pepperweed	0.2
Logfia gallica - narrowleaf cottonrose	0.2
Lysimachia arvensis - Scarlet pimpernel	0.2
Malacothamnus fasciculatus var. fasciculatus - Chaparral bush mallow	0.2
Malosma laurina - laurel sumac	1
Marah macrocarpa - Chilicothe	0.2
Nassella pulchra - purple tussockgrass	0.2
Navarretia hamata - hooked pincushionplant	0.2
Osmadenia tenella - false rosinweed	1
Peritoma arborea - bladderpod spiderflower	0.2
Plantago erecta - California plantain	0.2
Salsola tragus - prickly Russian thistle	0.2
Selaginella bigelovii - bushy spikemoss	0.2
Selaginella cinerascens - mesa spikemoss	10
Silene gallica - common catchfly	0.2
Sonchus oleraceus - common sowthistle	0.2
Stephanomeria diegensis - San Diego wirelettuce	0.2
Stylocline gnaphaloides - mountain neststraw	0.2
Uropappus lindleyi - Silver puffs	0.2
Other Associated Species?	yes
othername1	Camissoniopsis intermedia
otherper1	0.2
BareGround	38.6
CrypSoils	1
Rock	7
Litter	2
Water	0
Vegetation	51.2
DeadShrubs	0.2
TotalPercCover	100

MSP Occurr. ID & Sample point:	COOR7_1TIRI009_1
Alreadyentered	no
NumPlantsperCurrentMappedExtent	1,445
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
ExpandedEfforty_n	no
SurroundingLandUse	Open space preserve, area not open to public
NonnativeForbs	4
NonnativeForbs_desc	Hirschfeldia incana, Centaurea melitensis
NonnativeGrasses	5
NonnativeGrasses_desc	Bromus rubens, Avena fatua
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	3
Trampling_desc	Evidence of recent trail use
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	2

MSP Occurr. ID & Sample point:	COOR7_1TIRI009_1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	2
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	2
ORV_MtnBikeActivity_type	Border Patrol
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	4
Trails_authorized	unknown
TrailUse_Hiking	unknown
TrailUse_Biking	unknown
TrailUse_Equestrian	no
TrailUse_Dog	unknown
TrailUse_ServiceVehicles	yes
TrailUse_Other	yes
TrailUse_illegal_descript	Border Patrol
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Invasive non-native treatment (non-native grasses, crown daisy, shortpod mustard)
ManageActions_PastYr	None
CNDDB_SppDetected	Dicranostegia orcuttiana, Dichondra occidentalis, Selaginella cinerascens, Bahiopsis laciniata, Ferocactus viridescens, coastal California gnatcatcher
Notes	NA
Time Finish	16:00

C-6 Variegated Dudleya

MSP Occurr. ID & Sample point:	DUVA_6LUCR023_1
Preserve	Lusardi Creek Preserve
MgtUnit	6
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	319
UpdateSampInfo	no
Public	yes
Scientific Name	Dudleya variegata
Date	4/28/2023
Time Start	07:30
Surveyors	Dillon Travis, Brenda McMillan
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	1
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	vegetative
Category for Percent Vegetative in Sampling Area	5
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	11.5
GPSAccurracyUnits	inch
PlotX	484873
PlotY	3652555
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP Occurr. ID & Sample point:	DUVA_6LUCR023_1
Photo1Dir	158 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	DUVA_6LUCR023_1_Photo1_04282023
SANDAG2012_VegAllianceAssoc	Stipa pulchra Association
CryptogamicCrustCover	3
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	6
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber, Salvia mellifera
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	24
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	2
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	1
Artemisia californica - coastal sagebrush	3
Brachypodium distachyon - purple false brome	38
Bromus hordeaceus - soft brome	0.2
Bromus madritensis ssp. Rubens - foxtail brome	0.2
Calochortus splendens - splendid mariposa lily	0.2
Chlorogalum parviflorum - smallflower soap plant	1
Crassula connata - sand pygmyweed	0.2
Cryptantha spp. - cryptantha	0.2
Deinandra fasciculata - clustered tarweed	3
Dudleya variegata - Variegated dudleya	0.2
Eriogonum fasciculatum - California buckwheat	0.2
Erodium botrys - longbeak stork's bill	2
Ferocactus viridescens - San Diego barrel cactus	0.2
Festuca myuros - annual fescue	0.2
Festuca perennis - Italian rye grass	0.2
Hypochaeris glabra - smooth cat's ear	0.2
Logfia filaginoides - California cottonrose	0.2
Plantago erecta - California plantain	0.2
Pseudognaphalium spp. - cudweed	0.2

MSP Occurr. ID & Sample point:	DUVA_6LUCR023_1
Salsola spp. - Russian thistle	0.2
Selaginella cinerascens - mesa spikemoss	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Stipa lepida - Foothill needle grass	0.2
Stipa pulchra - Purple needle grass	5
Other Associated Species?	no
BareGround	30.4
CrypSoils	5
Rock	5
Litter	3
Water	0
Vegetation	56.6
DeadShrubs	0
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	9
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	vegetative
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
SurroundingLandUse	Open space preserve, adjacent to residential development
NonnativeForbs	2
NonnativeForbs_desc	Hypochaeris glabra, Erodium botrys, Salsola spp.
NonnativeGrasses	7
NonnativeGrasses_desc	Brachypodium distachyon, Bromus spp., Festuca spp.
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA

MSP Occurr. ID & Sample point:	DUVA_6LUCR023_1
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No
YearBurned	NA
Trails_disturbance	2
Trails_authorized	No
TrailUse_Hiking	No
TrailUse_Biking	No
TrailUse_Equestrian	no

MSP Occurr. ID & Sample point:	**DUVA_6LUCR023_1**
TrailUse_Dog	no
TrailUse_ServiceVehicles	no
TrailUse_Other	yes
TrailUse_illegal_descript	Old trail that has been blocked off to allow for passive revegetation
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring. Fix herbivory fences (deer poop present), hand weed invasive non-native plants in plot (grasses & forbs), line trim outside fencing
ManageActions_PastYr	Hand weeding, line trimming
CNDDB_SppDetected	Dudleya variegata, Ferocactus viridescens, Selaginella cinerascens, coastal California gnatcatcher, horned lark
Notes	NA
Time Finish	09:20

MSP Occurr. ID & Sample point:	**DUVA_4SYCA019_1**
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	2017236
UpdateSampInfo	no
Public	yes
Scientific Name	Dudleya variegata
Date	4/14/2023
Time Start	11:20
Surveyors	Adrienne Lee, Dillon Travis
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	144
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	vegetative
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	7
GPSAccurracyUnits	ft
PlotX	502938
PlotY	3643517
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iphone11

MSP Occurr. ID & Sample point:	DUVA_4SYCA019_1
Photo1Dir	Northeast, 42 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	DUVA _4SYCA019_1_Photo1_04142023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	2
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	50
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acanthomintha ilicifolia - San Diego thornmint	0.2
Acmispon glaber - deerweed	1
Adenostoma fasciculatum - chamise	2
Allium haematochiton - redskin onion	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	1
Brachypodium distachyon - purple false brome	38
Bromus hordeaceus - soft brome	0.2
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Chlorogalum parviflorum - smallflower soap plant	0.2
Deinandra fasciculata - clustered tarweed	0.2
Dichelostemma capitatum - bluedicks	0.2
Dudleya variegata - Variegated dudleya	0.2
Eriogonum fasciculatum - California buckwheat	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Harpagonella palmeri - Palmer's grappling-hook	1
Hypochaeris glabra - smooth cat's ear	0.2
Lepidium spp. - pepperweed	0.2

MSP Occurr. ID & Sample point:	DUVA_4SYCA019_1
Logfia sp. - cottonrose	0.2
Lonicera subspicata - southern honeysuckle	0.2
Lysimachia arvensis - Scarlet pimpernel	0.2
Malosma laurina - laurel sumac	4
Plantago erecta - California plantain	0.2
Rhamnus crocea - spiny redberry	3
Rhus integrifolia - lemonade sumac	1
Salvia apiana - white sage	1
Salvia mellifera - black sage	1
Selaginella cinerascens - mesa spikemoss	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Sonchus asper - spiny sowthistle	0.2
Xylococcus bicolor - mission manzanita	2
Other Associated Species?	yes
othername1	Sanicula bipinnatifida
otherper1	0.2
BareGround	29.4
CrypSoils	1
Rock	8
Litter	1
Water	0
Vegetation	59.6
DeadShrubs	1
TotalPercCover	100
Alreadyentered	yes
Ifyes_whichsurvey	DUVA_4SYCA019_2
ManageRecomm	Continued monitoring, invasive non-native plant management
ManageActions_PastYr	Hand-weeding BRADIS, CENMEL. Line trimming.
CNDDB_SppDetected	Dudleya variegata, Harpagonella palmeri, Polioptila californica california, Selaginella cinerascens, Acanthomintha ilicifolia
Notes	NA
Time Finish	11:52

MSP Occurr. ID & Sample point:	**DUVA_4SYCA019_2**
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
LandOwn	County of San Diego Department of Parks and Recreation
LandMan	County of San Diego Department of Parks and Recreation
SampID	202160
UpdateSampInfo	no
Public	yes
Scientific Name	Dudleya variegata
Date	4/14/2023
TimeStart	07:40
Surveyors	Adrienne Lee, Dillon Travis
Affliation	Environmental Science Associates
Number of Plants in the Sampling Area	444
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	individ_plants
Count is flowering or vegetated plants? (only answer for geophytes)	vegetative
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	1
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	2
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	6.5
GPSAccurracyUnits	ft
PlotX	502891
PlotY	3643611
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP Occurr. ID & Sample point:	DUVA_4SYCA019_2
Photo1Dir	335
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	DUVA_4SYCA019_2_Photo1_04142023
SANDAG2012_VegAllianceAssoc	Brachypodium distachyon Semi-Natural Stand Type
CryptogamicCrustCover	2
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Acmispon glaber, Artemesia californica
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	30
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	1
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Allium haematochiton - redskin onion	1
Artemisia californica - coastal sagebrush	1
Brachypodium distachyon - purple false brome	35
Bromus diandrus - ripgut brome	0.2
Bromus hordeaceus - soft brome	0.2
Calystegia macrostegia - island false bindweed	0.2
Ceanothus tomentosus - woolyleaf ceanothus	2
Centaurea melitensis - Maltese star-thistle	1
Chlorogalum parviflorum - smallflower soap plant	0.2
Deinandra fasciculata - clustered tarweed	0.2
Dichelostemma capitatum - bluedicks	0.2
Dudleya variegata - Variegated dudleya	0.2
Eriophyllum confertiflorum - golden-yarrow	0.2
Erodium cicutarium - redstem stork's bill	0.2
Harpagonella palmeri - Palmer's grappling-hook	0.2
Heteromeles arbutifolia - toyon	1
Lonicera subspicata - southern honeysuckle	1
Malosma laurina - laurel sumac	3
Microseris douglasii - Douglas' silverpuffs	0.2

MSP Occurr. ID & Sample point:	DUVA_4SYCA019_2
Plantago erecta - California plantain	1
Quercus berberidifolia - scrub oak	1
Rhamnus crocea - spiny redberry	5
Rhus integrifolia - lemonade sumac	0.2
Salvia apiana - white sage	1
Salvia mellifera - black sage	0.2
Selaginella spp. - spikemoss	0.2
Sisyrinchium bellum - western blue-eyed grass	1
Sonchus asper - spiny sowthistle	0.2
Sonchus oleraceus - common sowthistle	0.2
Stipa lepida - Foothill needle grass	0.2
Other Associated Species?	yes
othername1	Sanicula bipinnatifida
otherper1	1
BareGround	28.2
CrypSoils	0.2
Rock	10
Litter	2
Water	0
Vegetation	58.6
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	1348
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	low
Plants_clusters_vs_individ_MaxExt	individ_plants
Flower_Veget_MaxExt	vegetative
AreaCurrentMappedExtent	Polygon Submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space reserve, open to recreation ie hiking, biking, equestrian
NonnativeForbs	6
NonnativeForbs_desc	Centaurea melitensis, Erodium spp., Sonchus spp.
NonnativeGrasses	7

MSP Occurr. ID & Sample point:	DUVA_4SYCA019_2
NonnativeGrasses_desc	Brachopodium distachyon, Bromus spp.
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	no
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	1
Erosion_desc	NA
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA

MSP Occurr. ID & Sample point:	**DUVA_4SYCA019_2**
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive plant management
ManageActions_PastYr	Hand weeded BRADIS and CENMEL, line trimmed
CNDDB_SppDetected	Dudleya variegata, Harpagonella palmeri
Notes	NA
TimeFinish	09:06

C-7 Willowy Monardella

MSP_Occurr_ID_sampPt	MOLIV_4SYCA006_1
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	172
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/15/2023 19:00
Time Start	10:28
Surveyors	Adrienne Lee, Sonya Vargas
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	58
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	2
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	4
GPSAccurracyUnits	ft
PlotX	502412
PlotY	3642218
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP_Occurr_ID_sampPt	MOLIV_4SYCA006_1
Photo1Dir	South, 176 Degrees
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SYCA006_1_Photo1_06152023
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum Association
CryptogamicCrustCover	2
ThatchCover	3
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	5
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Artemisia californica, Eriogonum fasciculatum, Rhamnus crocea
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	38
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	3
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Apiastrum angustifolium - mock parsley	0.2
Artemisia californica - coastal sagebrush	1
Avena barbata - slender oat	1
Brachypodium distachyon - purple false brome	5
Bromus diandrus - ripgut brome	1
Bromus hordeaceus - soft brome	1
Bromus madritensis - compact brome	1
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Deinandra fasciculata - clustered tarweed	0.2
Dichelostemma capitatum - bluedicks	0.2
Eriogonum fasciculatum - California buckwheat	10
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca myuros - annual fescue	2
Galium spp. - bedstraw	1
Helianthus gracilentus - slender sunflower	0.2
Lactuca serriola - prickly lettuce	0.2
Malosma laurina - laurel sumac	1

MSP_Occurr_ID_sampPt	MOLIV_4SYCA006_1
Mirabilis laevis - desert wishbone-bush	0.2
Monardella viminea - Willowy monardella	3
Osmadenia tenella - false rosinweed	0.2
Prunus ilicifolia - hollyleaf cherry	1
Rhamnus crocea - spiny redberry	5
Salvia apiana - white sage	0.2
Salvia mellifera - black sage	2
Selaginella bigelovii - bushy spikemoss	0.2
Silene gallica - common catchfly	0.2
Sisyrinchium bellum - western blue-eyed grass	0.2
Unk Grass -	0.2
Uropappus lindleyi - Silver puffs	0.2
Other Associated Species?	yes
othername1	Cirsium sp.
otherper1	0.2
othername2	Eschscholzia californica
otherper2	0.2
BareGround	25
CrypSoils	0.2
Rock	25
Litter	10
Water	0
Vegetation	38.8
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	444
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very_low
Plants_clusters_vs_individ_MaxExt	clusters
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use

MSP_Occurr_ID_sampPt	MOLIV_4SYCA006_1
NonnativeForbs	5
NonnativeForbs_desc	Centaurea melitensis
NonnativeGrasses	7
NonnativeGrasses_desc	Avena barbata, Bromus spp., Brachypodium distachyon, Festuca myuros
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Eriogonum fasciculatum
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	3
AlteredHydrology_desc	Creekbed channel
Erosion	3
Erosion_desc	Creek bed channel erosion
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA

MSP_Occurr_ID_sampPt	MOLIV_4SYCA006_1
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No
YearBurned	NA
Trails_disturbance	1
Trails_authorized	NA
TrailUse_Hiking	NA
TrailUse_Biking	NA
TrailUse_Equestrian	NA
TrailUse_Dog	NA
TrailUse_ServiceVehicles	NA
TrailUse_Other	NA
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive forb/grass treatment
ManageActions_PastYr	None
CNDDB_SppDetected	Monardella viminea, coastal California gnatcatcher
Notes	NA
Time Finish	11:21

MSP_Occurr_ID_sampPt	MOLIV_4SYCA002_1
Preserve	Sycamore Canyon And Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	328
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/27/2023 19:00
Time Start	09:07
Surveyors	Adrienne Lee, Amy Orduno-Baez
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	4
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	4
Category for Percent Flowering in Sampling Area	4
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	5
GPSAccurracyUnits	ft
PlotX	501045
PlotY	3642551
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	Photo1_E_UTM
Photo1Y	Photo1_N_UTM
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP_Occurr_ID_sampPt	MOLIV_4SYCA002_1
Photo1Dir	200
Photo1Hei	CamHei_Photo1
Photo1Ang	CamAng_Photo1
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SYCA002_1_Photo1_06272023
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Salvia apiana, Prunus ilicifolia
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	30
FeralPigActivity	1
GroundSquirrelActivity	2
GopherActivity	2
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Artemisia californica - coastal sagebrush	0.2
Avena barbata - slender oat	0.2
Brachypodium distachyon - purple false brome	1
Bromus diandrus - ripgut brome	2
Bromus hordeaceus - soft brome	0.2
Bromus madritensis - compact brome	2
Carduus pycnocephalus - Italian plumeless thistle	0.2
Centaurea melitensis - Maltese star-thistle	3
Cercocarpus minutiflorus - smooth mountain-mahogany	3
Deinandra fasciculata - clustered tarweed	0.2
Eriogonum fasciculatum - California buckwheat	5
Erodium spp. - stork's bill	3
Festuca myuros - annual fescue	3
Festuca perennis - Italian rye grass	0.2
Galium angustifolium - narrowleaf bedstraw	0.2
Heteromeles arbutifolia - toyon	1
Hirschfeldia incana - shortpod mustard	1
Hypochaeris glabra - smooth cat's ear	1
Lonicera subspicata - southern honeysuckle	0.2

MSP_Occurr_ID_sampPt	MOLIV_4SYCA002_1
Monardella viminea - Willowy monardella	0.2
Prunus ilicifolia - hollyleaf cherry	3
Salvia apiana - white sage	1
Silene gallica - common catchfly	1
Stephanomeria spp. - wirelettuce	0.2
Other Associated Species?	no
BareGround	19.6
CrypSoils	0
Rock	45
Litter	3
Water	0
Vegetation	32.2
DeadShrubs	0.2
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	4
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very_low
Plants_clusters_vs_individ_MaxExt	clusters
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use
NonnativeForbs	5
NonnativeForbs_desc	Centaurea melitensis, Erodium spp., Hirschfeldia incana, Hypochaeris glabra, Silene gallica
NonnativeGrasses	6
NonnativeGrasses_desc	Avena barbata, Brachypodium distachyon, Bromus spp., Festuca myuros, Festuca perennis
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	3
CompetitiveNativePlts_desc	Eriogonum fasciculatum
Dumping_trash	1

MSP_Occurr_ID_sampPt	MOLIV_4SYCA002_1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	3
Erosion_desc	Channel bank shows some erosion
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	No
YearBurned	NA
Trails_disturbance	2
Trails_authorized	both

MSP_Occurr_ID_sampPt	MOLIV_4SYCA002_1
TrailUse_Hiking	yes
TrailUse_Biking	yes
TrailUse_Equestrian	yes
TrailUse_Dog	unknown
TrailUse_ServiceVehicles	unknown
TrailUse_Other	no
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive forb and grass treatment
ManageActions_PastYr	None
CNDDB_SppDetected	Monardella viminea
Notes	NA
Time Finish	10:15

MSP_Occurr_ID_sampPt	MOLIV_4SPCA006_2
Preserve	Sycamore Canyon and Goodan Ranch Preserves
MgtUnit	4
Land Owner	County of San Diego Department of Parks and Recreation
Land Manager	County of San Diego Department of Parks and Recreation
SampID	
UpdateSampInfo	no
Public	yes
Scientific Name	Monardella viminea
Date	6/15/2023
Time Start	13:23
Surveyors	Adrienne Lee, Sonya Vargas
Affiliation	Environmental Science Associates
Number of Plants in the Sampling Area	6
Exact or Estimate for Number in Sampling Area	exact
Uncertainty for Sampling Area	very_low
Sampling Area Radius (meters)	10
Count is clusters or individuals?	clusters
Count is flowering or vegetated plants? (only answer for geophytes)	NA
Category for Percent Vegetative in Sampling Area	6
Category for Percent Flowering in Sampling Area	2
Category for Percent Fruiting in Sampling Area	1
Category for Percent Dead in Sampling Area	1
Category for Percent Herbivory in Sampling Area	1
Category for Percent Diseased in Sampling Area	1
Category for Percent Stunted Growth in Sampling Area	1
Sampling Area within Current Mapped Extent?	yes
GPSAccurracy	3
GPSAccurracyUnits	ft
PlotX	501657
PlotY	3640638
Check your location of the SAMPLE PLOT against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
Photo1X	
Photo1Y	
Check your location of the PHOTO POINT 1 against the location above or provided by SDMMP. If your coordinates match, select "no change". If the coordinates differ, select the reason.	no_change
CameraType	iPhone 11

MSP_Occurr_ID_sampPt	MOLIV_4SPCA006_2
Photo1Dir	
Photo1Hei	
Photo1Ang	
UpdatePhotoInfo	no
PhotoNumPhoto1	MOLIV_4SPCA006_2_Photo1_06152023
SANDAG2012_VegAllianceAssoc	Eriogonum fasciculatum-Salvia apiana Association
CryptogamicCrustCover	1
ThatchCover	2
ThatchDepthAverage_cat	3
ThatchDepthMax_cm	4
DeadStandingBiomass_Presence	yes
DeadStanding_CoverSpecies	Rhamnus crocea, Artemisia californica
DeadStanding_CoverClass	2
DeadStandingHeightAverage_cm	25
FeralPigActivity	1
GroundSquirrelActivity	1
GopherActivity	2
SamplingAreaRepresent_of_mapped_occurr	yes
If no, Note Differences:	NA
Acmispon glaber - deerweed	0.2
Ambrosia psilostachya - Cuman ragweed	0.2
Artemisia californica - coastal sagebrush	1
Avena barbata - slender oat	3
Brachypodium distachyon - purple false brome	0.2
Bromus diandrus - ripgut brome	1
Bromus hordeaceus - soft brome	0.2
Bromus madritensis - compact brome	1
Calochortus spp. - mariposa lily	0.2
Calystegia macrostegia - island false bindweed	0.2
Centaurea melitensis - Maltese star-thistle	0.2
Cuscuta californica - California dodder	1
Deinandra fasciculata - clustered tarweed	0.2
Eriogonum fasciculatum - California buckwheat	15
Eriophyllum confertiflorum - golden-yarrow	0.2
Festuca myuros - annual fescue	5
Hirschfeldia incana - shortpod mustard	0.2
Hypochaeris glabra - smooth cat's ear	1
Mirabilis laevis - desert wishbone-bush	0.2

MSP_Occurr_ID_sampPt	MOLIV_4SPCA006_2
Monardella viminea - Willowy monardella	1
Pentagramma triangularis - goldbeck fern	0.2
Phacelia cicutaria - Caterpillar phacelia	0.2
Rhamnus crocea - spiny redberry	1
Salvia apiana - white sage	1
Silene gallica - common catchfly	0.2
Stephanomeria spp. - wirelettuce	0.2
Other Associated Species?	yes
othername1	Epilobium canum
otherper1	0.2
othername2	Eschscholzia californica
otherper2	0.2
BareGround	29.6
CrypSoils	0
Rock	30
Litter	5
Water	0
Vegetation	34.4
DeadShrubs	1
TotalPercCover	100
Alreadyentered	no
NumPlantsperCurrentMappedExtent	47
ExactorEstimate_MaxExt	exact
uncertainty_MaxExt	very_low
Plants_clusters_vs_individ_MaxExt	clusters
Flower_Veget_MaxExt	NA
AreaCurrentMappedExtent	Polygon submitted
Area_exact_or_estim	very_low
CurrentExtentPerimMethod	exact
SpeciesLocated_in_maximumExtent	yes
Reason_IfNotFound	NA
ExpandedEfforty_n	no
SurroundingLandUse	Conserved open space preserve, open to hiking, mountain biking, equestrian use
NonnativeForbs	4
NonnativeForbs_desc	Centaurea melitensis, Hirschfeldia incana, Hypochaeris glabra
NonnativeGrasses	7

MSP_Occurr_ID_sampPt	MOLIV_4SPCA006_2
NonnativeGrasses_desc	Avena barbata, Bromus spp., Festuca myuros, Brachypodium distachyon
NonnativeWoodyPlts	1
NonnativeWoodyPlts_desc	NA
CompetitiveNativePlts	1
CompetitiveNativePlts_desc	NA
Dumping_trash	1
Dumping_trash_desc	NA
Encampments	1
Encampments_desc	NA
FeralPig	1
FeralPig_desc	NA
Trampling	1
Trampling_desc	NA
Vandalism	1
Vandalism_desc	NA
CurrentGrazing	1
CurrentGrazing_desc	NA
HistoricGrazing	unknown
HistoricGrazing_desc	NA
HistoricAgriculture	unknown
HistoricAgriculture_desc	NA
AlteredHydrology	1
AlteredHydrology_desc	NA
Erosion	3
Erosion_desc	Creekbed erosion
UrbanRunoff	1
UrbanRunoff_desc	NA
SlopeMovement	1
SlopeMovement_desc	NA
SoilCompaction	1
SoilCompaction_desc	NA
FuelModZone_FireBreak	1
FuelModZone_FireBreak_desc	NA
RoadConst_Mainten	1
RoadConst_Mainten_descrip	NA
VegClearing	1
VegClearing_descript	NA
Restoration	1

MSP_Occurr_ID_sampPt	MOLIV_4SPCA006_2
Restoration_desc	NA
ORV_MtnBikeActivity_disturb	1
ORV_MtnBikeActivity_type	NA
EvidenceRecentFire	no
YearBurned	NA
Trails_disturbance	2
Trails_authorized	no
TrailUse_Hiking	yes
TrailUse_Biking	yes
TrailUse_Equestrian	unknown
TrailUse_Dog	unknown
TrailUse_ServiceVehicles	yes
TrailUse_Other	no
TrailUse_illegal_descript	NA
OtherDisturbance	1
OtherDisturbance_descript	NA
ManageRecomm	Continued monitoring, invasive grass/forb treatment
ManageActions_PastYr	None
CNDDB_SppDetected	Monardella viminea, turkey vulture, monarch butterfly
Notes	NA
Time Finish	14:08

Appendix D

Harbison's Dun Skipper Representative Photographs and Field Forms

D-1 Representative Monitoring Photographs

Hellhole Canyon County Preserve Harbison's Dun Skipper Representative Monitoring Photographs

Harbison's dun skipper larval host plant San Diego sedge (*Carex spissa*) observed during adult flight surveys at Hellhole Canyon County Preserve.

Harbison's dun skipper observed nectaring on shortpod mustard (*Hirschfeldia incana*) at Hellhole Canyon County Preserve.

Harbison's dun skipper observed nectaring on Indian hemp (*Apocynum cannabinum*) at Hellhole Canyon County Preserve.

D-2 Representative Management Photographs

Hellhole Canyon County Preserve Harbison's Dun Skipper Representative Management Photographs

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve before focused management.

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve before focused management.

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve after focused management, consisting of dethatching.

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve during focused management, consisting of line trimming.

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve during focused management, consisting of bagging and removing cut biomass.

Representative view of native nectar source seeding area at Hellhole Canyon County Preserve after focused management, consisting of hand seeding.

D-3 Field Forms

HARBISON'S DUN SKIPPER HABITAT AND THREATS ASSESSMENT MATRIX AT HELLHOLE CANYON COUNTY PRESERVE

				Oaks					Sycamores					Willows				
Site	Date	Latitude	Longitude	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage
Hellhole Canyon County Preserve	6/16/23	33.21667641	-116.9340129	5	100	0	0	0	15	100	0	0	0	35	50	75	50	0
Hellhole Canyon County Preserve	6/16/23	33.22600389	-116.9445327	20	50	50	10	0	10	75	10	0	0	50	75	20	0	0

				Cottonwoods					Eucalyptus					Ornamental				
Site	Date	Latitude	Longitude	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage
Hellhole Canyon County Preserve	6/16/23	33.21667641	-116.9340129	5	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Hellhole Canyon County Preserve	6/16/23	33.22600389	-116.9445327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Site	Date	Latitude	Longitude	Royal Empress Tree					Ash					*Carex spissa*			Water	
				% composition	% healthy	% thin canopy	% dead	% fire damage	% composition	% healthy	% thin canopy	% dead	% fire damage	% all green	% brown tips	% mostly brown	Flowing water	Standing Water
Hellhole Canyon County Preserve	6/16/23	33.21667641	-116.9340129	0	0	0	0	0	0	0	0	0	0	25	70	5	Y	N
Hellhole Canyon County Preserve	6/16/23	33.22600389	-116.9445327	0	0	0	0	0	0	0	0	0	0	10	90	0	Y	N

Site	Threats														Threats: Non-Native Vegetation															
	Grazing	Dumping/Trash	Encampments	Feral Pig Activity	Illegal Trails	GSOB	KSHB/PSHB	Drought	Climate Change	Human Intrusion	Pesticide	Altered Hydrology	Altered Fire	*Typha* sp.	*Arundo donax*	Tamarisk	Pampas Grass	Smilo Grass	Thistle	Tree Tobacco	Mustard	Fennel	Palm Trees	Castor Bean	Fountaingrass	Ice Plant	Horehound	Tocalote	Umbrella Sedge
Hellhole Canyon County Preserve	N	N	N	N	N	U	U	Y	U	N	N	N	U	N	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	Y
Hellhole Canyon County Preserve	N	N	N	N	N	U	Y	Y	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y

NOTES:

Tree Species

% composition: across all tree species, adds up to 100%
% healthy, % thin canopy, % dead: within a tree species, adds up to 100%
% fire damage: within a tree species; same tree could be included in other categories

San Diego Sedge

Carex spissa: % of plants that have leaves that are all green; green with brown tips; or all brown; adds up to 100%

Threats

GSOB: gold-spotted oak borer
KSHB/PSHB: Kuroshio shot hole borer/polyphagous shot hole borer (*Euwallacea* sp.)
Tamarisk: *Tamarix* sp.
Pampas grass: *Cortaderia* sp.
Smilo grass: *Stipa miliacea*
Thistle: several genera possible
Tree Tobacco: *Nicotiana glauca*
Mustard: *Brassica nigra* or *Hirschfeldia incana*
Fennel: *Foeniculum vulgare*
Palm Trees: several genera possible
Castor Bean: *Ricinus communis*
Fountaingrass: *Pennisetum setaceum*
Ice Plant: several genera possible
Horehound: *Marrubium vulgare*
Tocalote: *Centaurea melitensis*
Umbrella Sedge: *Cyperus involucratus*

N = No; Y = Yes; U - Unknown

Appendix E

Arroyo Toad Representative Photographs

E-1 Arroyo Toad Representative Photographs

Reach A22

Photo 1. Photo taken along Reach A22, facing downstream. Channel is characterized by large boulders. Date taken: 05/16/23

Photo 2. Photo taken along Reach A22, depicting larvae. Date taken: 05/16/23

Reach B22

Photo 3. Photo taken along Reach B22, facing upstream. Date taken: 05/16/23

Photo 4. Photo taken along Reach B22, facing upstream. Date taken: 05/16/23

Reach A23

Photo 5. Photo taken along Reach A23, facing upstream. Date taken: 05/16/2023

Photo 6. Photo taken along Reach A23, facing upstream. Date taken: 05/16/2023

Reach B23

Photo 7. Photo taken along Reach B23, facing upstream. Date taken: 05/16/2023

Photo 8. Photo taken along Reach B23. Date taken: 05/16/23

Reach A24

Photo 9. Photo taken along Reach A24, facing upstream. Date taken: 05/17/23

Photo 10. Photo taken along Reach A24, facing downstream. Date taken: 05/16/23

Reach B24

Photo 11. Photo taken along Reach B24. Date taken: 05/17/2023

Photo 12. Photo taken along Reach B24, depicting larvae. Date taken: 05/17/2023

Reach A26

Photo 13. Photo taken along Reach A26. Date taken: 05/17/2023

Photo 14. Photo taken along Reach A26, facing upstream. Date taken: 05/17/2023

Reach B26

Photo 15. Photo taken along Reach B26, facing upstream. Date taken: 05/17/2023

Photo 16. Photo taken along Reach B26, facing upstream. Date taken: 05/17/2023

Reach A27

Photo 17. Photo taken along Reach A27, facing upstream. Date taken: 05/17/2023

Photo 18. Photo taken along Reach A27, facing upstream. Date taken: 05/17/2023

Reach B27

Photo 19. Photo taken along Reach B27, facing upstream. Date taken: 05/17/2023

Photo 20. Photo taken along Reach B27, facing upstream. Date taken: 05/17/2023

Reach A28

Photo 21. Photo taken along Reach A28, facing upstream. Date taken: 05/17/2023

Photo 22. Photo taken along Reach A28. Date taken: 05/17/2023

Reach B28

Photo 23. Photo taken along Reach B28, facing downstream. Date taken: 05/17/2023

Photo 24. Photo taken along Reach B28. Date taken: 05/17/2023

Reach A30

Photo 25. Photo taken along Reach A30, facing downstream. Date taken: 05/17/2023

Photo 26. Photo taken along Reach A30. Date taken: 05/17/2023

Reach B30

Photo 27. Photo taken along Reach B30, facing upstream. Date taken: 05/17/2023

Photo 28. Photo taken along Reach B30, facing downstream. Date taken: 05/17/2023

Reach A33

Photo 29. Photo taken along Reach A33, facing upstream. Date taken: 05/18/2023

Photo 30. Photo taken along Reach A33, depicting larvae. Date taken: 05/18/2023

Reach B33

Photo 31. Photo taken along Reach B33, facing upstream. Date taken: 05/18/2023

Photo 32. Photo taken along Reach B33, depicting larvae. Date taken: 05/18/2023

Reach A35

Photo 33. Photo taken along Reach A35. Date taken: 05/19/2023

Photo 34. Photo taken along Reach A35, depicting larvae. Date taken: 05/19/2023

Reach B35

Photo 35. Photo taken along Reach B35. Date taken: 05/19/2023

Photo 36. Photo taken along Reach B35. Date taken: 05/19/2023

Reach A36

Photo 37. Photo taken along Reach A36, facing upstream. Date taken: 05/19/2023

Photo 38. Photo taken along Reach A36. Date taken: 05/19/2023

Reach B36

Photo 39. Photo taken along Reach B36, facing upstream. Date taken: 05/19/2023

Photo 40. Photo taken along Reach B36. Date taken: 05/19/2023

Reach A37

Photo 41. Photo taken along Reach A37, facing upstream. Date taken: 05/19/2023

Photo 42. Photo taken along Reach A37. Date taken: 05/19/2023

Reach B37

Photo 43. Photo taken along Reach B37. Date taken: 05/19/2023

Photo 44. Photo taken along Reach B37. Date taken: 05/19/2023

Reach A38

Photo 45. Photo taken along Reach A38. Date taken: 05/19/2023

Photo 46. Photo taken along Reach A38. Date taken: 05/19/2023

Reach B38

Photo 47. Photo taken along Reach B38. Date taken: 05/19/2023

Photo 48. Photo taken along Reach B38. Date taken: 05/19/2023

Reach A40

Photo 49. Photo taken along Reach A40. Date taken: 05/19/2023

Photo 50. Photo taken along Reach A40. Date taken: 05/19/2023

Reach B40

Photo 51. Photo taken along Reach B40. Date taken: 05/19/2023

Photo 52. Photo taken along Reach B40. Date taken: 05/19/2023

Reach A41

Photo 53. Photo taken along Reach A41. Date taken: 05/19/2023

Photo 54. Photo taken along Reach A41. Date taken: 05/19/2023

Reach B41

Photo 55. Photo taken along Reach B41. Date taken: 05/19/2023

Photo 56. Photo taken along Reach B41. Date taken: 05/19/2023

Reach A42

Photo 57. Photo taken along Reach A42. Date taken: 05/19/2023

Photo 58. Photo taken along Reach A42, facing upstream. Date taken: 05/19/2023

Reach B42

Photo 59. Photo taken along Reach B42, facing upstream. Date taken: 05/19/2023

Photo 60. Photo taken along Reach B42, facing downstream. Date taken: 05/19/2023

Reach A45

Photo 61. Photo taken along Reach A45. Date taken: 05/19/2023

Photo 62. Photo taken along Reach A45. Date taken: 05/19/2023

Reach B45

Photo 63. Photo taken along Reach B45. Date taken: 05/19/2023

Photo 64. Photo taken along Reach B45. Date taken: 05/19/2023

Reach A52

Photo 65. Photo taken along Reach A52. Date taken: 05/16/2023

Photo 66. Photo taken along Reach A52. Date taken: 05/16/2023

Reach B52

Photo 67. Photo taken along Reach B52. Date taken: 05/16/2023

Photo 68. Photo taken along Reach B52. Date taken: 05/16/2023

Reach A53

Photo 69. Photo taken along Reach A53. Date taken: 05/16/2023

Appendix F

San Diego Cactus Wren Representative Management Photographs

F-1 San Diego Cactus Wren Representative Management Photographs

Representative photograph of the San Diego cactus wren management area at Lakeside Linkage County Preserve prior to management activities.

Representative photograph of the San Diego cactus wren management area during management activities. Management consisted of line trimming around cactus patches and hand pulling vegetation by hand from within cactus patches.

Representative photograph of management activities at the San Diego cactus wren management area after management activities.

Appendix G

Northern Harrier Representative Photographs and Field Forms

G-1 Representative Photographs

Tijuana River Valley Regional Park

Photo 1. Habitat (coastal sage scrub) of previous documented northern harrier nest sites (Territory 1 and Territory 4). Habitat still suitable and in good condition. Area of successful nest site in 2023.

Photo 2. Habitat (Diegan coastal sage scrub). One adult male observed capturing unknown prey item during the April 2023 survey (Potential Territory 2). No nesting behavior was observed.

Photo 3. Habitat (mule fat and coastal sage scrub). Individual harriers actively foraging here during the March and May 2023 surveys (Potential Territory 3). No breeding behavior observed.

Photo 4. Habitat (mule fat scrub), inundated with water during the March and April surveys. A pair of harriers were observed in March performing courtship display, therefore breeding behavior was observed during the 2023 surveys (Territory 5). No other breeding behavior was observed.

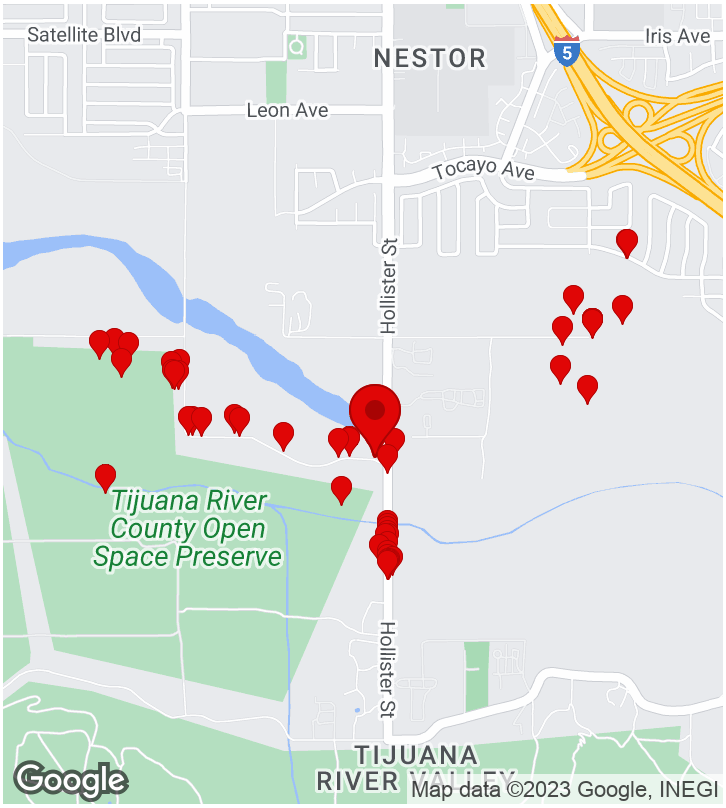
G-2 Field Forms

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

3/24/2023, 5:57:53 PM UTC



CREATED

3/24/2023, 2:12:58 PM UTC
by SC Fulcrum03

UPDATED

3/24/2023, 5:57:53 PM UTC
by SC Fulcrum03

LOCATION

32.553818, -117.084648

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Brennan Mulrooney
Date:	March 24, 2023

START Weather Details:

Start - Time:	07:00
Start - Temperature:	51.2
Start - Wind Direction From (select one):	N/A
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	60
Start - Precipitation (select one):	None
Start - Visibility (select one):	
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:00
End - Temperature:	60.5
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	1
End - High Wind Speed:	6.1
End - Average Wind Speed:	3.4
End - Cloud Cover (%):	15
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	1. Ponyland 2. Sunset ponds 3. Sunset ball fields
Observation Type:	Bird, Mammal
Photos	

Bird

Bird Observation: (59 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 15. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Yellow-rumped Warbler; Setophaga coronata; YRWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Gadwall; Mareca strepera; GADW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Western Kingbird; Tyrannus verticalis; WEKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1

Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Wilson's Warbler; Cardellina pusilla; WIWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; ECDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Merlin; Falco columbarius; MERL
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Green-winged Teal; Anas crecca; GWTE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record, no

Bird (Common or Scientific Name):	Fox Sparrow; Passerella iliaca; FOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record, no

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AMGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Ruby-crowned Kinglet; Regulus calendula; RCKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	Great-tailed Grackle; Quiscalus mexicanus; GTGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	Female type
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Sora; Porzana carolina; SORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record, yes

Bird (Common or Scientific Name):	Sharp-shinned Hawk; Accipiter striatus; SSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Subadult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1

Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 44. 1 record, no

Bird (Common or Scientific Name):	Common Ground-Dove; Columbina passerina; COGD
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 46. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 47. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing), Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 48. 1 record, yes

Bird (Common or Scientific Name):	Western Bluebird; Sialia mexicana; WEBL
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	4
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 49. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Territorial display, Perched (not singing)
Bird Sex (check all that apply):	Male, Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 50. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Subadult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 51. 1 record, no

Bird (Common or Scientific Name):	American Coot; Fulica americana; AMCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 52. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 53. 1 record, no

Bird (Common or Scientific Name):	Great Egret; Ardea alba; GREG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 54. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Subadult
Additional Notes:	Flew into riparian area SE of the end of Sunset
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 55. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 56. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 57. 1 record, no

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 58. 1 record, no

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 59. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	Territorial display, In flight
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

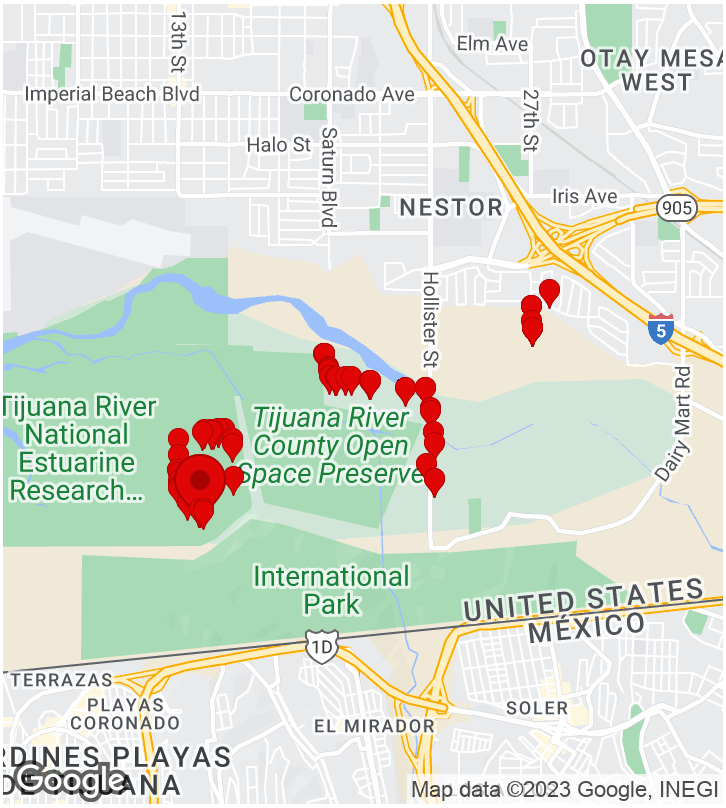
Mammal (Common or Scientific Name):	Audubons Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

8/16/2023, 7:34:31 PM UTC



CREATED

4/25/2023, 2:16:37 PM UTC
by SC Fulcrum05

UPDATED

8/16/2023, 7:34:31 PM UTC
by SC Fulcrum05

LOCATION

32.545079, -117.103885

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Adrienne Lee
Date:	April 25, 2023

START Weather Details:

Start - Time:	07:16
Start - Temperature:	60.6
Start - Wind Direction From (select one):	SW
Start - Low Wind Speed:	0.7
Start - High Wind Speed:	4.7
Start - Average Wind Speed:	2.7
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:43
End - Temperature:	69.9
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	0
End - High Wind Speed:	4.5
End - Average Wind Speed:	1.8
End - Cloud Cover (%):	40
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	1. TJ Campground 2. Ball field (no NOHA) 3. Ponyland 4. TJ Butterfly Garden
Observation Type:	Bird, Mammal, Invertebrate, Reptile

Photos

Bird

Bird Observation: (74 Items)

Bird Observation: - 1. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 2. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 3. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown, Male
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:	

Bird Observation: - 5.

Bird (Common or Scientific Name):	
Other Bird Species	Larus sp.
Is the Bird Sensitive ?	No
Photo(s) of Bird:	

Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Wilson's Warbler; Cardellina pusilla; WIWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

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Bird Observation: - 17. 1 record, yes

Bird (Common or Scientific Name):	Double-crested Cormorant; Phalacrocorax auritus; DCCO
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	

Notes:

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Townsend's Warbler; Setophaga townsendi; TOWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Black-throated Gray Warbler; Setophaga nigrescens; BTYW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight, Territorial display
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	Pair detected but not together. Female seen going to nest site area. Male foraging and perched on tree tobacco.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Blue Grosbeak; Passerina caerulea; BLGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, no

Bird (Common or Scientific Name):	American Coot; Fulica americana; AMCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Rock Pigeon; Columba livia; ROPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Pied-billed Grebe; Podilymbus podiceps; PBGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, no

Bird (Common or Scientific Name):	Great-tailed Grackle; Quiscalus mexicanus; GTGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record, no

Bird (Common or Scientific Name):	White-throated Swift; Aeronautes saxatalis; WTSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record, no

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Cinnamon Teal; Spatula cyanoptera; CITE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 39. 1 record, no

Bird (Common or Scientific Name):	Great Egret; Ardea alba; GREG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 40. 1 record, yes

Bird (Common or Scientific Name):	Gadwall; Mareca strepera; GADW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 43. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 44. 1 record, yes

Bird (Common or Scientific Name):	Vaux's Swift; Chaetura vauxi; VASW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 45. 1 record, no

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; ECDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 46. 1 record, no

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 47. 1 record, no

Bird (Common or Scientific Name):	Cedar Waxwing; Bombycilla cedrorum; CEDW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	10
Photo(s) of Bird:	
Notes:	

Bird Observation: - 48. 1 record, yes

Bird (Common or Scientific Name):	Long-billed Curlew; Numenius americanus; LBCU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 49. 1 record, no

Bird (Common or Scientific Name):	Brewer's Blackbird; Euphagus cyanocephalus; BRBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 50. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 51. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

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Bird Observation: - 52. 1 record, yes

Bird (Common or Scientific Name):	American Peregrine Falcon; Falco peregrinus anatum; PEFA
Is the Bird Sensitive ?	yes
Sub-Species Info:	Found throughout North America (south of tundra) and northern Mexico

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 53. 1 record, no

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:	

Bird Observation: - 54. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1

Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 55. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Caught mammalian prey item.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 56. 1 record, no

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

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Bird Observation: - 57. 1 record, no

Bird (Common or Scientific Name):	Killdeer; Charadrius vociferus; KILL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 58. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight, Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 59. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 60. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 61. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 62. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1

Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 63. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 64. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling

Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Counter singing
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 65. 1 record, no

Bird (Common or Scientific Name):	Yellow-rumped Warbler; Setophaga coronata; YRWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 66. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 67. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 68. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 69. 1 record, no

Bird (Common or Scientific Name):	California Quail; Callipepla californica; CAQU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 70. 1 record, no

Bird (Common or Scientific Name):	White-crowned Sparrow; Zonotrichia leucophrys; WCSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 71. 1 record, no

Bird (Common or Scientific Name):	Northern Mockingbird; Mimus polyglottos; NOMO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 72. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 73. 1 record, no

Bird (Common or Scientific Name):	Ruby-crowned Kinglet; Regulus calendula; RCKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 74. 1 record, no

Bird (Common or Scientific Name):	Bullock's Oriole; Icterus bullockii; BUOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Invertebrate

Invertebrate Observation: (4 Items)

Invertebrate Observation: - 1.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Velvet ant
Is the Invertebrate Sensitive ?	No

Invertebrate Observation: - 2.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Sphinx moth
Is the Invertebrate Sensitive ?	

Invertebrate Observation: - 3.

Invertebrate (Common or Scientific Name):	
Other Invertebrate Species	Sara’s orange tip
Is the Invertebrate Sensitive ?	No

Invertebrate Observation: - 4. 1 record

Invertebrate (Common or Scientific Name):	Cabbage white
Is the Invertebrate Sensitive ?	no
Sub-Species Info:	

Photo(s) of Invertebrate:

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Audubons Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (3 Items)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 2. 1 record

Reptile (Common or Scientific Name):	Common Sagebrush Lizard; Sceloporus graciosus
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 3. 1 record

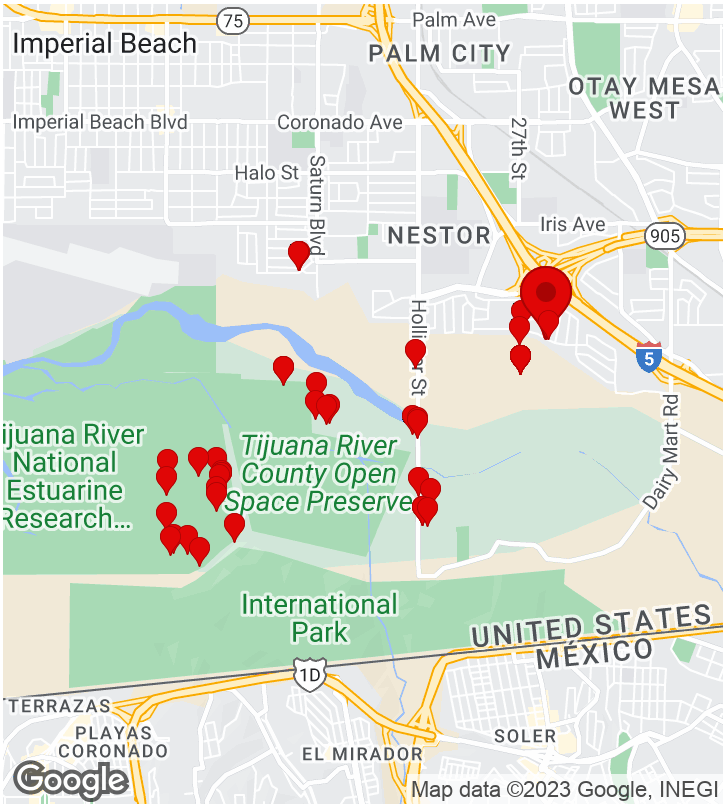
Reptile (Common or Scientific Name):	Common Side-blotched Lizard; Uta stansburiana
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

5/25/2023, 6:21:32 PM UTC



CREATED

5/25/2023, 2:22:46 PM UTC
by SC Fulcrum05

UPDATED

5/25/2023, 6:21:32 PM UTC
by SC Fulcrum05

LOCATION

32.560732, -117.073125

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Bailey Setzler
Date:	May 25, 2023

START Weather Details:

Start - Time:	07:22
Start - Temperature:	63.7
Start - Wind Direction From (select one):	W
Start - Low Wind Speed:	0
Start - High Wind Speed:	4.2
Start - Average Wind Speed:	0.6
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

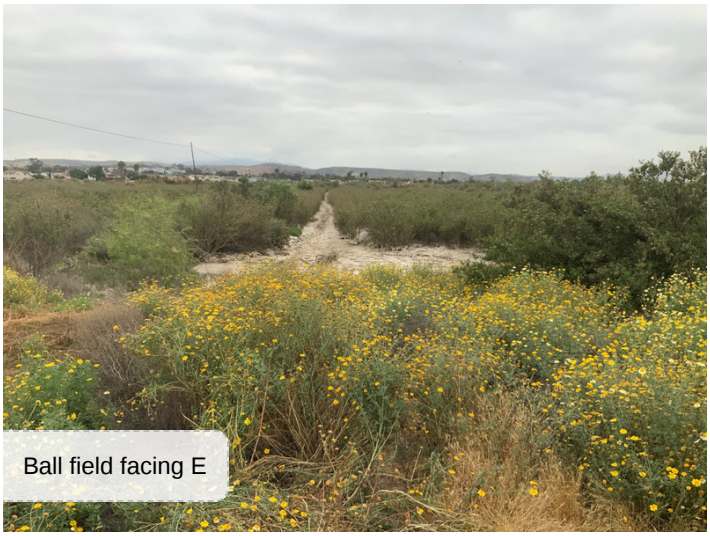
END Weather Details:

Time Out:	11:19
End - Temperature:	67.5
End - Wind Direction From (select one):	W
End - Low Wind Speed:	0
End - High Wind Speed:	5.8
End - Average Wind Speed:	2.4
End - Cloud Cover (%):	95
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

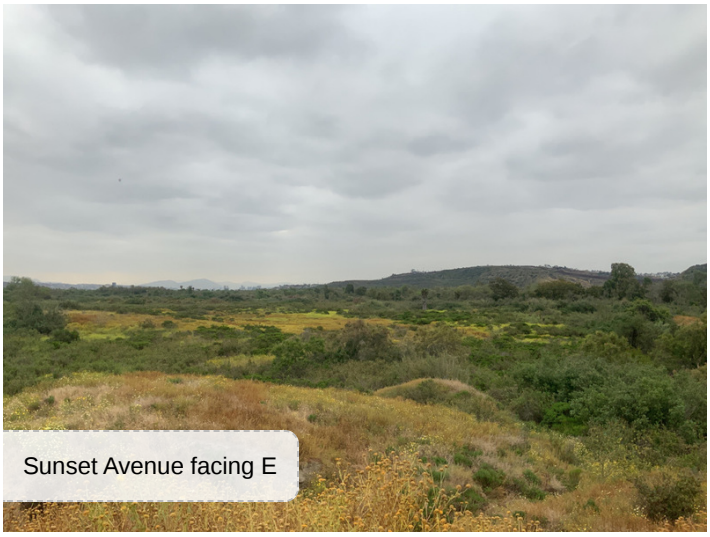
Project Location (description):	

Notes	1. Ball field 2. Campground 3. Butterfly Garden 4. Ponyland Dead animal at 32.5477337, -117.0835475
Observation Type:	Bird, Mammal, Butterfly/Moth, Reptile

Photos


Ball field facing E

Territory 1, facing NW


Sunset Avenue facing E

Ponyland facing NE

Bird

Bird Observation: (50 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Caspian Tern; Hydroprogne caspia; CATE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	White-throated Swift; Aeronautes saxatalis; WTSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Western Gull; Larus occidentalis; WEGU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Northern Mockingbird; Mimus polyglottos; NOMO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, yes

Bird (Common or Scientific Name):	Double-crested Cormorant; Phalacrocorax auritus; DCCO
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, yes

Bird (Common or Scientific Name):	Green Heron; Butorides virescens; GRHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 16. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 17. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, yes

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult, Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 23. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; ECDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Say's Phoebe; Sayornis saya; SAPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Coastal California Gnatcatcher; Polioptila californica californica; CAGN
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 29. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	4
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown, Male, Female
Bird Age (check all that apply):	Juvenile, Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 32. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo
Is the Bird Sensitive ?	yes
Sub-Species Info:	

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 33. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 34. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 35. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 39. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Nest building
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 40. 1 record, no

Bird (Common or Scientific Name):	American Kestrel; Falco sparverius; AMKE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record, no

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AMGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record, no

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 46. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 47. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 48. 1 record, no

Bird (Common or Scientific Name):	European Starling; Sturnus vulgaris; EUST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 49. 1 record, no

Bird (Common or Scientific Name):	House Sparrow; Passer domesticus; HOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 50. 1 record, no

Bird (Common or Scientific Name):	Blue Grosbeak; Passerina caerulea; BLGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Butterfly/Moth

Butterfly/Moth Observation: (4 Items)

Butterfly/Moth Observation: - 1. 1 record

Butterfly/Moth (Common or Scientific Name):	Painted Lady; Vanessa Cardui
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 2. 1 record

Butterfly/Moth (Common or Scientific Name):	Cabbage White; Pieris rapae
Is the Butterfly/Moth Sensitive ?	no

Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 3. 1 record

Butterfly/Moth (Common or Scientific Name):	Pacific Orangetip; Anthocharis sara
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 4. 1 record

Butterfly/Moth (Common or Scientific Name):	Western Tiger Swallowtail; Papilio rutulus
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Photo(s) of Butterfly/Moth:

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Audubons Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Mammal:

Notes:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Northern Harrier

6/27/2023, 5:59:27 PM UTC

CREATED

6/27/2023, 1:28:43 PM UTC
by SC Fulcrum05

UPDATED

6/27/2023, 5:59:27 PM UTC
by SC Fulcrum05

LOCATION

32.553905, -117.084578

Parent Form

Project Name:	TMP Monitoring ▸ Northern Harrier
Preserve/Park Name	Tijuana River Valley Regional Park
General Survey Type	TMP Monitoring
Specific Survey Type	TMP Northern Harrier
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Brennan Mulrooney
Date:	June 27, 2023

START Weather Details:

Start - Time:	06:28
Start - Temperature:	63.3
Start - Wind Direction From (select one):	N/A
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	Overcast but visibility good.

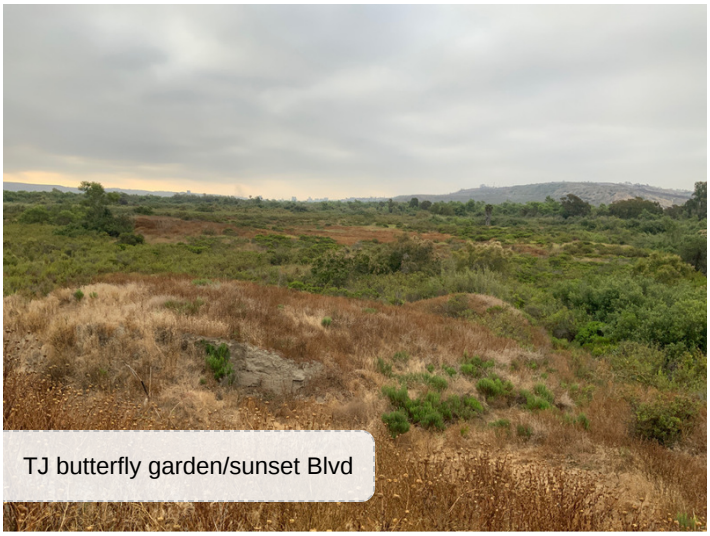
END Weather Details:

Time Out:	11:00
End - Temperature:	67.6
End - Wind Direction From (select one):	W
End - Low Wind Speed:	0.3
End - High Wind Speed:	6.9
End - Average Wind Speed:	3.6
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

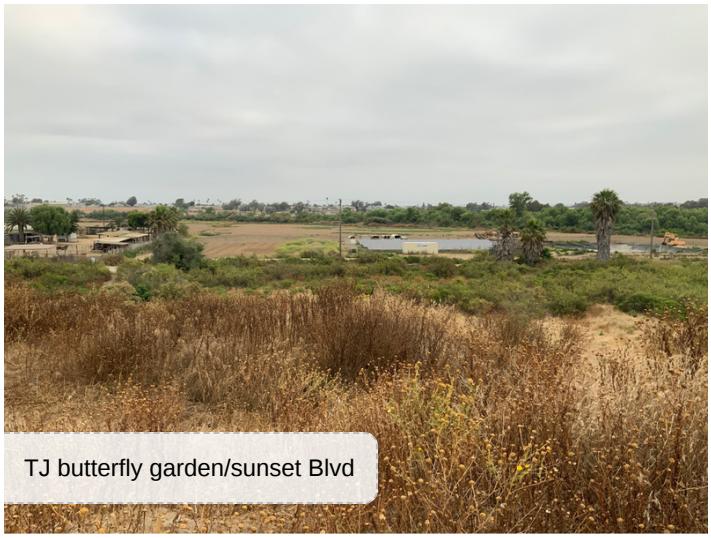
Notes	Started at TJ butterfly garden, then pony land, TJ campground, and ball field last.
Observation Type:	Bird, Mammal, Reptile, Butterfly/Moth

Photos


TJ butterfly garden/sunset Blvd

TJ butterfly garden/sunset Blvd

TJ butterfly garden/sunset Blvd


TJ butterfly garden/sunset Blvd

Ponyland

Ponyland

TJ campground

Baseball field

Baseball field

Bird

Bird Observation: (64 Items)

Bird Observation: - 1. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing), In flight
Bird Sex (check all that apply):	Unknown

Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male

Bird Age (check all that apply):	Adult
Additional Notes:	Two adults countering singing
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 9. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult

Additional Notes:	Two adult males counter singing
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Males counter singing

Photo(s) of Bird:

Photo(s) of Bird:

Notes:

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Tree Swallow; Tachycineta bicolor; TRES
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Black-crowned Night-Heron; Nycticorax nycticorax; BCNH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; ECDO
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Western Gull; Larus occidentalis; WEGU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Juvenile
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes

Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Red-winged Blackbird; Agelaius phoeniceus; RWBL
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, no

Bird (Common or Scientific Name):	Killdeer; Charadrius vociferus; KILL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Snowy Egret; Egretta thula; SNEG
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, yes

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 32. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record, no

Bird (Common or Scientific Name):	Common Gallinule; Gallinula galeata; COGA
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record, yes

Bird (Common or Scientific Name):	Osprey; Pandion haliaetus; OSPR
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 35. 1 record, yes

Bird (Common or Scientific Name):	Double-crested Cormorant; Phalacrocorax auritus; DCCO
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record, no

Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AMGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 44. 1 record, no

Bird (Common or Scientific Name):	Brewer's Blackbird; Euphagus cyanocephalus; BRBL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 46. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 47. 1 record, no

Bird (Common or Scientific Name):	Rock Pigeon; Columba livia; ROPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 48. 1 record, no

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 49. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 50. 1 record, no

Bird (Common or Scientific Name):	Black-throated Magpie-Jay; Calocitta colliei
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 51. 1 record, yes

Bird (Common or Scientific Name):	White-faced Ibis; Plegadis chihi; WFIB
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	15
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 52. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual

Number of individuals observed:	1
Behavior (check all that apply):	In flight, Perched (not singing)
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 53. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 54. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 55. 1 record, no

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 56. 1 record, yes

Bird (Common or Scientific Name):	American Peregrine Falcon; Falco peregrinus anatum; PEFA
Is the Bird Sensitive ?	yes
Sub-Species Info:	Found throughout North America (south of tundra) and northern Mexico

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	Stole prey item from WTKI

Bird Observation: - 57. 1 record, yes

Bird (Common or Scientific Name):	White-tailed Kite; Elanus leucurus; WTKI
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2

Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Juvenile
Additional Notes:	Both jugs
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 58. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 59. 1 record, yes

Bird (Common or Scientific Name):	Coastal California Gnatcatcher; Polioptila californica californica; CAGN
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling, In flight

Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 60. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 61. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male

Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 62. 1 record, yes

Bird (Common or Scientific Name):	Northern Harrier; Circus hudsonius; NOHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Subadult
Additional Notes:	Seen flying around and then diving don into the mulefat.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 63. 1 record, no

Bird (Common or Scientific Name):	European Starling; Sturnus vulgaris; EUST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 64. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA

Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Butterfly/Moth

Butterfly/Moth Observation: (1 Item)

Butterfly/Moth Observation: - 1. 1 record

Butterfly/Moth (Common or Scientific Name):	Queen; Danaus gilippus
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Photo(s) of Butterfly/Moth:

Notes:	

Mammal

Mammal Observation: (2 Items)

Mammal Observation: - 1. 1 record

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Mammal (Common or Scientific Name):	Audubons Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Mammal Observation: - 2. 1 record

Mammal (Common or Scientific Name):	California Ground Squirrel; Ostospermophilus beecheyi
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (2 Items)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Common Side-blotched Lizard; Uta stansburiana
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 2. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

G-3 Threat Assessment Form

Scientific Name: Circus hudsonius *Common Name: Northern Harrier*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Tijuana River Valley Regional Park

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA), Brennan Mulrooney (ESA)

Date: June 27, 2023 *Time Start: 0628*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____ Exact:_____ Estimate:_____ Uncertainty?_____ Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____ OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____ Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____ Flowering:_____ Fruiting:_____ Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____ Disease:_____ Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____ Yes_____ No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations.*

Enter here only if new habitat plot location or to make a correction to coordinates in list provided.

GPS/Smartphone Accuracy: +/-_____m Datum:_____ (NAD83 Recommended) Coord. Syst: UTM:___ State Plane:___

Center of Plot Coord: E:_____ N:_____ No Change:_____ New:_____ Correction:_____

Camera type:_____ PhotoCoord: E:_____ N:_____ No Change:____ New:_____ Correction:_____

Location 1: _____

Direction (facing) Height (m) Camera Angle Up or Down Photo #

E:_____ N:_____

Photo Location 2 [Coordinates] Direction (facing) Height (m) Camera Angle Up or Down Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in* ***10m radius sample t plot****. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____ (category) Thatch (Non-Native Grass) Cover:_____ (category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____ (category) Thatch Depth: Max:_____ cm

Dead Standing Biomass? Yes:_____ No:_____ If yes, species:_____ Cover Class (1-6):_____ Ave. Height:_____ cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____ Ground Squirrel Activity:_____ Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____ No:_____ If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category****. See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____ Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____ (∑ =100%)

Scientific Name: Northern Harrier | *MSP Occurrence ID: N/A*

Preserve: Tijuana River Valley Regional Park | *Occurrence Name: N/A*

Date: June 27, 2023 | *Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA), Brennan Mulrooney (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Rural development, ocean

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	5	Feral Pig Activity	1	Erosion	3
Non-Native Grasses	3	Trampling	3	Urban Runoff	3
Non-Native Woody Plants	4	Vandalism	1	Slope Movement	1
Competitive Native Plants	1	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	3	Historic Agriculture (Y/N/Unk)	Unknown		
Encampments	1	Altered Hydrology	1		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe: In field across from baseball fields. mowing only, no ground disturbance.

Restoration Project (Impacts): 3 If Observed, Briefly Describe: watering of restoration areas observed

ORV Activity 3 If Observed, List Type(s) of ORV Activity: Border Patrol on ORV

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized) 3 If Trails are Present, are they Authorized (circle one)? ☐ Yes / ☐ No / ☑ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking: Yes Biking: Yes Equestrian: Yes Dog: Yes Service Vehicles: Yes Other (Describe): Restoration crews

Illegal Trail Use? ☑ Yes ☐ No ☐ Unknown

Describe: Go around signs that say "trail closed" Other Disturbance? List & Rank:

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: N/A Species: Northern Harrier Date: June 27, 2023

VI. MANAGEMENT RECOMMENDATIONS

Continue to conduct nesting surveys, especially for Territory 1.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Conducted nesting surveys for Northern Harriers in 2022 and 2023.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

White-tailed Kite, Peregrine Falcon, Cooper's hawk, least Bell's vireo, yellow warbler, yellow-breasted chat, osprey, white-faced ibis, double-crested cormorant, California gnatcatcher

Time Finish: 10:50

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

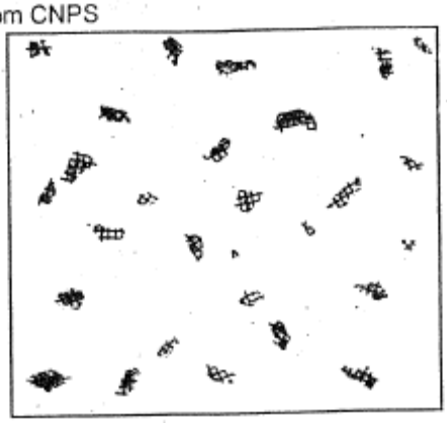
6 = Disturbance occurs 50% to <75% of area within maximum extent.

7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

Cover Diagrams from CNPS

1%



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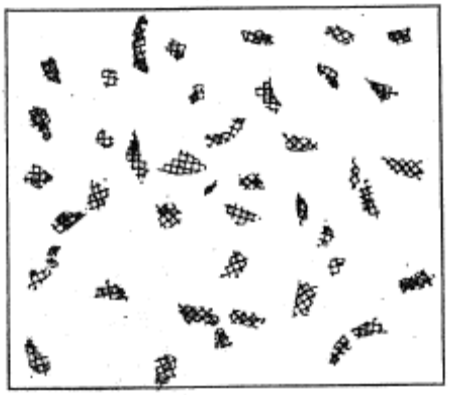

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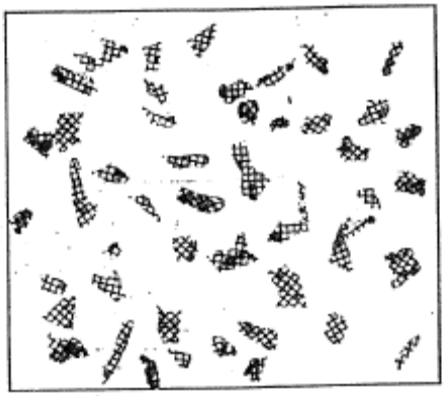

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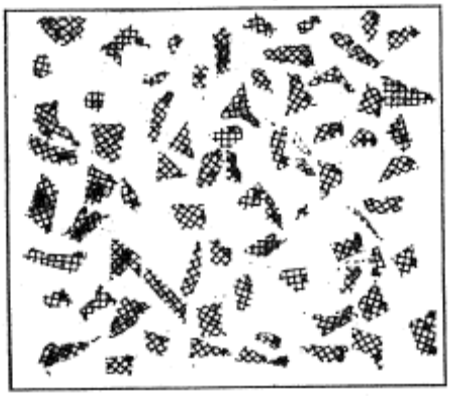

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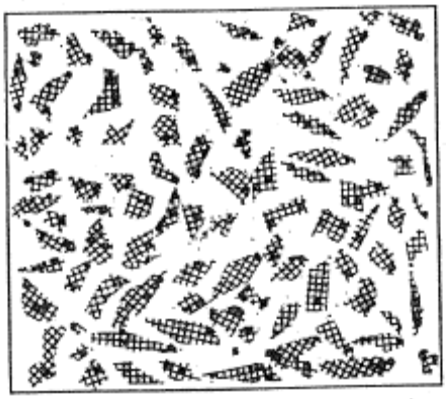

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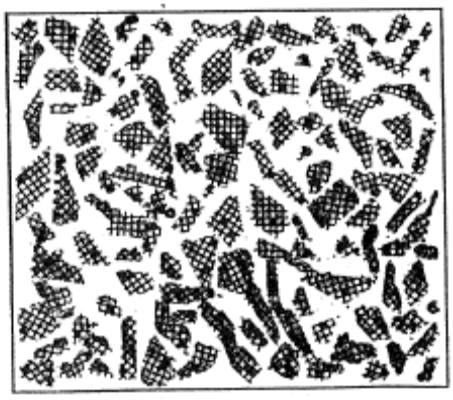

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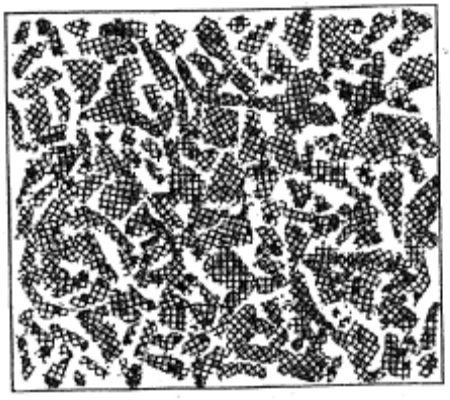

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Appendix H

Least Bell's Vireo USFWS 45-Day Report and Brown-Headed Cowbird Trapping Annual Report

H-1 Least Bell's Vireo USFWS 45-Day Report

ESA

2355 Northside Drive
Suite 100
San Diego, CA 92108
619.719.4200 phone
619.719.4201 fax

www.esassoc.com

August 11, 2023

Stacey Love
Carlsbad Fish and Wildlife Service Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

Subject: Results of 2023 Focused Least Bell's Vireo Surveys for the Santa Margarita County Preserve Implementation of Targeted Monitoring Plan (TMP), Unincorporated San Diego County, California

Dear Ms. Love:

This letter report presents the methodology and results of focused surveys conducted for least Bell's vireo (*Vireo bellii pusillus*; LBVI) at the Santa Margarita County Preserve (Preserve) located in unincorporated San Diego County, California. Environmental Science Associates (ESA) biologists Florence Chan, Brennan Mulrooney, Jaclyn Catino-Davenport, and Brenda McMillan conducted the surveys to determine the presence or absence of the species within the approximately 211-acre survey area (survey area) as directed by the County of San Diego (County) Department of Parks and Recreation (DPR) Targeted Monitoring Plan (TMP; ESA and ICF 2022).

Project Description and Location

The Preserve is an approximately 211-acre open space preserve located in northern San Diego County, west of Interstate 15 and north of State Route 76 (**Figure 1**; see **Attachment A** for figures). The Preserve is located just east of the northeastern portion of the Camp Pendleton Marine Corps Base; it is directly west of Sandia Creek Drive and the southern portion of the Preserve is bisected by De Luz Road. It is within the Temecula and Fallbrook U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (**Figure 2**).

Site Description

The survey area encompasses a portion of the Santa Margarita River and adjacent upland areas, recreational trails and access roads, and the Preserve staging area on the north side of De Luz Road. The Preserve contains a total of 21 vegetation communities and land cover types: Diegan coastal sage scrub, Diegan coastal sage scrub: inland form, southern mixed chaparral, chamise chaparral, scrub oak chaparral, coastal sage-chaparral transition, non-native grassland, wildflower field, southern riparian forest, southern coast live oak riparian forest, southern cottonwood-willow riparian forest, southern sycamore-alder riparian woodland, southern riparian woodland, southern riparian scrub, southern willow scrub, coast live oak woodland, open coast live oak woodland, coast live oak forest, open water, urban/developed, and disturbed habitat (**Figure 3**).

For the purposes of the LBVI survey, all vegetation communities within the Santa Margarita River channel were surveyed. Potentially suitable nesting habitat for LBVI occurs only in southern riparian forest (13.41 acres), southern coast live oak riparian forest (0.43 acres), southern cottonwood-willow riparian forest (2.71 acres), southern sycamore-alder riparian woodland (0.47 acres), southern riparian woodland (20.41 acres), southern

riparian scrub (0.67 acres), and southern willow scrub (4.94 acres), all together totaling 43.04 acres. Brief descriptions of suitable LBVI vegetation communities within the Preserve are presented below.

Southern Riparian Forest (13.41 acres)

Southern riparian forest consists of stands that are dominated or codominated by western sycamore and coast live oak. Additional tree species within this community include white alder (*Alnus rhombifolia*), Fremont's cottonwood (*Populus fremontii*), Goodding's black willow (*Salix gooddingii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*). Associated sub-dominant shrubs in this community include mulefat (*Baccharis salicifolia*), poison oak (*Toxicodendron diversilobum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), desert wild grape (*Vitis girdiana*), and California rose (*Rosa californica*). Herbaceous diversity is moderate and cover is continuous to open, including mugwort (*Artemisia douglasiana*), western ragweed (*Ambrosia psilostachya*), and many ruderal species.

Southern Coast Live Oak Riparian Forest (0.43 acres)

In this vegetation community, western sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*) are codominant in an open to closed tree canopy. Scattered within this community are red willow, Gooding's black willow, and Fremont's cottonwood trees. Associated understory plant species include blue elderberry, mugwort, poison oak, desert wild grape, and California rose.

Southern Cottonwood–Willow Riparian Forest (2.71 acres)

This habitat is characterized by stands dominated or codominated by Fremont's cottonwood, Goodding's black willow, arroyo willow, and western sycamore, forming an open to intermittent tree canopy. The understory is composed of mulefat, desert wild grape, California rose, and poison oak. Herbaceous vegetation occurs in openings, often in flood scour or depositional areas.

Southern Sycamore–Alder Riparian Woodland (0.47 acres)

In general, western sycamore and white alder are dominant or codominant in the tree canopy; additional tree species may include coast live oak, southern California black walnut (*Juglans californica*), Fremont's cottonwood, coast live oak, Goodding's black willow, red willow, and arroyo willow. Trees are generally < 35 meters tall with open canopy. The shrub and herb canopies are open with sparse cover.

Southern Riparian Woodland (20.41 acres)

Within this community, red willow, western sycamore, Fremont's cottonwood, coast live oak, and arroyo willow are dominant in an open tree canopy. Shrub species in the understory include mulefat, coyote brush (*Baccharis pilularis*), poison oak, desert wild grape, and blue elderberry.

Southern Riparian Scrub (0.67 acres)

Within this vegetation community, western sycamore is dominant or codominant in an open tree canopy with mulefat dominant in an open shrub canopy. Associated sub-dominant riparian shrubs include poison oak, blue elderberry, broom baccharis (*Baccharis sarothroides*), desert wild grape, and California rose. The herbaceous diversity is low and cover is sparse; characteristic species include mugwort and western ragweed.

Southern Willow Scrub (4.94 acres)

Several willow species (red willow, arroyo willow, narrowleaf willow [*Salix exigua*], Pacific willow [*Salix lasiandra*], and Goodding's black willow) dominate this dense, broad-leafed, winter-deciduous riparian thicket community. Scattered emergent Fremont's cottonwood and western sycamore also occur within this community. Shrub species that make up the understory include mulefat, coyote brush, or poison oak.

Methodology

Surveys for LBVI were conducted and led by ESA biologists Florence Chan, Brennan Mulrooney, Brenda McMillan, and Jaclyn Catino-Davenport and assisted by Dillon Travis, Mary Cozy, Karla Alcaraz, Amy Orduño-Baez, and Bailey Setzler. Survey methodology followed the U.S. Fish and Wildlife Service's (USFWS's) *Least Bell's Vireo Survey Guidelines* issued January 19, 2001 (USFWS 2001). Eight surveys were conducted between April 11 and June 30, 2023, within all portions of the survey area containing potentially suitable habitat. All vegetation communities within the Santa Margarita River channel were surveyed to encompass all potentially suitable nesting habitat and adjacent habitat potentially used for foraging. Surveys were conducted no less than 10 days apart between dawn and 11:31 a.m. Weather conditions were suitable for all surveys, with overcast to clear skies, winds of 3 miles per hour or less, and temperatures between 50°F and 79°F.

Results

Survey results are summarized in **Table 1** and depicted in **Figure 4**. Completed field forms are provided in **Attachment B**. LBVI were detected during all 2023 focused surveys. Brown-headed cowbirds (*Molothrus ater*; BHCO), which are brood parasites, were also detected within the survey area during protocol LBVI surveys, as summarized in **Table 2** below. BHCO trapping occurred within the Preserve from April 1 to June 30, 2023, and trap locations are depicted in **Figure 4**. Data for trapping results were not available at the time of this report.

Incidental Observations

A complete list of all wildlife observed during the surveys is included in **Attachment C**. Incidentally observed special-status species included Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), great blue heron (*Ardea herodias*), turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), yellow-breasted chat (*Icteria virens*), and yellow warbler (*Setophaga petechia*). Belding's orange-throated whiptail is a California Department of Fish and Wildlife (CDFW) watch list species and a

County Group 2 species. Great blue heron is a County Group 2 species. Turkey vulture is a County Group 1 species. Cooper's hawk is a CDFW watch list species and a County Group 1 species. Red-shouldered hawk is a County Group 1 species. Yellow-breasted chat is a CDFW species of special concern and a County Group 1 species. Yellow warbler is a CDFW species of special concern and a County Group 2 species. CDFW California Natural Diversity Database (CNDDB) forms for all state and federal special-status species are provided in **Attachment D**. Locations of special-status species are shown in **Figure 4**, with the exception of yellow warbler and yellow-breasted chat. These two species were very common in the survey area and the location for each individual was not recorded as this was not the focus of the survey. We estimate that there were approximately 10 territories of yellow warbler and 4 territories of yellow-breasted chat in the survey area.

TABLE 1
LBVI SURVEY RESULTS

Date	Time (start/end)	Wind (mph) (start/end)	Temperature (F) (start/end)	Cloud Cover (start/end)	Results	Surveyors
04/11/23	0630–1100	0/0	50°–58°	100–80	15 adult LBVI Detected	Brennan Mulrooney, Florence Chan
04/21/23	0629–1103	2/0	58°–70°	100–40	14 adult LBVI Detected	Florence Chan, Dillon Travis
05/02/23	0644–1115	0/2	55°–65°	95–45	10 adult LBVI Detected	Florence Chan, Jaclyn Catino-Davenport
05/12/23	0642–1107	1/1	56°–65°	100–60	13 adult LBVI Detected	Florence Chan, Mary Cozy
05/25/23	0630–1131	1/3	55°–75°	100–90	10 adult LBVI Detected	Brenda McMillan, Karla Alcaraz
06/06/23	0600–1100	1/1	58°–64°	60–100	15 adult and 2 juvenile LBVI Detected	Brennan Mulrooney, Florence Chan
06/19/23	0559–1100	0/0	56°–67°	100–100	10 adult and 5 juvenile LBVI Detected	Florence Chan, Amy Orduno-Baez
06/30/23	0555–1100	0/1	57°–79°	100–0	17 adult and 6 juvenile LBVI Detected	Brennan Mulrooney, Bailey Setzler

TABLE 2
BROWN-HEADED COWBIRD DETECTIONS

Date	Count	Latitude (Y)[1]	Longitude (X)[1]
5/02/2023	2	33.4008544	-117.250390
6/30/2023	2	33.408107	-117.249930

[1] Coordinates are in WGS 84

Conclusion

Based on the results of the protocol-level LBVI surveys, the survey area contains LBVI habitat that was occupied by up to 13 LBVI territories. At least six of those territories produced young. Nest searching was not part of this survey protocol; however, one nest was incidentally discovered. The nest was subsequently parasitized by BHCO and was abandoned by the LBVI pair. BHCOs were observed during two surveys and no juvenile BHCOs were observed during any survey.

If there are any questions regarding this report or the results, please feel free to reach out to Brennan Mulrooney at (305) 849-2762 or Florence Chan at (949) 491-2528 or fchan@esassoc.com.

Sincerely,

Brennan Mulrooney
Senior Biologist

Florence Chan
Senior Biologist

Brenda McMillan
Senior Biologist

Jaclyn Catino-Davenport
Principal Biologist

Attachments:
Attachment A: Figures

- Figure 1: Regional Location
- Figure 2: Vicinity Map
- Figure 3: Santa Margarita County Preserve Vegetation Communities – Holland-Oberbauer Classification
- Figure 4: Least Bell's Vireo Survey Results Map

Attachment B: Field Forms
Attachment C: Wildlife Compendium
Attachment D: California Natural Diversity Database (CNDDB) Forms

Certification Statement

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Brennan Mulrooney
Senior Biologist

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Florence Chan
Senior Biologist

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Brenda McMillan
Senior Biologist

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Jaclyn Catino-Davenport
Principal Biologist

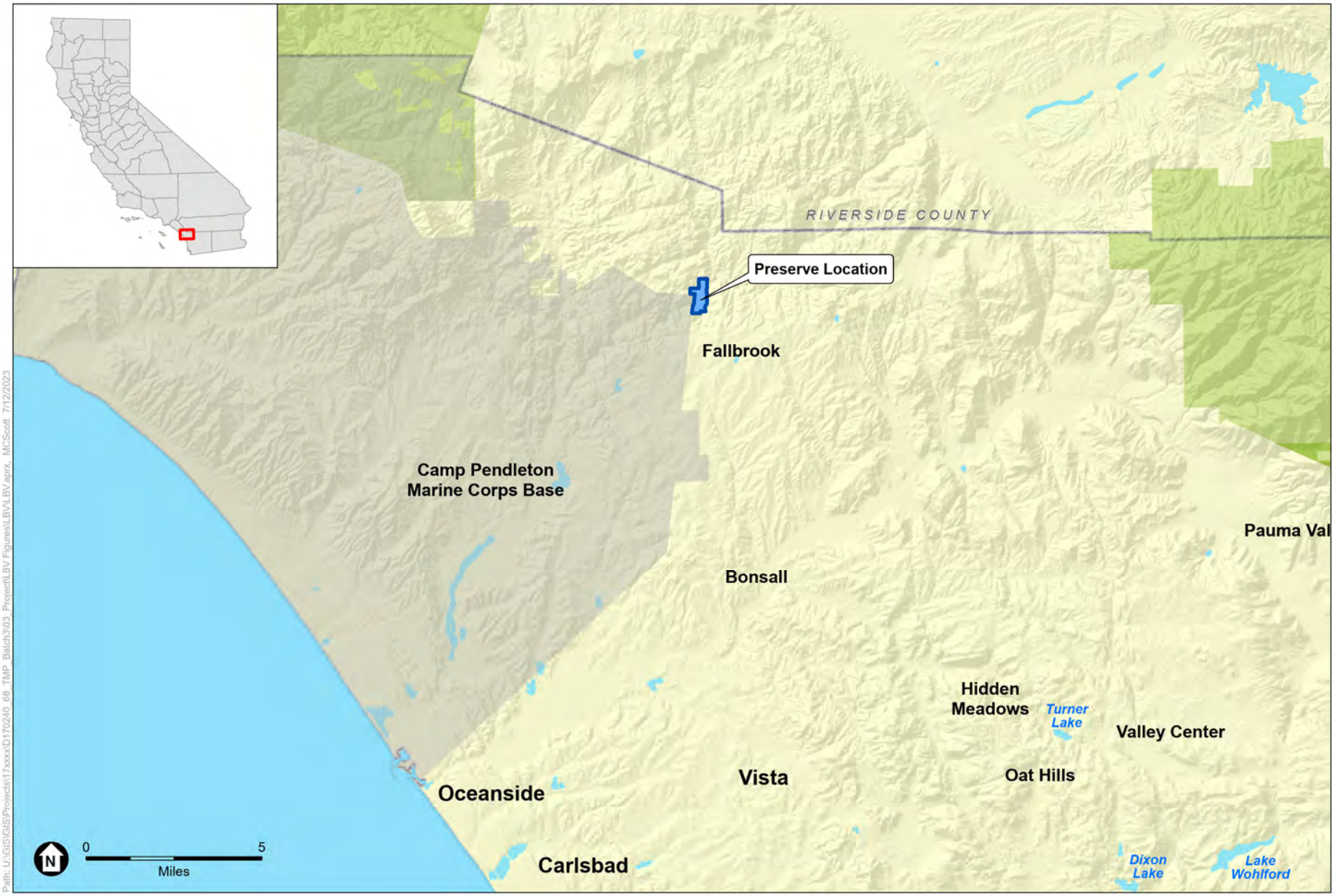
References

Environmental Science Associates and ICF. 2022. *Targeted Monitoring Plan.* Prepared for the County of San Diego Department of Parks and Recreation. December 2022.

U.S. Fish and Wildlife Service (USFWS). 2001. Least Bell's Vireo Survey Guidelines. January 19, 2001.

Attachment A
Figures

ESA



SOURCE: SanGIS

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
2023 Focused Least Bell's Vireo Surveys for the Santa Margarita County Preserve

Figure 1
Regional Location

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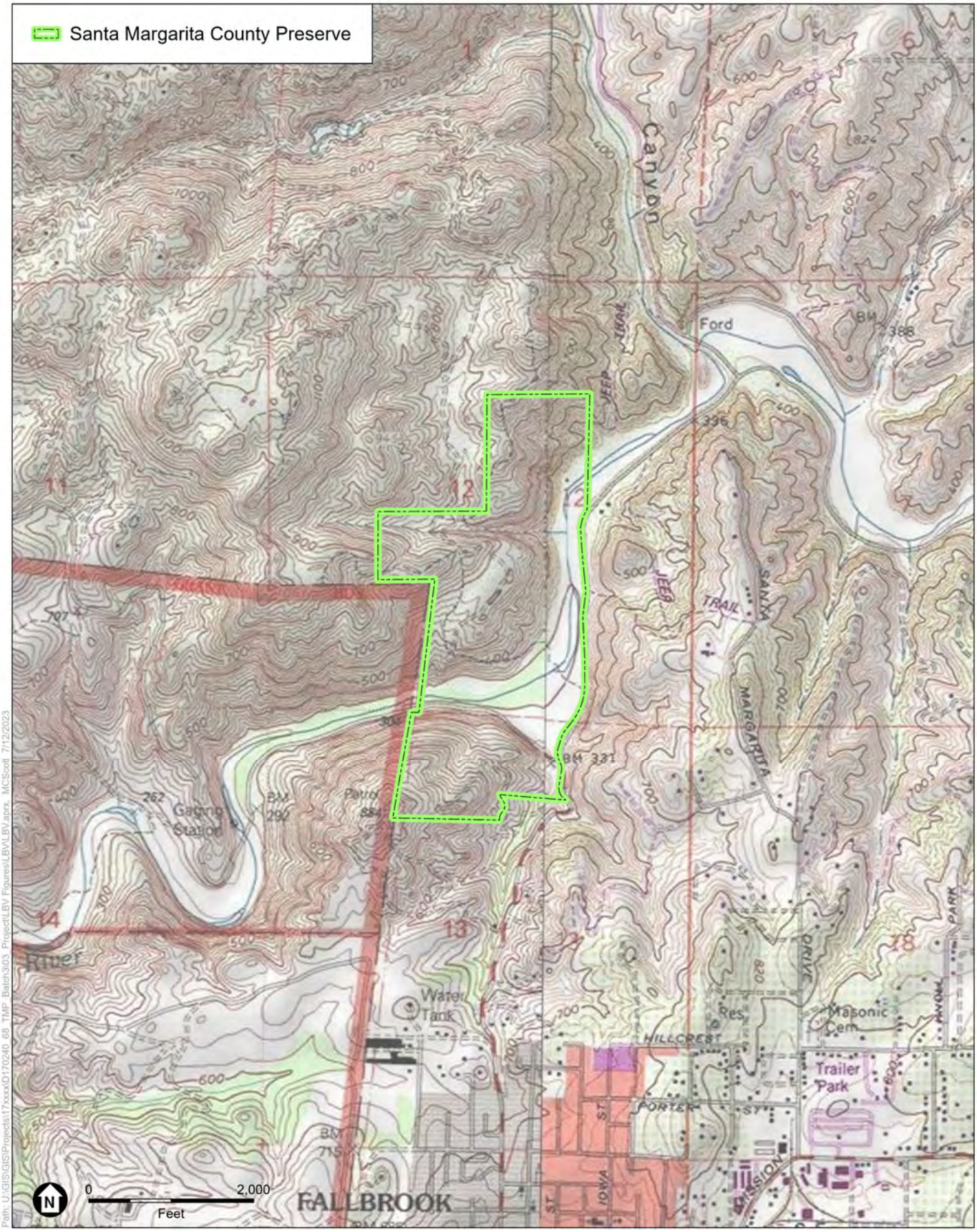


SOURCE: USGS Topoquads
Fallbrook and Temecula

COSD DPR 557744 TO 68 –
Implementation of Targeted Monitoring Plan 2022 Resource-Specific Monitoring and Management
2023 Focused Least Bell's Vireo Surveys for the Santa Margarita County Preserve

Figure 2
Vicinity Map

ESA

Santa Margarita County Preserve

Holland-Oberbauer

Scrub
- 32500 Diegan Coastal Sage Scrub
- 32520 Diegan Coastal Sage Scrub: Inland form

Chaparral
- 37120 Southern Mixed Chaparral
- 37200 Chamise Chaparral
- 37900 Scrub Oak Chaparral
- 37G00 Coastal Sage-Chaparral Transition

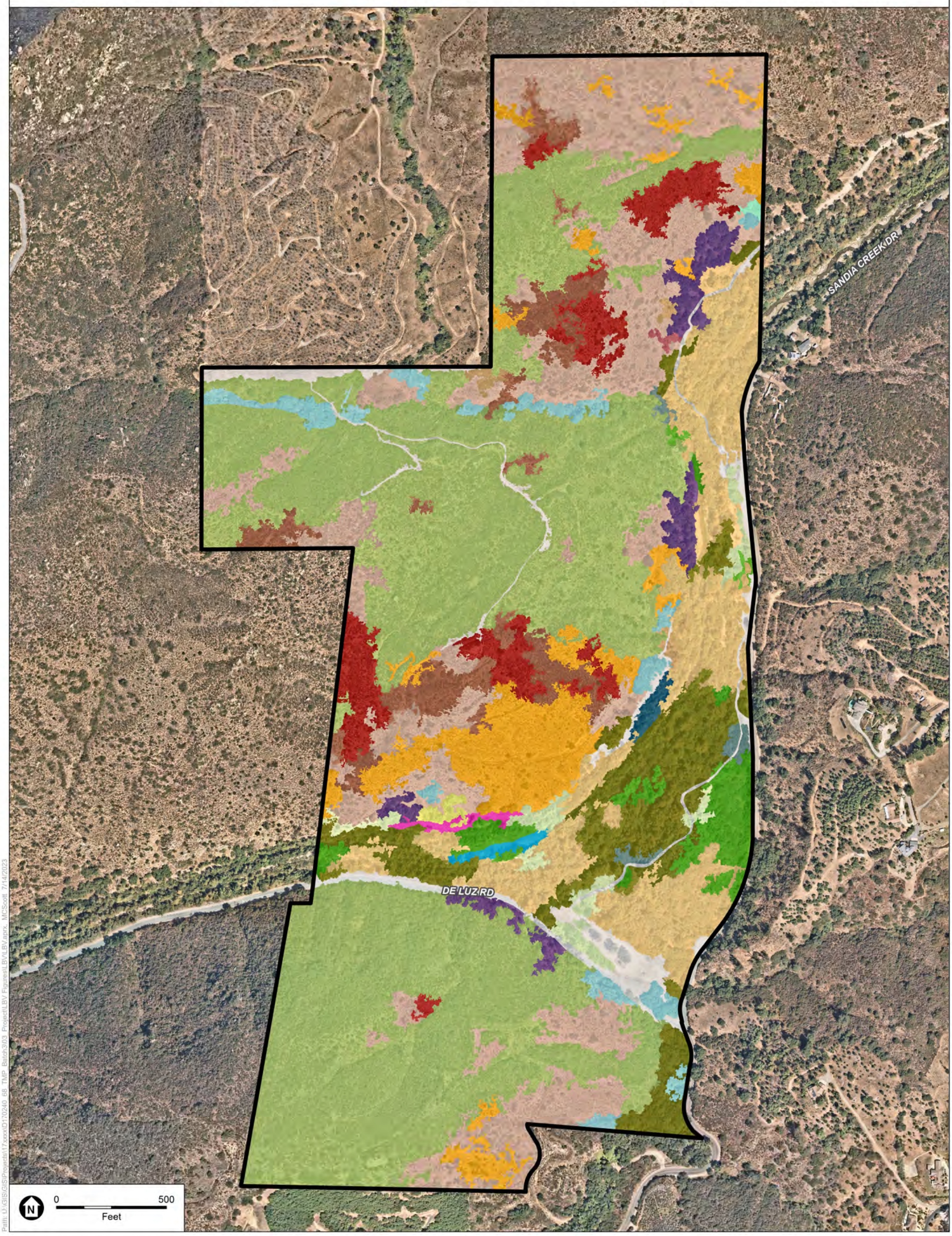
Herbaceous
- 42200 Non-Native Grassland
- 42300 Wildflower Field

Riparian
- 61300 Southern Riparian Forest
- 61310 Southern Coast Live Oak Riparian Forest
- 61330 Southern Cottonwood-Willow Riparian Forest
- 62400 Southern Sycamore-Alder Riparian Woodland
- 62500 Southern Riparian Woodland
- 63300 Southern Riparian Scrub
- 63320 Southern Willow Scrub

Woodland
- 71160 Coast Live Oak Woodland
- 71161 Open Coast Live Oak Woodland

Forest
- 81310 Coast Live Oak Forest

Disturbed/Developed
- 11300 Disturbed Habitat
- Open Water



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SOURCE: Nearmap, 9/5/2020; ESA, 2023.

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
2023 Focused Least Bell's Vireo Surveys for the Santa Margarita County Preserve

Figure 3
Santa Margarita County Preserve
Vegetation Communities - Holland-Oberbauer Classification

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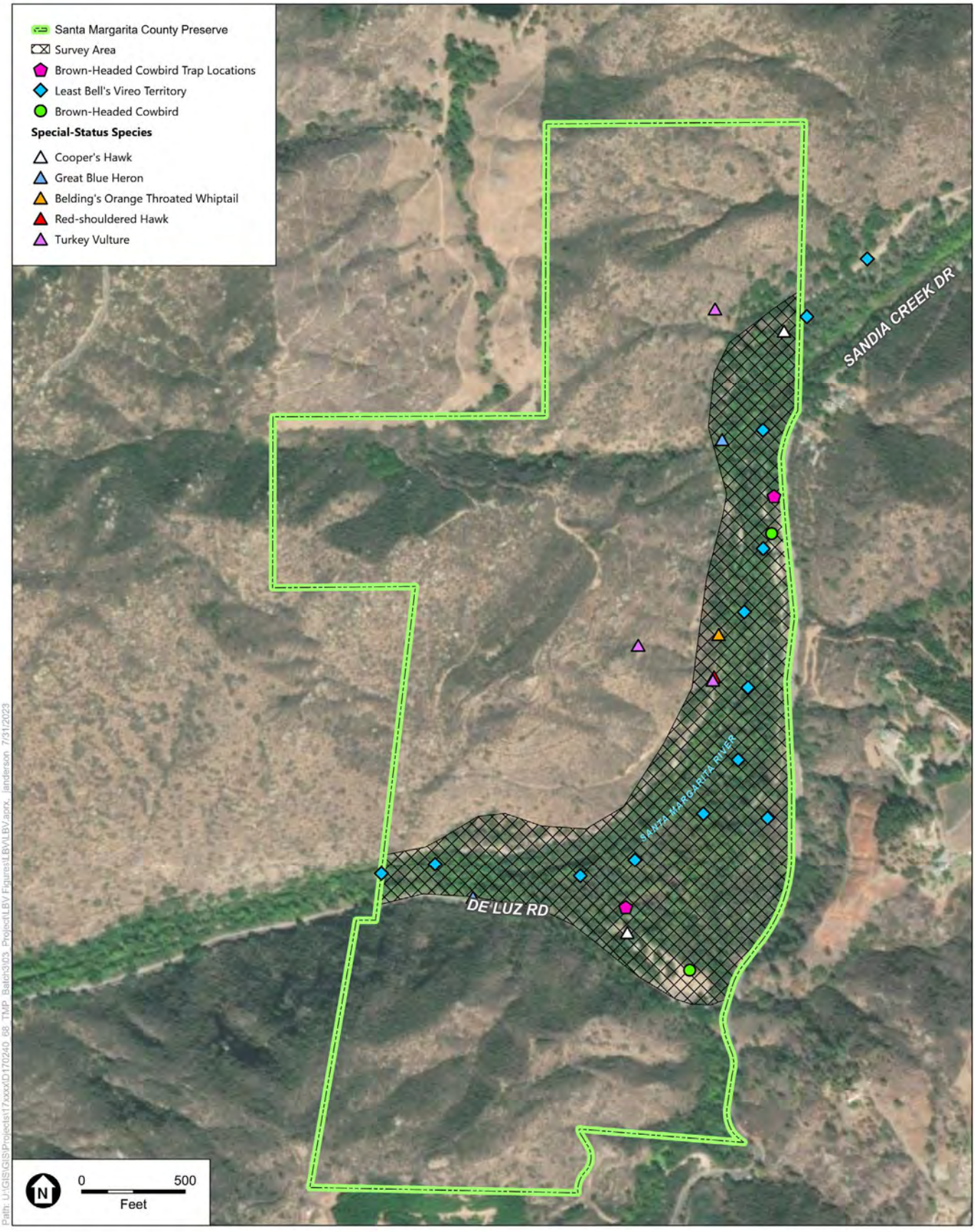

SOURCE: ESRI, 2023; ESA, 2023

COSD DPR 557744 TO 68 –
Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
2023 Focused Least Bell's Vireo Surveys for the Santa Margarita County Preserve

ESA

Figure 4
Least Bell's Vireo Survey Results

H-2 Brown-Headed Cowbird Trapping Annual Report

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

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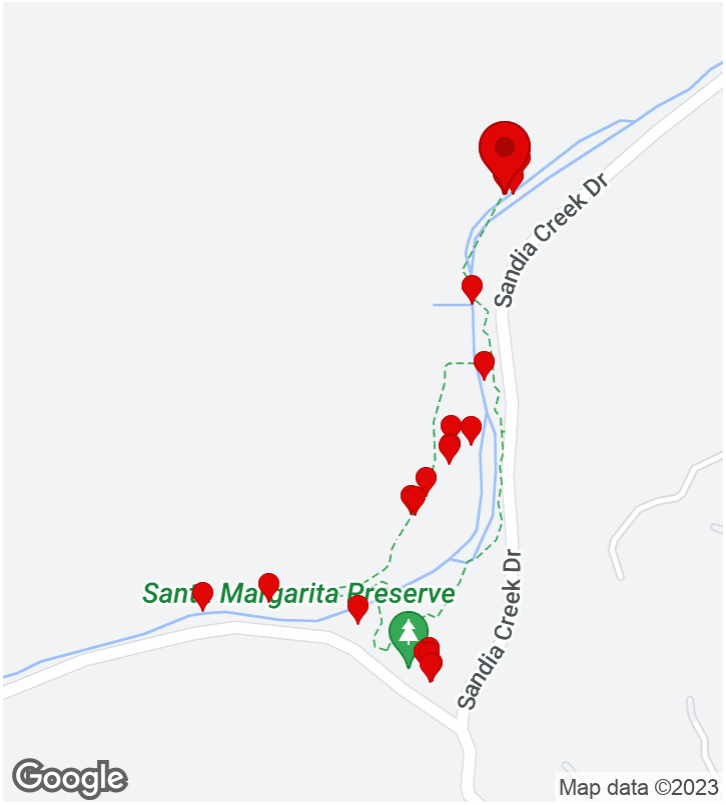

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by SC Fulcrum03

UPDATED

7/11/2023, 6:36:16 PM UTC
by SC Fulcrum14

LOCATION

33.410109, -117.249349

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Florence Chan
Date:	April 11, 2023

START Weather Details:

Start - Time:	06:30
Start - Temperature:	50
Start - Wind Direction From (select one):	N/A
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Fair
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:00
End - Temperature:	58
End - Wind Direction From (select one):	
End - Low Wind Speed:	0
End - High Wind Speed:	0
End - Average Wind Speed:	0
End - Cloud Cover (%):	80
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Santa Margarita Preserve.

Notes	12 territories. Three pairs (LBV1, LBV5, LBV12).
Observation Type:	Bird, Amphibian, Reptile
Photos	

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	Baja California Treefrog; Pseudacris hypochondriaca
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (46 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Ruby-crowned Kinglet; Regulus calendula; RCKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	

Photo(s) of Bird:

Notes:

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	10
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

POWERED BY Fulcrum WWW.FULCRUMAPP.COM

Notes:	

Bird Observation: - 10. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV2
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Belted Kingfisher; Megaceryle alcyon; BEKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 31. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Outside park boundary
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	LBVI 08

Bird Observation: - 32. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	LBVI 06

Bird Observation: - 33. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory

Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	LBV5. Paired.

Bird Observation: - 34. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 35. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV3
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 36. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Scaly-breasted Munia; Lonchura punctulata; SBMU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	Band-tailed Pigeon; Patagioenas fasciata; BTPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 39. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV10. Heard singing in the distance. Neighbor LBV1 pair was observed at the same time.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1

Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV11. Heard singing in the distance
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 42. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV12. Paired.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 43. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling

Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV1. Paired.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV4.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male

Bird Age (check all that apply):	Adult
Additional Notes:	LBV7
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 46. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV9
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	

Notes:

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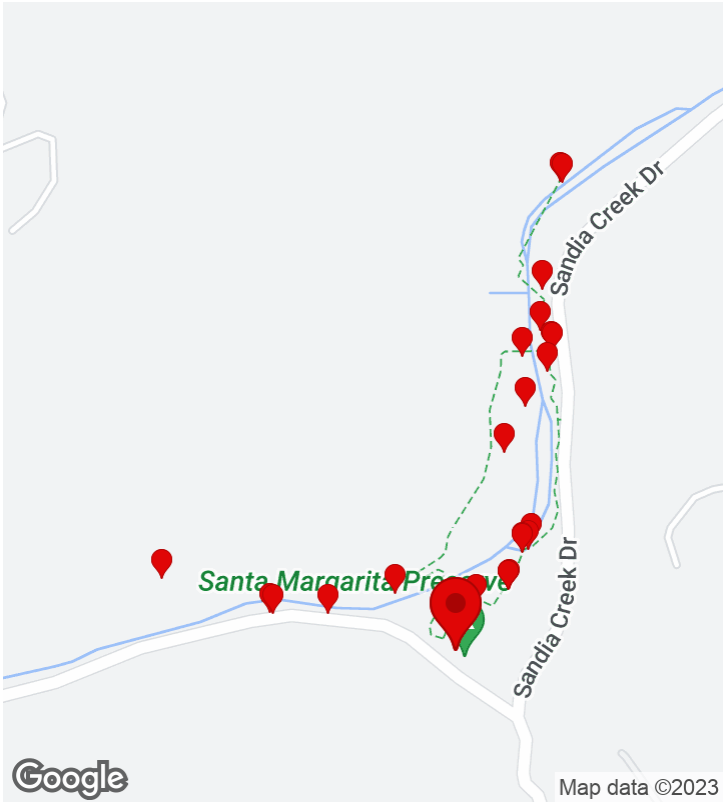
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

7/11/2023, 6:55:45 PM UTC



CREATED

4/21/2023, 1:29:46 PM UTC
by SC Fulcrum14

UPDATED

7/11/2023, 6:55:45 PM UTC
by SC Fulcrum14

LOCATION

33.401725, -117.251618

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Florence Chan
Assistant Observer/Surveyor:	Dillion Travis
Date:	April 21, 2023

START Weather Details:

Start - Time:	06:29
Start - Temperature:	58
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	0
Start - High Wind Speed:	4
Start - Average Wind Speed:	2
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:03
End - Temperature:	70
End - Wind Direction From (select one):	
End - Low Wind Speed:	0
End - High Wind Speed:	0
End - Average Wind Speed:	0
End - Cloud Cover (%):	40
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Santa Margarita Preserve.

Notes	LBV10, 2 (pair), 9, 3, 5 (pair, nest building), 6 (pair), 7 13, 4 (pair), 12, 11.
Observation Type:	Bird, Nesting Bird Behavior
Photos	

Bird

Bird Observation: (33 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling

Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV10. Heard in the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	Abundant throughout riparian habitat
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Abundant throughout riparian habitat
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling, Foraging
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV2. Paired. Singing and foraging together.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling, Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV9. Countersinging with LBV3.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male

Bird Age (check all that apply):	Adult
Additional Notes:	LBV3. Countersinging with LBV9.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Nest building
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV5. Pair building in mulefat between the trail and public road. Nest is 1.5-2feet off the ground. 50% complete.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling, Foraging
Bird Sex (check all that apply):	Male, Female

Bird Age (check all that apply):	Adult
Additional Notes:	LBV6. Paired. Looking for a suitable nest location.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 25. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV7. Heard singing in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV13. New. Singing in the distance between LBV5 and LBV4.
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult

Additional Notes:	LBV4. Paired. Heard counter singing with new bird LBV13.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AMGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult

Additional Notes:	LBV11. Singing in the distance infrequently.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV12. Heard singing in the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Nesting Bird Behavior

Nesting Bird Behavior Observation: (1 Item)

Nesting Bird Behavior Observation: - 1. 1 record

Status of Nest:	Active
Activity Status of Nest:	Nest building
Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Bird Nest Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Nest building
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV5. Nest building in mulefat. 1.5-2 feet off the ground. 50% complete.

Photo(s) of Bird:

Photo(s) of Nesting Bird Behavior:

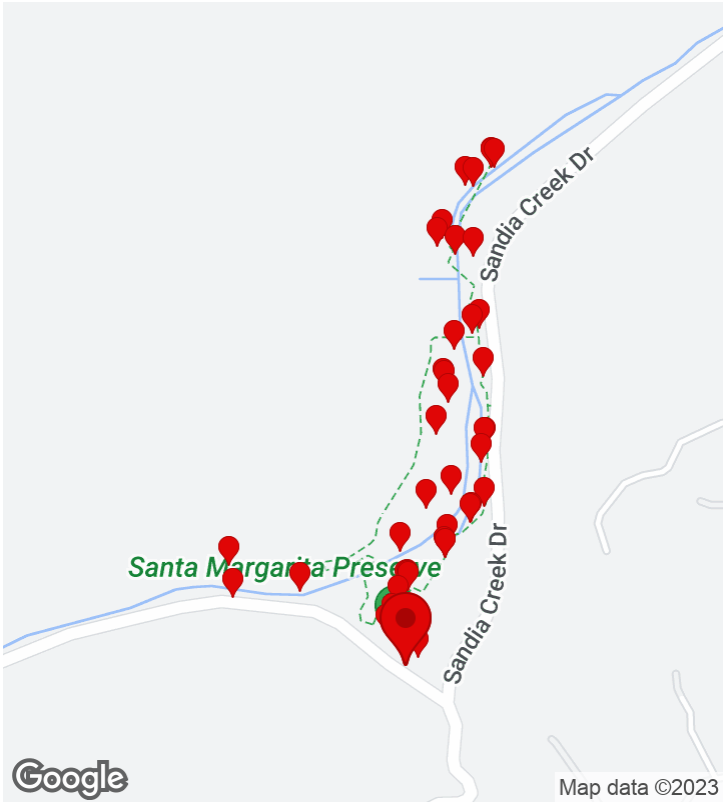
Notes:

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

7/11/2023, 7:03:17 PM UTC



CREATED

5/2/2023, 1:44:15 PM UTC
by SC Fulcrum05

UPDATED

7/11/2023, 7:03:17 PM UTC
by SC Fulcrum14

LOCATION

33.401200, -117.251171

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Florence Chan
Assistant Observer/Surveyor:	Jaclyn Catino-Davenport
Date:	May 2, 2023

START Weather Details:

Start - Time:	06:44
Start - Temperature:	55
Start - Wind Direction From (select one):	N/A
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	95
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:15
End - Temperature:	65
End - Wind Direction From (select one):	E
End - Low Wind Speed:	0
End - High Wind Speed:	4
End - Average Wind Speed:	2
End - Cloud Cover (%):	45
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Santa Margarita Preserve.

Notes	LBV2, 3, 13 (paired), 5 (paired), 6, 7, 10, 11.
Observation Type:	Amphibian, Bird, Reptile

Photos

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	American Bullfrog; Lithobates catesbeianus
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (47 Items)

Bird Observation: - 1. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	American Goldfinch; Spinus tristis; AMGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 13. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 16. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Territory #2
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Territory #3
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Two males counter singing
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 29. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Foraging, Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	Territory #13. Paired. Singing and foraging together around the territory.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 31. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV5. Nest appeared to be abandoned. No activity at the nest. Male heard singing from over side of trail and didn't scold our presence when approaching nest. Upon closer inspection, one BHCO egg seen in nest.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	Pair, 1 male and 1 female

Bird Observation: - 33. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV6. Low in foliage. Likely nesting.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 34. 1 record, no

Bird (Common or Scientific Name):	Band-tailed Pigeon; Patagioenas fasciata; BTPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 35. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 37. 1 record, no

Bird (Common or Scientific Name):	Ruby-crowned Kinglet; Regulus calendula; RCKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Territory #7
Photo(s) of Bird:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 40. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Hermit Thrush; Catharus guttatus; HETH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 43. 1 record, no

Bird (Common or Scientific Name):	Costa's Hummingbird; Calypte costae; COHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory

Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Territory #10, likely single male.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 46. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV11. Singing in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 47. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

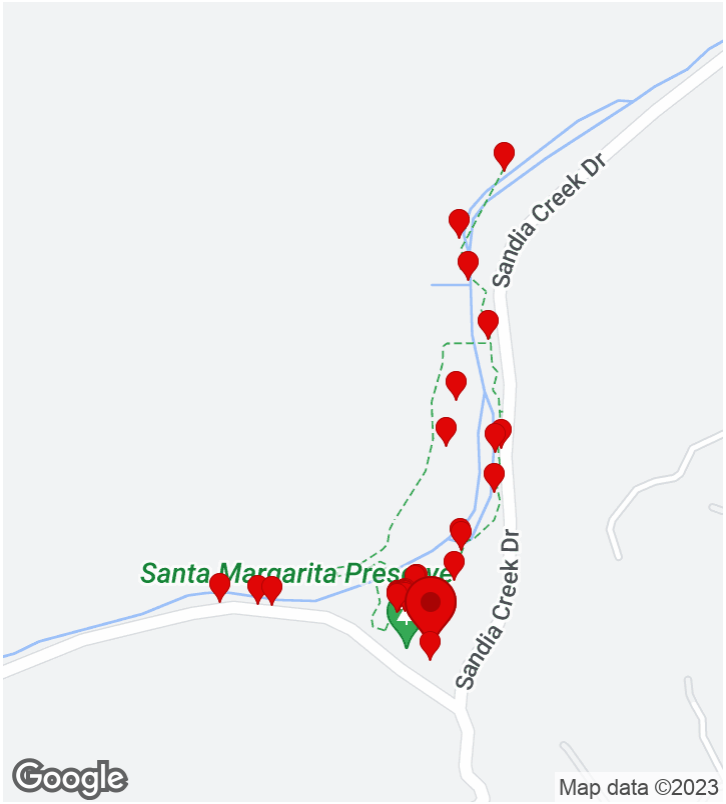
Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

5/12/2023, 8:29:30 PM UTC



CREATED

5/12/2023, 1:42:35 PM UTC
by SC Fulcrum14

UPDATED

5/12/2023, 8:29:30 PM UTC
by SC Fulcrum14

LOCATION

33.401606, -117.250899

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Florence Chan
Assistant Observer/Surveyor:	Mary Cozy
Date:	May 12, 2023

START Weather Details:

Start - Time:	06:42
Start - Temperature:	56
Start - Wind Direction From (select one):	N
Start - Low Wind Speed:	0
Start - High Wind Speed:	2
Start - Average Wind Speed:	
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:07
End - Temperature:	65
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	0
End - High Wind Speed:	2
End - Average Wind Speed:	
End - Cloud Cover (%):	60
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Santa Margarita Preserve.

Notes	LBV14, 2, 9, 3, 5 (paired), 6, 7, 13 (paired), 4,11,12.
Observation Type:	Bird

Photos

Bird

Bird Observation: (33 Items)

Bird Observation: - 1. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Hermit Warbler; Setophaga occidentalis; HEWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV9. Heard in the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1

Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV14. New. Heard in the distance. Countered briefly with LBV9. Confirmed two territories.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV2. Heard in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 21. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling

Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV3. In the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling

Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult
Additional Notes:	LBV5. Pair observed briefly as they potentially switched incubation duties. Male took over as female flew off. Potential nest in grape or area around 4 sycamores.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV6. Heard in the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV7. Heard in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling, Foraging
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV13. Male singing, making contact calls with the female, and and making short scolding call. Female heard calling.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 29. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV4. Uses both sides of the trail. Brief singing.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 30. 1 record, yes

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Flying over
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 31. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV12. On the hillside and in the habitat.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 32. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV11. In the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 33. 1 record, no

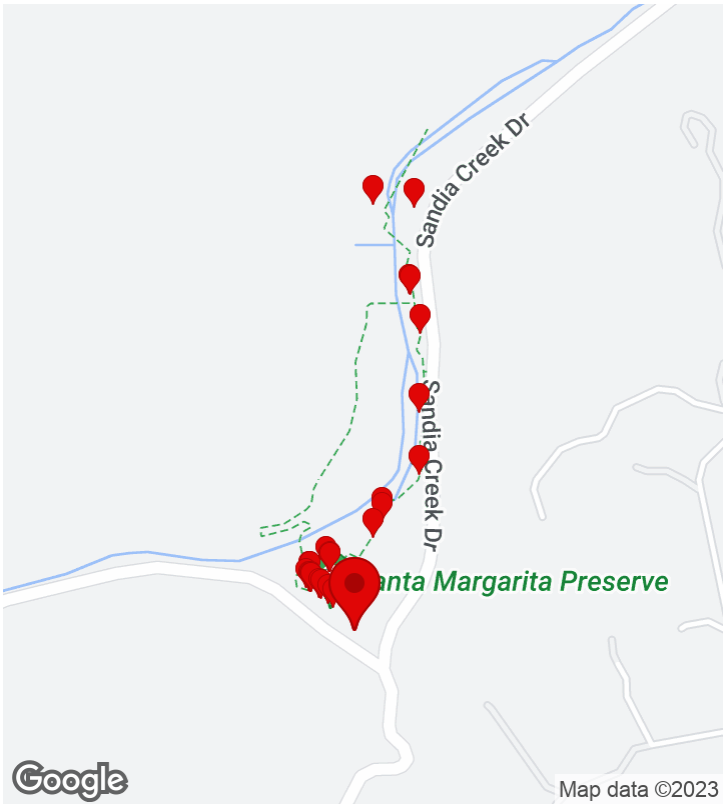
Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

5/25/2023, 6:51:56 PM UTC



CREATED

5/25/2023, 1:33:21 PM UTC
by SC Fulcrum13

UPDATED

5/25/2023, 6:51:56 PM UTC
by SC Fulcrum13

LOCATION

33.401221, -117.250899

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Brenda McMillan
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	May 25, 2023

START Weather Details:

Start - Time:	06:30
Start - Temperature:	55
Start - Wind Direction From (select one):	
Start - Low Wind Speed:	1
Start - High Wind Speed:	
Start - Average Wind Speed:	
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:31
End - Temperature:	75
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	2
End - High Wind Speed:	6
End - Average Wind Speed:	3
End - Cloud Cover (%):	90
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	2 cowbirds - DISREGARD THIS OBS - ASSOC WITH TRAPS
Observation Type:	Bird
Photos	

Bird

Bird Observation: (31 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	male observed perched, singing and foraging

Bird Observation: - 2. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	males observed foraging, singing, and flying

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	

Notes:	Nest in metal horse tie posts. females were observed flying in and out of nest with prey and pool packets. Males were observed foraging and exhibiting territorial flight behavior around nest; juveniles were heard calling for food from nest cavity.

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	heard calling; no visual observation

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	observed foraging around horse corrals

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	heard calling, observed flying and foraging

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	Heard calling, no visual ; BIRDS in TRAPS DISREGARD OBS

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	visual and auditory observations

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	perched and calling in flight

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	small flock observed foraging along edge of trail

Bird Observation: - 21. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling, In flight
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:	
Notes:	16 LBV notes; 10 were heard calling; 6 were perched and singing males; 1 male was heard counter-calling.

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown

Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	males were observed exhibiting mating flight behavior

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	heard calling

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	White-breasted Nuthatch; Sitta carolinensis; WBNU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	visual and auditory observation

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, no

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	male observed foraging and calling from willows

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	visual and auditory observation

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	visual observation; male observed flying over tree canopy

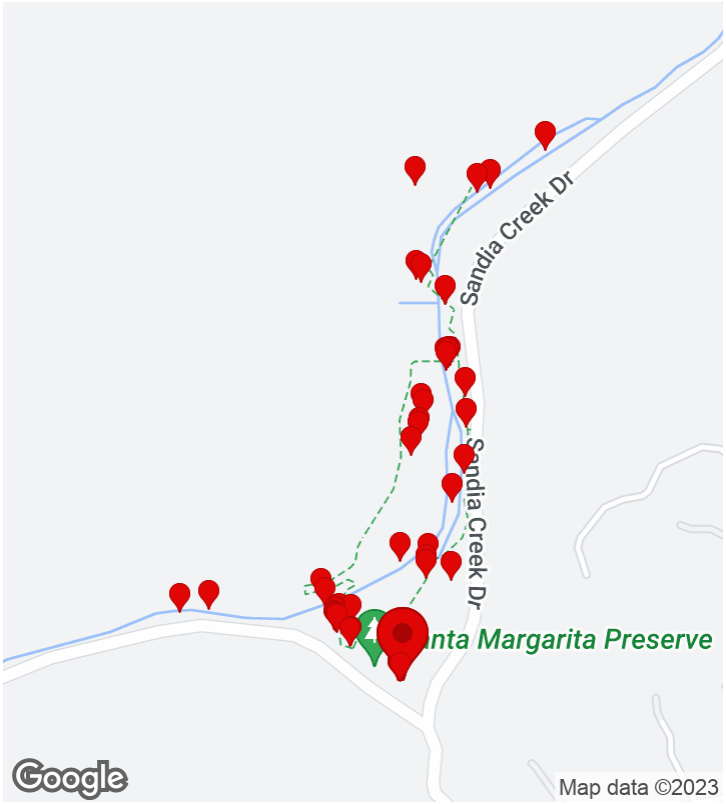
2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

6/30/2023, 4:15:48 PM UTC

Poison Hemlock



CREATED

6/6/2023, 1:15:09 PM UTC
by SC Fulcrum03

UPDATED

6/30/2023, 4:15:48 PM UTC
by SC Fulcrum03

LOCATION

33.401365, -117.250816

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Florence Chan
Assistant Observer/Surveyor:	Brennan Mulrooney
Date:	June 6, 2023

START Weather Details:

Start - Time:	06:00
Start - Temperature:	58
Start - Wind Direction From (select one):	E
Start - Low Wind Speed:	0
Start - High Wind Speed:	1
Start - Average Wind Speed:	1
Start - Cloud Cover (%):	60
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

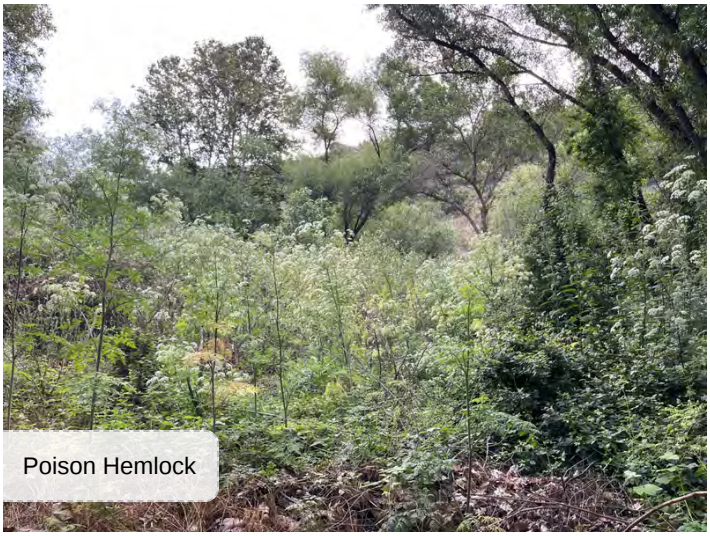
END Weather Details:

Time Out:	11:00
End - Temperature:	64
End - Wind Direction From (select one):	E
End - Low Wind Speed:	1
End - High Wind Speed:	2
End - Average Wind Speed:	1
End - Cloud Cover (%):	100
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	
Observation Type:	Bird, Amphibian, Nesting Bird Behavior

Photos


Poison Hemlock

Italian thistle

Radish

Nonnative opuntia

Illegal dumping of yard waste.

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	American Bullfrog; Lithobates catesbeianus
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (47 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV 1
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	White-breasted Nuthatch; Sitta carolinensis; WBNU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH

Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI

Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV10
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	American Robin; Turdus migratorius; AMRO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Northern Rough-winged Swallow; Stelgidopteryx serripennis; NRWS
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI

Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 2
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 9 Counter singing with LBVI 2
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 26. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 27. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 5 pair, but male is not singing near where we saw a silent female. Male eventually came in and sang in spot where we saw the female disappear into a hood looking spot for a nest.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 28. 1 record, no

Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Scaly-breasted Munia; Lonchura punctulata; SBMU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult

Additional Notes:	LBVI 13 singing in oak on slope later in the morning. Watched it foraging for about 10 minutes. Saw it carrying food and we think we saw two fledglings in the oaks.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 33. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	2
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 34. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI

Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 6 sounds like it's singing on a nest.

Photo(s) of Bird:

Photo(s) of Bird:

Notes:

Bird Observation: - 35. 1 record, yes

Bird (Common or Scientific Name):	Great Blue Heron; Ardea herodias; GBHE
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Adult

Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 36. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 37. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 7
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes

Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 8
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 40. 1 record, no

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no

Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Foraging in oaks either side of the trail. Followed by a silent bird briefly. Heard contact calls. LBVI 4?
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes

Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Foraging, Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	Had a brief glimpse of a second bird that could have been the female. LBVI 3
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 11 singing solo
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 46. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 12 sang once then disappeared
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 47. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Nesting Bird Behavior

Nesting Bird Behavior Observation: (1 Item)

Nesting Bird Behavior Observation: - 1. 1 record

Status of Nest:	Active
Activity Status of Nest:	Confirmed adults using nests
Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Bird Nest Observation

Observation Type:	Visual

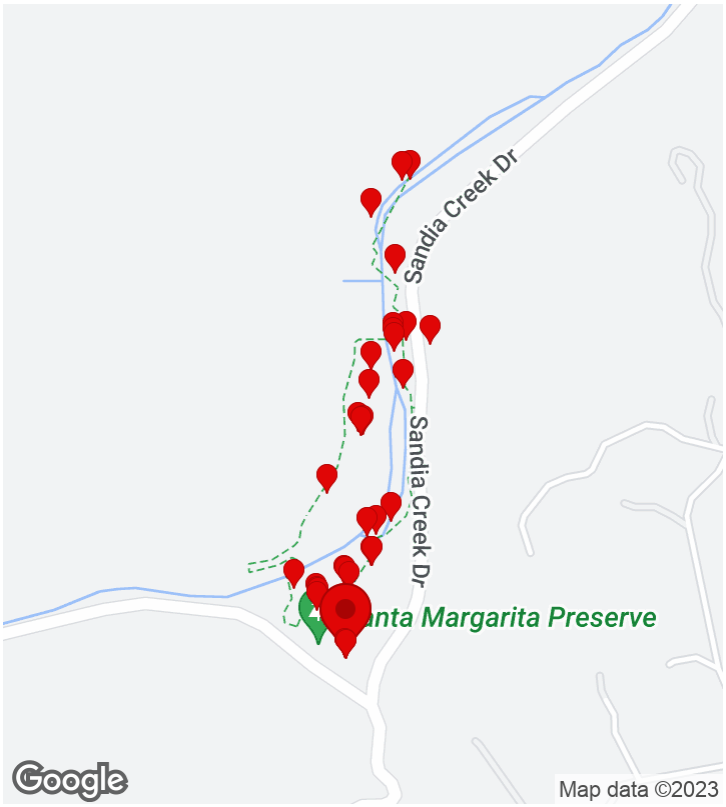
Number of individuals observed:	1
Behavior (check all that apply):	Incubating
Bird Sex (check all that apply):	Female
Bird Age (check all that apply):	Adult
Additional Notes:	In sycamore
Photo(s) of Bird:	
Photo(s) of Nesting Bird Behavior:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

7/11/2023, 8:07:00 PM UTC



CREATED

6/19/2023, 12:59:28 PM UTC
by SC Fulcrum14

UPDATED

7/11/2023, 8:07:00 PM UTC
by SC Fulcrum14

LOCATION

33.401404, -117.250837

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Florence Chan
Assistant Observer/Surveyor:	Amy Orduno-Baez
Date:	June 19, 2023

START Weather Details:

Start - Time:	05:59
Start - Temperature:	56
Start - Wind Direction From (select one):	S
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	None
Start - Visibility (select one):	Fair
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:00
End - Temperature:	67
End - Wind Direction From (select one):	
End - Low Wind Speed:	0
End - High Wind Speed:	0
End - Average Wind Speed:	0
End - Cloud Cover (%):	100
End - Precipitation (select one):	None
End - Visibility (select one):	Fair
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	Santa Margarita Preserve

Notes	LBV 14, 3,9,5,6,7, 13, 4
Observation Type:	Bird, Amphibian
Photos	

Amphibian

Amphibian Observation: (2 Items)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	American Bullfrog; Lithobates catesbeianus
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Amphibian Observation: - 2. 1 record

Amphibian (Common or Scientific Name):	Western Toad; Anaxyrus boreas
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (32 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Mallard; Anas platyrhynchos; MALL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 10. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 11. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	2
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 12. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV14. Heard in the distance. Countered with LBV9 briefly.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 13. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	4
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV9. Briefly countered with LBV14. Pair foraging with at least 2 fledglings. Observed begging fledglings getting fed by female.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV3. Singing in the distance.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 21. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV5. Singing and making contact calls with a female and at least one fledgling in the oak and sumac slope on the other side of the street.
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 23. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV6. Singing infrequently.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 24. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory, Visual
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult, Juvenile
Additional Notes:	LBV7. Male and at least two fledglings foraging and calling in the habitat. Alarm calls made due to a Cooper’s hawk in the area.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 25. 1 record, yes

Bird (Common or Scientific Name):	Cooper's Hawk; Accipiter cooperii; COHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

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Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Juvenile
Additional Notes:	In LBV7 territory.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 26. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV13. Heard in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 27. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory

Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV4. Heard in the distance.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 28. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Eurasian Collared-Dove; Streptopelia decaocto; ECDO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 32. 1 record, no

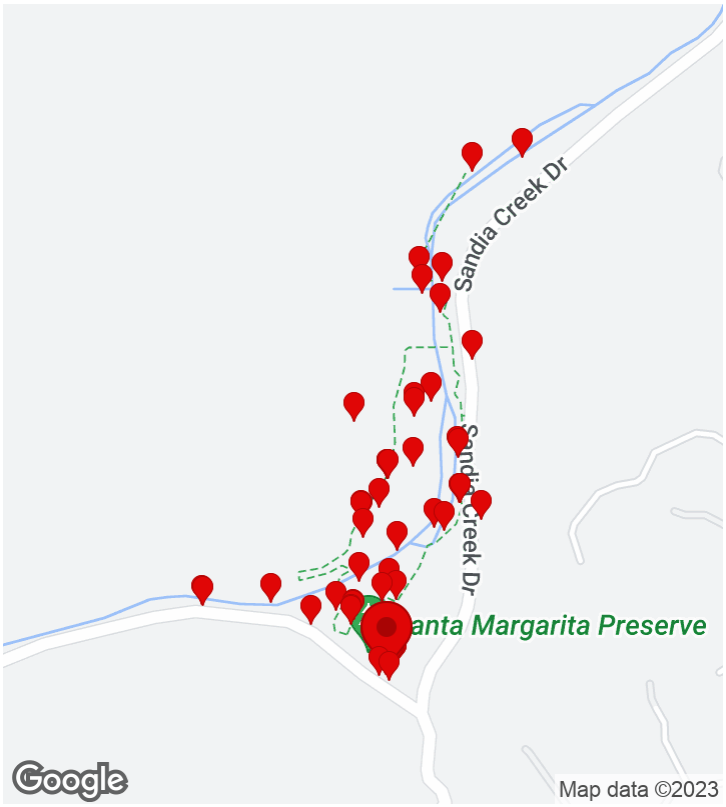
Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ LBV

6/30/2023, 11:18:05 PM UTC



CREATED

6/30/2023, 12:55:34 PM UTC
by SC Fulcrum03

UPDATED

6/30/2023, 11:18:05 PM UTC
by SC Fulcrum03

LOCATION

33.401220, -117.251033

Parent Form

Project Name:	TMP Monitoring ▸ LBV
Preserve/Park Name	Santa Margarita
General Survey Type	TMP Monitoring
Specific Survey Type	LBV Protocol
Observer/Surveyor:	Brennan Mulrooney
Assistant Observer/Surveyor:	Bailey Setzler
Date:	June 30, 2023

START Weather Details:

Start - Time:	05:55
Start - Temperature:	57
Start - Wind Direction From (select one):	SW
Start - Low Wind Speed:	0
Start - High Wind Speed:	0
Start - Average Wind Speed:	0
Start - Cloud Cover (%):	100
Start - Precipitation (select one):	Misting
Start - Visibility (select one):	Fair
Start - Notes (if applicable):	

END Weather Details:

Time Out:	11:00
End - Temperature:	79
End - Wind Direction From (select one):	SW
End - Low Wind Speed:	0
End - High Wind Speed:	2
End - Average Wind Speed:	1
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Found 10 (singing/begging), 1 (singing), 2 (singing), 9 (family), 3 calling/singing carrying food, 4 (family), 5 family, 6 pair with one juv, 7 (family 2fl), 8 (singing), 13 singing/calling, 11 singing
Observation Type:	Bird, Amphibian, Reptile, Butterfly/Moth, Mammal
Photos	

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	American Bullfrog; Lithobates catesbeianus
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	Heard adult

Bird

Bird Observation: (47 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Downy Woodpecker; Dryobates pubescens; DOWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	White-breasted Nuthatch; Sitta carolinensis; WBNU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Western Wood-Pewee; Contopus sordidulus; WEWP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, yes

Bird (Common or Scientific Name):	Yellow Warbler; Setophaga petechia; YEWA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Orange-crowned Warbler; Oreothlypis celata; OCWA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Hutton's Vireo; Vireo huttoni; HUVI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	White-breasted Nuthatch; Sitta carolinensis; WBNU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Pacific-slope Flycatcher; Empidonax difficilis; PSFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A

Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Song Sparrow; Melospiza melodia; SOSP
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record, yes

Bird (Common or Scientific Name):	Yellow-breasted Chat; Icteria virens; YBCH
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Black-headed Grosbeak; Pheucticus melanocephalus; BHGR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Common Yellowthroat; Geothlypis trichas; COYE
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

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Notes:	

Bird Observation: - 21. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Unknown
Additional Notes:	Singing and Begging call, never seen. LBVI 10
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 22. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 1
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 23. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 24. 1 record, no

Bird (Common or Scientific Name):	Band-tailed Pigeon; Patagioenas fasciata; BTPI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 25. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBV 2. Counter singing with 9
Photo(s) of Bird:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 26. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male, Female
Bird Age (check all that apply):	Adult, Juvenile
Additional Notes:	LBVI 9. Counter singing with 2. Pair with 1 fledge
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 27. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 28. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both

Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 3. Saw male fly across the road toward river and Counter sing with 9. Heard a calling/begging bird, but could never confirm it was female or juv. Saw adult calling with food, but it never found anyone to feed.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 29. 1 record, no

Bird (Common or Scientific Name):	Lazuli Bunting; Passerina amoena; LAZB
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 30. 1 record, no

Bird (Common or Scientific Name):	Black-chinned Hummingbird; Archilochus alexandri; BCHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 31. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 32. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 4. Pair with one fledge
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Bird Observation: - 33. 1 record, no

Bird (Common or Scientific Name):	House Wren; Troglodytes aedon; HOWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 34. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both

Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 13. Heard/saw one bird singing and calling, never saw or heard response.
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 35. 1 record, no

Bird (Common or Scientific Name):	Brown-headed Cowbird; Molothrus ater; BHCO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	

Notes:

Bird Observation: - 36. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	3
Behavior (check all that apply):	Singing/calling, Territorial display
Bird Sex (check all that apply):	Male, Female, Unknown
Bird Age (check all that apply):	Adult, Juvenile
Additional Notes:	LBV 5. Singing and attacking a CASJ
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 37. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling, Foraging
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 6. Calling with food in bill, but eventually just ate it. Then saw adult pair near river with juv heard begging in willows
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 38. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 39. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Both

Number of individuals observed:	4
Behavior (check all that apply):	Foraging, Singing/calling
Bird Sex (check all that apply):	Female, Male
Bird Age (check all that apply):	Adult, Juvenile
Additional Notes:	Lbvi 7, family with 2 juvs
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 40. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 8
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 41. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 42. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 43. 1 record, no

Bird (Common or Scientific Name):	Anna's Hummingbird; Calypte anna; ANHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 44. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 45. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1

Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 46. 1 record, no

Bird (Common or Scientific Name):	Black Phoebe; Sayornis nigricans; BLPH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:

Bird Observation: - 47. 1 record, yes

Bird (Common or Scientific Name):	Least Bell's Vireo; Vireo bellii pusillus; LBVI
Is the Bird Sensitive ?	yes
Sub-Species Info:	Breeds from central California south to n. Baja CA

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling, Perched (not singing)
Bird Sex (check all that apply):	Male
Bird Age (check all that apply):	Adult
Additional Notes:	LBVI 11. Counter singing with 10
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Butterfly/Moth

Butterfly/Moth Observation: (6 Items)

Butterfly/Moth Observation: - 1. 1 record

Butterfly/Moth (Common or Scientific Name):	Lorquin's Admiral; Limenitis lorquini
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 2. 1 record

Butterfly/Moth (Common or Scientific Name):	Cabbage White; Pieris rapae
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 3. 1 record

Butterfly/Moth (Common or Scientific Name):	Western Tiger Swallowtail; Papilio rutulus
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 4. 1 record

Butterfly/Moth (Common or Scientific Name):	Marine Blue; Leptotes marina
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 5. 1 record

Butterfly/Moth (Common or Scientific Name):	Orange Sulphur; Colias eurytheme

Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Butterfly/Moth Observation: - 6. 1 record

Butterfly/Moth (Common or Scientific Name):	Satyr Comma; Polygonia satyrus
Is the Butterfly/Moth Sensitive ?	no
Sub-Species Info:	N/A
Number of individuals observed:	

Photo(s) of Butterfly/Moth:

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	California Ground Squirrel; Ostospermophilus beecheyi
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Mammal:

Notes:	

Reptile

Reptile Observation: (3 Items)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Striped Racer; Masticophis lateralis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A

Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 2. 1 record

Reptile (Common or Scientific Name):	Western Fence Lizard; Sceloporus occidentalis
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Reptile Observation: - 3. 1 record

Reptile (Common or Scientific Name):	Orange-throated Whiptail; Aspidoscelis hyperythrus
Is the Reptile Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Reptile Observation

Observation Type (check all that apply):	Visual sighting
Number of individuals observed:	1
Behavior (check all that apply):	Foraging
Reptile Sex (check all that apply):	Unknown
Reptile Age (check all that apply):	Adult
Additional Notes:	
Photo(s) of Reptile:	

Photo(s) of Reptile:	
Notes:	

Attachment C
Wildlife Compendium

ESA

Scientific Name	Common Name	Status (Federal/State/Local)[1]
INSECTS		
Lepidoptera	Moths and Butterflies	
Lycaenidae	Gassamer-Winged Butterflies	
Leptotes marina	Marine Blue	None/None/None
Papiliondiae	Swallowtails	
Papilio rutulus	Western Tiger Swallowtail	None/None/None
Pieridae	Whites, Yellows and Sulphurs	
Colias eurytheme	Orange Sulphur	None/None/None
* *Pieris rapae*	Cabbage White	None/None/None
Nymphalidae	True Brushfoots	
Limenitis lorquini	Lorquin's Admiral	None/None/None
Polygonia satyrus	Satyr Comma	None/None/None
AMPHIBIANS		
Anura	Frogs	
Bufonidae	True Toads	
Anaxyrus boreas	Western Toad	None/None/None
Hylidae	Treefrogs	
Pseudacris hypochondriaca	Baja California Treefrog	None/None/None
Ranidae	True Frogs	
Lithobates catesbeianus	American Bullfrog	None/None/None
REPTILES		
Squamata	Squamates	
Colubridae	Colubrids	
Masticophis lateralis	Striped Racer	None/None/None
Phrynosomatidae	Phrynosomatid Lizards	
Sceloporus occidentalis	Western Fence Lizard	None/None/None
Teiidae	Whiptails and Racerunners	
Aspidoscelis hyperythrus beldingi	Belding's Orange-throated Whiptail	None/WL/Group 2
BIRDS		
Anseriformes		
Anatidae	Waterfowl	
Anas platyrhynchos	Mallard	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)[1]
Columbiformes		
Columbidae	Pigeons and Doves	
Patagioenas fasciata	Band-tailed Pigeon	None/None/None
* *Streptopelia decaocto*	Eurasian Collared-Dove	None/None/None
Zenaida macroura	Mourning Dove	None/None/None
Apodiformes		
Trochilidae	Hummingbirds	
Archilochus alexandri	Black-chinned Hummingbird	None/None/None
Calypte anna	Anna's Hummingbird	None/None/None
Calypte costae	Costa's Hummingbird	None/None/None
Selasphorus sasin	Allen's Hummingbird	None/None/None
Pelicaniformes		
Ardeidae	Herons, Bitterns, and Allies	
Ardea herodias	Great Blue Heron	None/None/Group 2
Cathartiformes		
Cathartidae	New World Vultures	
Cathartes aura	Turkey Vulture	None/None/Group 1
Accipitriformes		
Accipitridae	Hawks	
Accipiter cooperii	Cooper's Hawk	None/WL/Group 1
Buteo lineatus	Red-shouldered Hawk	None/None/Group 1
Buteo jamaicensis	Red-tailed Hawk	None/None/None
Coraciiformes		
Alcedinidae	Kingfishers	
Megaceryle alcyon	Belted Kingfisher	None/None/None
Piciformes		
Picidae	Woodpeckers	
Colaptes auratus	Northern Flicker	None/None/None
Melanerpes formicivorus	Acorn Woodpecker	None/None/None
Dryobates pubescens	Downy Woodpecker	None/None/None
Dryobates nuttallii	Nuttall's Woodpecker	None/None/None
Passeriformes		
Tyrannidae	Tyrant Flycatchers	
Myiarchus cinerascens	Ash-throated Flycatcher	None/None/None
Contopus sordidulus	Western Wood-Pewee	None/None/None
Empidonax difficilis	Pacific-slope Flycatcher	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)[1]
Sayornis nigricans	Black Phoebe	None/None/None
Tyrannus vociferans	Cassin's Kingbird	None/None/None
Virionidae	Vireos	
Vireo bellii pusillus	Least Bell's Vireo	FE/SE/Draft NC MSCP, Group 1
Vireo huttoni	Hutton's Vireo	None/None/None
Corvidae	Jays and Crows	
Aphelocoma californica	California Scrub-Jay	None/None/None
Corvus corax	Common Raven	None/None/None
Paridae	Chickadees and Tits	
Baeolophus inornatus	Oak Titmouse	None/None/None
Hirundinidae	Swallows and Martins	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	None/None/None
Aegithalidae	Bushtits	
Psaltriparus minimus	Bushtit	None/None/None
Sylviidae	Sylviid Warblers	
Chamaea fasciata	Wrentit	None/None/None
Regulidae	Kinglets	
Corthylio calendula	Ruby-crowned Kinglet	None/None/None
Ptiliogonatidae	Silky-flycatchers	
Phainopepla nitens	Phainopepla	None/None/None
Sittidae	Nuthatches	
Sitta carolinensis	White-breasted Nuthatch	None/None/None
Polioptilidae	Gnatcatchers	
Polioptila caerulea	Blue-gray Gnatcatcher	None/None/None
Troglodytidae	Wrens	
Troglodytes aedon	House Wren	None/None/None
Thryomanes bewickii	Bewick's Wren	None/None/None
Mimidae	Thrashers	
Toxostoma redivivum	California Thrasher	None/None/None
Turdidae	Thrushes	
Catharus guttatus	Hermit Thrush	None/None/None
Turdus migratorius	American Robin	None/None/None
Estrildidae	Waxbills and Allies	
* *Lonchura punctulata*	Scaly-breasted Munia	None/None/None

Scientific Name	Common Name	Status (Federal/State/Local)[1]
Fringillidae	Finches	
Haemorhous mexicanus	House Finch	None/None/None
Spinus psaltria	Lesser Goldfinch	None/None/None
Spinus tristis	American Goldfinch	None/None/None
Passerellidae	New World Sparrows	
Melospiza melodia	Song Sparrow	None/None/None
Melozone crissalis	California Towhee	None/None/None
Pipilo maculatus	Spotted Towhee	None/None/None
Icteriidae	Yellow-breasted Chats	
Icteria virens	Yellow-breasted Chat	None/SSC/Group 1
Icteridae	Orioles, Grackles, and Cowbirds	
Icterus cucullatus	Hooded Oriole	None/None/None
Molothrus ater	Brown-headed Cowbird	None/None/None
Parulidae	Wood Warblers	
Leiothlypis celata	Orange-crowned Warbler	None/None/None
Geothlypis trichas	Common Yellowthroat	None/None/None
Setophaga petechia	Yellow Warbler	None/SSC/Group 2
Setophaga occidentalis	Hermit Warbler	None/None/None
Cardinalidae	Cardinals and Allies	
Pheucticus melanocephalus	Black-headed Grosbeak	None/None/None
Passerina amoena	Lazuli Bunting	None/None/None

MAMMALS

Sciuridae	Squirrels	
Otospermophilus beecheyi	California Ground Squirrel	None/None/None

[1] FE: Federally Endangered
SE: State Endangered
WL: California Department of Fish and Wildlife Watch List
SSC: California Department of Fish and Wildlife Species of Special Concern
Draft NC MSCP: Proposed Covered Species 2017 Draft North County MSCP
Group 1: Animals of high sensitivity (listed or specific natural history requirements) (County)
Group 2: Animals declining but not in immediate threat of extinction or extirpation (County)

* Non-native species

Attachment D

California Natural Diversity Database (CNDDB) Forms

ESA

Attachment D. California Natural Diversity Database (CNDDB) Forms

ObserverName*	**ObserverContact***	**SciName***	ComName	SpFound(Y/N)	SpDetermine	ID_Confidence	**ObservationDate***	**NumberObserved***	Phenology	Collection	AnimalAgeClass	**AnimalSiteUse***	**AnimalBehavior***
Brenda McMillan	bmcmillan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/25/2023	16			16 adults	foraging, nesting and or migrating	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	4/11/2023	11			10 adults, 1 unknown age	foraging, nesting and or migrating	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	6/30/2023	18			18 adults, 1 unknown age	foraging, nesting and or migrating	singing, foraging, territorial display
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	4/21/2023	16			16 adults	foraging, nesting and or migrating	singing, foraging
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/2/2023	9			8 adults, 1 unknown age	foraging, nesting and or migrating	singing, foraging
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	5/12/2023	14			14 adults	foraging, nesting and or migrating	singing, foraging, nesting activity
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	6/6/2023	12			10 adults, 2 unknown age	foraging, nesting and or migrating	singing, foraging
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	y		very confident	6/19/2023	15			15 adults	foraging, nesting and or migrating	singing, foraging
Brenda McMillan	bmcmillan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	5/25/2023	3			5 adults	foraging, nesting	singing, foraging,
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	4/11/2023	10			10 adults	foraging, nesting	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	6/30/2023	1			1 unknown age	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	4/21/2023	1			1 adults	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	5/2/2023	3			3 adults	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	5/12/2023	2			2 adults	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	6/6/2023	1			1 adult	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	y		very confident	6/19/2023	2			2 adults	foraging, nesting	singing, foraging
Brenda McMillan	bmcmillan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	5/25/2023	5			5 adults	foraging, nesting	singing, foraging, territorial display
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	4/11/2023	3			3 unknown age	foraging, nesting	singing, foraging
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	6/30/2023	1			1 unknown age	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	4/21/2023	1			1 adult	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	5/2/2023	2			2 adults	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	5/12/2023	1			1 adult	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	6/6/2023	3			3 unknown age	foraging, nesting	singing, foraging
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	y		very confident	6/19/2023	2			2 adults	foraging, nesting	singing, foraging
Brenda McMillan	bmcmillan@esassoc.com	Accipter cooperii	Cooper's Hawk	y		very confident	5/25/2023	1			1 unknwn age	foraging, nesting	singing
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	y		very confident	4/11/2023	1			1 unknown age	foraging	in flight
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	y		very confident	6/30/2023	1			1 unknown age	foraging	in flight
Florence Chan	fchan@esassoc.com	Buteo lineatus	Red-shouldered Hawk	y		very confident	5/2/2023	1			1 unknown age	foraging, nesting	singing/calling
Florence Chan	fchan@esassoc.com	Cathartes aura	Turkey Vulture	y		very confident	6/6/2023	1			1 unknown age	foraging	in flight
Florence Chan	fchan@esassoc.com	Ardea herodias	Great Blue Heron	y		very confident	6/6/2023	1			2 unknown age	foraging	foraging
Florence Chan	fchan@esassoc.com	Accipter cooperii	Cooper's Hawk	y		very confident	6/19/2023	1			3 unknown age	foraging, nesting	in flight
Florence Chan	fchan@esassoc.com	Aspidoscelis hyperythra	Orange-throated Whiptail	y		very confident	6/30/2023	1			1 adult	foraging, nesting	foraging

Attachment D. California Natural Diversity Database (CNDDB) Forms

ObserverName*	ObserverContact*	SciName*	ComName	AnimalDetectionMethod*	LocationDescription	X_Coordinate*	Y_Coordinate*	Datum*	UTM_zone*	CoordSource*	CoordAccuracy	SurveyEffort*	Habitat	SiteQuality	LandUse	Disturbances	Threats	Landowner	Comments	Other
Brenda McMillan	bmcmillan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.40318	-117.25031			GoogleEarth		LBVI Protocol Survey								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.41012	-117.24936			GoogleEarth		LBVI Protocol Survey								
Brennan Mulrooney	bmulrooney@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.40238	-117.25212			GoogleEarth		LBVI Protocol Survey								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.40282	-117.25049			GoogleEarth		LBVI Protocol Survey								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.41013	-117.24927			GoogleEarth		LBVI Protocol Survey								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.40338	-117.250256			GoogleEarth		LBVI Protocol Survey								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	heard		33.410188	-117.24895			GoogleEarth		LBVI Protocol Survey								
Florence Chan	fchan@esassoc.com	Vireo bellii pusillus	Least Bell's Vireo	seen and heard		33.40304	-117.25029			GoogleEarth		LBVI Protocol Survey								
Brenda McMillan	bmcmillan@esassoc.com	Setophaga petechia	Yellow Warbler	seen and heard		33.40171	-117.25148			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.41012	-117.24936			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40139	-117.25087			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40234	-117.251805			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40427	-117.250209			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40231	-117.25159			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40229	-117.25228			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Setophaga petechia	Yellow Warbler	heard		33.40269	-117.25087			GoogleEarth		Incidental								
Brenda McMillan	bmcmillan@esassoc.com	Icteria virens	Yellow-breasted Chat	seen and heard		33.40318	-117.25031			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.41012	-117.249346			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40278	-117.25098			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40224	-117.25178			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40513	-117.24949			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40226	-117.25161			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40237	-117.25226			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Icteria virens	Yellow-breasted Chat	heard		33.40258	-117.25076			GoogleEarth		Incidental								
Brenda McMillan	bmcmillan@esassoc.com	Accipter cooperii	Cooper's Hawk	heard		33.40194	-117.25185			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	seen		33.40531	-117.25053			GoogleEarth		Incidental								
Brennan Mulrooney	bmulrooney@esassoc.com	Cathartes aura	Turkey Vulture	seen		33.40576	-117.25172			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Buteo lineatus	Red-shouldered Hawk	heard		33.40535	-117.25052			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Cathartes aura	Turkey Vulture	seen		33.41024	-117.25055			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Ardea herodias	Great Blue Heron	seen		33.4085	-117.25042			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Accipter cooperii	Cooper's Hawk	seen		33.40995	-117.24946			GoogleEarth		Incidental								
Florence Chan	fchan@esassoc.com	Aspidoscelis hyperythra	Orange-throated Whiptail	seen		33.40593	-117.25044			GoogleEarth		Incidental								

H-2 Brown-Headed Cowbird Trapping Annual Report

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2023

PREPARED FOR

COUNTY OF SAN DIEGO DEPARTMENT OF PARKS AND RECREATION
5500 OVERLAND AVENUE, SUITE 410
SAN DIEGO, CA 92123

SEPTEMBER 2023

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2023

PREPARED FOR

COUNTY OF SAN DIEGO DEPARTMENT OF PARKS AND RECREATION
5500 OVERLAND AVENUE, SUITE 410
SAN DIEGO, CA 92123

PREPARED BY

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Simi Valley, California 93065

UNDER SUBCONTRACT TO

Environmental Science Associates
2355 Northside Drive, Suite 100
San Diego, CA 92108

SEPTEMBER 2023

SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD TRAPPING PROGRAM 2023

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C. Cowbird Trap Information/Do Not Disturb Sign Attached to Each Trap

EXECUTIVE SUMMARY

A brown-headed cowbird (*Molothrus ater*) trapping program was implemented on Santa Margarita County Preserve (Preserve), San Diego County, California, in 2022, to reduce the threat and impact of brown-headed cowbird brood parasitism on least Bell's vireo (*Vireo bellii pusillus*). The trapping program was initiated in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 Targeted Monitoring Plan (TMP) surveys (ESA 2022) and was recommended to continue in 2023 based on 2022 brown-headed cowbird trapping results (ESA 2023). The trapping program is consistent with the TMP's management goals and objectives for least Bell's vireo (ESA and ICF 2022).

A total of two brown-headed cowbird traps were operated along the Santa Margarita River within the Preserve in 2023. Traps were placed within riparian habitat that provides suitable nesting habitat for the vireo.

A total of seven brown-headed cowbirds were removed from the project area between April 1 and June 30, 2023. Captures included four adult males, two adult females, and one juvenile. Newly captured cowbirds not used as decoys were removed daily and humanely euthanized. There were six non-target species capture events in the project area in 2023. Non-target captures included three California scrub jays (*Aphelocoma californica*), two song sparrows (*Melospiza melodia*), and one California thrasher (*Toxostoma redivivum*). All non-targets were captured in Trap #1 and were released from the trap site unharmed the same day they were captured.

1. INTRODUCTION

A brown-headed cowbird (*Molothrus ater*) trapping program was implemented in the Santa Margarita County Preserve (Preserve) on behalf of the County of San Diego Department of Parks and Recreation in 2022. The purpose of the trapping program was to reduce the threat and impact of brown-headed cowbird brood parasitism on the Preserve's least Bell's vireo (*Vireo bellii pusillus*) population. The least Bell's vireo is a federally and state endangered migratory songbird species that nests in riparian habitat within the Preserve. The least Bell's vireo is subject to reproductive pressure through nest parasitism by the brown-headed cowbird. Studies have shown that a program of cowbird trapping effectively reduces this reproductive pressure (Kus and Whitfield 2005). The trapping program was initiated in 2022 in response to detections of least Bell's vireo nest parasitism incidentally observed during 2021 Targeted Monitoring Plan (TMP) surveys (ESA 2022) and was recommended to continue in 2023 based on 2022 brown-headed cowbird trapping results (ESA 2023). The trapping program is consistent with the management goals and objectives detailed in the TMP and are as follows (ESA and ICF 2022):

- **Management Goal**: Maintain suitable breeding habitat for least Bell's vireo and maintain vireo breeding pairs within the Santa Margarita County Preserve.
- **Management Objective**: Control brown-headed cowbird parasitism through trapping and removal program, as necessary based on monitoring results.

2. BACKGROUND

During 2021 TMP surveys, Environmental Science Associates (ESA) biologists detected a brown-headed cowbird adult, fledgling, and egg in a least Bell's vireo nest (ESA 2022). A pair of cowbirds was observed copulating during the first survey and cowbirds were observed during five out of the eight protocol surveys (ESA 2022). While the number of observations of cowbirds was relatively low, at least 2 of 11 least Bell's vireo territories suffered direct impacts to productivity during the 2021 season (ESA 2022). These results were indicative of parasitism occurring within the Preserve. In response to these results, a brown-headed cowbird trapping program was established in 2022 within the Preserve to reduce the threat of brood parasitism on least Bell's vireo and other native songbirds.

During 2022 TMP surveys, ESA biologists did not observe direct evidence of cowbird parasitism; however, cowbirds were observed during three out of the eight protocol surveys and 20 cowbirds, including 1 juvenile, were captured during 2022 cowbird trapping, suggesting parasitism still occurred within the Preserve (ESA 2023). As a result, implementation of the cowbird trapping program was recommended to continue in 2023.

2.1 Least Bell's Vireo

The least Bell's vireo is a small migratory songbird and an obligate summer resident of riparian habitat within Southern California and northwestern Baja California, Mexico. Historically, the least Bell's vireo was considered a common breeding resident within lowland riparian habitat areas throughout California from the northern Sacramento Valley south into northwestern Baja California, Mexico (Franzreb 1989). Beginning in the mid-1900s, the least Bell's vireo experienced widespread declines due to extensive habitat destruction and brood parasitism by the brown-headed cowbird (Kus and Whitfield 2005; Goldwasser et al. 1980). With the loss of over 90 percent of the riparian habitat within the state of California and persistent pressure from cowbird parasitism, the least Bell's vireo was found in only small, localized populations within seven California counties during survey efforts conducted in 1978

(Goldwasser et al. 1980). First listed as an endangered species by the State of California in 1980, the least Bell's vireo was listed as federally endangered in 1986 with a statewide population of 291 known territories (USFWS 1998). After receiving endangered species status, intensive management efforts, including cowbird control, habitat restoration, and nest monitoring programs, were instituted to reverse the decline of the least Bell's vireo population within California. A 5-year study completed in 2006 by the U.S. Fish and Wildlife Service reported a statewide least Bell's vireo population of 2,968 known territories (USFWS 2006; USGS [unpublished data] 2006). This represents a tenfold population increase from the number that existed at the time of listing.

2.2 Brown-Headed Cowbird

The brown-headed cowbird is an obligate brood parasite that lays its eggs in the nests of other songbird species and is dependent upon the host to incubate its eggs and rear its young. The cowbird is a medium-sized songbird averaging 6 to 7 inches in length with sexually dimorphic plumage. Adult males are glossy black with a brown head and neck. Females are slightly smaller than males and are dull tan to light brown with indistinct streaking on the breast. The cowbird was historically restricted to the central regions of North America and expanded in both range and abundance following the alteration of natural habitats particularly associated with the increase in agriculture and livestock production (Mayfield 1977). This species reached California in the late 1800s. Specimens (adult female and eggs) collected in 1915 represent the first documented evidence of breeding in San Diego County (Unitt 1984). The species was well established within Southern California by the 1930s (Willett 1933; Rothstein 1994). The cowbird egg-laying period is generally considered to extend from mid-April to mid-July (Robinson et al. 1993); however, cowbird parasitism of local least Bell's vireo populations has been noted as early as the first week of April (B. Kus, pers. comm. 2009). Regional observations during vireo surveys and monitoring conducted by TW Biological Services over the past two decades are consistent with this earlier timing (Sexton pers. obs.).

Songbird species or populations that have not evolved with the cowbird may be subject to significantly reduced reproductive success due to brood parasitism (Mayfield 1977). Female cowbirds can lay an average of at least 30 to 40 eggs per season, allowing a small number of cowbirds to parasitize a large number of nests (Robinson et al. 1995). When female cowbirds locate a host's nest during or shortly after egg laying, they will typically remove a host egg and replace it with one of their own. Cowbird egg incubation is shorter than that of most host species (Robinson et al. 1993) and the cowbird egg will usually hatch days before the host's eggs. Cowbird nestlings do not typically directly cause the death of host nestlings by kicking them from the nests like some other brood parasites (USFWS 2002). More commonly, nestling cowbirds divert the attention of the adults and out-compete host nestlings for food because of their earlier hatch date, faster growth rate, louder begging calls, and larger gapes compared to host nestlings (Robinson et al. 1993). Brood parasitism combined with other impacts, such as habitat loss and fragmentation, can lead to declines and potential extirpation of host species, particularly those with an already limited population and distribution (Kus and Whitfield 2005; Mayfield 1977, Rothstein et al. 1987).

The cowbird is migratory and somewhat nomadic throughout most of its range. In areas where it is considered a year-round resident, the cowbird exhibits significant dispersal movements between breeding and wintering areas (Ortega 1998). Two subspecies of brown-headed cowbird occur in California, the dwarf cowbird (*M. a. obscurus*) and Great Basin cowbird (*M. a. artemisiae*) (Rothstein 1994; Ortega 1998). While both subspecies occur in Southern California as winter residents and spring/fall migrants, only dwarf cowbird breeds in Southern California (Fleischer and Rothstein 1988; Unitt 2004). In San Diego County, cowbird populations are at the highest levels during spring and fall migration, with peak numbers generally occurring between April 1 and May 15, and again from early August through September (TW Biological Services unpubl. data). During these periods there is

considerable overlap of both migrant and breeding residents, as well as subspecies. During the breeding season, cowbirds also exhibit a wide range of movement and have been shown to commute up to 7 kilometers (km) between foraging and breeding sites (Robinson et al. 1993; Rothstein et al. 1984).

2.3 Brown-Headed Cowbird Control

Brown-headed cowbird control through breeding-season trapping is proven to be an effective method in controlling cowbirds and reducing brood parasitism of sensitive songbird populations throughout the United States; this method was initially used in the recovery efforts of the Kirtland's Warbler (*Dendroica kirtlandii*) in Michigan (Mayfield 1977). Subsequently, cowbird trapping has become an important tool in the conservation of several sensitive songbird species, including the black-capped vireo (*Vireo atricapillus*) (Eckrich et al. 1999), least Bell's vireo (Kus 1999; Kus and Whitfield 2005), and southwestern willow flycatcher (*Empidonax traillii extimus*) (Whitfield et al. 1999). A study was conducted in 2005 to evaluate the effectiveness of cowbird trapping on California least Bell's vireo populations. The study evaluated data from three California sites over a 20-year period and concluded that cowbird control reduces the incidence of parasitism and consequently increases least Bell's vireo productivity (Kus and Whitfield 2005).

3. PROJECT SITE

The Preserve is an approximately 211-acre open space property located just east of Camp Pendleton Marine Corps Base and north of the city of Fallbrook (Appendix A: Figure A-1). Trapping in 2023 was conducted along a 1.25 km section of the Santa Margarita River where it passes through the Preserve. The southerly edge of the river is bordered by De Luz Road and Sandia Creek Drive, and the northerly edge of the river is bordered by undeveloped hilly terrain that rises to the north and northwest.

4. TRAP LOCATIONS

In 2023, two traps were placed along the Santa Margarita River within the Preserve in the same locations as those in 2022 (Appendix A: Figure A-2). The primary goal of this trapping program is to maintain suitable breeding habitat for least Bell's vireo and maintain vireo breeding pairs within the Preserve. A primary consideration is to locate traps in those habitats most suitable for nesting, and to do so in a manner that provides acceptable coverage of the project area. Traps were placed within the riparian habitat, approximately 0.7 km from each other, in locations that were easily accessible by vehicle. Trap #1 was located approximately 0.2 km northwest of the intersection of De Luz Road and Sandia Creek Drive. This trap was placed adjacent to a trail at the north end of the Preserve staging area. Trap #2 was placed approximately 0.8 km north of the De Luz Road/Sandia Creek Drive intersection a short distance west of the road. Both traps were placed within riparian habitat, behind brush, to obscure view by the public.

5. METHODS

TW Biological Services personnel performed trapping operations from April 1 through June 30, 2023. The two traps were delivered to the project area and assembled on March 23, 2023. The traps were activated on April 1, 2023. Upon activation, the traps were supplied with fresh water, seed, perches, shade, and live decoy cowbirds. The right primary wing feathers of both male and female decoy cowbirds were clipped for identification and prevention of accidental escape or release back into the wild. This practice also greatly diminishes their likelihood of survival in the wild should they escape. GPS coordinates for trap locations were recorded with a Garmin 276C handheld GPS unit (Appendix B: Table

B-1). Coordinates were recorded in World Geographic System 1984 (WGS 84). A sign was placed on each trap providing trap information and contact phone numbers (Appendix C).

Traps were checked daily, during daylight hours, from April 1 through June 30, 2023. This was done to record trap capture events, release non-target species incidentally captured, add or remove cowbirds to maintain the 2:3 (male:female) decoy ratio, provide fresh seed and water, and repair trap damage if needed. Information recorded for all newly captured cowbirds included capture location, date, sex, and age. Newly captured cowbirds not used as decoys were removed daily and humanely euthanized off-site. All other non-target birds captured were released unharmed at the trap sites. On June 30, 2023, both traps were deactivated and on July 12, 2023, the traps were dismantled and removed from the project area.

6. RESULTS

6.1 Brown-Headed Cowbird Captures

A total of seven cowbirds were captured within the Preserve between April 1 and June 30, 2023 (Table 6-1; Appendix B: Table B-2). These included four adult males, two adult females, and one juvenile. The first adult male and female cowbird captures occurred on May 2, 2023; and the first juvenile cowbird capture occurred on June 24, 2023. There were 182 actual trap days out of a potential of 182. Total trap days are calculated by multiplying the number of traps by the number of days they are in operation, then subtracting the number of days individual traps are inactive for various reasons such as vandalism. There were 0.03 cowbirds captured per trap day during the 2023 project period. The ratio of male to female captures was 2:1.

TABLE 6-1. BROWN-HEADED COWBIRDS CAPTURED PER TRAP IN 2023

Trap Number	Cowbirds Captured			
	Adult Male	Adult Female	Juvenile	Total
1	1	0	0	**1**
2	3	2	1	**6**
Total	**4**	**2**	**1**	**7**

6.2 Non-Target Species

There were six non-target species capture events in the project area in 2023 (Table 6-2). Non-target captures included three California scrub jays, two song sparrows, and one California thrasher. All non-targets were captured in Trap #1 and were released from the trap site unharmed the same day they were captured.

TABLE 6-2. NON-TARGET SPECIES CAPTURE EVENTS IN 2023

Common Name	Scientific Name	Capture Events
California Scrub Jay	*Aphelocoma californica*	3
Song Sparrow	*Melospiza melodia*	2
California Thrasher	*Toxostoma redivivum*	1
	Total	**6**

6.3 Trap Vandalism

No incidences of vandalism occurred during the 2023 trapping period.

6.4 Parasitism

During 2023 TMP surveys, ESA biologists incidentally discovered a least Bell's vireo nest (-117.2495566, 33.40709889) that was subsequently parasitized by brown-headed cowbird and was abandoned by the least Bell's vireo pair.

7. DISCUSSION AND RECOMMENDATIONS

A total of seven brown-headed cowbirds, including four adult males, two adult females, and one juvenile, were removed from the project area in 2023.

Trap #2 captured nearly the same number of birds as last year; Trap #1 captured significantly fewer birds than in 2022 (Table 7-1). The significance of the decreased capture numbers in this trap is difficult to assess given the limited number of years for comparison. Variations in capture numbers in individual traps from one year to the next are not unusual.

TABLE 7-1. BROWN-HEADED COWBIRDS CAPTURED PER TRAP FROM 2022–2023

	Trap #1				Trap #2			
	Number of Cowbirds Removed				Number of Cowbirds Removed			
Year	Male	Female	Juvenile	Total	Male	Female	Juvenile	Total
2022	8	5	0	13	4	2	1	7
2023	1	0	0	1	3	2	1	6

Possible reasons for decline can include annual variations in cowbird migration and dispersal patterns, changes in cowbird populations, variations in movements of cowbirds within the project area, the presence of other nearby trapping programs, or natural or small-scale changes at individual trap locations (e.g., surrounding vegetative cover, composition, or disturbance).

Evaluating trap placement requires consideration of several elements, including the number of available traps and their effective trapping radius, locations of suitable nesting habitat, the total target area to be protected, the locations of travel corridors and foraging areas, access and physical limitations to trap placement, proximity of any nearby trapping programs, and historic locations of least Bell's vireo nest sites.

TW Biological Services considers the current general trap placement on the Preserve to be suitable with respect to overall trap distribution and proximity to least Bell's vireo nesting habitat. The specific location of Trap #1 is currently overgrown with grapevine. Relocating this trap to a more open area may help improve capture numbers and decrease parasitism. We recommend evaluating the vegetation prior to trap placement next season and adjusting the specific placement of Trap #1 as needed in 2024.

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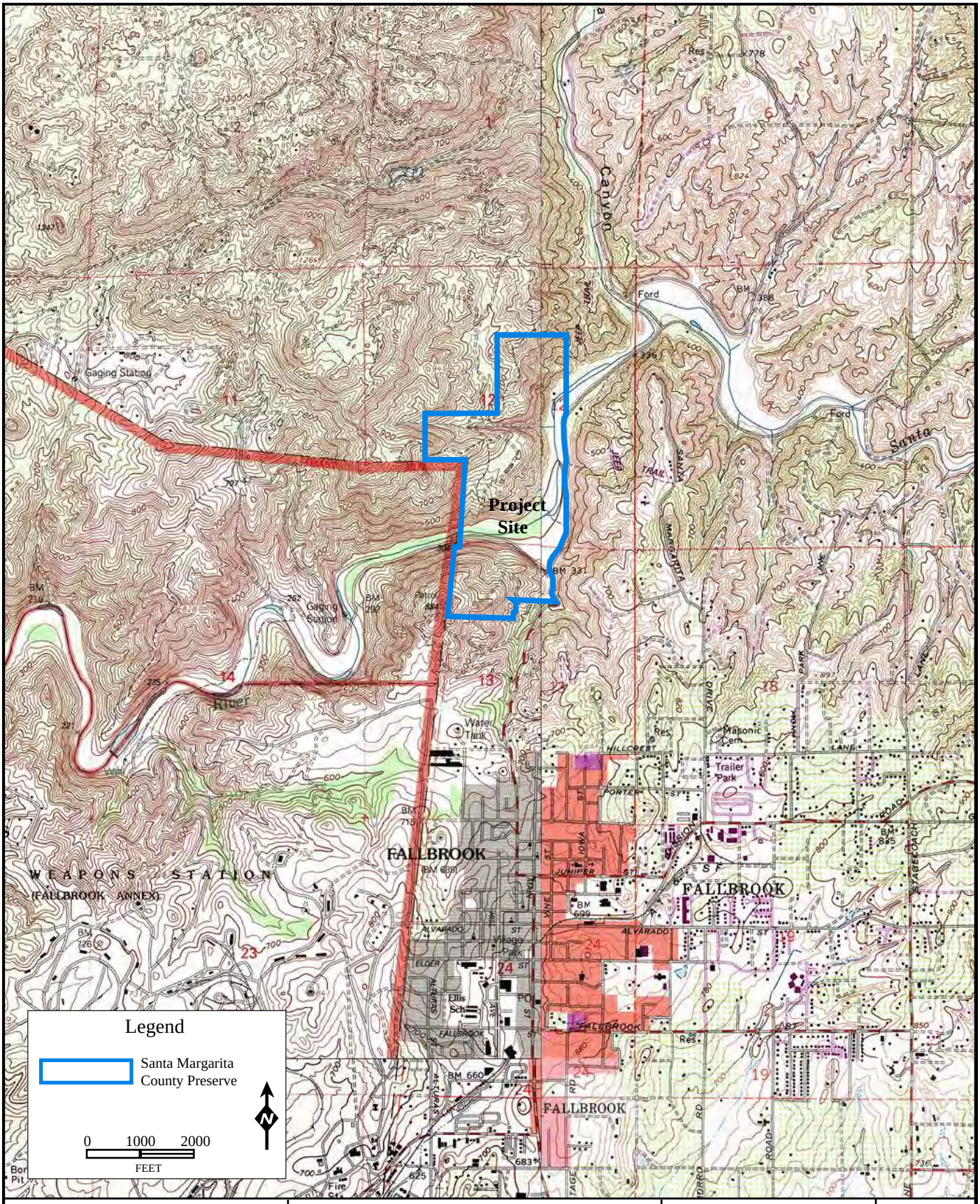
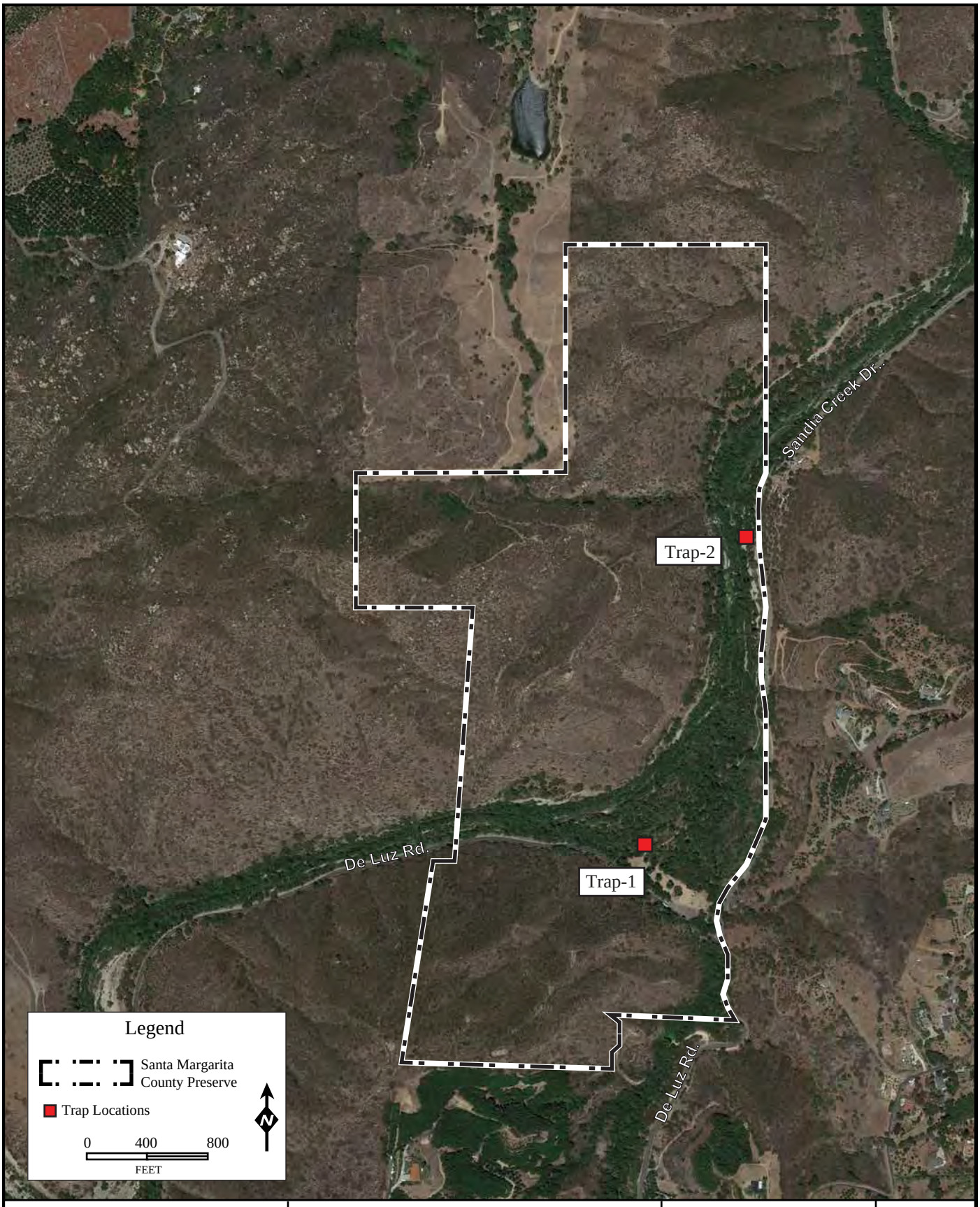
APPENDIX A

FIGURES



TW Biological Services	2023 SANTA MARGARITA COUNTY PRESERVE BROWN-HEADED COWBIRD TRAPPING PROJECT Project No: SMCP-01-23	Project Site Map Source: Fallbrook and Temecula 7.5' USGS Quadrangle Maps	FIGURE A-1



TW Biological Services

2023 SANTA MARGARITA COUNTY PRESERVE
BROWN-HEADED COWBIRD
TRAPPING PROJECT

Project No: SMCP-01-23

Trap Locations

Aerial Source: Google Earth Pro.
August 2021

FIGURE
A-2

APPENDIX B

RAW DATA TABLES

TABLE B-1. BROWN-HEADED COWBIRD TRAP GPS COORDINATES IN 2023

	Trap GPS Coordinates (Decimal Degrees WGS84)		
Trap Number	Y-North	X-West	Elevation (feet)
1	33.402263	-117.251844	326
2	33.407742	-117.249581	317

TABLE B-2. BROWN-HEADED COWBIRDS CAPTURED PER TRAP PER WEEK IN 2023

Week		Trap 1			Trap 2			**Total**		
No.	Date	M	F	J	M	F	J	**M**	**F**	**J**
1	1-7 April	0	0	0	0	0	0	**0**	**0**	**0**
2	8-14 April	0	0	0	0	0	0	**0**	**0**	**0**
3	15-21 April	0	0	0	0	0	0	**0**	**0**	**0**
4	22-28 April	0	0	0	0	0	0	**0**	**0**	**0**
5	29 April-5 May	0	0	0	1	1	0	**1**	**1**	**0**
6	6-12 May	0	0	0	0	1	0	**0**	**1**	**0**
7	13-19 May	0	0	0	1	0	0	**1**	**0**	**0**
8	20-26 May	0	0	0	0	0	0	**0**	**0**	**0**
9	27 May-2 June	1	0	0	0	0	0	**1**	**0**	**0**
10	3-9 June	0	0	0	0	0	0	**0**	**0**	**0**
11	10-16 June	0	0	0	1	0	0	**1**	**0**	**0**
12	17-23 June	0	0	0	0	0	0	**0**	**0**	**0**
13	24-30 June	0	0	0	0	0	1	**0**	**0**	**1**
Total		**1**	**0**	**0**	**3**	**2**	**1**	**4**	**2**	**1**

M= Adult Male, F= Adult Female, J= Juvenile

APPENDIX C

COWBIRD TRAP INFORMATION/DO NOT DISTURB SIGN ATTACHED TO EACH TRAP

PLEASE DO NOT DISTURB

THIS TRAP IS OPERATED IN COOPERATION WITH THE U.S. FISH AND WILDLIFE SERVICE AND CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

THE OPERATION OF THIS TRAP IS PART OF A MANAGEMENT PROGRAM FOR THE ENDANGERED LEAST BELL'S VIREO

ALL TRAPPED BIRDS ARE TREATED HUMANELY IN ACCORDANCE WITH ESTABLISHED FEDERAL AND STATE PROTOCOL.

FOR ADDITIONAL INFORMATION ON THE OPERATION OF THIS TRAP PLEASE CONTACT:

Jennifer Sexton, TW Biological Services
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Appendix I

Stephens' Kangaroo Rat Monitoring and Maintenance Memorandums and Representative Photographs

I-1 Stephens' Kangaroo Rat Habitat Assessment Memorandum: Ramona Grasslands County Preserve

FALL 2023 STEPHENS' KANGAROO RAT MONITORING

RAMONA GRASSLANDS COUNTY PRESERVE

RAMONA, SAN DIEGO COUNTY, CALIFORNIA

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December 5, 2023

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) was contracted by the County of San Diego (County) Department of Parks and Recreation (DPR) with Blackhawk Environmental, Inc. as a sub-consultant to conduct resource-specific monitoring for the federal- and state-threatened Stephens' kangaroo rat (*Dipodomys stephensi;* SKR) within the Ramona Grasslands County Preserve (Preserve) during the fall of 2023. Survey methodology followed the Targeted Monitoring Plan (TMP) (ESA and ICF 2022). The monitoring was a habitat assessment of (1) the 16 permanent plots, established during the 2016 SKR monitoring effort (ICF 2017), and (2) 12 randomly selected plots, including 6 within the SKR monitoring area and 6 within the SKR discovery area.

This report summarizes results of the SKR habitat assessment within the Preserve for the fall of 2023. While fall 2023 monitoring was conducted at a similar time of year compared to previous monitoring efforts, due to the above-average rain year between fall 2022 and fall 2023, a greater percentage of annual vegetation was living/standing, compared to the typical dry and largely senesced conditions observed during the fall 2022 monitoring effort. For a historical perspective, several monitoring efforts have occurred since 2016. The winter 2019 monitoring occurred during a period when abundant, green, and freshly growing annual vegetation was present following recent, above-average rainfall. In comparison, the 2017–2018, fall 2021, and fall 2022 monitoring occurred when the annual vegetation was generally dry and senesced, following some of the worst drought years in recorded California history. As a result, monitoring plots in fall 2023 were similar to the winter 2019 results in that they contained above-average percentages of living herb density, dense grasses, and obstruction factors. This, in turn, resulted in lower evidence of SKR runways, tracks, scat, dust-bathing sites, and other surface SKR sign in 2023 compared to the 2022 monitoring. While several sites saw an increase in the herbaceous layer and obstruction factors, there were still several sites that consisted of low-growing annual plants, resulting in generally low obstruction factors and thus the potential for SKR occupancy.

While the fall 2023 monitoring results demonstrated comparable occupancy overall compared to prior years, there was a significant reduction in SKR habitat suitability when compared to the fall 2022 monitoring. A significant decrease of plots with high potential to occur was documented in 2023, compared to 2022's results, indicating that conditions were less favorable for SKR from 2022 to 2023. This result is likely due to the above-average rainfall between 2022 and 2023 in the greater San Diego area, but it could also be due to a combination of other factors, such as annual fluctuations in habitat characteristics, SKR population dynamics, different timings of the monitoring, and other variables that may affect SKR occupancy/suitability of a given monitoring plot at a given time. However, long-term SKR population viability on a landscape level within the Preserve is not expected to have decreased, and SKR is not anticipated to be in any danger of extirpation as currently managed.

1.0 INTRODUCTION

Purpose and Regulatory Background

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted MSCP South County Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered under the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. DPR prepared the TMP to provide detailed specifications for implementation of adaptive management and monitoring within 10 County-owned and managed conserved lands (open space parks and preserves) overseen by DPR (ESA and ICF 2015). The TMP was revised in December 2022 (ESA and ICF 2022) to incorporate 10 additional open space parks and preserves (Preserve Group 2) and to confirm monitoring and management goals and objectives for TMP-covered species at the newly added open space parks and preserves. The TMP is an adaptive management plan that includes both focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Framework Management Plan (County of San Diego 2001). The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, MSCP jurisdictions, and outside experts. Stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) understand that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods. The TMP currently addresses monitoring within the following 20 open space parks and preserves: Barnett Ranch County Preserve, Boulder Oaks County Preserve, Del Dios Highlands County Preserve, El Capitan County Preserve, El Monte Regional Park, Furby-North Property, Hellhole Canyon County Preserve, Lakeside Linkage County Preserve, Lawrence and Barbara Daley County Preserve, Louis A. Stelzer County Park, Lusardi Creek County Preserve, Mount Olympus County Preserve, Oakoasis County Preserve, Ramona Grasslands County Preserve, Santa Margarita County Preserve, Simon County Preserve, Stoneridge County Preserve, Sycamore Canyon/Goodan Ranch County Preserve, Tijuana River Valley Regional Park, and Wilderness Gardens County Preserve.

Project Location and Description

Ramona Grasslands County Preserve (Preserve) is located within both the MSCP South County Subarea Plan Area and the draft North County MSCP Plan Area. The Preserve is in the Santa Maria Valley west of the unincorporated community of Ramona, San Diego County, California.

Ramona Grasslands County Preserve is within part of the historic Santa Maria Rancho in the western portion of the Santa Maria Valley, approximately 2 miles west of downtown Ramona, California, and 6 miles east of Interstate 15 (Attachment A, Figure 1). The Preserve is in Township 13 South, Range 1 East, and Range 1 West as depicted on the United States Geological Survey (USGS) 7.5-minute San Pasqual, California, quadrangle (Attachment A, Figure 2). The Preserve is within the Santa Maria Valley, consisting of a broad basin surrounded by gentle hills and steep, rocky slopes ranging in elevation from approximately 410 meters (1,350 feet) above mean sea level along the valley floor to over 518 meters (1,700 feet) above mean sea level in the rocky hills of the northern sections of the Preserve.

Historic use of the Preserve has consisted of cattle grazing and other anthropogenic uses. The site contains a network of dirt roads and trails used primarily for ranch access as well as DPR maintenance purposes. Cattle grazing is generally confined to lowland areas within the Preserve and occurs year-round without formalized rotation or rest periods. Stocking rates are established on an annual basis, primarily based on weather and forage conditions.

The northwest portion of the Preserve, west of Rangeland Road and generally north of the Ramona Municipal Water District (RMWD) property, is characterized by rocky hills bisected by Bandy Canyon, through which the Santa Maria Creek flows. The southwest portion of the Preserve consists of rolling hills with rocky outcrops and areas of oak woodland that transition into the lower topography grasslands to the south. The northeast portion of the Preserve, east of Rangeland Road and north of Ramona Airport, is characterized by rocky chaparral-covered hillsides in the north and lower-lying valley grasslands in the south. The southeast portion of the Preserve, east of Rangeland Road and south of the Ramona Airport, consists of low, rolling hills supporting grasslands and rocky outcrops.

RMWD utilizes land west of Rangeland Road for storage and infiltration of treated sewage effluent. Treated effluent is piped from a treatment facility to two storage reservoirs that exist on its property. Treated effluent is disposed of on RMWD property and on ranchland east of Rangeland Road through infiltration in a series of spray fields. The irrigated spray fields are an important year-round source of green forage for cattle grazing. The RMWD property is located west and east of Rangeland Road and is bordered by the Preserve to the north, south, and west.

The Ramona Airport is east of Rangeland Road and borders the Preserve to the north and south. Low-density residential areas are present to the north of the Preserve (accessible by Rangeland Road), adjacent to the Preserve's southern boundary, and along much of the Preserve's western and eastern boundary. Other areas around the periphery of the Preserve are used for dry farming and small citrus and avocado orchards.

2.0 METHODS

SKR Monitoring Area Determination

SKR Monitoring Areas were originally determined based on potentially suitable SKR habitat. Within the Preserve, specific management areas have been developed by DPR and are referred to as Grazing Management Units (i.e., 1A, 1B, 1C, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, 4B, 4C, and 5) and SKR Management Areas (i.e., 1, 2, and 3). Grazing Management Units that provide potentially suitable SKR habitat (i.e., flat terrain and/or gentle slopes that support open, low-growing grasslands) were included within the SKR monitoring area; however, only portions of the associated Grazing Management Units are within SKR Management Areas. The current SKR Monitoring Areas are focused on Grazing Management Units 1A, 1C, 2A (contains portions of SKR Management Area 1), 2B (contains portions of SKR Management Area 1 and 2), 3A, 3B (contains SKR Management Area 3), 3C, 3D, 3E, and 4A, as these areas provide suitable SKR habitat (Attachment A, Figure 3). Additional SKR discovery areas are located within Grazing Management Units 3B and 4C. It is important to note that Grazing Management Unit 3A is not located within an SKR Management Area, but it is included in the monitoring based on previously determined SKR suitability.

Monitoring Plots

Monitoring plots were initially established within SKR core habitat areas on the Preserve in 2016, following an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). A 50- by 50-meter grid pattern was overlain onto a georeferenced aerial map over each of the core SKR Monitoring Areas, and 28 plots were established. Of these 28 plots, 16 were determined to be permanent sampling plots that have been monitored since 2016: A1-1 to A1-6, A2-1, A2-6, A2-7, 3A-1, 3A-6, 3A-7, 3A-8, A3-1, A3-2, and A3-3. Per the TMP (ESA and ICF 2022), the 2023 SKR monitoring sampled these 16 permanent sampling plots for consistency with previous monitoring, and 12 randomly selected plots—6 within the SKR monitoring area and 6 within the SKR discovery area—for a total of 28 sampling plots. Monitoring details, including dates, weather conditions, and field personnel are listed in Table 1.

Table 1. Survey Conditions

Biologist(s)	Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Precipitation
Kris Alberts Hayley Milner Dillon Travis	10-24-23	0805–1530	59–73	0–3 / 3-8	10 / 5	None
Kris Alberts Hayley Milner Dillon Travis	10-25-23	0815–1400	59–64	0-1 / 1–4	100 / 90	Light mist

All monitoring plots were located in the field using the cellular ArcGIS Collector application. Representative photographs were taken from the southeast corner of each plot, facing northwest (Attachment B). The biologists then walked systematic transects through each plot searching for kangaroo rat sign (e.g., burrows, scat, tracks, trails through vegetation, dust-bathing sites) until 100 percent coverage of the plot was achieved. All kangaroo rat sign was recorded on the Survey123 application. Presence or absence of SKR within a given plot was determined solely on whether or not kangaroo rat sign was observed within the plot.

Habitat assessment forms on the Survey123 application were also completed for each plot specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance and land use (Attachment C). These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008). Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned a SKR-potential rating using primarily the following criteria:

- High Potential
    - Readily apparent potential SKR sign (particularly scat and burrows)
    - Relatively flat to gently sloping topography
    - Presence of bare ground common
    - Relatively low living herb density
    - Extremely low to no shrub cover
    - Relatively low obstruction factor (O.F.)[1]

- Moderate Potential
    - Some potential SKR sign (particularly scat and burrows) observed, but infrequent and/or appearing dated or inactive
    - Gently to moderately sloping topography
    - Presence of bare ground moderate
    - Low shrub percent cover
    - Relatively low herb cover
    - Low to moderate O.F.

- Low Potential
    - Trace to no apparent potential SKR sign
    - Moderately sloping topography
    - Minimal bare ground
    - Moderate to high shrub percent cover
    - Moderate to very high living herb density
    - Moderate to high O.F.

- No Potential
    - No apparent potential SKR sign
    - Moderate to steep sloping topography
    - No bare ground
    - High shrub percent cover
    - High living herb density
    - High O.F.

[1] Obstruction factor (O.F.) is the observable ground level conditions of herbaceous vegetation or dead litter that has the potential to obstruct movement of kangaroo rats across the landscape. High O.F. would consist of a very high density of herb and/or dead litter at the ground level. Low O.F. would consist of a low density of herb or dead litter at the ground level, with a high proportion of patches of bare ground.

3.0 RESULTS

A comparison between the overall rating of SKR potential at each plot from the winter of 2017–2018 (ICF 2018) to the winter of 2019 (ESA and Blackhawk Environmental, Inc. 2019) to the fall of 2021 (ESA and Blackhawk Environmental, Inc. 2021) to the fall of 2022 (ESA and Blackhawk Environmental, Inc. 2022) and to the fall of 2023 is included in Table 2; increased or decreased changes for the analyzed elements are provided in the final column of Table 2 comparing the fall 2022 and fall 2023 results only. Results of the 2023 SKR habitat assessment for each sample plot are provided in Table 3. In 2023, habitat assessments were conducted at 28 sample plots; 14 were determined to be potentially or likely occupied by SKR, and 14 were determined to be unoccupied. Each plot was rated for SKR potential, and in total, 8 sample plots were characterized as having a high potential, 10 were characterized as having a medium potential, 10 were characterized as having low potential, and none were characterized as having no potential (Attachment A, Figure 4).

Table 2. SKR Habitat Assessment Comparison

		Winter 2017–2018	Winter 2019	Fall 2021	Fall 2022	Fall 2023	2022–2023 Change
SKR Occupancy	**Occupied**	14	19	14	15	14	-1
	Unoccupied	14	9	14	13	14	+1
SKR Potential	**High**	11	21	17	15	8	-7
	Medium	5	1	5	7	10	+3
	Low	7	6	6	5	10	+5
	No	5	0	0	1	0	-1

Table 3. SKR Habitat Assessment Summary

Fall 2023										Fall 2022
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	***Potential K-Rat Sign**	**SKR Occupancy Determination**	**Rating†**	**Rating†**
A1-1	0–5	Low	0	50–75	Low/Medium	Low	B, TD	Occupied	Medium**	High**
A1-2	0–5	High	0	50–75	Low/Low	High	None	Not Occupied	Low	None
A1-3	0–5	Medium	0	50–75	Low/High	Low	None	Not Occupied	Medium	High**
A1-4	0–5	High	0	50–75	Low/Low	High	None	Not Occupied	Low	Low
A1-5	0–5	Low	0–5	50–75	Medium/Medium	Medium	None	Not Occupied	Low	Medium
A1-6	0–5	Low	0–5	50–75	Low/Low	Medium	S	Occupied	Medium**	High**
A2-1	5–25	Low	0–5	50–75	Low/High	Low	B, S, O	Occupied	High**	High**
A2-6	0–5	High	0–5	50–75	Low/Medium	Medium	B, S	Occupied	High**	High**
A2-7	0–5	Medium	0–5	50–75	Low/Low	High	None	Not Occupied	Low	High**
A3-1	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	High**
A3-2	5–25	Medium	0	50–75	Low/High	Low	B, S, TD	Occupied	High**	High
A3-3	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	High**
2A-1	5–25	Medium	0–5	50–75	Medium/Medium	High	None	Not Occupied	Low	Low
2B-1	0–5	Low	0–5	50–75	Low/Medium	Medium	B, S	Occupied	High**	Low
2B-2	0–5	High	0–5	50–75	Low/Medium	Medium	B, S, TD	Occupied	Low**	Low
2B-3	0–5	Medium	0–5	50–75	Low/Low	Medium	B, S	Occupied	High**	High**
2B-4	0–5	Low	0	50–75	Low/Medium	Medium	None	Not Occupied	Low	Medium**
3A-1	0–5	Medium	0	50–75	Low/Low	High	None	Not Occupied	Low	Low
3A-4	0–5	Medium	0	50–75	Low/Low	High	None	Not Occupied	Low	N/A
3A-6	0–5	Medium	0	50–75	Low/Low	Low	None	Not Occupied	Medium	High
3A-7	0–5	Medium	0	50–75	Medium/Low	Medium	B, S	Occupied	Medium**	High**
3A-8	0–5	Medium	0–5	50–75	Low/Medium	Low	None	Not Occupied	Medium	High**
3B-1	0–5	Low	0	50–75	High/Low	Medium	None	Not Occupied	Low	Medium
3B-2	0–5	Medium	0–5	50–75	Medium/Low	Medium	None	Not Occupied	Medium	Medium
3B-3	0–5	Medium	0	50–75	Low/High	Low	None	Not Occupied	Medium	Medium
3B-4	5–25	Medium	0	50–75	Low/High	Low	B, S	Occupied	High**	Medium
3B-5	0–5	Medium	0–5	50–75	Low/High	Medium	B, S, TV	Occupied	Medium**	Medium**
3B-6	0–5	Medium	0–5	50–75	Low/Medium	Medium	B, S	Occupied	Medium**	High**

^= Active gopher excavation density ratings used; inactive excavations excluded.
* = Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** = Exhibited habitat conditions and observed sign indicates plot is likely occupied by SKR.
† = Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.

4.0 DISCUSSION

Overall occupancy for fall 2023 remained similar to previous monitoring years with 14 occupied plots, compared to 15 occupied plots in fall 2022, 14 in fall 2021, 19 in fall 2019, and 14 in winter 2017–2018 (Table 2). However, there was a significant downshift in the number of high SKR-potential plots in 2023 compared to previous years (Table 3). For all 28 plots, the fall 2023 monitoring resulted in only 8 plots with high potential for SKR, compared to 15 plots with high potential in fall 2022, 17 in fall 2021, 21 in fall 2019, and 11 in winter 2017–2018. This, in turn, resulted in an increase in plots with low and medium SKR potential for 2023. When comparing only the 16 permanent plots, fall 2023 resulted in five plots with high SKR potential, six plots with medium potential, five plots with low potential, and zero plots with no potential. This is a decrease of seven plots with high potential for SKR from fall 2022, as well as an increase of five medium-potential plots, an increase of three low-potential plots, and a decrease of one no-potential plot compared to fall 2022 monitoring efforts.

The results, when considered collectively, indicate slight shifts in overall SKR suitability that can increase or decrease at given sites between monitoring years due to variables such as randomized assignment of non-permanent sampling plots that varies between survey years, annual grazing practices, precipitation, survey timing, predation, weather, food availability, competition among sympatric species, microtopographic differences, proximity of groundwater, and/or availability of natural or artificial water sources that could affect localized plant phenologies, which in turn can affect vegetative density and food availability, etc.

The findings of fall 2023 monitoring efforts showed an overall decrease in SKR potential, which may be partly attributed to the heavy above-average rainfall observed in the greater San Diego region between fall 2022 and fall 2023. An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall is likely to increase vegetation density and height, which may increase obstruction factors. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could result in a reduction of suitable habitat for SKR by promoting vegetation cover that excludes SKR.

Historically, much of the SKR Monitoring Areas are actively grazed, thereby helping to reduce significant vegetative growth during years of above-average rainfall. Grazing in 2022 – 2023 was atypical due to a change in grazing lessee and a capital improvement project.

- January – April 2022. Grazing occurred on the Preserve from January through April 2022, until Tellam and Tellam Cattle no longer had a grazing agreement with DPR.
- May – December 2022. Cattle were removed for the remainder of 2022.
- November 2022. Marcus Battaglia, James Greer, and Remy Greer entered a new grazing agreement with DPR.
- January 2023 – present. Cattle were added to the Preserve in January 2023 and grazing resumed.
- June 2023 – present. Ramona Municipal Water District began a pipeline replacement project in the southeast portion of the Preserve in June 2023 and the new grazing lessee is unable to graze that portion of the Preserve.

Areas in which grazing was not observed within the past 3 to 6 months, or that are not grazed at all, were correlated with low or medium SKR potential. The majority of the annual vegetation present in the high- or medium-potential SKR monitoring plots consisted of broadleaf filaree (*Erodium botrys*), a

low-growing annual plant that facilitates SKR movement and is a potential food source. Taller growths of annual vegetation such as short pod mustard (*Hirschfeldia incana*), as well as dense perennial vegetation such as western ragweed (*Ambrosia psilostachya*) and vinegar weed (*Trichostema lanceolatum*) and dense annual grasses were observed in several low- and medium-potential plots, which may preclude or reduce SKR movement.

To enable more consistent data comparisons on a year-to-year basis, it is recommended that future monitoring be conducted during the dry season (June through November). Annual weather patterns in the greater San Diego region are known to have significant variability in rainfall quantities, while generally dry conditions prevail for the majority of the year. This rainfall variability can cause significant, albeit temporary, changes in herb density, dead plant litter, bare ground, and obstruction factors that tend to be most dramatic when comparing site conditions during the wet season. Dry season monitoring is likely to yield a more consistent comparison of the assessment areas.

5.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings, and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental, Inc.

Kris Alberts
Principal Biologist

6.0 REFERENCES

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2021 Fall 2021 Stephens' Kangaroo Rat Monitoring, Ramona Grasslands County Preserve, Ramona, San Diego County, California. Prepared for the County of San Diego Department of Parks and Recreation. November 1, 2021.

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2022 Draft Targeted Monitoring Plan Update. Prepared for the County of San Diego Department of Parks and Recreation. December 2022.

ICF
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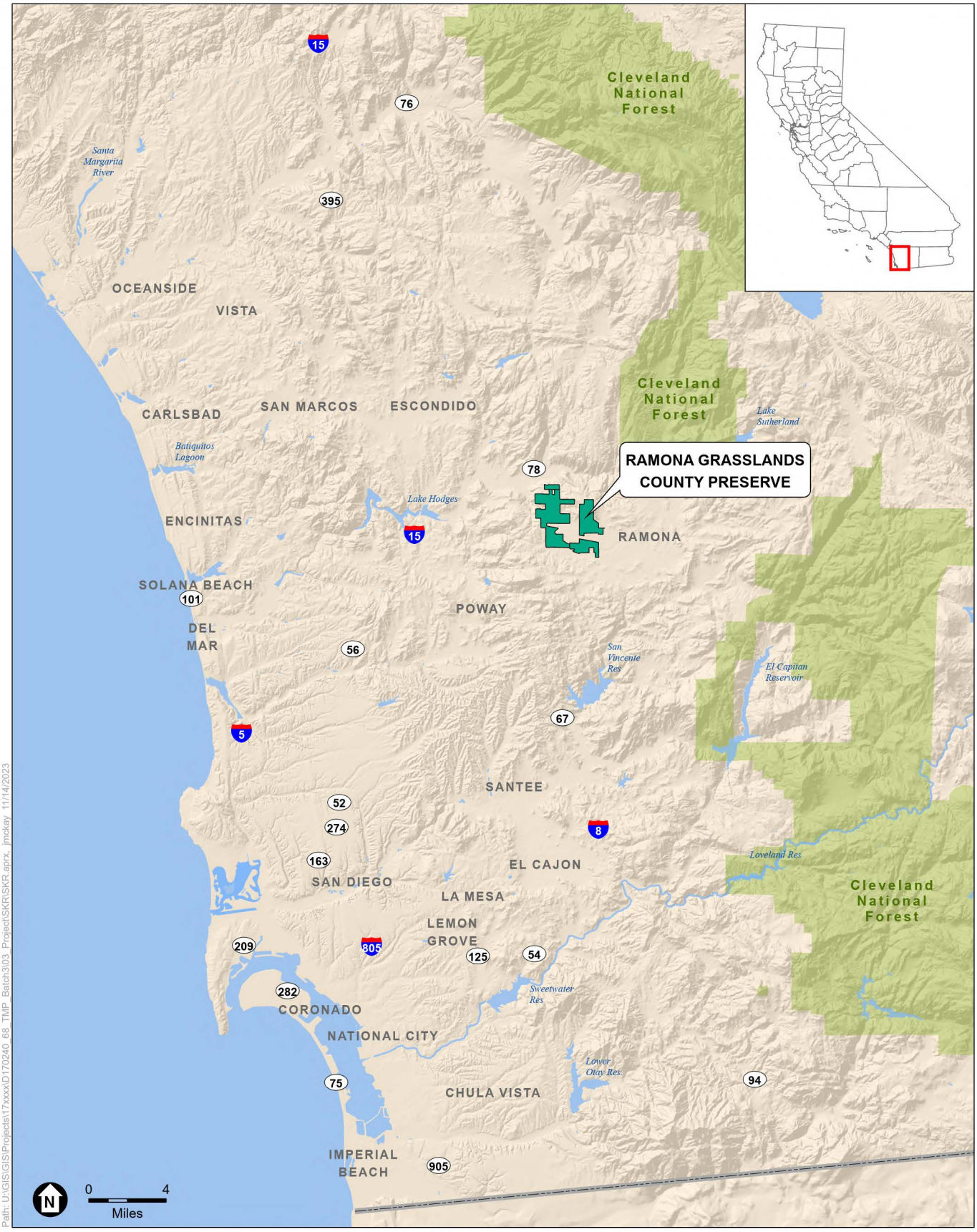
Montgomery, S. J., D. J. Grout, C. M. Wolf, V. M. Shoblock, A. Davenport, and R. N. Knight
2008 *Stephens' kangaroo rat monitoring program, and results of annual monitoring sessions between spring 2002 and fall 2004, at Naval Weapons Station Seal Beach Detachment Fallbrook*. Unpublished report submitted by SJM Biological Consultants to the Environmental Programs and Services Office, Naval Weapons Station Seal Beach Detachment Fallbrook, Fallbrook, CA.

Attachment A
Figures

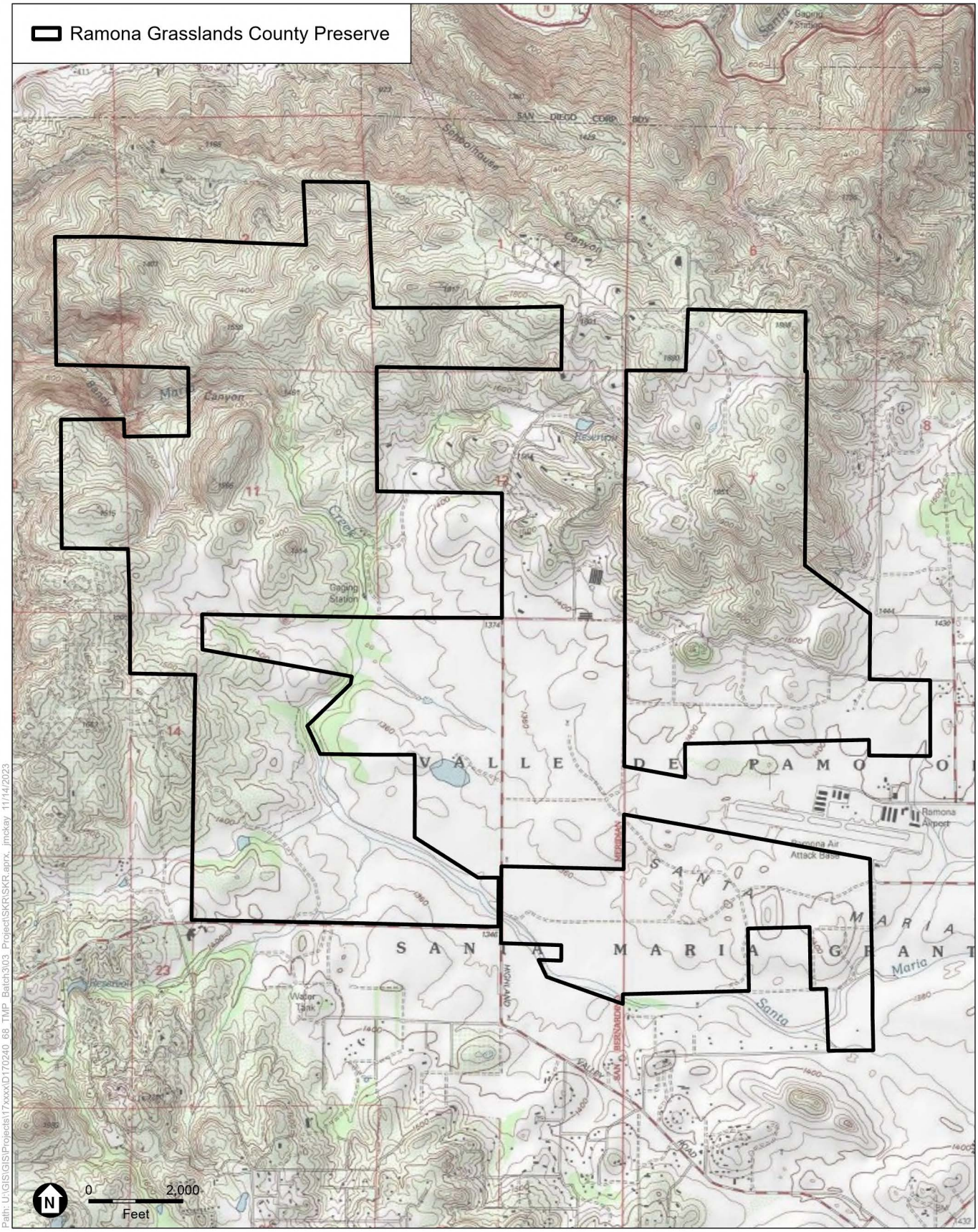


SOURCE: ESRI; SanGIS, 2023

COSD DPR 557744 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 1
Regional Location

ESA



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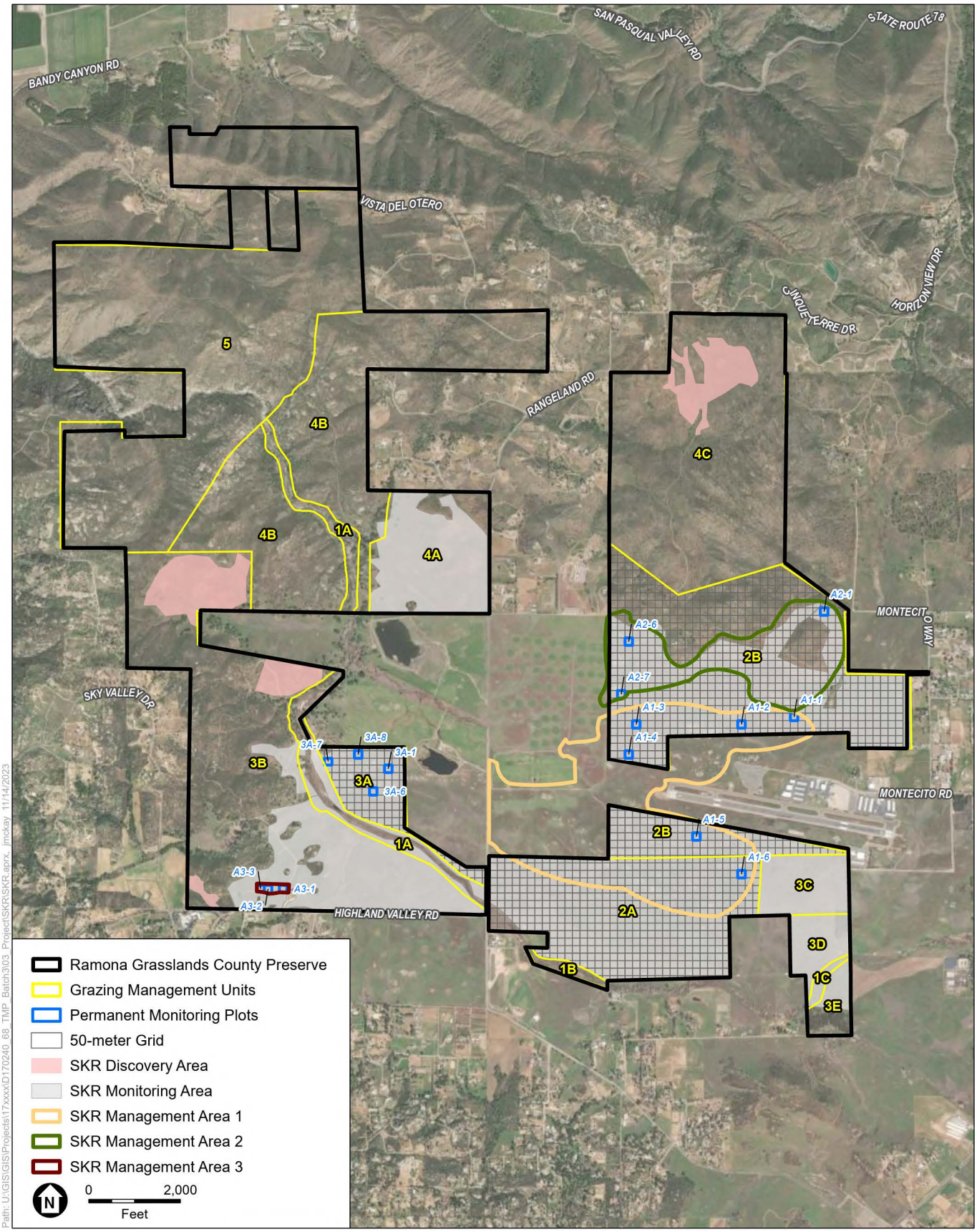
SOURCE: USGS 7.5 minute, San Pasqual quadrangle

COSD DPR 557744 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 2
Project Location

ESA



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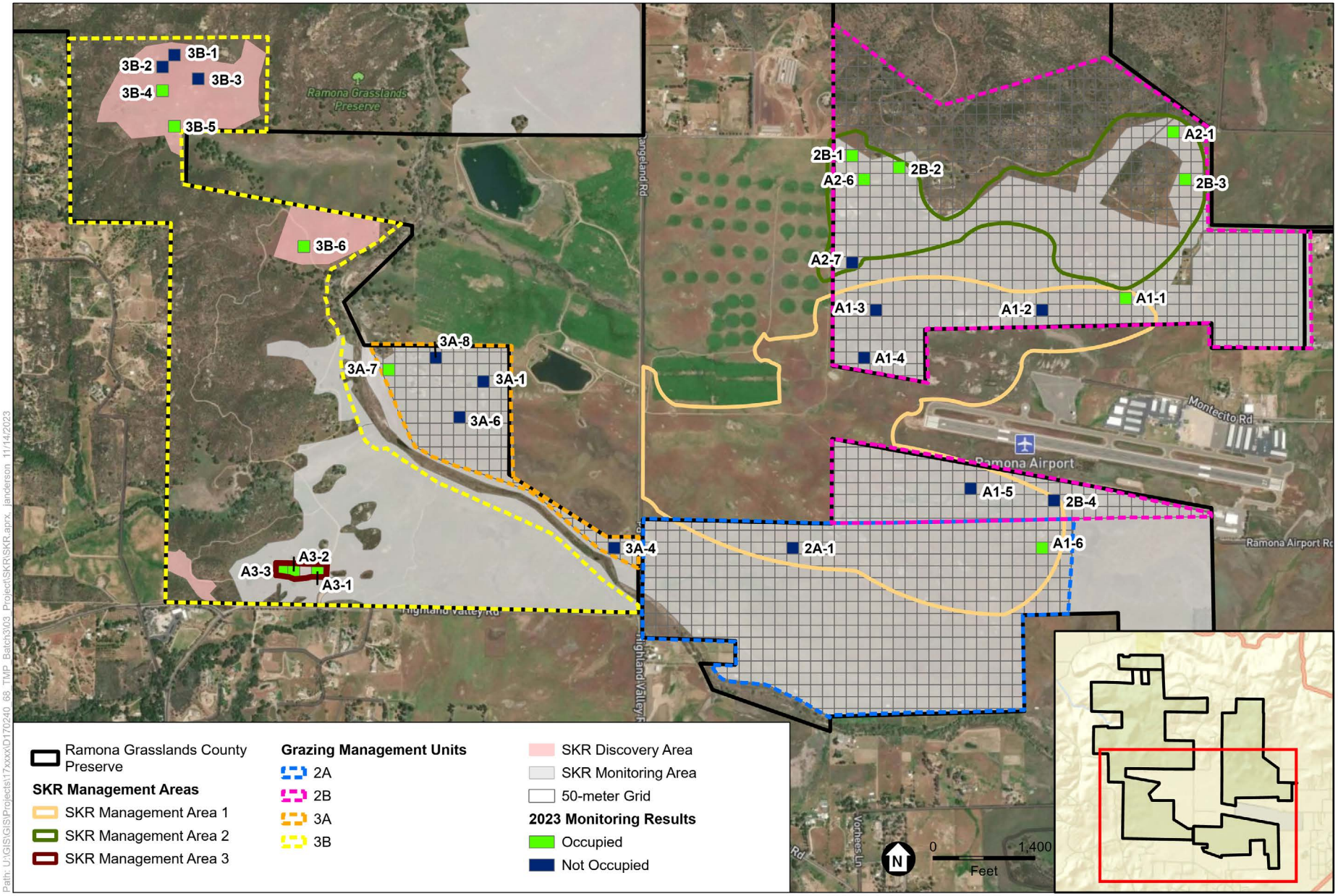
SOURCE: ESRI, 2023

COSD DPR 557744 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

Figure 3
SKR Monitoring and Management Areas

ESA



SOURCE: Mapbox; ESA, 2023

COSD DPR 557744 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Ramona Grasslands County Preserve

ESA

Figure 4
2023 SKR Monitoring Results

Attachment B
Site Photographs

2A-1

2B-1

2B-2

2B-3

2B-4

3A-1

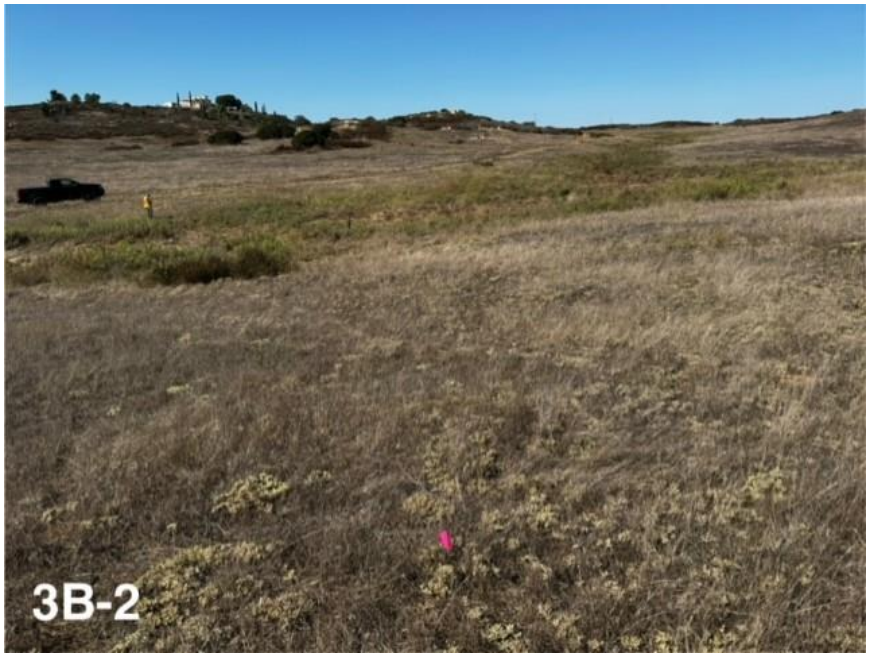
3A-4

3A-6

3A-7

3A-8

3B-1



3B-2

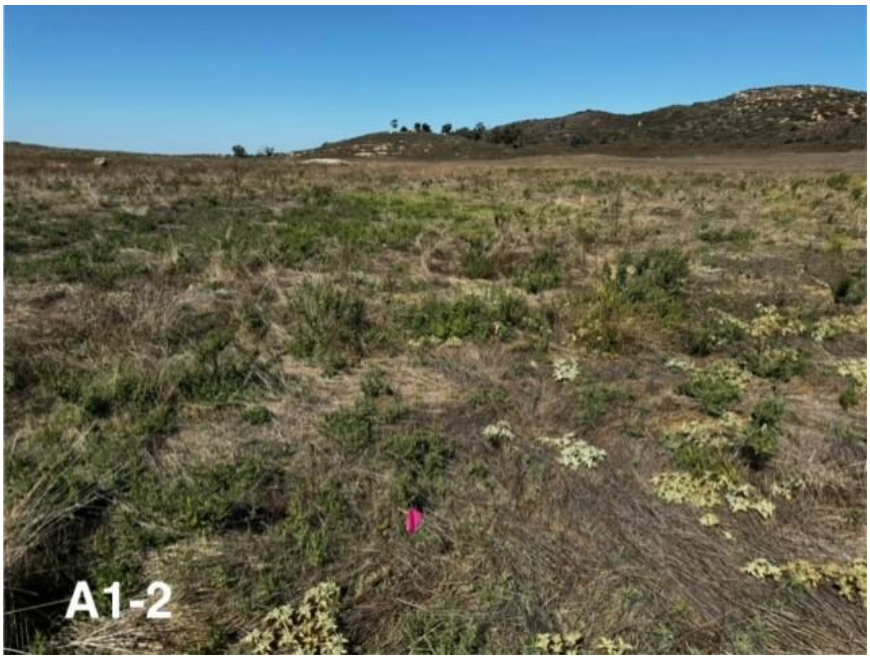
3B-3

3B-4

3B-5

3B-6

A1-1



A1-2

A1-3

A1-4

A1-5

A1-6

A2-1

A2-6

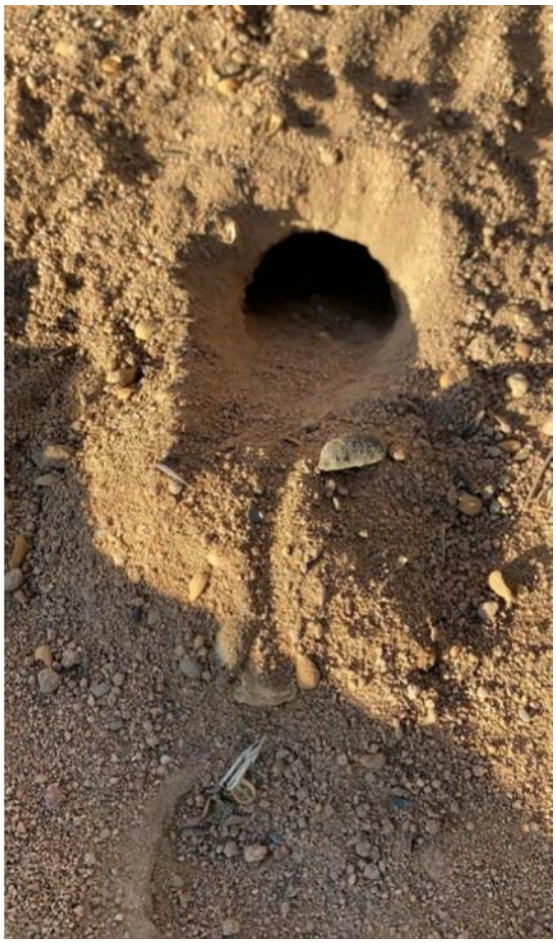
A2-7

A3-1

A3-2

A3-3

Stephens' kangaroo rat burrow at plot A3-1.



Kangaroo rat burrow with tail drag marks at plot A1-1

Kangaroo rat burrow with scat at plot 3A-7.

Attachment C
Field Forms

SKR Monitoring – Habitat Assessment Form

Plot Number: 2A-1 **Date/ Time:** 10/25/2023 13:31

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Construction fencing and small pond take up 60% or more of plot

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Avena barbata, Distichlis spicata, Bromus hordaceous

Shrubs - List 3 Dominant Species: Isocoma menziesii

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 1:31 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 2A-1	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-1 **Date/ Time:** 10/24/2023 10:32

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Grounds squirrel, gopher, and KR burrows next to each other (pic 1)

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Herschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus rubens, Bromus hordaceous, Avena barbata

Shrubs - List 3 Dominant Species: Artemesia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 10:32 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-1	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-2 **Date/ Time:** 10/24/2023 09:59

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Invaded with mustard, little bare ground, excluding road that passes through middle of plot.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Herschfeldia incana, Croton spp., Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus rubens, Bromus diandrus, Avena barbata

Shrubs - List 3 Dominant Species: Isocoma menziesii, Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☑ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 9:59 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-2	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-3 **Date/ Time:** 10/24/2023 08:56

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Large field of standing mustard with scattered open space.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Herschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus spp., Avena barbata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 8:56 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-3	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 2B-4 **Date/ Time:** 10/24/2023 12:53

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Dominated by Brome and Mustard. No bare ground, no SKR sign

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Hirschfeldia incana, Croton spp., Trichostema lanceolatum

Grasses - List 3 Dominant Species: Bromus hordaceous, Bromus matridensis, Bromus spp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 12:53 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 2B-4	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-1 **Date/ Time:** 10/25/2023 11:26

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Large amount of plant litter and faller grass. no SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 25, 2023 11:26 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-1	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-4 **Date/ Time:** 10/25/2023 13:18

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Invaded by Avena and Brome. The grass is old and is laying flat covering virtually all of plot.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Hirschfeldia incana

Grasses - List 3 Dominant Species: Avena barbata, Bromus madritensis, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 25, 2023 1:18 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-4	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-6 **Date/ Time:** 10/25/2023 11:35

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Dead and fallen Bromus makes up majority of plot. low obstruction factor, but no SKR sign

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 11:35 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-6	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-7 **Date/ Time:** 10/25/2023 10:52

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Invaded by mustards. Gopher burrows dominant. Adjacent sandy area has SKR burrows.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 10:52 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-7	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3A-8 **Date/ Time:** 10/25/2023 11:11

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Low obstruction factor, but no SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Distichlis spicata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 25, 2023 11:11 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3A-8	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-1 **Date/ Time:** 10/24/2023 13:45

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Dominated by grasses and veg around stream that intersects the plot. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Croton spp., Hirschfeldia incana

Grasses - List 3 Dominant Species: Bromus diandrus, Avena barbata, Bromus spp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 1:45 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-1	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-2 **Date/ Time:** 10/24/2023 13:32

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Both a dry stream and dirt road intersect plot. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Herschfeldia incana, Croton spp.

Grasses - List 3 Dominant Species: Bromus diandrus, Bromus madritensis, Avena barbata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemesia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 1:32 PM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-2	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-3 **Date/ Time:** 10/25/2023 09:48

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Little bare ground, mostly plant litter. No SKR sign but habitat is not bad.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Corethrogyne filaginifolia

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Distichlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 25, 2023 9:48 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-3	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-4 **Date/ Time:** 10/25/2023 10:21

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Burrows at the eastern border of plot. Low obstruction factor.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 10:21 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-4	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-5 **Date/ Time:** 10/25/2023 09:27

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Invaded by Hirschfeldia and brome. Where bare ground is there are potential SKR burrows and trails through veg.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Trichostema lanceolatum

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Distichlis spicata

Shrubs - List 3 Dominant Species: Artemesia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 9:27 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-5	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: 3B-6 **Date/ Time:** 10/25/2023 09:07

Grazing Management Unit: NA **SKR Management Area:** None

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Invaded by brome. Small patch of bare ground has possible SKR burrows.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Erigeron canadensis

Grasses - List 3 Dominant Species: Bromus hordaceous, Muhlenbergia rigens, Avena barbata

Shrubs - List 3 Dominant Species: Isocoma menziesii

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☑ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 9:07 AM	**Preserve:** Ramona Grasslands Preserve
Plot: 3B-6	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-1 **Date/ Time:** 10/24/2023 08:31

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Little to no bare ground, mostly litter. KR burrows and tail drag tracks

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Ambrosia psilostachya, Hirschfeldia incana

Grasses - List 3 Dominant Species: Bromus rubens, Avena barbata, Bromus diandrus

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☑ Burrow(s) ☐ Tracks ☑ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 8:31 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-1	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-2 **Date/ Time:** 10/24/2023 12:02

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Completely invaded by salt grass. No KR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia spp., Croton spp., Hirschfeldia incana

Grasses - List 3 Dominant Species: Distichlis spicata, Avena barbata, Bromus spp.

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 12:02 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-2	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-3 **Date/ Time:** 10/24/2023 11:15

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: No observed SKR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Hirschfeldia incana, Croton spp., Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus madritensis, Distchlis spicata

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe): None.

Date: October 24, 2023 11:15 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-3	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-4 **Date/ Time:** 10/24/2023 11:41

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Invaded with salt grass, no burrows detected at all

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☐ Medium ☑ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Ambrosia psilostachya, Hirschfeldia incana, Rumex spp.

Grasses - List 3 Dominant Species: distichlis spicata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 11:41 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-4	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-5 **Date/ Time:** 10/24/2023 14:51

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Albertsdo

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Dominated by Brome, Salt grass, and Avena. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Distichlus spicata, Avena barbata, Bromus hordaceous

Shrubs - List 3 Dominant Species: Scrophularia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☑ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 2:51 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-5	**Observers:** Dillon Travis, Kris Albertsdo

SKR Monitoring – Habitat Assessment Form

Plot Number: A1-6 **Date/ Time:** 10/24/2023 14:34

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Dominated by Brome, Distichlus spicata. Potential SKR scat

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Deinandra spp.

Grasses - List 3 Dominant Species: Bromus hordaceous, Distichlis spicata, Gastridium phleoides

Shrubs - List 3 Dominant Species: Isocoma mensiesii

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 2:34 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A1-6	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A2-1 **Date/ Time:** 10/24/2023 09:12

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Open space checkered with buckwheat and dead mustard.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Herschfeldia incana, Corethrogyne filaginifolia

Grasses - List 3 Dominant Species: Bromus rubens, Bromus diandrus, Avena barbata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemesia californica

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☑ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 9:12 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A2-1	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A2-6 **Date/ Time:** 10/24/2023 10:16

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Burrows on side of dirt berm next to old stream(see 2nd, 3rd pic)

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☑ High ☐ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Herschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus rubens, Bromus diandrus, Avena barbata

Shrubs - List 3 Dominant Species: Isocoma menziesii

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☑ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☑ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 10:16 AM	**Preserve:** Hellhole Canyon Preserve
Plot: A2-6	**Observers:** Dillon Travis, Kris Alberts

SKR Monitoring – Habitat Assessment Form

Plot Number: A2-7 **Date/ Time:** 10/24/2023 10:52

Grazing Management Unit: NA **SKR Management Area:** 2

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Highly invaded with grass and mustard, no observed KR sign.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Ambrosia psilostachya

Grasses - List 3 Dominant Species: Bromus madritensis, Bromus hordaceous, Distichlis spicata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 24, 2023 10:52 AM	**Preserve:** Ramona Grasslands Preserve
Plot: A2-7	**Observers:** Dillon Travis

SKR Monitoring – Habitat Assessment Form

Plot Number: A3-1 **Date/ Time:** 10/25/2023 12:37

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Optimal habitat. Low obstruction factor.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 25, 2023 12:37 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-1	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: A3-2 **Date/ Time:** 10/25/2023 12:47

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Optimal habitat. Low obstruction factor. Several burrows located.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☑ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 12:47 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-2	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

SKR Monitoring – Habitat Assessment Form

Plot Number: A3-3 **Date/ Time:** 10/25/2023 12:52

Grazing Management Unit: NA **SKR Management Area:** 3

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley Milner

Trapping needed to confirm SKR vs DKR? ☐ Yes ☑ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Optimal habitat. Low obstruction factor. Continue the previous years management bc it is working at these sites.

Plot Habitat Descriptors

Describe current land use: ☑ Grazing ☐ Open Space ☐ Other

Soil Surface Hardness: ☑ Hard ☐ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☑ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☑ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hirschfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus hordaceous, Avena barbata, Bromus madritensis

Shrubs - List 3 Dominant Species: NA

Trees - Dominant Species: NA

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of ground squirrel burrows: ☑ High ☐ Medium ☐ Low

Substrate Disturbance: ☐ None ☑ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☑ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 25, 2023 12:52 PM	**Preserve:** Ramona Grasslands Preserve
Plot: A3-3	**Observers:** Dillon Travis, Kris Alberts, Hayley Milner

I-2 Stephens' Kangaroo Rat Habitat Assessment Memorandum: Hellhole Canyon County Preserve

FALL 2023 STEPHENS' KANGAROO RAT MONITORING

HELLHOLE CANYON COUNTY PRESERVE

VALLEY CENTER, SAN DIEGO COUNTY, CALIFORNIA

Prepared for:
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December 5, 2023

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) was contracted by the County of San Diego (County) Department of Parks and Recreation (DPR) with Blackhawk Environmental, Inc. as a sub-consultant to conduct resource-specific monitoring for the federal- and state-threatened Stephens' kangaroo rat (*Dipodomys stephensi;* SKR) within the Hellhole Canyon County Preserve (Preserve) during the fall of 2023. Survey methodology followed the Targeted Monitoring Plan (TMP) (ESA and ICF 2022). The monitoring was a habitat assessment of the three plots established during the 2020 live-trapping conducted by ESA and sub-consultant Aardvark Environmental (ESA 2021) and monitored during the fall 2021 and 2022 SKR habitat assessments (ESA and Blackhawk Environmental, Inc. 2021, 2022) associated with 2021 and 2022 TMP Resource-Specific Monitoring (ESA 2022, 2023).

This report summarizes results of the SKR habitat assessment within the Preserve for the fall of 2023. While fall 2023 monitoring was conducted at a similar time of year compared to previous monitoring efforts, due to the above-average rain year between fall 2022 and fall 2023, a greater percentage of annual vegetation was living/standing, compared to the typical dry and largely senesced conditions observed during the 2020 trapping surveys and the fall 2021 and 2022 monitoring efforts. As a result, monitoring plots in fall 2023 were anticipated to yield lower SKR presence results. While some of the SKR monitoring areas in 2023 consisted of an herbaceous layer comprising low-growing annual plants interspersed among open coastal sage scrub habitat, resulting in generally low SKR obstruction factors similar to those in 2020–2022, other areas saw an increase in obstruction factors, thus decreasing suitable habitat for SKR.

The fall 2023 monitoring results demonstrated a reduction in SKR habitat suitability compared to that of the fall 2020 trapping survey and fall 2021 and 2022 monitoring efforts. The fall 2020 live trapping survey yielded one SKR in plot 2 and 17 Dulzura kangaroo rats (*Dipodomys simulans*) spread among all three plots. The three plots are all within 150 feet of one another, and there are no factors that could preclude SKR movement between the three plots. In 2021 and 2022, kangaroo rat sign was detected at all three monitoring plots; therefore, all three plots were assumed potentially occupied by SKR. This assumption considered the positive detection of SKR in plot 2 in fall 2020, kangaroo rat sign in all three plots in fall 2021 and fall 2022, and the lack of obstruction factors that would preclude SKR potential between the three proximal plots. In 2023, however, plot 1 was not considered potentially occupied due to the lack of kangaroo rat sign observed. Additionally, the potential for SKR was reduced to low and medium for plots 1 and 3, respectively, compared to high potential ratings in previous years. Despite these 2023 findings, long-term SKR population viability on a landscape level within the Preserve is not anticipated to be in any danger of extirpation as currently managed given that anthropogenic influence is minimal within the monitoring area.

1.0 INTRODUCTION

Purpose and Regulatory Background

As a participant in the Multiple Species Conservation Program (MSCP) and the adopted MSCP South County Subarea Plan, the County of San Diego (County) is obligated to conduct biological monitoring of habitats and species covered under the MSCP to ensure that the MSCP biological conservation goals and conditions for species coverage are being met. DPR prepared the TMP to provide detailed specifications for implementation of adaptive management and monitoring within 10 County-owned and managed conserved lands (open space parks and preserves) overseen by DPR (ESA and ICF 2015). The TMP was revised and updated in December 2022 (ESA and ICF 2022) to incorporate 10 additional open space parks and preserves (Preserve Group 2) and to confirm monitoring and management goals and objectives for TMP-covered species at the newly added open space parks and preserves, including SKR at Hellhole Canyon County Preserve (Preserve). The TMP is an adaptive management plan that includes both focused goals and objectives for target resources and detailed monitoring protocols and is intended to achieve the management directives for species per the adopted South County MSCP Framework Management Plan (County of San Diego 2001). The regional framework that guides monitoring at the preserve level has been refined over time and is still evolving through a collaborative effort among U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, MSCP jurisdictions, and outside experts. Stakeholders (e.g., state and federal resource agencies, municipal and county agencies, land managers) understand that adaptive management is an iterative process in which lessons are learned and used to further refine priorities, goals, objectives, and monitoring methods. The TMP addresses monitoring within the following 20 open space parks and preserves: Barnett Ranch County Preserve, Boulder Oaks County Preserve, Del Dios Highlands County Preserve, El Capitan County Preserve, El Monte Regional Park, Furby-North Property, Hellhole Canyon County Preserve, Lakeside Linkage County Preserve, Lawrence and Barbara Daley County Preserve, Louis A. Stelzer County Park, Lusardi Creek County Preserve, Mount Olympus County Preserve, Oakoasis County Preserve, Ramona Grasslands County Preserve, Santa Margarita County Preserve, Simon County Preserve, Stoneridge County Preserve, Sycamore Canyon/Goodan Ranch County Preserve, Tijuana River Valley Regional Park, and Wilderness Gardens County Preserve.

Project Location and Description

Hellhole Canyon County Preserve is located within the draft North County MSCP Plan Area. The Preserve is located northeast of Escondido within Valley Center, an unincorporated community of San Diego County.

Hellhole Canyon County Preserve is in the eastern portion of the unincorporated area of Valley Center (Attachment A, Figure 1). The Preserve is in Township 11 South, Range 1 West, and Range 1 East as depicted on the United States Geological Survey (USGS) 7.5-minute Rodriguez Mountain quadrangle (Attachment A, Figure 2). The Preserve is in northeastern San Diego County in the Peninsular Geomorphic Range and consists of mountain and peak faces of Rodriguez Mountain, rocky hills, unnamed streams, drainages, Hell Creek, and valleys north and east of Paradise Mountain. Elevations range from approximately 457 meters (1,500 feet) above mean sea level within Hell Creek to approximately 1,143 meters (3,750 feet) above mean sea level on the western face of Rodriguez Mountain in the eastern section of the Preserve. SKR were historically observed within the Sierra Verde Addition of the Preserve. Suitable annual and perennial grassland and open coastal sage scrub habitat for SKR is present within the northeast corner of the Sierra Verde Addition of the Preserve, and SKR and Dulzura kangaroo rat (*Dipodomys simulans*) presence were confirmed during baseline trapping surveys conducted in 2020.

2.0 METHODS

SKR Monitoring Area Determination

The SKR Monitoring Area was originally determined based on the 2020 baseline visual habitat assessment and live-trapping results. Within the Preserve, suitable SKR habitat is confined to the northeastern corner of the Sierra Verde Addition. Potentially suitable SKR habitat (i.e., flat terrain and/or gentle slopes that support low-growing, open habitat) were included within the SKR Monitoring Area. The current SKR Monitoring Area focused on open coastal sage scrub and annual and perennial grassland habitats as the only area in the larger Hellhole Canyon County Preserve that provides suitable SKR habitat with connectivity to the high-quality expansive grassland habitat within the adjacent Rancho Guejito (Attachment A, Figure 3).

Monitoring Plots

Baseline SKR trapping surveys were conducted in 2020 within the northeastern corner of the Sierra Verde Addition and confirmed SKR presence in one of the three trapping plots (plot 2). Per the updated TMP (ESA and ICF 2022), the 2023 SKR monitoring effort sampled the same three sampling plots established during 2020 baseline trapping surveys due to the limited size of suitable SKR habitat within the Preserve. In accordance with the TMP, specific monitoring protocols followed an adapted methodology used by USGS for SKR monitoring at Camp Pendleton (Brehme et al. 2016). Monitoring details, including dates, weather conditions, and field personnel are listed in Table 1.

Table 1. Survey Conditions

Biologists	Date	Start/End Time	Start/End Air Temperature (°F)	Start/End Wind Speed (mph)	Start/End Cloud Cover (%)	Precipitation
Kris Alberts Hayley Milner Dillon Travis	10-23-23	0915–1135	61–63	0–2 / 1–3	100 / 80	Light mist

A cellular ArcGIS Collector application was used to determine the locations of all monitoring plots in the field. Representative photographs were taken from the southeast corner of each plot, facing northwest (Attachment B). The biologists then walked systematic transects through each plot searching for kangaroo rat sign (e.g., burrows, scat, tracks, trails through vegetation, dust-bathing sites) until 100 percent coverage of the plot was achieved. All kangaroo rat sign was recorded on the Survey123 application. Potential presence or absence of SKR within a given plot was determined solely on whether or not kangaroo rat sign was observed within the plot.

Habitat assessment forms on the Survey123 application were also completed for each plot, specifically noting habitat characteristics critical to SKR habitat suitability, including percent bare ground, living herb density, shrub/tree density, percentage of dead plant litter, gopher or ground squirrel density, obstruction factor, types of disturbance, and land use (Attachment C). These assessment variables were modeled after field forms used by Brehme et al. (2016) (adapted from a field form in Montgomery et al. 2008. Based on the quality of potentially suitable SKR habitat and the density of apparent kangaroo rat sign, each plot was assigned a SKR-potential rating using primarily the following criteria:

- High Potential
  - Readily apparent potential SKR sign (particularly scat and burrows)
  - Relatively flat to gently sloping topography
  - Presence of bare ground common
  - Relatively low living herb density
  - Extremely low to no shrub cover
  - Relatively low obstruction factor (O.F.)[1]

- Moderate Potential
  - Some potential SKR sign (particularly scat and burrows) observed, but infrequent and/or appearing dated or inactive
  - Gently to moderately sloping topography
  - Presence of bare ground moderate
  - Low shrub percent cover
  - Relatively low herb cover
  - Low to moderate O.F.

- Low Potential
  - Trace to no apparent potential SKR sign
  - Moderately sloping topography
  - Minimal bare ground
  - Moderate to high shrub percent cover
  - Moderate to very high living herb density
  - Moderate to high O.F.

- No Potential
  - No apparent potential SKR sign
  - Moderate to steep sloping topography
  - No bare ground
  - High shrub percent cover
  - High living herb density
  - High O.F

[1] Obstruction factor (O.F.) is the observable ground level conditions of herbaceous vegetation or dead litter that has the potential to obstruct movement of kangaroo rats across the landscape. High O.F. would consist of a very high density of herb and/or dead litter at the ground level. Low O.F. would consist of a low density of herb or dead litter at the ground level, with a high proportion of patches of bare ground.

3.0 RESULTS

A comparison between the overall rating of SKR potential at each plot from the fall 2020 trapping survey to the fall 2021, fall 2022, and fall 2023 monitoring is included in Table 2; increased or decreased changes for the analyzed elements are provided in the final column of Table 2 comparing fall 2022 to fall 2023 (ESA and Blackhawk Environmental, Inc. 2022). Results of the 2023 SKR habitat assessment for each sample plot are provided in Table 3. In 2023, habitat assessments were conducted at three monitoring plots, two of which were determined to be occupied or potentially occupied by SKR. Each plot was rated for SKR potential, and only one plot was characterized as having high potential, while one plot was characterized as medium potential and one as low potential. None of the sample plots were found to have no potential for SKR (Attachment A, Figure 4).

Table 2. SKR Habitat Assessment Comparison

		Fall 2020	Fall 2021	Fall 2022	Fall 2023	2022–2023 Change
SKR Occupancy	**Occupied**	1	3*	3*	2*	-1
	Unoccupied	2	0	0	1	+1
SKR Potential	**High**	3	3	3	1	-2
	Medium	0	0	0	1	+1
	Low	0	0	0	1	+1
	No	0	0	0	0	0

*Occupancy status in fall 2023 was determined as "potentially occupied" based on the positive detection of one SKR in plot 2 in fall 2020 live-trapping surveys, as well as positive kangaroo rat sign in plots 2 and 3 during fall 2023, the proximity of the two plots (within 150 feet of one another), and no factors that could reasonably be expected to entirely preclude SKR movement between the two plots.

Table 3. SKR Habitat Assessment Summary

Fall 2023										Fall 2022
Plot ID	**% Bare Ground**	**Living Herb Density**	**Shrub/Tree Density (%)**	**Plant Litter (Dead) (%)**	**Gopher/ Ground Squirrel Density^**	**Obstruction Factor**	**Potential K-Rat Sign***	**SKR Occupancy Determination+**	**Rating†**	**Rating†**
1	0–5	Medium	5–25	50–75	Low/Low	Medium	None	Not Occupied	Low	High**
2	5–25	Low	0–5	25–50	Low/Low	Low	B, S, T	Occupied	High**	High**
3	0–5	Medium	25–50	25–50	Low/Low	Medium	B, S	Occupied	Medium**	High**

^ = Active gopher excavation density ratings used; inactive excavation density ratings excluded.
* = Potential Kangaroo Rat Sign: B = Burrow(s); S = Scat; T = Tracks; TD = Tail Drag; TV = Trails in Vegetation; O = Other
** = Exhibited habitat conditions and observed sign indicates plot is likely or potentially occupied by SKR.
† = Estimated potential for SKR occupancy based on habitat community condition and observed kangaroo rat sign.
+ = Occupancy status in fall 2023 was determined as "potentially occupied" as described in the footnote on Table 2.

4.0 DISCUSSION

SKR occupancy potential decreased for two of the three monitoring plots in fall 2023 compared to prior monitoring efforts in fall 2021 and fall 2022. SKR was found present at only one of the three monitoring plots during the fall 2020 trapping survey but was potentially detected at all three monitoring plots during the fall 2021 and 2022 habitat assessments. During the 2023 monitoring efforts, however, only two of the three plots potentially detected SKR (Table 3). Differentiating between SKR and DKR sign is not conclusive in and of itself; however, there are no obstruction factors that could preclude the possibility of SKR from any of the three sites, especially considering the proximity of the three sites (within 150 feet of one another). Therefore, monitoring results from 2021 and 2022 suggested high potential for SKR in all three plots, whereas in 2023, potential for SKR was high only in plot 2. Potential for SKR in plots 1 and 3 decreased to low and medium, respectively. The results indicate seasonal SKR occupancy can increase or decrease at given sites between monitoring years due to variables such as precipitation, survey timing, predation, weather, food availability, competition among sympatric species, microtopographic differences, proximity of groundwater, and/or availability of natural or artificial water sources that could affect localized plant phenologies, which in turn can affect vegetative density and food availability, etc.

An increase in overall rainfall can be beneficial for SKR suitability in that it can increase food availability; however, significant increases in rainfall is likely to increase vegetation density and height, which may increase obstruction factors. The period between the fall 2022 and fall 2023 monitoring efforts was marked by a significantly above-average rainfall year in the greater San Diego region. In an ecological regime that is free of anthropogenic influences such as cattle grazing, consistently higher rainfall could serve to reduce habitat suitability for SKR by promoting vegetation cover that excludes SKR.

During the 2023 monitoring effort, all three plots were observed to have had mowing conducted in portions of the plots within the last 6 months. Despite this, an increase in living/standing herb density and overall vegetation coverage, as well as a decrease in bare ground, was observed in plots 1 and 3. Plot 2 presented similar findings as previous years, with more open areas primarily vegetated with low-growing filarees (*Erodium spp.*) that facilitates SKR movement and is a potential food source. Comparatively, plots 1 and 3 presented with higher percentages of taller-growing ruderal species (i.e., tocalote [*Centaurea melitensis*] and short-pod mustard [*Hirschfeldia incana*]) that increase obstruction factors and may preclude or reduce SKR movement. Obstruction factors were thus increased for plots 1 and 3, compared to findings in 2022 and 2021, reducing the potential for SKR.

To enable consistent data comparisons on a year-to-year basis, it is recommended that future monitoring be conducted during the dry season (July through November), following the precedent set by the fall 2020, fall 2021, fall 2022, and fall 2023 monitoring efforts. Annual weather patterns within the greater San Diego region are known to have significant variability in rainfall quantities, while generally dry conditions prevail for most of the year. This rainfall variability can cause significant, albeit temporary, changes in herb density, dead plant litter, bare ground, and obstruction factors that tend to be most dramatic when comparing site conditions during the wet season. Dry season monitoring is likely to yield a more consistent comparison of the assessment areas.

5.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings, and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental, Inc.

Kris Alberts
Principal Biologist

6.0 REFERENCES

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2016 *Stephens' Kangaroo Rat Monitoring on MCB Camp Pendleton, Results and Trends Analyses for Fall-Winter 2014*. Prepared for Wildlife Management Branch, AC/S Environmental Security, Marine Corps Base Camp Pendleton. 52pp.

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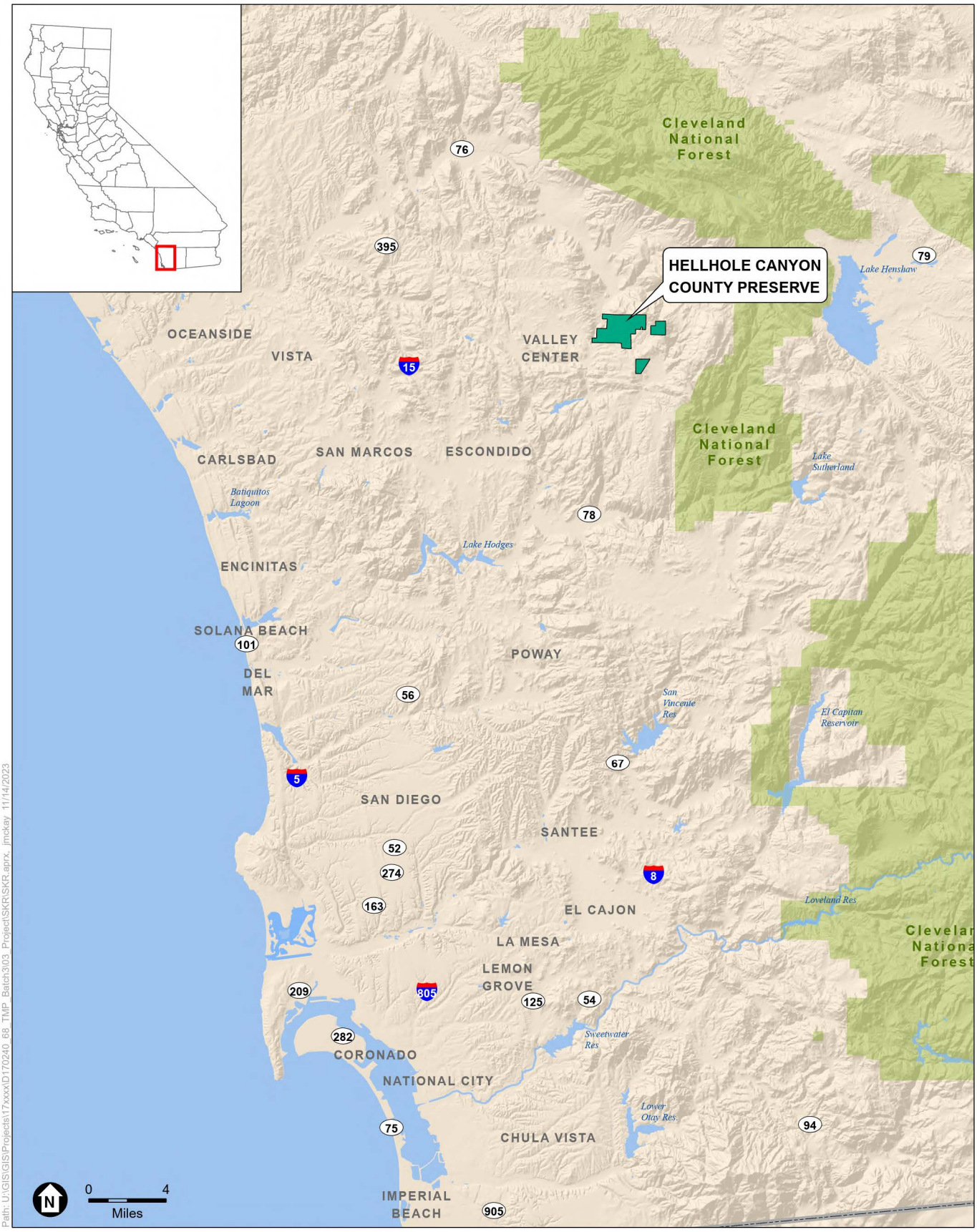
2008 *Stephens' kangaroo rat monitoring program, and results of annual monitoring sessions between spring 2002 and fall 2004, at Naval Weapons Station Seal Beach Detachment Fallbrook*. Unpublished report submitted by SJM Biological Consultants to the Environmental Programs and Services Office, Naval Weapons Station Seal Beach Detachment Fallbrook, Fallbrook, CA.

Attachment A
Figures



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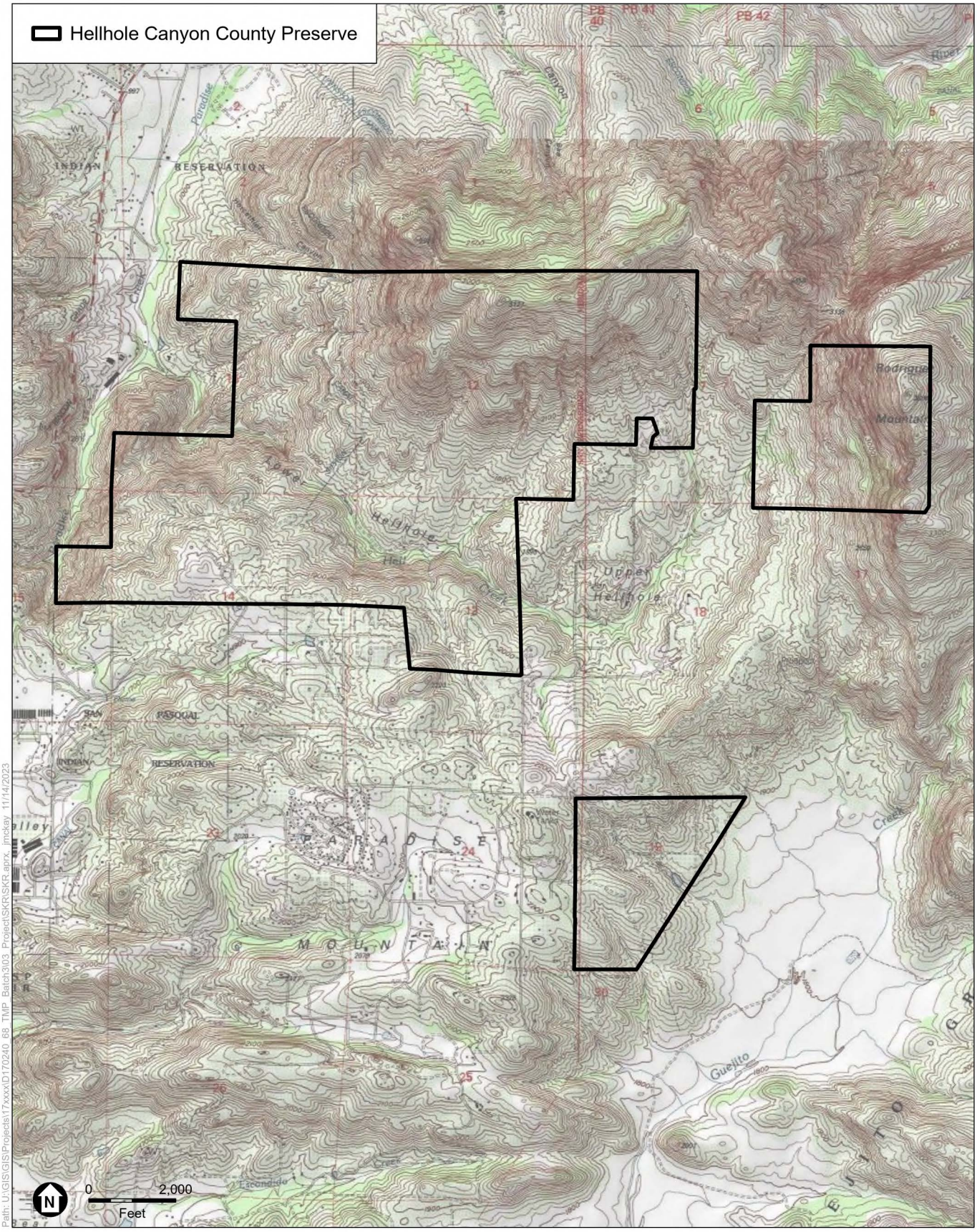
SOURCE: ESRI; SanGIS, 2023

COSD DPR 5577 44 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 1
Regional Location

ESA



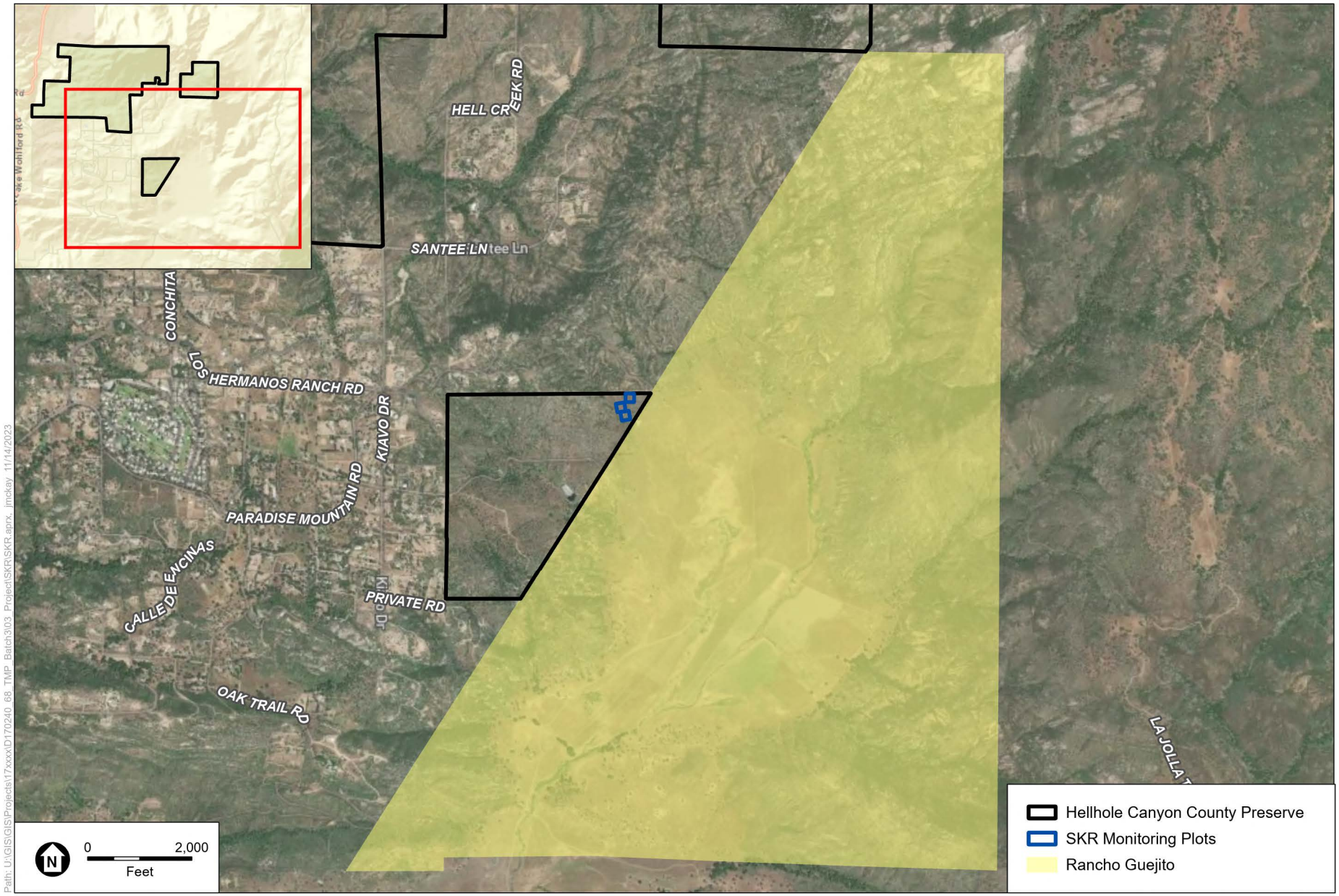
Path: U:\GIS\GIS\Projects\17xxxx\D170240 68 TMP Batch3\03 Project\SKR\SKR aprx jmckay 11/14/2023

SOURCE: USGS 7.5 minute, Rodriguez Mountain quadrangle

COSD DPR 5577 44 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 2
Project Location

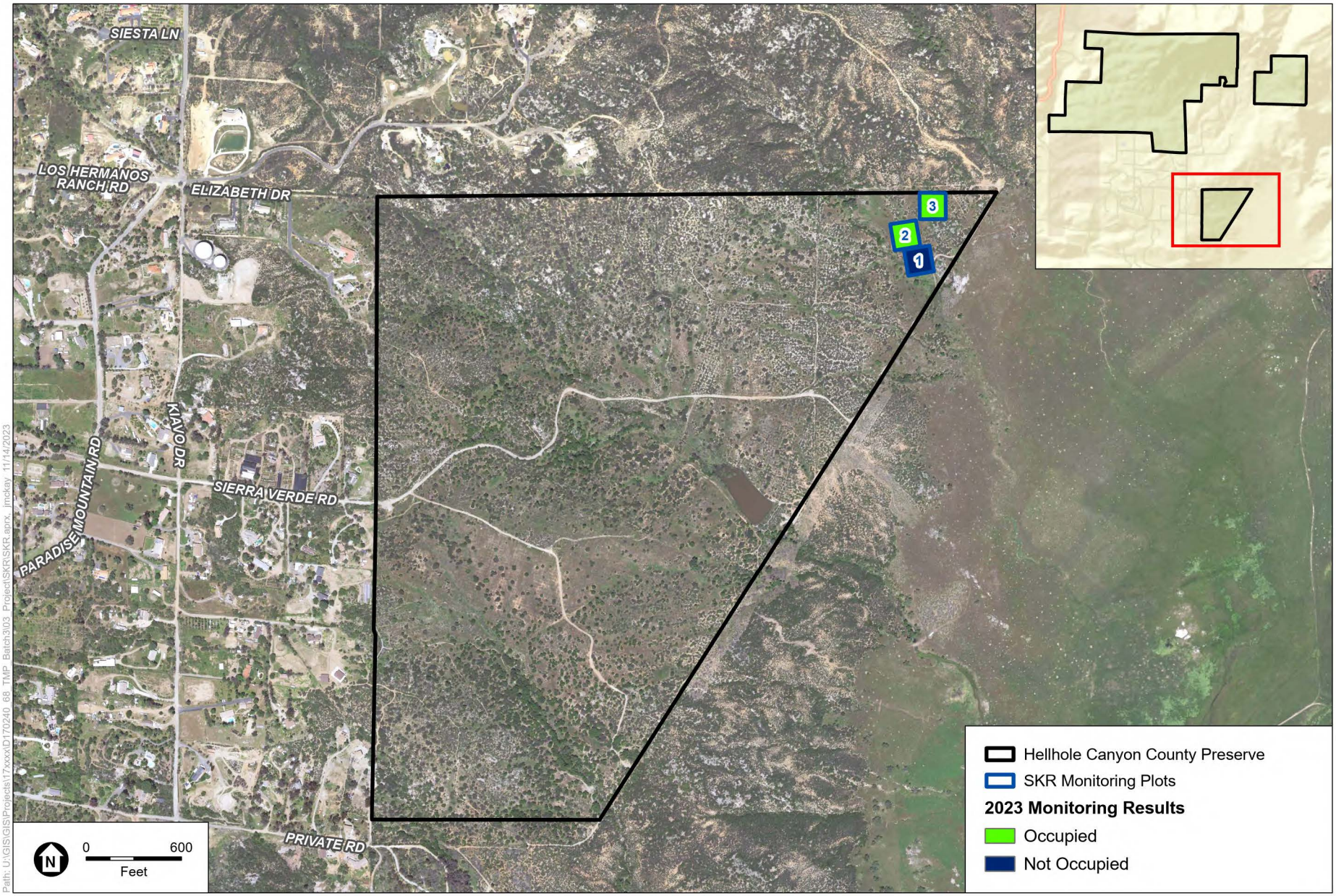
ESA



SOURCE: ESRI, 2023; SanGIS, 2023

COSD DPR 5577 44 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

Figure 3
SKR Monitoring Area



SOURCE: NAIP, 2020; SanGIS, 2023; ESA, 2023.

COSD DPR 5577 44 TO 68 - Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring and Management
Fall 2023 SKR Habitat Monitoring Memorandum – Hellhole Canyon County Preserve

ESA

Figure 4
2023 SKR Monitoring Results

Attachment B
Site Photographs

Plot 1

Plot 2

Plot 3

Attachment C
Field Forms

SKR Monitoring – Habitat Assessment Form

Plot Number: 1 **Date/ Time:** 10/23/2023 09:07

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☐ Medium ☑ Low ☐ None

Comments: Plot 1 has had vegetation management (weed whacked grasses/ mustard) detritus was left in place covering area in detritus. No SKR sign.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp., Hercshfeldia incana, Erodium spp.

Grasses - List 3 Dominant Species: Bromus spp. (like rubens), Avena barbata,

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemesia californica, Bacharris salicifolia

Trees - Dominant Species: Quercus berbidifolia

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☐ Scat ☐ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe): None.

Date: October 23, 2023 9:07 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 1	**Observers:** Dillon Travis, Kris Alberts, Hayley

SKR Monitoring – Habitat Assessment Form

Plot Number: 2 **Date/ Time:** 10/23/2023 10:31

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☑ High ☐ Medium ☐ Low ☐ None

Comments: Located one burrow and scat. Area was mowed and refuse left in place and is now litter/detritus

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☐ Medium ☑ Low

Bare Ground: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Herschfeldia incana, Erodium spp., Croton

Grasses - List 3 Dominant Species: Bromus spp, Avena barbata

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Artemsesia California

Trees - Dominant Species: Quercus berbirifolia

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☐ High ☑ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Weed whacking Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☑ Tracks ☐ Tail Drag ☐ Caching/foraging craters Other(Describe):

Date: October 23, 2023 10:31 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 2	**Observers:** Dillon Travis, Kris Alberts, Hayley

SKR Monitoring – Habitat Assessment Form

Plot Number: 3 **Date/ Time:** 10/23/2023 10:54

Grazing Management Unit: NA **SKR Management Area:** 1

Digital Photographs taken @ SE Corner of Plot? ☑ Yes ☐ No

Observer(s): Dillon Travis, Kris Alberts, Hayley

Trapping needed to confirm SKR vs DKR? ☑ Yes ☐ No

Overall SKR Potential: ☐ High ☑ Medium ☐ Low ☐ None

Comments: Was mowed/whacked. Wasn't collected so old plants are now detritus/litter. Less KR sign compared to last year.

Plot Habitat Descriptors

Describe current land use: ☐ Grazing ☑ Open Space ☐ Other

Soil Surface Hardness: ☐ Hard ☑ Medium ☐ Soft

Living/Standing Herb Density: ☐ High ☑ Medium ☐ Low

Bare Ground: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Plant Litter (dead): ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forb Cover: ☐ 0 ☐ 0-5% ☑ 5-25% ☐ 25-50% ☐ 50-75%

Grass Cover: ☐ 0 ☑ 0-5% ☐ 5-25% ☐ 25-50% ☐ 50-75%

Shrub Cover: ☐ 0 ☐ 0-5% ☐ 5-25% ☑ 25-50% ☐ 50-75%

Forbs - List 3 Dominant Species: Croton spp, Tocalote, Herschfeldia incana

Grasses - List 3 Dominant Species: Avena barbata, Bromus hordaceaous, Bromus spp.

Shrubs - List 3 Dominant Species: Eriogonum fasciculatum, Gutierrezia spp, Artemesia californica

Trees - Dominant Species: Quercus spp., Malosma laurnina, Citrus spp.

Abundance of ACTIVE Gopher Excavations: ☐ High ☐ Medium ☑ Low

Abundance of INACTIVE Gopher Excavations: ☑ High ☐ Medium ☐ Low

Abundance of ground squirrel burrows: ☐ High ☐ Medium ☑ Low

Substrate Disturbance: ☐ None ☐ Grazing ☐ Grading ☐ Discing ☐ Furrows

Grazing - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Grading - Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Discing- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Furrows- Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Mowing – Estimate When? ☐ past 3 months ☑ past 6 months ☐ past 12 months ☐ Older

Dirt Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Paved Road – Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Other? Describe: Estimate When? ☐ past 3 months ☐ past 6 months ☐ past 12 months ☐ Older

Potential Kangaroo Rat Sign? ☑ Scat ☑ Burrow(s) ☐ Tracks ☐ Tail Drag ☐ Caching/foraging craters

Other(Describe):

Date: October 23, 2023 10:54 AM	**Preserve:** Hellhole Canyon Preserve
Plot: 3	**Observers:** Dillon Travis, Kris Alberts, Hayley

I-3 Cultural Monitoring Memorandum for Stephens' Kangaroo Rat Focused Management: Hellhole Canyon County Preserve

ESA

80 South Lake Avenue
Suite 570
Pasadena, CA 91101
626.204.6170 phone
626.204.6171 fax

esassoc.com

memorandum

date	October 12, 2023
to	Jennifer Price, Department of Parks and Recreation Resource Management Division, County of San Diego
cc	Adrienne Lee and Sonya Vargas, Environmental Science Associates
from	Kyle Garcia and Joel Aspeytia, Environmental Science Associates
subject	Stephens' Kangaroo Rat Habitat Maintenance – Cultural Resources Summary

The County of San Diego (County) Department of Parks and Recreation (DPR) monitors and adaptively manages habitats and species covered by the Multiple Species Conservation Program (MSCP) to ensure MSCP biological conservation goals and conditions for species coverage are being met, as a requirement of the MSCP and the adopted South County MSCP Subarea Plan. The monitoring and adaptive management program is guided by the Targeted Monitoring Plan (TMP) (ESA and ICF 2015) and its subsequent update (ESA and ICF 2022). The TMP includes focused goals and objectives for target resources and detailed monitoring protocols and adaptive management for 22 species, including Stephens' kangaroo rat (SKR; *Dipodomys stephensi*) (ESA and ICF 2022). Annual habitat assessment monitoring for SKR at Hellhole Canyon County Preserve began in 2021. In response to these monitoring results, habitat enhancement for SKR was recommended to reduce vegetation density and increase open ground to support SKR movement across the landscape (ESA 2022; ESA 2023).

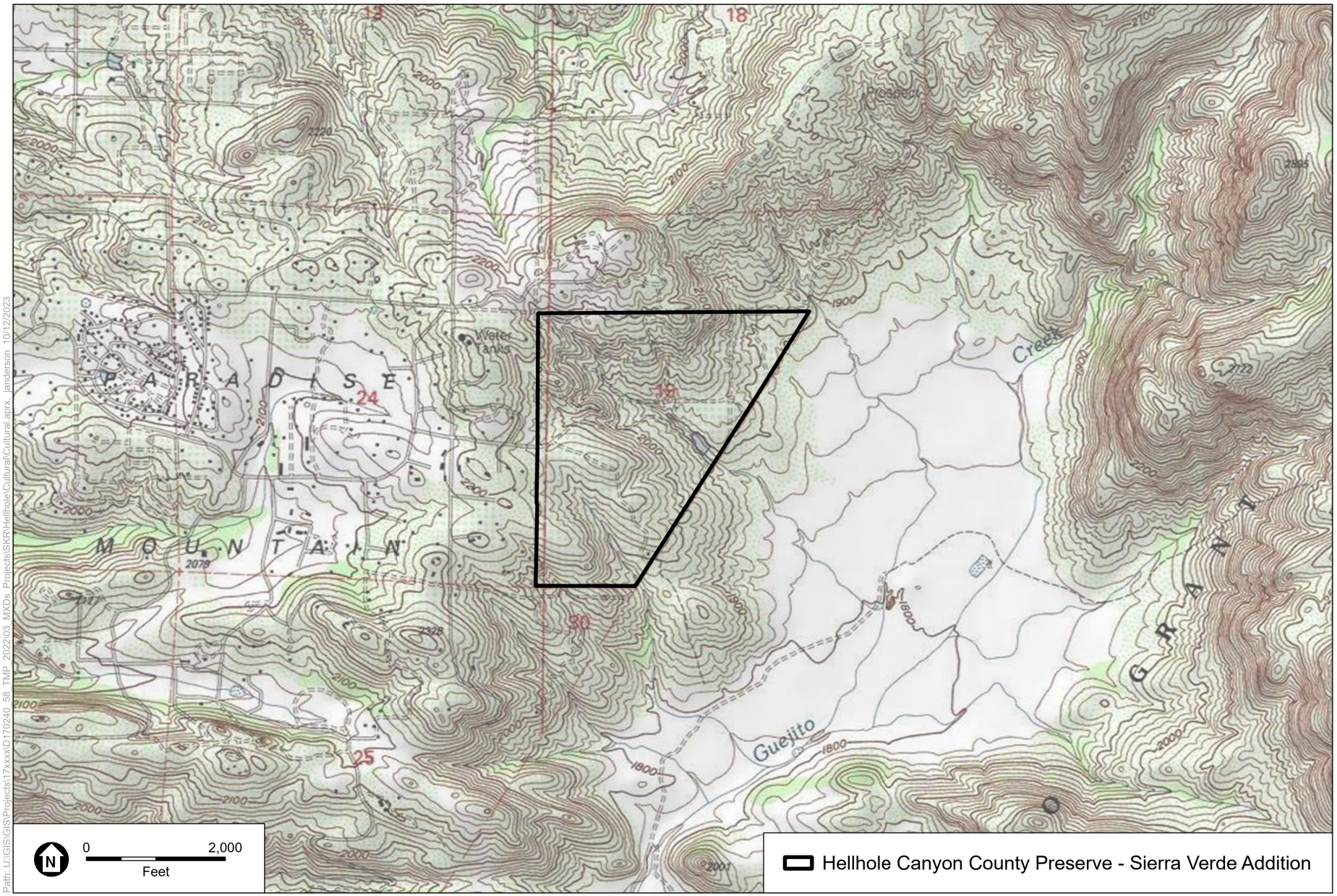
Environmental Science Associates (ESA) was retained by County DPR to provide archaeological monitoring in support of SKR habitat enhancement maintenance at the Sierra Verde Addition of the Hellhole Canyon County Preserve located east of the community of Valley Center in unincorporated San Diego County (**Figure 1**).

The habitat maintenance included the use of mechanical weed whips to cut back invasive non-native vegetation. This habitat maintenance occurred in an area of high archaeological sensitivity in the immediate vicinity of four previously recorded prehistoric archaeological sites (P-37-011900, -013393, -026394, and -038744) consisting of lithic, groundstone, and ceramic scatters with associated bedrock milling features (**Figure 2**). ESA documented these four archaeological sites in 2019 as part of a cultural resources inventory report prepared for the Hellhole Canyon County Preserve Additions (ESA 2019). In the inventory report, the four sites were not formally evaluated, but were identified as having moderate to high probability to be significant resources.

Given the archaeological sensitivity of the habitat maintenance area and the potential significance of the four archaeological sites, ESA cultural resources specialists Kyle Garcia, M.A., RPA, and Joel Aspeytia, B.A., delineated 20-foot exclusionary areas around each of the four sites' boundaries (Figure 2) on September 22, 2023, prior to the start of maintenance activities. The exclusionary area was marked with pink pin flags to identify areas

for the Habitat West maintenance crew to avoid (**Figure 3**). In addition, ESA cultural resources specialist Joel Aspeytia was present on September 25–26, 2023, to ensure the maintenance crew did not encroach into the exclusionary areas established at each of the four sites (Figure 3).

As a result of the establishment of the 20-foot exclusionary areas and the presence of a cultural resources specialist during ground-disturbing activities, no elements of the four prehistoric archaeological sites were impacted during the habitat maintenance activities. ESA recommends no further work.



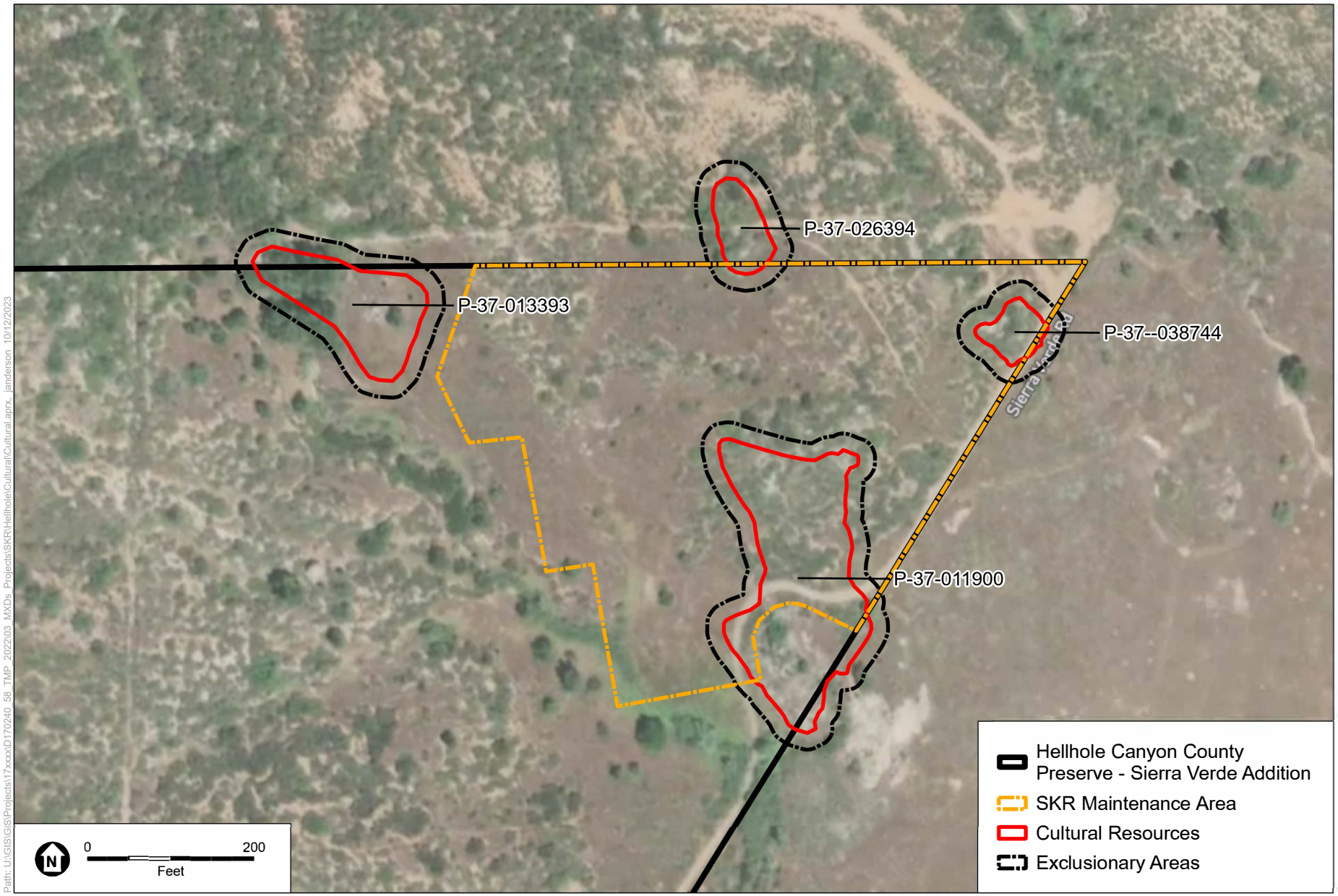
Path: U:\GIS\GIS\Projects\17xxxx\D170240_58_TMP_202203_MXDs_Projects\SKR\Hellhole\Cultural\Cultural.aprx, janderson 10/12/2023

USGS 7.5' Topo Quad Rodriguez Mountain 1980, 1985; SanGIS 2019

COSD DPR 5577 44 TO 68 – Implementation of Targeted Monitoring Plan –
2023 Resource-Specific Monitoring and Management
Stephen's Kangaroo Rat Habitat Maintenance – Cultural Resources Summary

Figure 1
Project Location

ESA



Mapbox 2018; SanGIS 2019

COSD DPR 5577 44 TO 68 – Implementation of Targeted Monitoring Plan –
2023 Resource-Specific Monitoring and Management
Stephen's Kangaroo Rat Habitat Maintenance – Cultural Resources Summary

Figure 2
Cultural Resource Exclusionary Areas

ESA

Overview of pin flag exclusionary area placement in progress, view to southwest.

Overview of habitat maintenance activities, view to northwest.

SOURCE: ESA, 2023

COSD DPR 5577 44 TO 68 – Implementation of Targeted Monitoring Plan –
2023 Resource-Specific Monitoring and Management
Stephen's Kangaroo Rat Habitat Maintenance – Cultural Resources Summary

Figure 3
Representative Maintenance Photographs

References

Environmental Science Associates (ESA). 2019. *Cultural Resources Survey and Inventory for the Hellhole Canyon Preserve Additions, County of San Diego, California*. Prepared for the County of San Diego Department of Parks and Recreation. August 2019.

ESA. 2022. *Targeted Monitoring Plan Resource-Specific Monitoring 2021 Annual Report*. Prepared for the County of San Diego Department of Parks and Recreation. May 2022.

ESA. 2023. *Targeted Monitoring Plan Resource-Specific Monitoring 2022 Annual Report*. Prepared for the County of San Diego Department of Parks and Recreation. January 2023.

ESA and ICF International, Inc. (ICF). 2015. *Comprehensive Monitoring Plan* (Targeted Monitoring Plan). Prepared for the County of San Diego Department of Parks and Recreation. July 2015.

ESA and ICF. 2022. *Targeted Monitoring Plan Update*. Prepared for the County of San Diego Department of Parks and Recreation. December 2022.

I-4 Stephens' Kangaroo Rat Focused Management Representative Photographs: Hellhole Canyon County Preserve

Representative photograph of the Stephens' kangaroo rat management area prior to management activities.

Representative photograph of the Stephens' kangaroo rat management area after management activities.

Representative photograph of the Stephens' kangaroo rat management area prior to management activities.

Representative photograph of the Stephens' kangaroo rat management area after management activities.

Representative photograph during management activities at the Stephens' kangaroo rat management area.

Appendix J

Bat Survey & Habitat Assessment Field Forms

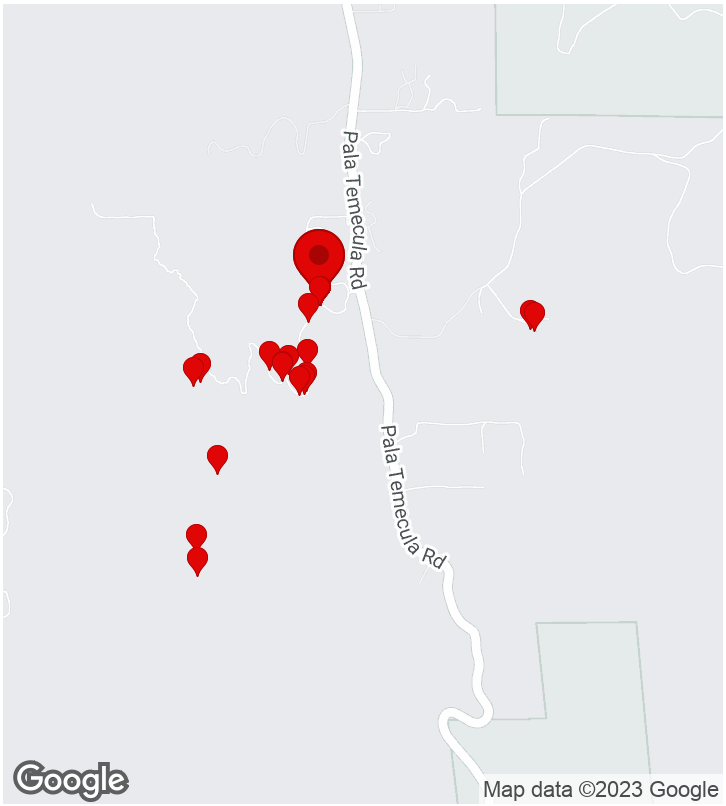
J-1 Survey Field Forms

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

6/21/2023, 4:37:49 AM UTC



CREATED

6/21/2023, 12:41:48 AM UTC
by SC Fulcrum05

UPDATED

6/21/2023, 4:37:49 AM UTC
by SC Fulcrum05

LOCATION

33.423601, -117.090490

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Mt. Olympus
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	June 20, 2023

START Weather Details:

Start - Time:	17:41
Start - Temperature:	74.6
Start - Wind Direction From (select one):	SW
Start - Low Wind Speed:	0
Start - High Wind Speed:	7.5
Start - Average Wind Speed:	2.9
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

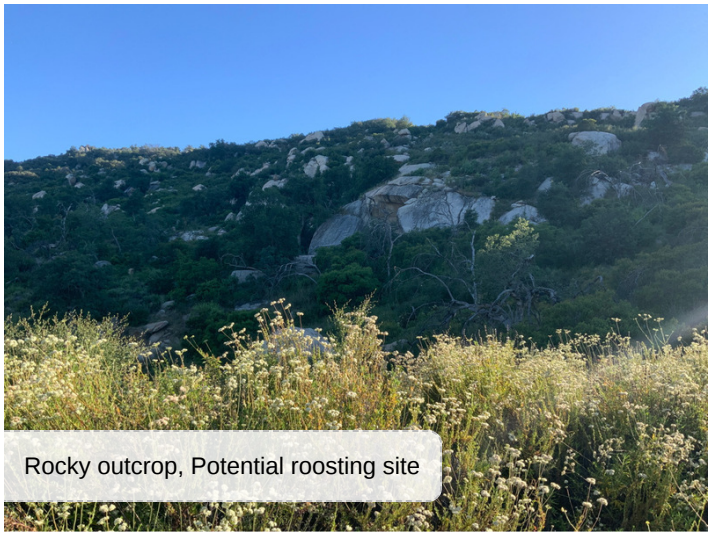
Time Out:	21:32
End - Temperature:	66.5
End - Wind Direction From (select one):	S
End - Low Wind Speed:	0.7
End - High Wind Speed:	1.4
End - Average Wind Speed:	1
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

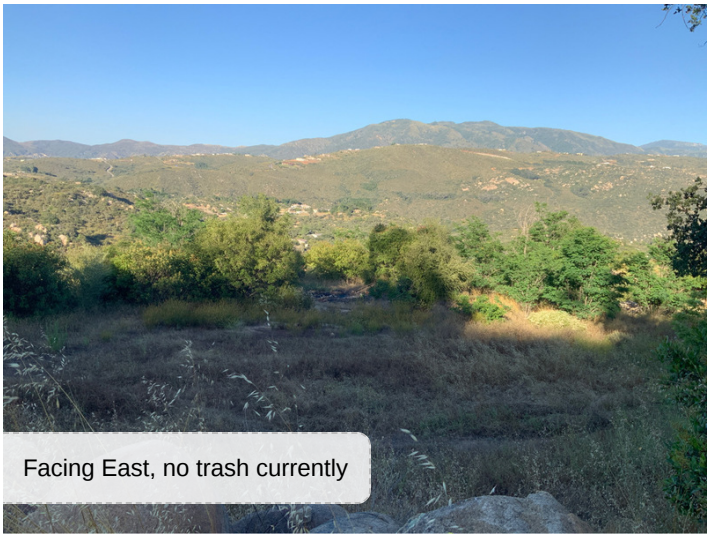
Project Location (description):	

Notes	Foot print and dirt pie tracks seen along trail, sunset weather 60.7 F, 0 wind, visibility good
Observation Type:	Bird, Mammal, Amphibian

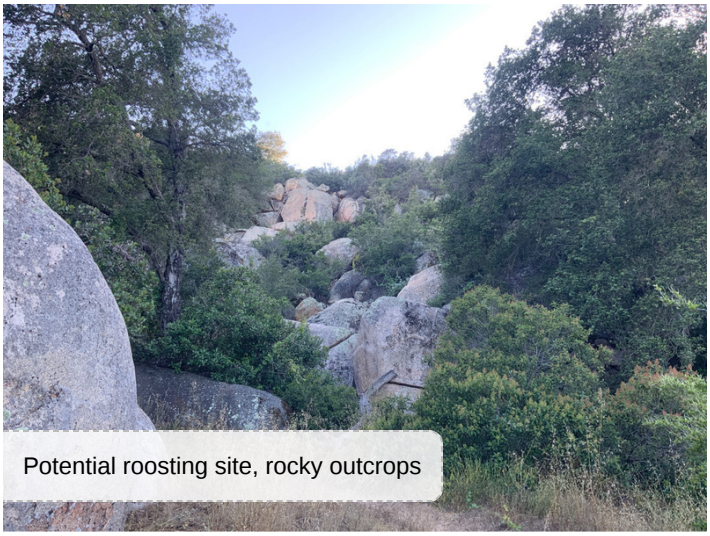
Photos

Facing South


Rocky outcrop, Potential roosting site


Facing East, no trash currently

Potential roosting site


Potential roosting site, rocky outcrops

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	Western Toad; Anaxyrus boreas
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (20 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	American Crow; Corvus brachyrhynchos; AMCR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	European Starling; Sturnus vulgaris; EUST
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Phainopepla; Phainopepla nitens; PHAI

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Canyon Wren; Catherpes mexicanus; CANW

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	California Scrub-Jay; Aphelocoma californica; CASJ
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH

Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, yes

Bird (Common or Scientific Name):	Barn Owl; Tyto alba; BNOW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	California Ground Squirrel; Ostospermophilus beecheyi
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	Mt Olympus preserve
Survey Duration (minutes)	90
General Notes (detectability, habitat, etc.)	
Photos	

Observation (1 Item)

Observation - 1. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	(18/18 2118), (2/6 2105)

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

6/24/2023, 5:06:35 AM UTC

CREATED

6/24/2023, 1:36:19 AM UTC
by SC Fulcrum05

UPDATED

6/24/2023, 5:06:35 AM UTC
by SC Fulcrum05

LOCATION

33.348035, -117.026818

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Wilderness Gardens
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Dillion Travis
Date:	June 23, 2023

START Weather Details:

Start - Time:	18:36
Start - Temperature:	76.5
Start - Wind Direction From (select one):	W
Start - Low Wind Speed:	0.1
Start - High Wind Speed:	3.3
Start - Average Wind Speed:	1.7
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	21:41
End - Temperature:	63.1
End - Wind Direction From (select one):	W
End - Low Wind Speed:	0
End - High Wind Speed:	2.3
End - Average Wind Speed:	0.8
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Start of acoustic collection weather: temp 66F, avg wind 1.9mph, max wind 4mph, visibility good End of acoustic collection weather: temp 63.1F, avg wind 0.8mph, max wind 2.3mph, visibility good
Observation Type:	Bird, Reptile, Mammal, Amphibian

Photos

Amphibian

Amphibian Observation: (1 Item)

Amphibian Observation: - 1. 1 record

Amphibian (Common or Scientific Name):	Western Toad; Anaxyrus boreas
Is the Amphibian Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Amphibian:	
Notes:	

Bird

Bird Observation: (22 Items)

Bird Observation: - 1. 1 record, yes

Bird (Common or Scientific Name):	Turkey Vulture; Cathartes aura; TUVU
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:	

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Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	Singing

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	California Towhee; Melozone crissalis; CALT
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	Singing

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Red-tailed Hawk; Buteo jamaicensis; RTHA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Oak Titmouse; Baeolophus inornatus; OATI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Nuttall's Woodpecker; Dryobates nuttallii; NUWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Northern Flicker; Colaptes auratus; NOFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, yes

Bird (Common or Scientific Name):	Red-shouldered Hawk; Buteo lineatus; RSHA
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, no

Bird (Common or Scientific Name):	Cassin's Kingbird; Tyrannus vociferans; CAKI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Northern Mockingbird; Mimus polyglottos; NOMO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 17. 1 record, no

Bird (Common or Scientific Name):	Hooded Oriole; Icterus cucullatus; HOOR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	
Notes:	

Bird Observation: - 18. 1 record, no

Bird (Common or Scientific Name):	White-throated Swift; Aeronautes saxatalis; WTSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	

Bird Observation: - 19. 1 record, no

Bird (Common or Scientific Name):	House Finch; Haemorhous mexicanus; HOFI
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	

Bird Observation: - 20. 1 record, no

Bird (Common or Scientific Name):	Cliff Swallow; Petrochelidon pyrrhonota; CLSW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	2
Photo(s) of Bird:	
Notes:	

Bird Observation: - 21. 1 record, yes

Bird (Common or Scientific Name):	Barn Owl; Tyto alba; BNOW
Is the Bird Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Bird Observation

Observation Type:	Visual
Number of individuals observed:	1
Behavior (check all that apply):	In flight
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	

Photo(s) of Bird:

Notes:

Bird Observation: - 22. 1 record, no

Bird (Common or Scientific Name):	Common Poorwill; Phalaenoptilus nuttallii; COPO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	1
Photo(s) of Bird:	

Notes:

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	California Ground Squirrel; Ostospermophilus beecheyi
Is the Mammal Sensitive ?	no

Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Red Diamond Rattlesnake; Crotalus ruber
Is the Reptile Sensitive ?	yes
Sub-Species Info:	N/A

Sensitive Reptile Observation

Observation Type (check all that apply):	Visual sighting
Number of individuals observed:	1
Behavior (check all that apply):	Moving (flushed)
Reptile Sex (check all that apply):	Unknown
Reptile Age (check all that apply):	Juvenile
Additional Notes:	
Photo(s) of Reptile:	
Photo(s) of Reptile:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	Preserve
Survey Duration (minutes)	100
General Notes (detectability, habitat, etc.)	
Photos	

Observation (15 Items)

Observation - 1. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	Visual, 34/54, 41/44, 20:06, 21/60 20:34, 9/9 20:36, 33/33 20:36,

Observation - 2. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	8/11 , likely big brown 20:07, 9/20 20:33, 23/44 20:37, 15/25 8:38, 1/4 21:10

Observation - 3. Western red bat (Lasiurus blossevillii)

Species Observed	Western red bat (Lasiurus blossevillii)
Observation Notes	4/4, 2/2 not accurate 20:28,

Observation - 4. Silver-haired bat (Lasionycteris noctivagans)

Species Observed	Silver-haired bat (Lasionycteris noctivagans)
Observation Notes	20/41, 26/35, 3/5 20:10, 7/16 20:57,

Observation - 5. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	39/93, 16/59, 20:10

Observation - 6. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	36/74 20:11

Observation - 7. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	19/59 20:11,

Observation - 8. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)

Observation Notes	41/89, 30/59, 15/74, 24/60 71/108, 37/84, 42/97, 28/41 30/95, 10/26, 12/29, 30/98, 24/38 20:33, at least 3 Indvs seen at once, 7/42, 20/42 20:34, 25/52 20;40, 16/20 20:54, 15/53 21:06, 24/61 21;06, 29/65 21:17

Observation - 9. Mexican free-tailed bat (Tadarida brasiliensis)

Species Observed	Mexican free-tailed bat (Tadarida brasiliensis)
Observation Notes	11/18, 37/77 visual, 4/8, 4/4 20:27, 6/9 20:53, 5/10 20:55, 2/2? 21:02,

Observation - 10. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)
Observation Notes	15/32, 2/3 northern mockingbird calling 20:14, 9/77 20:33

Observation - 11. Western small-footed myotis (Myotis ciliolabrum)

Species Observed	Western small-footed myotis (Myotis ciliolabrum)
Observation Notes	29/58 20:27, 14/21 20:41, 8/11 20:47

Observation - 12.

Species Observed	
Observation Notes	

Observation - 13. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	3/9 20:47, 33/90 20:50, 16/50 20:51, 14/18 20:53, 9/12 21:03, 40/57 21:12

Observation - 14. Yuma myotis (Myotis yumanensis)

Species Observed	Yuma myotis (Myotis yumanensis)
Observation Notes	9/11 20:47, 23/41 20:48, 9/21 20:48, 30/109 20:49, 1/3 20:50, 8/11 20:52, 41/68 21:04, 58/87 21:04, 42/72 21:04, 4/10 21:07, 76/122 21:07, 51/91 21:13, 3/4 21:19, 33/36 21:22, 5/6 21:22

Observation - 15. California myotis (Myotis californicus)

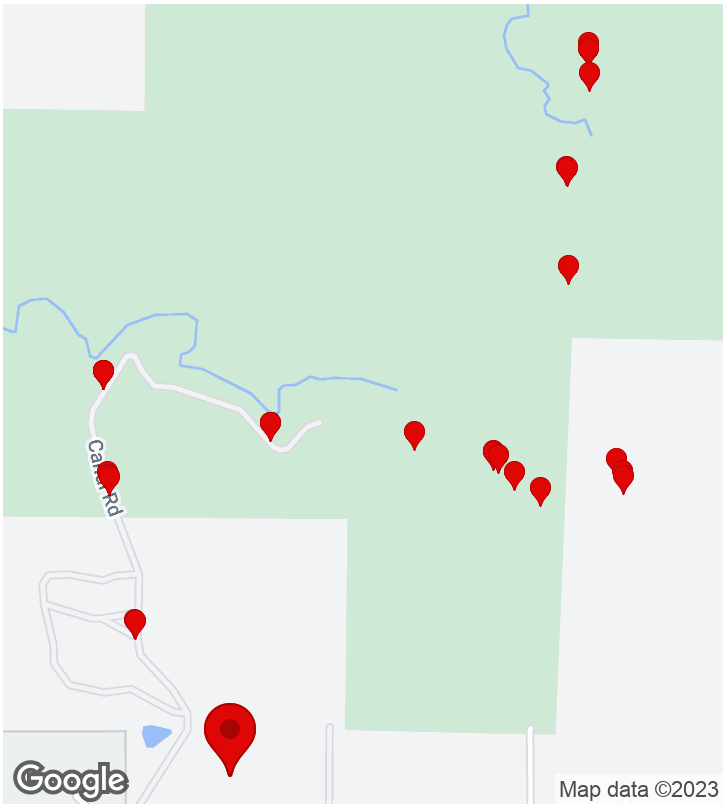
Species Observed	California myotis (Myotis californicus)
Observation Notes	21:01, 12/14 21:19, 10/16 21:19, 22/22 21:20, 2/2 , 21:20, 21/42 21:20

2_COSD DPR Bio

Biology Surveys (SoCal Bio ONLY)

TMP Monitoring ▸ Pallid/Townsends Bat

6/27/2023, 4:38:13 AM UTC



CREATED

6/27/2023, 1:14:34 AM UTC
by SC Fulcrum05

UPDATED

6/27/2023, 4:38:13 AM UTC
by SC Fulcrum05

LOCATION

33.219467, -116.951721

Parent Form

Project Name:	TMP Monitoring ▸ Pallid/Townsends Bat
Preserve/Park Name	Hellhole Canyon
General Survey Type	TMP Monitoring
Specific Survey Type	Bat Echo Meter Survey
Observer/Surveyor:	Jaclyn Catino-Davenport
Assistant Observer/Surveyor:	Karla Alcaraz
Date:	June 26, 2023

START Weather Details:

Start - Time:	18:14
Start - Temperature:	76.3
Start - Wind Direction From (select one):	SW
Start - Low Wind Speed:	1.2
Start - High Wind Speed:	6.2
Start - Average Wind Speed:	3.7
Start - Cloud Cover (%):	0
Start - Precipitation (select one):	None
Start - Visibility (select one):	Good
Start - Notes (if applicable):	

END Weather Details:

Time Out:	21:31
End - Temperature:	60.5
End - Wind Direction From (select one):	N
End - Low Wind Speed:	0
End - High Wind Speed:	0.9
End - Average Wind Speed:	0
End - Cloud Cover (%):	0
End - Precipitation (select one):	None
End - Visibility (select one):	Good
End - Notes (if applicable):	
Total Hours:	

Project Location (description):	

Notes	Hell creek running, seepage location, sunset weather 69.1, visibility good, max 3.3, avg 1.4,
Observation Type:	Bird, Mammal, Reptile

Photos

Bird

Bird Observation: (16 Items)

Bird Observation: - 1. 1 record, no

Bird (Common or Scientific Name):	Wrentit; Chamaea fasciata; WREN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 2. 1 record, no

Bird (Common or Scientific Name):	Ash-throated Flycatcher; Myiarchus cinerascens; ATFL
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 3. 1 record, no

Bird (Common or Scientific Name):	California Quail; Callipepla californica; CAQU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 4. 1 record, no

Bird (Common or Scientific Name):	Bewick's Wren; Thryomanes bewickii; BEWR
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 5. 1 record, no

Bird (Common or Scientific Name):	Spotted Towhee; Pipilo maculatus; SPTO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 6. 1 record, no

Bird (Common or Scientific Name):	Bushtit; Psaltriparus minimus; BUSH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 7. 1 record, no

Bird (Common or Scientific Name):	Common Raven; Corvus corax; CORA
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 8. 1 record, no

Bird (Common or Scientific Name):	Allen's Hummingbird; Selasphorus sasin; ALHU
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 9. 1 record, no

Bird (Common or Scientific Name):	Acorn Woodpecker; Melanerpes formicivorus; ACWO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 10. 1 record, no

Bird (Common or Scientific Name):	Blue-gray Gnatcatcher; Polioptila caerulea; BGGN
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 11. 1 record, no

Bird (Common or Scientific Name):	Lesser Goldfinch; Spinus psaltria; LEGO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 12. 1 record, no

Bird (Common or Scientific Name):	Mourning Dove; Zenaida macroura; MODO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 13. 1 record, no

Bird (Common or Scientific Name):	California Thrasher; Toxostoma redivivum; CATH
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 14. 1 record, yes

Bird (Common or Scientific Name):	Southern California Rufous-crowned Sparrow; Aimophila ruficeps canescens; RSCP - SoCal
Is the Bird Sensitive ?	yes
Sub-Species Info:	Found from Los Angeles County south to Baja California Norte

Sensitive Bird Observation

Observation Type:	Auditory
Number of individuals observed:	1
Behavior (check all that apply):	Singing/calling
Bird Sex (check all that apply):	Unknown
Bird Age (check all that apply):	Unknown
Additional Notes:	
Photo(s) of Bird:	
Photo(s) of Bird:	
Notes:	

Bird Observation: - 15. 1 record, no

Bird (Common or Scientific Name):	Common Poorwill; Phalaenoptilus nuttallii; COPO
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	

Notes:	

Bird Observation: - 16. 1 record, no

Bird (Common or Scientific Name):	Great Horned Owl; Bubo virginianus; GHOW
Is the Bird Sensitive ?	no
Sub-Species Info:	N/A
Number of Individuals:	
Photo(s) of Bird:	
Notes:	

Mammal

Mammal Observation: (1 Item)

Mammal Observation: - 1. 1 record

Mammal (Common or Scientific Name):	Audubons Cottontail; Sylvilagus audubonii
Is the Mammal Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Mammal:	
Notes:	

Reptile

Reptile Observation: (1 Item)

Reptile Observation: - 1. 1 record

Reptile (Common or Scientific Name):	Common Side-blotched Lizard; Uta stansburiana
Is the Reptile Sensitive ?	no
Sub-Species Info:	N/A
Photo(s) of Reptile:	
Notes:	

Bat Echo Meter Survey Details

Survey Station/Location (number)	Hellhole canyon
Survey Duration (minutes)	90
General Notes (detectability, habitat, etc.)	
Photos	

Observation (7 Items)

Observation - 1. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	5/9 2013,

Observation - 2. Western pipistrelle (Parastrellus hesperus)

Species Observed	Western pipistrelle (Parastrellus hesperus)
Observation Notes	6/6, 6/8, 6/7, 2020; 10/11 2020, at least two individuals bats

Observation - 3. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	59/115 2039,

Observation - 4. Big brown bat (Eptesicus fuscus)

Species Observed	Big brown bat (Eptesicus fuscus)
Observation Notes	35/89 2040, 15/44 2040, 26/63 2040, 24/48 2040, 27/58 2041, 15/43 2041, 14/60 2042

Observation - 5. Pallid bat (Antrozous pallidus)

Species Observed	Pallid bat (Antrozous pallidus)
Observation Notes	22/35 2042

Observation - 6. Hoary bat (Lasiurus cinereus)

Species Observed	Hoary bat (Lasiurus cinereus)

Observation Notes	2/7 2107

Observation - 7. California myotis (Myotis californicus)

Species Observed	California myotis (Myotis californicus)
Observation Notes	6/6 2059

J-2 Threat Assessment Forms

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Mt Olympus

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)

Date: June 20, 2023 *Time Start: 1741*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____Exact:_____Estimate:_____Uncertainty?_____Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____Flowering:_____Fruiting:_____Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____Disease:_____Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____Yes_____No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____(NAD83 Recommended) Coord. Syst: UTM:___State Plane:___

Center of Plot Coord: E:_____N:_____No Change:_____New:_____Correction:_____

Camera type:_____PhotoCoord: E:_____N:_____No Change:____New:_____Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in **10m radius sample t plot**. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____(category) Thatch (Non-Native Grass) Cover:_____(category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____(category) Thatch Depth: Max:_____cm

Dead Standing Biomass? Yes:_____No:_____If yes, species:_____Cover Class (1-6):_____Ave. Height:_____cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____Ground Squirrel Activity:_____Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____No:_____If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category***. *See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____(∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii | *MSP Occurrence ID:*

Preserve: Mt. Olympus | *Occurrence Name:*

Date: June 20, 2023 | *Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA), Karla Alcaraz (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Open Space, Rural Development

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	3
Non-Native Grasses	3	Trampling	1	Urban Runoff	1
Non-Native Woody Plants	3	Vandalism	1	Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	1	Historic Agriculture (Y/N/Unk)	Unknown		
Encampments	1	Altered Hydrology	1		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe: Trails appeared to have been trimmed.

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 3 If Observed, List Type(s) of ORV Activity: Motorcycle/single-wheel

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized) 3 If Trails are Present, are they Authorized (circle one)? ☐ Yes / ☑ No / ☐ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking: Yes Biking: Yes Equestrian: No Dog: No Service Vehicles: Yes Other (Describe):_____

Illegal Trail Use? ☑ Yes ☐ No ☐ Unknown

Describe: OHV and potential hikers fron BLM lands Other Disturbance? List & Rank: 3 (0-10%)

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: June 20, 2023

VI. MANAGEMENT RECOMMENDATIONS

Stop illegal access especially where trails are coming in from BLM land at the top of the Preserve.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Trash cleaned up.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

N/A

Time Finish: 21:30

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

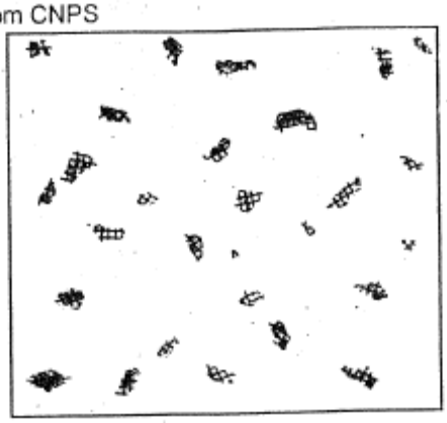
6 = Disturbance occurs 50% to <75% of area within maximum extent.

7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

Cover Diagrams from CNPS

1%



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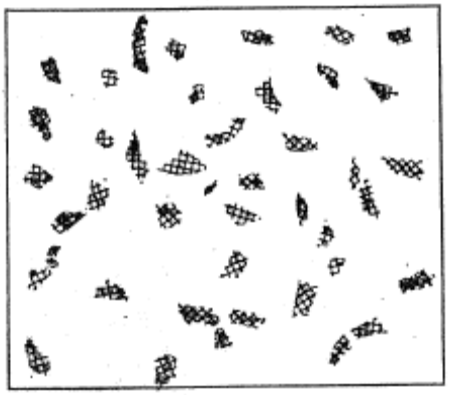

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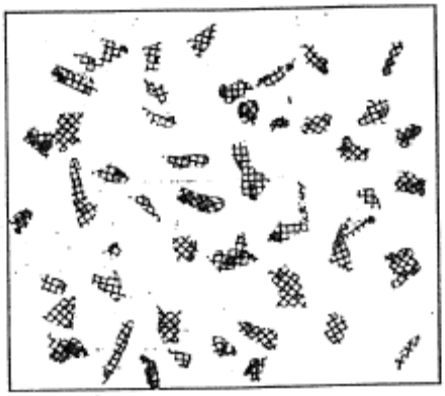

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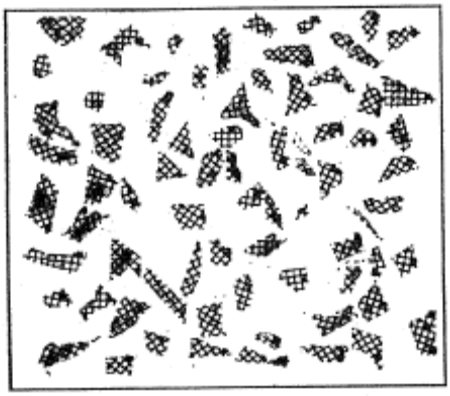

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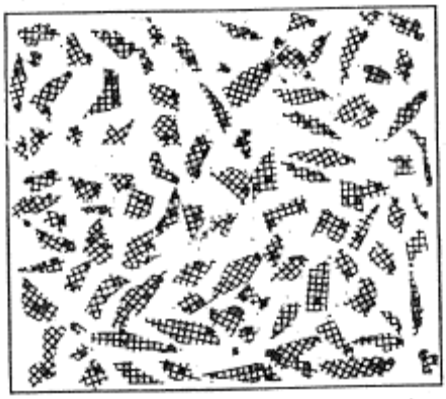

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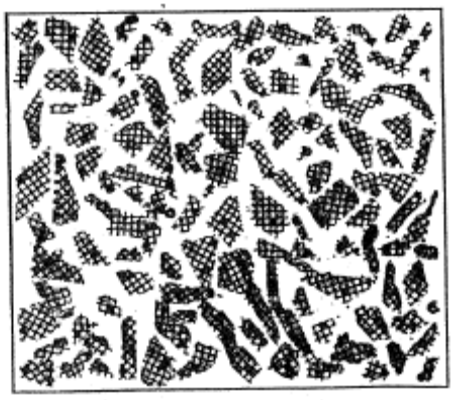

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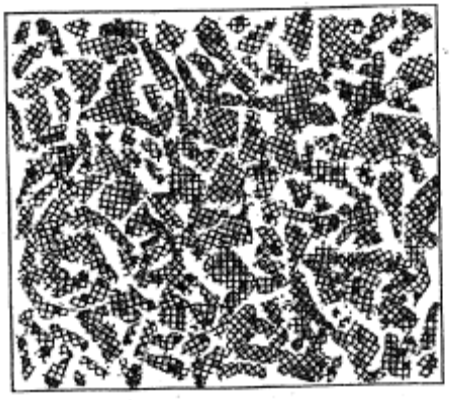


75%

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Wilderness Gardens

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA), Dillon Travis (ESA)

Date: June 23, 2023 *Time Start: 1836*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____ Exact:_____ Estimate:_____ Uncertainty?_____ Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____ OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____ Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____ Flowering:_____ Fruiting:_____ Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____ Disease:_____ Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____ Yes_____ No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____ (NAD83 Recommended) Coord. Syst: UTM:___ State Plane:___

Center of Plot Coord: E:_____ N:_____ No Change:_____ New:_____ Correction:_____

Camera type:_____ PhotoCoord: E:_____ N:_____ No Change:____ New:_____ Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____ N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in **10m radius sample t plot**. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____ (category) Thatch (Non-Native Grass) Cover:_____ (category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____ (category) Thatch Depth: Max:_____ cm

Dead Standing Biomass? Yes:_____ No:_____ If yes, species:_____ Cover Class (1-6):_____ Ave. Height:_____ cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____ Ground Squirrel Activity:_____ Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____ No:_____ If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category***. *See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____ Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____ (∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii | *MSP Occurrence ID:*

Preserve: Wilderness Gardens | *Occurrence Name:*

Date: June 23, 2023 | *Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA), Dillon Travis (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Open Space, Rural Development, Orchard

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	1
Non-Native Grasses	4	Trampling		Urban Runoff	3
Non-Native Woody Plants	3	Vandalism		Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash		Historic Agriculture (Y/N/Unk)	Yes		
Encampments	1	Altered Hydrology	3		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe:_____

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 1 If Observed, List Type(s) of ORV Activity: _____

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? unknown

Disturbance from Trails (authorized & unauthorized)__If Trails are Present, are they Authorized (circle one)? ☑ Yes / ☐ No / ☐ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking:___Yes___Biking:___Yes___Equestrian:___Yes___Dog:___Yes___Service Vehicles: ___Yes___ Other (Describe):_____

Illegal Trail Use? ☐ Yes ☑ No ☐ Unknown

Describe: _____ Other Disturbance? List & Rank: _____

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: June 23, 2023

VI. MANAGEMENT RECOMMENDATIONS

Reduce vegetation height within the retention pond to allow more open areas over the water for bats to drink and forage from.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Reducing trash within the Preserve.

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

Red Rattlesnake

Time Finish: 20:45

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

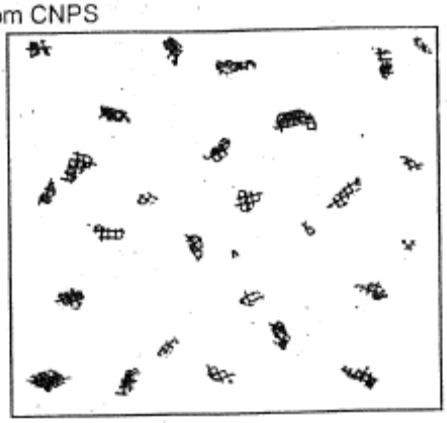
6 = Disturbance occurs 50% to <75% of area within maximum extent.

7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

Cover Diagrams from CNPS

1%



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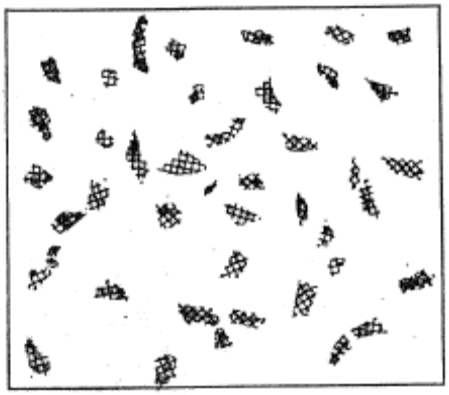

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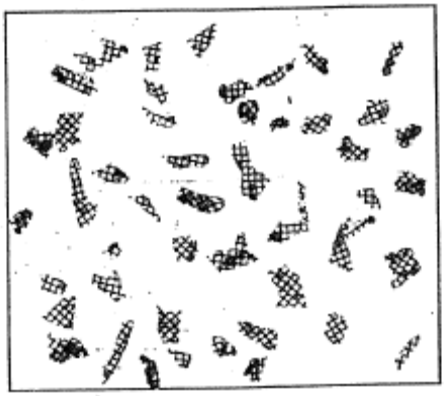

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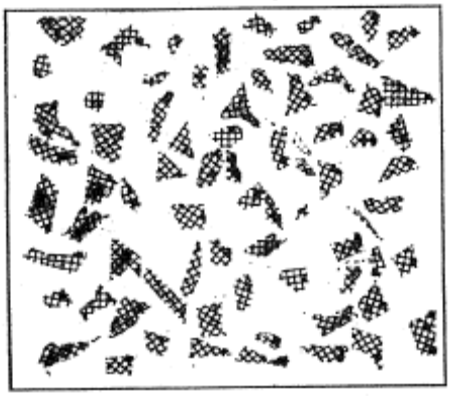

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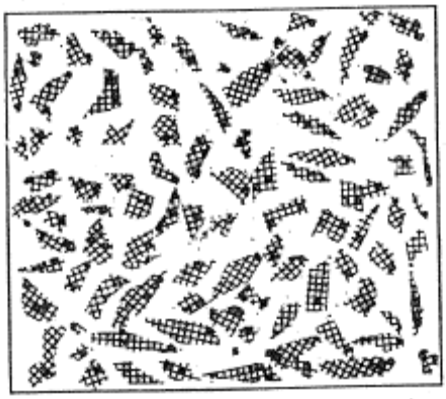

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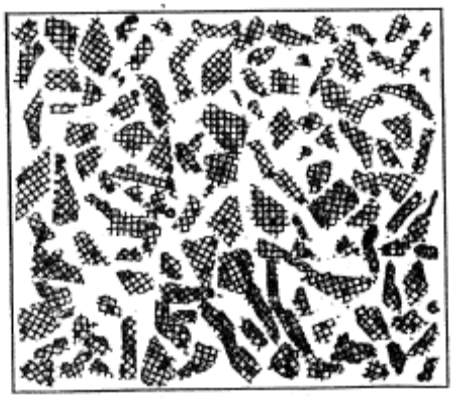

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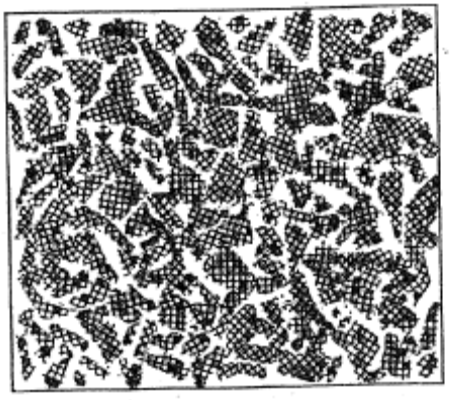


75%

Scientific Name: Antrozous pallidus / Corynorhinus townsendii *Common Name: Pallid Bat / Townsend's big-eared bat*

MSP Occurrence ID: *New MSP Occurrence? Yes:____, No:____, Unknown:____*

Sample Point #: *New Sample Point? Yes:____, No:____, Unknown:____*

Occurrence Name: *CNDDB EO#:* *Translocated? Yes:____, No:____, Unknown:____*

Preserve: Hellhole Canyon

Land Owner: County of San Diego, DPR *Land Manager:*

Surveyors & Affiliation: Jaclyn Catino-Davenport (ESA) & Karla Alcaraz (ESA)

Date: June 26, 2023 *Time Start:1814*

I. SAMPLE PLOT INFORMATION. *Count # plants in 10m radius sample plot, see p. 4 for category definitions for phenology, herbivory, disease & stunted growth. Record notes on p. 3.*

Plants/Sample Plot:_____Exact:_____Estimate:_____Uncertainty?_____Sample plot radius_____m

For both exact counts and estimates, indicate: Counted/estimated indiv. plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Phenology in Sample Plot (Categories 1-6): Vegetative:_____Flowering:_____Fruiting:_____Dead:_____

Evidence in Sample Plot (Categories 1-6) of: Herbivory:_____Disease:_____Stunted Growth:_____

Is Sample Plot within Current Mapped Extent?_____Yes_____No

II. SAMPLE PLOT LOCATION & SITE PHOTOMONITORING - *consult SDMMP list of GPS coordinates for plot center and photo locations. Enter here only if new habitat plot location or to make a correction to coordinates in list provided.*

GPS/Smartphone Accuracy: +/-_____m Datum:_____(NAD83 Recommended) Coord. Syst: UTM:___State Plane:___

Center of Plot Coord: E:_____N:_____No Change:_____New:_____Correction:_____

Camera type:_____PhotoCoord: E:_____N:_____No Change:____New:_____Correction:_____

Location 1: _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

E:_____N:_____ Photo Location 2 [Coordinates] _____ Direction (facing) _____ Height (m) _____ Camera Angle _____ Up or Down _____ Photo #

III. SAMPLE PLOT ASSESSMENT - *Assess habitat covariates in **10m radius sample t plot**. Vegetation alliance can be assigned using San Diego vegetation key (AECOM 2012) in office or field using "Associated Species" data. See page 4 for mammal activity categories. Record any notes on p. 3.*

SANDAG 2012 Vegetation Alliance/Association: _____

Cover Classes: 1 (0%); 2 (>0 - <10%); 3 (10 to <25%); 4 (25 to <50%); 5 (50% to <75%); 6 (≥75%)

Cryptogamic Crust Cover:_____(category) Thatch (Non-Native Grass) Cover:_____(category)

Thatch Depth categories: 1 (no thatch); 2 (<1 cm); 3 (1 to <5 cm); 4 (5 to <10 cm); 5 (10 to <15 cm); 6 (15 to < 20 cm); 7 (≥ 20 cm)

Thatch Depth: Ave._____(category) Thatch Depth: Max:_____cm

Dead Standing Biomass? Yes:_____No:_____If yes, species:_____Cover Class (1-6):_____Ave. Height:_____cm

Mammal Species Activity Categories (1-4): Feral Pig Activity:_____Ground Squirrel Activity:_____Gopher Activity: _____

Habitat plot representative of maximum extent? Yes:_____No:_____If no, note differences on Page 3.

IV. ASSOCIATED SPECIES IN SAMPLE PLOT ***Record cover estimate, not cover category***. *See % cover diagram, p. 5. Record substrate, total veg & total cover at bottom of form. Total cover should be at least 100% to account for entire plot. Record notes on p. 3.*

Species	% Cover	Species	% Cover

Bare Ground:_____Cryptogamic Soil Crust:_____ Rock:_____ Litter:_____

Water:_____ Total Live Vegetation:_____ Dead Shrubs:_____ Total Cover:_____(∑ =100%)

Scientific Name: Antrozous pallidus / Corynorhinus townsendii		*MSP Occurrence ID:*
Preserve: Hellhole Canyon		*Occurrence Name:*
Date: June 26, 2023		*Surveyors & Affiliation/Agency: Jaclyn Catino-Davenport (ESA) & Karla Alcaraz (ESA)*

V. CURRENT MAPPED EXTENT INFORMATION. *Count or estimate number of plants in mapped extent. Area can be calculated based on GIS perimeter mapping or visual mapping on aerial photo in the office.*

Plants/Current Mapped Extent:_____, Exact Count:_____, Estimate (1000s, 10k):_____, Uncertainty?_____

For both exact counts and estimates, indicate: Counted/estimated individual plants:_____OR Counted/estimated clusters of plants:_____

For geophytes: are counts of flowering or vegetative individuals? Flowering:_____Vegetative:_____

Area of Current Mapped Extent:_____Units:_____Exact (GPS mapping):_____Estimate:_____

Perimeter of current extent determined by walking it or estimated by other means (mapped on aerials)? Walked:_____Other (describe p. 3):_____

Species in Maximum Extent? Yes:_____No:_____If not, why

_____

VI. THREATS ASSESSMENT IN MAXIMUM EXTENT - *Assess threats within the **occurrence's maximum extent** (cumulative extent over years of monitoring) **plus 10-m surrounding buffer**. Record notes on p. 3.*

Surrounding Land Use/Activity at or Adjacent to Site: Rural Development, Open Space

Disturbance Classes (rank each threat as 1-7): 1 = no sign of disturbance, 2 = disturbance in 10m surrounding buffer but not within maximum extent, 3 = disturbance occurs in >0 % to <10% of area within maximum extent, 4 = disturbance in 10% to <25% of maximum extent, 5 = disturbance in 25 to < 50% of maximum extent, 6 = disturbance occurs within 50 to <75% of maximum exent, and 7 = disturbance occurs within ≥75% of maximum extent.

Non-Native Forbs	3	Feral Pig Activity	1	Erosion	3
Non-Native Grasses	3	Trampling	1	Urban Runoff	1
Non-Native Woody Plants	3	Vandalism	1	Slope Movement	1
Competitive Native Plants	3	Grazing (Y/N/UNK)	Unknown	Soil Compaction	1
Dumping/Trash	2	Historic Agriculture (Y/N/Unk)	Unknown		
Encampments	1	Altered Hydrology	1		

Fuel Modification Zone/Fire Break 1

Road Construction/Maintenance: 1 If Observed, Briefly Describe: _____

Vegetation Clearing: 3 If Observed, Briefly Describe:_____

Restoration Project (Impacts): 1 If Observed, Briefly Describe: _____

ORV Activity 1 If Observed, List Type(s) of ORV Activity: _____

Evidence of Recent Fire 1 If Sign of Recent Fire: Year Burned?____OR Unknown Burn Year? Unknown

Disturbance from Trails (authorized & unauthorized) 3 If Trails are Present, are they Authorized (circle one)? ☐ Yes / ☐ No / ☑ Both / ☐ Unknown

Type of Trail Use (Yes/No)? Hiking: Yes Biking: Yes Equestrian: Yes Dog: Yes Service Vehicles: Yes Other (Describe): Escondido Canal

Illegal Trail Use? ☑ Yes ☐ No ☐ Unknown

Describe: Horse tracks on trails closed to the public Other Disturbance? List & Rank:

_____

Collection? Yes:_____No:_____Collector:_____

Collection #:_____Herbarium:_____Species Collected: _____

Collection 2, Collector:_____(enter additional collections on p. 3)

Collection #:_____Herbarium:_____Species Collected: _____

Occurrence ID: _____ Species: Pallid Bat, Townsend's Big-eared Bat Date: June 26, 2023

VI. MANAGEMENT RECOMMENDATIONS

Continue to reduce illegal access to closed trails including for horses, hikers, bikers, and offroad vehicles.

VII. MANAGEMENT ACTIONS IN LAST YEAR

Reducing unauthorized offroad vehicle use on the Preserve

VIII. CNDDB SPECIES DETECTED & NOTES

List any sensitive plant or animal species to add to the CNDDB:

Southern California Rufous-crowned Sparrow

Time Finish: 19:45

Categories of % Individuals in Sample Plot for Phenological Stages (Vegetative, Flowering, Fruiting & Dead) and for Evidence of Herbivory, Disease and Stunted Growth.

1 = 0% (not detected)

2 = >0% to <10%

3 = 10% to <25%

4 = 25% to <50%

5 = 50% to <75%

6 = ≥75%

% Cover Class Definitions within Sample Plot for Cryptogamic Crust and Thatch.

See page 5 for illustrations of different cover classes.

1 = 0% cover (not detected)

2 = >0% to <10% cover

3 = 10% to <25% cover

4 = 25% to <50% cover

5 = 50% to <75% cover

6 = ≥75% cover

Feral Pig Activity within Sample Plot:

1 = No feral pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) detected.

2 = Signs of pig activity (rooting, wallowing, vegetation destruction) in sample plot appear months old.

3 = Signs of recent pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pig) in adjacent area but not within sample plot.

4 = Recent signs of pig activity (rooting, wallowing, vegetation destruction, tracks, scat, pigs) within sample plot.

Ground Squirrel Activity within Sample Plot:

1 = No ground squirrel burrows detected.

2 = Burrows and/or ground squirrels observed in adjacent area but not within sample plot.

3 = Single squirrel or burrow seen within sample plot.

4 = Multiple burrows and/or squirrels seen within sample plot.

Botta's Pocket Gopher Activity within Sample Plot:

1 = No pocket gopher mounds detected.

2 = Mounds or gophers observed in adjacent area but not within sample plot.

3 = <10 mounds observed within sample plot.

4 = ≥10 mounds or one or more gophers seen within sample plot.

Disturbance Categories within the Maximum Extent:

1 = No sign of disturbance within maximum extent or in adjacent 10 m buffer.

2 = Disturbance does not occur within maximum extent but is detected within the surrounding 10 m buffer area.

3 = Disturbance present in >0% to <10% of area within maximum extent.

4 = Disturbance occurs in 10% to <25% of area within maximum extent.

5 = Disturbance occurs in 25% to <50% of area within maximum extent.

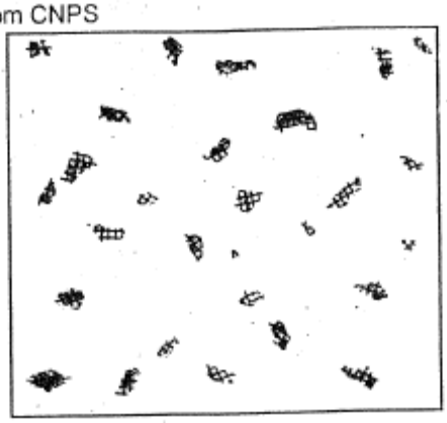
6 = Disturbance occurs 50% to <75% of area within maximum extent.

7 = Disturbance occurs ≥75% of area within maximum extent.

CNPS Cover Diagram

Cover Diagrams from CNPS

1%



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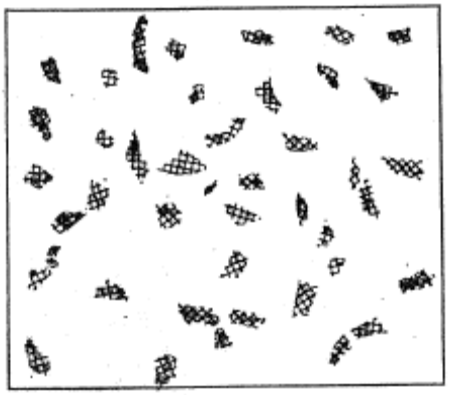

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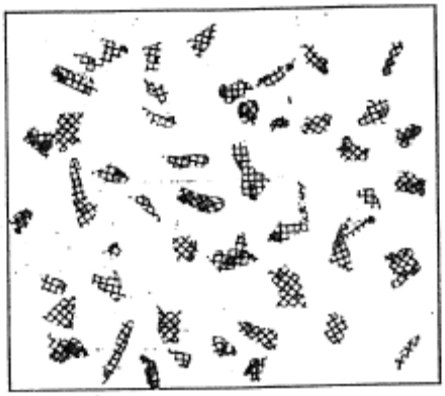

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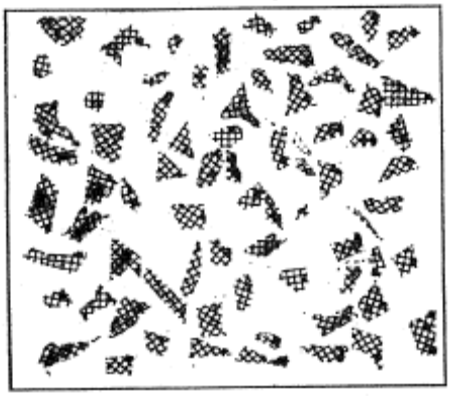

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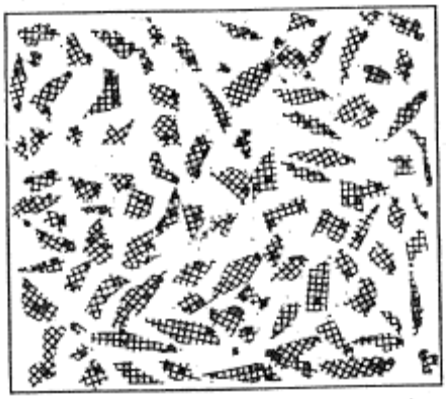

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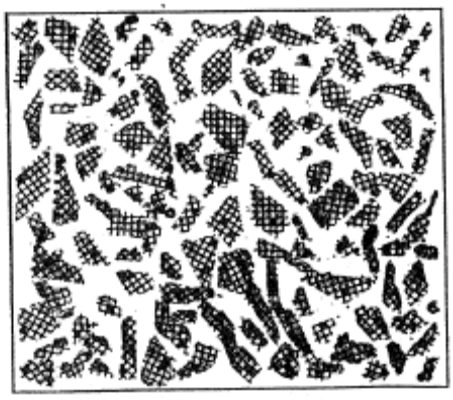

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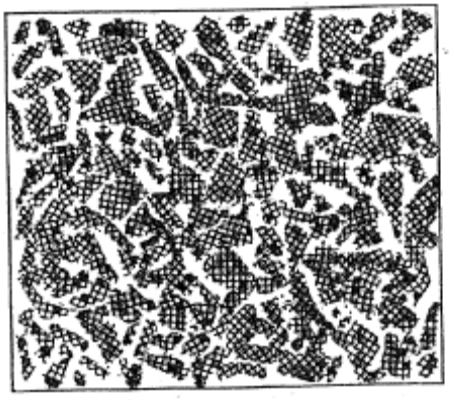

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Appendix K

Peak Forage Production and Residual Dry Matter Monitoring Reports

K-1 Ramona Grasslands County Preserve Peak Forage Production Monitoring Report

ESA

2355 Northside Drive
Suite 100
San Diego, CA 92108
619.719.4200 phone
619.719.4201 fax

esassoc.com

July 19, 2023

Jennifer Price
County of San Diego
Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, CA 92123

Subject: Ramona Grasslands County Preserve Spring 2023 Peak Forage Production Monitoring

Dear Ms. Price:

At the request of the County of San Diego Department of Parks and Recreation (DPR), Environmental Science Associates (ESA) monitored peak forage production in April 2023 at 58 predetermined vegetation monitoring plots (monitoring plots) within the Ramona Grasslands County Preserve (Preserve). The Preserve is in the Santa Maria Valley, southwest of the unincorporated township of Ramona and northeast of the city of Poway in central San Diego County (**Figure 1**).

DPR's livestock grazing program includes goals for improving and maintaining biodiversity, reducing wildfire hazards, and maintaining soil health. Grazing on the Preserve is managed under the *Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan* (Grazing Management Plan) (ESA 2019). The Grazing Management Plan designates grazing management units within the Preserve and monitors the effects of cattle grazing on the land to support the following management goals and objectives:

- Goal 1: Maintain and improve biodiversity:
  - Objective 1.1. Reduce abundance of non-native annual grasses.
  - Objective 1.2. Maintain and improve habitat for raptors.
  - Objective 1.4. Maintain and improve habitat for arroyo toad (*Anaxyrus californicus*).
  - Objective 1.5. Maintain and improve habitat for Stephens' kangaroo rat (SKR; *Dipodomys stephensi*).
- Goal 2: Reduce wildfire hazard:
  - Objective 2.1. Reduce thatch buildup and continuity of fine fuels.
  - Objective 2.2. Reduce the abundance of non-native annual grasses.
- Goal 3: Maintain soil health:
  - Objective 3.1. Maintain minimum RDM standards to protect soil structure.

The Grazing Management Plan includes performance standards and a monitoring plan to monitor the effectiveness of management prescriptions in achieving the Plan's goals and objectives. Annual peak forage production monitoring measures annual forage production. It allows for detection of year-to-year fluctuations in forage production. The grazing lessee submits an annual report to DPR. The annual reports include livestock type,

class, numbers, and dates of use of each management unit used by the grazing lessee's livestock. This data is field verified by DPR staff and is integrated with observations made from monitoring to help assess the extent to which grazing management may be related to changing conditions being observed. DPR uses peak forage production and residual dry matter (RDM) monitoring to determine whether stocking rate adjustments are necessary to meet RDM targets and the associated goals and objectives.

Peak forage production is determined by measuring the biomass (e.g., grass) in the rangeland at the end of rapid spring growth. Measuring peak forage production assesses the amount of forage available for grazing and informs stocking rates. California's annual rangelands characteristically have large year-to-year fluctuations in forage production (UCANR 2016). Forage production is influenced by temperature and rainfall. The temperature and the amount of soil moisture available during the winter/spring growing season determine how much forage will be produced. Rapid spring growth occurs when weather begins warming in late winter or early spring and continues for a short time until soil moisture is exhausted. Peak forage production occurs at the end of rapid spring growth, when soil moisture levels limit vegetative growth and plants mature and set seed. At this point, the forage is at its peak and monitoring is conducted to determine annual forage production.

Samples were collected and peak production was measured following the University of California Agriculture and Natural Resources' (UCANR's) *Rangeland Management Series Annual Range Forage Production* recommendations (UCANR 2016) and *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* (Bartolome et al. 2002). Peak forage production was monitored at 58 monitoring plots within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B. This year, 2023, was the second time peak forage production was monitored.

Marcus Battaglia, James Greer, and Remy Greer hold a grazing agreement with DPR. Cattle were added to the Preserve in January 2023. No grazing occurred on the Preserve in 2022.

Methods

Peak forage production was monitored at 58 monitoring plots within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B (**Figure 2**). Sampling was conducted on April 7 and 10, 2023, by ESA biologists Amanda French, Jaclyn Catino-Davenport, Karla Alcaraz, and Mary Cozy. A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each monitoring plot. All aboveground biomass, including vegetation and thatch, were collected (samples) within the hoop using gardening shears or by gathering manually. These samples were stored in paper bags. Samples did not include tree leaves (e.g., oaks [*Quercus* spp.]), as referenced in the RDM methodology (Bartolome et al. 2002). Woody shrubs (e.g., scrub oak [*Quercus berberidifolia, xacutidens*]), perennial species, and summer annuals were also excluded from collection. Dominant plant species observed within and in the vicinity of the monitoring plots were recorded, as were special-status species or invasive non-native species incidentally observed while traveling to and from monitoring plots. One monitoring plot within management unit 1A and one within management unit 2A were underwater due to high water levels along streams within those management units. Therefore, samples were not taken at these monitoring plots as they were inaccessible.

ESA biologists processed the samples in the ESA office located at 626 Wilshire Boulevard #1100, Los Angeles, California 90017. All samples were air-dried and weighed in grams using a digital scale. ESA biologists excluded the weight of the paper bags. The weights of the three samples from each monitoring plot were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was calculated by averaging all monitoring plots within a management unit. The averaged value is the peak forage production for the management unit for the year. The two monitoring plots that were not sampled during peak forage production monitoring were not factored into the averaged value.

The National Oceanic and Atmospheric Administration monitors annual precipitation levels at climate stations across California. Precipitation values are reported by water year (October–September). ESA documented the current water year precipitation data from the Ramona climate station. This allows for year-to-year fluctuations in forage production influenced by rainfall to be documented.

Results

Table 2 displays the plant species observed within or adjacent to the monitoring plots in spring 2023 in order of observed abundance. Plant species included in the sample are indicated as *collected*. Trees, woody shrubs, perennials, and summer annuals were not collected per the sampling protocol and are indicated as *not collected*.

TABLE 2
PLANT SPECIES OBSERVED WITHIN AND ADJACENT TO MONITORING PLOTS

Common Name	Scientific Name	Collected	Not Collected[1]
red brome*	*Bromus rubens*	✓	
ripgut brome*	*Bromus diandrus*	✓	
longbeak filaree*	*Erodium botrys*	✓	
slender oat*	*Avena barbata*	✓	
wild oat*	*Avena fatua*	✓	
soft chess brome*	*Bromus hordeaceus*	✓	
redstem filaree*	*Erodium cicutarium*	✓	
foxtail barley*	*Hordeum murinum*	✓	
California buckwheat	*Eriogonum fasciculatum*		✓
chamise	*Adenostema fasciculatum*		✓
California sagebrush	*Artemisia californica*		✓
black mustard*	*Brassica nigra*		✓
compact brome*	*Bromus madritensis*	✓	
short-pod mustard*	*Hirschfeldia incana*		✓
Menzies' goldenbush	*Isocoma menziesii*		✓
miniature lupine	*Lupinus bicolor*	✓	
laurel sumac	*Malosma laurina*		✓
chilicothe	*Marah macrocarpa*		✓
bur clover*	*Medicago polymorpha*	✓	

Common Name	Scientific Name	Collected	Not Collected[1]
rusty popcorn flower	*Plagiobothrys nothofulvus*	✓	
coast live oak	*Quercus agrifolia*		✓
wild radish*	*Raphanus sativus*		✓
Russian thistle*	*Salsola tragus*		✓
London rocket*	*Sisymbrium irio*	✓	
hairy vetch*	*Vicia villosa*	✓	

NOTES:
Species identified in this table are listed in order of dominance throughout the monitoring plots.
* Non-native plant species.
1 Trees, woody shrubs, perennials, and summer annuals were not collected per the sampling protocol (Bartolome et al. 2002).

Invasive Non-Native Plant Incidental Observations

Non-native plant species such as red brome, ripgut brome, longbeak filaree, slender oat, wild oat, soft chess brome, redstem filaree, foxtail barley, black mustard, compact brome, short-pod mustard, bur clover, wild radish, Russian thistle, and London rocket were observed during monitoring. No high-priority invasive non-native plants were observed. These incidental observations are not representative of comprehensive invasive non-native plant mapping.

Special-Status Species Incidental Observations

A golden eagle (*Aquila chrysaetos*), a Multiple Species Conservation Program (MSCP)–covered species, was observed within management units 2B and 3B during spring 2023 peak forage production monitoring (**Figure 3**). Additionally, a coastal California gnatcatcher (*Polioptila californica* ssp. *californica*), a MSCP–covered species, was observed within management unit 2B during spring 2023 peak forage production monitoring.

Annual Precipitation

The current annual precipitation recorded for water year 2023 is 23 inches at the Ramona climate station (NOAA 2023). This is the value for October 1, 2022 through April 18, 2023. Normal precipitation from October 1 through April 18 is 13.54 inches. The precipitation is tracking at 170 percent of normal. For the full water year (October 1 through September 30), normal precipitation is 14.65 inches.

Peak Forage Production Values

The average lb/acre of peak forage for a given management unit is presented in **Table 3** and in Figure 3. All management units, with the exception of 2B, 3D, 4A, and 4B, had lower average peak forage production values in 2023 than in 2022. Monitoring plots T20, located in management unit 1A, and 18, located in management unit 2A, were inaccessible during spring peak forage production monitoring and were not sampled. The monitoring plots not sampled within management units 1A and 2A were located adjacent to streams and were underwater due to heavy spring precipitation and subsequent increased stream flows. Since no samples were

taken at monitoring plots T20 and 18, average peak forage production results exclude these monitoring plots. The results of the average peak forage production values from each monitoring plot in 2023 can be found in **Attachment A**.

TABLE 3
SUMMARY OF MANAGED RESOURCES AND PEAK FORAGE PRODUCTION MONITORING RESULTS

		Average Peak Forage Production (lb/acre)	
Management Unit	**Managed Resources**	**2022**	**2023**
1A	Riparian pastures and arroyo toad habitat	5,522	1,667
2A	SKR habitat	3,119	2,526
2B	SKR habitat	2,171	2,505
3A	SKR habitat	3,453	2,100
3B	Species diversity, fire hazard reduction, and soil conservation	3,767	1,640
3C	Vernal pool habitat	3,389	2,889
3D	Vernal pool habitat	2,722	3,444
3E	Restoration	4,458	1,825
4A	Species diversity, fire hazard reduction, and soil conservation	1,389	2,478
4B	Species diversity, fire hazard reduction, and soil conservation	1,144	1,317
4C	Not grazed	N/A	N/A
5	Not grazed	N/A	N/A

NOTES:
lb/acre = pounds per acre
N/A = not applicable, no monitoring plots established for these management units
SKR = Stephens' kangaroo rat
These results are an average of the peak production values of all monitoring plots per management unit from 2023.

Conclusions

Peak forage production and RDM monitoring allow for identification of forage gaps, fine-tuning of grazing plans, and development of contingency plans for drought. These two monitoring points allow for adjustment of stocking rates for each management unit based on (1) amount of forage available, (2) whether RDM targets were met, and (3) annual weather conditions (e.g., drought). For example, if forage availability dictates a certain stocking rate, but RDM is above target levels at the end of the season, the stocking rate may be increased with the same forage availability. Year-to-year weather variability must also be considered—forage production and composition will vary depending on rainfall and temperature.

This is the second time peak forage production monitoring was conducted at the Preserve. Over time, DPR will use monitoring results to detect year-to-year fluctuations in forage production.

Peak forage production monitoring targets are not established for the Preserve or per management unit; rather peak forage production monitoring results inform stocking rates. The following decision-making parameters will be considered:

- Identify the amount of peak forage available in the spring.
- Determine stocking rate peak forage supports; adjust stocking rate as appropriate.
- Measure RDM in the fall.
- Determine if the stocking rate was appropriate to achieve RDM targets by management unit.
- Adjust stocking rate assumptions related to peak forage availability and ability to achieve RDM targets; placement of livestock attractions (e.g., water) may also be considered.

Together with RDM monitoring and grazing reports, DPR will use the results to determine whether stocking rate adjustments are necessary to meet RDM targets and the associated goals and objectives. Adjustments to stocking rates should be made in collaboration with the grazing lessee.

If you have questions, please feel free to contact me at (530) 966-4294 or afrench@esassoc.com.

Sincerely,

Amanda French
Biologist

Attachments: Figure 1 – Preserve Location
Figure 2 – Monitoring Plot Locations
Figure 3 – Peak Forage Production Results
Attachment A – Results of 2023 Peak Forage Production Monitoring at the Preserve

References

Bartolome, J. W., W. E. Frost, N. K. McDougald, and M. Conner. 2002. Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California. *Rangeland Management* 8092: 1–7.

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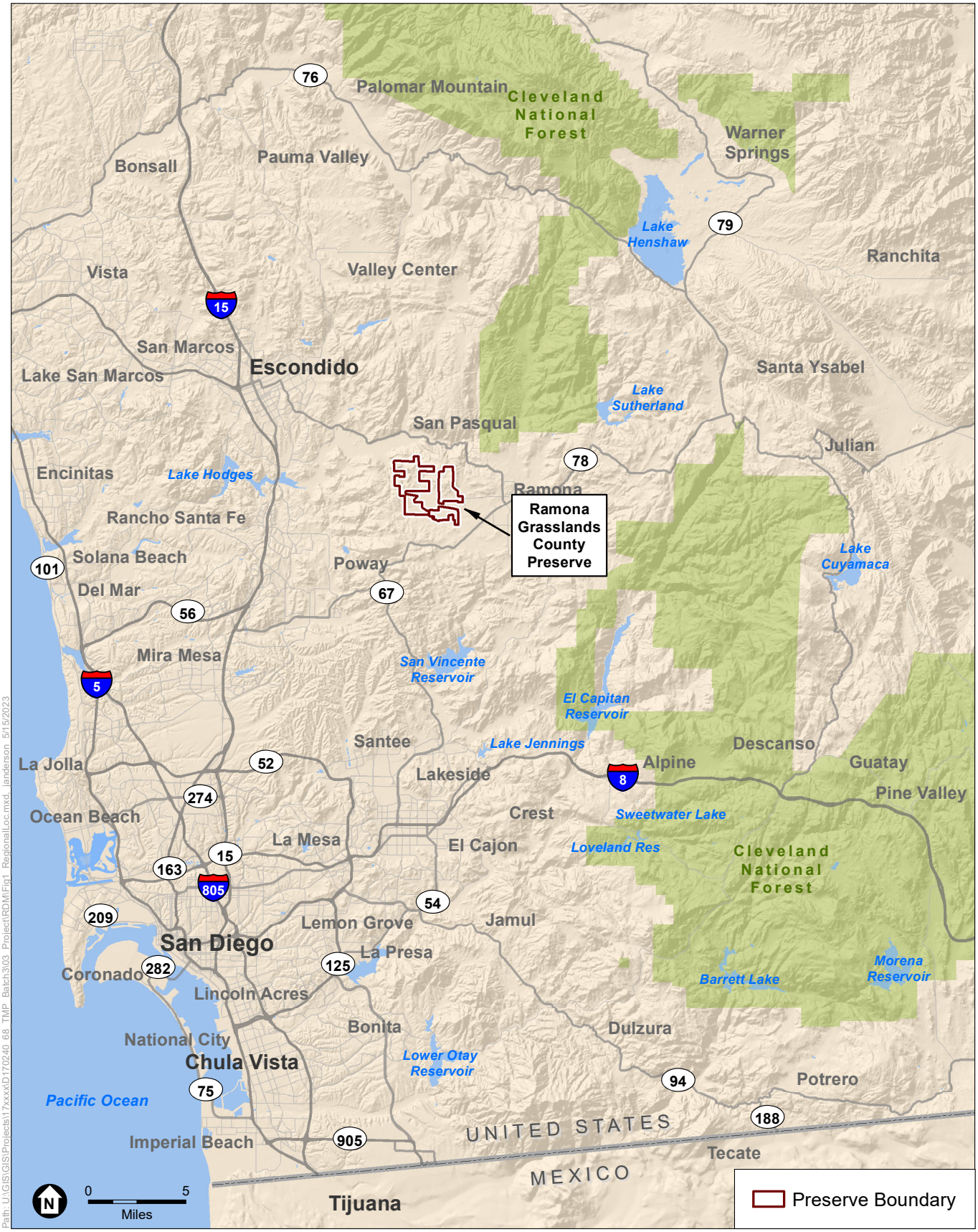
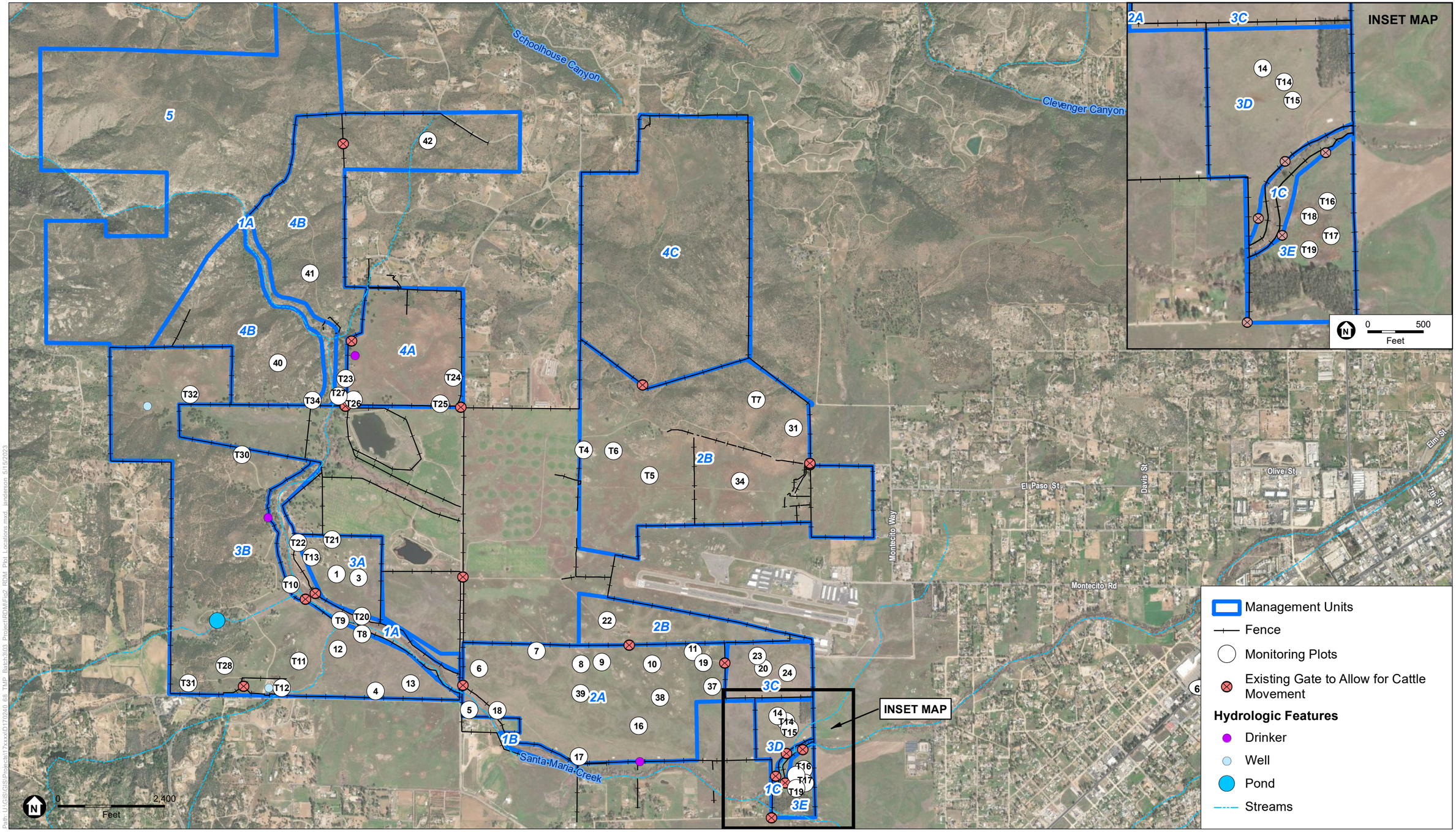


SOURCE: ESRI

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring
Ramona Grasslands County Preserve Spring 2023 Peak Forage Production Monitoring Report

Figure 1
Preserve Location



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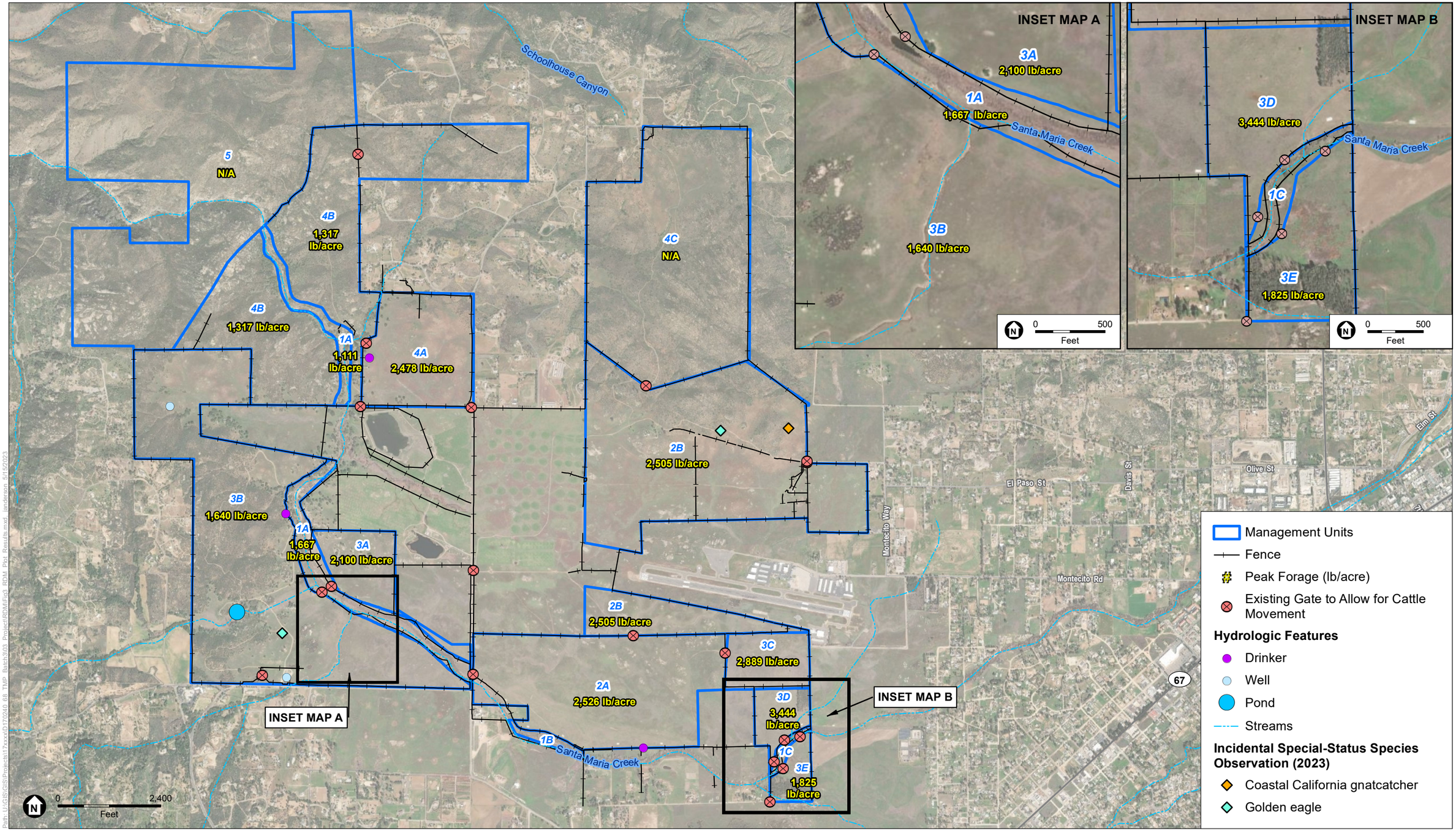
SOURCE: ESRI, AECOM 2017; ESA 2023

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring
Ramona Grasslands County Preserve Spring 2023 Peak Forage Production Monitoring Report

Figure 2
Monitoring Plot Locations

ESA



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SOURCE: ESRI, AECOM 2017; ESA 2021

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan 2023 Resource-Specific Monitoring
Ramona Grasslands County Preserve Spring 2023 Peak Forage Production Monitoring Report

ESA

Figure 3
Peak Forage Production Results

Attachment A

Results of 2023 Peak Forage Production Monitoring at the Preserve

ATTACHMENT A
RESULTS OF 2023 PEAK FORAGE PRODUCTION MONITORING AT THE PRESERVE

Management Unit	Plot #	Date Collected	Monitoring Plot Average (grams) 2023	Pounds per Acre 2023
1A	T9	4/7/2023	16.3	1633
1A	T10	4/7/2023	17.0	1700
1A	T20	4/7/2023	N/A	N/A
2A	5	4/7/2023	32.7	3267
2A	6	4/7/2023	23.0	2300
2A	7	4/7/2023	21.3	2133
2A	8	4/7/2023	20.3	2033
2A	9	4/7/2023	32.7	3267
2A	10	4/7/2023	18.3	1833
2A	11	4/7/2023	12.3	1233
2A	16	4/7/2023	20.0	2000
2A	17	4/7/2023	35.7	3567
2A	18	4/7/2023	N/A	N/A
2A	19	4/7/2023	31.3	3133
2A	37	4/7/2023	30.3	3033
2A	38	4/7/2023	25.3	2533
2A	39	4/7/2023	25.0	2500
2B	22	4/7/2023	28.3	2833
2B	31	4/10/2023	20.3	2033
2B	34	4/10/2023	27.3	2733
2B	T4	4/10/2023	16.3	1633
2B	T5	4/10/2023	25.3	2533
2B	T6	4/10/2023	23.0	2300
2B	T7	4/10/2023	34.7	3467
3A	1	4/10/2023	22.0	2200
3A	3	4/10/2023	23.7	2367
3A	T13	4/10/2023	9.3	933
3A	T21	4/10/2023	27.0	2700
3A	T22	4/7/2023	23.0	2300
3B	4	4/7/2023	15.7	1567
3B	12	4/7/2023	11.7	1167
3B	13	4/7/2023	17.7	1767
3B	T8	4/7/2023	7.3	733
3B	T11	4/7/2023	22.3	2233
3B	T12	4/7/2023	12.3	1233
3B	T28	4/7/2023	16.3	1633

Management Unit	Plot #	Date Collected	Monitoring Plot Average (grams) 2023	Pounds per Acre 2023
3B	T30	4/7/2023	24.3	2433
3B	T31	4/7/2023	11.7	1167
3B	T32	4/7/2023	24.7	2467
3C	20	4/7/2023	36.7	3667
3C	23	4/7/2023	20.3	2033
3C	24	4/7/2023	29.7	2967
3D	14	4/7/2023	37.0	3700
3D	T14	4/7/2023	37.3	3733
3D	T15	4/7/2023	29.0	2900
3E	T16	4/10/2023	35.3	3533
3E	T17	4/10/2023	0.0[1]	0
3E	T18	4/10/2023	21.0	2100
3E	T19	4/10/2023	16.7	1667
4A	T24	4/10/2023	18.7	1867
4A	T25	4/10/2023	28.7	2867
4A	T26	4/10/2023	27.0	2700
4B	T23	4/10/2023	20.3	2033
4B	T27	4/7/2023	24.7	2467
4B	T34	4/7/2023	11.7	1167
4B	40	4/7/2023	0.0[1]	0
4B	41	4/10/2023	13.7	1367
4B	42	4/10/2023	8.7	867

NOTES:

N/A = Monitoring plot T20 within management unit 1A and monitoring plot 18 within management unit 2A were underwater due to high water levels within the Santa Maria Creek during 2023 peak forge production monitoring.

[1] No aboveground biomass, including vegetation and thatch and excluding woody shrubs, perennial species, and summer annuals, was present within the monitoring plot at the time of monitoring

K-2 Ramona Grasslands County Preserve Residual Dry Matter Monitoring Report

ESA

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December 21, 2023

Jennifer Price
County of San Diego
Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, CA 92123

Subject: Residual Dry Matter Monitoring for the Ramona Grasslands County Preserve, September 2023

Dear Ms. Price:

At the request of the County of San Diego (County) Department of Parks and Recreation (DPR), Environmental Science Associates (ESA) performed residual dry matter (RDM) monitoring in September 2023 at 58 predetermined vegetation monitoring plots within the Ramona Grasslands County Preserve (Preserve). The Preserve is located in the Santa Maria Valley, southwest of the unincorporated township of Ramona and northeast of the city of Poway in central San Diego County (**Figure 1**; see figures attached to the end of this report).

RDM values for each monitoring plot within management units 1A, 2A, 2B, 3A, 3B, 3C, 3D, 3E, 4A, and 4B were collected following the University of California Division of Agriculture and Natural Resources' *Guidelines for Residual Dry Matter Management on Coastal and Foothill Rangelands in California* recommendations (Bartolome et al. 2002). RDM is determined by measuring the biomass (i.e., the amount of residual plant matter) in the rangeland at the end of fall. RDM acts as soil protection from the compacting and erosive effects of rains and can help conserve initial rainfall soil moisture to facilitate germination of the next season's annual plants. Annual RDM monitoring is a method used to quantify the impact of cattle grazing on grasslands from year to year, to determine if natural community or species-specific RDM targets are achieved, and to provide land managers with information that allows them to make grazing management adjustments to maintain a sustainable rangeland.

DPR's livestock grazing program includes goals for improving and maintaining biodiversity, reducing wildfire hazards, and maintaining soil health. Grazing on the Preserve is managed under the *Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan* (Grazing Management Plan) (ESA 2019). The Grazing Management Plan designates grazing management units within the Preserve and monitors the effects of cattle grazing on the land to support the following management goals and objectives:

- Goal 1: Maintain and improve biodiversity:
  - Objective 1.1. Reduce abundance of non-native annual grasses.
  - Objective 1.2. Maintain and improve habitat for raptors.
  - Objective 1.4. Maintain and improve habitat for arroyo toad (*Anaxyrus californicus*).
  - Objective 1.5. Maintain and improve habitat for Stephens' kangaroo rat (SKR; *Dipodomys stephensi*).

- Goal 2: Reduce wildfire hazard:
  - Objective 2.1. Reduce thatch buildup and continuity of fine fuels.
  - Objective 2.2. Reduce the abundance of non-native annual grasses.
- Goal 3: Maintain soil health:
  - Objective 3.1. Maintain minimum RDM standards to protect soil structure.

Grazing occurred on the Preserve from January through April 2022, until Tellam and Tellam Cattle no longer had a grazing agreement with DPR. After April 2022, the cattle were removed for the remainder of 2022. On November 7, 2022, Marcus Battaglia, James Greer, and Remy Greer entered a new grazing agreement with DPR. Through this grazing agreement, cattle were added to the Preserve in January 2023 and grazing resumed on the Preserve.

Methods

RDM monitoring for all 58 vegetation monitoring plots was conducted on September 11 and 12, 2023, by ESA biologists Adrienne Lee, Amanda French, Bailey Setzler, and Dillon Travis (**Figure 2**).

A sampling hoop with a 13.25-inch interior diameter (hoop area is 0.96 square feet) was tossed randomly and sampled three times within each of the designated monitoring plots. Biomass (i.e., RDM) samples were obtained by collecting all aboveground biomass, including vegetation and thatch, from within the hoop using gardening shears or by gathering manually; samples were then stored in paper bags. Biomass collections did not include tree leaves (e.g., oaks [*Quercus* spp.]) or summer annuals such as doveweed (*Croton setiger*) and tarplant (*Centromadia* spp., *Holocarpha* spp.), as referenced in the RDM methodology (Bartolome et al. 2002). Additionally, woody shrubs (e.g., scrub oak [*Quercus berberidifolia, xacutidens*]) were not collected. Native species seen in the vicinity of the RDM plots were also recorded at the time of sampling, as well as any incidental observations of special-status species or invasive non-native species encountered while traveling to each RDM plot.

ESA biologists processed the samples in the ESA office located at 626 Wilshire Boulevard #1100, Los Angeles, California 90017. All samples were air-dried and weighed in grams using a digital scale. Biologists excluded the weight of the paper bags. The weights of the three biomass samples from each of the vegetation monitoring plots were averaged and then converted to pounds per acre (lb/acre) by a multiplication of 100 (Bartolome et al. 2002). The average lb/acre for each management unit was then calculated by averaging all RDM plots within a management unit.

The average lb/acre for a given management unit was compared to the target RDM values established for each management unit (**Table 1**). Target RDM values for each management unit are based on the management prescriptions detailed in the Grazing Management Plan (ESA 2019). Management prescriptions were based on creating optimal conditions to achieve the management goals and objectives, including those for sensitive

biological resources, for each management unit. Target sensitive species and habitats for the Preserve include arroyo toad, SKR, raptor habitat, and vernal pools (ESA 2019).

TABLE 1
SUMMARY MANAGEMENT TARGETS AND TARGET GRAZING INTENSITIES PER MANAGEMENT UNIT

Unit	Management Targets	Target Grazing Intensities (RDM Values[1])
1A	Riparian pasture, Arroyo toad	800 to 2,000 lb/acre
2A, 2B, 3A	SKR	400 to 800 lb/acre
3B, 4A, 4B	Flexible use	800 to 1,500 lb/acre
3C, 3D	Vernal pool	800 to 1,500 lb/acre
3E	Restoration[2]	800 to 1,500 lb/acre
4C	Not proposed for managed grazing due to vegetation community	N/A
5	Not proposed for grazing due to topography	N/A

NOTES: lb/acre = pounds per acre; RDM = residual dry matter; SKR = Stephens' kangaroo rat; Flexible use = managed for species diversity, fire hazard reduction, and soil conservation; N/A = not applicable

1 Target grazing intensities (RDM values) are based on Ramona Grasslands, Santa Ysabel, and Boulder Oaks Preserves Grazing Management Plan (ESA 2019).

2 After recommended restoration (ESA 2019) is completed, this pasture should have a target RDM value of 800 lb/acre.

Results

The following plant species were observed to be the most common within or adjacent to the monitoring plots in 2023: wild oat (*Avena* spp.), brome grass (*Bromus* spp.), doveweed, filaree (*Erodium* spp.), and short-pod mustard (*Hirschfeldia incana*). Wild oat, brome grass, and filaree were collected during RDM sampling, while western ragweed (*Ambrosia psilostachya*), doveweed, and short-pod mustard were not collected, per the protocol (Bartolome et al. 2002).

The following plants were observed but seen less commonly within or near the monitoring plots: chamise (*Adenostema fasciculatum*), western ragweed, yerba mansa (*Anemopsis californica*), California sagebrush (*Artemisia californica*), saltbush (*Atriplex* spp.), mule fat (*Baccharis salicifolia*), cluster lily (*Brodiaea* sp.), tocalote (*Centaurea melitensis*), Bermuda grass (*Cynodon dactylon*), clustered tarweed (*Deinandra fasciculata*), saltgrass (*Distichlis spicata*), daisy (*Erigeron* sp.), California buckwheat (*Eriogonum fasciculatum*), Italian ryegrass (*Festuca perennis*), nit grass (*Gastridium phleoides*), common sunflower (*Helianthus annus*), graceful tarplant (*Holocarpha virgata* ssp. *elongata*), barley (*Hordeum* spp.), goldenbush (*Isocoma* sp.), rush (*Juncus* sp.), prickly lettuce (*Lactuca serriola*), cheeseweed (*Malva parviflora*), oaks, wild radish (*Raphanus sativus*), white sage (*Salvia apiana*), common catchfly (*Silene gallica*), vinegarweed (*Trichostema lanceolatum*), and rough cocklebur (*Xanthium strumarium*). Bermuda grass, Italian ryegrass, and nit grass were collected during RDM sampling, per the protocol (Bartolome et al. 2002).

Invasive Non-Native Species Incidental Observations

No high-priority invasive non-native plants or wildlife were observed incidentally during 2023 monitoring.

Special-Status Species Incidental Observations

A southern mule deer (*Odocoileus hemionus fuliginatus*), a County of San Diego Group 2 species and Multiple Species Conservation Program (MSCP)-covered species, was observed within management unit 4B during fall 2023 RDM monitoring (**Figure 3**). Additionally, a red-shouldered hawk (*Buteo lineatus*), a County of San Diego Group 1 species and MSCP-covered species, was observed within management unit 3E.

Residual Dry Matter Values and Recommendations

All management units, with the exception of 1A and 4B, had higher RDM values than their target values. Management units 1A and 4B fell within the target RDM values for the unit. Results of RDM analyses are depicted in Figure 3.

The majority of management units were above their target RDM values in 2023. This can be attributed to a few factors: (1) increased annual rainfall; (2) lack of grazing; and (3) late-season rainfall. Ramona Airport reported approximately 21.1 inches of accumulated rainfall from January to September 2023—a significant increase compared to the approximately 4 inches of accumulated rainfall from January to September 2022 (NOAA 2023). Cattle were onsite from January through April 2022 until the original grazing lessee, Tellam and Tellam Cattle, no longer had a grazing agreement with DPR. After April 2022, cattle were removed from the Preserve for the remainder of 2022. Grazing resumed in January 2023 through a new grazing agreement with Marcus Battaglia, James Greer, and Remy Greer. The late-season rainstorm on August 20, 2023, prior to RDM monitoring, could have also played a part in these results, as many plant species took advantage of the rainfall and began sprouting. The effects of these factors relative to RDM are discussed further in the *Summary and Recommendations* section.

The results of vegetation sampling within each management unit are discussed below, and 2023 RDM values are summarized in **Table 2**. The results of the average RDM values from each of the individual RDM plots from 2011 through 2023 can be found in **Attachment A**.

TABLE 2
SUMMARY OF 2023 RDM RESULTS

Management Unit	Target RDM Value	Average RDM (lb/acre)													2023 Results
		2011*	2012*	2013*	2014*	2015*	2016*	2017*	2018*	2019*	2020	2021	2022	2023	
1A	800 to 2,000 lb/acre	4,900	2,137	586	453	350	843	679	233	2,522	4,178	1,833	2,478	1,333	Meets grazing requirements.
2A	400 to 800 lb/acre	6,241	3,381	1,728	517	1,137	1,479	1,085	394	3,071	3,352	2,348	2,186	3,886	Does not meet grazing requirements.
2B	400 to 800 lb/acre	3,957	1,844	933	301	1,124	747	798	338	3,167	3,786	2,962	1,400	2,881	Does not meet grazing requirements.
3A	400 to 800 lb/acre	3,688	2,796	384	136	238	282	1,521	20	1,767	2,600	2,540	1,627	2,447	Does not meet grazing requirements.
3B	800 to 1,500 lb/acre	2,450	2,405	635	402	385	880	803	27	2,420	2,587	2,413	1,933	2,193	Does not meet grazing requirements.
3C	800 to 1,500 lb/acre	4,055	2,890	1,013	810	403	1,543	919	233	2,622	2,100	3,711	2,456	3,600	Does not meet grazing requirements.
3D	800 to 1,500 lb/acre	6,855	3,740	1,406	1,450	370	1,190	709	167	489	1,800	2,622	2,522	2,667	Does not meet grazing requirements.
3E	800 to 1,500 lb/acre	0	123	2,540	1,547	1,330	5,883	4,923	5,908	925	1,025	2,675	5,608	6,858	Does not meet grazing requirements.
4A	800 to 1,500 lb/acre	4,122	2,407	2,086	100	513	890	876	78	2,522	1,889	1,267	911	1,800	Does not meet grazing requirements.
4B	800 to 1,500 lb/acre	2,688	1,140	1,210	400	1,053	633	573	244	1,417	1,594	2,039	1,272	1,294	Meets grazing requirements.
4C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not proposed for managed grazing.

NOTES: RDM = residual dry matter; lb/acre = pounds per acre; N/A = not applicable

* RDM values from 2011–2019 were compared to previous target RDM values as described in the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012). These results are an average of the RDM values of all monitoring plots per management unit 2011 through 2023.

Management Unit 1A

RDM levels in management unit 1A average 1,333 lb/acre, which is within the target RDM value range of 800 to 2,000 lb/acre in the Grazing Management Plan (Table 2). As prescribed by the Grazing Management Plan, target RDM values for management unit 1A are set to maintain and improve biodiversity for riparian pastures and federally listed arroyo toad habitat.

Cattle grazing should be maintained at its current levels within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 2,000 lb/acre), which is beneficial for arroyo toad. Arroyo toad breeding season extends from February 1 to July 31; therefore, targeted grazing is recommended to occur between August and January. Targeted cattle grazing prevents overgrowth of riparian vegetation, as cattle will keep riparian vegetation at a mid-successional range (Hancock 2009), providing better habitat conditions for arroyo toad. Natural succession of riparian species and increases in density of riparian vegetation can create a loss of breeding habitat for arroyo toad (Hancock 2009; USFWS 2011). Arroyo toad prefers shallow pools and open, sandy stream terraces. This species uses adjacent upland habitat for feeding and shelter in the nonbreeding seasons (USFWS 2011).

Management Unit 2A

RDM levels in management unit 2A average 3,886 lb/acre, which is above the target RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 2). The loamy grasslands in management unit 2A should continue to be managed for SKR. SKR prefers loamy grassland soils with high forb cover and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2024 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 2A should continue to be monitored by DPR. Previously documented rare plants, including Coulter's saltbush (*Atriplex coulteri*) (California Rare Plant Rank [CRPR] 1B.2), southern tarplant (*Centromadia parryi* ssp. *australis*) (CRPR 1B.1), and graceful tarplant (CRPR 1B.2), were not observed during the 2023 surveys. Coulter's saltbush and graceful tarplant were last observed in this management unit in 2013 and 2020. Southern tarplant was last observed in this management unit in 2021. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 2B

RDM levels in management unit 2B average 2,881 lb/acre, which is above the target RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 2). SKR prefers loamy grassland soils with high forb cover

and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2024 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 2B should continue to be monitored by DPR. Graceful tarplant and southern tarplant were not detected during 2023 surveys but were previously detected during 2019 and 2021 surveys, respectively. Small flower bindweed (*Convolvulus simulans*, CRPR 4.2) has also been known to occur within this management unit, though it has not been documented since 2007. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3A

RDM levels in management unit 3A average 2,447 lb/acre, which is above the target range of RDM value range of 400 to 800 lb/acre in the Grazing Management Plan (Table 2). SKR prefers loamy grassland soils with high forb cover and low overall aboveground biomass (ESA 2019). Grazing can reduce aboveground biomass and shift species composition to higher forb cover to provide better habitat for SKR.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (400 to 800 lb/acre), which is beneficial for SKR. Grazing in 2024 is recommended to target a RDM value range of 400 to 500 lb/acre. SKR reaches their highest densities in grassland communities dominated by forbs and characterized by moderate to high amounts of bare ground (USFWS 2020).

Rare plant populations in management unit 3A should continue to be monitored by DPR. Graceful tarplant was not detected during 2023 surveys but was detected in low numbers during 2019 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3B

RDM levels in management unit 3B average 2,193 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Rare plant populations in management unit 3B should continue to be monitored by DPR. Graceful tarplant was detected during 2023 surveys. San Diego gumplant (*Grindelia halli*) was previously detected during 2021 surveys

but was not detected within this management unit during 2023 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3C

RDM levels in management unit 3C average 3,600 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). Management unit 3C should continue to be managed to maintain the health and function of the vernal pool complex south of Ramona Airport. Targeted spring grazing can more effectively cause a shift in species composition toward native annual forbs, relative to other seasons, helping to reduce the abundance of invasive non-native grasses. This will reduce evapotranspiration and can help promote longer vernal pool inundation periods, increasing the likelihood of San Diego fairy shrimp (*Branchinecta sandiegonensis*) being able to complete their lifecycle within vernal pools, particularly in years with marginal rainfall (ESA 2019).

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is beneficial for vernal pools. As recommended in the Targeted Monitoring Plan (TMP) (ESA and ICF 2022), a springtime vernal pool survey to assess the health of the vernal pool complex was conducted in 2023. The vernal pool survey assessed the plant community and habitat function of the vernal pools and provided comprehensive management recommendations (ESA 2023). Based on the results of the springtime vernal pool survey, cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[1] (typically November through March for Southern California), as well as when clay soils are still moist and malleable.

Rare plant populations in management unit 3C should continue to be monitored by DPR. Graceful tarplant was last observed in low numbers in the northern section of this management unit during the 2017 surveys, but it has not been detected during recent monitoring efforts from 2019 through 2023. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3D

RDM levels in management unit 3D average 2,667 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). Management unit 3D should continue to be managed to maintain the health and function of vernal pools. Targeted spring grazing can more effectively cause a shift in species composition toward native annual forbs, relative to other seasons, helping to reduce the abundance of invasive non-native grasses. This will reduce evapotranspiration and can help promote longer vernal pool inundation periods, increasing the likelihood of San Diego fairy shrimp being able to complete their lifecycles within vernal pools, particularly in years with marginal rainfall (ESA 2019).

[1] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use. As recommended in the TMP (ESA and ICF 2022), a springtime vernal pool survey to assess the health of the vernal pool complex was conducted in 2023. The vernal pool survey assessed the plant community and the habitat function of the vernal pools and provided comprehensive management recommendations (ESA 2023). Based on the results of the springtime vernal pool survey, cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[2] (typically November through March for Southern California), as well as when clay soils are still moist and malleable.

Rare plant populations in management unit 3D should continue to be monitored by DPR. Graceful tarplant was last observed in the central section of this management unit during the 2017 surveys but was not detected during the 2023 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

Management Unit 3E

RDM levels in management unit 3E average 6,858 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). This management unit was previously overgrazed by cattle between 2005 and 2010, causing invasive non-native plant species to grow after the cattle were removed by DPR (ICF 2012). This management unit was observed to contain a high density of summer annuals, including invasive non-native plant species such as Russian thistle (*Salsola* sp.) and saltbush. As of 2023, grazing has still not been reinstated within this management unit, which has contributed to the high RDM levels.

Continued active restoration can be implemented using a combination of mechanical removal by mowing, herbicide, and/or targeted grazing as recommended by the Ramona Grasslands Preserve Vegetation Management Plan (ICF 2012) to return this management unit to a grass regime. Quantitative vegetation monitoring is recommended to document before-and-after conditions and determine restoration progress and success. Relevé assessment of the management unit using the California Native Plant Society protocol (CNPS 2000) would provide detailed species composition and cover to the land manager and would capture the presence of biomass from invasive non-native summer annuals that are not included in the RDM. The information, in turn, will give DPR the ability to assess the quality of the vegetation on-site and track the progress of restoration from invasive non-native forbs to native grasses.

Rare plant populations in management unit 3E should continue to be monitored by DPR. Southern tarplant was not detected during 2023 surveys, although it was previously detected within this management unit during 2021 surveys. The high RDM levels resulting from thatch buildup could preclude the emergence of rare plants.

[2] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

Management Unit 4A

RDM levels in management unit 4A average 1,800 lb/acre, which is above the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. No invasive non-native plants or rare plants requiring monitoring or management were observed during the 2023 surveys. Cattle grazing should be increased within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Management Unit 4B

RDM levels in management unit 4B average 1,294 lb/acre, which is within the target range of 800 to 1,500 lb/acre in the Grazing Management Plan (Table 2). This management unit should continue to be managed for specific management goals and objectives, including species diversity, fire hazard reduction, and soil conservation. No invasive non-native plants or rare plants requiring monitoring or management were observed during the 2023 surveys. Cattle grazing should be maintained within this management unit to achieve the target grazing intensity proposed by the Grazing Management Plan (800 to 1,500 lb/acre), which is appropriate for flexible use.

Management Unit 4C

Management unit 4C is not proposed for active grazing management due to the on-site vegetation community; therefore, no RDM monitoring was conducted in 2023. This unit consists of southern mixed chaparral, disturbed southern mixed chaparral, and coastal sage scrub (ICF 2012). This unit should be monitored for invasive non-native plant invasion.

Management Unit 5

Management unit 5 is not proposed for grazing due to topography; therefore, no RDM monitoring was conducted in this unit in 2023. This unit should be monitored for invasive non-native plant invasion.

Summary and Recommendations

All RDM values, with the exception of management units 1A and 4B, were above the target RDM values. Management units 1A and 4B had RDM values within their target RDM value range. In 2023, RDM values in all management units except 1A increased from 2022 results. Management unit 2A had the most significant increase in RDM value this season.

The majority of management units were above their target RDM values in 2023. Results were likely influenced by the increased annual rainfall in 2023, including the late-season rainstorm event in August 2023 that initiated vegetative growth. Extreme fluctuations in rainfall in recent years (e.g., drought conditions in 2018, above-average rainfall in 2019, below-average to average rainfall in 2020, and drought conditions in 2021 and 2022)

drive substantial variability in vegetative cover from year to year. As mentioned in the *Results* section, the increase in RDM values between 2022 and 2023 is likely due to above-average rainfall levels in the region. Ramona Airport reported approximately 21.1 inches of accumulated rainfall from January to September 2023 compared to approximately 6.5 inches of accumulated rainfall from January to September 2021 and approximately 4 inches of accumulated rainfall from January to September 2022 (NOAA 2023).

To better estimate how much biomass is available and likely to persist in a given year, ESA initiated annual spring peak forage production monitoring on the Preserve, with the inaugural monitoring effort in April 2022. Based on the results of this monitoring, the grazing regime can be adjusted accordingly by either increasing or decreasing heads of cattle or grazing duration/frequency. Spring peak forage production monitoring is recommended to be conducted annually to better inform the grazing lessee on grazing practices for a given year.

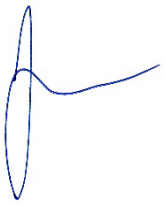
Based on the annual RDM monitoring results, the following measures are recommended for all management units:

- Coordinate with the new grazing lessees to provide information on the conservation goals to be fulfilled by grazing on the Preserve and discuss grazing frequency, timing, rotation, and RDM targets to better guide annual grazing practices on the Preserve.
- Continue spring peak forage monitoring in all units (except 4C and 5). This monitoring assesses the amount of forage available for grazing in a given year, allowing the grazing lessees to adjust their grazing regime (e.g., stocking density and grazing duration) with the RDM target values in mind to meet management targets.
- Continue long-term RDM monitoring in all units (except 4C and 5). This is important to make sure that RDM values do not exceed or drop below the range needed to meet the management targets and increase biodiversity.
- Invasive non-native plant mapping should be conducted throughout the Preserve annually, if feasible, per the monitoring recommendations in the TMP (ESA and ICF 2022).
- Continue active restoration of management unit 3E to remove invasive non-native plant species by a combination of mowing, herbicide treatment, and/or targeted grazing. Quantitative vegetation monitoring, such as Relevé assessment, is recommended within this management unit to document pre-restoration and post-restoration conditions.
- Seed bare ground surrounding water troughs. Extensive areas of bare ground were observed surrounding the water troughs during 2018–2023 surveys. Native grass seed should be planted around water troughs and in bare ground near water troughs to improve soil quality. Seed should be from a local, credible source or collected within the Preserve by hired seed collectors or DPR rangers who have been taught by a consultant how to collect native plant seeds. Plant species that could be distributed in areas with bare ground, such as those around the troughs, include purple needlegrass (*Stipa pulchra*), nodding needlegrass (*Stipa cernua*), wild rye (*Elymus triticoides*), and Lemmon's canary grass (*Phalaris lemmonii*). These species have been verified as native grasses found within the Preserve, according to the San Diego Natural History Museum (2011) Plant Atlas Database. Seeds should not come from outside of San Diego County.

- Conduct rare plant surveys throughout the Preserve at 10-year intervals in the spring and late summer, per the monitoring recommendations in the TMP (ESA and ICF 2022). Rare plants have been incidentally observed during RDM monitoring; however, these incidental observations are not representative of comprehensive rare plant surveys. Rare plant surveys should focus on areas with rare soils and sensitive habitats, and areas where rare plants have been recorded in the past. The rare plant surveys should be used to update the sensitive plant maps from the Vegetation Management Plan (ICF 2012), identify populations of sensitive species for more intensive monitoring, and determine if any new sensitive species are present. Following the completion of rare plant surveys, monitoring plots located within sensitive plant populations should be adjusted to avoid impacts to the species.
- Cattle grazing frequency and rotations should be carefully monitored to restrict access to vernal pool and playa habitat during the wet season[3] (typically November through March for Southern California), as well as when clay soils are still moist and malleable. Quantitative and qualitative monitoring frequency should follow the TMP-recommended frequencies (ESA and ICF 2022).
- Conduct SKR surveys, per the TMP (ESA and ICF 2022). SKR burrow count/sign surveys, quantitative habitat assessments, and SKR live trapping should be conducted to determine whether grazing is meeting management goals for this species, or if other management actions are needed.

If you have questions, please feel free to contact me at (530) 966-4294 or afrench@esassoc.com.

Sincerely,



Amanda French
Biologist

Attachments: Figure 1 – Preserve Location
Figure 2 – Monitoring Plot Locations
Figure 3 – RDM Plot Results
Attachment A – Results of 2011–2023 RDM Monitoring at the Preserve

[3] The vernal pool wet season can generally be defined as the period between winter and early spring, typically November through March for southern California. The start of the vernal pool wet season begins each year once a substantial precipitation event occurs (providing at least 0.5 inches) to wet the soil enough to start germination of vernal pool indicator species.

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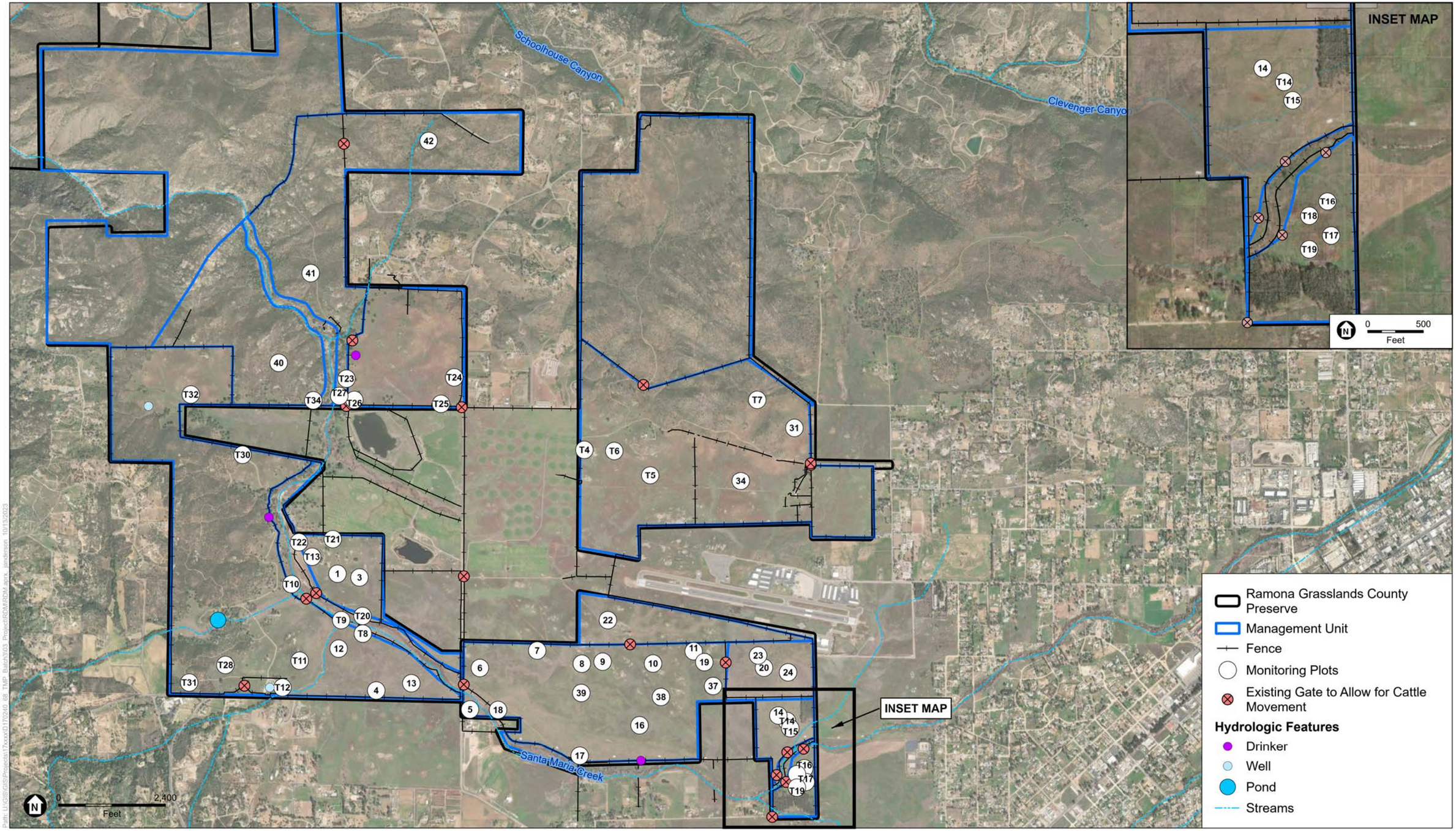
SOURCE: ESRI

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2023 Residual Dry Matter Monitoring Report

Figure 1
Preserve Location

ESA

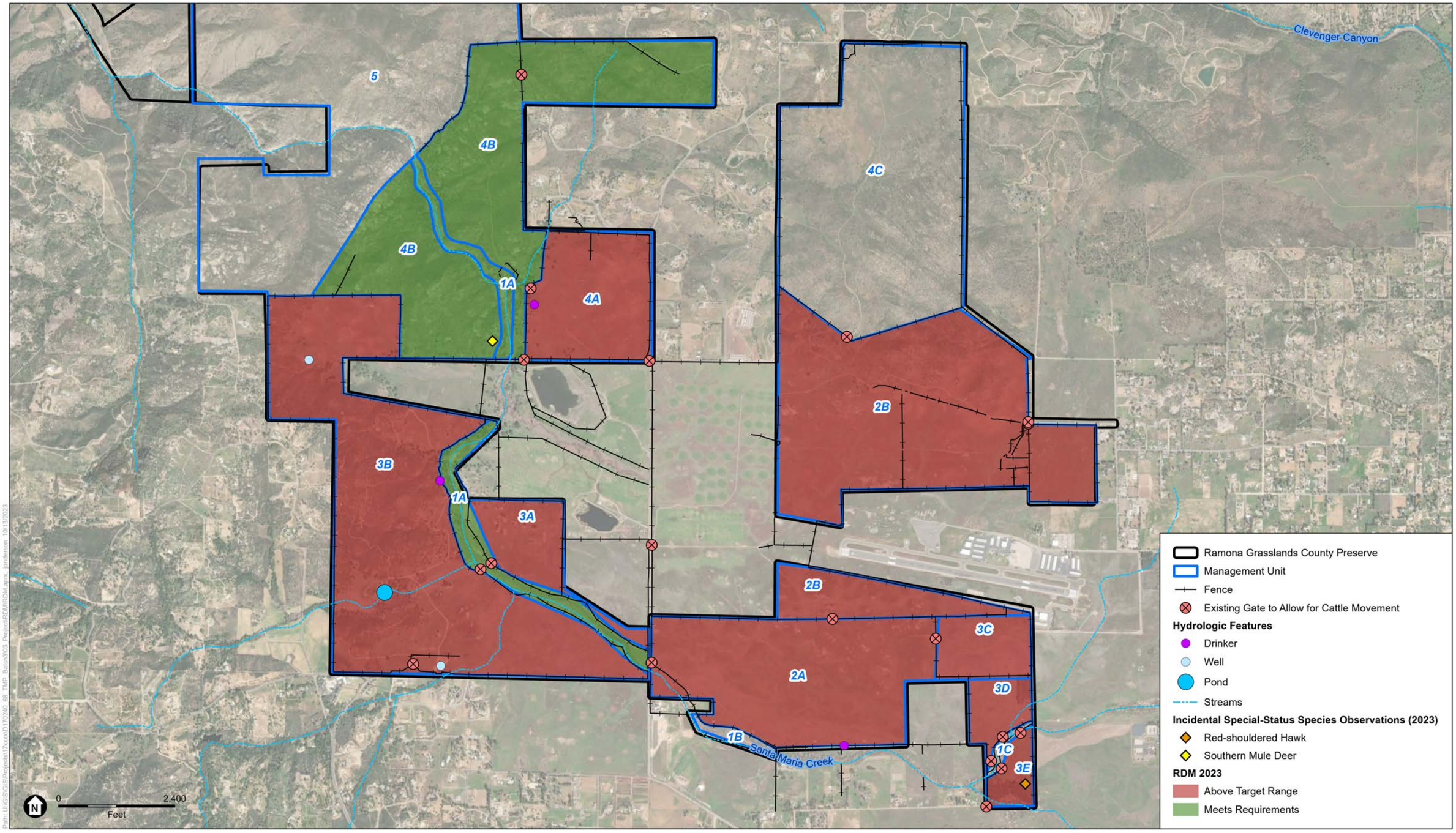


SOURCE: ESRI, AECOM 2017; ESA 2023

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2023 Residual Dry Matter Monitoring Report

Figure 2
Monitoring Plot Locations

ESA



SOURCE: ESRI, AECOM 2017; ESA 2023

COSD DPR 557744 TO 68 – Implementation of Targeted Monitoring Plan – 2023 Resource-Specific Monitoring and Management
Ramona Grasslands County Preserve Fall 2023 Residual Dry Matter Monitoring Report

Figure 3
RDM Plot Results

ESA

Attachment A

Results of 2011–2023
RDM Monitoring at the Preserve

TABLE A-1
RESULTS OF 2011–2023 RDM MONITORING AT THE PRESERVE

Management Unit	Plot #	Date Collected	Monitoring Plot Average (grams) 2011	Pounds per Acre 2011	Date Collected	Monitoring Plot Average (grams) 2012	Pounds per Acre 2012	Date Collected	Monitoring Plot Average (grams) 2013	Pounds per Acre 2013	Date Collected	Monitoring Plot Average (grams) 2014	Pounds per Acre 2014	Date Collected	Monitoring Plot Average (grams) 2015	Pounds per Acre 2015	Date Collected	Monitoring Plot Average (grams) 2016	Pounds per Acre 2016	Date Collected	Monitoring Plot Average (grams) 2017	Pounds per Acre 2017	Date Collected	Monitoring Plot Average (grams) 2018	Pounds per Acre 2018	Date Collected	Monitoring Plot Average (grams) 2019	Pounds per Acre 2019	Date Collected	Monitoring Plot Average (grams) 2020	Pounds per Acre 2020	Date Collected	Monitoring Plot Average (grams) 2021	Pounds per Acre 2021	Date Collected	Monitoring Plot Average (grams) 2022	Pounds per Acre 2022	Date Collected	Monitoring Plot Average (grams) 2023	Pounds per Acre 2023
1A	T9	10/4/2011	51.3	5133	10/10/2012	23.2	2320	10/9/2013	2	200	10/24/2014	2.4	240	10/21/2015	4.8	480	10/25/2016	16.3	1630	10/24/2017	4.2	420	12/27/2018	5	500	10/14/2019	27.7	2766.7	10/27/2020	40.33	4033	10/11/2021	33.67	3367	9/13/2022	25.33	2533	9/11/2023	20.3	2033
1A	T10	10/5/2011	25	2500	10/10/2012	18.8	1880	10/8/2013	12.6	1260	10/24/2014	4.9	490	10/21/2015	4.3	430	10/25/2016	3.3	330	10/24/2017	7.8	780	12/27/2018	0	0	10/14/2019	17.3	1733.3	10/27/2020	25.33	2533	10/11/2021	21.33	2133	9/13/2022	22.67	2267	9/11/2023	19.7	1967
1A	T20	10/5/2011	70.7	7067	10/10/2012	22.1	2210	10/9/2013	3	300	10/24/2014	6.3	630	10/21/2015	1.4	140	10/25/2016	5.7	570	10/24/2017	8.37	837	12/27/2018	2	200	10/14/2019	30.7	3066.7	10/27/2020	59.67	5967	10/11/2021	0.00	0	9/13/2022	26.33	2633	9/11/2023	0.0	0
2A	5	10/3/2011	93.7	9367	10/9/2012	37.5	3750	10/7/2013	26.6	2660	10/27/2014	26.1	2610	10/21/2015	5.6	560	10/27/2016	36	3600	10/26/2017	10.2	1020	12/28/2018	6.33	633	10/14/2019	57	5700	10/28/2020	33.67	3367	10/11/2021	36.00	3600	9/13/2022	16.67	1667	9/11/2023	21.7	2167
2A	6	10/3/2011	83.3	8333	10/9/2012	25.4	2540	10/7/2013	15	1500	10/27/2014	0.5	50	10/21/2015	5.9	590	10/27/2016	8	800	10/26/2017	2.5	250	12/27/2018	0	0	10/14/2019	32	3200	10/28/2020	29.67	2967	10/11/2021	20.00	2000	9/13/2022	15.67	1567	9/11/2023	37.3	3733
2A	7	10/3/2011	31	3100	10/9/2012	35.2	3520	10/10/2013	11	1100	10/27/2014	2.6	260	10/21/2015	12.7	1270	10/27/2016	1.3	130	10/26/2017	3.6	360	12/28/2018	0.67	67	10/14/2019	28	2800	10/28/2020	37.33	3733	10/11/2021	22.00	2200	9/13/2022	17.33	1733	9/11/2023	38.7	3867
2A	8	10/3/2011	66.7	6667	10/9/2012	35.2	2790	10/10/2013	22	2200	10/23/2014	5.4	540	10/22/2015	17.5	1750	10/27/2016	10	1000	10/26/2017	18.1	1810	12/28/2018	0.67	67	10/14/2019	39.3	3933.3	10/28/2020	46.67	4667	10/11/2021	27.00	2700	9/13/2022	20.00	2000	9/11/2023	29.7	2967
2A	9	10/3/2011	60.3	6033	10/9/2012	42.9	4290	10/10/2013	33	3300	10/23/2014	5.4	540	10/22/2015	17.8	1780	10/27/2016	3	300	10/26/2017	3.67	367	12/28/2018	1	100	10/14/2019	47.7	4766.7	10/28/2020	44.33	4433	10/11/2021	26.67	2667	9/13/2022	28.00	2800	9/11/2023	67.7	6767
2A	10	10/3/2011	44.7	4467	10/9/2012	31.9	3190	10/7/2013	17	1700	10/22/2014	3.7	370	10/22/2015	4.5	450	10/27/2016	9	900	10/26/2017	10.03	1003	12/28/2018	0.33	33	10/14/2019	34.3	3433.3	10/28/2020	35.33	3533	10/11/2021	21.67	2167	9/13/2022	22.00	2200	9/11/2023	25.7	2567
2A	11	10/4/2011	56	5600	10/9/2012	27.9	2790	10/8/2013	7.3	730	10/22/2014	3.4	340	10/22/2015	5.2	520	10/27/2016	21	2100	10/26/2017	11.9	1190	12/28/2018	1.33	133	10/14/2019	26	2600	10/28/2020	26.00	2600	10/11/2021	24.33	2433	9/13/2022	25.67	2567	9/11/2023	25.7	2567
2A	16	10/4/2011	60.7	6067	10/9/2012	31.2	3120	10/8/2013	19.3	1930	10/23/2014	2.3	230	10/22/2015	5.6	560	10/27/2016	30	3000	10/26/2017	10.8	1080	12/28/2018	1.33	133	10/14/2019	5	500	10/28/2020	17.67	1767	10/11/2021	20.33	2033	9/13/2022	17.00	1700	9/11/2023	18.7	1867
2A	17	10/4/2011	83.7	8367	10/3/2012	37.9	3790	10/7/2013	24.6	2460	10/27/2014	4.2	420	10/22/2015	6.2	620	10/27/2016	36	3600	10/26/2017	22.5	2250	12/28/2018	0.33	33	10/14/2019	39.3	3933.3	10/28/2020	37.33	3733	10/11/2021	25.67	2567	9/13/2022	40.00	4000	9/11/2023	66.7	6667
2A	18	10/3/2011	73	7300	10/3/2012	27.7	2770	10/7/2013	14.7	1470	10/27/2014	2.9	290	10/21/2015	13.2	1320	10/27/2016	6	600	10/26/2017	20.6	2060	12/28/2018	33.33	3333	10/14/2019	80	8000	10/28/2020	61.67	6167	10/11/2021	39.00	3900	9/13/2022	48.33	4833	9/11/2023	85.3	8533
2A	19	10/4/2011	40	4000	10/9/2012	35.7	3570	10/8/2013	9.3	930	10/22/2014	0.4	40	10/22/2015	31.9	3190	10/27/2016	8.6	860	10/26/2017	6.57	657	12/28/2018	1.33	133	10/14/2019	15.7	1566.7	10/28/2020	48.33	4833	10/11/2021	15.00	1500	9/13/2022	14.00	1400	9/11/2023	21.7	2167
2A	37	10/4/2011	56	5600	10/9/2012	44.5	4450	10/8/2013	7.6	760	10/22/2014	11.1	1110	10/22/2015	10.3	1030	10/27/2016	8.6	860	10/26/2017	9.83	983	12/28/2018	0.67	67	10/14/2019	8.7	866.7	10/28/2020	14.33	1433	10/11/2021	16.67	1667	9/13/2022	12.00	1200	9/11/2023	27.7	2767
2A	38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/14/2019	3.3	333.3	10/28/2020	21.33	2133	10/11/2021	12.00	1200	9/13/2022	16.67	1667	9/11/2023	34.0	3400
2A	39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/14/2019	13.7	1366.7	10/28/2020	15.67	1567	10/11/2021	22.33	2233	9/13/2022	12.67	1267	9/11/2023	43.7	4367
2B	22	10/3/2011	60	6000	10/9/2012	14.7	1470	10/7/2013	15	1500	10/23/2014	3.1	310	10/20/2015	34.1	3410	10/27/2016	8.6	860	10/26/2017	4.9	490	12/28/2018	21.67	2167	10/14/2019	61	6100	10/28/2020	56.33	5633	10/11/2021	19.33	1933	9/13/2022	6.33	633	9/12/2023	56.3	5633
2B	31	10/4/2011	26.3	2633	10/3/2012	19.7	1970	10/9/2013	3.6	360	10/22/2014	4.6	460	10/20/2015	7.7	770	10/26/2016	11.3	1130	10/25/2017	5.5	550	12/28/2018	0.67	67	10/15/2019	17.3	1733.3	10/29/2020	26.00	2600	10/12/2021	12.67	1267	9/13/2022	3.33	333	9/12/2023	22.0	2200
2B	34	10/4/2011	48.3	4833	10/3/2012	14.8	1480	10/7/2013	2	200	10/22/2014	2	200	10/20/2015	3.6	360	10/26/2016	16	1600	10/25/2017	7.2	720	12/28/2018	0.33	33	10/15/2019	22.3	2333.3	10/29/2020	34.00	3400	10/12/2021	37.33	3733	9/13/2022	18.67	1867	9/12/2023	31.3	3133
2B	T4	10/4/2011	37.3	3733	10/3/2012	28.8	2880	10/7/2013	9	900	10/22/2014	4.4	440	10/20/2015	6.1	610	10/26/2016	0	0	10/25/2017	6.67	667	12/28/2018	0.33	33	10/15/2019	29.7	2966.7	10/29/2020	26.67	2667	10/12/2021	32.33	3233	9/13/2022	7.33	733	9/12/2023	15.3	1533
2B	T5	10/4/2011	39.7	3967	10/3/2012	17.5	1750	10/7/2013	10	1000	10/22/2014	0.7	70	10/20/2015	21.9	2190	10/26/2016	1.7	170	10/25/2017	14.53	1453	12/28/2018	0.33	33	10/15/2019	37.3	3733.3	10/29/2020	35.00	3500	10/12/2021	51.67	5167	9/13/2022	36.33	3633	9/12/2023	32.0	3200
2B	T6	10/4/2011	24	2400	10/3/2012	11.2	1120	10/7/2013	19	1900	10/22/2014	3.9	390	10/20/2015	2.1	210	10/26/2016	3.7	370	10/25/2017	6.37	637	12/28/2018	0.33	33	10/15/2019	13.3	1333.3	10/29/2020	26.67	2667	10/12/2021	19.33	1933	9/13/2022	15.67	1567	9/12/2023	18.3	1833
2B	T7	10/4/2011	41.3	4133	10/3/2012	22.4	2240	10/7/2013	6.7	670	10/22/2014	2.4	240	10/20/2015	3.2	320	10/26/2016	11	1100	10/25/2017	10.73	1073	12/28/2018	0	0	10/15/2019	40.7	4066.7	10/29/2020	60.33	6033	10/12/2021	34.67	3467	9/13/2022	10.33	1033	9/12/2023	26.3	2633
3A	1	10/4/2011	36	3600	10/10/2012	31.5	3150	10/8/2013	4.6	460	10/24/2014	1.1	110	10/21/2015	3.3	330	10/25/2016	2	200	10/24/2017	18.83	1883	12/27/2018	0	0	10/14/2019	17	1700	10/27/2020	41.00	4100	10/11/2021	30.33	3033	9/13/2022	27.00	2700	9/12/2023	24.7	2467
3A	3	10/4/2011	22.3	2233	10/10/2012	15.4	1540	10/8/2013	1	100	10/24/2014	0.1	10	10/21/2015	0.9	90	10/25/2016	1	100	10/24/2017	13.4	1340	12/27/2018	0.33	33	10/14/2019	30.3	3033.3	10/27/2020	41.33	4133	10/11/2021	17.67	1767	9/13/2022	26.67	2667	9/12/2023	37.7	3767
3A	T13	10/5/2011	50.3	5033	10/10/2012	50	5000	10/9/2013	4	400	10/24/2014	2.8	280	10/21/2015	1.3	130	10/25/2016	1.3	130	10/24/2017	14.3	1430	12/27/2018	0.67	67	10/14/2019	4.7	466.7	10/27/2020	6.67	667	10/11/2021	23.00	2300	9/13/2022	12.67	1267	9/12/2023	11.0	1100
3A	T21	10/5/2011	17.7	1767	10/10/2012	34.8	3480	10/9/2013	5	500	10/24/2014	2.3	230	10/21/2015	3.7	370	10/25/2016	9.7	970	10/24/2017	12.43	1243	12/27/2018	0	0	10/14/2019	18.7	1866.7	10/27/2020	29.00	2900	10/11/2021	32.00	3200	9/13/2022	5.00	500	9/12/2023	21.3	2133
3A	T22	10/5/2011	24.3	2433	10/10/2012	8.1	810	10/9/2013	4.6	460	10/24/2014	0.5	50	10/21/2015	2.7	270	10/25/2016	0.1	10	10/24/2017	17.1	1710	12/27/2018	0	0	10/14/2019	17.7	1766.7	10/27/2020	12.00	1200	10/11/2021	24.00	2400	9/13/2022	10.00	1000	9/11/2023	27.7	2767
3B	4	10/3/2011	10	1000	10/9/2012	25	2500	10/7/2013	11	1100	10/23/2014	2.2	220	10/21/2015	0.5	50	10/25/2016	5.6	560	10/24/2017	5.73	573	12/27/2018	0.33	33	10/14/2019	18	1800	10/27/2020	16.67	1667	10/12/2021	36.00	3600	9/13/2022	17.33	1733	9/11/2023	28.0	2800
3B	12	10/4/2011	25.7	2567	10/10/2012	21.4	2140	10/9/2013	5.6	560	10/24/2014	8.9	890	10/21/2015	5.9	590	10/25/2016	12.7	1270	10/24/2017	10.4	1040	12/27/2018	1.33	133	10/14/2019	8	800	10/27/2020	6.00	600	10/12/2021	32.00	3200	9/13/2022	37.33	3733	9/11/2023	22.0	2200
3B	13	10/3/2011	36.7	3667	10/9/2012	32.9	3290	10/7/2013	25	2500	10/23/2014	11.5	1150	10/21/2015	4.9	490	10/25/2016	18	1800	10/24/2017	8.47	847	12/27/2018	0.67	67	10/14/2019	0.7	66.7	10/27/2020	13.67	1367	10/12/2021	25.00	2500	9/13/2022	14.67	1467	9/11/2023	9.7	967
3B	T8	10/4/2011	33.3	3,333	10/10/2012	15.2	1520	10/9/2013	1.6	160	10/24/2014	5.8	580	10/21/2015	2.7	270	10/25/2016	9.3	930	10/24/2017	9.33	933	12/27/2018	0.33	33	10/14/2019	12	1200	10/27/2020	26.00	2600	10/12/2021	23.67	2367	9/13/2022	17.00	1700	9/11/2023	20.7	2067
3B	T11	10/5/2011	29	2900	10/9/2012	30.6	3060	10/9/2013	0	0	10/27/2014	0.6	60	10/21/2015	4.1	410	10/25/2016	6.7	670	10/24/2017	6.47	647	12/27/2018	0	0	10/14/2019	37.7	3766.7	10/27/2020	57.33	5733	10/12/2021	24.33	2433	9/13/2022	40.67	4067	9/11/2023	27.7	2767
3B	T12	10/5/2011	12.3	1233	10/9/20212	45.1	4510	10/7/2013	10	1000	10/27/2014	0.8	80	10/21/2015	2.6	260	10/25/2016	12	1200	10/24/2017	5.33	533	12/27/2018	0	0	10/14/2019	27	2700	10/28/2020	20.00	2000	10/12/2021	19.00	1900	9/13/2022	15.67	1567	9/11/2023	18.3	1833
3B	T28	10/21/2011	28	2800	10/9/2012	19.5	1950	10/9/2013	4.6	460	10/27/2014	2.1	210	10/21/2015	2.9	290	10/25/2016	0	0	10/24/2017	4.53	453	12/27/2018	0	0	10/14/2019	62.3	6233.3	10/28/2020	52.00	5200	10/12/2021	15.67	1567	9/13/2022	29.33	2933	9/11/2023	39.7	3967
3B	T30	10/21/2011	31.5	3150	10/3/2012	16.8	1680	10/9/2013	1.6	160	10/24/2014	2.4	240	10/27/2015	5.6	560	10/26/2016	0	0	10/24/2017	11.67	1167	12/27/2018	0	0	10/15/2019	35.3	35833.3	10/27/2020	8.33	833	10/12/2021	22.33	2233	9/13/2022	3.00	300	9/11/2023	9.3	933
3B	T31	10/21/2011	15	1500	10/10/2012	20.3	2030	10/9/2013	2.1	210	10/27/2014	2.6	260	10/21/2015	6.1	610	10/25/2016	7	700	10/24/2017	9.03	903	12/27/2018	0	0	10/14/2019	0.3	33.3	10/28/2020	12.33	1233	10/12/2021	7.33	733	9/13/2022	6.67	667	9/11/2023	4.7	467
3B	T32	10/21/2011	30	3000	10/3/2012	13.7	1370	10/10/2013	2	200	10/24/2014	3.3	330	10/27/2015	3.2	320	10/26/2016	16.7	1670	10/24/2017	7.07	707	12/27/2018	0	0	10/15/2019	40.7	4066.7	10/27/2020	46.33	4633	10/12/2021	36.00	3600	9/13/2022	11.67	1167	9/11/2023	39.3	3933
3C	20	10/3/2011	58	5800	10/9/2012	35.7	3570	10/8/2013	16	1600	10/22/2014	7.7	770	10/22/2015	6.7	670	10/27/2016	20	2000	10/26/2017	7.6	760	12/28/2018	0.33	33	10/14/2019	25.3	2533.3	10/28/2020	21.33	2,133	10/11/2021	36.33	3633	9/13/2022	29.33	2933	9/11/2023	32.7	3267

Management Unit	Plot #	Date Collected	Monitoring Plot Average (grams) 2011	Pounds per Acre 2011	Date Collected	Monitoring Plot Average (grams) 2012	Pounds per Acre 2012	Date Collected	Monitoring Plot Average (grams) 2013	Pounds per Acre 2013	Date Collected	Monitoring Plot Average (grams) 2014	Pounds per Acre 2014	Date Collected	Monitoring Plot Average (grams) 2015	Pounds per Acre 2015	Date Collected	Monitoring Plot Average (grams) 2016	Pounds per Acre 2016	Date Collected	Monitoring Plot Average (grams) 2017	Pounds per Acre 2017	Date Collected	Monitoring Plot Average (grams) 2018	Pounds per Acre 2018	Date Collected	Monitoring Plot Average (grams) 2019	Pounds per Acre 2019	Date Collected	Monitoring Plot Average (grams) 2020	Pounds per Acre 2020	Date Collected	Monitoring Plot Average (grams) 2021	Pounds per Acre 2021	Date Collected	Monitoring Plot Average (grams) 2022	Pounds per Acre 2022	Date Collected	Monitoring Plot Average (grams) 2023	Pounds per Acre 2023
3C	23	10/4/2011	41	4100	10/9/2012	19.7	1970	10/8/2013	7.7	770	10/22/2014	7.9	790	10/22/2015	5.4	540	10/27/2016	13	1300	10/26/2017	7.63	763	12/28/2018	5	500	10/14/2019	45.7	4566.7	10/28/2020	15.67	1567	10/11/2021	29.00	2900	9/13/2022	11.00	1100	9/11/2023	28.7	2867
3C	24	10/3/2011	22.7	2267	10/9/2012	31.3	3130	10/8/2013	6.7	670	10/22/2014	8.7	870	10/22/2015	0	0	10/27/2016	13.3	1330	10/26/2017	12.33	1233	12/28/2018	1.67	167	10/14/2019	7.7	766.7	10/28/2020	26.00	2600	10/11/2021	46.00	4600	9/13/2022	33.33	3333	9/11/2023	46.7	4667
3D	14	10/4/2011	93	9300	10/9/2012	23.3	2330	10/9/2013	17.6	1760	10/23/2014	14.4	1440	10/20/2015	0.1	10	10/27/2016	18	1800	10/25/2017	7.73	773	12/28/2018	1	100	10/14/2019	4.7	466.7	10/28/2020	22.33	2233	10/11/2021	27.00	2700	9/13/2022	23.67	2367	9/11/2023	38.0	3800
3D	T14	10/5/2011	46.3	4633	10/9/2012	45.6	4560	10/9/2013	12	1,200	10/23/2014	10.9	1090	10/22/2015	0.4	40	10/27/2016	7	700	10/25/2017	7.57	757	12/28/2018	1	100	10/14/2019	1.3	133.3	10/28/2020	14.33	1433	10/11/2021	27.67	2767	9/13/2022	26.00	2600	9/11/2023	14.0	1400
3D	T15	10/5/2011	66.3	6633	10/9/2012	43.3	4330	10/9/2013	12.6	1260	10/23/2014	18.2	1820	10/22/2015	10.6	1060	10/27/2016	10.7	1070	10/25/2017	5.97	597	12/28/2018	3	300	10/14/2019	8.7	866.7	10/28/2020	17.33	1733	10/11/2021	24.00	2400	9/13/2022	26.00	2600	9/11/2023	28.0	2800
3E	T16	10/5/2011	0	0	10/10/2012	330	330	10/7/2013	25	2500	10/23/2014	6.7	670	10/22/2015	5.3	530	*	*	*	10/25/2017	92.7	9270	12/28/2018	89	8900	10/14/2019	1.7	166.7	10/28/2020	0.00	0	10/11/2021	27.00	2700	9/13/2022	66.00	6600	9/11/2023	136.7	13667
3E	T17	10/5/2011	0	0	10/10/2012	0	0	10/7/2013	22	2200	10/23/2014	8.5	850	10/22/2015	27.4	2740	*	*	*	10/25/2017	44.87	4487	12/28/2018	0.33	33	10/14/2019	0	0	10/28/2020	0.00	0	10/11/2021	0.00	0	9/13/2022	28.00	2800	9/11/2023	0.0	0
3E	T18	10/5/2011	0	0	10/10/2012	160	160	10/7/2013	26	2600	10/23/2014	34.5	3450	10/22/2015	13.6	1,360	*	*	*	10/25/2017	59.37	5937	12/28/2018	75.67	7567	10/14/2019	10	1000	10/28/2020	4.00	400	10/11/2021	37.00	3700	9/13/2022	80.67	8067	9/11/2023	84.3	8433
3E	T19	10/5/2011	0	0	10/10/2012	0	0	10/7/2013	28.6	2860	10/23/2014	12.2	1220	10/22/2015	6.9	690	*	*	*	10/25/2017	0	0	12/28/2018	71.33	7133	10/14/2019	25.3	2533.3	10/28/2020	37.00	3700	10/11/2021	43.00	4300	9/13/2022	49.67	4967	9/11/2023	53.3	5333
4A	T24	10/5/2011	35.3	3533	10/3/2012	24	2400	10/10/2013	22	2200	10/24/2014	0	0	10/21/2015	5.5	550	10/25/2016	0.7	70	10/25/2017	5.17	517	12/27/2018	1.33	133	10/15/2019	34.3	3433.3	10/27/2020	23.00	2300	10/12/2021	15.00	1500	9/13/2022	6.33	633	9/12/2023	20.3	2033
4A	T25	10/5/2011	42.7	4267	10/3/2012	17.3	1730	10/9/2013	11.6	1160	10/24/2014	1.2	120	10/21/2015	1.6	160	10/25/2016	7	700	10/25/2017	7.93	793	12/27/2018	0.33	33	10/15/2019	29.7	2966.7	10/27/2020	26.33	2633	10/12/2021	13.00	1300	9/13/2022	12.67	1267	9/12/2023	17.3	1733
4A	T26	10/5/2011	45.7	4567	10/3/2012	30.9	3090	10/8/2013	29	2900	10/24/2014	1.8	180	10/20/2015	8.3	830	10/26/2016	19	1900	10/25/2017	13.17	1317	12/27/2018	0.67	67	10/15/2019	11.7	1166.7	10/27/2020	7.33	733	10/12/2021	10.00	1000	9/13/2022	8.33	833	9/12/2023	16.3	1633
4B	T23	10/5/2011	30.3	3033	10/3/2012	10.5	1050	10/10/2013	22.3	2230	10/24/2014	4.5	450	10/20/2015	0.2	20	10/25/2016	0	0	10/25/2017	1.73	173	12/27/2018	3.67	367	10/15/2019	5	500	10/27/2020	13.67	1367	10/12/2021	44.67	4467	9/13/2022	29.33	2933	9/12/2023	10.3	1033
4B	T27	10/5/2011	27.3	2733	10/3/2012	10.7	1070	10/8/2013	12.3	1230	10/27/2014	3.2	320	10/20/2015	30.9	3,090	10/26/2016	16.3	1630	10/25/2017	7.23	723	12/27/2018	0.33	33	10/15/2019	22.3	2233.3	10/27/2020	19.00	1900	10/12/2021	19.00	1900	9/13/2022	6.67	667	9/12/2023	10.7	1067
4B	T34	10/21/2011	23	2300	10/3/2012	13	1300	10/10/2013	1.7	170	10/27/2014	4.3	430	10/20/2015	0.5	50	10/26/2016	2.7	270	10/25/2017	8.23	823	12/27/2018	3.33	333	10/15/2019	9.3	933.3	10/27/2020	16.00	1600	10/12/2021	26.33	2633	9/13/2022	18.67	1867	9/12/2023	21.3	2133
4B	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/15/2019	3.3	333.3	10/27/2020	0.00	0	10/12/2021	0.00	0	9/13/2022	0.00	0	9/12/2023	0.0	0
4B	41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/15/2019	17.7	1766.7	10/27/2020	27.33	2733	10/12/2021	24.00	2400	9/13/2022	11.67	1167	9/12/2023	28.0	2800
4B	42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/15/2019	27.3	2733.3	10/27/2020	19.67	1967	10/12/2021	8.33	833	9/13/2022	10.00	1000	9/12/2023	7.3	733

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