

**SANTA CLARA VALLEY HABITAT PLAN
6TH ANNUAL REPORT
FY2019–2020**

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ERRATA SHEET

SANTA CLARA VALLEY HABITAT AGENCY

FISCAL YEAR 2019-2020 ANNUAL REPORT

Page	Paragraph/Line	Revision
ES-5	Delete 1 st and 4 th bullet of LAG text	Removed as not accurate. Wintering Burrowing Owl Study was completed in the prior reporting year and the Tiburon Paintbrush Project was not LAG funded.
ES-5	Added new bullets for Herp Linkage and Hydroperiod LAG studies initiated in reporting year	Added missing report updates
ES-5	Added new bullet for Pajaro River Riparian Restoration Project	New LAG awarded funding
5-2	Edit text in first paragraph of Section 5.1.1.1	Burrowing Owl Conservation Easement at the Regional Wastewater Facility Bufferlands will be expanded from 72 to 201 acres
7-11	Deleted Wintering Burrowing Owl Monitoring and Tiburon Paintbrush Project subsections 7.2.1.1 and 7.2.1.4	Projects removed for reasons cited above
7-11 and 7-12	Added Herp Linkage and Hydroperiod Water Studies information to subsections 7.2.1.3 and 7.2.1.4	Omitted LAG studies were added
7-13	Added Section 7.2.2.2 Pajaro River Riparian Restoration Project	Added omitted study
Global Update	In all sections relevant to occupied burrowing owl habitat impacts	Immediately following completion of the reporting year, a project was found to have permanently impacted approximately 17 acres of this habitat type, where only temporary impacts were assumed. This will result in 17 fewer acres of temporary, but 17 more acres of permanent impacts to occupied burrowing owl habitat that will be cited in the FY 2020-2021 Annual Report

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Acronyms and Abbreviations

°C	Celsius
Caltrans	California Department of Transportation
CAZ	Conservation Analysis Zone
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
Co-Permittees	Cities of San José, Gilroy, and Morgan Hill; County of Santa Clara; Santa Clara Valley Water District; Santa Clara Valley Transportation Authority
County	County of Santa Clara
Creekside Science	Creekside Center for Earth Observation
CROSP	Coyote Ridge Open Space Preserve
FMP	Fire Management Plan
FY1920	Fiscal Year 2019–2020
Habitat Agency	Santa Clara Valley Habitat Agency
Habitat Plan	Santa Clara Valley Habitat Plan
HCP	Habitat Conservation Plan
ILF	In-Lieu-Fee
IRT	Interagency Review Team
LAG	Local Assistance Grant
NCCP	Natural Community Conservation Plan
PBCS	Point Blue Conservation Science
Permit Area	Habitat Plan Permit Area
PG&E	Pacific Gas and Electric Company
PHS	Peninsula Humane Society
PSE	Participating Special Entity
RDM	residual dry matter
Refuge	Don Edwards National Wildlife Refuge
RGP	Regional General Permit
San Felipe Project	San Felipe Creek Restoration Project
SCVWD	Santa Clara Valley Water District
SFBBO	San Francisco Bay Bird Observatory
RWF, or bufferlands	San José-Santa Clara Regional Wastewater Facility bufferlands
STRAW	Students and Teachers Restoring a Watershed
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UTC	United Technology Corporation
VTA	Santa Clara Valley Transportation Authority
Warm Springs	Warm Springs Unit
Wildlife Agencies	U.S. Fish and Wildlife Service and California Department of Fish and Wildlife

Executive Summary

This is the sixth Annual Report for the *Santa Clara Valley Habitat Plan* (Habitat Plan). Prepared by the Santa Clara Valley Habitat Agency (Habitat Agency), it summarizes implementation activities undertaken during the reporting year (July 1, 2019, through June 30, 2020) and cumulatively through permit term year 7 of 50 per the conditions of the Habitat Plan.

The Habitat Plan offers a streamlined permitting process for development activities while protecting, enhancing, and restoring valuable natural resources in Santa Clara County and contributing to the recovery of threatened and endangered species. It provides a regional conservation and development framework that protects natural resources while improving and streamlining the permit process for take coverage of state-listed and federally listed species and impacts on sensitive habitat and resources. Permits issued by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) in 2013 allow the Co-Permittees¹ to comply with the federal Endangered Species Act and California’s Natural Community Conservation Planning Act. Over the 50-year permit term, impacts from urban development and rural infrastructure projects will be offset by the creation of a Reserve System managed for the benefit of 18 covered species, as well as the natural communities that they—and hundreds of other species—depend on for habitat.

At a Glance

The Annual Report is a complex and metric heavy document. There are several figures at the end of the Executive Summary that summarize Habitat Plan progress based on program assumptions and permit requirements. The reporting year is 7 of the 50-year permit term, or 14% of the permit term.

Figure ES-1 thru **Figure ES-3** display reporting year and cumulative covered project information.

Figure ES-4 displays the percent of impacts incurred, conservation achieved, and funding received.

Figure ES-5 and **Figure ES-6** display Stay-Ahead compliance for natural communities, burrowing owl, and plant occurrences.

Figure ES-7 and **Figure ES-8** display reporting year and cumulative revenues received. **Figure ES-9** displays expenditures by the Habitat Agency, land acquisition by partners, and grants expended by partners that contribute to Habitat Plan implementation.

Figure ES-10 displays the percent of impacts incurred and preservation achieved for terrestrial land cover types. **Figure ES-11** summarizes the same plus restoration/creation achieved for aquatic land cover types.

Figure ES-12 and **ES-13** summarize impacts and preservation for wildlife and plant modeled habitat.

¹ The Co-Permittees are the County of Santa Clara; the cities of Gilroy, Morgan Hill, and San José; the Santa Clara Valley Habitat Agency; the Santa Clara Valley Water District; and the Santa Clara Valley Transportation Authority.

Covered Activities

The Habitat Plan describes the activities and projects within the Habitat Plan Permit Area (Permit Area) that are covered by its permits and for which the Habitat Plan provides avoidance, minimization, and compensation (i.e., conservation) for impacts on covered species and natural communities.

During the reporting period, 27 projects received coverage under the Habitat Plan: 15 private projects, 10 public projects, and 2 Participating Special Entity (PSE) projects (**Figure ES-1**). The covered projects consisted of 12 urban development projects, 5 in-stream operations and maintenance activities, 4 rural operations and maintenance projects, 4 rural development projects, and 2 conservation strategy implementation projects.

The 27 projects resulted in 118 acres of permanent impacts and 37 acres of temporary impacts on land cover. Impacts resulting from covered activities were tracked by land cover type, modeled species habitat, and covered plant occurrences. Impacts on aquatic land cover types during the reporting period spanned three different watersheds—Coyote, Uvas, and Guadalupe. During the reporting period, no covered plants were removed.

A total of 312² projects have received take coverage under the Habitat Plan since permit issuance (**Figure ES-2** and **Figure ES-3**). Cumulative land cover impacts total 2,232 acres of permanent, 350 acres of temporary, and 630 feet of permanent and 893 feet of temporary impacts on streams (**Figure ES-3**). Of the 312 projects, 180 were private, 112 were public, and 20 were PSE projects. Covered activity types include 171 urban development projects, 19 in-stream operations and maintenance activities, 12 in-stream capital projects, 43 rural operations and maintenance projects, 38 rural development projects, 17 rural capital projects, and 12 conservation strategy implementation projects.

Project impacts have largely occurred in urban and agricultural areas, 41% and 38% respectively, with only 21% occurring in natural lands. This results in lower fees paid as most projects avoid high-fee sensitive land cover types. For this reason, the impacts accrued appear to outpace the fees paid shown in **Figure ES-4**. As more natural lands are developed and sensitive land cover types impacted, the fees paid will increase.

Land Acquisition

The Reserve System totals 3,042 acres with about 10% of the conservation target being achieved (**Figure ES-4**). An additional 920 acres are under management agreements for western burrowing owl. The Reserve System includes 14 land cover types and nearly 24 miles of stream. Rare serpentine bunchgrass grassland is the most prevalent (1,563 acres). The Reserve System fulfills over 40% of the modeled habitat protection goals for six of these covered species—Bay checkerspot butterfly, Mount Hamilton thistle, fragrant fritillary, smooth lessingia, Metcalf Canyon jewelflower, and most beautiful jewelflower. Occurrences of Mount Hamilton thistle, Santa Clara Valley dudleya, fragrant fritillary, Loma Prieta hoita, Metcalf Canyon jewelflower, and most beautiful jewelflower and occupied breeding ponds for California red-legged frog and California tiger salamander are also

² Four projects from FY1819 were removed from the cumulative total as these were Nitrogen Deposition Only Projects.

protected. The Reserve System contributes to the protection of nine landscape linkages, two on the Coyote Ridge Open Space Preserve (CROSP; #6, #7); four on the Tulare Hill Wedge Reserve (#6, #7, #8, and #9), two on the Uvas South Reserve (#12 and #13), one on the Davidson/Tilton Ranch South Reserves (#11), and two on the Pacheco Creek Reserve (#15 and #17).

Five new properties were acquired during the FY1920 reporting year including Tulare Hill Wedge Reserve (36 acres), Uvas South Reserve (347 acres), Davidson Reserve (94 acres), Tilton South Reserve (602 acres), and Ciraulo (103 acres), which is an extension of the Pacheco Creek Reserve.

Habitat Restoration and Creation

No new restoration projects were initiated in Fiscal Year 2019–2020 (FY1920). Five prior restoration projects were progressing through their respective management and monitoring periods, and four projects were in the planning phase. Cumulatively, restoration projects have restored nearly 5 acres of riparian woodlands, 4.5 acres of perennial and seasonal wetlands and ponds, and 1.83 miles of streams. They have benefitted 5 of 18 covered species—California red-legged frog, California tiger salamander, western pond turtle, Mount Hamilton thistle, and Coyote ceanothus. One project improved a regional connection between the Diablo Range and Santa Cruz Mountains. Restoration projects span the Alamitos, Coyote, Pacheco, and Pajaro Watersheds.

Western Burrowing Owl Management and Monitoring

The Habitat Agency manages two of five western burrowing owl breeding sites and conducts surveys throughout the Permit Area and Extended Permit Area for burrowing owl conservation. Management agreements with the San José-Santa Clara Regional Wastewater Facility (RWF) and the Don Edwards San Francisco National Wildlife Refuge include 920 acres of burrowing owl breeding habitat, approximately 17% of the total required under the Habitat Plan.

During this seventh annual breeding season survey, South Bay burrowing owl breeding locations decreased by one for the second consecutive year since monitoring began in 2014, and now stands at four. However, the number of owls increased from 33 to 38 adults between 2019 and 2020. The average number of offspring per pair remained relatively stable at 3.67 offspring per pair in 2020. The stable offspring rate is partly attributed to supplemental feeding.

Three female burrowing owls were relocated to the San José-Santa Clara Regional Wastewater Facility bufferlands as part of the Juvenile Overwintering Project. They were released into one hacking enclosure on February 21, 2020. After the enclosure was removed on March 6, 2020, one of the females was never resighted post-release; the two others found mates and remained on site for the breeding season. One of these females was successful and produced four young.

In addition to the annual breeding season surveys described above, the Habitat Agency conducted Tier 3 recovery actions in 2019 and 2020. These actions included the following:

- Captive-rearing of juvenile burrowing owl to reduce mortality and increase the number of breeding owls for the next year.
- Release of overwintered owls at existing and new breeding sites to expand existing colonies and establish new ones. These sites will also be managed by the Habitat Agency via a management

agreement. Supplemental feeding during the breeding season at select sites to improve nesting success, brood size, and health of adult owls and their chicks.

- Captive breeding of burrowing owls for eventual active translocation to new breeding sites. In 2020, a proposal was submitted to the USFWS and CDFW, and has since been approved. Implementation of the Santa Clara Valley Habitat Agency Burrowing Owl Captive Breeding Program will begin in 2021.

Reserve System Management

The Habitat Agency manages two Reserve System properties—the CROSP³ and Pacheco Creek Reserve. Treatment of invasive plant species, implementation of the feral pig depredation program, monitoring of residual dry matter, water source planning, road maintenance, and fence repair were completed at the CROSP. The Rancho Santa Ana Botanic Garden established five permanent conservation seed collections of Santa Clara Valley dudleya, Mount Hamilton thistle, smooth lessingia, Tiburon paintbrush and fragrant fritillary at the California Seed Bank from seeds collected from the CROSP and Paintbrush Hill on Coyote Ridge.

Management actions performed on the Pacheco Creek Reserve included trash removal, maintenance of the solar well pump and irrigation system, and weed abatement within restoration planting sites.

Monitoring, Research, and Adaptive Management

The monitoring and adaptive management program informs and improves conservation actions in the Reserve System and ensures that the Habitat Plan achieves its biological goals and objectives.

Coyote Ridge Open Space Preserve

Monitoring included surveys for Bay checkerspot butterfly and serpentine grassland composition. The following summarizes the results.

- The number of Bay checkerspot butterfly (*Euphydryas editha bayensis*) larvae in 2020 was approximately 182,000 individuals, which is approximately 20-30% of the total Bay checkerspot butterfly population across Coyote Ridge. Even with the one-third decline from last year's estimate, this is still a high number, and definitely within the norm of historical variability. Adult surveys illustrated that Bay checkerspot butterfly are found throughout Coyote Ridge and were encountered at rates ranging from 6 to 27 butterflies/hour (Creekside Center for Earth Observations 2020).
- The larvae and adult surveys illustrate some of the variability inherent in Bay checkerspot populations. The declines from 2016-2018 and 2020 do not indicate patterns outside the norm of historical variability, nor did the increase in 2019, given that Bay checkerspot populations follow a boom and bust cycle based on weather patterns and host plant abundance (Creekside Center for Earth Observations 2020).

³ The CROSP is managed by the Santa Clara Valley Open Space Authority via a management agreement with the Habitat Agency.

- Native cover decreased to low and moderate levels in 2020. Cover ranged from 20.1% to 28.8%. Native richness remained stable at high values at the southern and central portions of Coyote Ridge and slightly decreased in the northern section. Cover had high values ranging from 11.7 species in the north to 13.6 species in the central portion of the preserve. Nonnative cover remained high in the south this year but decreased noticeably in the northern and central portions. It was highest in the south (24.5%) and lowest in the central and northern sections (10.0% and 9.3%, respectively) (Creekside Center for Earth Observations 2020).
- The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat. Bay checkerspot host plants and nectar sources were very low this year, with declines in dwarf plantain, but all remain within the range of historical variability seen throughout Coyote Ridge. The results indicate that: (1) The low rainfall in 2020 affected vegetation, especially the dry spell where no rain fell from late January to early March, making overall plant cover low; (2) Regionally, Bay checkerspot butterfly host and nectar sources were low, although they appeared adequate to support the life cycle; (3) vegetative composition parameters aren't tightly correlated with Bay checkerspot abundance; and (4) low cover of dwarf plantain is sufficient for this taxon. This is illustrated by the fact that central portion of the preserve had the highest habitat quality with the highest dwarf plantain and perennial forbs cover, but had low larval densities over the past 5 years (including wet, average, and dry water years) (Creekside Center for Earth Observations 2020). In conclusion, weather is a key driver of Bay checkerspot butterfly highs and lows, and there is a wide variability of management regimes that allow Bay checkerspot butterfly to persist and even thrive.

Local Assistance Grant Program

Researchers in the Habitat Plan area continue to benefit from the CDFW's Natural Community Conservation Plan (NCCP) Local Assistance Grant (LAG) Program. The LAG Program provides state funds for urgent tasks associated with the implementation of approved NCCPs. The grant research activities completed during the reporting period included the following research projects.

- Wintering Burrowing Owl Monitoring
- Establish Baseline of Smooth Lessingia using High-Resolution Multispectral Aerial Imagery
- Pacheco Creek Restoration Project
- Tiburon Indian Paintbrush Project

Awarded LAG-funded projects during the reporting period include the following:

- Coyote Ridge Open Space Preserve Fire Management Plan

Stay-Ahead Provision

Reserve System lands with a conservation easement, restoration or creation projects approved by the Wildlife Agencies, and lands under management agreements count toward Stay-Ahead Provision compliance.⁴ Stay-Ahead requirements are being met or exceeded in the following resources (**Figure ES-5** and **Figure ES-6**).

- Conifer woodlands
- Chaparral northern coastal scrub
- Oak woodlands
- Riparian forest and scrub
- Ponds
- Streams
- Western burrowing owl occupied nesting habitat⁵
- Mount Hamilton thistle
- Santa Clara Valley dudleya
- Fragrant fritillary
- Loma Prieta hoita
- Smooth lessingia⁶
- Metcalf Canyon jewelflower
- Most beautiful jewelflower⁷
- Coyote ceanothus

⁴ Areas with “existing easements” (e.g., access, mitigation) or without conservation easements (e.g., Pacheco Creek Reserve) are not credited toward the Stay-Ahead provision compliance.

⁵ The western burrowing owl stay-ahead requirement measures two different compliance metrics— (1) **occupied nesting habitat**: impacts and conservation of occupied nesting habitat using a 3:1 ratio within a 10% deviation, and (2) **nesting habitat (rough proportionality)**: rough proportionality for impacts to occupied breeding habitat compared to conserved occupied nesting and potential breeding habitat within a 10-15% deviation. For both metrics, both lands enrolled in the Reserve System and lands under management agreements can be credited toward conservation. Additional detail on the burrowing owl stay-ahead requirement can be found on Habitat Plan pages 8-30 through 8-31.

⁶ Stay-ahead compliance for this species is the result of the refined definition of occurrences documented in the memorandum *Summary of Covered Plant Occurrences* (ICF 2018b) and a revision to impacts to this species.

⁷ *Almaden Dam Improvement Project Geotechnical Investigations* was permitted to allow for the removal of a most beautiful jewelflower occurrence (110 plants). Baseline surveys for this species indicated that the occurrence is more widely distributed than previously thought. Surveys were conducted in spring 2019 verify the occurrence of this species was not removed and includes over 800 plants.

Stay-Ahead compliance is not being met for the following resources. The Habitat Plan will not be in compliance with the Stay-ahead provision until an additional acreage is enrolled in the Reserve System.

- Grasslands
- Western burrowing nesting habitat (rough proportionality)^{8,9}
- Wetlands

The Habitat Agency continues to work in good faith with the Wildlife Agencies and Co-Permittees to comply with the Stay-Ahead provision. Five new land acquisitions occurred in the reporting year. Of these sites, four contributed to compliance for annual grasslands and three contributed to oak woodland compliance. Two contributed to riparian forest and scrub, chaparral scrub and wetlands. Three contributed to various serpentine land covers. Additionally, three of the acquisitions will protect extant plant occurrences of most beautiful jewelflower, smooth lessingia, Santa Clara Valley dudleya and Coyote ceanothus.

Enrollment of the Calero conservation easement area will result in compliance for grasslands, oak woodlands, riparian forest and scrub, and most beautiful jewelflower. Implementation of the planned restoration projects and the enrollment of the Calero County Park conservation easement area and the Pacheco Reserve will contribute to wetland and riparian forest and scrub compliance. Planned restoration projects are the Bolsa Fish Passage Project on Uvas-Carnadero Creek, Pacheco Creek Stream and Riparian Restoration Project on the Pacheco Creek Preserve, and Pajaro Creek Riparian and Stream Restoration Project on the Pajaro River Agricultural Preserve.

Valley Water continues to successfully implement the Coyote ceanothus creation project. The November 2018 status update for the Coyote ceanothus pilot study estimates that it could take an additional 10 years to establish a population of 2,000 plants. In November 2019, Valley Water installed 200 new container plants and 60 new seeded basins. Results from the 2020 annual monitoring indicate that the plantings are doing well. In addition, Valley Water has earmarked grant funding to acquire a Coyote ceanothus occurrence when a property becomes available. Two newly acquired properties, Tilton Ranch South (formerly known as Baird Ranch) and Davidson Ranch, share an occurrence of Coyote ceanothus and Valley Water contributed funding toward both of them.

⁸ The Habitat Agency has a total of 861.9 acres of occupied nesting habitat and 316.8 acres of potential nesting habitat under management agreements or enrolled in the Reserve System. The occupied nesting habitat is present on the lands over which the Habitat Agency has management agreements. The potential nesting habitat is present on these lands plus the Coyote Ridge Open Space Preserve.

⁹ The draft annual report indicated stay-ahead compliance for western burrowing. The compliance is being met for occupied habitat, but not nesting habitat rough proportionality. This is fully explained in Chapter 8, *Stay Ahead Provision*.

Changed and Unforeseen Circumstances

The “No Surprises” Regulation established by USFWS defines changed circumstances as those circumstances affecting a species or geographic area covered by a Habitat Conservation Plan (HCP) that can be reasonably anticipated by the applicant or the USFWS and to which the parties preparing the HCP can plan a response. Similarly, state regulation defines changed circumstances as those circumstances that are reasonably foreseeable and could affect a covered species or geographic area covered by the plan. One changed circumstance occurred during the reporting period.

- **Covered species becoming listed.** The West/Central Coast clade for the Foothill yellow-legged frog (*Rana boylei*) was listed as endangered under the California Endangered Species Act in March 2020.
- **Non-covered species becoming listed.** The mountain lion (*Puma concolor*) was listed as a candidate species under the California Endangered Species Act in April 2020.

Finances

The Habitat Agency’s available revenue, allocated budget, and expenditures varied from what was anticipated by the Habitat Plan. For Years 6-10, the Habitat Plan assumed \$11.7 million for its average annual expenditures. The FY1920 expenditures were \$4.1 million, 35% of what was estimated in the Habitat Plan. The Habitat Agency’s budget focused on program administration, land enrollment, land management activities, burrowing owl management, reserve management, monitoring, and restoration.

The Habitat Plan anticipates 55% of funding from fees and 45% from non-fee sources (**Figure ES-7**). The Habitat Agency received approximately \$12.5 million in funds during the reporting period from fee and non-fee funding sources. Fee funding totaled approximately \$2.6 million (21% of total revenues) across private, public, and PSE projects. Non-fee funding totaled approximately \$9.9 million (79%). This includes funds from six grants.

Program Administration

The Habitat Plan permits were issued in July 2013, and with the close of FY1920, the Habitat Agency neared 7 years of Habitat Plan implementation. This period focused on the advocacy and outreach, grants and funding, negotiations with landowners, monitoring of restoration projects, development of the in-lieu fee (ILF program) for the Habitat Agency’s Regional General Permit, climate change, and other conservation efforts.

Other activities include the following:

- **Permit Integration.** The Habitat Agency continued to refine a draft ILF program and Enabling Instrument for the Regional General Permit.
- **Database Development.** The Habitat Agency moved into Phase 2 development of a comprehensive database for covered project reporting, and resource management, monitoring and surveying within the Permit area. The new database will streamline review of information and data entry and will facilitate development of reports, including future annual reports.

- **Grants and Funding.** The Habitat Agency utilized \$8.0 of the \$8.0 million dollars secured during the previous reporting year for two land acquisitions. This funding is based on partnership agreement between the SCVWD and the Habitat Agency that would support the acquisition and management of Reserve System lands that would also support the water supply strategies in the SCVWD's 2017 Water Supply Master Plan (Santa Clara Valley Water District 2018).
- **New Staff.** The Habitat Agency hired three new staff members in the FY1920 reporting year. Julie King was hired full-time as the Agency's first Principal Land Management Specialist; Will Spangler was hired full-time as the Agency's first Senior Conservation Biologist; and Kim Rook was hired part-time as a conservation planner.

Figure ES-1. Covered Projects: Reporting Year

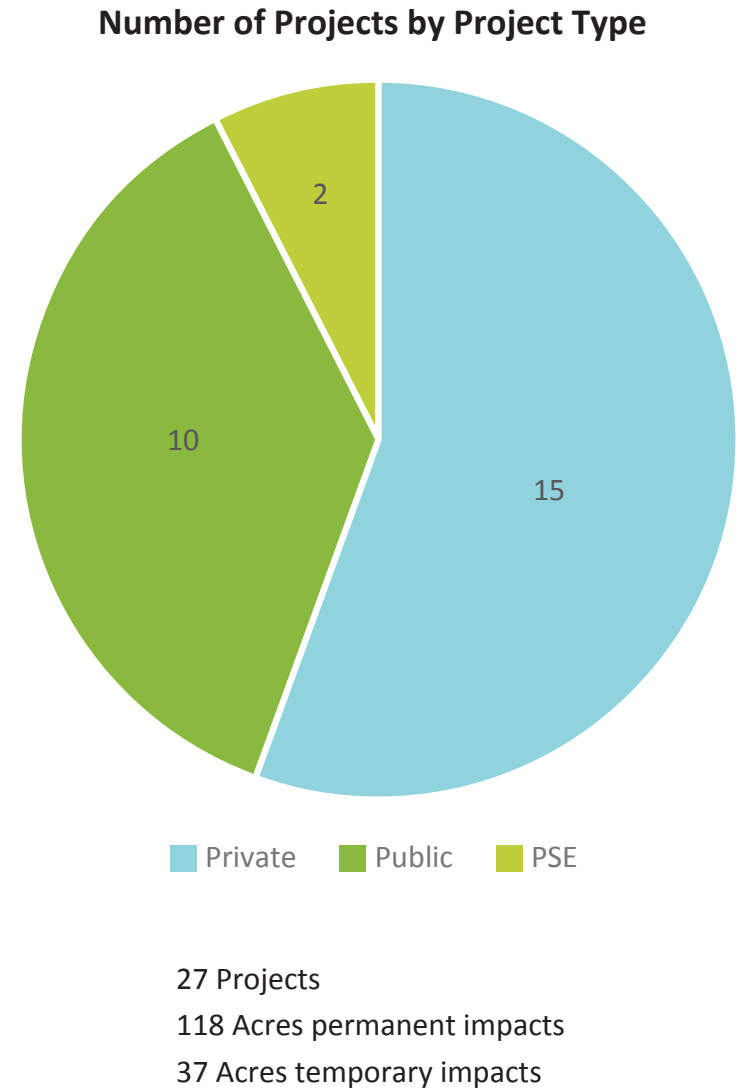
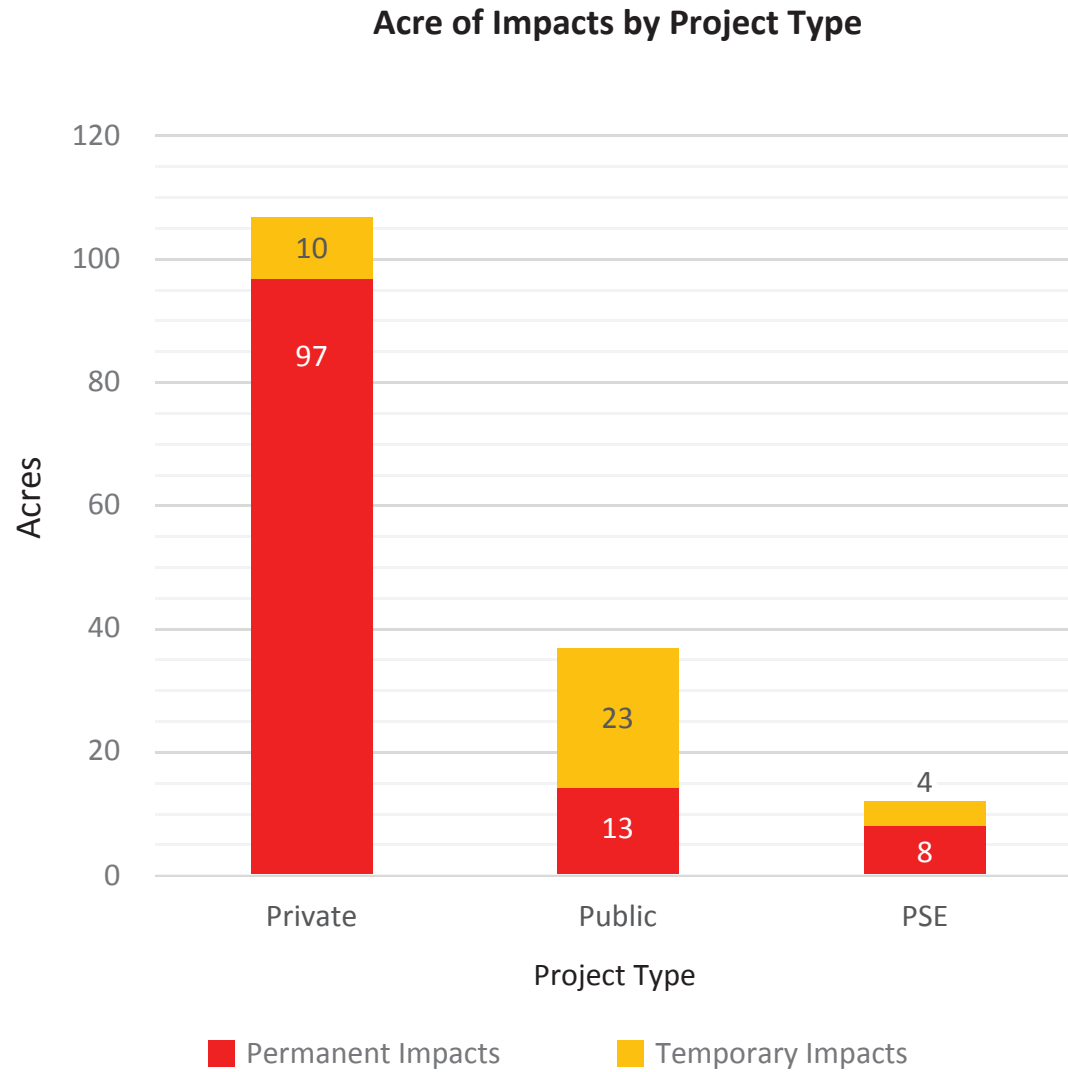
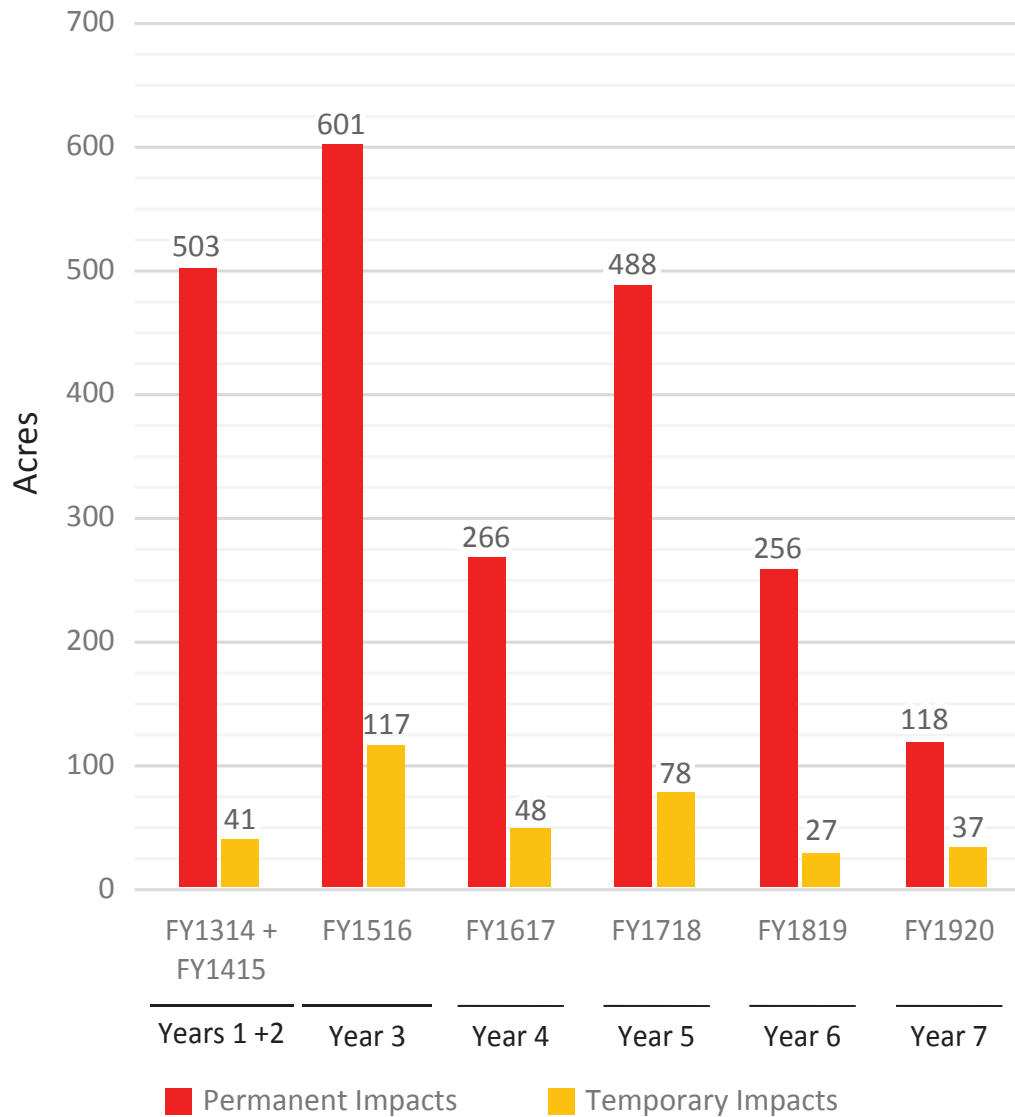


Figure ES-2. Covered Projects Impacts: Cumulative FY1314 through FY1920—Permit Year 7 of 50

Acres of Impact by Permit Year



Cumulative Impacts

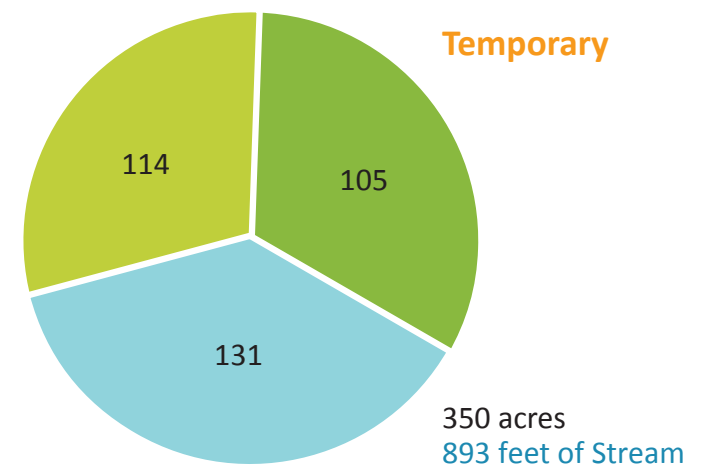
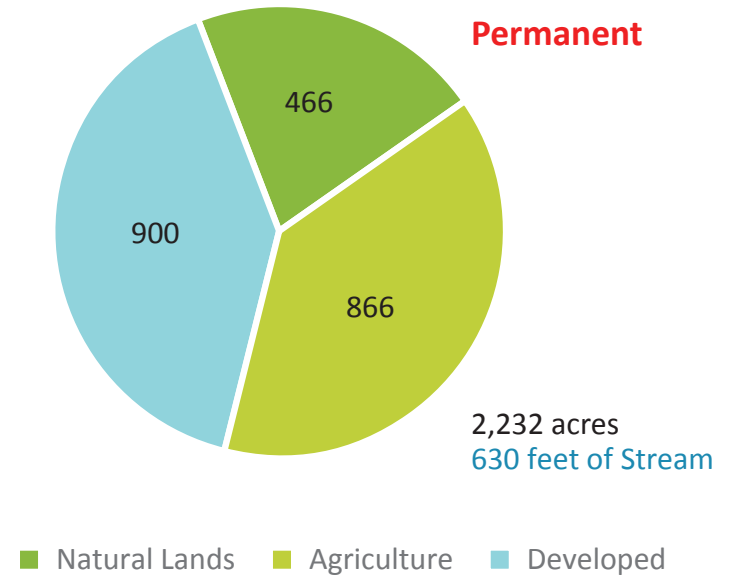


Figure ES-3. Covered Projects: Cumulative FY1314 through FY1920—Permit Year 7 of 50

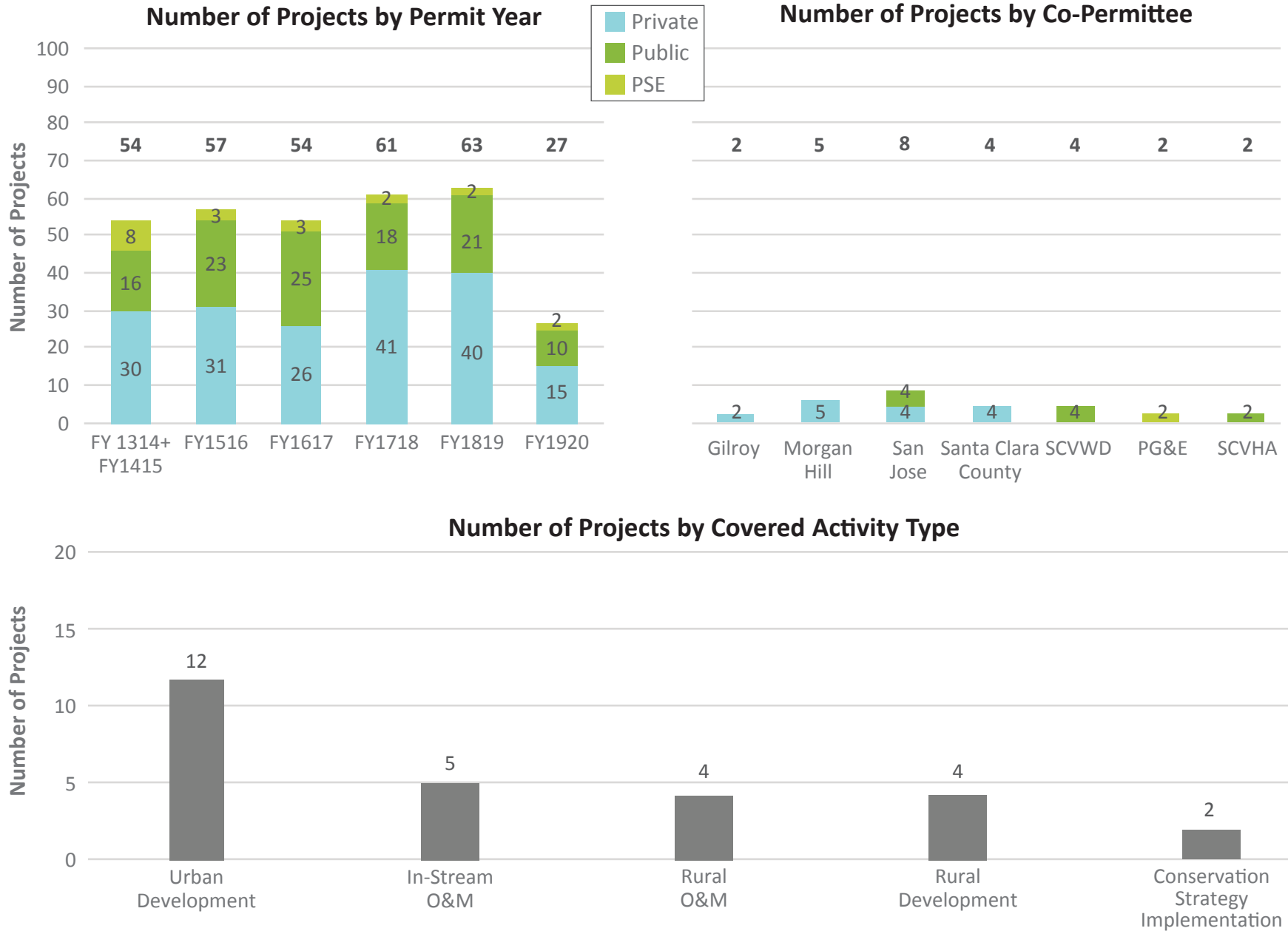
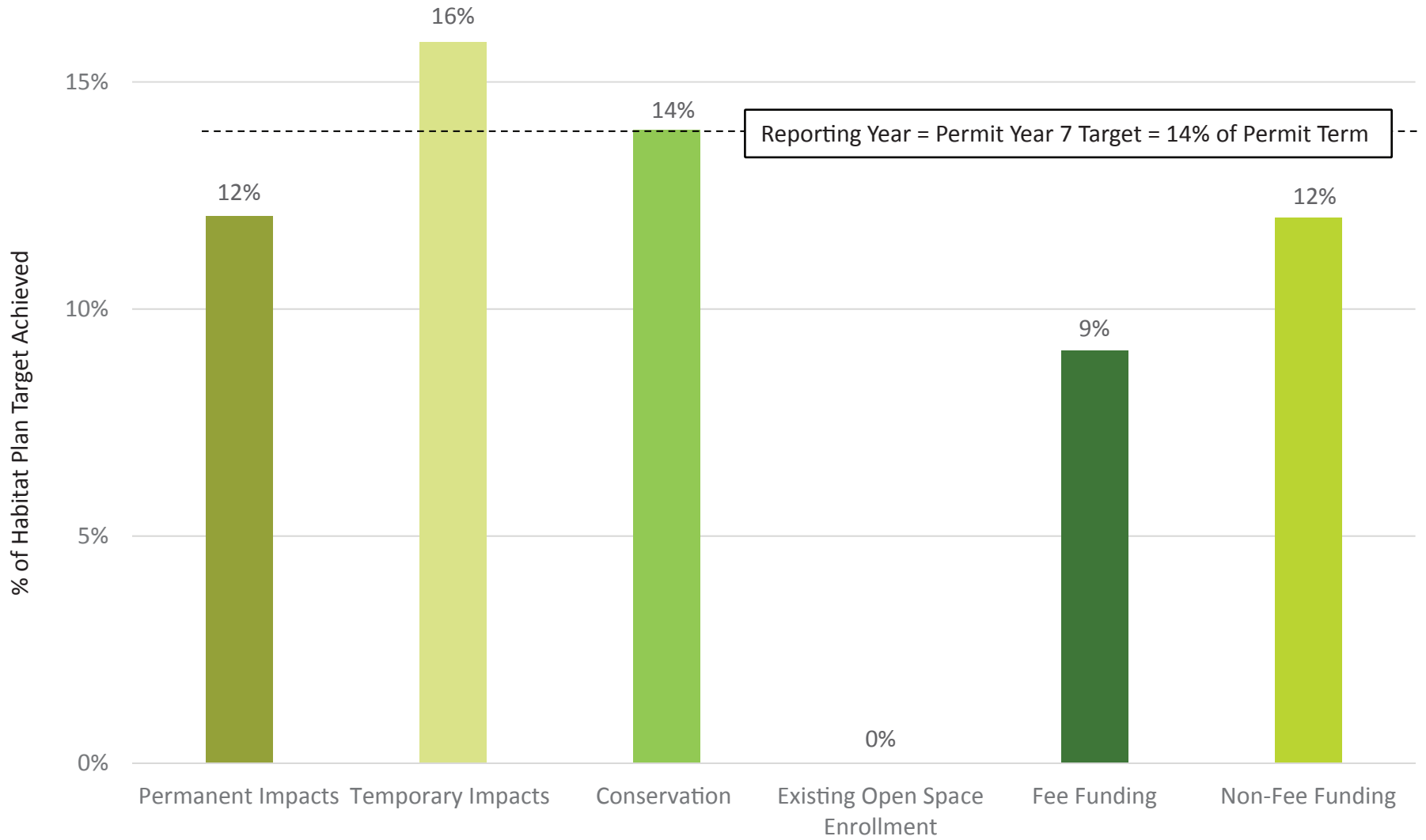


Figure ES-4. Habitat Plan Progress Summary: Impacts Incurred, Conservation Achieved, and Funding Received as Percent of Anticipated by Habitat Plan over 50-Year Permit Term



Status	2,232	350	4,795	0	\$33M	\$35M
Habitat Plan Target	17,976 acres	2,223 acres	34,580 acres (protection, restoration + creation)	13,291 acres	\$364M	\$294M

Figure ES-5a. Stay-Ahead Compliance for Natural Communities

Conservation Required = (% of Allowable Impacts Accrued)*(Conservation Total)
 Compliance = (Conservation Achieved)/(Conservation Required)

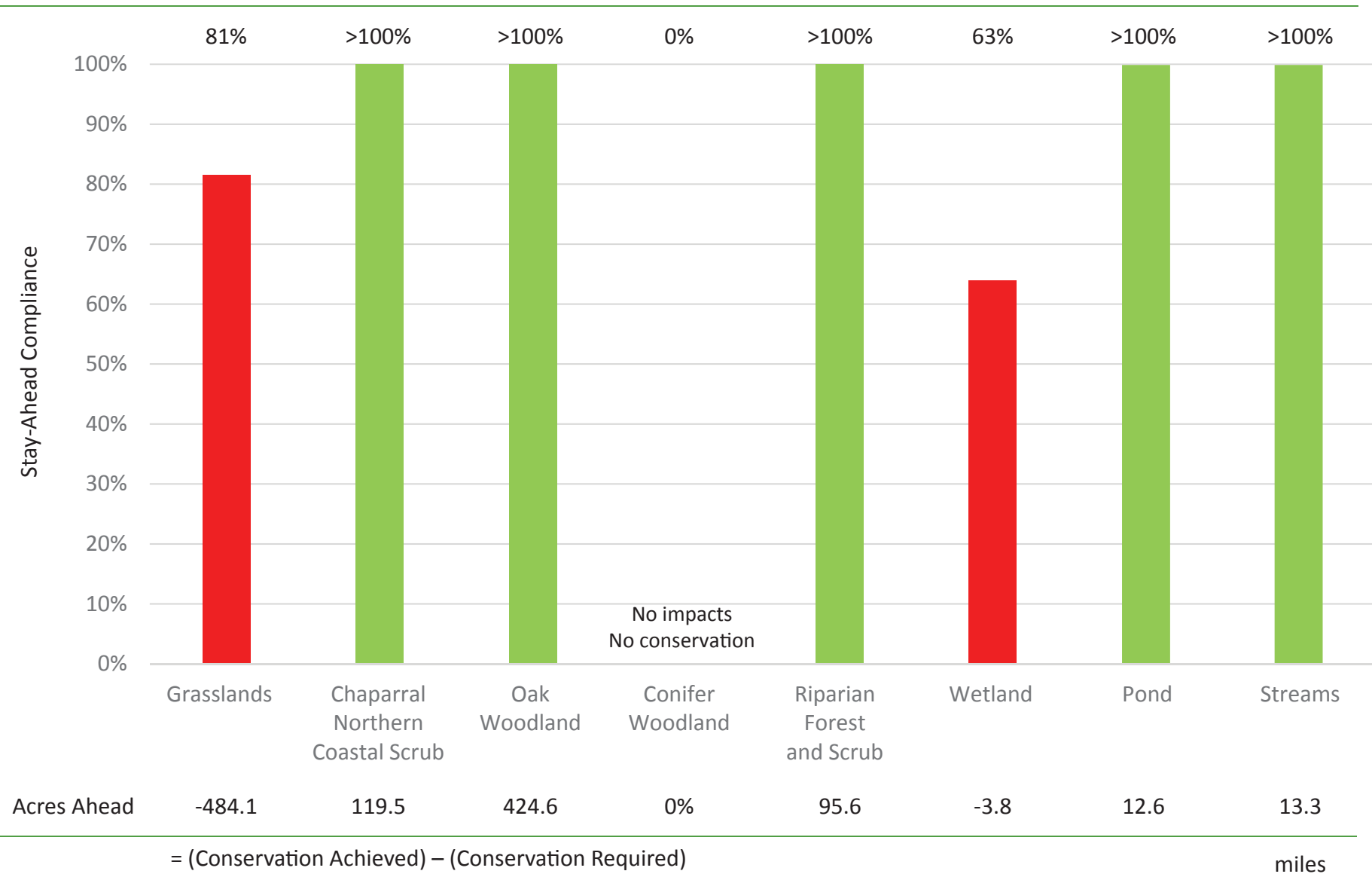


Figure ES-5b. Stay-Ahead Compliance for Western Burrowing Owl



The western burrowing owl stay-ahead requirement measures two different compliance metrics:

- 1) occupied nesting habitat:** impacts and conservation of occupied nesting habitat using a 3:1 ratio within a 10% deviation, and
- 2) nesting habitat rough proportionality:** rough proportionality for impacts to occupied breeding habitat compared to conserved occupied nesting and potential breeding habitat within a 10-15% deviation.

For both metrics, both lands enrolled in the Reserve System and lands under management agreements can be credited toward conservation. For the second metric, conservation actions implemented on managed lands allow for the 10% deviation to be increased to 15%.

Acres Ahead 482.7 -2,090.4

= (Conservation Achieved) – (Conservation Required)

Figure ES-6. Stay-Ahead Compliance for Plants

Conservation Required = (% of Allowable Impacts Accrued)*(Conservation Total)
 Compliance = (Conservation Achieved)/(Conservation Required)

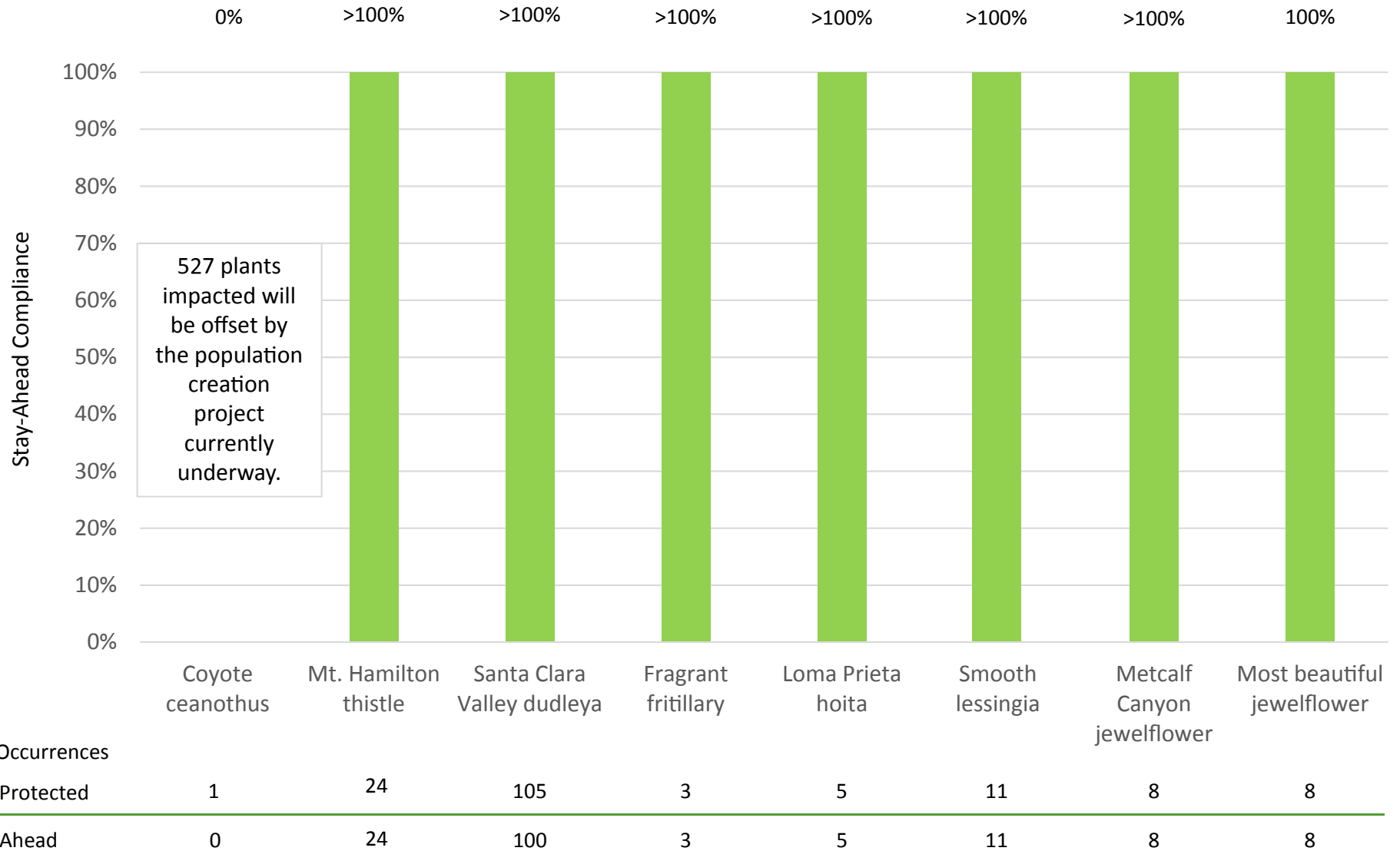
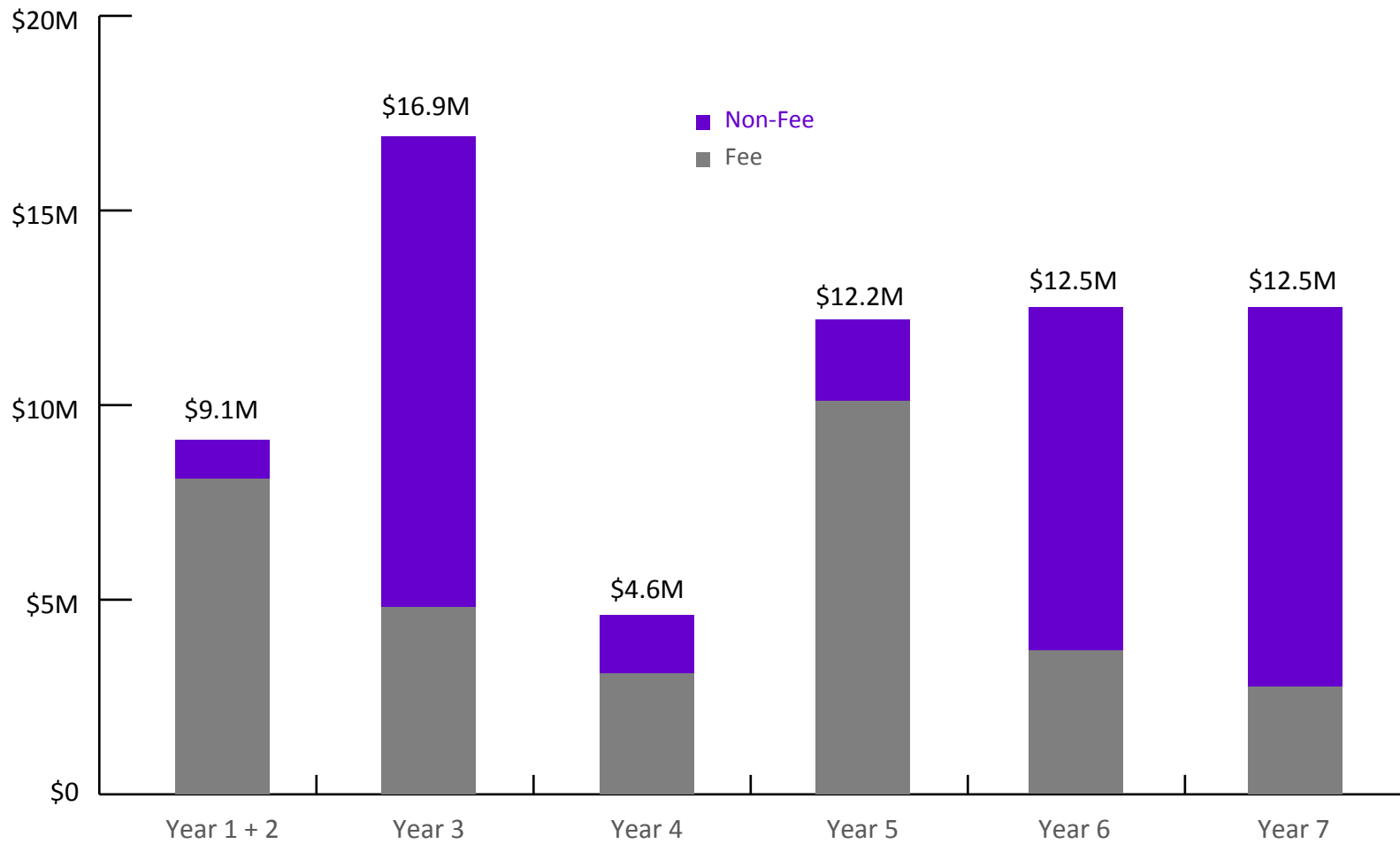
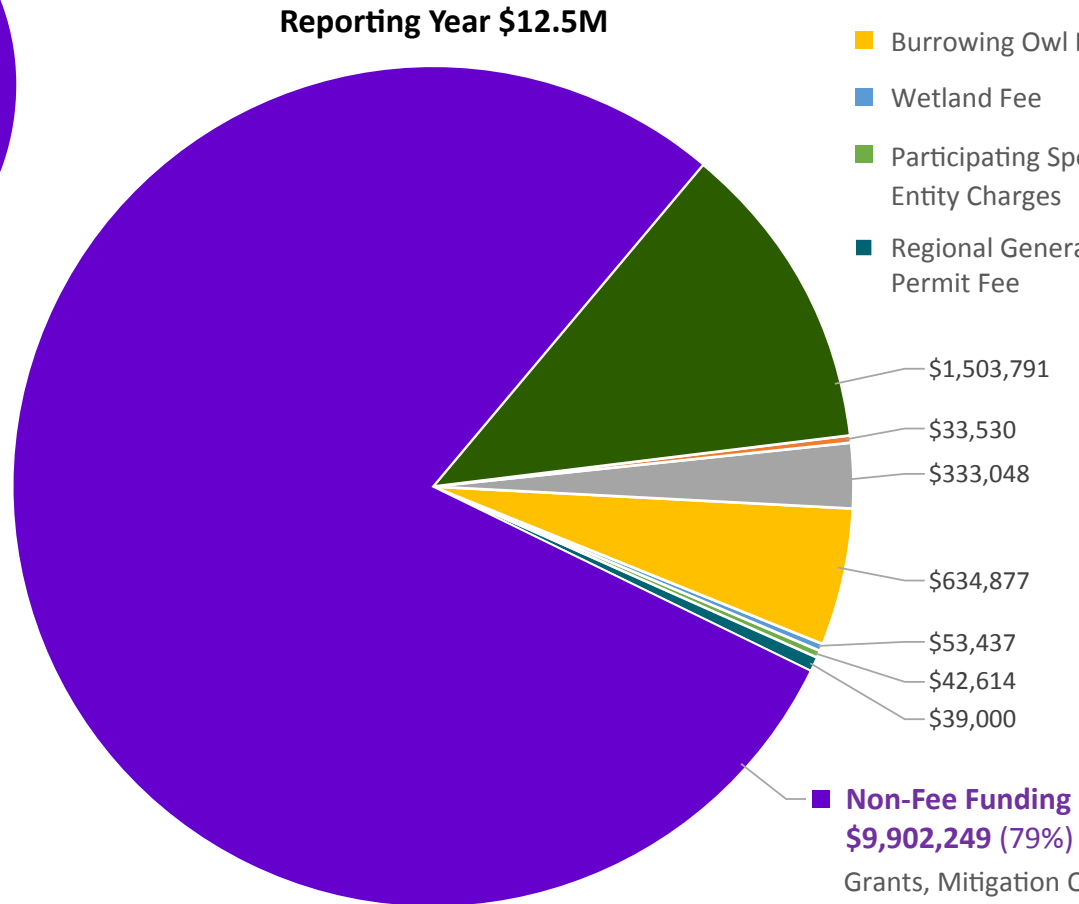
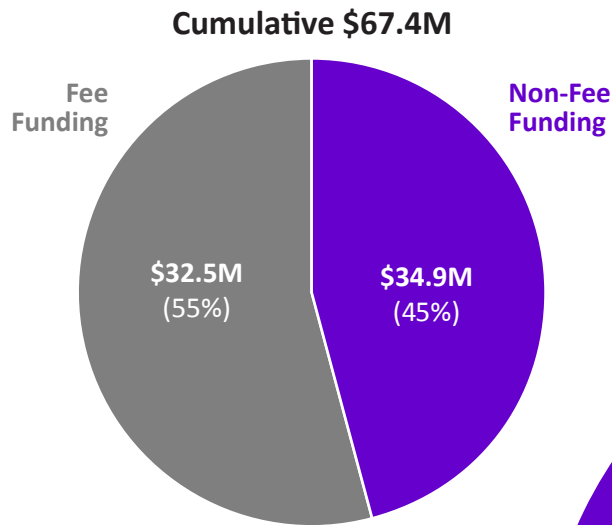


Figure ES-7. Revenue Summary by Reporting Year



	FY14 + FY 15	FY16	FY17	FY18	FY19	FY20	Total	
Non-Fee	\$1.0M	\$12.1M	\$1.5M	\$2.1M	\$8.8M	\$9.9M	\$34.9M	45%
Fee	\$8.1M	\$4.8M	\$3.1M	\$10.1M	\$3.7M	\$2.6M	\$32.5M	55%
						Total	\$67.4M	100.0%

Figure ES-8. Revenue Summary—Detail



**Fee Funding
\$2,640,297 (21%)**

- Land Cover Fee
- Serpentine Fee
- Nitrogen Deposition Fee
- Burrowing Owl Fee
- Wetland Fee
- Participating Special Entity Charges
- Regional General Permit Fee

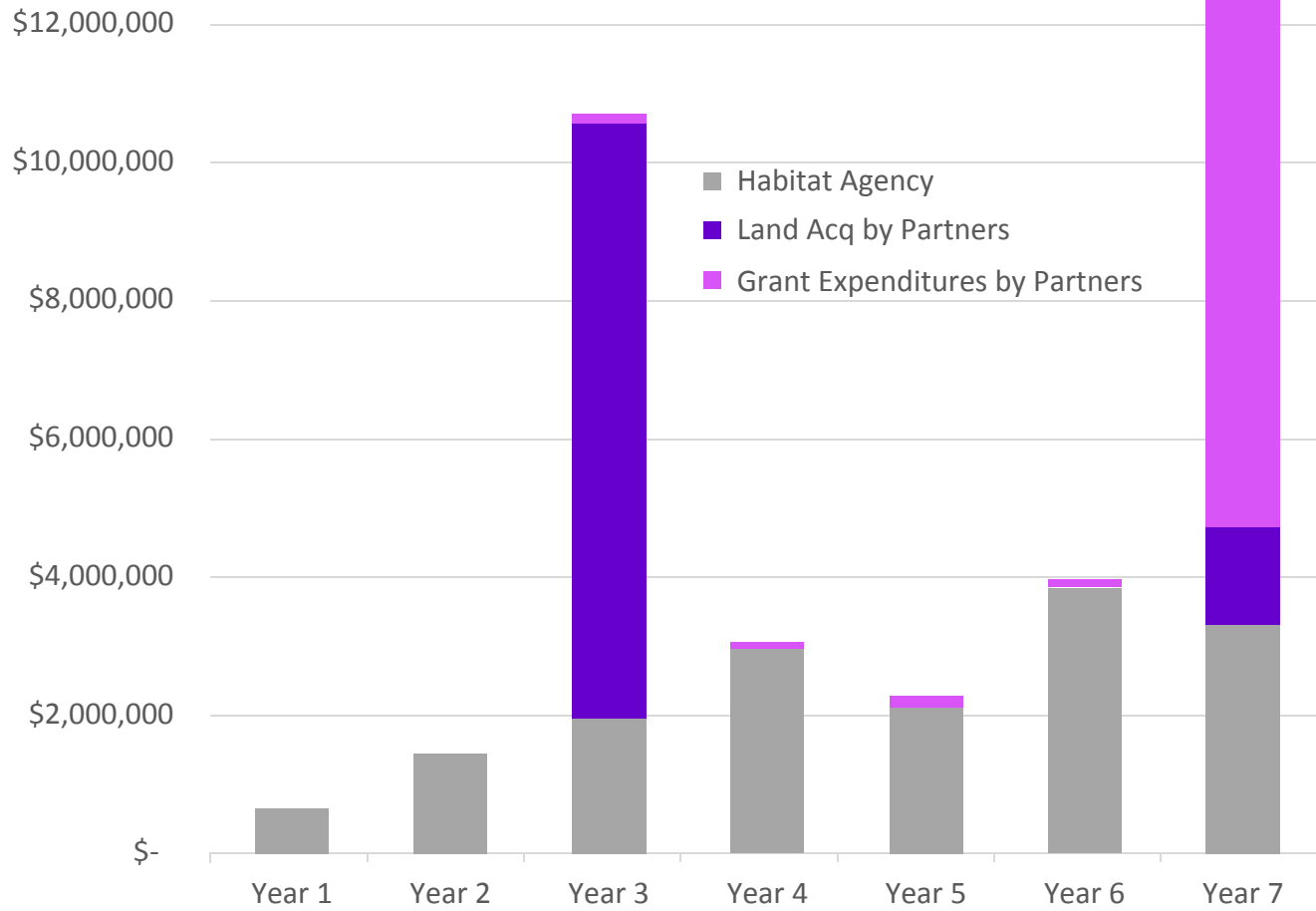
\$1,503,791
 \$33,530
 \$333,048
 \$634,877
 \$53,437
 \$42,614
 \$39,000

**Non-Fee Funding
\$9,902,249 (79%)**

Grants, Mitigation Only/ Voluntary Contributions, and Land Aquisitions by local land agencies, non-profit groups, and foundations.

Habitat Plan Assumptions
 Fee Funding 55%
 Non-Fee Funding 45%

Figure ES-9. Expenditure Summary



\$35.2M
total
expenditures

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
	FY1314	FY1415	FY1516	FY1617	FY1718	FY1819	FY1920	
Habitat Agency	\$630K	\$1.4M	\$1.9M	\$3.0M	\$2.1M	\$3.9M	\$3.4M	\$16.4M
Land Acq by Partners			\$8.6M				\$1.3M	\$9.9M
Grants by Partners			\$140K	\$94K	\$169K	\$96K	\$8.4M	\$8.9M

Figure ES-10. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Terrestrial Land Cover Types



Figure ES-11. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Aquatic Land Cover Types

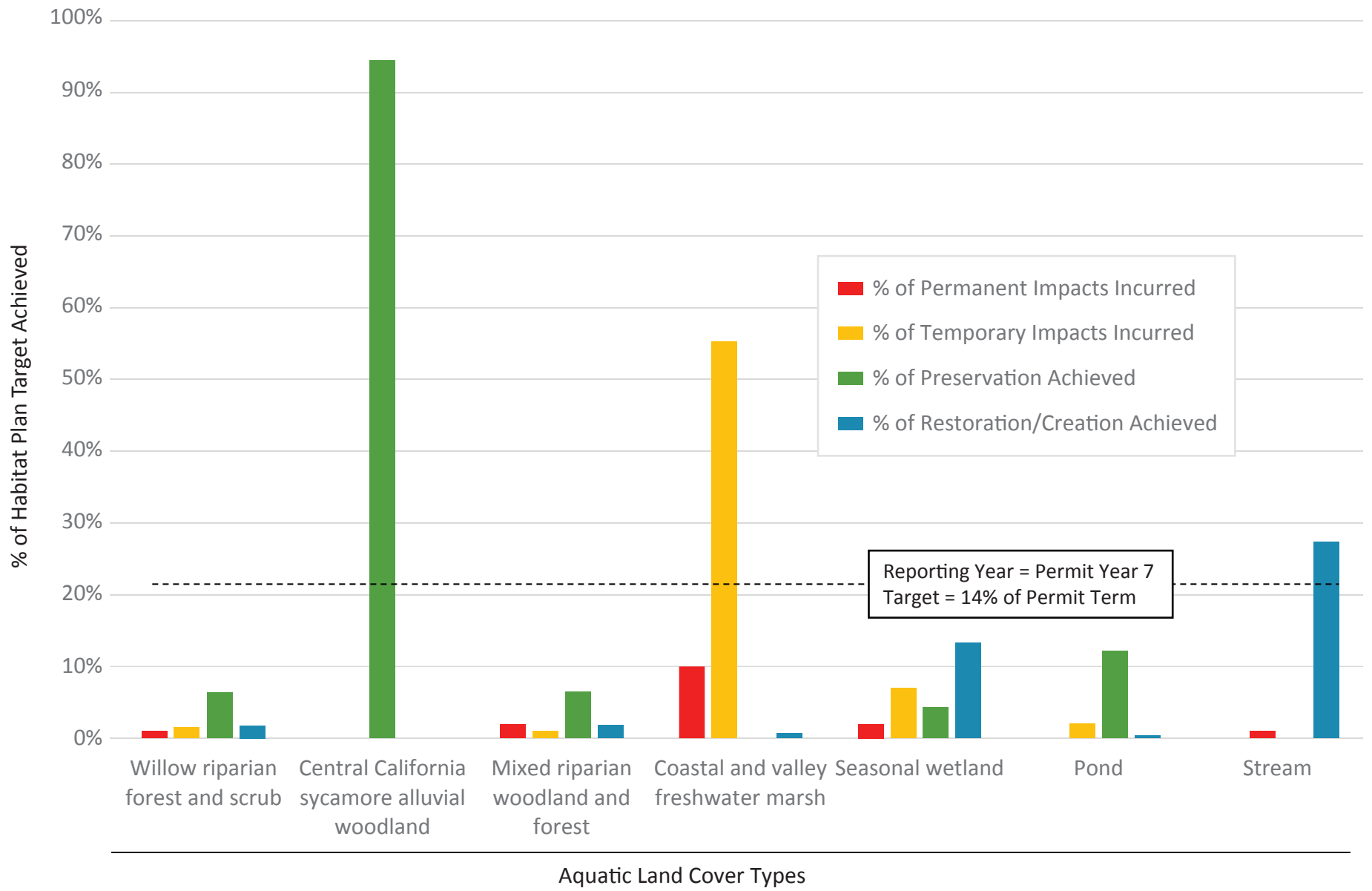
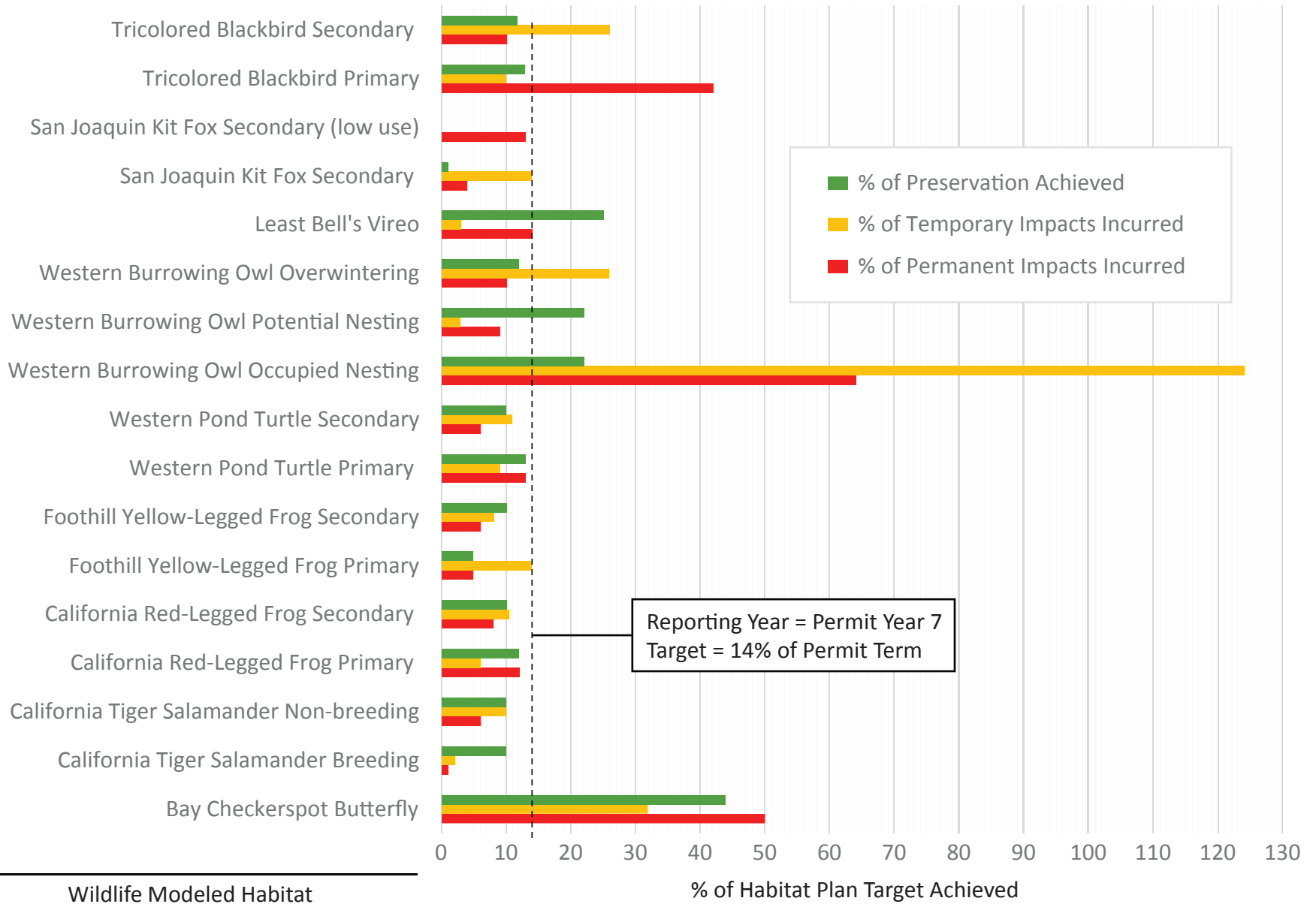
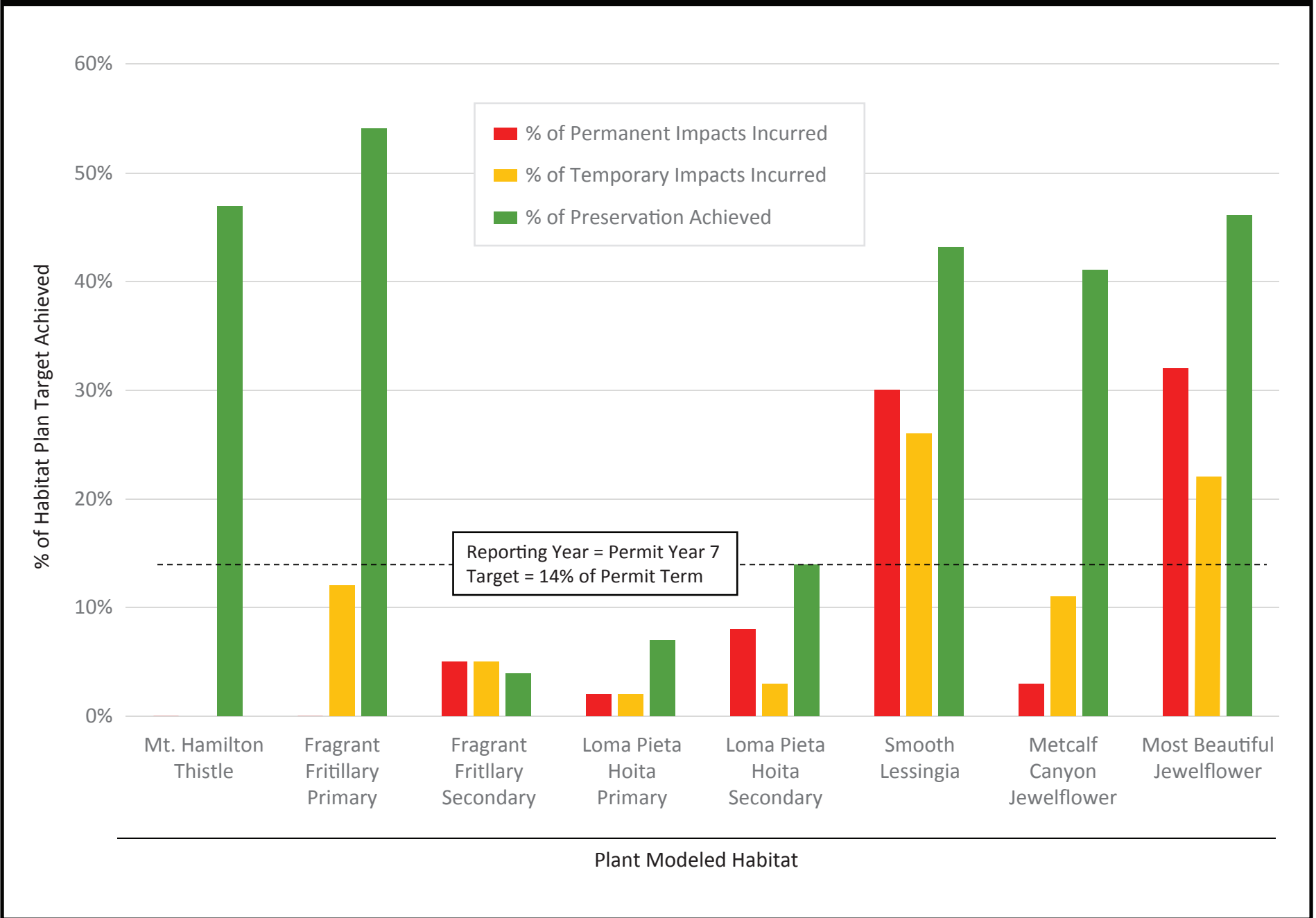


Figure ES-12. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Wildlife Habitat



Comment Response: Tracking of San Joaquin Secondary (low use) temporary impacts incurred removed from graphic per CDFW comments

Figure ES-13. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Plant Habitat



1.1 Santa Clara Valley Habitat Plan Background

The Santa Clara Valley Habitat Plan (Habitat Plan) provides a framework to protect, enhance, and restore natural resources in Santa Clara County while improving and streamlining the environmental permitting process for impacts on threatened and endangered species. The Habitat Plan is a Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP). This means it provides participants a mechanism for securing both federal Section 10 and state NCCP permits for endangered species take coverage. In return, it will conserve 18 covered species (9 wildlife and 9 plants) and the natural communities on which these species rely. The Habitat Plan Permit Area (Permit Area) is 508,669 acres (460,205 acres where most covered activities will occur and 48,464 acres in the expanded study area for burrowing owl conservation), or approximately 60% of the area of Santa Clara County, in the San Francisco Bay Area. The Permit Area includes all of the Llagas, Uvas, and Pajaro Watersheds within Santa Clara County, all of the Coyote Creek Watershed except for the Baylands, and a large portion of the Guadalupe Watershed. The Permit Area also encompasses small, adjacent areas outside these watersheds (**Figure 1**).

The Habitat Plan grew from a collaborative effort in the early 2000s among four partners—the County of Santa Clara (County), the City of San José, the Santa Clara Valley Water District (SCVWD), and the Santa Clara Valley Transportation Authority (VTA)—as compensation for impacts on endangered and threatened species and their habitats due to several local transportation projects, a research park, and a biological mitigation site. In 2005, these partners were joined by the Cities of Gilroy and Morgan Hill, who recognized the long-term benefits of the Habitat Plan for their communities. The final Habitat Plan was approved and adopted by these entities in 2013; at that time, the Santa Clara Valley Habitat Agency (Habitat Agency) was also formed, and together these seven agencies are referred to as the *Co-Permittees*.

The Habitat Agency is responsible for executing the requirements of the Habitat Plan, the federal and state endangered species permits, and the Implementing Agreement. The Implementing Agreement is a legal document between the Wildlife Agencies—U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW)—and the Co-Permittees to implement the Habitat Plan. The Habitat Agency is a Joint Powers Authority composed of the Cities of Gilroy, Morgan Hill, and San José, and the County.¹⁰

The County and three cities are responsible for Habitat Plan compliance with respect to private development projects in their jurisdictions, and each Co-Permittee is responsible for ensuring its own public projects are carried out in conformance with the Habitat Plan. The Habitat Agency holds the title to lands or easements it purchases, and it oversees cooperative agreements with land management entities that own and/or manage reserves as part of the Reserve System. The Habitat

¹⁰ The Joint Powers Authority is limited to the four participating jurisdictions because the Joint Exercise of Powers Act requires that a Joint Powers Authority can only exercise powers held by all the participating agencies—and of the six participating agencies, only the four jurisdictions have the authority to adopt the Habitat Plan development fees. However, because all six agencies are responsible for implementing the Habitat Plan, each has a role in the Habitat Agency.

Agency may also provide funding to local land trusts and management agencies for them to purchase land for the Reserve System. The Habitat Agency provides funds for Reserve System management and monitoring to those agencies and organizations with whom it contracts for such services.

The Habitat Agency has two decision-making bodies, the Governing Board and the Implementation Board. The Governing Board is composed of two representatives of each of the four participating jurisdictions, for a total of eight members. Each representative is an elected official from the participating jurisdiction. The Governing Board is responsible for the governance and administration of the Habitat Agency. It may delegate its authority to the Implementation Board except for two duties that must remain with the Governing Board: adoption and modification of Habitat Plan fees and the approval of the Habitat Agency's annual budget. The Implementation Board is represented by all Co-Permittees. The 11-member Implementation Board has two representatives each from the Co-Permittees except for VTA, which, per its request, has one representative.

The Habitat Plan's requirements for the Reserve System are provided below.

- Acquisition, management, and monitoring of 33,652 acres of newly protected lands.
- Improved management and monitoring of an additional 12,844 acres of existing protected lands.
- Restoration of 353 acres of riparian habitats, 75 acres of wetlands, 72 acres of ponds, and 10.4 miles of streams.
- Protection of nine terrestrial and seven aquatic linkages.
- Ongoing research of issues related to the improved management of all Reserve System lands.

1.2 Annual Report Overview

The Annual Report provides the Governing Board, Implementation Board, USFWS, CDFW, and the general public the opportunity to review the Habitat Agency's actions and progress toward implementing the Habitat Plan. Annual Reports are prepared by the Habitat Agency over the term of the Habitat Plan to document permit compliance, impacts, conservation actions, management actions, restoration/creation actions, and monitoring results. The Annual Reports summarize the previous fiscal year's implementation activities (July 1 to June 30).

This is the sixth Annual Report prepared by the Habitat Agency. This report summarizes implementation actions from July 1, 2019, through June 30, 2020.

The goals of the Annual Report are as follows.

- Provide the information and data necessary for the Co-Permittees to demonstrate to the Wildlife Agencies and the public that the Habitat Plan is being implemented properly and as anticipated.
- Disclose any problems with Habitat Plan implementation so they can be corrected.
- Document issues with Habitat Plan implementation that may require consultation with the Wildlife Agencies.
- Identify administrative or minor changes to Habitat Plan components required to increase the success of implementation, including the success of meeting conservation measures.

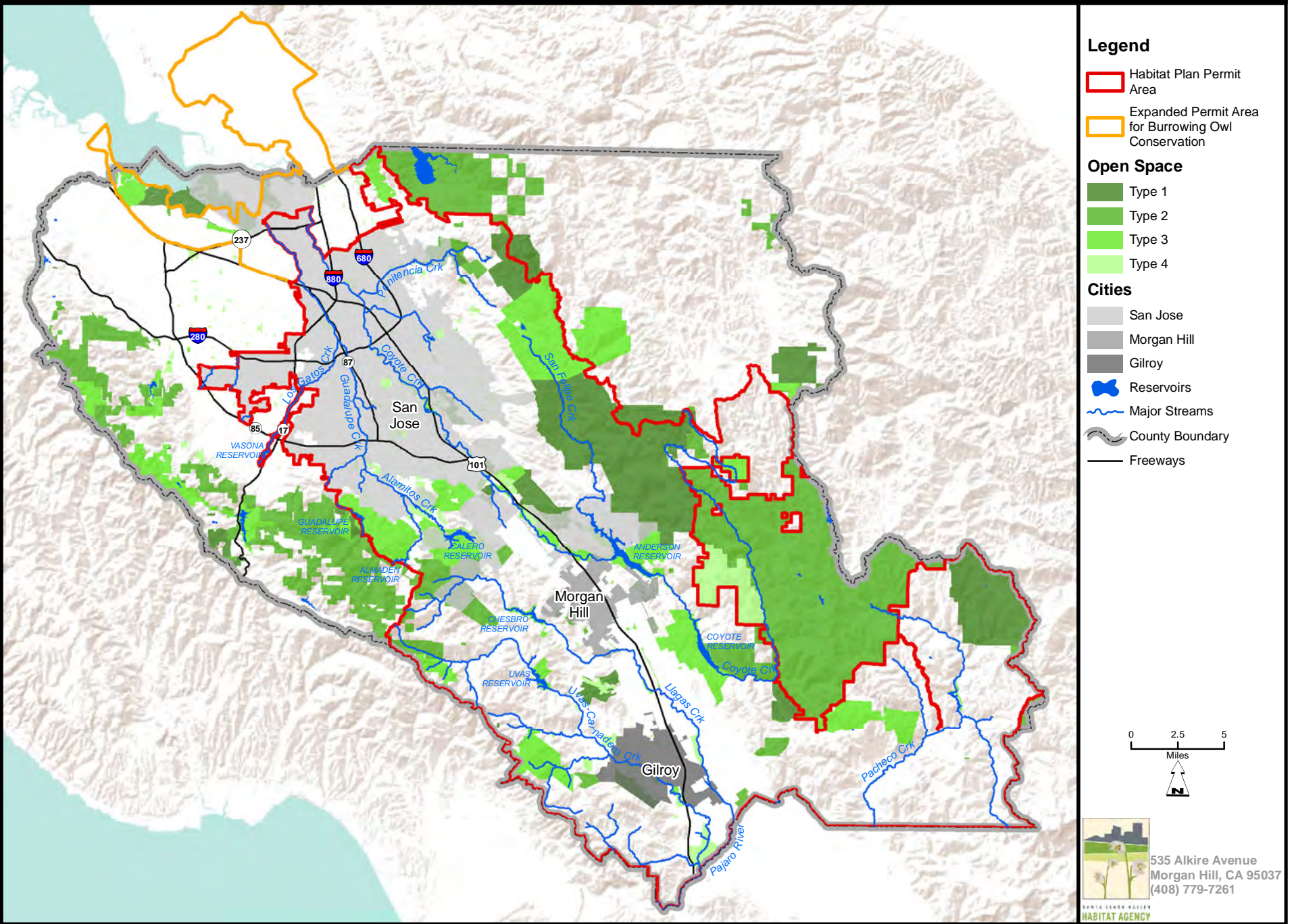
The required elements of the Annual Report as defined by the Habitat Plan are summarized below. Each topic is discussed separately in its own chapter in this Annual Report.

- Chapter 2, *Covered Activities*, describes all projects and activities that occurred during the reporting period for which incidental take authorization was approved, including an accounting of the acreages of impact by project, land cover type, and covered species habitat. This chapter identifies conditions on covered activities applied to each project and reports impacts on riparian and wetland land cover types by watershed.
- Chapter 3, *Land Acquisition*, describes the land acquisitions that occurred during the reporting period, including a summary of land acquisition funding from local, state, and federal sources. This chapter identifies each land acquisition conservation measure implemented during the reporting period and summarizes natural community protection during the reporting period and permit term. In addition, this chapter documents progress toward all acquisition requirements, including land cover types, habitat connectivity, covered plant populations, and aquatic protection.
- Chapter 4, *Habitat Restoration and Creation*, describes natural community creation and restoration conservation measures implemented during the reporting period and summarizes cumulative accomplishments during the permit term, including aquatic restoration/creation by watershed.
- Chapter 5, *Western Burrowing Owl Management and Monitoring*, describes western burrowing owl monitoring efforts, management actions, and research studies undertaken during the reporting period, and identifies future management agreements.
- Chapter 6, *Reserve System Management*, describes the Reserve System management planning activities that took place and the tools that were created during the reporting period.
- Chapter 7, *Monitoring, Research, and Adaptive Management*, summarizes the monitoring, research, and adaptive management activities conducted under the Habitat Plan during the reporting period.
- Chapter 8, *Stay-Ahead Provision*, assesses compliance with the Stay-Ahead provision, a set of requirements to ensure that progress toward acquisition of Reserve System lands precedes impacts associated with covered activities. This assessment includes a cumulative summary of impacts and conservation for all land cover types.
- Chapter 9, *Changed and Unforeseen Circumstances*, describes actions taken or anticipated regarding changed circumstances,¹¹ including remedial actions.

¹¹ The federal “No Surprises” Rule defines changed circumstances as those circumstances affecting a species or geographic area covered by the HCP that can be reasonably anticipated by the applicant or federal wildlife agencies and that can be planned for.

Figure 1. Santa Clara Valley Habitat Plan Permit Area

MAP by BAZ. SCC Planning Office TeamGIS. D:\PROJECTS\HCP\AnnualReport2015\Fig_1_HabitatPlanPermitArea.mxd (2/4/2016)



Chapter 2 Covered Activities

A total of 27 projects received take coverage under the Habitat Plan during the reporting period, the majority of which were Urban Development Projects. Of these 27 projects, 15 were private projects, 10 were public projects, and 2 were Participating Special Entities (PSEs). Permanent impacts totaled 118 acres and temporary impacts totaled 37 acres. The applicable conditions on covered activities were enforced for each applicable project to minimize and avoid impacts on covered species and natural communities. Since 2013, 312 projects have been permitted under the Habitat Plan.

This chapter describes the activities and projects (covered activities) within the Permit Area that were approved for take authorization pursuant to the Habitat Plan during the reporting period. The *Covered Activities Receiving Take Coverage* section summarizes major activity types and impacts by private, public, and PSE projects. The subsequent sections summarize impacts on land cover types, including aquatic impacts by watershed, impacts on species modeled and critical habitat, impacts on covered plants, and stream and riparian setback exemptions. In addition, a summary of the *Temporary Project Impact Assessment* is provided.

The Habitat Plan requires covered activities to compensate, avoid, and minimize impacts on covered species through a variety of conservation measures. The Habitat Plan allows incidental take coverage for the following covered activities.

- **Urban Development Projects** are projects and activities that occur inside the planning limits of urban growth but outside of in-stream areas and is intended to be as inclusive as possible to accommodate urban growth and all ground-disturbing activities within designated urban areas.
- **In-Stream Capital Projects** are public infrastructure projects that occur within streams in both urban and rural areas. Activities within streams are those activities or projects that occur in or

Reporting Requirements

- Description of all covered activities implemented during the reporting period categorized by major activity type (per Chapter 2), acreage, and whether the project is public or private.
- Year-to-date and cumulative summaries (i.e., from the start of the permit term) of permanent and temporary impacts on all land cover types. Impacts on riparian and wetland land cover types will also be reported by watersheds.
- Year-to-date and cumulative summaries of impacts associated with projects exempt from fees and/or conditions of the Habitat Plan.
- Accounting of all conditions on covered activities applied to these activities.
- List of all riparian setback exceptions granted each calendar year within the reporting period.
- Year-to-date and cumulative summaries of permanent and temporary impacts on modeled habitat of covered species, and of permanent impacts on covered plant occurrences.
- Year-to-date and cumulative summaries of total impacts on critical habitat of the California red-legged frog, California tiger salamander, and Bay checkerspot butterfly.

immediately adjacent to creeks and that may result in impacts on a creek or canal. This category includes activities in the stream channel, along the stream bank, and on adjacent lands at top-of-bank within the riparian corridor.

- **In-Stream Operation and Maintenance Activities** are operations and maintenance activities in the stream channel, along the stream bank, and on adjacent lands at top-of-bank within the riparian corridor, including maintenance of access roads and trails in both urban and rural areas.
- **Rural Capital Projects** are public infrastructure projects outside the cities' planning limits of urban growth.
- **Rural Operation and Maintenance Activities** are rural operations and maintenance activities including utility line or facility operations and maintenance; facility maintenance, including vegetation and infrastructure management; and pond maintenance outside the Reserve System.
- **Rural Development Projects** are those rural projects that occur in accordance with existing general plans at the time of permit issuance. This includes activities that are subject to ministerial or discretionary approval by the County or cities. Most of this type of development is expected to be residential development in areas outside the planning limits of urban growth, which generally occurs in the unincorporated County, but some development may occur within city limits. Specifically, rural residential development is expected to occur on the non-urban hillsides of eastern San José, in the Coyote Valley Urban Reserve and South Almaden Valley Urban Reserve, in Morgan Hill's Southeast Quadrant, and in Gilroy's Hecker Pass Specific Plan area.
- **Conservation Strategy Implementation** are activities that take place within or outside the Reserve System consistent with the Habitat Plan conservation strategy. All conservation actions will take place within the Permit Area and the Expanded Burrowing Owl Conservation Area.
- **Nitrogen Deposition Only Projects** are development projects that do not contribute to land cover impacts in the Permit Area but do contribute to cumulative nitrogen deposition impacts. Therefore, these projects pay nitrogen deposition fees under the Plan.

A total of 27 projects received take coverage under the Habitat Plan during the reporting period. In addition, 31 development projects paid nitrogen deposition fees under the Plan. **Table 1** provides a summary of all the covered activities permitted in the reporting period. The 27 projects resulted in 118 acres of permanent land cover impacts and 37 acres of temporary land cover impacts. **Figure 2** and **Figure 3** show the locations of private and public covered projects, respectively, in the Permit Area. Of the 27 projects receiving take coverage during the reporting period, 15 projects were private projects and 10 were public projects, and 2 were PSE projects. Covered activities are summarized as follows.

- 12 Urban Development Projects
- 5 In-Stream Operations and Maintenance Activities
- 4 Rural Operations and Maintenance Activities
- 4 Rural Development Projects
- 2 Conservation Strategy Implementation Projects
- 31 Nitrogen Deposition Only Projects

Covered activities mitigated impacts through the payment of Habitat Plan fees or land in lieu. Fees totaled \$2,640,297 during the reporting period. See Chapter 10, *Finances*, of this Annual Report for details. No land has been received in lieu of fee payments to date; however, the Habitat Agency, the City of San José, and the County continue to work in good faith to enroll City and County lands into the Reserve System (see Habitat Plan, Section 5.23, *Reserve System, Existing Open Space in the Reserve System*).

A total of 312¹² projects have received take coverage under the Habitat Plan since permit issuance. Cumulative impacts total 2,232 acres of permanent impacts, 350 acres of temporary impacts, 630 feet of permanent impacts on streams, and 893 feet of temporary impacts on streams. Of the 312 projects, 180 were private, 112 were public, and 20 were PSE projects. Covered activity types are 171 urban development projects, 19 in-stream operations and maintenance activities, 12 in-stream capital projects, 43 rural operations and maintenance projects, 38 rural development projects, 17 rural capital projects, and 12 conservation strategy implementation projects.

During the reporting period, 15 private projects received streamlined permits through the Habitat Plan (**Table 1, Figure 2**). Permanent impacts totaled 97 acres and temporary impacts totaled 10 acres. The City of San José permitted 4 projects, the City of Morgan Hill permitted 5 projects, the City of Gilroy permitted 2 projects, and the County permitted 4 projects. Projects included residential housing, community development, and other economic development activities providing a range of benefits for the communities in the Permit Area. Highlights of these approved projects are provided below.

- *Residential Housing*: The City of Gilroy issued a permit for Town Center. This project developed a 124-unit multi-family condominium residential community with a private open space.
- *Commercial Development*: The City of Morgan Hill issued a permit for Carpenter’s Training Center. This project developed a new 55,000-square-foot building and parking area for the Carpenter's Training Center.
- *Recreational Development*: The City of San José issued a permit for IBM Sports Field. This project developed an 83,400 square-foot artificial turf playing field on a 200-acre parcel within the IBM complex.

Over the permit term, a total of 180 private projects have been permitted. These projects resulted in 1,530 acres of permanent impacts and 135 acres of temporary impacts. The City of San José permitted 76 projects, the City of Morgan Hill permitted 39 projects, the City of Gilroy permitted 33 projects, and the County permitted 32 projects.

2.1 Public Projects

During the reporting period, 10 public agency projects received streamlined permits through the Habitat Plan (**Table 1, Figure 3**). The City of San José permitted 4 projects, Valley Water permitted 4 projects, and the Habitat Agency permitted 2 projects. Permanent impacts totaled 13 acres and temporary impacts totaled 23 acres. These projects include road and trail improvements, water supply, park facilities, and economic development activities providing a range of benefits for the communities in the Permit Area. Highlights of these approved projects are provided below.

¹² This number excludes the 34 Nitrogen Deposition Only Projects that have been reported since FY1819. This is the first time the SCHVA has separated these types of projects from the cumulative total and will continue to do so in the future.

- *Resource Management.* The Santa Clara Valley Habitat Agency conducted road maintenance along the lower road of the Coyote Ridge Open Space Preserve to allow wet season travel for species surveys, land management and maintenance activities.
- *Facility Maintenance.* Valley Water improved safe access to the Snell Pipeline Vault, a component of Valley Water's treated water infrastructure.
- *Wastewater Management.* The City of San José replaced and expanded Headworks 1 and 2 portions of the San José/Santa Clara County Regional Wastewater Facility.

Over the permit term, a total of 112 public projects have been permitted. These projects resulted in 658 acres of permanent impacts and 174 acres of temporary impacts. The City of San José permitted 25 projects, the City of Gilroy permitted 3 projects, the County permitted 32 projects, Valley Water permitted 46 projects, VTA permitted 1 project, and the Habitat Agency permitted 5 projects.

2.2 Participating Special Entities

Public or quasi-public entities not subject to the jurisdiction of the Co-Permittees may seek coverage under the Habitat Plan to conduct projects or ongoing activities within the Permit Area that could affect listed species and require take authorization from USFWS or CDFW. These organizations may become PSEs, and may include existing or future school districts, water districts, irrigation districts, transportation agencies, local park districts, geologic hazard abatement districts, or other utilities or special districts that own land or provide public services. PSEs can request coverage under the Habitat Plan. Municipalities that are not Co-Permittees are not eligible to participate using this status. PSE projects have ranged from restoration projects to the construction of campus buildings and a parking lot.

During this reporting year, two PSE Agreements were approved for take coverage under the Habitat Plan: both were rural operations and maintenance projects, both were conducted by Pacific Gas and Electric Company (PG&E). These projects resulted in a combined total of 7 acres of permanent impacts and 6 acres of temporary impacts.

Over the permit term, a total of 20 PSE applications have been permitted by the Habitat Agency. These projects resulted in 42 acres of permanent impacts and 42 acres of temporary impacts.

2.3 Nitrogen Deposition Only Projects

During the reporting period, 31 private development projects paid nitrogen deposition only fees through the Habitat Plan (**Table 1**) totaling \$207,503. These projects did not result in direct impacts to additional land cover but contributed to the increase in nitrogen emissions from new daily vehicle trip generation. Seven projects were located in Gilroy, one in Morgan Hill, and 23 projects in San José. The average fee paid during the reporting year totaled \$6,694 (Median = \$2,226). These projects include single housing developments, redevelopments, and structural improvements in the Permit Area. Highlights of these projects are provided below.

- *449 S. Winchester* – A private, urban redevelopment of a movie theater and an office building with underground parking. Total fee paid was \$49,907.

- *Coleman Highline Tranche 2* – A private, urban development including grading, utilities, and site improvements for an eight-story building, two two-story amenity buildings, and a five-story parking garage in San José. Total fee paid was \$31,476.
- *Bascom Station* – A private, urban development including a 10-story office building and an 8-story residential building with 590 units at 1330 and 1410 S Bascom Avenue in San José. Total fee paid was \$28,515.
- *200 Park Avenue* – A private, urban redevelopment of an office building with below grade parking at 200 Park Avenue in San José. Total fee paid was \$27,096.
- *Rotten Robbie #67* – A private, urban redevelopment of commercial/retail fueling center with a convenience store in San José. Total fee paid was \$19,959.

2.4 Conditions on Covered Activities

The purpose of conditions on covered activities is to meet regulatory standards to avoid and minimize potential impacts on covered species and sensitive natural communities. Conditions on covered activities include completion of preconstruction surveys, minimization of development footprints, establishment of stream setbacks and fuel management buffers, management of the urban-wildland interface, maintenance of hydrologic conditions, avoidance of direct impacts on extremely rare plants and fully protected wildlife species and covered migratory birds, best management practices for stormwater management, and design requirements for roads outside the urban development area. Each condition is described in detail in Chapter 6 of the Habitat Plan under Section 6.4, *Conditions on Specific Covered Activities*.

Numerous conditions on covered activities at the landscape, natural community, and species levels were applied during the reporting period as shown in **Table 2** and **Table 3**. Of the 27 covered activities implemented during the reporting period, Conditions 1 and 3 applied to every project, wildlife conditions were triggered 27 times, natural community conditions were triggered 13 times, plants conditions were triggered 6 times, and other covered project categories were triggered 18 times (**Table 2**). **Table 3** provides a summary of the species-level measures triggered by covered activities during the reporting period. These measures include habitat surveys, preconstruction surveys, avoidance and minimization measures, and construction monitoring. California Natural Diversity Database (CNDDDB) forms were submitted for most species surveys indicating presence. The *Coyote Ridge Open Space Preserve Lower Road Repair Project* permitted the Santa Clara Valley Habitat Agency to remediate the lower dirt access road for wet season access. Plant surveys were conducted and determined the smooth lessingia would be partially impacted, but the occurrence on Coyote Ridge is so large (it extends across all of Coyote Ridge) and the project impacted less than 5% of the occurrence, below the limit necessary to qualify as take.

2.5 Impacts on Land Cover Types

Reporting period impacts occurred on terrestrial and aquatic land cover types across three watersheds. There were 118 acres of permanent impacts and 37 acres of temporary impacts on non-stream land cover types. The majority of permanent impacts occurred in grain and row crops (73 acres), urban suburban (23 acres), California annual grassland (9 acres), and golf course/urban parks (4 acres) land cover types. **Table 4** summarizes covered activity impacts, tracked by land

cover type. Impacts on aquatic land cover types occurred in three different watersheds— Uvas, Guadalupe, and Coyote. Impacts on aquatic land cover types included 0.15 acre of permanent impacts and 0.15 acre of temporary impacts. **Table 5** summarizes impacts on aquatic habitat by watershed.

The Wildlife Agencies recommended the rate of impacts accrued compared to the permit term year be examined to identify and evaluate impacts that are being accrued more quickly than others.¹³ Year 7 represents 14% of the permit term. If a constant rate of impacts is assumed, allowable impacts should be at about 14% of the impact cap. There are four land cover types for which 14% of the permanent impact cap is exceeded. California annual grasslands, serpentine rock outcrops, coyote brush, and barren are being impacted at the fastest rates, with 16%, 17%, 34%, and 221% of total allowable permanent impacts incurred, respectively. The reasons for these higher impact accruals are as follows.

- **Prevalence of land cover type.** California annual grassland is the most widely distributed land cover type and is being developed at a fast rate in Permit Area. However, the cumulative percentage of impacts on grassland did not change between the FY18-19 and current reporting years, so this impact continues to level off.
- **Finer-scale mapping.** Higher impacts on serpentine rock outcrops/barrens, coyote brush, and barren are likely due to the finer scale mapping required for covered projects. It is possible that serpentine rock outcrops/barrens were previously mapped as serpentine grassland and in-field mapping required for covered activity compliance determined otherwise. There were few new projects impacting serpentine outcrops/barren or coyote brush during the reporting year and therefore these percentages remained the same. Impacts on the barren land cover type increased only by 3% in the reporting year, compared to 15% during the last reporting year.

Temporary impacts on coastal and valley freshwater marsh remain at 55%. Additional guidance was provided to Co-Permittee during the FY1718 reporting year to flag impacts on this land cover type and to work with project proponents to ensure projects are avoiding impacts, which allowed covered projects to avoid impacts on this land cover type in FY1920 in addition to the past two reporting years.

2.6 Impacts on Modeled and Critical Habitat

Modeled and critical habitat impacts remain varied across species with impacts remaining below take limits. **Table 6** summarizes the impacts on modeled habitat for the reporting period and cumulatively. Impacts on species modeled habitat were driven by urban development in the cities of Gilroy and Morgan Hill. This is reflected in the increased total impacts on aquatic species secondary habitat for California red-legged frog and California tiger salamander and impacts on western burrowing owl breeding and overwintering habitat near San José developments. Permanent impact accrual rates¹⁴ exceed 14% for Bay checkerspot butterfly (50%), western burrowing owl occupied nesting habitat (64%), tricolored blackbird primary habitat (42%), smooth lessingia (30%), and

¹³ Resources with high impacts are discussed with the Wildlife Agencies and Co-Permittees and guidance memorandums developed to ensure permit compliance. These are distributed to the Co-Permittees at the Technical Advisory Committee meetings and to the Implementation Committee for implementation.

¹⁴ Year 7 represents 14% of the permit term. If a constant rate of impacts is assumed, 14% of impacts would be accrued by Year 7.

most beautiful jewelflower primary habitat (32%). Temporary impact accrual rates exceed 14% for Bay checkerspot butterfly (32%), western burrowing owl occupied nesting habitat (124%), smooth lessingia primary habitat (26%), and most beautiful jewelflower primary habitat (22%). The excessive permanent impact accrual for occupied burrowing owl nesting habitat reflects the fact that there is decreasing occupied nesting habitat each year and that impacts continue to occur within occupied breeding sites. In particular, the Santa Clara/San José Regional Wastewater Facility is experiencing impacts due to the expansion of critical infrastructure by the City of San José.

Table 7 provides a summary of impacts on critical habitat from covered activities during the reporting period and cumulatively. In the reporting year, there were impacts on two California red-legged frog, one California tiger salamander, and two Bay checkerspot butterfly critical habitat units. To date, permanent and temporary impacts on California red-legged frog critical habitat are 43.6 acres and 10.9 acres (4% of the total allowable impacts). Permanent impacts are 39.0 acres and temporary impacts are 21.9 acres on California tiger salamander critical habitat (14% and 17% of the total allowable). Permanent impacts are 57 acres and temporary impacts are 16.1 acres on Bay checkerspot butterfly critical habitat (10% and 19% of the total allowable).

2.7 Impacts on Covered Plants

No impacts on covered plants were reported for FY1920 (**Table 8**).

Covered Activity Type	Public/Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Urban Development								
Commercial	Private	Gilroy	GIL-2019-015	Gilroy Self-Storage Project	Self-storage facility.	Urban Development	2.9	0.0
Residential	Private	Gilroy	GIL-2020-002	Miller Ave/Town Center Mutli-Family	Town Center Multi-family subdivision with approximately 124 condiminnium units, private open space, and public and private streets. Project area is approximately 19.5 acres.	Urban Development	18.5	1.0
Commercial	Private	Morgan Hill	MH-2019-005	Cochrane Evergreen	Divide 11 parcels and develop a nine-pump gas station, approximately 10,000 sq ft of restaurant space, 38,000 of retail space (including a tire shop and grocery store), 110 room hotel, 40,500 sq ft of office space, and an 85-bed assisted living facility.	Urban Development	19.9	0.0
Commercial	Private	Morgan Hill	MH-2020-001	Carpenter's Training Center	New 55,000 sqft building and parking area for Carpenter's Training Center.	Urban Development	4.8	0.0
Residential	Private	Morgan Hill	MH-2020-002	Butterfield Apartments	Butterfield Village is a 389-unit multifamily residential project at the southeasterlt quadrant of Monterey Rd and Jarvis Dr.	Urban Development	29.4	0.0
Commercial	Private	Morgan Hill	MH-2020-003	225 Cochran	Temporary stockpiling of soil for future use. Approximately 8,000 cubic yards placed on 19,675 sf of land area.	Urban Development	0.0	0.9
Industrial	Private	Morgan Hill	MH-2020-006	Techon	Construction of a 43,383 sq ft light industrial building and 7,062 sq ft maintenance building and contractor's yard.	Urban Development	3.3	0.0
Commercial	Private	San Jose	SJ-2019-020	Silver Creek Hotel	The proposed project would develop the 2.1 acre site with a four story 127-room hotel building that would be constructed at-grade on southeast side of Silver Creek Valley Rd and Hellyer Ave.	Urban Development	2.1	0.0
Commercial	Private	San Jose	SJ-2019-022	North Berryessa Flea Market	The subject site is part of the Flea market project, which plans to construct 2,818 residential units and 365,622 sq ft of commercial/industrial/offices for use.	Urban Development	9.7	0.0
Recreational	Private	San Jose	SJ-2020-005	IBM Sports Field	The project is a request for a PDA to permit 83,400 sq.ft (1.9 acre) artificial turf on a 200 acre parcel designated by the General Plan as Industrial Park(IP) and the Zoning as Planned Development Zoning District (A(PD) established per PDC74-061).	Urban Development	1.9	4.2
Wastewater Management	Public	San Jose	SJ-2020-009	Headworks Improvements	Replacement and expansion of Headworks 1 and 2 portions of the San Jose/Santa Clara County Regional Wastewater Facility.	Urban Development	9.4	17.3
Residential	Public	San Jose	SJ-2020-015	Monterey and Bernal Bridge	The Monterey and Bernal Bridge Housing Communtiy (BHC) will provide up to 80 single room occupancy units for formerly unhoused residents in the form of 16-20 transportable modular units.	Urban Development	2.4	0.0
Nitrogen Deposition Only								
Commerical/ Residential	Private/ Public	San Jose, Morgan Hill, Gilroy	N/A	N/A	31 Nitrogen Deposition Projects by multiple residential and commercial applicants in the city boundaries of San Jose, Morgan Hill, and Gilroy.	Urban Development	0.0	0.0

Covered Activity Type	Public/Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
In-Stream Operations & Maintenance								
Bank Stabilization	Private	San Jose	SJ-2019-027	459 Willow St Bank Stabilization	Approximately 771 cubic yards of rock and 314 cubic yards of backfilled soil would be placed below the 100-year flood plain along approximately 166 linear ft of the creek bank within 0.11 acre. The design will reestablish the area of the bank tha was lost during the storm event. The project will result in the removal of two willows (7 and 8 inches in diameter); three Fremont cottonwood (12, 10 and 6 inches in diameter); and 5 Boxelders (5,5,5,5, and 8 inches in diameter)	In-Stream Operations & Maintenance	0.1	0.1
Bank Stabilization	Public	San Jose	SJ-2019-023	Alum Rock Mineral Springs Bridge Embankment	The City of San Jose is planning maintenance actions that will restore and repair a rock wall embankment along Upper Penitencia Creek at Alum Rock Park Mineral Springs Trail that failed during heavy rains from February 2017 storm events.	In-Stream Operations & Maintenance	0.0	0.0
Bank Stabilization	Public	San Jose	SJ 2019-024	FEMA Kelly Park Storm Drain	The City of San Jose is planning maintenance actions to repair an existing storm drain outfall structure and adjacen embankment along Coyote Creek in Kelly Park in the City of San Jose. The storm drain outfall structure and adjacent embankment failed during winter storms in 2017.	In-Stream Operations & Maintenance	0.0	0.0
Other	Public	Santa Clara Valley Water District	SVWD-2019-006	Anderson Dam Spillway	The project proposes to restore the unlined spillway maintenance road and spillway flip bucket rip rap to "as-built" conditions, based on requirements imposed by the Federal Energy Regulatory Commision (FERC).	In-Stream Operations & Maintenance	0.2	0.1
Other	Public	Santa Clara Valley Water District	SVWD-2020-004	Coyote Alamositos Canal/Tulare Hill	The project would consist of mowing and overhead vegetation trimming on District fee And easement property along the canal. Work actyivities would establish a 30" wide fuel break along the north edge of the District's property on Tulare Hill, between Monterey Rd and Santa Teresa Blvd in the City of San Jose.	In-Stream Operations & Maintenance	0.0	4.4
Rural Development Projects								
Residential	Private	Santa Clara County Planning	SCPN-2018-008	Hendry Lane Turner	New single family residence with attached garage, driveway and associated improvements.	Rural Development	1.5	0.5
Commercial	Private	Santa Clara County Planning	SCPN-2019-001	Casa De Fruta Water Tanks	The Project consists of the installation of a new water line and a storage tank to replace an outdated water system at Casa de Fruita, in Santa Clara County of approximately 435 linear ft of pipe.	Rural Development	0.8	3.3
Residential	Private	Santa Clara County Planning	SCPN-2019-002	22623 Country View Lane	Removal of stockpile and the unpermitted driveway and stockpile area on the property.	Rural Development	0.0	0.2
Commercial	Private	Santa Clara County Planning	SCPN-2019-003	Watsonville Road Kuchan	New winery with driveway and a parking lot.	Rural Development	2.1	0.1
Rural Operations and Maintenance								
Utilities	PSE	PG&E		PG&E Calaveras Fault	PG &E is proposing to complete two projects: Caleveras Fault Investigation and R-1143L-300B Caleveras Fault Replacement (R-1143). Under both projects, trenching will be required to investigate the Calaveras Fault and associated landslide conditions.	Rural Operations & Maintenance	8.4	4.1
Utilities	PSE	PG&E	PSE-2020-005	PG&E Pipeline Hendry Dr	PG&E is proposing to complete three excavations within an approximately 145 by 50 foot workspace to inspect and repair an anomaly on Gas Transmission Pipeline 300B in unincorporated Santa Clara County near the northeast city boundary of Morgan Hill.	Rural Operations & Maintenance	0.0	0.3

Table 1. Summary of Covered Activities—Reporting Period

Covered Activity Type	Public/Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Facility Maintenance	Public	Santa Clara Valley Water District	SVWD-2019-007	Snell Pipeline Vault	The proposed project would ensure safe access to a vault located on the Snell Pipeline, a component of Valley Water's treated water infrastructure.	Rural Operations & Maintenance	0.3	0.0
Facility Maintenance	Public	Santa Clara Valley Water District	SVWD-2020-005	Wells Vegetation	The Project will provide for the maintenance of groundwater monitoring wells (including vegetation management) owned by Valley Water.	Rural Operations & Maintenance	0.0	0.0
Conservation Strategy Implementation								
Other	Public	Santa Clara Valley Habitat Agency	SCVHA-2019-001	CROSP Ponds 1 and 4	Two stock ponds are proposed for restoration: Pond CR-01 and CR-04. The ponds were excavated high in the watershed and the excavated material appears to have been placed on the downstream end of each pond in order to create an earthen embankment.	Conservation Strategy Implementation	1.3	0.3
Other	Public	Santa Clara Valley Habitat Agency	SCVHA-2020-001	CROSP Lower Road Repair	The Santa Clara Valley Habitat Agency, Santa Clara Valley Open Space Authority (OSA) and PG&E are jointly repairing the lower access road on the Coyote Open Space Preserve. The first phase of the project includes grading, rock treatments and dips to allow wet season travel for species surveys and maintenance on CROSP.	Conservation Strategy Implementation	0.7	0.9
Total							119.7	37.7
Total minus Conservation Strategy Implementation Projects							117.7	36.5

Table 2. Applied Conditions by Covered Activity—Reporting Period

Covered Activity		Conditions																			
Project #	Project Name	Condition 1. Avoid Direct Impacts on Legally Protected Plant and Wildlife Species	Condition 2. Incorporate Urban-Reserve System Interface Design Requirements	Condition 3. Maintain Hydrologic Conditions and Protect Water Quality	Condition 4. Avoidance and Minimization for In-Stream Projects	Condition 5. Avoidance and Minimization Measures for In-Stream Operations and Maintenance	Condition 6. Design and Construction Requirements for Covered Transportation Projects	Condition 7. Rural Development Design and Construction Requirements	Condition 8. Implement Avoidance and Minimization Measures for Rural Road Maintenance	Condition 9. Prepare and Implement a Recreation Plan	Condition 10. Fuel Buffer	Condition 11. Stream and Riparian Setbacks	Condition 12. Wetland and Pond Avoidance and Minimization	Condition 13. Serpentine and Associated Covered Species Avoidance and Minimization	Condition 14. Valley Oak and Blue Oak Woodland Avoidance and Minimization	Condition 15. Western Burrowing Owl	Condition 16. Least Bell's Vireo	Condition 17. Tricolored Blackbird	Condition 18. San Joaquin Kit Fox	Condition 19. Plant Salvage when Impacts are Unavoidable	Condition 20. Avoid and Minimize Impacts to Covered Plant Occurrences
GIL-2019-015	Gilroy Self-Storage Project	X		X																	
GIL-2020-002	Miller Ave/Town Center Multi-Family	X		X	X						X		X				X	X			
MH-2019-005	Cochrane Evergreen	X		X																	
MH-2020-001	Carpenter's Training Center	X		X																	
MH-2020-002	Butterfield Apartments	X		X														X			
MH-2020-003	225 Cochran	X		X																	
MH-2020-006	Techon	X		X																	
PSE-2020-003	PG&E Calaveras Fault	X		X												X	X	X	X		
PSE-2020-005	PG&E Pipeline Hendry Dr	X		X																	
SCPN-2018-008	Hendry Lane Turner	X		X					X												
SCPN-2019-001	Casa De Fruta Water Tanks	X		X					X		X	X		X		X	X	X			

Table 2. Applied Conditions by Covered Activity—Reporting Period

Covered Activity		Conditions																			
Project #	Project Name	Condition 1. Avoid Direct Impacts on Legally Protected Plant and Wildlife Species	Condition 2. Incorporate Urban-Reserve System Interface Design Requirements	Condition 3. Maintain Hydrologic Conditions and Protect Water Quality	Condition 4. Avoidance and Minimization for In-Stream Projects	Condition 5. Avoidance and Minimization Measures for In-Stream Operations and Maintenance	Condition 6. Design and Construction Requirements for Covered Transportation Projects	Condition 7. Rural Development Design and Construction Requirements	Condition 8. Implement Avoidance and Minimization Measures for Rural Road Maintenance	Condition 9. Prepare and Implement a Recreation Plan	Condition 10. Fuel Buffer	Condition 11. Stream and Riparian Setbacks	Condition 12. Wetland and Pond Avoidance and Minimization	Condition 13. Serpentine and Associated Covered Species Avoidance and Minimization	Condition 14. Valley Oak and Blue Oak Woodland Avoidance and Minimization	Condition 15. Western Burrowing Owl	Condition 16. Least Bell's Vireo	Condition 17. Tricolored Blackbird	Condition 18. San Joaquin Kit Fox	Condition 19. Plant Salvage when Impacts are Unavoidable	Condition 20. Avoid and Minimize Impacts to Covered Plant Occurrences
SCPN-2019-002	22623 Country View Lane	X		X				X													
SCPN-2019-003	Watsonville Road Kuchan	X		X																	
SCVHA-2019-001	CROSP Ponds 1 and 4	X		X	X	X							X								X
SCVHA-2020-001	CROSP Lower Road Repair	X		X	X				X				X						X		X
SJ-2019-020	Silver Creek Hotel	X		X																	
SJ-2019-022	North Berryessa Flea Market	X		X																	
SJ-2019-023	Alum Rock Mineral Springs Bridge Embankment	X		X	X	X						X									
SJ-2019-023	FEMA Kelly Park Storm Drain	X		X	X	X						X									
SJ-2019-027	459 Willow St Bank Stabilization	X		X	X	X															

Table 2. Applied Conditions by Covered Activity—Reporting Period

Covered Activity		Conditions																			
Project #	Project Name	Condition 1. Avoid Direct Impacts on Legally Protected Plant and Wildlife Species	Condition 2. Incorporate Urban-Reserve System Interface Design Requirements	Condition 3. Maintain Hydrologic Conditions and Protect Water Quality	Condition 4. Avoidance and Minimization for In-Stream Projects	Condition 5. Avoidance and Minimization Measures for In-Stream Operations and Maintenance	Condition 6. Design and Construction Requirements for Covered Transportation Projects	Condition 7. Rural Development Design and Construction Requirements	Condition 8. Implement Avoidance and Minimization Measures for Rural Road Maintenance	Condition 9. Prepare and Implement a Recreation Plan	Condition 10. Fuel Buffer	Condition 11. Stream and Riparian Setbacks	Condition 12. Wetland and Pond Avoidance and Minimization	Condition 13. Serpentine and Associated Covered Species Avoidance and Minimization	Condition 14. Valley Oak and Blue Oak Woodland Avoidance and Minimization	Condition 15. Western Burrowing Owl	Condition 16. Least Bell's Vireo	Condition 17. Tricolored Blackbird	Condition 18. San Joaquin Kit Fox	Condition 19. Plant Salvage when Impacts are Unavoidable	Condition 20. Avoid and Minimize Impacts to Covered Plant Occurrences
SJ-2020-005	IBM Sports Field	X	X	X																	
SJ-2020-009	Headworks Improvements	X		X												X					
SJ-2020-015	Monterey and Bernal Bridge	X		X																	
SVWD-2019-006	Anderson Dam Spillway	X		X		X						X	X							X	X
SVWD-2019-007	Snell Pipeline Vault	X		X					X												
SVWD-2020-004	Coyote Alamitos Canal/Tulare Hill	X		X					X				X	X	X						X
SVWD-2020-005	Wells Vegetation	X		X													X				
# of Times Condition Applied		27	1	27	6	5	0	3	3	0	0	2	4	5	2	3	3	5	2	2	4

Table 3. Measures Required at the Species Level For Covered Activities—Reporting Period

Project #	Project Name	Species-Level Measures-Wildlife																							
		Western Burrowing Owl				Least Bell's Vireo				Tricolored Blackbird				San Joaquin Kit Fox				Bay Checkerspot							
		Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring				
GIL-2020-002	Miller Ave/Town Center Multi-Family					X	X			X	X							X	X						
MH-2020-002	Butterfield Apartments									X	X														
PSE-2020-003	PG&E Calaveras Fault	X	X			X				X				X	X										
SCPN-2019-001	Casa De Fruta Water Tanks					X				X	X			X											
SCVHA-2019-001	CROSP Ponds 1 and 4																	X	X						
SCVHA-2020-001	CROSP Lower Road Repair																	X	X						
SJ-2020-009	Headworks Improvements	X	X																						
SVWD-2019-006	Anderson Dam Spillway																	X	X						
SVWD-2020-004	Coyote Alamos Canal/Tulare Hill	X																X							
SVWD-2020-005	Wells Vegetation	X				X				X	X														
Total		10	4	2	0	0	4	1	0	0	0	5	4	0	0	0	0	2	1	0	0	5	4	0	0

Table 3. Measures Required at the Species Level For Covered Activities—Reporting Period

Project #	Project Name	Species-Level Measures-Plants																		
		Smooth		Fragrant		Metcalf		Most		Tiburon		Coyote		Santa		Mount		Loma		
		Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	
GIL-2020-002	Miller Ave/Town Center Multi-Family	X				X		X						X		X				
MH-2020-002	Butterfield Apartments																			
PSE-2020-003	PG&E Calaveras Fault																			
SCPN-2019-001	Casa De Fruta Water Tanks																			
SCVHA-2019-001	CROSP Ponds 1 and 4																			
SCVHA-2020-001	CROSP Lower Road Repair	X	X			X	X	X	X					X	X	X	X	X	X	
SJ-2020-009	Headworks Improvements																			
SVWD-2019-006	Anderson Dam Spillway	X				X		X						X		X				
SVWD-2020-004	Coyote Alamos Canal/Tulare Hill	X				X		X						X		X				
SVWD-2020-005	Wells Vegetation																			
Total		10	4	1	0	0	4	1	4	1	0	0	0	0	4	1	4	1	1	1

Table 4. Summary of Impacts to Land Cover Types—Reporting Period and Cumulative

Land Cover Type	Reporting Period		Cumulative					
	(acres, unless otherwise noted)		(acres, unless otherwise noted)					
	Permanent	Temporary	Permanent	Temporary	Total Allowable Permanent Impact	Percentage used of Total Allowable Permanent Impacts (%)	Total Allowable Temporary Impact	Percentage used of Total Allowable Temporary Impacts (%)
Terrestrial								
California Annual Grassland	8.6	7.5	326.6	68.9	2,006	16%	574	12%
Serpentine Bunchgrass	1.1	4.1	35.9	14.5	550	7%	91	16%
Serpentine Rock Outcrop/Barrens	0.0	0.0	3.7	0.1	22	17%	2	4%
Serpentine Seep	0.0	0.0	0.0	0.0	0.5	2%	0.4	0%
Rock Outcrop (Non-Serpentine)	0.0	0.0	0.0	0.0	0.5	0%	0.2	0%
Northern mixed chaparral/chamise chaparral	0.0	0.0	10.3	0.4	86	12%	31	1%
Mixed serpentine chaparral	0.0	0.0	0.7	1.2	131	1%	30	4%
Northern coastal scrub/Diablan coastal scrub	0.1	0.0	2.7	0.5	178	1%	66	1%
Coyote brush scrub	0.0	0.0	3.4	0.3	10	34%	10	3%
Valley oak woodland	0.2	0.1	2.1	1.1	201	1%	45	2%
Mixed oak woodland and forest	0.1	0.0	17.5	6.7	1,441	1%	302	2%
Coast live oak woodland and forest	2.7	1.2	14.1	1.9	840	2%	181	1%
Blue oak woodland	0.0	0.0	3.8	1.7	131	3%	39	4%
Foothill pine-oak woodland	0.0	0.0	5.7	0.0	46	12%	26	0%
Mixed evergreen forest	0.0	0.0	0.0	0.1	50	0%	25	1%
Redwood forest	0.0	0.0	0.0	0.0	109	0%	56	0%
Ponderosa pine woodland	0.0	0.0	0.0	0.0	0	--	1	0%
Knobcone pine woodland	0.0	0.0	0.0	0.0	8	0%	2	0%
Non-serpentine native grassland	0.2	0.0	0.2	0.0	--	--	--	--
<i>Subtotal terrestrial</i>	<i>12.9</i>	<i>12.9</i>	<i>426.6</i>	<i>97.4</i>	<i>5,810</i>	<i>7%</i>	<i>1,482</i>	<i>7%</i>
Aquatic								
Willow riparian forest and scrub	0.12	0.00	2.2	1.7	180	1%	103	1.6%
Central California sycamore alluvial woodland	0.00	0.00	0.0	0.0	7	0%	6	0%
Mixed riparian woodland and forest	0.00	0.08	2.0	1.0	109	2%	101	1%
Coastal and valley freshwater marsh	0.01	0.01	2.4	3.9	25	10%	7	55%
Seasonal wetland	0.00	0.06	0.3	0.1	15	2%	2	7%

Table 4. Summary of Impacts to Land Cover Types—Reporting Period and Cumulative

Land Cover Type	Reporting Period		Cumulative					
	(acres, unless otherwise noted)		(acres, unless otherwise noted)					
	Permanent	Temporary	Permanent	Temporary	Total Allowable Permanent Impact	Percentage used of Total Allowable Permanent Impacts (%)	Total Allowable Temporary Impact	Percentage used of Total Allowable Temporary Impacts (%)
Pond	0.02	0.00	0.1	0.2	52	0%	9	2%
Reservoir	0.00	0.00	32.8	0.3	-	-	-	-
<i>Subtotal Aquatic</i>	<i>0.15</i>	<i>0.15</i>	<i>39.8</i>	<i>7.2</i>	<i>388</i>	<i>10%</i>	<i>228</i>	<i>3%</i>
Stream (length in linear feet)								
Total stream length	448.0	81.0	630.0	893.0	49,632	1%	253,440	0%
Agricultural								
Orchard	0.0	0.0	65.8	4.6	625	11%	24	19%
Vineyard	0.2	0.0	0.2	0.2	37	-	3	8%
Agriculture developed	2.9	0.3	28.2	1.2	-	-	-	-
Grain, row-crop, hay and pasture, disked/short-	72.5	15.9	771.4	108.4	7,356	10%	284	38%
<i>Subtotal Agricultural</i>	<i>75.6</i>	<i>16.1</i>	<i>865.6</i>	<i>114.4</i>	<i>8,018</i>	<i>11%</i>	<i>311</i>	<i>37%</i>
Developed								
Rural residential	0.3	0.5	16.7	8.2	1,603	1%	139	6%
Golf courses/ Urban parks	4.1	0.9	179.4	11.9	2,095	9%	40	30%
Ornamental woodland	0.0	0.5	5.1	0.7	30	-	8	8%
Barren	0.9	0.0	70.8	1.1	32	221%	15	7%
Urban Suburban	23.1	7.6	627.7	109.1	-	-	-	-
<i>Subtotal Developed</i>	<i>28.4</i>	<i>9.5</i>	<i>899.7</i>	<i>130.9</i>	<i>3,760</i>	<i>24%</i>	<i>202</i>	<i>65%</i>
Totals								
Acres	117.7	36.5	2,231.6	350.0	17,976	12%	2,223	16%
Linear Feet	448.0	81.0	630.0	893.0	49632	1%	253,440	0%

Aquatic Land Cover Type (acres)	Impacts			
	Reporting Period		Cumulative	
Watershed	Permanent	Temporary	Permanent	Temporary
Coyote				
Willow riparian forests, woodlands, and scrub	0.00	0.00	1.36	0.97
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.08	0.35	0.09
Coastal and valley freshwater marsh	0.00	0.01	0.00	3.88
Seasonal wetland	0.00	0.06	0.03	0.09
Pond	0.02	0.00	0.02	0.00
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.02	0.15	1.76	5.03
Stream (linear feet)	448.00	81.00	464.00	81.00
Guadalupe				
Willow riparian forests, woodlands, and scrub	0.12	0.00	0.24	0.71
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.39	0.17
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.20	0.02
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	32.80	0.30
Subtotal aquatic	0.12	0.00	33.63	1.20
Stream (linear feet)	0.00	0.00	137.00	715.00
Pajaro				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.01	0.01
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.58	0.50
Coastal and valley freshwater marsh	0.00	0.00	0.04	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.00	0.00	0.63	0.51
Stream (linear feet)	0.00	0.00	0.00	0.00
Uvas				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.01	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.01	0.28
Coastal and valley freshwater marsh	0.01	0.00	0.13	0.00
Seasonal wetland	0.00	0.00	0.03	0.00
Pond	0.00	0.00	0.04	0.00
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.01	0.00	0.22	0.28
Stream (linear feet)	0.00	0.00	29.00	-
Llagas				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.04	0.00

Aquatic Land Cover Type (acres)	Impacts			
	Reporting Period		Cumulative	
Watershed	Permanent	Temporary	Permanent	Temporary
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.04	0.00
Coastal and valley freshwater marsh	0.00	0.00	2.26	0.00
Seasonal wetland	0.00	0.00	0.00	0.02
Pond	0.00	0.00	0.00	0.17
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.00	0.00	2.34	0.19
Stream (linear feet)	0.00	0.00	0.00	97.00
San Tomas				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.00	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.00	0.00
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.00	0.00	0.00	0.00
Stream (linear feet)	0.00	0.00	0.00	0.00
Alamitos Creek				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.00	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.00	0.00
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	0.00	0.00
Subtotal aquatic	0.00	0.00	0.00	0.00
Stream (linear feet)	0.00	0.00	0.00	0.00
Total				
Willow riparian forests, woodlands, and scrub	0.12	0.00	1.72	1.69
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.08	1.37	1.04
Coastal and valley freshwater marsh	0.01	0.01	2.43	3.88
Seasonal wetland	0.00	0.06	0.26	0.13
Pond	0.02	0.00	0.06	0.17
Reservoir	0.00	0.00	32.80	0.30
Total aquatic	0.15	0.15	38.64	7.21
Total stream length	448.00	81.00	630.0	893.0

Table 6. Summary of Impacts to Modeled Covered Species Habitat

Modeled Habitat	Reporting Period		Cumulative					
	Impacts (acres, unless otherwise		Impacts (acres, unless otherwise noted)					
	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%) _a
Bay Checkerspot Butterfly								
Primary Habitat	0.8	4.2	151.4	17.5	300	50%	54	32%
California Tiger Salamander								
Breeding Habitat	0.0	0.0	0.9	0.3	77	1%	14	2%
Non-breeding Habitat	82.5	16.5	749.0	157.2	12,855	6%	1,529	10%
<i>Total</i>	82.5	16.5	749.9	157.5	12,932	6%	1,543	10%
California Red-Legged Frog								
Primary Habitat	0.2	0.4	35.8	7.1	299	12%	116	6%
Secondary Habitat	75.7	30.2	1,033.9	200.9	12,937	8%	1,489	13%
<i>Total</i>	75.9	30.6	1,069.7	208.0	13,236	8%	1,605	13%
Foothill Yellow-Legged Frog (length in miles)								
Primary Habitat	0.0	0.0	0.1	0.1	2	5%	0.7	14%
Secondary Habitat	0.0	0.0	0.3	0.1	5	6%	1.3	8%
<i>Total</i>	0.0	0.0	0.4	0.2	7	6%	2.0	10%
Western Pond Turtle								
Primary Habitat	8.8	1.3	240.3	41.0	1,824	13%	440	9%
Secondary Habitat	51.5	11.8	497.0	107.0	7,825	6%	986	11%
<i>Total</i>	60.3	13.1	737.3	148.0	9,649	8%	1,426	10%
Western Burrowing Owl								
Occupied Nesting Habitat	9.4	19.9	126.4	24.8	198	64%	20	124%
Potential Nesting Habitat	85.1	7.2	367.4	20.0	4,000	9%	604	3%
Overwintering Habitat	80.4	30.4	944.5	200.9	9,671	10%	762	26%
<i>Total</i>	174.9	57.5	1,438.3	245.7	13,869	10%	1,385	18%
Least Bell's Vireo								
Primary Habitat	0.1	0.0	9.9	1.4	72	14%	43	3%

Table 6. Summary of Impacts to Modeled Covered Species Habitat

Modeled Habitat	Reporting Period		Cumulative					
	Impacts (acres, unless otherwise		Impacts (acres, unless otherwise noted)					
	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%) _a
San Joaquin Kit Fox								
Secondary Habitat	0.9	4.4	7.1	6.4	198	4%	46	14%
Secondary Habitat (low use)	0.0	0.0	3.6	16.7	28	13%	6	
<i>Total</i>	0.9	4.4	10.7	23.1	226	5%	52	44%
Tricolored Blackbird								
Primary Habitat	0.1	0.4	115.6	9.0	276	42%	93	10%
Secondary Habitat	80.2	30.2	985.6	202.5	10,317	10%	768	26%
<i>Total</i>	80.3	30.6	1,101.2	211.5	10,593	10%	861	25%
Mt. Hamilton Thistle								
Primary Habitat	0.0	0.0	0.1	-	26	0%	4	0%
Fragrant Fritillary								
Primary Habitat	0.0	0.0	18.8	6.8	5503	0%	59	12%
Secondary Habitat	5.0	7.1	129.4	32.5	2,729	5%	655	5%
<i>Total</i>	5.0	7.1	148.2	39.3	3,279	5%	714	6%
Loma Prieta Hoita								
Primary Habitat	1.8	1.0	52.5	7.0	2,117	2%	413	2%
Secondary Habitat	0.2	0.0	20.0	1.6	266	8%	60	3%
<i>Total</i>	2.0	1.0	72.5	8.6	2,383	3%	473	2%
Smooth Lessingia								
Primary Habitat	0.8	4.2	163.4	17.9	550	30%	68	26%
Metcalf Canyon Jewelflower								
Primary Habitat	0.0	0.0	18.8	6.7	550	3%	62	11%
Most Beautiful Jewelflower								
Primary Habitat	0.9	4.3	177.9	19.9	550	32%	92	22%
Secondary Habitat	0.0	0.0	-	-	0	0%	0	0%
<i>Total</i>	0.9	4.3	177.9	19.9	550	32%	92	22%

Modeled Habitat	Reporting Period		Cumulative					
	Impacts (acres, unless otherwise)		Impacts (acres, unless otherwise noted)					
	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impacts to Modeled Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%) ^a
<p>^a Temporary Impact tracking was updated consistent with the memorandum <i>Tracking Temporary Impacts for Compliance Monitoring of the Santa Clara Valley Habitat Plan</i> dated September 20, 2018. Temporary Impacts are track cumulatively over the permit term against the total allowable impacts for each species (inclusive of all modeled habitat types), while ensuring that impacts to breeding habitat, primary habitat, or occupied nesting habitat (as applicable by species) is not exceeded (in the case of San Joaquin kit fox, this limitation applies to secondary habitat).</p>								

Table 7. Summary of Impacts to Critical Habitat from Covered Activities

Species	Reporting Period		Cumulative					
	(acres)		(acres)					
	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impact to Critical Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impact to Critical Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%)
California Red-Legged Frog								
STC Unit 1	0.0	0.0	19.9	7.2				
STC Unit 2	0.9	0.9	23.7	3.7				
ALA Unit 2								
<i>Total</i>	0.9	0.9	43.6	10.9	1,035	4%	277	4%
California Tiger Salamander								
EBR Unit 5								
EBR Unit 6			4.2	1.1				
EBR Unit 7			2.1	4.7				
EBR Unit 8			29.8	10.1				
EBR Unit 9								
EBR Unit 10a			0.2					
EBR Unit 10b								
EBR Unit 11								
EBR Unit 12		3.0	2.8	5.9				
<i>Total</i>		3.0	39.0	21.9	272	14%	125	17%
Bay Checkerspot Butterfly								
Tulare Hill		0.4	0.4	0.8				
Metcalf			1.7	2.4				
Santa Teresa Hills			7.5	1.0				
Calero Reservoir			13.5	6.3				
Kirby	0.8	1.0	33.6	5.6				
Kalana			0.3					
Hale								
Bear Ranch								
San Martin								
<i>Total</i>	0.8	1.4	57.0	16.1	550	10%	86	19%

Table 8. Summary of Impacts to Covered Plants

Common Name	Scientific Name	Known Occurrences that May Be Removed by Covered Activities ¹	Impacts (Occurrences)				
			Reporting Period		Cumulative		
			Extant	New	Extant	New	
Tiburon paintbrush	<i>Castilleja affinis ssp. Neglecta</i>	0	0	0	0	0	0
Coyote ceanothus ²	<i>Ceanothus ferrisiae</i>	3,650	5	0	527	0	0
Mt. Hamilton thistle	<i>Cirsium fontinale var. campylon</i>	6	0	0	0	0	0
Santa Clara Valley dudleya	<i>Dudleya abramsii ssp. Setchellii</i>	11	0	0	0	0	1
Fragrant fritillary	<i>Fritillaria liliacea</i>	1	0	0	0	0	0
Loma Prieta hoita	<i>Hoita strobilina</i>	0	0	0	0	0	0
Smooth lessingia	<i>Lessingia micradenia var. glabrata</i>	6	0	0	0	0	0
Metcalf Canyon jewelflower	<i>Streptanthus albidus ssp. albidus</i>	2	0	0	0	0	0
Most beautiful jewelflower	<i>Streptanthus albidus ssp. peramoenus</i>	6	0	0	0	0	0

¹ These could change over time if additional occurrences are found. This column provides the limit of impacts by number of occurrences allowable under the Habitat Plan. The impact limit assumes that no new occurrences of the species are discovered during the permit term and that occurrences impacted are in worse condition than those protected within reserves . Impact limits were determined based on estimated impacts of covered activities. In some cases, impacts were capped to ensure regulatory standards are met.

²3,650 individuals of the occurrence on either side of Anderson Dam could be removed by covered activities, or up to 5% of the total population.

Figure 2. Location of FY19-20 Private Covered Projects

MAP by:BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2019-2020\Annual Report 2019-2020.aprx (3/3/2021)

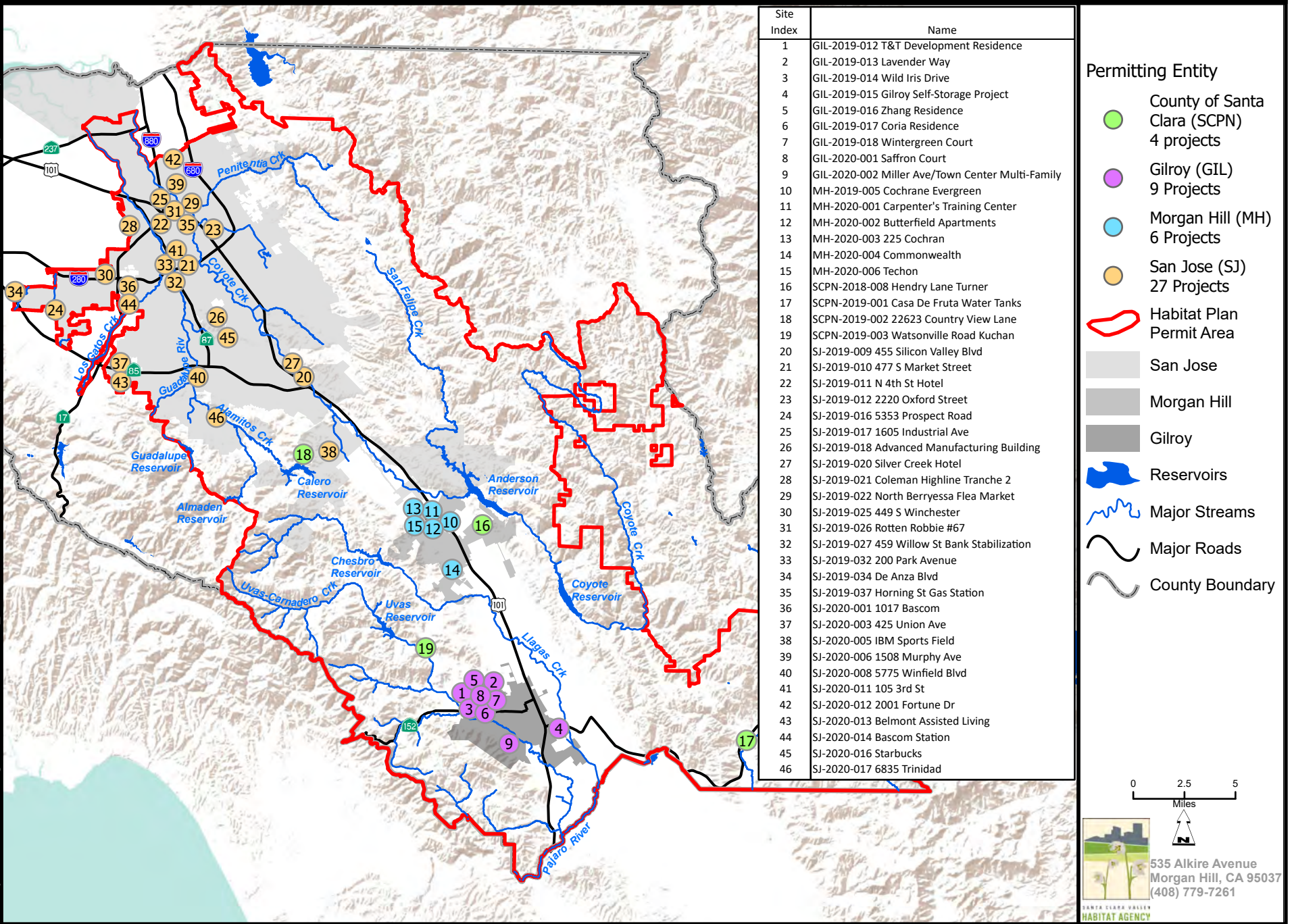
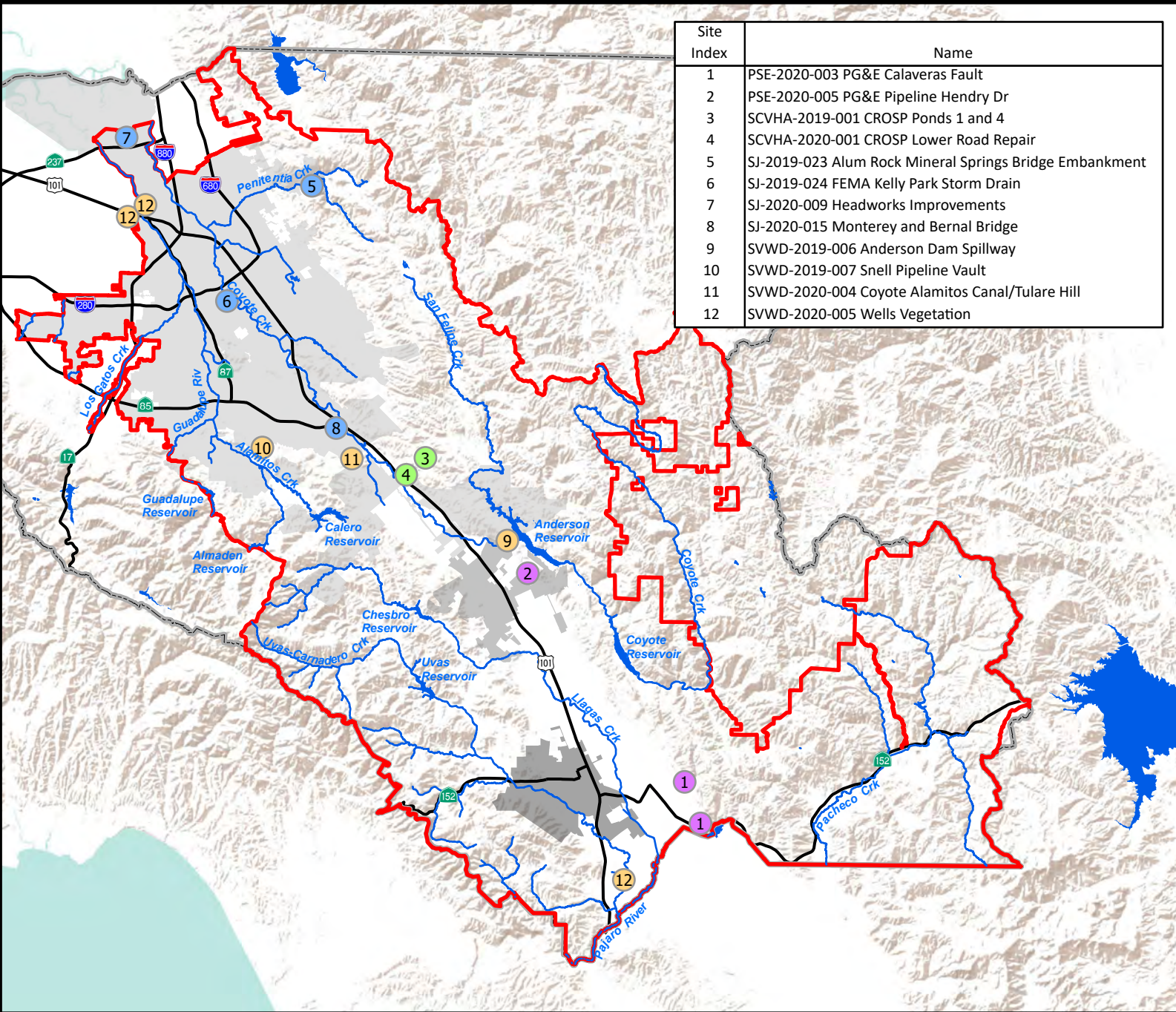


Figure 3. Location of FY19-20 Public Covered Projects

Site Index	Name
1	PSE-2020-003 PG&E Calaveras Fault
2	PSE-2020-005 PG&E Pipeline Hendry Dr
3	SCVHA-2019-001 CROSP Ponds 1 and 4
4	SCVHA-2020-001 CROSP Lower Road Repair
5	SJ-2019-023 Alum Rock Mineral Springs Bridge Embankment
6	SJ-2019-024 FEMA Kelly Park Storm Drain
7	SJ-2020-009 Headworks Improvements
8	SJ-2020-015 Monterey and Bernal Bridge
9	SVWD-2019-006 Anderson Dam Spillway
10	SVWD-2019-007 Snell Pipeline Vault
11	SVWD-2020-004 Coyote Alamos Canal/Tulare Hill
12	SVWD-2020-005 Wells Vegetation

- ### Jurisdiction
- Habitat Agency (SCVHA)
2 Projects
 - Participating Special Entity (PSE)
2 Projects
 - San Jose (SJ)
4 Projects
 - Water District (SVWD)
4 Projects
 - Habitat Plan Permit Area
 - San Jose
 - Morgan Hill
 - Gilroy
 - Reservoirs
 - ~ Major Streams
 - ~ Major Roads
 - ~ County Boundary

MAP by BAZ, SCC Planning Office TeamGIS, D:\HCP_PROJECTS\AnnualReports\AnnualReport2019-2020\Annual Report 2019-2020.aprx (3/3/2021)



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SANTA CLARA VALLEY
HABITAT AGENCY

3.1 Reserve System

The Reserve System includes seven properties spanning 3,042¹⁵ acres (**Figure 4**). These lands include habitat for 17 of the 18 covered species and are known to be occupied by eleven species (three covered wildlife species and eight covered plant species). Land cover types include 14 of the 21 required for acquisition and span Coyote-4, Coyote-5, Guadalupe-3, Llagas-2, Llagas-3, Pacheco-6, Uvas-2, and Uvas-3 Conservation Analysis Zones. Protection of landscape linkages 6, 7, 8, 9, 11, 12, 13, 15, and 17 are contributed to with these lands.

The Habitat Plan Reserve System will be at least 46,496 acres in size and will encompass up to an estimated 46,920 acres. Land preservation is an important component of the Habitat Plan conservation strategy, acquired through fee title purchase from willing sellers or through establishment of conservation easements to create the Habitat Plan Reserve System. The Reserve System links existing protected areas and newly protected lands. When completed, the Reserve System will protect substantial areas of high-quality habitat for covered species and provide extensive opportunities for habitat enhancement, restoration, and creation. The minimum terrestrial land acquisition requirement is 32,850 acres, and which must be accomplished by 2058 (Year 45). In addition to newly acquired land, 13,291 acres of existing open space will be incorporated into the Reserve System to enhance its long-term management.

Regardless of impacts, the Habitat Agency must acquire, at a minimum, 250 acres of riparian forest and scrub, 40 acres of central California sycamore alluvial woodland, 10 acres of coast and valley freshwater marsh (perennial wetland), 5 acres of seasonal wetland, 50 acres of ponds, and 100 miles of streams. The following principles guide the development of the Reserve System.

- Maximize size efficiently.
- Preserve irreplaceable and threatened resources.

Reporting Requirements

- A year-to-date and cumulative summary of the extent of modeled habitat for covered species protected. This will be calculated by overlaying the most current species habitat models.
- Location, extent, and timing of land acquisition and Habitat Plan reserve establishment within each Conservation Analysis Zone.
- An assessment of the progress toward all acquisition requirements by local, state, and federal sources, including land cover types, landscape linkages, covered plant occurrences, and wetland protection. This assessment will include evaluation of compliance with the reserve design and assembly principles in Chapter 5 of the Habitat Plan (e.g., minimizing edge).
- A copy of all easements recorded during the reporting year.

¹⁵ The total of 3,042 acres were acquired by the end of the FY1920 reporting year. An additional 3,451 acres was acquired after June 2020 and will be detailed in the FY2021 report.

- Preserve the highest-quality communities.
- Preserve connectivity.
- Minimize edge.
- Buffer urban impacts.
- Fully represent environmental gradients.
- Consider watersheds.
- Consider full ecological diversity within communities.
- Consider management needs.

This chapter provides a summary of the sites acquired and quantifies contributions to requirements for conservation analysis zones (CAZs), covered plant species occurrences, land cover requirements, species modeled habitat, and landscape linkages. The *Sites Under Review* section provides a summary of properties evaluated and assessed during the reporting period.

3.1.1 Conservation Analysis Zones

The Plan Area is subdivided into 34 discrete CAZs to develop priorities and identify potential locations for acquisition (**Figure 4**). These zones define the areas in which conservation actions could occur outside existing protected areas. CAZs were defined within the six primary watersheds of the study area: Guadalupe, Coyote, Llagas, Uvas, Pacheco, and Pescadero.

To ensure that acquisition occurs in locations that will maximize the benefits to natural communities and covered species, acquisition requirements are also defined by CAZ or by a combination of CAZs. The Habitat Plan describes land acquisition and enhancement requirements for select CAZs where geographic specificity was required to ensure that Habitat Plan biological goals and objectives were met. **Figure 4** illustrates the relative level of land acquisition effort that would be required in each CAZ (high, moderate, or low).

3.2 Sites Acquired

This section summarizes the progress toward land acquisition requirements during this reporting period and to date (**Table 9 through Table 13**).

3.2.1 Reporting Period

Five new properties were acquired during the FY1920 reporting year:

- **Tulare Hill Wedge Reserve.** The property is 36 acres, consisting of annual grassland and serpentine soils in a strategic location preserving wildlife connectivity in Coyote Valley.
- **Tilton Ranch South Reserve.** The property is 602 acres, which consists of very high value habitat including serpentine grassland, several covered plant species and one of only three known occurrences of Coyote Ceanothus.

- **Davidson Reserve.** The property is 94 acres of annual grassland and serpentine soils adjacent to the southeast of Tilton Ranch South Reserve. Acquisition of this site will protect the remaining portion of the Coyote ceanothus occurrence on the Tilton Ranch South Reserve.
- **Uvas South Reserve.** The property is 347 acres extending uphill and to the west of Uvas Dam and reservoir. This site includes varied habitat, with grassland, coastal and sage scrub, blue and live oak woodlands. It also provides good wildlife connectivity in foothills of the Santa Cruz Mountains.
- **Ciraulo.** The property is 103 acres and includes one mile of Pacheco Creek immediately upstream from the existing Pacheco Creek Reserve. The property will expand the Reserve in this strategic location, further protecting important wildlife connectivity and increasing the amount of sycamore alluvial woodland in conservation.

3.2.2 Cumulative

The Reserve System includes seven properties as listed above with an additional two properties under short-term management agreements for western burrowing owl (Warm Springs Unit at Don Edwards National Wildlife Refuge [Refuge] and Santa Clara-San José Regional Wastewater Treatment Facility Bufferlands). The Reserve System includes a total of 3,042 acres. Terrestrial land cover types comprise 3,006 acres, fulfilling approximately 11% of the total terrestrial land acquisition requirement (32,850 acres) under the Habitat Plan. The Reserve System contributes to the following individual land cover type acquisition requirements: 1,562.7 acres (39.1%) of serpentine bunchgrass grassland, 464.6 acres (3.5%) of California annual grassland, 10.1 acres (8.4%) of serpentine rock outcrop/barren, 4 acres (39.6%) of serpentine seep, 172.4 acres (24.6%) of mixed serpentine chaparral, 14.5 acres (0.9%) of valley oak woodland, 206.9 acres (2.9%) of mixed oak woodland and forest, 401.8 acres (13.9%) of coast live oak forest and woodland, 58.8 acres (6.4%) of willow riparian forest and scrub and mixed riparian forest and woodland, 50.8 acres (94.1%) of Central California sycamore alluvial woodland, 2.6 acres (4.3%) of seasonal wetland, and 12.6 acres (12.1%) of pond. The Reserve System also includes 23.4 miles of streams, which is 21.2 % of the 2,392-acre stream acquisition goal called for in the Habitat Plan. In addition, a total of 3.2 acres of California annual grassland, 3.0 acre of mixed oak woodland and forest, 4.9 acres of willow riparian forest and scrub and mixed riparian forest and woodland, 0.3 acre of coastal valley and freshwater marsh (perennial wetland), 4.0 acres of seasonal wetland, 0.2 acre of pond, and 1.8 miles of stream have been restored within the Reserve System (**Table 9**).

The Reserve System protects habitat for 16 covered species and fulfills over 40% of the modeled habitat protection goals for six of these covered species (Bay checkerspot butterfly, Mount Hamilton thistle, fragrant fritillary, smooth lessingia, Metcalf Canyon jewelflower, and most beautiful jewelflower) (**Table 10**). The Reserve System includes eight CAZs, Coyote-4, Coyote-5, Guadalupe-3, Llagas-2, Llagas-3, Pacheco-6, Uvas-2, and Uvas-3, fulfilling 859 acres (4%) of the total 21,000 natural land cover acquisition requirements in conservation analysis zones (**Table 11**). A summary of the number the protected covered plant occurrences in the Reserve System is shown in **Table 12**. The Reserve System also contributes to the protection of nine landscape linkages (#6, 7, 8, 9, 11, 12, 13, 15, and 17). Tulare Hill Wedge Reserve contributes to four linkages (#6, #7, #8, and #9), Uvas South Reserve contributes to two linkages (#12 and #13), and Davidson/Tilton Ranch South Reserves contribute to one linkage (#11). Pacheco Creek Reserve also contributes to two linkages (#15 and #17).

3.2.3 Pre-Existing Easements, Access Routes, and Leases

Reserve System properties—CROSP and Pacheco Creek Reserve—include existing easements, access routes, and lease areas. These areas may conflict with the biological goals and objectives of the Habitat Plan or are already assigned as mitigation. For compliance tracking purposes, these areas are identified as “existing easements” in **Table 9** and **Table 10**. On the CROSP, these areas include PG&E easements and trails. On the Pacheco Creek Reserve, these areas include utility, trail and access easements. These areas do not count toward most Habitat Plan compliance metrics and are excluded from Stay-Ahead compliance. They are included when reporting the size of the Reserve System and accounting for areas protected within wildlife corridors and CAZs. Restoration in these areas may still be credited toward Habitat Plan requirements if approved by the Wildlife Agencies. Management and monitoring will occur in these areas consistent with Reserve Unit Management and Monitoring Plan requirements.

3.3 Sites Under Review

3.3.1 Acquisitions Under Consideration

A total of 13 potential land acquisitions are currently under consideration by the Habitat Agency. **Table 13** provides a list of these sites. These acquisition locations generally target areas with populations of covered species and covered natural communities, such as the Calero Preserve (which is a 3,020-acre¹⁶ subset of Calero County Park.). Acquisition locations also include properties that will link to open space lands outside the Reserve System to protect wildlife corridors, as well as large landscape areas that can buffer against the effects of climate change. Negotiations on all properties shown in **Table 13** have begun, however it is unclear if or when they will each be acquired.

Two additional properties were acquired by the Habitat Agency after the end of the FY1920 reporting year and will be referenced as new Reserve System acquisitions in the FY2021 Annual Report. Those two properties are:

- Tilton Ranch – The property is 1,960 acres in size and is adjacent to the north of the recently acquired Tilton Ranch South Reserve. Similar in terrain and land cover to its southern neighbor, the Tilton Ranch also includes high value serpentine grasslands, is home to four or more covered plant species, as well as bay checkerspot butterfly.
- East Coyote Ridge Reserve – The property known as UTC (United Technology Corporation) East Parcel is 1,521 acres in size, adjacent to the east of the existing Coyote Ridge Open Space Preserve. This acquisition would nearly double the size of the CROSP and results in a single Reserve System management unit that is 3,323 acres in size.

¹⁶ This County enrollment will count both towards existing open space requirements and new acquisition requirements. Lands acquired during the preparation of the Habitat Plan (after the Planning Agreement was signed) are considered interim conservation and may count toward new acquisition requirements once the site is incorporated into the Reserve System through placement of a conservation easement. A portion of Calero County Park, Rancho San Vicente, acquired in October 2009 using County Park Charter Funds, is considered interim conservation.

Table 9a. Summary of Land Acquisition Contribution to Land Cover Requirements To Date

Land Cover Type	Land Cover Requirements (acres)			Reporting Period (acres)				Cumulative (acres) ^{a,b}				Percent Complete (%)	
	Total in Study Area (acres)	Total Protection Requirements (acres)	Restoration + Creation	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation	Protection	Restoration + Creation
California Annual Grassland	81,795	13,300		93.0	0.0	0.0	0.0	464.6	23.0	487.6	3.2	3.5%	
Serpentine Bunchgrass Grassland	10,308	4,000		342.1	0.0	0.0	0.0	1,562.7	16.5	1579.2	0.0	39.1%	
Serpentine Rock Outcrop/ Barrens	260	120		9.9	0.0	0.0	0.0	10.1	0.0	10.1	0.0	8.4%	
Serpentine Seep	34	10		3.6	0.0	0.0	0.0	4.0	0.0	4.0	0.0	39.6%	
Rock Outcrop	87	10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	
Northern Mixed Chaparral / Chamise Chaparral	23,763	400		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	-	
Mixed Serpentine Chaparral	3,712	700		97.4	0.0	0.0	0.0	172.4	0.2	172.5	0.0	24.6%	
Northern Coastal Scrub / Diablan Sage Scrub	10,306	1,400		52.3	0.0	0.0	0.0	52.3	0.0	52.3	0.0	3.7%	
Valley Oak Woodland	12,895	1,700		13.4	0.0	0.0	0.0	14.5	0.0	14.5	3.0	0.9%	
Mixed Oak Woodland and Forest	84,488	7,100		178.8	0.0	0.0	0.0	206.9	4.4	211.2	0.0	2.9%	
Blue Oak Woodland	11,160	1,100		6.6	0.0	0.0	0.0	6.6	0.0	6.6	0.0	0.6%	
Coast Live Oak Forest and Woodland	31,652	2,900		317.5	0.0	0.0	0.0	401.8	0.2	402.0	0.0	13.9%	
Foothill Pine—Oak Woodland	10,960	80		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	
Mixed Evergreen Forest	5,775	20		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland	6,310	917	339	36.6	0.0	0.0	0.0	58.8	1.6	60.4	4.9	6.4%	1.4%
Central California Sycamore Alluvial Woodland	373	54	14	45.0	0.0	0.0	0.0	50.8	2.4	53.1	0.0	94.1%	
Redwood Forest	9,693	10		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Coastal and Valley Freshwater Marsh (Perennial Wetland)	381	95	45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3		0.7%
Seasonal Wetland	201	60	30	0.7	0.0	0.0	0.0	2.6	0.0	2.6	4.0	4.3%	13.3%
Pond	1,110	104	72	12.2	0.0	0.0	0.0	12.6	0.0	12.6	0.2	12.1%	0.3%
Subtotal (acres)	305,263	34,080	500	1,209	0.0	0.0	0.0	3,020.7	48.5	3,069.2	15.6	8.9%	3.1%
Streams (miles)	2,392.0	110.4	10.4	9.8	0.0	0.0	0.0	23.4	0.1	13.7	1.8	21.2%	17.3%
Land Cover Types without Acquisition, Restoration, or Creation Requirements													
Coyote brush scrub	180			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ponderosa Pine Woodland	419			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Knobcone Pine Woodland	711			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Reservoir	2,767			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Orchard	2,697			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Vineyard	1,393			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agriculture developed / covered agriculture	1,935			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Grain, row-crop, hay and pasture, disked/short-term fallowed	33,648			47.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Urban-suburban	89,438			9.0	0.0	0.0	0.0	0.04	0.00	0.04	0.0		
Rural - residential	12,414			7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Barren	211			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Landfill	364			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Golf courses / urban parks	8,673			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Ornamental woodland	95			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Subtotal	154,944	0	0	63.60	0.0	0.0	0.0	0.04	0.0	0.04	0.0		
TOTAL (acres)	460,207	34,080	500	1,272.7	0.0	0.0	15.0	3,084.3	48.5	1,977.2	9.4	9.1%	1.9%
TOTAL Streams (miles)	2,392.0	110.4	10.4	9.8	0.0	0.0	1.8	23.4	0.1	13.7	1.8	21.2%	17.6%

^a Cumulative acres include properties owned in fee title and protected via Conservation Easement. Calculations for Stay-Ahead requirements only include properties protected with a Conservation Easement or restored by the Habitat Agency outside the Reserve System with Wildlife Agency Approval.

^b Cumulative Total Restoration + Creation only includes acreages that contribute toward Habitat Agency Requirements.

Table 9b. Land Cover Acquisition and Restoration by Site

Land Cover Type	Land Acquisition and Restoration Properties (acres, unless otherwise noted)																				
	Total				Coyote Ridge Open Space Preserve				Pacheco Creek Reserve				Calero County Park				Joseph D. Grant County Park				
	Protection	Easements	Protection + Easement	Restoration + Creation	Protection	Easements	Protection + Easement	Restoration + Creation	Protection	Easements	Protection + Easement	Restoration + Creation	Protection	Easements	Protection + Easement	Restoration + Creation	Protection	Easements	Protection + Easement	Restoration + Creation	
																					Total
California Annual Grassland	464.6	23.0	487.6	3.2	364.0	10.4	374.37		30.7	12.6	43.3	3.2									
Serpentine Bunchgrass Grassland	1562.7	16.5	1579.2	0.0	1220.6	16.5	1237.15														
Serpentine Rock Outcrop/ Barrens	10.1	0.0	10.1	0.0	0.2		0.23														
Serpentine Seep	4.0	0.0	4.0	0.0	0.4		0.36														
Rock Outcrop	0.0	0.0	0.0	0.0																	
Northern Mixed Chaparral / Chamise Chaparral	0.0	0.3	0.3	0.0					0.3		0.3										
Mixed Serpentine Chaparral	172.4	0.2	172.5	0.0	75.0	0.2	75.13														
Northern Coastal Scrub / Diablan Sage Scrub	52.3	0.0	52.3	0.0					0.0												
Valley Oak Woodland	14.5	0.0	14.5	3.0	1.1		1.12					3.0									
Mixed Oak Woodland and Forest	206.9	4.4	211.2	0.0	24.3		24.27		8.4	4.4	12.8										
Blue Oak Woodland	6.6	0.0	6.6	0.0					0.9		0.9										
Coast Live Oak Forest and Woodland	401.8	0.2	402.0	0.0	84.3	0.2	84.50														
Foothill Pine—Oak Woodland	0.0	0.0	0.0	0.0																	
Mixed Evergreen Forest	0.0	0.0	0.0	0.0																	
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland	58.8	1.6	60.4	4.9	2.6	0.2	2.75		51.2	1.5	52.7	3.3								1.64	
Central California Sycamore Alluvial Woodland	50.8	2.4	53.1	0.0					50.8	2.4	53.1										
Redwood Forest	0.0	0.0	0.0	0.0																	
Coastal and Valley Freshwater Marsh (Perennial Wetland)	0.0	0.0	0.0	0.3																0.15	
Seasonal Wetland	2.6	0.0	2.6	4.0	1.9		1.89													0.24	
Pond	12.6	0.0	12.6	0.2	0.2		0.24		12.0		12.0									0.22	
Subtotal (acres)	3020.66	48.51	3069.16	15.63	1774.52	27.50	1802.02	0.00	154.09	21.00	175.02	9.50	0.0	0.0	0.0	0.62	0.0	0.0	0.0	5.51	
Streams (miles)	23.4	0.1	15.7	1.8	12.8		12.80		2.8	0.1	2.9									1.83	
Land Cover Types without Acquisition, Restoration, or Creation Requirements		0.0	0.0	0.0																	
Coyote brush scrub	0.0	0.0	0.0	0.0																	
Ponderosa Pine Woodland	0.0	0.0	0.0	0.0																	
Knobcone Pine Woodland	0.0	0.0	0.0	0.0																	
Reservoir	0.0	0.0	0.0	0.0																	
Orchard	0.0	0.0	0.0	0.0																	
Vineyard	0.0	0.0	0.0	0.0																	
Agriculture developed / covered agriculture	0.0	0.0	0.0	0.0																	
Grain, row-crop, hay and pasture, disked/short-term fallowed	47.4	0.0	0.0	0.0																	
Urban-suburban	9.0	0.0	0.0	0.0	0.0		0.04		7.50												
Rural - residential	7.2	0.0	0.0	0.0																	
Barren	0.0	0.0	0.0	0.0																	
Landfill	0.0	0.0	0.0	0.0																	
Golf courses / urban parks	0.0	0.0	0.0	0.0																	
Ornamental woodland	0.0	0.0	0.0	0.0																	
Subtotal	63.6	0.0	0.0	0.0	0.04	0.00	0.04	0.00	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL	3084.3	48.5	1977.1	15.6	1774.56	27.50	1802.07	0.00	161.6	21.0	175.0	9.5	0.0	0.0	0.0	0.62	0.0	0.0	0.0	5.51	
Streams (miles)	23.4	0.1	15.7	1.8	12.80	0.00	12.80	0.00	2.8	0.1	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	
Note: FY1819 Reporting year conservation and restoration highlighted in green. No new restoration or creation was conducted in FY1920.					Purchased: 9/17/2015 Conservation Easement: 9/17/2015 Land Cover Revisions: 2/21/2019 Restoration Revisions: N/A Existing Easements: Various; documented in MMP				Purchased: 8/29/2017 Conservation Easement: N/A Land Cover Revisions: 2/21/2019 Restoration Revisions: 2/21/2019 Riparian Restoration (Pt. Blue, 2017, 2018) Existing Easements: Caltrans Mitigation Area (21 acres) Annual grass restoration (3.2 acres) and oak planting (3.0) fulfill Caltrans 100 oaks requirement				Purchased: N/A Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: 2/21/2019 Pond and Wetland Restoration (HTH, 2016)				Purchased: N/A Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: 2/21/2019 San Felipe Creek (HRS, 2018)				

Table 9b. Land Cover Acquisition and Restoration by Site

Land Cover Type	Tulare Hill Wedge Reserve				Tilton Ranch South Reserve				Davidson Reserve				Uvas South Reserve			
	Total				Total				Total				Total			
	Protection	Existing Easements	Protection + Easement	Restoration + Creation	Protection	Existing Easements	Protection + Easement	Restoration + Creation	Protection	Existing Easements	Protection + Easement	Restoration + Creation	Protection	Existing Easements	Protection + Easement	Restoration + Creation
California Annual Grassland	2.9				64.4								2.6			
Serpentine Bunchgrass Grassland	34.6				253.1				54.4							
Serpentine Rock Outcrop/ Barrens					9.9											
Serpentine Seep					3.6											
Rock Outcrop																
Northern Mixed Chaparral / Chamise Chaparral																
Mixed Serpentine Chaparral					59.4				38.0							
Northern Coastal Scrub / Diablan Sage Scrub													52.3			
Valley Oak Woodland					13.4											
Mixed Oak Woodland and Forest					174.2											
Blue Oak Woodland					0.34								5.3			
Coast Live Oak Forest and Woodland					30.7								286.8			
Foothill Pine—Oak Woodland																
Mixed Evergreen Forest																
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland					5.0											
Central California Sycamore Alluvial Woodland																
Redwood Forest																
Coastal and Valley Freshwater Marsh (Perennial Wetland)																
Seasonal Wetland					0.7											
Pond													0.4			
Subtotal (acres)	37.5				614.74				92.4				347.4			
Streams (miles)	0				4.3				0.4				3.1			
Land Cover Types without Acquisition, Restoration, or Creation Requirements																
Coyote brush scrub																
Ponderosa Pine Woodland																
Knobcone Pine Woodland																
Reservoir																
Orchard																
Vineyard																
Agriculture developed / covered agriculture																
Grain, row-crop, hay and pasture, disked/short-term fallowed					47.4											
Urban-suburban					0.4				1.1							
Rural - residential					6.8				0.4							
Barren																
Landfill																
Golf courses / urban parks																
Ornamental woodland																
Subtotal	0				54.6				1.5				0.0			
TOTAL	37.5				669.34				93.9				347.4			
Streams (miles)	0				4.3				0.4				3.1			
Note: FY1819 Reporting year conservation and restoration highlighted in green. No new restoration or creation was conducted in FY1920.	Purchased: 10/13/2019 Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: N/A Existing Easements: N/A	Purchased: 12/27/2019 Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: N/A Existing Easements: N/A	Purchased: 2/19/2020 Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: N/A Existing Easements: N/A	Purchased: 12/12/2019 Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: N/A Existing Easements: N/A												

Table 10a. Summary of Land Acquisition Contribution to Modeled Habitat Requirements to Date

Modeled Habitat Requirements (acres)				Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
	Protection	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Open Space	Total
Bay Checkerspot Butterfly														
Primary Habitat	3,800	754	4,554	341.8			341.8	1671.0	19.8	0.0	1690.9	44%		37%
California Tiger Salamander														
Breeding Habitat	150	45	195	12.9			12.9	14.9	0.0	0.0	14.9	10%		8%
Non-breeding Habitat	30,000	11,700	41,700	1,243.7			1,243.7	3053.2	48.5	0.0	3101.7	10%		7%
Total	30,150	11,745	41,895	1,256.6			1,256.6	3068.1	48.5	0.0	3116.6	10%		7%
California Red-Legged Frog														
Primary Habitat	1,300	130	1,430	102.7			102.7	157.8	19.0	0.0	176.8	12%		12%
Secondary Habitat	30,000	11,800	41,800	1,140.6			1,140.6	2895.2	29.5	0.0	2924.7	10%		7%
Total	31,300	11,930	43,230	1,243.3			1,243.3	3053.0	48.5	0.0	3101.5	10%		7%
Foothill Yellow-Legged Frog (length in miles)														
Primary Habitat	30	7	37	1.1			1.1	1.5	0.1	0.0	1.6	5%		4%
Secondary Habitat	50	17	67	1.8			1.8	4.9	0.0	0.0	4.9	10%		7%
Total	80	24	104	2.8			2.8	6.3	0.1	0.0	6.5	8%		6%
Western Pond Turtle														
Primary Habitat	7,000	2,800	9,800	364.4			364.4	884.9	8.0	0.0	893.0	13%		9%
Secondary Habitat	20,000	9,100	29,100	806.4			806.4	2058.0	38.9	0.0	2096.9	10%		7%
Total	27,000	11,900	38,900	1,170.8			1,170.8	2942.9	46.9	0.0	2989.9	11%		8%
Western Burrowing Owl														
Overwintering Habitat	17,000	4,310	21,310	480.7			480.7	1992.8	29.2	0.0	2022.0	12%		9%
Potential Nesting Habitat				114.8			114.8	431.6	6.4	0.0	438.0			
Occupied Nesting Habitat				0.0			0.0	861.9	0.0	0.0	861.9			
Subtotal potential and occupied nesting	5,300	0	5,300	114.8			114.8	1293.5	6.4	0.0	1300.0	24%		25%
Total	22,300	4,310	26,610	595.5			595.5	3286.3	35.7	0.0	3322.0	15%		12%
Tricolored Blackbird														
Primary Habitat	1,000	40	1,040	93.8			93.8	133.4	19.0	0.0	152.4	13%		15%
Secondary Habitat	18,000	3,800	21,800	496.8			496.8	2106.3	29.3	0.0	2135.6	12%		10%
Total	19,000	3,840	22,840	590.6			590.6	2239.7	48.3	0.0	2288.0	12%		10%
Least Bell's Vireo														
Primary Habitat	460	2	462	77.0			77.0	113.9	18.8	0.0	132.7	25%		29%

Table 10a. Summary of Land Acquisition Contribution to Modeled Habitat Requirements to Date

Modeled Habitat Requirements (acres)				Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
	Protection	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Open Space	Total
San Joaquin Kit Fox														
Secondary Habitat	4,000	-	4,000	24.0			24.0	24.0	2.2	0.0	26.2	1%		1%
Secondary Habitat (Low Use)	100	-	100	0.0			0.0	0.0	0.0	0.0	0.0	0%		0%
Total	4,100	-	4,100	24.0			24.0	24.0	2.2	0.0	26.2	1%		1%
Mt. Hamilton Thistle														
Primary Habitat	150	60	210	1.6			1.6	70.2	0.2	0.0	70.4	47%		34%
Fragrant Fritillary														
Primary Habitat	3,000	1,000	4,000	305.6			305.6	1624.0	18.0	0.0	1641.9	54%		41%
Secondary Habitat	20,000	3,000	23,000	657.9			657.9	1021.5	8.4	0.0	1029.9	5%		4%
Total	23,000	4,000	27,000	963.6			963.6	2645.4	26.4	0.0	2671.8	12%		10%
Loma Prieta Hoita														
Primary Habitat	9,000	3,500	12,500	496.4			496.4	605.1	0.2	0.0	605.3	7%		5%
Secondary Habitat	1,000	600	1,600	97.4			97.4	140.6	0.0	0.0	140.6	14%		9%
Total	10,000	4,100	14,100	593.8			593.8	745.7	0.2	0.0	745.9	7%		5%
Smooth Lessingia														
Primary Habitat	4,000	1,100	5,100	352.1			352.1	1701.1	20.7	0.0	1721.8	43%		34%
Metcalf Canyon Jewelflower														
Primary Habitat	3,200	1,000	4,200	315.6			315.6	1299.7	4.6	0.0	1304.4	41%		31%
Most Beautiful Jewelflower														
Primary Habitat	4,000	1,700	5,700	449.5			449.5	1841.7	20.7	0.0	1862.3	46%		33%

Table 10b. Land Acquisition Contribution to Modeled Habitat Requirements by Site

Modeled Habitat	Land Acquisition, Conservation Easement or Management Area																			
	Culmative (acres)				Coyote Ridge Open Space Preserve				Pacheco Creek Reserve				Regional Waste Water Facility (BUOW only)				Don Edwards (BUOW only)			
	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total
Bay Checkerspot Butterfly																				
Primary Habitat	1671.0	19.8	0.0	1690.9	1329.2	19.8		1349.0				0.0								
California Tiger Salamander																				
Breeding Habitat	14.9	0.0	0.0	14.9	1.9		1.9	11.9			11.9									
Non-breeding Habitat	3053.2	48.5	0.0	3101.7	1772.6	27.5		1800.1	142.1	21.0		163.1								
Total	3068.1	48.5	0.0	3116.6	1774.5	27.5	0.0	1802.0	154.0	21.0	0.0	175.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
California Red-Legged Frog																				
Primary Habitat	157.8	19.0	0.0	176.8	18.1	0.2		18.3	125.5	18.8		144.3								
Secondary Habitat	2895.2	29.5	0.0	2924.7	1754.6	27.3		1781.9	28.5	2.2		30.7								
Total	3053.0	48.5	0.0	3101.5	1772.6	27.5	0.0	1800.1	154.0	21.0	0.0	175.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foothill Yellow-Legged Frog (length in miles)																				
Primary Habitat	1.5	0.1	0.0	1.6	0.3	0.0		0.3	0.6	0.1		0.7								
Secondary Habitat	4.9	0.0	0.0	4.9	2.8	0.0		2.8	0.6			0.6								
Total	6.3	0.1	0.0	6.5	3.1	0.0	0.0	3.1	1.2	0.1	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western Pond Turtle																				
Primary Habitat	884.9	8.0	0.0	892.9	496.7	2.5		499.2	105.2	5.5		110.7								
Secondary Habitat	2058.0	38.9	0.0	2096.9	1238.4	23.4		1261.8	48.8	15.5		64.3								
Total	2942.9	46.9	0.0	2989.9	1735.1	25.9	0.0	1761.0	154.0	21.0	0.0	175.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western Burrowing Owl																				
Overwintering Habitat	1992.8	29.2	0.0	2022.0	1512.1	27.1		1539.2	23.1	2.2		25.2			0.0					0.0
Potential Nesting Habitat	431.6	6.4	0.0	438.0	258.3	6.4		264.7				0.0			0.0					58.5
Occupied Nesting Habitat	861.9	0.0	0.0	861.9											201.5					660.5
Subtotal potential and occupied nesting	1293.5	6.4	0.0	1300.0	258.3	6.4	0.0	264.7	0.0	0.0	0.0	0.0	0.0	0.0	201.5	0.0	0.0	0.0	201.5	719.0
Total	3286.3	35.7	0.0	3322.0	1770.4	33.5	0.0	1803.9	23.1	2.2	0.0	25.2	201.5	0.0	0.0	201.5	719.0	0.0	0.0	719.0
Tricolored Blackbird																				
Primary Habitat	135.5	19.0	0.0	152.4	2.6	0.2		2.8	125.4	18.8		144.2								
Secondary Habitat	2103.7	29.3	0.0	2135.6	1609.5	27.1		1636.6	23.1	2.2		25.3								
Total	2239.7	48.3	0.0	2288.0	1612.1	27.3	0.0	1639.4	148.5	21.0	0.0	169.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least Bell's Vireo																				
Primary Habitat	113.9	18.8	0.0	132.7				0.0	113.4	18.8		132.3								
San Joaquin Kit Fox																				
Secondary Habitat	24.0	2.2	0.0	26.2				0.0	24.0	2.2		26.2								
Secondary Habitat (Low Use)	0.0	0.0	0.0	0.0				0.0				0.0								
Total	24.0	2.2	0.0	26.2				0.0	24.0	2.2	0.0	26.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mt. Hamilton Thistle																				
Primary Habitat	70.2	0.2	0.0	70.4	68.6	0.2		68.9				0.0								
Fragrant Fritillary																				
Primary Habitat	1624.0	18.0	0.0	1641.9	1318.3	18.0		1336.3				0.0								
Secondary Habitat	1021.5	8.4	0.0	1029.9	363.5	6.3		369.8	28.6	2.2		30.8								
Total	2645.4	26.4	0.0	2671.9	1681.9	24.2	0.0	1706.1	28.6	2.2	0.0	30.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loma Prieta Hoita																				
Primary Habitat	605.1	0.2	0.0	605.4	108.7	0.2		109.0	4.6			4.6								
Secondary Habitat	140.6	0.0	0.0	140.6	43.2			43.2				0.0								
Total	745.7	0.2	0.0	745.9	151.9	0.2	0.0	152.2	4.6	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smooth Lessingia																				
Primary Habitat	1701.1	20.7	0.0	1721.8	1349.0	20.7		1369.7				0.0								
Metcalf Canyon Jewelflower																				
Primary Habitat	1299.7	4.6	0.0	1304.4	984.2	4.6		988.8				0.0								
Most Beautiful Jewelflower																				
Primary Habitat	1841.7	20.7	0.0	1862.4	1392.2	20.7		1412.9				0.0								
					Purchased:	N/A			Purchased:	8/29/2017			Management Agreement (5-year)					Management Agreement (5-year)		
					Conservation Easement:	9/17/2015			Conservation Easement:	N/A										
					Species habitat revisions:	2/22/2019			Species habitat revisions:	2/22/2019										

Table 10b. Land Acquisition Contribution to Modeled Habitat Requirements by Site

Modeled Habitat	Tulare Hill Wedge Reserve				Tilton Ranch South Reserve				Davidson Reserve				Uvas South Reserve			
	Protection	Existing Easements	Existing Open Space	Total	Protection	Existing Easements	Existing Open Space	Total	Protection	Existing Easements	Existing Open Space	Total	Protection	Existing Easements	Existing Open Space	Total
	Bay Checkerspot Butterfly															
Primary Habitat	34.2			34.2	253.2			253.2	54.4			54.4				
California Tiger Salamander																
Breeding Habitat				0.0	0.7			0.7					0.4			0.4
Non-breeding Habitat	37.5			37.5	661.5			661.5	92.4			92.4	347.1			347.05
Total	37.5			37.5	662.2			662.2	92.4			92.4	347.5			347.48
California Red-Legged Frog																
Primary Habitat				0.0	9.6			9.6	0.4			0.4	4.2			4.2
Secondary Habitat	37.5			37.5	639.2			639.2	92.1			92.1	343.3			343.32
Total	37.5			37.5	648.9			648.9	92.5			92.5	347.5			347.5
Foothill Yellow-Legged Frog (length in mi)																
Primary Habitat					0.6			0.6					0.0			0.0
Secondary Habitat					1.3			1.3					0.2			0.2
Total					1.9			1.9					0.2			0.2
Western Pond Turtle																
Primary Habitat					150.3			150.3	13.4			13.4	119.3			119.3
Secondary Habitat	24.9			24.9	453.3			453.3	64.4			64.4	228.2			228.2
Total	24.9			24.9	603.6			603.6	77.8			77.8	347.5			347.5
Western Burrowing Owl																
Overwintering Habitat	37.3			37.3	364.3			364.3	53.4			53.4	2.6			2.6
Potential Nesting Habitat	2.9			2.9	111.9			111.9								
Occupied Nesting Habitat																
Subtotal potential and occupied nesting	2.9			2.9	111.9			111.9								
Total	40.2			40.2	476.2			476.2	53.4			53.4	2.6			2.6
Tricolored Blackbird																
Primary Habitat					5.0			5.0					0.4			0.4
Secondary Habitat	37.5			37.5	379.2			379.2	54.4			54.4	2.6			2.6
Total	37.5			37.5	384.1			384.1	54.4			54.4	3.0			3.0
Least Bell's Vireo																
Primary Habitat					0.5			0.5								
San Joaquin Kit Fox																
Secondary Habitat																
Secondary Habitat (Low Use)																
Total																
Mt. Hamilton Thistle																
Primary Habitat					1.6			1.6								
Fragrant Fritillary																
Primary Habitat					252.0			252.0	53.6			53.6				
Secondary Habitat					282.3			282.3					347.1			347.1
Total					534.3			534.3	53.6			53.6	347.1			347.1
Loma Prieta Hoita																
Primary Habitat					205.0			205.0					286.8			286.8
Secondary Habitat					59.4			59.4	38.0			38.0				
Total					264.4			264.4	38.0			38.0	286.8			286.8
Smooth Lessingia																
Primary Habitat	34.6			34.6	263.1			263.1	54.4			54.4				
Metcalf Canyon Jewelflower																
Primary Habitat					261.9			261.9	53.6			53.6				
Most Beautiful Jewelflower																
Primary Habitat	34.6			34.6	322.5			322.5	92.4			92.4				
	Purchased:		10/31/2019		Purchased:		12/27/2019		Purchased:		2/19/2020		Purchased:		12/12/2019	
	Conservation Easement:		N/A		Conservation Easement:		N/A		Conservation Easement:		N/A		Conservation Easement:		N/A	
	Species habitat revisions:		N/A		Species habitat revisions:		N/A		Species habitat revisions:		N/A		Species habitat revisions:		N/A	

Table 11. Summary of Land Acquisition Contribution to CAZ Requirements to Date

Conservation Analysis Zone	Natural Land Cover Types in Zone(s) (acres)	Natural Land Cover Acquisition Requirement in Zone(s) (acres)	Reporting Period Total Contribution (acres)	Cumulative Total Contribution (acres)	Percentage of Requirement Met by all acquisitions
Alameda-1	1,338			0	
Coyote-7	49,567			0	
<i>Subtotal</i>	<i>5,905</i>	<i>2,300</i>		0	
Coyote-4	9,146	4,200		323	8%
<i>Subtotal</i>	<i>9,146</i>	<i>4,200</i>		<i>322.9</i>	<i>8%</i>
Uvas-1	10,891	1,000		0	
Uvas-2	8,573	800	341.8	341.8	43%
Uvas-3	4,761		5.67	5.67	
Uvas-4	4,357			0	
Uvas-5	8,630	4,600		0	
Uvas-6	831	200		0	
<i>Subtotal</i>	<i>38,043</i>	<i>6,600</i>		<i>0</i>	
Pacheco-1	9,093			0	
Pacheco-2	7,535		5.31	5.31	
Pacheco-3	5,849			0	
Pacheco-4	5,477			0	
Pacheco-5	12,959			0	
Pacheco 6	8,278		119.14	183.64	
<i>Subtotal</i>	<i>49,190</i>	<i>2,400</i>		<i>64.5</i>	<i>3%</i>
Coyote 2	4,954	900		0	
Pacheco 8	11,706	3,800		0	
<i>Subtotal</i>	<i>21,697</i>	<i>5,500</i>		<i>0</i>	
Total	123,981	21,000	471.9	859.32	4%

Table 12. Summary of Covered Plant Occurrences for Compliance Tracking

Species	Number of Covered Plant Occurrences									Total in Reserve System
	Coyote Ridge Open Space Preserve			Calero CE			Tilton Ranch South & Davidson Reserves*			
	Habitat Plan Occurrences	Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	Occurrences Identified in Baseline Surveys	Compliance	
Mt. Hamilton Thistle	16	6	22	2	0	2	0	0	0	24
Santa Clara Valley Dudleya	99	-3	96	6	2	8	0	1	1	105
Fragrant Fritillary	3	0	3	1	-1	0	0	0	0	3
Loma Prieta Hoita	0	2	2	2	0	2	0	0	1	5
Smooth Lessingia	6	0	6	3	1	4	0	1	1	11
Metcalf Canyon Jewelflower	1 (45)	7	8	0	0	0	0	0	0	8
Most Beautiful Jewelflower	1 (45)	1	2	4	1	5	0	1	1	8
Coyote Ceanothus	0	0	0	0	0	0	1	0	1	1
Total	225	13	139	19	16	21	0	0	5	165

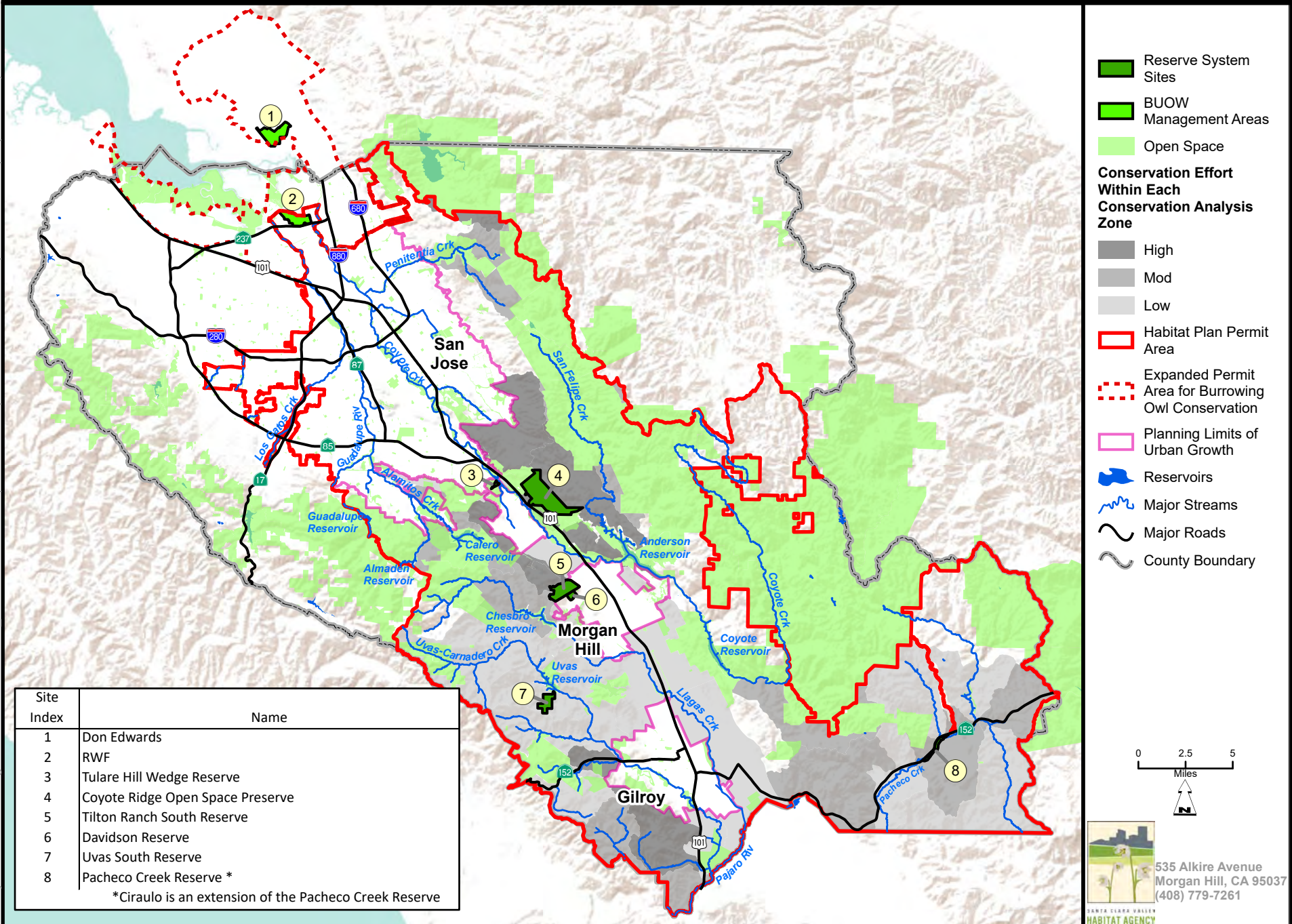
Note: This table summarizes the number of plant occurrences identified in baseline surveys and tracked for Habitat Plan compliance. For most covered plants, the Habitat Plan occurrences align with the results of the baseline surveys--site surveys documented plants in the approximately the same location, extent and numbers to what was documented in the Habitat Plan. For other species, such as Santa Clara Valley dudleya, smooth lessingia, and most beautiful jewelflower in CROSP, plant surveys documented much more widespread occurrences. In these cases, the number of compliance occurrences is based on the overlap of the Habitat Plan occurrences preserved. For example, using the 0.25 mile rule to determine separate occurrences for Santa Clara Valley dudleya, there are only 2 separate occurrences per the baseline surveys; however, the Habitat Plan assumed the same area included 99. For this species, 3 are removed because the surveys revealed 3 occurrence points to now be unoccupied. The methodology for determining the number of occurrence preserved is provided in Appendix B of this report.

*Reserves are adjacent parcels that support the same covered plant occurrences.

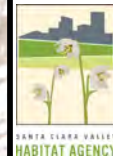
Table 13. Pending Acquisitions by the Habitat Agency

Property Name	Acres	Type of Ownership Interest	General Location
Property A	357	Fee Title	Central East Plan Area
Property B	123	Fee Title	Central East Plan Area
Property C	155	Fee Title	Northeast Plan Area
Property D	575	Fee Title	Northeast Plan Area
Property E	75	Conservation Easement	Central West Plan Area
Property F	60	Fee Title	Central West Plan Area
Property G	206	Fee Title	Central West Plan Area
Property H	65	Fee Title	Central West Plan Area
Property I	850	Fee Title	Central West Plan Area
Property J	761	Conservation Easement	Southeast Plan Area
Property K	165	Fee Title	South Plan Area
Property L	12	Fee Title	Northwest Plan Area

Figure 4. Reserve System, Existing Open Space, and Conservation Analysis Zones



MAP by BAZ, SCC Planning Office TeamGIS, D:\HCP_PROJECTS\AnnualReports\AnnualReport2019-2020\Annual Report 2019-2020.aprx (3/30/2021)



535 Alkire Avenue
Morgan Hill, CA 95037
(408) 779-7261

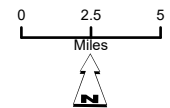
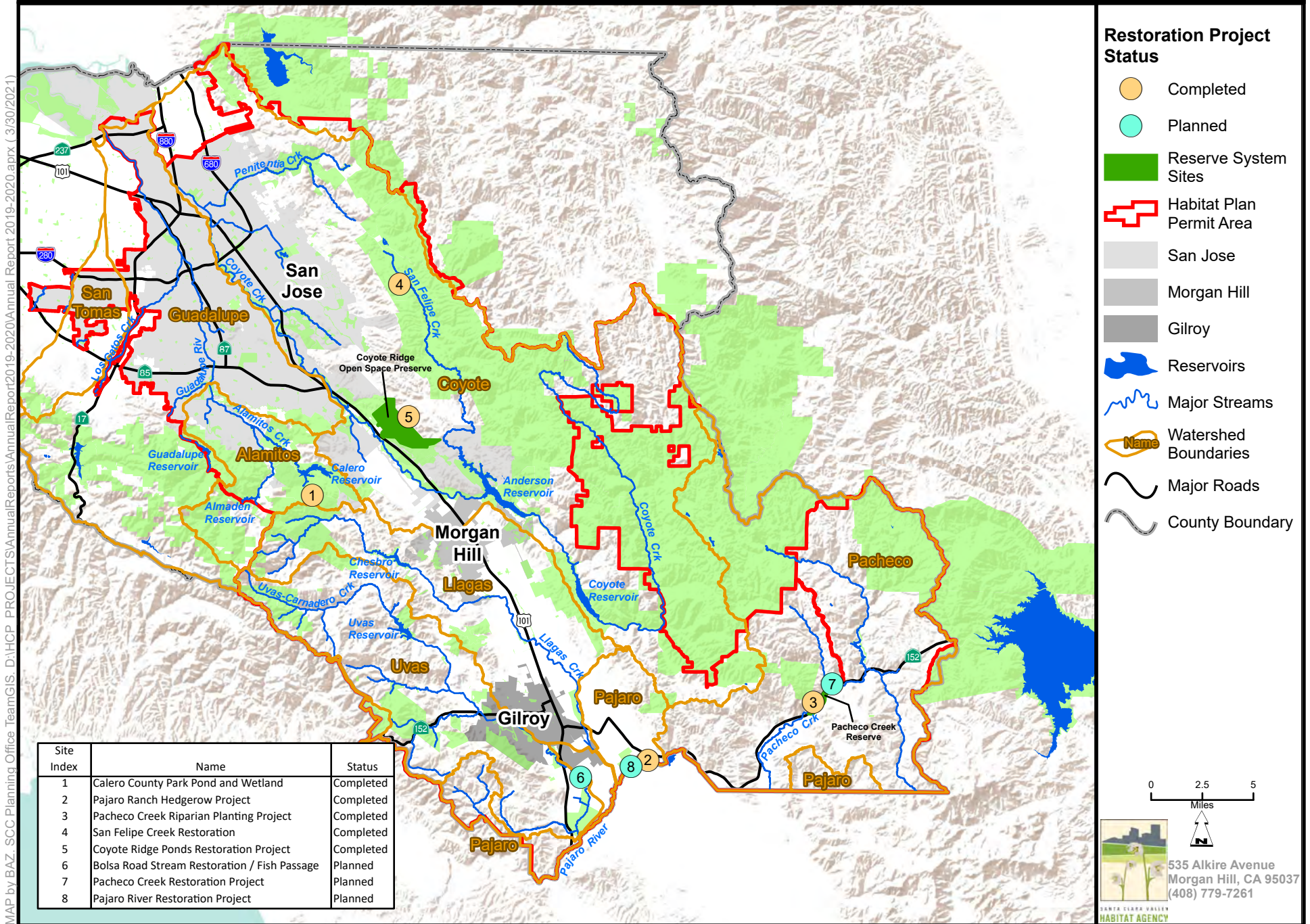


Figure 5. Completed and Planned Restoration Projects



Chapter 4

Habitat Restoration and Creation

One new habitat restoration and creation project was implemented in the reporting year: Coyote Ridge Ponds Restoration Project. The monitoring results for six restoration and creation projects are presented in this chapter. Cumulatively, these projects have restored nearly 5 acres of riparian woodlands, 4.5 acres of perennial and seasonal wetlands and ponds, and 1.83 miles of streams. They benefitted 5 of 18 covered species—California red-legged frog, California tiger salamander, western pond turtle, Mount Hamilton thistle (*Cirsium fontinale* var. *campylon*), and Coyote ceanothus. One project improved a regional connection between the Diablo Range and Santa Cruz Mountains. Restoration projects span the Alamitos, Coyote, Pacheco, and Pajaro Watersheds. In addition, three projects were in the planning phase in the reporting year (**Figure 5**).

Habitat restoration and creation is a critical component of the Habitat Plan’s conservation strategy. Restoration and creation of specific habitats and land cover types are required in addition to protection of land within the Reserve System. Specifically, if all anticipated impacts occur, implementation of the Habitat Plan will result in restoration or creation of an estimated 353 acres of riparian, 75 acres of wetlands, 72 acres of ponds, and 10.4 miles of streams. Together, land preservation and restoration/creation provide benefits to covered species, natural communities, biological diversity, hydrologic function, and ecosystem function to compensate for impacts on, and to contribute to, recovery of covered species.

Reporting Requirements

- The location, extent, and timing of restoration or creation of applicable land cover types.
- A description of all-natural community creation/restoration conservation actions implemented during the reporting period. Riparian and wetland restoration and creation will also be reported by the watersheds shown in Figure 3-6 in the Habitat Plan to facilitate regional coordination of wetland mitigation for the U.S. Army Corps of Engineers and the San Francisco and Central Coast Regional Water Quality Control Boards.
- Year-to-date and cumulative summaries of the extent of land cover types restored or created. The success rate for restoration and creation projects will also be documented. If conservation easements were used, the report will describe who holds the easements. A map containing this information will also be provided.
- Year-to-date and cumulative summaries of stream and riparian restoration conducted outside of the Reserve System.
- The location, extent, timing, and progress of plant occurrence creation and enhancement (Table 5-16 in the Habitat Plan).
- Year-to-date and cumulative summaries of the protection or creation of covered plant occurrences and occupied habitat for selected covered wildlife species as defined in Chapter 5 of the Habitat Plan.

4.1 Restoration and Creation Projects

Annual monitoring reports for all Habitat Agency restoration projects can be accessed through the Habitat Agency website at the following link: <https://scv-habitatagency.org/340/Monitoring-Reports>.

4.1.1 Calero County Park Pond and Wetland Restoration Project

The *Calero County Park Pond and Wetland Restoration Project* is composed of two distinct restoration sites, both contained within the northwest portion of Calero County Park (**Figure 6**). Calero County Park is located in the eastern foothills of the Santa Cruz Mountains in the Alamos Creek Watershed. The project sites were selected in partnership with County Parks, USFWS, CDFW, and the Resource Conservation District of Santa Cruz County. This project was implemented in 2016 and resulted in the restoration/creation of 0.17 acre of coastal valley freshwater marsh, 0.26 acre of seasonal wetland, and 0.22 acre of pond to benefit California tiger salamander, California red-legged frog, western pond turtle, and Mount Hamilton thistle (**Table 14**). Water conveyance systems for cattle were installed to ensure sufficient year-round water for grazing.

4.1.1.1 Project Description

The project focused on improving aquatic natural communities, improving covered species habitat, and installing water conveyance infrastructure for cattle at a pond and wetland sites (**Figure 6**). The pond site was heavily grazed by cattle, had a limited ponding duration, and was occupied by invasive aquatic predators. These conditions reduced habitat quality for California red-legged frog, California tiger salamander, western pond turtle, and Mount Hamilton thistle. The pond restoration objectives were as follows.

- Restore breeding habitat for California tiger salamander and California red-legged frog.
- Restore wetland habitat functions including habitat for Mount Hamilton thistle.
- Create seasonal wetland habitat.
- Establish basking habitat for the western pond turtle.
- Improve pond habitat climate change resiliency.
- Provide water for cattle.

To accomplish these objectives, the following actions were taken at the pond.

- Fencing installed to exclude cattle from a portion of the pond.
- Pond excavated to increase ponding depth and duration, and basking logs for western pond turtle installed.
- Uplands at the pond fringe excavated to establish new seasonal wetlands.
- Native wetland vegetation planted along the pond fringe.
- Pond outfall structure replaced with gated structure to allow for draining for aquatic predator control at the deepened pond.

- Ditch excavated and wood log jams installed above spring box to increase seep inflow.
- Two 400-gallon troughs, 3,200-gallon water storage tank, and conveyance infrastructure installed for cattle.

The wetland site was heavily grazed and subject to sedimentation largely due to access by cattle. The wetland restoration objectives were as follows.

- Restore wetland habitat functions.
- Establish seasonal wetland habitat.
- Restore breeding habitat for California tiger salamander and foraging and dispersal habitat for California red-legged frog.
- Improve wetland habitat climate change resiliency.
- Provide water for cattle.

To accomplish these objectives, the following actions were taken.

- Fencing installed to exclude cattle.
- Uplands adjacent to existing wetlands excavated to establish new wetlands.
- Sediment within existing wetlands excavated to restore California red-legged frog foraging habitat.
- Native wetland vegetation planted.
- One 400-gallon trough and water conveyance infrastructure installed for cattle.

4.1.1.2 Management and Maintenance

The project was managed and maintained consistent with the *Calero County Park Pond and Wetland Restoration Project Mitigation and Monitoring Plan* (H. T. Harvey and Associates 2016). During the 2020 calendar year, the following actions were completed (H. T. Harvey and Associates 2020).

- Controlled weeds including Italian thistle (*Carduus pycnocephalus*) via hand removal and bagging, black mustard (*Brassica nigra*), purple star thistle (*Centaurea calcitrapa*), bull thistle (*Cirsium vulgare*) and sow thistle (*Sonchus asper*) via hand removal, and Harding grass (*Phalaris aquatica*) and white top (*Lepidium draba*) via string-trimming (April 7, 2020 and May 7, 2020).
- Controlled weeds including yellow star thistle (*Centaurea solstitialis*) and purple star thistle via hand removal and bagging, and bull thistle, stinkwort (*Dittrichia graveolens*), and Himalayan blackberry (*Rubus armeniacus*) and via hand removal (July 6, 2020).
- Controlled weeds by mowing Himalayan blackberry and hand removal and bagging of stinkwort (November 3, 2020).
- Removed sediment from spring box (July 6, 2020 and November 3, 2020).
- Seep inflow diversion from the pond (November 3, 2020).
- Seep inflow restoration to the pond (December 9, 2020).

4.1.1.3 Monitoring Results

Year 4 monitoring of the Calero Restoration Project occurred in 2020 and indicated that the pond and wetland mitigation sites are fulfilling the project's habitat restoration and establishment objectives (H. T. Harvey and Associates 2020). Year 4 monitoring shows positive trends in the Mt. Hamilton thistle population, and stable or increasing levels of wetland vegetative cover. Wetland conditions were observed to be establishing quickly in the target wetland areas and wildlife were observed using wetland and aquatic habitats at the pond and wetland mitigation sites. Invasive plant species remained at low densities and below 5% across the pond and wetland mitigation sites. Aquatic predators remained similar to Years 1–3 and were effectively controlled primarily via the gradual drawing down and complete draining of the pond in November to December 2020.

All Year 4 performance standards were achieved, with the exception of the California red-legged frog standard which calls for documented successful breeding in at least one monitoring year. The California red-legged frog standard is not being met because of a lack of evidence of successful breeding at the pond mitigation site. Because no individuals of this species have been recorded within 1.4 miles of the site (H. T. Harvey and Associates 2016), it is possible that the lack of California red-legged frog detections over the past four monitoring years reflects the distance of the site from extant occurrences and failure of dispersants from those occurrences to have found this pond. In time, dispersing California red-legged frogs from other populations are likely to eventually find and colonize the pond.

For the first time during the four-year monitoring period, California tiger salamander breeding was not observed. California tiger salamanders may not have bred in Year 4 due to below-average rainfall conditions, or breeding may not have been observed due to the delay in larval surveys as a result of COVID-19 protocols. However, the lack of observations in Year 4 does not conclusively indicate a lack of California tiger salamander in the pond or wetland mitigation sites. California tiger salamander larvae may have metamorphosed and dispersed out of the wetland and pond sites by the time the larval surveys were conducted.

Ecological performance standards and Year 4 monitoring results in the following list. The Year 4 success criteria are summarized in **Table 15a**.

- **Target Hydrologic Regime.** Year 4 was an extremely dry, below-average water year. Therefore, the target hydrologic regime performance standards do not apply to Year 4 (H. T. Harvey and Associates 2020).
- **Sedimentation and Geomorphic Stability.** Cross section surveys indicated minor sedimentation at the pond mitigation and wetland mitigation sites. Overall, cross section survey results demonstrate that the pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and are geomorphically stable.
- **California Red-legged Frog/California Tiger Salamander Surveys.** Western pond turtle continued to occur at the pond mitigation site. California tiger salamander was not observed for the first time during the monitoring period in part due to the delay in larval surveys and dry conditions of the below-average water year. California red-legged frog have not been observed during Years 1–3. Although this performance standard was not met it was not required to be completed in Year 4 and does not require remedial actions at this time.
- **Aquatic Predator Presence/Absence.** The abundance of aquatic predators at the pond mitigation site in Year 3 was similar to baseline conditions in Year 1.

- **Mount Hamilton Thistle Abundance.** The abundance and percent cover of Mt. Hamilton thistle increased from Year 1 through Year 3, but slightly decreased in Year 4 likely due to the dry conditions. However, the spatial extent of the population increased from Year 3 to Year 4.
- **Wetland Vegetation Percent Cover.** The average percent cover of wetland vegetation was 60.2% at the pond mitigation site and 75% at the wetland mitigation site. Wetland vegetation percent cover was relatively stable or increased at the pond and wetland mitigation sites, respectively. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present at both mitigation sites.
- **Invasive plant cover.** Invasive plant cover was less than 5% at each mitigation site and across the mitigation sites combined. Some low-density patches of invasive plants were observed at the pond mitigation site.
- **Water for cattle.** Water was available year-round for cattle at the pond mitigation site and water was available until mid-summer from the trough at the wetland mitigation site.

4.1.1.4 Adaptive Management

No adaptive management actions took place in the reporting year.

4.1.1.5 Management Recommendations

The following management recommendations were made based on the fourth-year monitoring results.

- Manage water levels so that the pond completely dries out during each year that aquatic predators are observed in the pond to discourage their breeding.
- Target the following invasive plant species control and removal: Black mustard, whitetop, yellow star-thistle, and purple star-thistle.
- Remove nonnative plant species, such as curly dock, from the seep wetland area of the pond mitigation site to reduce competition between nonnative vegetation and the Mt. Hamilton thistle.
- Conduct surveys are most likely to detect bullfrog egg masses based on site conditions, which, based on the Year 3 monitoring results, may be earlier in the spring than previously expected (i.e. May).
- Controlling the population of adult bullfrogs prior to their start of breeding in May-June via bullfrog removal and dispatching (i.e., gigging and/or shooting).
- Remove sediment from the spring box and logjams to optimize seep flow to the pond mitigation site. Also, consider suggesting best management practices and roadway construction techniques to County Parks on the roadway/trail to minimize roadway erosion and deposition of trail gravel between the roadway/trail and the springbox.
- Clean accumulated silt out of the seep troughs each fall.
- Reduce human impacts on the side slopes of the pond when soils are saturated. Pond maintenance and management personnel should be educated on the design of the pond liner and, if possible, should wear mud shoes (e.g., mudders available through Forestry Suppliers) or use plywood walking platforms when entering the pond to reduce impacts on the pond liner and

side slopes. Personnel should continue to use the designated access location on the south side of the pond to limit impacts on the pond liner and side slopes.

- The abundance and extent of ground squirrel burrows should be monitored along the berm at the pond mitigation site to confirm that berm integrity is not compromised.
- The gage that continuously measures water levels at the outlet structure in the lower wetland area at the wetland mitigation site should be relocated to the side of the outlet structure and recessed into the soil to better capture the entire water level drawdown.
- Evaluate survey data on aquatic predators and special-status species to determine the need for pond draining in late summer/fall.
- Transport water to the trough at the wetland mitigation site when water is not available, rather than allowing cattle to access the wetland mitigation site.
- Cattle activity at the spring-fed concrete trough that is outside the cattle exclusion fencing at the pond mitigation site is undermining the trough. Building up the area around the trough to avoid any long-term damage is recommended.

4.1.2 Coyote Ridge Ponds 1 and 4 Restoration Project

The *Coyote Ridge Ponds 1 and 4 Restoration Project* was constructed in 2019 to restore and establish pond habitat at two locations (CR1 and CR4) in the Coyote Ridge Open Space Preserve, located in the eastern foothills of the Diablo Range in the Coyote Creek watershed (**Figure 7**). The project sites were selected and constructed in partnership with the Santa Clara Valley Habitat Agency and the Santa Clara Valley Open Space Authority. This project was implemented in 2019 and resulted in the restoration/creation of 0.17 acre of coastal valley freshwater marsh and 0.22 acre of pond to benefit California tiger salamander, California red-legged frog, and western pond turtle (**Table 15b**).

4.1.2.1 Project Description

The project focused on improving aquatic natural communities, improving covered species habitat, reducing downstream sedimentation, and improving overall water quality into the Coyote Creek watershed. Both of these ponds had lost functionality due to the degradation of their earthen dams. In both cases, a head cut in the dams was preventing water from collecting in the ponds. The resulting drainage from the ponds had severely eroded and incised the spillways that channel the water downhill. These conditions reduced habitat quality for California red-legged frog, California tiger salamander, and western pond turtle. The pond restoration objectives were as follows.

- Restore breeding habitat for California tiger salamander and California red-legged frog.
- Restore wetland habitat functions including sediment/nutrient filtration and erosion protection.
- Establish basking habitat for the western pond turtle.
- Improve pond habitat climate change resiliency.

To accomplish these objectives, the following actions were taken at the ponds.

- Fencing installed to exclude cattle from a portion of the pond.
- Pond excavated to increase ponding depth and duration, and basking logs for western pond turtle installed.

- Repair berm failure to restore pond capacity, hydroperiod, and water retention.
- Native wetland vegetation planted along the pond fringe.
- Establish a spring water source for cattle that graze the CROSP.

4.1.2.2 Management and Maintenance

The project was managed and maintained consistent with the *Coyote Ridge Ponds Restoration Project (CR1 and CR4) Restoration and Monitoring Plan (MMP)* (Swaim Biological Inc. 2018). During the 2020 calendar year, the following actions were completed (Camara Environmental Consulting 2020).

- Herbicide treatment of artichoke thistle (*Cynara cardunculus*) and purple star thistle (*Centaurea calcitrapa*) at CR4 and along the abandoned access road to the top of the hill (April 27, 2020).
- Hand pulled black mustard (*Brassica nigra*) and Italian/slender flowered thistle (*Carduus* sp.) adjacent to and partially within the CR4 project area (April 27, 2020).
- Hand pulled Italian/slender flowered thistle (*Carduus* sp.) within and adjacent to the CR1 project area (April 27, 2020).
- Herbicide treatment of artichoke thistle (*Cynara cardunculus*) and purple star thistle (*Centaurea calcitrapa*) at CR1 and to the top of the hill (May 8, 2020).
- Hand pulled black mustard (*Brassica nigra*) and Italian/slender flowered thistle (*Carduus* sp.) adjacent to and partially within the CR1 project area (May 8, 2020).
- Shovel cut outlier purple star thistle (*Centaurea calcitrapa*) (May 13, 2020).
- Hand pulled yellow star thistle (*Centaurea solstitialis*) and Italian thistle (*Carduus* sp.) on the CR4 pond berm (May 25, 2020).
- Removed yellow star thistle (*Centaurea solstitialis*) and barbed goatgrass through weedwacking at CR1 and CR4 (May 25, 2020).
- Removed yellow star thistle (*Centaurea solstitialis*) and barbed goatgrass (*Aegilops triuncialis*) through weed-wacking at CR1 and CR4 (June 7, 2020).
- Hand pulled yellow star thistle (*Centaurea solstitialis*) at CR1 and CR4 (June 7, 2020).
- Hand pulled yellow star thistle (*Centaurea solstitialis*), barbed goatgrass (*Aegilops triuncialis*) and Italian thistle (*Carduus* sp.) at CR1 and CR4 (August 5, 2020).
- Inspected infrastructure at CR1 and CR4 (August 5, 2020).
- Conducted spring monitoring of infrastructure at CR1 and CR4 (April 28, 2020).

4.1.2.3 Monitoring Results

Year 1 monitoring of the Coyote Ridge Ponds Restoration Project occurred in 2020 and indicated that the pond and wetland mitigation sites are not yet on track to fulfilling the project's habitat restoration and establishment objectives (Camara Environmental Consulting 2020). Year 1 was characterized by a below-average rainfall year and therefore the hydroperiods of the ponds were diminished. Only one of the two sites ponded for approximately 45 days with a maximum depth of 1.2 feet. None of the special-status wildlife species were detected nor were aquatic predators. Monitoring efforts did indicate positive trends in the establishment of wetland vegetative cover with

a combined average of 47%. However, the wetland cover is predominantly nonnative. Invasive plant species were also observed at moderate densities across the mitigation site.

Three of the seven performance standards were achieved in Year 1. Ecological performance standards and Year 1 monitoring results in the following list. The Year 1 success criteria are summarized in **Table 15b**.

- **Target Hydrologic Regime.** Year 1 was an extremely dry, below-average water year. Therefore, the target hydrologic regime performance standards do not apply to Year 1 (Camara Environmental Consulting 2020).
- **California Red-legged Frog/California Tiger Salamander Surveys.** Year 1 was an extremely dry, below-average water year. No water was ponded at CR1 to support breeding. Water was observed in CR4 for the first time on April 2, 2020, but no egg masses or larvae or western pond turtle individuals were observed. The pond was dry on May 16, 2020. Therefore, the performance standard was not applicable in Year 1.
- **Aquatic Predator Presence/Absence.** There were no aquatic predators observed at the pond mitigation sites in Year 1.
- **Wetland Vegetation Percent Cover.** The average percent cover of wetland vegetation was 55.1% at CR1 pond mitigation site and 40.9% at the CR4 pond mitigation site. Wetland vegetation percent cover was relatively stable. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present at both mitigation sites.
- **Invasive plant cover.** Invasive plant cover was more than 5% at each mitigation site and across the mitigation sites combined. Some high-density patches of yellow star thistle were observed at both pond mitigation sites.
- **Water for cattle.** Water was available temporarily for cattle at the pond mitigation sites.

4.1.2.4 Adaptive Management

No adaptive management actions took place in the reporting year.

4.1.2.5 Management Recommendations

The following management recommendations were made based on the first-year monitoring results.

- Monitor the seep, which was encountered during construction.
- Native wetland plantings shall be installed in January or February 2021 to increase native wetland vegetation abundance.
- Conduct visual assessments of open water earlier in the season (February or March).
- Target the following invasive plant species control and removal: Black mustard, goat grass, Italian thistle, yellow star-thistle, and purple star-thistle.

4.1.3 Coyote Ceanothus Population Creation Project

There are a three known occurrences of Coyote ceanothus in the world, all of which are located in the Permit Area. These occurrences are located in the vicinity of Morgan Hill on serpentine soils. The

Habitat Plan requires protection of five occurrences of this species, with creation of one or more occurrences permitted under the Habitat Plan.

The focus on meeting the biological goals and objectives for the species has been centered on population creation because it is highly unlikely that any additional occurrences will be discovered in the Permit Area. Valley Water leads creation of a new occurrence for this species. Efforts began in 2009 and 2010 with an updated population census and detailed ecological observations of all three known occurrences, a series of collaborative research studies on the population genetics of the species, modeling of suitable habitat, surveys for additional undiscovered populations, and identification of potentially suitable introduction sites for population creation. The data collected were used in developing the details of the conservation strategy for Coyote ceanothus in the final Habitat Plan, released in 2012. Additional research studies since 2010 have documented not only population dynamics, but water potential and microclimate needs, propagation methods, and soil symbiotic relationships. The data have been used to develop a comprehensive population creation strategy on mitigation land purchased by the Valley Water on Coyote Ridge, in an area located north of the Anderson Dam population. The following is a summary of the project's past methodology and this year's milestones, as reported by Janell Hillman of Valley Water (Santa Clara Valley Water District 2021).

Annual planting using a combination of direct seeding and container material continues. In November 2019, 200 new container plants were installed in the expanded plot area of the site. In December, 30 new direct seeded basins were installed in the Pine test plot and the Chaparral Edge test plot, for a total of 60 seeded basins. This completes the planting of the four small test plots which were first installed in 2014. Container plant installation occurred earlier in the planting season than in past years to reduce the potential for *Botrytis* (a fairly common fungal pathogen infection) to infect the seedlings. *Botrytis* is more common under cool, moist conditions (Ted Swiecki pers. comm.) so the intent was to avoid transporting or handling plants during wet weather and get them planted prior to the first fall rains.

On December 16, 2020, 200 container plants were installed in the larger introduction site area adjacent to the Pine subplot where Ceanothus plantings have historically performed the best. On December 30, an additional 61 basins were direct seeded, for a total installation of 261 new planting basins in 2020. This brought the current total of created and planted basins at the population creation site to 1,042, as of December 2020. (Note that this does not indicate the current number of surviving CEFE at the site, due to some mortality and the design of direct seeded basins often having multiple surviving individuals). The annual monitoring results presented here do not include an assessment of the winter 2020 planted stock.

Results from the 2020 annual monitoring indicate that the plantings are doing well. Percent survival by treatment and test plot for the various planting years is summarized in **Table 15c**. As in previous monitoring years, the Pine test plot continues to have the highest survivorship for direct seeded and container stock, ranging from 80 to 100% survival by treatment and year (**Table 15c**). This plot is located on an east facing slope under some canopy of grey pines, is more protected from prevailing north westerly winds, and has deeper, less rocky soils. This likely provides more shelter to young plants.

Results in 2020 indicate a germination success of direct seeded basins ranging from 52% to 63% in the other test plots averaged over five years of direct seeding. Survival success was consistently higher for container plants than direct seeded plants across plant age and test plot. Direct seeded

plants had the lowest survival rate in the Lower Sage plot (26.7% survival one year after planting and 10% survival four years after planting) due to extreme herbivory of young seedlings. Cover provided by adjacent sagebrush (*Artemisia californica*) likely facilitated a higher density of small herbivore pressure in this plot. The highest survival rate for both direct seeded plants and container plants was seen consistently over time in the Pine plot, with an 85% survival rate for direct seeded plants and a 90% survival rate for container plants, by the fourth monitoring year (**Table 15c**). Survival amongst container plants was similar across test plots and changed little as plants aged. Average health and vigor scores were consistently higher for container plants than for direct seeded plants, and the highest health and vigor scores for both container plants and direct seeded plants were seen in the Pine plot (2.40 for direct seeded plants and 2.45 for container plants, out of a highest possible score of 3) (Santa Clara Valley Water District 2021).

Flowering of planted Coyote ceanothus in the introduction site was first documented in 2019, with very limited fruit production that year. In 2020 plants flowered in all four test plots. The first flowering typically occurs as early as two to three years after planting, with container plants more likely to flower than direct seeded plants. Ten percent of direct seeded plants had flowered by age four or five, while 29.2% of container plants had flowered by age two or three. In 2020, 22% of container plants three to four years old produced fruit. Direct seeded plants appear to lag behind container plants by a year, in time to first fruit production (Santa Clara Valley Water District 2021).

The higher overall success of Coyote ceanothus in the Pine plot is possibly due to the shelter and some shading provided by overstory grey pines (*Pinus sabiniana*), as well as protection from the prevailing NW winds on the ridge. Planted Coyote ceanothus appear to experience annual drought stress in the late summer months, evidenced by yellowing and chlorotic foliage, and some leaf drop on the older stems. Plant stress is seen less frequently in the Pine plot. The most stressed plants in the introduction site appear to be intermediate in age and have been weaned from irrigation (plants are irrigated for 2-3 years), relying only on annual precipitation, and appear in more exposed and windy portions of the introduction site. All the plantings put on new, healthy foliage in the winter months after adequate rainfall. Future plant installation will occur adjacent the Pine plot and shelter provided by the foothill pine woodland at the east end of the introduction site. While the introduction site does appear to fall within the limits of water availability needs and microclimate suitability for Coyote ceanothus, it is in the upper limit and higher elevation range of the summer marine layer, which has shown to be important in enhancing water availability for coastal chaparral shrubs. This may have implications for long-term persistence of Coyote ceanothus in the face of a changing and warming climate, and for this reason any additional introduction or population creation efforts for the species should occur on the west side of the valley near the Llagas occurrence, where the climate is more mesic (and population genetic diversity is highest) (Santa Clara Valley Water District 2021).

Additional lessons learned from five years of planting and maintaining the introduction site for population establishment of Coyote ceanothus include fine-tuning of the irrigation system in a harsh environment, application of a topical spray to reduce herbivory pressure on seedlings and young plants, ever better phytosanitary methods for growing plants in a nursery environment, and further exploration of possible *Frankia* microsymbiont-facilitated Nitrogen fixation. Planting via direct seeding and container plants is important to the overall success of the population creation effort and increases both genetic diversity and long-term successful establishment of plants at the site, and that over time, there will be less difference between planting methods (Santa Clara Valley Water District 2021). All site access continues to follow strict phytosanitary procedures to avoid pathogen introduction (**Appendix A**). Representative photographs and graphs are included in **Figure 8**.

4.1.4 Pacheco Reserve Contingency Planting

In September 2015, the USFWS notified Caltrans that transferring the 55-acre Pacheco Creek Mitigation Area to the Habitat Agency (Habitat Agency) would fulfill the compensatory mitigation requirements of the SR 152 Highway Improvements Project (EA 11275) constructed between 1988 and 1990. Approval from the USACE was received in November 2015. The Habitat Agency agreed to implement an oak contingency planting, accept the property and ensure its protection in perpetuity in return for receiving the property on a no-cost basis. The Habitat Agency, in return, will manage the property in accordance with the Habitat Plan to meet Reserve System requirements for land preserved in perpetuity. The Habitat Agency took control of the property in June 2016 and named the property the Pacheco Creek Reserve.

Beginning in October 2017, Point Blue Conservation Science (PBCS) designed a restoration plan in coordination with the Habitat Agency for the *Pacheco Reserve Contingency Planting Project*¹⁷ in order to fulfill the commitment to attempt a final oak planting restoration effort on the site on behalf of Caltrans. The site selected for the Contingency Planting is a 7.25-acre portion of the Reserve that is transected by Harper Creek, immediately upstream of its confluence with Pacheco Creek.

From December 2017 to April 2018, PBCS installed a total of 281 native trees (coast live oak [*Quercus agrifolia*], valley oak [*Quercus lobata*] and California buckeye [*Aesculus californica*]) and shrubs (toyon [*Heteromeles arbutifolia*], California rose [*Rosa californica*]), coffeeberry [*frangula californica*], sticky monkeyflower [*mimulus aurantiacus*] and holly leaf cherry [*prunus ilicifolia*]), which included native plants from local nurseries, as well as seeds harvested directly from the site for replanting. PBCS coordinated this project utilizing their Students and Teachers Restoring a Watershed (STRAW) program. Over 800 students from five local elementary school classes, as well as other volunteers, participated in local planting days. PBCS and volunteers also installed mats and browse protection cages around plants to increase survival and prevent damage from weeds and herbivores.

The cumulative survival rate of all planted material within the Contingency Planting area is 50% (140 trees and shrubs), same as last year. Coffeeberry and coast live oak had the best survival rates (60% and 59% respectively) and the best vigor, while California rose and toyon fared the worst (0% and 14% respectively). Replacement of failed plant material was implemented during the winter of 2019/2020 in order to improve the overall survivability rate.

Plant establishment monitoring was performed September 30, 2020. Of the surviving plants, the vast majority of plants are of high vigor, exhibiting new height and foliage growth. Of note, the consistency in survival percentage reflects a combination of factors including (1) replanting of a total of 83 coast live oak, Valley oak, and California buckeye trees, and (2) die-off of previously planted species from 2018 (Point Blue Conservation Science 2021a).

Maintenance activities included irrigation repairs, herbivory avoidance, and weed abatement. Irrigation repairs were done periodically by replacing couplers or replacing driplines. Overall rodent pressure was quite prevalent during 2020. By mid-June, heavy girdling at the base of plants were observed throughout the site. To account for the girdling, tree wraps were installed, however that effort didn't always thwart rodents. Other rodent pressure included burrowing at the base of plants and exposing and girdling plant roots. From July to October, dripline repairs to the irrigation system

¹⁷ Please refer to the annual monitoring report located on the Habitat Agency's website for more information: <https://scv-habitatagency.org/340/Monitoring-Reports>

were implemented due to rodent damage. Weed abatement utilized hand-pulling methods inside browse protection cages. Large-scale invasive species removal of hemlock and thistle was not conducted this year, but could be considered for this coming season utilizing field support from the San José Conservation Corps (Point Blue Conservation Science 2021a).

4.1.5 Pacheco Reserve Riparian Restoration

Beginning in October 2017, PBCS designed and finalized planting locations in coordination with the Habitat Agency for the *Pacheco Creek Riparian Planting Project*¹⁸. From December 2017 to April 2018, native riparian species were planted in a two-acre portion of the site extending east and west of the primary access driveway between the north bank of Pacheco Creek and Highway 152. PBCS installed a total of 238 native trees (e.g., box elder [*Acer negundo*], and cottonwood [*populus spp.*]), shrubs (e.g., California grape [*Vitis californica*], toyon [*Heteromeles artbutifolia*], California rose [*Rosa californica*]), and grasses and forbs (e.g., mugwort [*Artemisia douglasiana*], meadow barley [*Hordeum brachyantherum*], Mexican rush [*Juncus mexicanus*]), which included native plants from local nurseries, as well as coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), and California buckeye (*Aesculus californica*) seeds harvested directly from the site for replanting. PBCS coordinated seven classes from local schools, as well as other volunteers, to participate in local planting days. PBCS and volunteers also installed mats and browse protection around plants to increase survival and prevent damage from weeds and herbivores. For a period of 5 years, PBCS will maintain the plants, including repairing weed, browse protection, and assessing threats, and will monitor the plantings on an annual basis to assess plant health and vigor. The estimated time for completion of maintenance and monitoring of the riparian plantings is September 2022.

The third annual monitoring report was received by the Habitat Agency in February 2021. Although the coast live oak, coffeeberry, common elderberry, and buckeye plantings were successful, resulting in a minimum 70% survival rate, this number is still tempered by very poor survival rates for cottonwood, black walnut, and blue elderberry, which all had survival rates of 20% or lower. The overall survival rate is 53% (Point Blue Conservation Science 2021b). Replacement plantings were installed during the winter of 2019/2020 for Valley oak, California buckeye, blue elderberry, toyon, and California coffeeberry trees and shrubs, which assisted in the increase of the overall survival rate. Representative photographs are included in **Figure 9**.

4.1.6 San Felipe Creek Restoration Project on Joseph D. Grant County Park

4.1.6.1 Project Description

The San Felipe Creek Restoration Project's (San Felipe Project) goal was to restore approximately 1 mile of stream by modifying in-channel habitat and restoring sustainable natural channel and floodplain functions (**Table 15d**). The San Felipe Project restored incising reaches of the channel by excavating, expanding, and revegetating inset channel floodplains. The project also restored and enhanced existing onsite seasonal wetlands by installing exclusion fencing (for pigs and cattle), conducting nonnative invasive plant species control, and, where appropriate, supplemental native

¹⁸ Please refer to the annual monitoring report located on the Habitat Agency's website for more information: <https://scv-habitatagency.org/340/Monitoring-Reports>

plantings, to improve wetlands. Restoration of San Felipe Creek will mitigate impacts from historical land uses and disturbances, enhance aquatic and upland habitats, make San Felipe Creek more resilient to climate change, and provide educational opportunities for the public (Dudek 2018). Photographs of the project are included in **Figure 10**.

4.1.6.2 Management and Maintenance

The San Felipe Project was completed in November 2018 and maintenance began in January 2019. Maintenance and monitoring will be performed for 10 years or until the performance standards have been met and will include regularly scheduled maintenance and monitoring visits. The primary effort of the maintenance and monitoring program will occur in the first few seasons of growth when the control of weeds and promotion of native plant growth is critical. Site inspections occurred approximately biannually during 2020 to assess the condition of the roads, fencing, plantings, weeds, and irrigation. Maintenance activities that occurred throughout the year as a result of these inspections included channel debris removal, weed management, fencing repairs, irrigation repairs, and road maintenance.

4.1.6.3 Monitoring Results

The second year of monitoring occurred during the FY1920 reporting year (**Table 15d**). Qualitative monitoring was conducted quarterly during Year 2, whereas quantitative monitoring (transects and plots) was conducted in the late spring/early summer. Based on the Year 2 monitoring, the wetland re-establishment and enhancement area is struggling to meet most of the performance standards and results indicate that these areas will require remedial measures and adaptive management strategies to reach Year 3 performance standards. The non-wetland waters (stream) and riparian buffer met all but three of the performance standards: container survivorship, cutting survivorship, and relative cover of native species. The low container/cutting survivorship and relative cover of natives across the site can be attributed to multiple factors including feral pig damage in the restoration area damaging the irrigation system and plantings, irrigation issues, drought conditions, and invasive weeds. The low survivorship and native cover are being addressed with remedial measures, which include supplementing more plantings, improving and monitoring the irrigation system, and excluding all feral pigs from the restoration site (Dudek 2020).

The San Felipe Project must also meet the following wetland re-establishment success criteria (Dudek 2018).

- **Wetlands re-establishment areas must meet all three wetland parameters** – The wetlands re-establishment areas under the jurisdiction of the U.S. Army Corps of Engineers (USACE) must meet the definition of three-parameter USACE-jurisdictional wetlands by the end of the 10-year maintenance and monitoring period. A delineation of the wetland establishment areas will be required prior to resource agency sign-off from the USACE and Regional Water Quality Control Board.
- **Wetlands re-establishment areas must be self-sustaining** – The wetlands re-establishment mitigation areas must be self-sustaining (i.e., able to survive on their own without artificial support) by the end of the 10-year maintenance and monitoring period. Determination of self-sustainability will be the presence of natural growth cycles and healthy wetlands vegetation that has not been irrigated in the preceding 2 years prior to the end of the 10-year maintenance and monitoring period.

- **Wetlands re-establishment areas must show evidence of natural recruitment** – The wetlands re-establishment mitigation areas must show evidence of natural recruitment of native wetlands and/or riparian species within the mitigation area. This means naturally occurring native species colonize the site in addition to the originally planted container plants or applied seed.

The mitigation site is in the second year of establishment and some areas are showing promising signs of meeting the wetland re-establishment success criteria by Year 10. In areas that did not meet the performance standards, remedial measures have begun in late fall 2020. Approximately 751 additional container plants and 100 willow cuttings were planted in November 2020 in addition to upgrading the irrigation system and exclusion fence to aid plantings during the upcoming dry season in Year 3. The site will be heavily monitored in Year 3 to ensure it will stay on track to meet these three wetland re-establishment success criteria by the end of the 10-year maintenance and monitoring period (Dudek 2020).

4.1.6.4 Adaptive Management

An adaptive management approach will be implemented to address unforeseen or probable but unpredictable circumstances. Adaptive management is defined, for the purposes of the San Felipe Project, as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the restoration site.

As part of the adaptive management process, a meeting was held with the regulatory agencies on October 21, 2020 to notify them of Year 2 container plant mortality within riparian buffer areas and to discuss preliminary remedial recommendations. In direct coordination with the Habitat Agency, a Remedial Plan Memorandum (Dudek 2020) has been prepared that directs the operations, maintenance, and monitoring work going forward to meet the project goals and objectives and performance standards. The remedial plan considers adaptive management measures to address the onsite issues with feral pig damage, irrigation supply, plant mortality, and invasive weeds by focusing on the following five actions:

- **Feral Pig Control:** Pigs continue to be an issue in the restoration site. Recommendations for remediation of feral pig damage consist of fence reinforcement, swing gate modification, and additional 1-way pig gates. These remedial measures are underway as of November 2020.
- **Irrigation System Reliability:** Irrigation system upgrades are needed to support establishment of the original and replacement plantings. The existing irrigation system is being overhauled and retrofitted as a drip irrigation system. The upgrades went into action by the end of November 2020.
- **Plant Survivorship:** As indicated by Year 2 monitoring results, the majority of the container plantings and cuttings did not meet the performance standards. The replacement planting palette follows a two-phase approach and is based on data collected to-date during the onsite qualitative and quantitative monitoring efforts in addition to professional input from the Project team specialists. The replacement plant list was developed with a consideration of existing site conditions and monitoring results, with the goals of establishing species that will tolerate the range of hydrologic conditions at the site and providing diverse riparian and wetland habitats. The majority of the replacement plantings occurred in the floodplain restoration areas and at log jams during the Phase 1 planting effort. To supplement the Phase 1 - Fall 2020 replacement plantings, and to ensure enough quantities are available to exceed the plant performance

requirements, site-appropriate species propagules were collected this fall to be grown in containers over the winter, spring and summer for planting in fall 2021. Approximately 720 container plants will be installed in Phase 2.

- **Channel Incision:** The upstream floodplain restoration area on San Felipe Creek (ID03-02) is currently functioning as expected with respect to the anticipated dynamic channel movement. However, a cut-off channel became incised in flood events during FY1920. In order to offset the risk of new channel incision evolving to become a dominant and/or incised single thread channel, a debris jam made of natural materials will be installed in summer 2021. Additionally, one log jam on Boyds Creek that was damaged and the easternmost log that was dislodged was replaced during the week of October 26, 2020. In intermittent drainage ID-02, and as planned, additional boards may be installed at the structures as sediment accumulates and consolidates.
- **Invasive Weed Control:** Weed management should continue to be prioritized during Year 3 monitoring. Yellow star thistle, mustard and Italian thistle can be controlled early to prevent more extensive infestations on the restoration site in future years. Control should be maintained through an integrated pest management program that consists of a combination of physical and chemical eradication techniques.
- **Operations, Maintenance, and Monitoring:** The project's operations, maintenance and monitoring will be modified going forward, and responsibilities will fall on both Dudek/HRS and the Habitat Agency. In addition, it is anticipated that Balance Hydrologics will provide adaptive management construction oversight for debris jam and log jam replacement. Qualitative monitoring of ongoing operation and maintenance will occur approximately 8 times per year (1 visit each month anticipated in March through October). Quantitative vegetation monitoring will occur annually in the month of April. Site operations and maintenance will be ongoing throughout the year with a minimum of 1 day per week.

4.1.7 Restoration Project Planning

4.1.7.1 Bolsa Fish Passage Project on Uvas-Carnadero Creek

The SCVWD is in the planning and design phase of the *Bolsa Fish Passage Project on Uvas-Carnadero Creek*. The project would restore approximately 1,700 linear feet of Uvas-Carnadero Creek. It will contribute towards the Habitat Plan goal of restoring 10 miles of streams for the benefit of covered species. This project will count as stream restoration outside of the Reserve System and be completed in a Habitat Agency partnership with the SCVWD.

4.1.7.2 Pacheco Creek Stream and Riparian Restoration Project

The Habitat Agency acquired the Pacheco Creek Reserve in 2017 for the purpose of habitat conservation and restoration, consistent with the goals and objectives of the Habitat Plan. Formerly the site of a gravel mining operation, the natural topography of the Reserve was altered, and connectivity to the floodplain affected. The lack of regular activation of secondary channels and reduced inundation of the floodplain has reduced habitat quality along this reach of Pacheco Creek and has also likely led to scouring and erosion of the north bank of the creek at the location of the only legal access to the site, an active water well, electric power lines, a former stream crossing, and a length of State Route 152 frontage. The Habitat Agency previously implemented riparian and oak woodland enhancement and restoration with PBCS to reduce the impact of bank erosion at this location.

The Reserve is dominated by habitat that could benefit the recovery of several Habitat Plan-covered species and other species of concern. Yet the habitat has been impacted by the altered topography and drought, fire, flooding, poorly timed grazing, and a lack of active management. In addition, sycamore alluvial woodland exists on the site, and because it is a rare land cover type within the Habitat Plan area, the Habitat Agency will generally have limited opportunities to restore the required acreage of this habitat type. Because the site holds great potential for stream and riparian restoration, and because restoration at the site clearly addresses many of the goals and objectives of the Habitat Plan (including land management), the Habitat Agency determined that a stream and riparian restoration project for the Pacheco Creek Reserve was appropriate and necessary.

The Habitat Agency initiated the Pacheco Creek Restoration Project in 2018 to meet as many Habitat Plan goals and objectives as possible, including sycamore alluvial woodland habitat restoration. A watershed approach was taken to understand the historic and current hydrologic and geomorphic conditions and site-specific studies and baseline monitoring were conducted to identify opportunities and constraints for habitat enhancement and restoration. The *Pacheco Creek Restoration Project Feasibility Study* was completed in 2020 to describe the results of baseline studies and inform project design. Throughout the development of the feasibility study and as the Habitat Agency's project has moved into design, the Habitat Agency has worked closely with Valley Water staff and consultants as they develop plans for their proposed Pacheco Dam Expansion Project upstream from the Pacheco Creek Reserve. The *Pacheco Creek Restoration Project Phase 1 Project Description* was prepared in 2020 and shared with the regulatory agencies to kick off the project design and receive feedback. The Habitat Agency has contracted with two qualified native plant nurseries to begin collection of native California sycamore plant propagules for the project, building on previous California sycamore genetics and propagation studies and mapping efforts partially funded by the Habitat Agency. Project design is underway and it is anticipated that final design and permitting will be completed during FY2022, with project implementation beginning in fall 2022 or summer 2023.

4.1.7.3 Pajaro River Agricultural Preserve Restoration Plan

The Habitat Agency and the OSA are developing plans to improve riparian habitat along the Pajaro River, at its confluence with Llagas Creek near Frazier Lake Road. The project will include stream bank enhancement and planting a buffer between existing riparian habitat and adjacent agriculture (Phase I), riparian restoration to expand the width of the stream channel and floodplain (Phase II), and stream and wetland restoration at the Pajaro River/Llagas Creek confluence (Phase III). The project's goals include enhancing habitat linkages for wildlife, restoring riparian habitat to benefit the least Bell's vireo and songbirds, restoring stream habitat to benefit numerous species including central California coast steelhead, and restoring wetland habitat to benefit the monarch butterfly. The project is adjacent to the only documented occurrence of the least Bell's vireo in the Habitat Plan area. In addition, the project is expected to improve water quality by increasing floodplain connectivity, buffering agricultural runoff, and providing additional shade to moderate stream temperature. Baseline studies to inform the project's feasibility study and conceptual design are currently underway. Project design and permitting will occur in FY2021 and FY 2022 and it is anticipated that final design and permitting for Phases I and II will be completed in during FY2022. Pilot planting for Phase I implementation may occur in fall 2021 and implementation of Phases I and II will occur in summer and fall 2022. The Habitat Agency and the OSA have begun collaborating with Valley Water for further study and design of Phase III, for which implementation may occur in a future year.

Table 14. Aquatic Land Cover Restoration and Creation by Watershed

Watershed	Aquatic Land Cover (acres)							
	Willow riparian forests, woodlands, and scrub	Central California sycamore alluvial woodland	Mixed riparian woodland and forest	Coastal and valley freshwater marsh	Seasonal wetland	Pond	Stream (linear feet)	Aquatic Land Cover Total
Coyote								
Restoration	0.82		0.82	0.15	3.72		9,645.00	5.51
Creation								0.00
<i>subtotal</i>	<i>0.82</i>	<i>0.00</i>	<i>0.82</i>	<i>0.15</i>	<i>3.72</i>	<i>0.00</i>	<i>9,645.00</i>	<i>5.51</i>
Guadalupe								
Restoration				0.16	0.21	0.22		0.59
Creation					0.03			0.03
<i>subtotal</i>				<i>0.16</i>	<i>0.24</i>	<i>0.22</i>		<i>0.62</i>
Pajaro								
Restoration			3.30					3.30
Creation								0.00
<i>subtotal</i>	<i>0.00</i>	<i>0.00</i>	<i>3.30</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>3.30</i>
Uvas								
Restoration								
Creation								
<i>subtotal</i>								
Llagas								
Restoration								
Creation								
<i>subtotal</i>								
Total	0.82	0.00	4.12	0.31	3.96	0.22	9,645.00	9.43

Ecological Performance Standard	Year 4 Success Criteria	Year 4 Monitoring Results	Standard Met in Year 4
Target Hydrologic Regime	A portion of the pond mitigation site will be inundated by at least 2 feet of water through August 31, if average or above-average rainfall year.	Year 4 was a below average water year and was the driest recorded water year in the last 30 years. Thus the target hydrologic regime performance standard does not apply to Year 4. The maximum pond water depth did not exceed 2 feet on August 31, 2020 (depth was 0 feet on August 31, 2020).	N/A
Sedimentation and Geomorphic Stability	The pond and wetland mitigation sites and springbox-seep water collection structures will demonstrate minimal sedimentation and geomorphic stability.	Little to no appreciable sedimentation occurred at the pond mitigation and wetland mitigation sites. Cattle grazing and maintenance of the outlet structure caused small, localized sedimentation in the pond mitigation site. Overall, the pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and are geomorphically stable.	Yes
California Red-legged Frog/ California Tiger Salamander Surveys	At the pond mitigation site, successful breeding of California red-legged frog in at least one monitoring year; continued successful breeding of California tiger salamander; and continued occurrence of the western pond turtle.	California red-legged frogs have not been observed during Years 1–4. The target hydrologic regime for California red-legged frog was not achieved in Year 4 due to the very dry water year. California tiger salamander demonstrated successful breeding in Years 1-3, but successful breeding was not observed in Year 4. Failure to observe California tiger salamander breeding may be the result of delayed sampling timing due to Covid-19 restrictions, or lack of breeding in 2020 due to the very dry water year. Western pond turtles continued to occur at the pond mitigation site.	No

Ecological Performance Standard	Year 4 Success Criteria	Year 4 Monitoring Results	Standard Met in Year 4
Aquatic Predator Presence/Absence	Abundance of bullfrogs and Louisiana red swamp crayfish will be below baseline conditions at the pond mitigation site and minimal predator occurrence at the wetland mitigation site (no management is required at the wetland mitigation site).	The abundance of aquatic predators at the pond mitigation site in Year 4 was similar to baseline conditions in Year 1. Predator control seining occurred on August 6, 2020 and the pond dried out without draining during the summer, effectively controlling for aquatic predators. Seep flow to the pond was diverted on November 3, 2020, to further dry out soil below the pond for further control of potential estivating crayfish. Seep flow was restored on December 9, 2020.	Yes
Mt. Hamilton Thistle Abundance	A stable or increasing population of Mt. Hamilton thistle at the pond mitigation site (criterion does not apply to the wetland site).	The spatial extent and percent cover of Mt. Hamilton thistle increased from Year 1 to Year 4. The abundance and percent cover of the population increased from Year 1 to Year 4, although the abundance and percent cover decreased from Year 3 to Year 4.	Yes
Wetland Vegetation Percent Cover	40% in planting zones; less than 50% in open water pond habitat; at least three wetland species will be present. Average percent cover of wetland vegetation will exhibit an increasing temporal trend across monitoring years at the pond and wetland mitigation sites; evaluated separately.	The average percent cover of wetland vegetation was 60.2% at the pond mitigation site and 75.0% at the wetland mitigation site. Wetland vegetation percent cover increased and was relatively stable at the pond and wetland mitigation sites, respectively. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present at each mitigation site.	Yes
Invasive Plant Cover	Less than 5%	Invasive plant cover was less than 5% at each mitigation site and across the mitigation sites combined. Some patches of and individual invasive plants were observed at the pond mitigation site.	Yes

Ecological Performance Standard	Year 4 Success Criteria	Year 4 Monitoring Results	Standard Met in Year 4
Wetland Delineation	N/A	A wetland delineation will be performed in Year 5. Wetland conditions were observed to be establishing in the target wetland mitigation areas even though the water year 2017-2018 featured well below average precipitation.	N/A
Water for Cattle	Sufficient water to support the same grazing intensity of the Reserve lands as the existing conditions.	Water was available year-round for cattle via the spring-fed trough at the pond mitigation site and another spring away from the mitigation site. Tank and secondary trough below pond were dry by mid-summer. Water connection from a large municipal tank is currently in development to help available water consistently keep up with cattle demand.	Yes

Ecological Performance Standard	Year 1 Success Criteria	Year 1 Monitoring Results	Standard Met in Year 1
Target Hydrologic Regime	Depth of inundation at least 6 inches through Sept 30, if average rainfall year.	The maximum water depth at CR1 was 0 feet. The maximum water depth at CR4 was 1.2 feet (April 2, 2020). CR4 fell to 0 feet on May 16, 2020. However, 2019-2020 was a very dry water year with well below average precipitation. Therefore, the performance standard was not applicable in Year 1.	N/A
California Red-legged Frog/ California Tiger Salamander/Western Pond Turtle Surveys	Successful breeding of California red-legged frogs and California tiger salamander and western pond turtle presence in at least one average rainfall monitoring year.	As 2019-2020 was a very dry water year, with well below average precipitation, no water was ponded at CR1 to support breeding. Water was observed in CR4 for the first time on April 2, 2020, but no egg masses, larvae, or turtles were observed. The pond was dry on May 16, 2020. Therefore, the performance standard was not applicable in Year 1.	N/A
Aquatic Predator Presence/Absence	No predator occurrences.	As 2019-2020 was a very dry water year, with well below average precipitation, CR1 was completely dry during the April 2, 2020 predator survey, so no management activities such as pond draining were recommended. CR4 dried by May 16, 2020. No predators were observed, and no management activities were recommended.	Yes
Wetland Vegetation Percent Cover	15% wetland vegetation cover in planting zones; less than 50% in open water pond habitat; at least three wetland species will be present.	The average percent cover of wetland vegetation was 55.1% at CR1 and 40.9% at CR4. More than 50% open water occurred at CR1 and CR4. More than three wetland species were present at CR1 and CR4.	Yes
Invasive Plant Cover	Less than 5%	Invasive plant cover was greater than 5%, except for poison hemlock.	No
Wetland Delineation Water for Cattle	N/A Sufficient water to support the same grazing intensity of the CROSP lands as the existing conditions.	A wetland delineation will be performed in Year 5. Water was not available for cattle at CR1. Water was temporarily available at CR4, April 2, 2020. However, we have met the criteria by providing water longer into the year than before the berms were reconstructed.	N/A Yes

Table 15c. Percent Survival of Coyote Ceanothus by Treatment and Test Plot for Planting Years 2015-2019

Test Plot	Treatment	% Survival by Treatment 2015 Stock	% Survival by Treatment 2016 Stock	% Survival by Treatment 2017 Stock	% Survival by Treatment 2018 Stock	% Survival by Treatment 2019 Stock
Chaparral Edge	Direct Seed	62	45	83	90	56
	Container	--	90	83	100	90
Pine	Direct Seed	--	80	95	100	85
	Container	--	100	100	95	90
Lower Sage	Direct Seed	10	--	--	--	10
	Container	--	80	100	100	80
Upper Sage	Direct Seed	60	55	35	90	59
	Container	--	80	77	100	80

Table 15d. Success Criteria for the San Felipe Creek Restoration Project

Ecological Performance Standard	Year 2 Success Criteria	Year 2 Monitoring Results	Standard Met in Year 2
Wetland Re-Establishment and Enhancement Area			
Standard 1: Container Plants	85% survivorship	<85% survivorship	No
Standard 2: Cuttings Survivorship	65% survivorship	No cuttings were installed in Year 2	No
Standard 3: Seeded Areas Percent Cover	55% cover	Between 87% and 98% cover in seeded areas were measured in the wetland re-establishment and enhancement areas in Year 2.	Yes
Standard 4: Maximum Cover of Weed Species	15% cover	Weed species are present in the wetland rehabilitation and enhancement areas, and have absolute cover of less than 15% in SW02 and 16% in SW03. Performance standard was met for SW02.	No
Standard 4: Absolute Cover of Wetland Species (OBL or FACW)	≥75% of reference absolute cover of wetland species	Absolute cover of wetland species in wetland rehabilitation and enhancement areas was approximately 70% for SW02 and 83% for SW03. This performance standard has been met for SW03 but not for SW02.	No
Standard 6: Relative Cover of Native Species	≥75% relative cover of native species	Relative cover of native species in wetland rehabilitation and enhancement areas was approximately 63% for SW02 and 76% for SW03. This performance standard has been met for SW03 but not for SW02.	No
Standard 7: Target Species Richness	≥75% of reference site	Target species richness in wetland rehabilitation and enhancement areas was approximately 77% of the species richness in the reference site for SW02 and 64% of the species richness in the reference site for SW03. When averaged together the performance standard criteria is not met.	No
Standard 8: Hydrology	≥14 days of ponding or saturated soils in an average or above-average precipitation year	FY1920 was well below the long-term average precipitation year; therefore, the 14-day ponding criteria was not applicable.	N/A
Stream and Riparian Buffer Area			
Standard 1: Container Plants	85% survivorship	22% survivorship	No
Standard 2: Cuttings Survivorship	65% survivorship	26% survivorship	No

Table 15d. Success Criteria for the San Felipe Creek Restoration Project

Ecological Performance Standard	Year 2 Success Criteria	Year 2 Monitoring Results	Standard Met in Year 2
Standard 3: Seeded Areas Percent Cover	55% cover	Vegetative cover in seeded riparian buffer enhancement and restoration areas exceeded 55%. San Felipe Creek (ID03-01B, ID03-02, ID03-03, ID03-04) had an average absolute vegetative cover of 81%; ID03-01A had an average absolute vegetative cover of 100%; and ED03 had an average total vegetative cover 99%.	Yes
Standard 4: Maximum Cover of Weed Species	15% cover	Weed specise had an absolute cover of less than 15% throughout the riparian buffer areas. San Felipe creek (ID03-01B, ID03-02, ID03-03, ID03-04) had an average of 5.6% weed cover, ID03-01A had approximately 7% weed cover, and ED03 had approximately 6.5% weed cover.	Yes
Standard 5: Absolute Cover of Wetland Species (OBL or FACW)	N/A	N/A	N/A
Standard 6: Relative Cover of Native Species	≥75% relative cover of native speices	San Felipe Creek had an average relative native cover of 44%, ID03-01A had an average relative native cover of 47%, and ED03 had an average relative native cover of 65%.	No
Standard 7: Target Species Richness	≥75% of reference site	Species richness in riparian buffer enhancement areas was approximately 236% of the reference site.	Yes
Standard 8: Hydrology- Inset Floodplains on San Felipe Creek	Inset Floodplain inundation if peak flows exceed a 2-year event	FY1920 was well below the long-term average precipitation year. Since a 2-year storm event did not occur, this criteria was not applicable.	N/A
Standard 9: Hydrology- Boyds Creek Alluvial Fan- Living Log Jams	Living log jams in Boyds Creek alluvial fan will contain flow in two or more channels during the winter season	A storm on April 5, 2020 generated flow in two channels within Boyds Creek alluvial fan. This performance standard has been achieved.	Yes
Standard 10: Channel Form	There will be less than 1 foot of channel bed elevation loss, averaged over reach and absent of significant knickpoint; presence of normal fluvial features such as channel bed grain size sorting, sandbar, slip face, and cutback formation.	No additional quantitative data was collected since Year 1 to assess this performance standard; however, qualitative assessments of the site did not indicate any new areas of problematic erosion during FY1920. This performance standard is being achieved.	Yes

Table 15d. Success Criteria for the San Felipe Creek Restoration Project

Ecological Performance Standard	Year 2 Success Criteria	Year 2 Monitoring Results	Standard Met in Year 2
Standard 11: Corral Trail Drainage Lenses	During- and post- storm: If Corral Trail is/was overtopped, positive flow off of road maintained with no significant erosion of road or fill prism. Dry season: pipes are not plugged	Portions of the Corral Trail between the Hotel Trail and Circle Corral experienced sheet flow. The Arizona crossing is performing as designed, and no erosion was observed along the Corral Trail in FY1920.	Yes
Standard 12: Lower Hotel Trail Arizona Crossings	Articulated mat is stable and no significant knickpoints have formed	The Lower Hotel Trail Arizona crossing is performing as designed, and no erosion or knickpoints formed.	Yes
Standard 13: Staked Wood Jams	Staked material is intact and in such a condition to capture sediment and organic material transported by creek	The staked wood jams are intact and functioning as intended. In FY1819, the staked wood jams trapped more sediment than in FY1920, but this process is expected, and the jams are still functional and trapping sediment.	Yes



Photo 1. Year 1 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 2. Year 4 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (May 13, 2020)

Graphics 00679;19 (3/31/21) AB

Source: H.T. Harvey & Associates, 2020



Photo 3. Year 1 Conditions at Photo Point 1b during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 4. Year 4 Conditions Looking East from Photo Point 1b during Vegetation Monitoring at the Wetland Mitigation Site (May 13, 2020)

Graphics 00679;19 (3/31/21) AB

Source: H.T. Harvey & Associates, 2020



Photo 5. Year 1 Conditions at Photo Point 2 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 6. Year 4 conditions at Photo Point 2 during Vegetation Monitoring at the Wetland Mitigation Site (May 13, 2020)

Graphics 00679;19 (3/31/21) AB

Source: H.T. Harvey & Associates, 2020



Photo 7. Year 1 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 8. Year 4 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (May 13, 2020)

Graphics 00679;19 (3/31/21) AB

Source: H.T. Harvey & Associates, 2020



Photo 9. Year 1 Conditions at Photo Point 4 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 10. Year 4 Conditions at Photo Point 4 during Vegetation Monitoring at the Wetland Mitigation Site (May 13, 2020)

Graphics 00679;19 (3/31/21) AB

Source: H.T. Harvey & Associates, 2020



Photo 1. Establishment of Photo Monitoring Point CR1_PPT1 (August 12, 2019)



Photo 2. Establishment of Photo Monitoring Point CR1_PPT2_1 (August 12, 2019)

Graphics 00679;19 (3/31/21) AB



Photo 3. Establishment of Photo Monitoring Point CR1_PPT2_2 (August 12, 2019)



Photo 4. Establishment of Photo Monitoring Point CR1_PPT2_3 (August 12, 2019)

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Photo 5. Establishment of Photo Monitoring Point CR1_PPT3_1 (August 12, 2019)



Photo 6. Establishment of Photo Monitoring Point CR1_PPT3_2 (August 12, 2019)

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Photo 7. Establishment of Photo Monitoring Point CR1_PPT3_3 (August 12, 2019)



Photo 8. Establishment of Photo Monitoring Point CR4_PPT1 (August 12, 2019)

Graphics 00679;19 (3/31/21) AB



Photo 8. Establishment of Photo Monitoring Point CR4_PPT2 (August 12, 2019)



Photo 10. Post-Construction Photo Monitoring Point CR1_PPT1 (November 14, 2019)

Graphics 00679;19 (3/31/21) AB

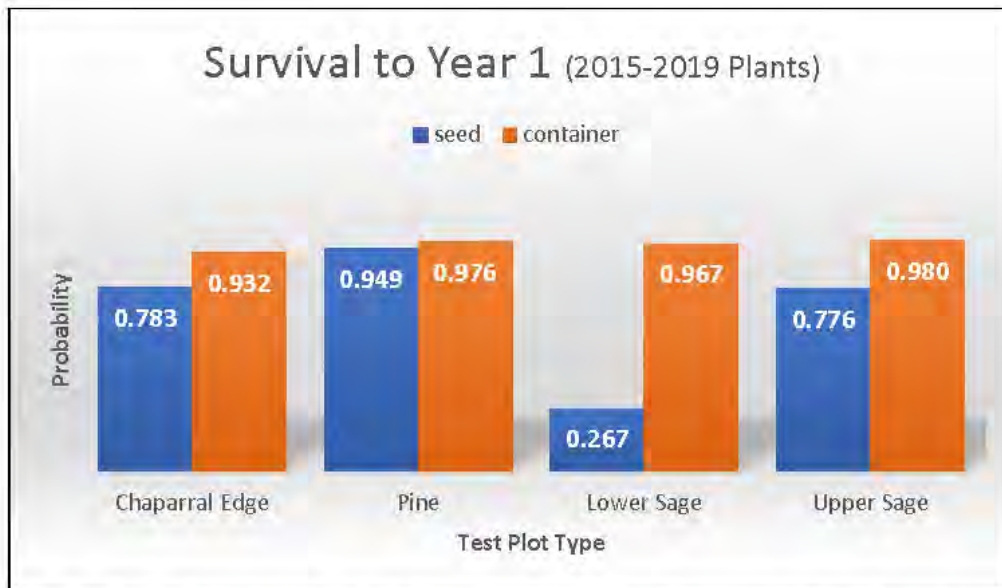


Figure 8a. Survival Probability of Direct Seeded and Container Plants One Year After Planting

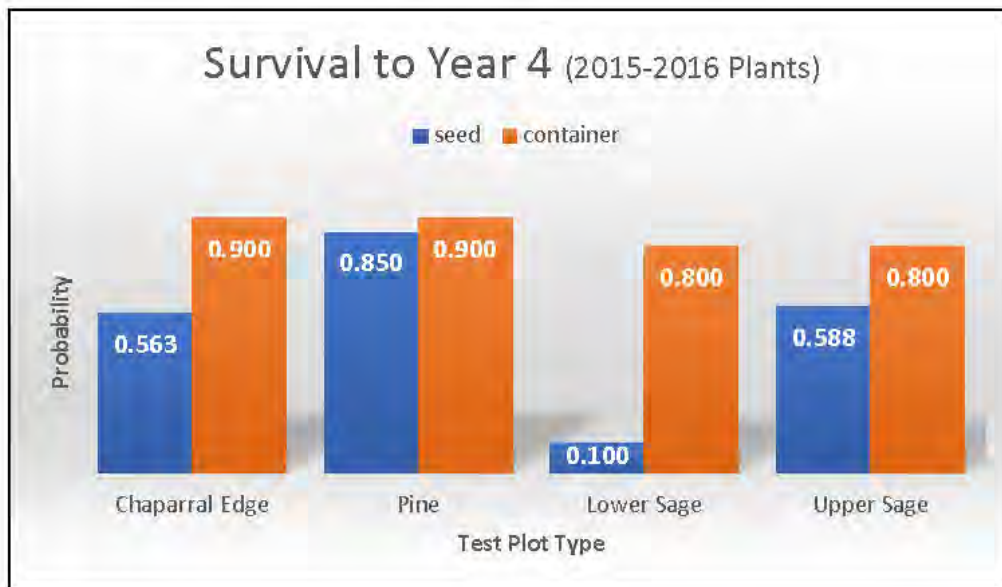


Figure 8b. Survival Probability of Direct Seeded and Container Plants Four Years After Planting

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Photos 8c and 8d. Condition 3 'excellent' rating during the annual monitoring effort. Plants robust, dark green leaves. Note: different plant sizes are due to different age of plants. Photo date: June 10, 2020.



Photo 8e. Condition 2 or 2.5 'good' rating during annual monitoring effort. Some leaf chlorosis but plant multi-branched. Photo date: June 10, 2020.



Photo 8f. Condition 1 'fair-poor' rating during the annual monitoring effort. Significant leaf chlorosis and plant stunted. Photo date: June 17, 2020.

Graphics 00679;19 (3/31/21)AB



Photo 8g. Flower fly (family Syrphidae) visiting Coyote ceanothus flowers in the Pine plot.
Photo date: February 12, 2020.

Graphics 00679;19 (3/31/21) AB



Figure 9a. Each year, Point Blue conducts photo-monitoring surveys (year 2 of 5). Photo point locations below. Zone A = Oak Contingency Planting area photo points, and Zone B = Pacheco Reserve Enhancement/ Restoration planting area photo points.



Figure 9b. Photomonitoring point Pacheco Reserve Enhancement/Rest_1 – Nov. 2018 (left) and Sept. 2020 (right)

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Figure 9c.
Photomonitoring point Pacheco Reserve Enhancement/Rest_2 – Nov. 2018 (left) and Sept. 2020 (right)



Figure 9d.
Photomonitoring point Pacheco Reserve Enhancement/Rest_3 – Nov. 2018 (left) and Sept. 2020 (right)



Photo 1a: East - SW03 - 06/19/2019



Photo 1b: East - SW03 - 10/28/2020



Photo 2a: Southwest - SW03 - 06/19/2019



Photo 2b: Southwest - SW03 - 10/28/2020

Graphics 00679;19 (3/31/21) AB

Source: Dudek, 2020



Photo 3a: Southwest - ED02 - 09/30/2019

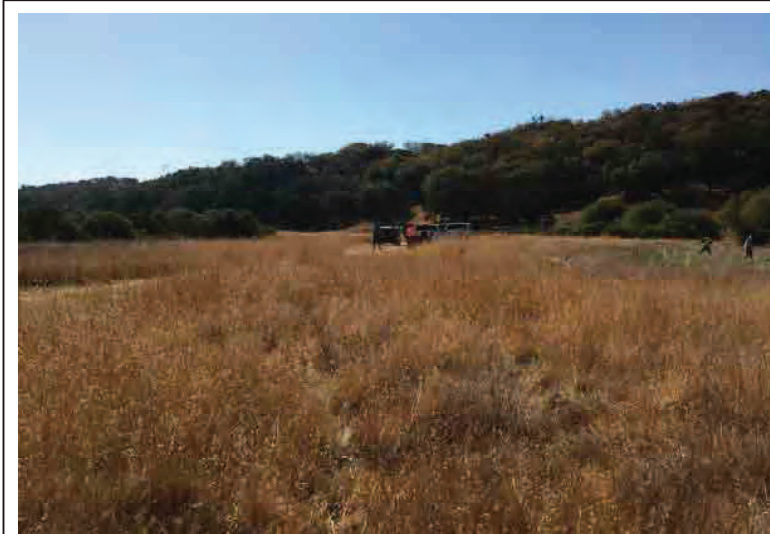


Photo 3b: Southwest - ED02 - 10/28/2020



Photo 4a: Northeast - SW03 - 06/19/2019



Photo 4b: Northeast - SW03 - 10/28/2020

Graphics 00679;19 (3/31/21) AB

Source: Dudek, 2020



Photo 5a: South - ID03 - 09/30/2019



Photo 5b: South - ID03 - 10/28/2020



Photo 6a: West - ID03 - 09/30/2019



Photo 6b: West - ID03 - 10/28/2020

Graphics 00679;19 (3/31/21) AB

Source: Dudek, 2020



Photo 7a: Southwest - ID03 - 06/19/2019



Photo 7b: Southwest - ID03 - 10/28/2020



Photo 8a: South - ID03 - 06/19/2019



Photo 8b: South - ID03 - 10/28/2020

Graphics.06679;19 (3/31/21).AB

Source: Dudek, 2020



Photo 9a: West - ID03 - 09/30/2019



Photo 9b: West - ID03 - 10/28/2020



Photo 10a: Southwest - ID03 - 06/19/2019



Photo 10b: Southwest - ID03 - 10/28/2020

Graphics 00679;19 (3/31/21) AB

Source: Dudek, 2020

Western Burrowing Owl Management and Monitoring

The 2020 western burrowing owl surveys documented 38 breeding adult burrowing owls and 66 fledged young with an average productivity rate of 3.67 juveniles per pair. In comparison, in 2019 the number of adults was 33, the number of juveniles was 46, resulting in a productivity rate of 3.29 juveniles per pair. While 2020 was better than 2019, in terms of productivity, the goal of establishing a stable, then increasing owl population is not being met. The Habitat Agency will be working with the regulatory agencies and the Burrowing Owl Expert Team to explore and implement additional conservation measures in 2021.

The Habitat Agency will manage a minimum of 5,300 acres of western burrowing owl occupied breeding habitat over the next 45 years. Of this acreage, a minimum of 600 acres must be protected in fee title or placed under conservation easement. For the remaining 4,700 acres, a combination of land acquisition (fee title or easement) and long-term management agreements may be used, with the goal of having all 5,300 acres under some sort of permanent protection by Year 45. Maintaining suitable habitat and increasing breeding pairs in a highly altered environment, such as exists in urban areas in the South Bay Area, where western burrowing owls currently nest, will require active land management. Lands acquired or protected using permanent or temporary management agreements will be managed to protect and enhance habitat with the aim to increase the number of nesting western burrowing owl adults. Temporary management agreements (e.g., 5- to 20-year agreements as opposed to agreements in perpetuity) may be used to protect nesting habitat in areas not immediately planned for development or on lands where permanent protection is not possible or necessary (e.g., publicly owned land). **Figure 11** shows the Expanded Burrowing Owl Conservation Area and the potential to increase the burrowing owl population within the Permit Area.

This chapter provides a summary of western burrowing owl-related management actions undertaken during the reporting period, research studies, current management agreements, and ongoing and future agreements, and is adapted from the *Santa Clara Valley Habitat Plan Burrowing Owl Breeding Season Survey Report* (Menzel et al. 2020).

Reporting Requirements

- Management agreements for western burrowing owl nesting habitat, lands acquired in fee title, interagency memorandums of agreement, or any other agreements entered into for the purposes of protecting, enhancing, restoring, or creating covered species habitat.
- Year-to-date and cumulative summaries of exceptions to the burrowing owl passive relocation prohibition, as described in Chapter 6 of the Habitat Plan.

5.1 Protection of Western Burrowing Owl Habitat

5.1.1 Management Agreements

5.1.1.1 San José-Santa Clara Regional Wastewater Facility

The San José-Santa Clara Regional Wastewater Facility bufferlands (RWF, or bufferlands) are owned and controlled by the Cities of San José and Santa Clara. In 2016, the Habitat Agency entered into a 5-year management agreement with the City of San José that covers 201 acres of the bufferlands. A conservation easement (under development) held by the Habitat Agency will cover 72 of the 201 acres, all of which will be managed under a single management plan. The conservation easement language is expected to be approved and recorded in 2021.

The bufferlands are located in Alviso in north San José, north of Highway 237 between Coyote Creek and the Guadalupe River. Data for this population were collected opportunistically from 1996–2013 and then more consistently since 2014. The number of adult owls observed during the breeding season has fluctuated between a low of two adults in 2012 and a high of 34 adults in 2017. In 2020, three pairs were observed, two of which were successful, and produced a total of 9 young. Productivity was 3.0 young/pair which was lower than the average of 3.4 young/pair at this breeding site. This year was the lowest number of offspring observed since consistent data collection began in 2014.

Three female burrowing owls were relocated to the bufferlands as part of the Juvenile Overwintering Project. They were released into one hacking enclosure on February 21, 2020. After the enclosure was removed on March 6, 2020, one of the females was never resighted post-release; the two others found mates and remained on site for the breeding season. One of these females was successful and produced four young.

All pairs and their young were provided supplemental feeding (Wellicome et al. 2013) throughout the breeding season. Adult and juvenile birds have been banded at this location since 2015. Analysis of banding data revealed that one pair was inbreeding last year; a female mated with her male offspring and produced five young.

Vegetation management at this location has varied over the years, from minimal maintenance, to intensive sheep grazing, to regular mowing. Habitat enhancements at this site include artificial burrows, mounds and berms, vegetative islands, and brush piles, all funded by the Habitat Agency. In 2017 and 2019, extended periods of flooding at the start of the breeding season reduced the available breeding and foraging habitat.

5.1.1.2 Don Edwards San Francisco National Wildlife Refuge

The Don Edwards San Francisco National Wildlife Refuge (Refuge), Warm Springs Unit (Warm Springs), has the greatest amount of suitable, undisturbed habitat for western burrowing owls of the five main owl populations in the South Bay. It is managed by USFWS to provide habitat to several endangered and special-status species, including western burrowing owls. It is composed of 719 acres of vernal pool grasslands in South Fremont, within the North San José/Baylands region. In 2015, the Habitat Agency entered into a 5-year management agreement with the USFWS for the Refuge. The emphasis of this agreement is to perform a series of monitoring and habitat

enhancement tasks to better understand the status of the western burrowing owl population and to improve nesting and foraging habitat for this species.

Warm Springs is located along the southeastern side of San Francisco Bay, west of Highway 880. Western burrowing owls have been regularly observed in and around Warm Springs since it was purchased in 1992, and they have been regularly observed since biological surveys were initiated in the late 1990s. Warm Springs is dominated by alkali grasslands and seasonal wetlands. Of the 719 acres at Warm Springs, approximately 200 acres are seasonal wetlands. Data for this western burrowing owl population have been collected somewhat consistently since 2001. The number of adult owls observed during the breeding season has fluctuated between a high of 64 adults in 2008 and a low of three adults in 2019. Average productivity at Warm Springs is 2.0 young/pair. Since 2015, adult and juvenile owls have been banded at this location.

In 2020, biologists observed two adult males: one banded individual (banded as an owlet in the bufferlands in Alviso in 2019) in May and one unbanded individual in July. The banded male was initially resighted in Alviso before travelling to Warm Springs during this breeding season. Each owl was only observed during one monthly survey and motion-triggered trail cameras revealed that each owl only stayed at the burrow for a short period of time (Chromczak 2015–2020). Due to COVID-19 restrictions, regular monthly surveys were not permitted at this site at the start of the breeding season in March and April. When surveys resumed in May, only two surveyors were permitted on site at a time; usually this large site is surveyed by a group of 5–6 surveyors at a time. These restrictions reduced the overall survey coverage during the height of the breeding season.

A habitat management program for Warm Springs was initiated in 2004 (Kakouros and Burns 2014, Lordeo, n.d.). Vegetation height can be characterized as low, except in the highly weedy patches or fields. Cattle grazing has occurred at Warm Springs throughout most of the twentieth century. On acquisition of Warm Springs in 1992, however, the Refuge ceased all grazing practices in the absence of a formal management plan. In 2004, this program included the reintroduction of grazing, as well as prescribed burning, invasive plant control, and expanded biological monitoring. Cattle are rotated among 10 fenced pastures to keep vegetation low and improve habitat conditions for three federally listed species (i.e., California tiger salamander, vernal pool tadpole shrimp, and Contra Costa goldfields) as well as for the western burrowing owl. The program set five main goals.

1. Reduce residual dry matter (RDM).
2. Enhance hydrology for vernal pool functions and species.
3. Increase native plant species richness and cover.
4. Reduce invasive plants, excluding nonnative grasses.
5. Maintain a grassland community of shorter stature (i.e., less than 6 inches) throughout the upland areas of Warm Springs within 5 years in order to provide habitat that supports at least five pairs of western burrowing owls 10 years from program approval.

Vegetation management in 2020 was conducted by the Burrowing Owl Experts with support from San Francisco Bay Bird Observatory (SFBBO) staff, Refuge staff and biologists conducting the monthly breeding season surveys. Various techniques were used to keep vegetation short and control the spread of invasive weeds into burrowing owl habitat, including focused herbicide application, weed-whacking, and hand-pulling of weeds. Staff prioritized applying these techniques first to areas surrounding occupied burrows, then around unoccupied burrows located in areas where burrowing owls have historically nested (“priority areas”), and finally to areas outside

priority areas containing tall, weedy vegetation. Herbicides were not applied within 6 feet of occupied burrows. Herbicides were highly successful at keeping vegetation low in priority areas throughout the breeding season, despite the absence of nesting owls. Vegetation conditions were therefore not likely a factor in nest abandonment (Menzel et al. 2019). As in previous years, predator management activities continued to be implemented by the U.S. Department of Agriculture Animal and Plant Health Inspection Service across the entire 719 acres.

Recommendations for vegetation management in 2020 and beyond include continued use of pre-emergent herbicide in February and March with a transition to non-grass-killing herbicide later in the season, mowing in the spring, and developing and implementing a long-term native vegetation restoration plan to decrease the need for annual vegetation management. SFBBO also recommends assessing abundance of burrowing owl prey items (i.e., insects and small rodents) at Warm Springs and potentially developing and implementing a plan to increase prey populations (Cech et al. 2019).

Urban development has increased around the Warm Springs Unit. Construction of the Pacific Commons development, adjacent to the north, has been completed; development along Auto Mall Parkway was ongoing this year. Increased use of anticoagulant rodenticides leading to secondary poisoning in these newly urbanized areas is of concern to burrowing owl survival. The site is now mainly surrounded by habitat unsuitable for owls; salt ponds to the southwest and urban development everywhere else.

5.1.1.3 Progress to Date

Number of Adults

- Increase in the number of adults during the breeding season between previous reporting year (33 individuals) to current reporting year (38 individuals) (**Table 16a and Table 16b**).

Acres under Protection

- For the entire 50-year permit term, the Habitat Agency needs to protect or manage 106 acres of burrowing owl habitat per year. Given that FY1920 is Year 7 of Plan implementation, the Habitat Agency needs to protect or manage 742 acres to stay on track. A total of 920 acres of occupied burrowing owl habitat is under management agreements, which is ahead of the Year 7 requirement; 920 acres is a little less than the amount required in Year 9 (i.e., 954 acres). This is also 17% of the total 5,300 acres required to be protected and/or managed during the life of the Plan.
- The 72-acre conservation easement on the bufferlands will be 12% of the goal of 600 acres of occupied nesting habitat protected in fee title or conservation easement. The Habitat Agency needs to protect 12 acres per year of occupied nesting habitat in fee title or conservation easement. Given that FY1920 is Year 7 of Plan implementation, the Habitat Agency is behind of this goal by 1 year.

Exceptions to Passive Relocation Prohibition

- Passive relocation is currently prohibited under the Habitat Plan. As of June 30, 2015, there have been no exceptions to the passive relocation prohibition in Chapter 6 of the Habitat Plan.

5.2 Monitoring Actions

5.2.1 South Bay Western Burrowing Owl Survey Network

Annual western burrowing owl surveys are being completed through a collaborative effort between resource agencies, cities, and other local jurisdictions that are surveying for western burrowing owls in the region (Habitat Plan Appendix M, Western Burrowing Owl Conservation Strategy). This group was first assembled in 2014 and is collectively referred to as the South Bay Burrowing Owl Survey Network. Currently this group consists of members from the City of Mountain View/Shoreline Golf Course, RWF, Don Edwards National Wildlife Refuge, ICF, NASA Ames: Moffett Airfield, San Francisco Bay Bird Observatory, San José State University, City of San José, City of Palo Alto, Santa Clara County Parks, The Nature Conservancy, San José International Airport/U.S. Department of Agriculture, and the Santa Clara Valley Audubon Society. This group meets at least twice annually, once before the breeding season begins and once after the breeding season concludes. The South Bay Burrowing Owl Survey Network allows the Habitat Agency to gain maximum knowledge of breeding western burrowing owls in the region by coordinating with resource agencies, cities, and other local jurisdictions that are surveying for western burrowing owls.

5.2.1.1 2020 Burrowing Owl Survey Methods

Most sites—the five existing known breeding sites, adjacent areas, and other potentially suitable nesting habitat—were surveyed at least two times during the breeding season. The first survey was to be conducted between March 15 and April 15, and the second survey between June 1 and July 15. Each surveyor received a survey site map that included any recorded burrowing owl occurrences within or adjacent to the site, as well as parcel boundaries, land cover types, and suitable nesting or overwintering habitat within and adjacent to the site.

Site visits were generally conducted between morning civil twilight to 10:00 a.m., or 2 hours before sunset until evening civil twilight. Surveys were conducted during weather conducive to observing owls outside their burrows by avoiding surveying during heavy rain, high winds (>20 kilometers per hour), or dense fog. Dependent on terrain and site access, a variety of survey techniques were employed, including walk-through transect surveys, perimeter surveys, and windshield surveys. All burrowing owl sightings, occupied burrows, and burrows with owl sign (e.g., whitewash, feathers, regurgitated pellets, prey remains) were recorded and mapped. Numbers of adult and juvenile burrowing owls and their behavior such as courtship and foraging were also recorded. Unoccupied sites were classified as having low, moderate, or high potential for nesting burrowing owls based on site conditions observed during the surveys.

Surveyors scanned the ground, all perch structures inside the survey area, and perimeter fences (if present) with binoculars or telescopes from various observation points. If the site was publicly accessible or access was permitted, they walked each site and inspected ground squirrel burrows for sign of burrowing owl occupancy, including whitewash, nest decoration materials, prey remains, and molted feathers. The surveyor recorded the date, time, weather conditions, and observations on the survey form. They took digital photographs of most survey areas.

5.2.1.2 Burrowing Owl Habitat Description

During initial site visits, all suitable nesting and foraging habitat within the accessible areas was identified and site conditions were summarized on a survey form. Access to parcels ranged from full

access to areas only surveyed from fence lines along public roads or trails. Habitat information included on the survey form consisted of the following: land cover type and structure, current land use practices, abundance of ground squirrels or other burrowing animals, other incidental observations, and the percentage of survey coverage.

5.2.1.3 Burrowing Owl Survey Results

For the second time since monitoring began in 2014, breeding burrowing owls were not observed at all five locations in the South Bay area in 2020 due to the absence of breeding owls at Don Edwards San Francisco Bay National Wildlife Refuge – Warm Springs Unit. Breeding was observed at the other four locations: Shoreline at Mountain View, RWF, NASA Ames Research Center at Moffett Field, and the San José International Airport. In total, surveyors observed 38 adults during the 2020 breeding season, forming 18 pairs, 16 of which were successful (**Table 16a** and **Table 16b**). Pairs produced a total of 66 young, resulting in a reproductive rate of 3.67 young/pair. In comparison, in 2019, 33 adults produced 46 young (3.29 young/pair), and in 2018, 50-53 adults produced 80-81 young (3.24 young/pair).

No new breeding season locations were identified in 2020. **Table 16a** and **Table 16b** shows the number of adult burrowing owls present during the breeding season since monitoring for the Habitat Plan began in 2014. During Habitat Plan development a count-based population viability analysis was completed (Appendix N of the Habitat Plan). Based on that analysis it was determined that in order for burrowing owls to reach recovery levels by the end of the permit term, an average of three owls would need to be recruited into the South Bay breeding population each year. Figure 4-3 in the Habitat Plan shows what population growth under those assumptions would look like. Although the Habitat Plan does not set population-based goals, Figure 4-3 is offered to provide relative population targets that can be used to determine if the population is in general tracking with expectations. Further, if recruitment at a rate of at least three owls per years can be realized, the risk of local extinction is low. According to the modeled adult owl numbers extrapolated from the population viability analysis, in 2020, the seventh year of Habitat Plan implementation, there should be 88 adult owls present during the breeding season. The 38 adult owls observed was well below the modeled estimate. In 2014 the population exceeded expectations, and in 2015 the population met expectations, but from 2016 to 2020 the population failed to meet expectations. This does not mean that the Habitat Agency is out of compliance, but it does require the Habitat Agency to begin Tier 3 active recovery actions. If the population fails to meet modeled expectations, it is assumed that a portion of burrowing owl conservation fee monies will be directed toward active recovery efforts.

5.2.2 Tier 3 Recovery Actions

During this seventh annual breeding season survey, the number of owls increased to a total of 38 adults in comparison to 33 adults in 2019. The total number of adult owls was up slightly and the average number of offspring per pair slightly increased from 3.29 in 2019 to 3.67 juveniles per pair in 2020. As a result the Habitat Agency continued to fund Tier 3 Recovery Actions as described in the Burrowing Owl Conservation Strategy, Appendix M, Santa Clara Valley Habitat Plan.

5.2.2.1 Breeding Season Banding

Banding of breeding burrowing owls and their young continued in 2021. **Table 17** provides a summary of burrowing owls banded in the Plan Area during 2020 and during previous years.

5.2.2.2 Burrowing Owl Genomics Project

In 2020, the Bird Genomics Laboratory at Colorado State University, headed by Dr. Kristen Ruegg, undertook two tasks for the Santa Clara Valley Habitat Agency as part of Tier 3 actions for the Burrowing Owl Conservation Strategy. First, they analyzed the genetic sequences of 13 burrowing owls being overwintered at the Peninsula Humane Society as part of the Juvenile Overwintering Project. The genomes of the birds were analyzed to determine the best birds to match up for breeding to ensure the greatest genetic diversity. Each bird was analyzed for relatedness to the other birds in the group (to avoid inbreeding) and for runs of homozygosity to ensure genetic diversity. The analysis, combined with genealogy data provided by Debra Chromczak, resulted in recommendations for the best pairings. The recommended pairs were formed and two pairs were transferred to outside aviaries in Alviso, California, in March 2021, ultimately to be released to the wild. Two other pairs were transferred in March 2021 to the Ohlone Humane Society to initiate the Burrowing Owl Captive Breeding program. This is a very successful and essential aspect of the overwintering program which allows us to promote maximum genetic diversity in the pairs we release into the wild population.

The second task was to determine the sex and resident versus migratory status of burrowing owls that we captured in winter and summer in the Habitat Plan area. The purpose of this work was to determine whether wintering birds were residents of our area or migrants and to determine the relationship of these wintering birds to the resident, breeding population of birds. The lab analyzed feathers from 47 unbanded birds that we captured in winter and found that 22 were females and 25 were males. With respect to migratory status, of 49 winter birds analyzed, all 26 that were captured outside the breeding sites were migratory birds. At the breeding sites, we sought to capture only unbanded burrowing owls, and not banded birds that we knew were residents. At these sites, there were also 18 migratory birds as well as 3 resident birds (one was a known resident), and an "intermediate" bird. Birds showing intermediate migratory status were determined by Dr. Ruegg's team to be birds that were the offspring of migratory and resident birds. The summer data--taken only from breeding sites as these were the only places burrowing owls were found--were extremely interesting. Of 37 birds analyzed, we found that 21 were resident, 14 were intermediate birds, and 2 were migrants who stayed into the breeding season.

These findings show that some migratory burrowing owls are staying to breed with our resident birds producing "intermediate" offspring that also stay to breed. The migratory burrowing owls that stay to breed add genetic diversity to the wild population in our region, which is beneficial. However, it does not appear that the number of migrants staying into the breed season is enough to reverse the decline in the breeding burrowing owl population in the Habitat Plan area that has been occurring over the last few decades.

5.2.2.3 Supplemental Feeding Program

Implementation of the supplemental feeding program continues. The program is aimed at increasing the number of young reared and fledged from nests in the plan area. Below is a summary for feeding that occurred in both the breeding and non-breeding season.

Breeding Season

Supplemental feeding of burrowing owls (owls) started on February 21, 2020 at the RWF when the three single overwintered females were soft released into hacking enclosures, then on March 14 at Shoreline when the five overwintered pairs were released, April 14 for Moffett and June 11 for

Warm Springs. At Warm Springs, a single male was fed for one week only; no breeding pairs were observed at this location during 2020.

Non-Breeding Season

Supplemental feeding continued at Shoreline outside of the breeding season from October 2020 to March 2021. Only owls released as part of the Juvenile Overwintering Project were fed each week (blue banded owls). Eight blue banded owls were fed regularly up to the fourth quarter of 2020, while seven blue banded owls were fed during the first quarter of 2021.

5.2.2.4 Captive Overwintering Project

In April 2019, Habitat Agency researchers Debra Chromczak and Phil Higgins initiated the Juvenile Burrowing Owl Overwintering Project. The aim of this project is to reduce juvenile mortality at existing breeding locations by taking some juveniles into captivity, overwintering them in a protected captive-rearing facility, and releasing them back at known breeding locations as adults when they have a higher chance of surviving. In 2020, approximately 10 (5 pairs) of the breeding owls at Shoreline, as well as three single females at Santa Clara Regional Wastewater Facility were released as part of the Juvenile Burrowing Owl Overwintering Project.

Of the 38 adults observed in 2020, 13 (34%) were released as part of the Juvenile Burrowing Owl Overwintering Project. Without protection of these juveniles in captivity, 50–75% of them would likely have perished during fall and winter and the number of breeding adults in 2020 would likely have been lower. Continuation of the Juvenile Overwintering Project and the anticipated success of a future Captive Breeding Program are crucial for maintaining, and hopefully increasing, a source population in the Plan area.

5.2.2.5 Captive Breeding

Habitat Agency researchers continued outreach to other organizations to learn more about captive-rearing and captive-breeding techniques. Lynne Trulio and Sandra Menzel coordinated with Bay Area animal rehabilitation facilities to gauge interest on forming future partnerships for captive breeding of burrowing owls for eventual active translocation to new breeding sites. In 2020, a proposal was submitted to the USFWS and CDFW, and has since been approved. Implementation of the Santa Clara Valley Habitat Agency Burrowing Owl Captive Breeding Program will begin in 2021.

Table 16a. Breeding Burrowing Owl Survey Observation Results—Reporting Period

Site Name/Location	Number of Adults Present During the Breeding Season 2020	Number of Adults Required to Meet Population Growth Target 2020	Number of Young Fledged in 2020	Number of Pairs 2020	Number of Successful Pairs 2020	Acreage
Within Permit Area						
San José International Airport	9	-	17	5	5	331
San José-Santa Clara Regional Wastewater Facility	8	-	9	3	2	492
Permit Area Subtotal	17	-	26	8	7	823
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View	16	-	35	8	8	750
Don Edwards National Wildlife Refuge - Warm Springs Unit	2	-	0	0	0	719
NASA Ames Moffett Airfield	4	-	5	2	1	700
Other Locations	0	-	0	0	0	70
Expanded Area Subtotal	22		40	10	9	2,239
Total Breeding Season Adults	38	88	66	18	16	3,062

Table 16b. Breeding Burrowing Owl Survey Observation Results—Cumulative

Site Name/Location	Number of Adults Present During the Breeding Season	Number of Adults Required to Meet Population Growth Target	Number of Young Fledged	Number of Pairs ^a	Number of Successful Pairs ^a	Acreage
Total Breeding Season Adults						
2014	103	73	81			3,062
2015	75	76	97	32	24	3,062
2016	62	79	108	31	24	3,062
2017	74	82	64	33	19	3,062
2018	52-53	85	80-81	24-25	19-20	3,062
2019	33	88	46	14	8	3,062
2020	38	88	66	18	16	3,062
Within Permit Area						
San José International Airport						
2014	35	-	34			331
2015	18	-	24	8	8	331
2016	12	-	21	6	6	331
2017	8	-	14	3	3	331
2018	10	-	8	5	3	331
2019	4	-	11	2	2	331
2020	9	-	17	5	5	331
San José-Santa Clara Regional Wastewater Facility						
2014	16	-	17			492
2015	23	-	46	10	9	492
2016	25	-	58	13	12	492
2017	34	-	29	17	9	492
2018	18	-	23	9	7	492
2019	12	-	21	5	4	492
2020	8	-	9	3	2	492
Permit Area Subtotal						
2014	51	-	51			823
2015	41	-	70	18	17	823
2016	37	-	79	19	18	823
2017	42	-	43	20	12	823
2018	28	-	31	14	10	823
2019	16	-	32	7	6	823

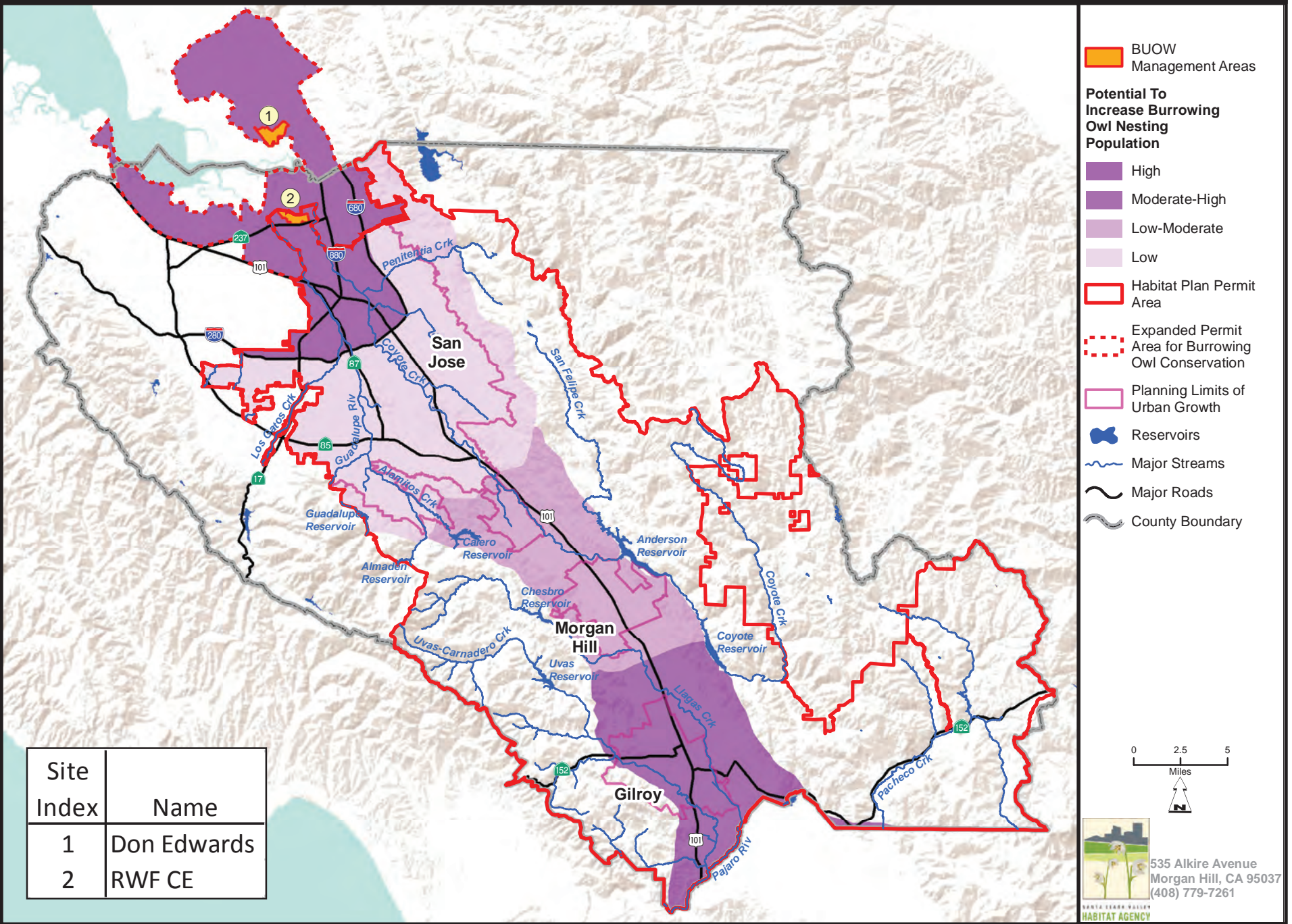
Table 16b. Breeding Burrowing Owl Survey Observation Results—Cumulative

Site Name/Location	Number of Adults Present During the Breeding Season	Number of Adults Required to Meet Population Growth Target	Number of Young Fledged	Number of Pairs ^a	Number of Successful Pairs ^a	Acreage
2020	17	-	63	21	7	823
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View						
2014	8	-	5			750
2015	6	-	3	3	0	750
2016	4	-	4	2	1	750
2017	5	-	0	2	1	750
2018	4	-	14	2	2	750
2019	2	-	6	1	1	750
2020	16	-	35	8	8	750
Don Edwards National Wildlife Refuge - Warm Springs Unit						
2014	17	-	5			719
2015	6	-	13	3	3	719
2016	9	-	13	4	2	719
2017	12	-	7	4	2	719
2018		-	5-6	2-3	1-2	719
2019	3	-	0	1	0	719
2020	2	-	0	0	0	719
NASA Ames Moffett Airfield						
2014	24	-	20			700
2015	17	-	11	8	3	700
2016	12	-	12	6	3	700
2017	13	-	13	6	4	700
2018	15	-	30	6	6	700
2019	12	-	8	5	1	700
2020	4	-	5	2	1	700
Other Locations						
2014	4	-	0			70
2015	5	-	0	0	0	70
2016	0	-	0	0	0	70
2017	2	-	1	1	1	70
2018	0	-	0	0	0	70

Site Name/Location	Number of Adults Present During the Breeding Season	Number of Adults Required to Meet Population Growth Target	Number of Young Fledged	Number of Pairs ^a	Number of Successful Pairs ^a	Acreage
2019	0	-	0	0	0	70
2020	0	-	0	0	0	70
Expanded Area Subtotal						
2014	53	-	30			2,239
2015	34	-	27	14	7	2,239
2016	25	-	29	12	6	2,239
2017	32	-	21	13	7	2,239
2018	52-53	-	80-81	24-25	19-20	2,239
2019	17	-	14	7	2	2,239
2020	22		40	10	9	2,239
^a These metrics were not tracked in 2014						

Historic Breeding Sites	Number of BUOWs Banded in 2020			Number of Previously Banded BUOWs			Oldest Previously Banded BUOWs (6-year old male)	
	FEMALE	MALE	CHICK	FEMALE	MALE	CHICK	FEMALE	MALE
Shoreline at Mountain View	0	0	29	1	1	14	1 AHY-2018	1 HY-2014
NASA Ames Moffett Airfield	0	1	5	2	1	0	2 HY-2018	1 AHY-2019
San José-Santa Clara Regional Wastewater Facility	0	1	7	1	1	5*	1 AHY-2017	1 HY-2018
Don Edwards National Wildlife Refuge - Warm Springs Unit	0	1	0	0	0	1*	-	1 HY-2019
San José International Airport	0	0	0	0	0	0	-	-
Total Number of Banded BUOWs	0	3	41	4	3	19	4	4
* one male relocated from RWF to Warm Springs HY = Banded as hatch year (chick) AHY = Banded after hatch year (adult)								

Figure 11. Expanded Burrowing Owl Conservation Area with Management Areas



Chapter 6

Reserve System Management

Reserve System lands are managed to meet the Habitat Plan's biological goals and objectives. The Santa Clara Valley Open Space Authority manages the Coyote Ridge Reserve on the behalf of the Habitat Agency consistent with its interim management plan. The Habitat Agency manages the Pacheco Creek Reserve.

The Santa Clara Valley Open Space Authority performed several management actions on CROSP including invasive species control, grazing, feral pig control, and road repairs. Species that benefit from these actions include all of the covered species that occur on the CROSP, including Bay checkerspot butterfly, California red-legged frog, California tiger salamander, Mount Hamilton thistle, fragrant fritillary, Santa Clara Valley dudleya, smooth lessingia, Loma Prieta hoita, most beautiful jewelflower, and Metcalf Canyon jewelflower.

Management actions performed on the Pacheco Creek Reserve included a new grazing regime, fencing of restoration sites, and trash clean-up. The Habitat Agency began the Pacheco Creek restoration planning process to improve creek conditions on the Pacheco Creek Reserve. A feasibility study for this project will be completed in 2020.

6.1 Management Planning Activities

Management and monitoring plans are completed within five years of Reserve System acquisitions. As described in Section 3.2.1, five new properties were acquired by the Habitat Agency in the reporting year. Management and monitoring plans for these properties will be developed in the coming years. As stated in Chapter 3, *Sites Under Review*, at least two new properties will be acquired in FY2021. Management plans will also be developed for these properties that identify, on the basis of site-specific conditions and objectives, the management, monitoring, and maintenance actions necessary to ensure that desired ecosystem characteristics and functions are established, maintained, and enhanced.

6.2 Management Implementation

Below are details on the FY1920 reporting year management implementation measures at Coyote Ridge Open Space Preserve and Pacheco Creek Reserve. Management measures implemented at the five newly acquired lands in the reserve system occurred after the FY1920 reporting year. These results will be summarized in next year's report.

6.2.1 Coyote Ridge Open Space Preserve

6.2.1.1 Management Activities

The following management activities were conducted on the Coyote Ridge Reserve by the Santa Clara Valley Open Space Authority (Galli Basson 2021 pers. comm.).

- Invasive plant control scattered throughout the preserve and along access roads including the south ascent roads (artichoke thistle (*Cynara cardunculus*), purple star-thistle, and yellow star-thistle).
- Continued feral pig depredation program.
- Performed road culvert replacements at two key locations to facilitate drainage under the lower road.
- Fence monitoring and repairs.
- Residual dry matter monitoring.
- Water source planning.

6.2.1.2 Management Issues

The Santa Clara Valley Open Space Authority identified the following management needs on the Coyote Ridge Reserve in the reporting year.

- Improvements to grazing infrastructure including water source plans.
- Fencing and protection of sensitive wetland, riparian, and pond habitats.
- Removal of the cyclone fencing and replacing dilapidated fencing with wildlife-friendly fencing.
- Trail inventory and repair.
- Ongoing invasive plant species management.

These management issues informed the 2021 work plan. Progress on these will be reported on in next year's annual report.

6.2.2 Pacheco Creek Reserve

6.2.2.1 Management Activities

The following management activities were conducted on the Pacheco Creek Reserve by the Habitat Agency.

- Roadside and on-site trash clean-up and removal.
- Maintenance of solar powered water well for irrigation.
- Weed abatement within restoration planting sites.

6.2.2.2 Management Issues

The Habitat Agency has identified the following management needs on the Pacheco Creek Reserve. These needs will continue to be addressed in the coming year.

- Removal of remnant fencing and PVC piping from failed Caltrans restoration irrigation system.
- Invasive weed control for poison hemlock, star thistle, mustard, and other species.

Monitoring, Research, and Adaptive Management

Reporting Requirements

- A description of the landscape-, natural community-, and species-level monitoring undertaken during the reporting period and a summary of monitoring results, including species status and trends.
- A presentation of the conceptual ecological models developed to date and any changes to them that have taken place during the reporting period.
- A description of the adaptive management process utilized during the reporting period (e.g., consultation with science advisors, convening of the Independent Conservation Assessment Team).
- A summary of the recommendations or advice provided by the Wildlife Agencies, science advisors, and the Independent Conservation Assessment Team (if applicable) regarding adaptive management and monitoring.
- An assessment of the efficacy of habitat restoration and creation methods in achieving performance objectives and recommended changes to improve the efficacy of the methods.
- An assessment of the appropriateness of performance indicators and objectives (see Table 7-1 of the Habitat Plan for examples) based on the results of effectiveness monitoring, and recommendations for changes to performance indicators and objectives.
- The success of the conservation actions in meeting the biological objectives in Chapter 5 and in Tables 5-1a through 5-1d of the Habitat Plan.
- The location and extent of annual and cumulative compliance with the species occupancy requirements.
- The location, extent, timing, and success rates of implementation of all other conservation actions described in Chapter 5 of the Habitat Plan (e.g., preparing reserve unit management plans [including recreation plans], constructing artificial perches, monitoring).
- A summary of the monitoring program objectives, techniques, and protocols including monitoring locations; variables measured; sampling frequency, timing, and duration; analysis methods; and who performed the analyses.
- An assessment of the efficacy of the monitoring and research program and recommended changes to the program based on interpretation of monitoring results and research findings.

Monitoring was completed on CROSP, Tilton Ranch South Reserve, Davidson Reserve, and burrowing owl management areas during the reporting period. On the CROSP, monitoring included surveys for Bay checkerspot butterfly larvae and serpentine grassland composition. The surveys documented a stable Bay checkerspot butterfly population. In 2020, the total number of larvae on the CROSP decreased to approximately 182,000 +/- 58,000 (in comparison to 307,000 +/- 138,000

in 2019), which is approximately 20-30% of the total Bay checkerspot butterfly population across Coyote Ridge. Even with the one-third decline from last year's CROSP estimate, this is still a high number, and definitely within the norm of historical variability. The surveys also documented high quality serpentine habitat. Bay checkerspot butterfly host plants and nectar sources were mostly stable in 2020, with some declines in dwarf plantain and California goldfields that remain within the range of historical variability seen throughout Coyote Ridge.

After acquiring Tilton Ranch South Reserve in 2019 and Davidson Reserve in 2020, the Santa Clara Valley Habitat Agency conducted baseline surveys for covered plant species in April and August 2020 that identified large populations of Santa Cruz dudleya, most beautiful jewelflower, and smooth lessingia (ICF 2020) in addition to one of the three known populations of Coyote ceanothus (Santa Clara Valley Water District 2021).

The Habitat Plan provides a framework, guidelines, and specific suggestions to help the Habitat Agency develop and implement a detailed monitoring program during the initial years of Habitat Plan implementation. The Habitat Plan describes two types of monitoring: *compliance monitoring* and *effectiveness monitoring*. Compliance monitoring determines if the requirements of the Habitat Plan are being implemented as described in the Habitat Plan. This Annual Report is the primary mechanism for tracking and reporting on Habitat Plan compliance issues. Effectiveness monitoring evaluates the effectiveness of the management and monitoring actions described in the Reserve Management and Monitoring Plans at achieving their intended outcomes. In addition, each Reserve Management and Monitoring Plan divides the process for conducting effectiveness monitoring into three main phases: inventory, long-term monitoring and adaptive management, and targeted studies (i.e., research). These three phases will be ongoing throughout the Habitat Plan permit term.

Collectively, the monitoring and adaptive management program tracks Habitat Plan compliance, as well as informs and improves conservation actions in the Reserve System to ensure that the Habitat Plan achieves its biological goals and objectives. This chapter of the Annual Report is focused on reporting on the effectiveness monitoring requirements of the Habitat Plan.

7.1 Monitoring

7.1.1 Coyote Ridge Open Space Preserve

Creekside Center for Earth Observation (Creekside Science) conducted status and trends monitoring in 2020 on CROSP for Bay checkerspot butterfly (*Euphydryas editha bayensis*). Creekside science also monitored plant species composition and tracked cattle stocking rates. Except where otherwise stated, the following subsections summarize the *Coyote Ridge Open Space Preserve: 2020 Annual Report* (Creekside Center for Earth Observations 2020).

7.1.1.1 Bay Checkerspot Butterfly Surveys

Surveys for Bay checkerspot butterfly estimated species population and distribution. The CROSP contains 1,665.8 acres of the occupied Kirby/East Hills habitat unit (31%) and the 1,665.8-acre Kirby Recovery Unit (31%).

Post Diapause Larvae

The basic method of population estimation is timed counts of larvae in a stratified sampling design (Murphy and Weiss 1988, Weiss 1996). Larvae are counted in 10 person-minute intervals over irregularly shaped sample areas (0.25-1 ha) corresponding to patches of relatively uniform insolation, and the counts are converted into density. Larval sample sites are distributed across the landscape and grouped into “population zones” —CROSP North, CROSP South, and CROSP Border—in which average densities and absolute numbers are estimated across 49 plots. These population zones are areas where historical population estimates and confidence intervals have been calculated, and provide continuous time series back to 2008, and discontinuous series ranging back into the 1990s. There are 23 additional plots that fall outside these zones, some of which span adjacent properties. Results from these surveys have not yet been integrated into population estimates because of low sample sizes. These additional plots are used to establish breeding occupancy and a density estimate for local areas. In 2020, zero out of 49 plots along the ridgeline were unoccupied (compared with six in 2019 and 13 in 2018). In the mid and low elevations, three out of 23 plots had zeroes (compared with three in 2019 and five in 2018).

Adults

Adult monitoring supplements larval surveys. Presence/absence surveys took place only in the four additional zones since larvae were found in all of the six BCB zones with larval plots in 2020. Adults were surveyed using transects that encompass topoclimatic variation with a focus on north-facing slopes and hilltops where adults are most locally abundant. The transects are visited during peak flight season, on sufficiently warm (65°F +) and sunny days (less than ~50% cloud cover) with winds less than 15 mph. This year the transects were conducted on March 13, 2020 under acceptable weather conditions (warm, but with cloud cover and a cool breeze).

Multiple adults were encountered on each of the four transects on the first visits. The encounter rate was highest (27 adults encountered per hour) at CROSP Fence (southern portion of the Coyote Ridge Open Space Preserve), while the other three transects across the CROSP were similar or lower to that encounter rate, with lowest (6 adults encountered per hour) at CROSP Canyon (southern portion of the Coyote Ridge Open Space Preserve).

Trends

The Coyote Ridge ridgetop population complex—extending from north of Metcalf Canyon to Anderson Dam—is the core of the Bay checkerspot butterfly distribution. The CROSP supports a high fraction of the overall population. In 2020, the total number of larvae on the CROSP decreased to approximately 182,000 +/- 58,000 (in comparison to 307,000 +/- 138,000 in 2019), which is approximately 20-30% of the total Bay checkerspot butterfly population across Coyote Ridge. Even with the one-third decline from last year’s CROSP estimate, this is still a high number, and definitely within the norm of historical variability. Historically in 2016, there were approximately 200,000 larvae on CROSP (25-50% of the Coyote Ridge population), but the population CROSP dropped to 60,000 to 70,000 larvae in 2017 and 2018 (**Figure 12**). The 2019 larval population increased five-fold indicating a good weather year, primarily a cool spring in 2018 that extended the host plant growing season. Larvae dropped in 2020 even after a cool spring in 2019, although numbers remain strong overall.

Adult surveys illustrated that Bay checkerspot butterfly are found throughout the CROSP and were encountered at rates ranging from 6 to 27 butterflies/hour. For regional context, the adult per hour

encounter rate at the nearby Kirby Canyon Butterfly Reserve for the 2019 flight season was 19.4. The lower adult encounter rates seen in CROSP compared to Kirby were echoed by the lower larval densities surveyed in CROSP. The larvae and adult surveys illustrate some of the variability inherent in Bay checkerspot populations. The declines from 2016-2018 and 2020 do not indicate patterns outside the norm of historical variability, nor did the increase in 2019, given that Bay checkerspot populations follow a boom and bust cycle based on weather patterns and host plant abundance. The following are recommendations based on the Habitat Plan biological goals and objectives and the survey results (Creekside Center for Earth Observations 2020).

- Maintain current grazing regime in the different pastures at CROSP, which includes providing the ranchers flexibility in adjusting annual stocking rates and timing as documented over the last decade. The grazing leasees have shown they have the experience and skills necessary to balance their goals (removing mostly nonnative grass to feed livestock) with conservation goals, while responding to the extreme interannual climatic variations of the region. The current regime supports a rich variety of native species, both common and covered. Managers should be cautious about making major changes. More intensive techniques such as mowing and seeding are not recommended at this time.
- Consider additional grass control targeting nonnative annual grasses, including barbed goatgrass. The graminicide Envoy Plus has been used on CROSP to target barbed goatgrass (as well as other nonnative annual grass species) with increases in native annual forb cover. The summit-VTA border region (south of UTC/VTA fence) is recommended for a pilot treatment. Scaling up graminicide trials near the ridgetop (1-2 acres/yr) would improve habitat for Bay checkerspot butterfly and native vegetation, as well as increase visual enjoyment for visitors.
- Large population fluctuations are natural but require ongoing data collection to detect problematic declines.

7.1.1.2 Serpentine Grassland Composition Surveys

Serpentine grassland composition is monitored to provide a reliable system for detecting major changes in grassland composition in response to climate, topography, and management and to characterize Bay checkerspot butterfly habitat. Three plant species composition/cover monitoring clusters, consisting of four sampling transects each, were established on serpentine soils of the Coyote Ridge Reserve. The cluster in the southern end, called CROSP South, was installed in 2007 and originally had six transects, two of which were dropped this year to conform with other clusters. The CROSP North and CROSP Mid clusters, which are both on the north side of the Coyote Ridge Reserve at different elevations, were installed in spring 2016. These clusters were spread throughout the site to target different elevations and pastures/grazing regimes. The different elevations encompass different rates of nitrogen deposition. Each of the four clusters has a 50 meter transect set up in a warm (south-facing >10° slope), moderate (flat), cool (north-facing >10° slope), and very cool (north-facing >20° slope) topoclimate. Data is collected using a quadrat placed at uniform distances along the tape and the percent relative cover of each plant species is recorded with the quadrat. Monitoring is conducted during the peak spring flowering season (this year early to late April). Data collected included cover of Bay checkerspot butterfly host and nectar sources, nonnative annual grass, native perennial grass, perennial forbs, annual forbs, native cover, nonnative cover, native richness, thatch, and bare ground. The system is designed to monitor large changes in composition from year to year (interannual) and across topographic and edaphic (soil) gradients, while at the same time being efficient for data collection and interpretation. Key findings in 2020 appear below, followed by survey details.

Bay Checkerspot Host Plants

Dwarf plantain cover decreased to low levels at CROSP South and CROSP Mid in 2020. It remained at low levels at CROSP North. Values ranged from 0.6% at the South cluster to 1.7% at the Mid cluster. These are historical lows. Cover of owl's clover decreased from a historical high to moderate levels at CROSP North (0.4%). It remained low at CROSP South (0.1%) and moderate at CROSP Mid (0.5%). Although the Bay checkerspot butterfly can complete its life cycle without owl's clover, this plant is important because it extends the pre-diapause feeding season, which tends to lead to higher numbers in the next season when post-diapause larvae are monitored.

Bay Checkerspot Nectar Sources

Goldfields decreased across sites. CROSP North had the largest decrease from 8.5% to 1.6% which is a low value but the highest of the sites this year. CROSP South had the lowest value at 0.3% and CROSP Mid had 1.2% cover. Tidy tips were low across the three sites at 0.2% or less. They were detected at CROSP South again this year after two years of going undetected. Jeweled onion values were also low, below 0.1%. Muilla cover values remained stable at CROSP South and CROSP Mid (both at 0.4%). It increased at CROSP North to 1.5%, a historical high across sites since 2005. Overall Muilla was at moderate to high amounts.

The perennial grasses measured are all native. CROSP North had the highest value at 5.7% and CROSP South had the lowest at 1.6%. This is a moderate value for the South. Nonnative annual grasses remained high at CROSP South this year at 24.4%, although they decreased at the other two sites. CROSP North saw the largest decrease from 24.5% to 9.3% and CROSP Mid decreased from 17.9% to 9.8%. CROSP North and CROSP Mid both had the second lowest values of their sites since 2016. Thatch cover increased to high values at all sites this year. CROSP North had the highest value at 14.2%, which is a value more than twice that of any other value since 2006. CROSP South had 5.7% cover and CROSP Mid had 5.1%.

Annual forbs are almost entirely native on serpentine soils at CROSP. They decreased across sites this year to low values. Cover values ranged from 10.0% at CROSP North to 12.3% at CROSP Mid. Cover values for perennial forbs, which are all native in the plots, remained at low to moderate values at CROSP South and CROSP North. They increased at CROSP Mid. Values ranged from 2.3% to 4.2%.

Native cover decreased to low and moderate levels in 2020. Cover ranged from 20.1% to 28.8%. Native richness remained stable at high values at CROSP South and CROSP Mid and slightly decreased at CROSP North. Cover had high values ranging from 11.7 species at CROSP North to 13.6 species at CROSP Mid. Nonnative cover remained high at CROSP South this year but decreased noticeably at the other two sites. It was highest at CROSP South (24.5%) and lowest at CROSP Mid and CROSP North (10.0% and 9.3%, respectively).

Bare was moderate to high across sites in 2020. It was highest at CROSP Mid (49.5%) and lowest at CROSP North (35.9%). CROSP South had a value of 42.9%.

Discussion

The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat. Bay checkerspot butterfly host plants were very low this year but remain within the range of historical variability seen throughout Coyote Ridge. Nectar sources were varied and abundant this year at

CROSP. Even though goldfields decreased in 2020, they tend to provide the highest cover values of the various nectar sources. Native plant cover decreased but richness remained mostly stable throughout the CROSP. Nonnative annual grass cover remained high at CROSP South but decreased noticeably at the other two sites in 2020.

The results indicate that: 1) The low rainfall in 2020 affected vegetation, especially the dry spell where no rain fell from late January to early March, making overall plant cover low. 2) Regionally, Bay checkerspot butterfly host and nectar sources were low, although they appeared adequate to support the life cycle. 3) vegetative composition parameters aren't tightly correlated with Bay checkerspot abundance; and 4) low cover of dwarf plantain is sufficient for this taxon. This is illustrated by the fact that CROSP Mid had the highest habitat quality with the highest dwarf plantain and perennial forbs cover, but had low larval densities over the past 5 years (including wet, average, and dry water years).

Nonnative annual grass has been high the last four years; the CROSP North and South clusters are infested with barbed goatgrass. During the drought of 2012–2014, nonnative annual grass cover declined, and ranchers had to lower stocking rates in response to reduced forage availability. The ranchers are well aware of grass recovery and have responded with higher stocking rates as adaptation to drought recovery in 2012-2014. Because ranchers needed more than a year to build up herds, many nonnative grasses went to seed in the early and wet years following drought recovery, likely creating a legacy effect of a higher seed bank that maintained high grass cover even in the face of higher stocking rates. Because Bay checkerspot butterfly numbers decreased even with lower nonnative grass cover, there is little need to encourage ranchers to change their management techniques. If anything, the presence of low nonnative annual grass cover in conjunction with low Bay checkerspot butterfly numbers demonstrates that weather is a key driver of Bay checkerspot butterfly highs and lows, and there is a wide variability of management regimes that allow Bay checkerspot butterfly to persist and even thrive.

Recommendations

The following are recommendations based on the Habitat Plan biological goals and objectives and the survey results (Creekside Center for Earth Observations 2020).

1. Maintain current grazing regime in the different pastures at CROSP, which includes providing the ranchers flexibility in adjusting annual stocking rates and timing as documented over the last decade. Desired higher stocking rates to decrease nonnative annual grass cover have been communicated to the ranchers including increasing grazing pressures in CROSP South. This is an adaptive adjustment to the existing grazing regime, rather than the institution of a new grazing regime. Both ranchers have shown they have the experience and skills necessary to balance their goals (removing mostly nonnative grass to feed livestock) with conservation goals, while responding to the extreme interannual climatic variations of the region. The current regime supports a rich variety of native species, both common and covered. Managers should be cautious about making major changes. More intensive techniques such as mowing and seeding are not recommended at this time.
2. To better assist ranchers in meeting both resource management and beef production goals, consider creating smaller “sacrifice” pastures. This is a method rancher can use to address the problem of grass cover that changes dramatically with interannual weather fluctuations. A smaller pasture is created that doesn't need to be grazed every year (i.e., off serpentine). In years where forage is high and/or herd numbers are low, the cattle can be maintained in the

higher priority pastures, i.e., those with Bay checkerspot butterfly and associated native annual forbs. In years where forage is low and/or herd numbers are high, the sacrifice pasture is grazed. The sacrifice pasture addresses the fact that while cattle are land management tools, they are living creatures that can't just be left in storage when not needed. This prescription isn't critical now but is standard grazing practice that is especially useful in regions like this that have large interannual weather and forage fluctuations.

3. Consider additional grass control targeting nonnative annual grasses, including barbed goatgrass. The graminicide Envoy Plus has been used on CROSP to target barbed goatgrass (as well as other nonnative annual grass species) with increases in native annual forb cover. The summit-VTA border region (south of UTC/VTA fence) is recommended for a pilot treatment. Scaling up graminicide trials near the ridgetop (1-2 acres/yr) would improve habitat for BCB and native vegetation, as well as increase visual enjoyment for visitors.
4. Continue annual monitoring to track vegetation community changes. Share key results with ranchers.
5. Manage key invasive plants.
6. Introduce prescribed fire on a trial basis. Prescribed fires were conducted on CROSP in 2006 and 2007 to treat barbed goatgrass, but lack of fuel resulted in poor burn coverage. Further studies are recommended as described in GRASS-2 of the biological goals and objectives in the Habitat Plan. Wildfires provide limited opportunity to study fire effects, because pre-burn data are lacking (i.e., the fire tends to burn a very small number of already established plots).

7.1.1.3 Species Occupancy and Occurrence Requirements

The Reserve System is required to support occupied habitat for five covered wildlife species (**Table 18**) and protect occurrences of all nine covered plant species. Baseline surveys at the Coyote Ridge Reserve in 2016 and 2017 documented habitat occupied by Bay checkerspot butterfly, Santa Clara Valley dudleya, Mount Hamilton thistle, smooth lessingia, most beautiful jewelflower, Metcalf Canyon jewelflower, Loma Prieta hoita, and fragrant fritillary. Surveys in the previous reporting year have also documented habitat occupied by California tiger salamander and California red legged frog on the Coyote Ridge Reserve. These species continued to occur on the CROSP in the FY1920 reporting year.

7.1.2 Tilton Ranch South and Davidson Reserves

The Tilton Ranch South¹⁹ and Davidson Reserves are two contiguous parcels that were acquired in during the reporting year by the Santa Clara Valley Habitat Agency located northeast of Chesbro Reservoir and southeast of Tilton Ranch in Morgan Hill. The acquisition adds approximately 696 acres of native natural communities to the Reserve System including serpentine bunchgrass grassland, serpentine rock outcrop, serpentine seep, seasonal wetlands, mixed oak woodland and forest, and mixed riparian woodland and forest. The topography is characterized by gentle slopes in the central portion with an average elevation of 337 feet above mean sea level to steep rocky slopes in the northern and southern portions peaking at 995 feet in elevation. The prominent hydrologic features are Tilton Creek, and three tributaries of Little Llagas Creek. Tilton Creek, a perennial feature, flows through the site nearly parallel to Willow Springs Road. The remaining waterways on

¹⁹ During the 2020 survey efforts, Tilton Ranch South Reserve was referred to as Baird Ranch.

site are intermittent, including the drainages within the headwaters of Fisher Creek and two unnamed tributaries in the Little Llagas Creek watershed. There are also several aquatic features including wetlands and seeps (**Figure 13**).

ICF conducted baseline botanical surveys in 2020. Except where otherwise stated, the following subsections summarize the survey results (ICF 2020).

7.1.2.1 Baseline Surveys

Baseline covered plant species inventories of acquired properties or conservation easements are a crucial step of Plan implementation to determine how many covered plant species populations are under permanent protection and whether or not the Habitat Agency is in compliance with the covered plant species protection requirements in the Plan. In addition, after acquisitions are secured, baseline data is used as a reference point from which to measure the success of the Plan by measuring the covered plant population demographics.

Approximately 455 acres within the two properties are dominated by serpentine land cover types that are known to support the covered plant species including serpentine bunchgrass grassland, mixed serpentine chaparral, and serpentine rock outcrop. These areas were the focus of the baseline field survey. Covered plant species surveys were conducted over eleven days in April, May, August, and September 2020; this timing is consistent with the Habitat Agency's *Clarification and Interpretation Memo* on "Covered Plant Survey Timing" (Santa Clara Valley Habitat Agency 2017). Because abundance was so high for several covered species, surveys included meandering walking transects and 33 predetermined and randomly-located transects (30 meters long) in suitable habitat. Using a 1-meter² quadrat, direct counts of covered species were recorded every 1.5 meters along the line (i.e., 20 quadrats/transect) for a grand total of 640 quadrats sampled throughout the site. The total number of individuals at these randomly selected locations was averaged and then extrapolated by the number of acres of occupied habitat present within the study area to estimate abundance. Meandering transects were used to map the extent of each population. Data on population conditions (i.e., physical health, age structure, reproductive success) was also collected in the field and conformed to the reporting requirements appearing in Chapter 5 of the Plan.

Survey Results

Three covered plant species populations were observed in the study area during the 2020 spring and summer surveys: one Santa Clara Valley dudleya population with an estimated abundance of 1,649,110 individuals; one most beautiful jewelflower population with an estimated abundance of 2,950,899 individuals; and one smooth lessingia population with an estimated abundance of 54,072,888. The results of the 2020 surveys confirmed the CNDDDB occurrences of all three covered species and expanded each population from the southeastern section of the Davidson parcel to the northwestern portion of the Tilton Ranch South Reserve, with individuals of all three species occurring throughout both sites (**Figures 14 and 15**).

With regards to the other covered species, two serpentine seeps and two drainageways were surveyed and resulted in negative findings for Mt. Hamilton thistle and Loma Prieta hoita. Fruiting fragrant fritillary individuals were not evident nor were Tiburon Indian paintbrush or Metcalf Canyon jewelflower. Fragrant fritillary surveys will be conducted during the peak blooming period (February-March) in 2021. Coyote ceanothus was observed in the southeastern portion of the site only. Coyote ceanothus was excluded from the spring transect survey analyses because individuals

will be counted in a separate focused survey effort in the spring of 2021 by Coyote ceanothus expert, Janell Hillman.

Population Conditions

Approximately 75 percent of the Santa Clara dudleya population were documented in good physical condition, with 25 percent in fair condition. Approximately 50 percent of the individuals were flowering or budding. There were occasional signs of rabbit and deer herbivory of the leaves, as evidenced by scat, and potential signs of nutrients or water deficiencies on multiple individuals due to the decrease in visual health and vigor. Most-beautiful jewelflower and smooth lessingia individuals were either in flower or beginning to form fruit at the time of observations and appeared to be in excellent physical condition. Based on the number of mature versus immature individuals across all three species, it was presumed that each population is healthy and thriving.

Santa Clara Valley dudleya was estimated to be present on approximately 35 percent of the outcrops on site, whereas most-beautiful jewelflower and smooth lessingia were estimated to be present on 40% and 70%, respectively, of the serpentine bunchgrass grasslands.

The remainder of this suitable habitat, ranging from 136 to 295 acres, that does not support the three covered species is located in the central and southwestern portions of the site. Therefore, there is potential for each population to expand west into remaining suitable serpentine outcrop and grassland habitats onsite in addition to more suitable areas on Tilton Ranch located to the northwest.

Potential threats noted for these covered plant populations are the presence of the nonnative invasive plant species. Two invasive species were observed scattered throughout the site: tocolote (*Centaurea melitensis*) and barbed goatgrass. Stinkwort (*Dittrichia graveolens*) was also found in the southeastern section of Davidson Ranch.

Discussion

All three populations are in good condition based on observations of physical condition, reproductive success, and abundance and diversity of suitable habitat. None of the populations appeared to be threatened by biotic or abiotic stressors. The abundance of individuals within each population exceeded the Plan objective for 2,000 individuals per population. Of the 455 acres of suitable habitat surveyed, at least 50% of this acreage is unoccupied and suitable for population expansion for most beautiful jewelflower and Santa Clara Valley dudleya, and 30% is unoccupied and suitable for population expansion of smooth lessingia.

Recommendations

- Continue annual monitoring to track vegetation community changes. Share key results with ranchers.
- Conduct baseline surveys for fragrant fritillary and Coyote ceanothus.
- Continue grazing regime.
- Manage key invasive plants.

7.2 Research

7.2.1 Current Grant-Funded Research Activities

Research provides new information or direction regarding management actions. The purpose of research is to inform management in cases where species and natural community response to management is uncertain. The following research activities completed in the reporting year and funded by CDFW's NCCP Local Assistance Grant (LAG) Program, which provides state funds for urgent tasks associated with the implementation of approved NCCPs.

7.2.1.1 Winter Burrowing Owl Monitoring

See Chapter 5, *Western Burrowing Owl Management and Monitoring*, subsection *Additional Research Studies*, above.

7.2.1.2 Establish Baseline of Smooth Lessingia using High-Resolution Multispectral Aerial Imagery

The Habitat Agency was awarded a LAG on March 30, 2019 to establish baseline data for smooth lessingia. The grant terms end on March 30, 2021. The objective of the project is to improve the Habitat Agency's knowledge of specific population information through updating habitat modeling through the permit area and set a baseline for future monitoring and management of smooth lessingia. The project provides permit area-wide baseline data for the distribution and abundance of smooth lessingia to inform the conversation strategy, monitoring, and adaptive management implementation. This was accomplished using high-resolution multispectral aerial imagery, image analysis software and field at collected in areas mapped as primary habitat. The project involved conducting a remote sensing-based analysis, with field data collection and targeted ground-truthing, baseline data collection, such as population size, on smooth lessingia in areas of mapped primary habitat totaling approximately 10,491 acres. Overall, the smooth lessingia signature was distinct enough to detect through segmentation and classification under ideal conditions, but because the signature was subtle, it was more difficult to classify smooth lessingia over varied terrain. Both normal color and normalized difference vegetation index imagery were useful in creating the remote sensing model, including both normal color and infrared bands proved helpful in finding the slight spectral differences within grasslands. Classification results varied across the study area, with better results on exposed aspects and less accurate results on shaded slopes.

Smooth lessingia was found to occupy approximately 2,660 acres within the entire study area and comprised 72 populations. Of the 72 populations, 50 of them were new occurrences, and all except three met the required minimum Plan conservation goal of 2,000 individuals. Field data were collected for 371 reconnaissance quadrats characterizing the density and number of individuals throughout accessible parcels. Cover of smooth lessingia based on the quadrat data ranged from 0.5% to 28% cover with an average of 6% cover. Number of individuals per square meter quadrat ranged from 3 to 520 with an average of 89 individuals. The 95% confidence interval was calculated²⁰ per square meter and extrapolated to individuals per acre. Based on the density in

²⁰ The 95% confidence interval was calculated as $mean \pm z \left(\frac{Std\ dev.}{\sqrt{n}} \right)$ where z represents the appropriate z-value from the standard normal distribution for the desired confidence level, or in this case $z = 1.96$, $Std. dev$ is the

reconnaissance quadrats, it is estimated that there are 360,171 individuals per acre on average (95% confidence interval is 327,796 to 392,545 individuals) and between 871,904,580 and 1,044,130,446 individuals in the study area during the 2019 growing season.

Smooth lessingia was mapped throughout the study area, with large areas mapped on Coyote Ridge, Santa Teresa Hills, and around Calero CE. The majority of smooth lessingia noted during hand-mapping and ground-truthing was within study area polygons (modeled smooth lessingia habitat). However, some small areas of smooth lessingia were also mapped outside of modeled smooth lessingia habitat at Almaden Quicksilver, Coyote Ridge, Rancho Cañada del Oro, and Santa Teresa preserves. These areas were usually adjacent to modeled habitat or extended past the boundaries of modeled habitat.

7.2.1.3 Pacheco Creek Restoration Project

The Habitat Agency was awarded a LAG on March 30, 2019 for the Pacheco Creek restoration project. The objective of the project is to plan for bank stabilization; restoration of stream, mixed riparian and sycamore alluvial woodland habitats; and to restore floodplain function. The project will address declining habitat types (riverine, sycamore alluvial woodland, wetland, and riparian), degraded rare and species habitat (i.e., least Bell's vireo, tricolored blackbird, South Central California Coast steelhead, California red-legged frog, California tiger salamander), and poor water quality along Pacheco Creek in the Pajaro River Watershed in Santa Clara County.

A Feasibility Study was initiated in the reporting year, and the results will be shared in the FY2021 Annual Report. Initial assessments of the Feasibility Study have revealed that, at the natural-community level, the site provides opportunities for restoration of riparian woodland communities (willow riparian forest and scrub, mixed riparian forest and woodland, and Central California sycamore alluvial woodland). The site also provides opportunities for enhancement and restoration of in-stream, riverine and wetland habitat functionality, as well as enhanced connection to or expansion of the floodplain.

7.2.1.4 Tiburon Indian Paintbrush Project

Tiburon Indian Paintbrush is a covered species under the Habitat Plan and is restricted to only two occurrences in the Habitat Plan area (and Santa Clara County). One occurrence is located on an area known as Paintbrush Hill, which is owned by the Santa Clara Valley Water District, and the other occurrence is located in Paintbrush Canyon, which is owned by Waste Management, Inc. Both occurrences are at risk of extirpation from threats (e.g., grazing, feral pig uprooting) and have shown declines in recent years. The Habitat Agency partnered with Creekside Science in 2018 to complete the following tasks.

- Evaluate Tiburon Indian paintbrush
- Paintbrush Hill census and CNDDDB submission
- Paintbrush Hill covered species surveys/maps/reporting
- Paintbrush Canyon macroplot, seeded plot census, and CNDDDB submission
- Seed collection at both sites

standard deviation, and n is the number of samples. Based on this equation, the 95% confidence interval for number of individuals per square meter is 89 ± 8 .

In 2019, Valley Water committed to conducting the annual monitoring in a similar manner including the following near-term tasks for the Paintbrush Hill occurrence: 1. Population monitoring; 2. Limited seed collection and banking; 3. Basic assessment of habitat quality and threats.

The following is a summary of the covered species monitoring results described in the *Tiburon Paintbrush Hill Annual Monitoring Report* (Santa Clara Valley Water District 2021).

Paintbrush Hill Results

The Paintbrush Hill population decreased from 224 individuals counted in 2018 to 139 individuals observed in 2020. Despite this decrease, the available population numbers show for the most part a relatively stable or increasing trend in this population. The number of individuals at Paintbrush Hill increased from the 2006 census (135) to the 2018 census (224), despite the dip in 2009 (109) and 2013 (100, estimate). The occurrence currently is at similar population numbers as the 2006 census and occupies less than 200 square meters over an area of approximately 1 hectare. The low total number of plants and the small occupied area, however, still point to an extremely vulnerable occurrence, especially in light of threats from herbivory, trampling, climate change, and other concerns.

The distribution of plants across Paintbrush Hill has changed relatively little from 2006 to 2020. Patches were mainly found in the central portion of the site with a small patch in the northern section of the site. Plants observed in 2020 plants were shorter and more branched than 2019 plants, and had fewer inflorescences, which could be seen as consistent with a drier year where plant focus is on collecting nutrients rather than expending energy on reproduction.

Cages were monitored in the reporting year to determine if they had an effect on the viability of Tiburon Indian Paintbrush. Five plots were caged and five uncaged (control) plots were staked in 2012, and data were taken in 2012, 2013, 2016, 2018, and 2020 including plant and flowering stalk counts at various intervals in each season. The conclusions from the caging study over the last three reporting year are as follows.

- Cages were highly effective in preventing browsing, with subsequently larger production of flowering stalks and fruits in the caged plots. This observation has been made in other years, where seed collections necessarily have had to be done in the caged plots because fruit production in uncaged areas (not just the plots) was so low.
- Plant numbers declined in both caged and uncaged plots, but three plots held steady, and three lost all their plants. The increased stalk and fruit production in the caged plots did not result in increases in number of plants relative to the uncaged plots.

Recommendations for future protection and management from cattle grazing, feral pig destruction, invasive plants, and small mammal herbivory are as follows:

- Continue annual population monitoring in order to establish population trend. Population monitoring will occur in spring and summer 2021.
- Continue limited annual seed collection and banking at an accredited institution. Collecting small amounts of seed annually will help build a reserve of seed which can be banked and used in the future for possible population augmentation as more is learned about the demographics of this taxon.

- Continue evaluation of enclosures which exclude large herbivores, and compare with non-enclosure areas to evaluate herbivory/trampling/other damage to plants. Consider quantifying plant cover inside and outside of cages, ideally in both a relatively wet and dry year, to address the concern that enclosures may cause a buildup of thatch detrimental to Tiburon paintbrush persistence. Consider adjusting grazing lease to protect plants from cattle grazing and trampling as an alternative, and/or during planning and implementation phases for a large enclosure. Another interim measure would be to use Liquid Fence to deter herbivory on plants currently outside enclosures.
- Assessment of seedling recruitment and survivorship. COVID-19 field restrictions prevented this from occurring in 2020. If restrictions permit, we propose to scale our monitoring effort for this metric using early spring 2021 observations of the number and spatial distribution of seedlings over time. Small quadrats may be employed rather than repeated surveys of the entire occurrence.

Paintbrush Canyon Results

The Paintbrush Canyon occurrence was surveyed using one macroplot to index the population in order to determine population trends, consistent with monitoring conducted in 2006, 2009, and 2013. A small number of wild plants outside the macroplot were censused. The macroplot index resulted in an estimate (with 80% confidence) of 415 ± 189 plants. Comparing old macroplot data, this was a decrease from 795 ± 138 in 2013, with higher numbers in previous years. The total estimate for the site, however, which includes an extended macroplot and plots seeded between January 2013 and December 2016, is 1900 ± 375 .

7.2.2 Awarded Grant-Funded Research Projects

7.2.2.1 Coyote Ridge Open Space Preserve Fire Management Plan

The Habitat Agency was awarded a LAG on January 28, 2020 for the Coyote Ridge Open Space Preserve Fire Management Planning Project. The objective of the project is to develop a fire management plan that includes pre-suppression, suppression, and post-fire elements with local fire agencies and other stakeholders, such as County Parks, ranchers, and adjacent landowners, for the Coyote Ridge Open Space Management and Monitoring Plan. Other objectives include establishing a schedule for annual updates and collaboration with the local fire agencies and stakeholders as well as monitoring vegetation recovery after the 2019 Malech Fire that impacted Coyote Ridge. The Project through development of a fire management plan and monitoring of the effects of fire and fire suppression on natural community regeneration will ensure regular coordination with fire agencies, neighboring landowners, and other open space managers.

The Fire Management Plan (FMP) will include preserve-specific information for pre-suppression, suppression, and post-suppression management actions. Fire is an important natural component of local ecosystems. Therefore, some wildfires will be allowed to burn naturally to provide periodic disturbances that will benefit natural communities and covered species, within the larger land-use context. The fire management component of each reserve unit management plan must include a clear decision system to determine when a wildfire will be left to burn and when it must be partially or wholly contained to prevent damage to structures, prevent injuries, prevent impacts to neighboring properties (including loss of forage and livestock), or cause excessive disturbance to natural communities. Reserve fire management components will be coordinated with the CalFire

and any other firefighting agency that has responsibility for Reserve System lands and other stakeholders such as rancher and adjacent landowners (e.g., County Parks).

The fire management component of each reserve's overall management and monitoring plan must be consistent with achieving the biological objectives of the reserve, as well as associated regulatory requirements. The FMP will draw from the NCCP, Coyote Ridge Open Space Preserve Management Plan, and Wildfire Management in Protected Habitats: Santa Clara Valley, California; Guidelines for Reducing Fire Hazard and Minimizing Environmental Impacts of Fuel Reduction Projects and Fire Suppression.

Table 18. Status of Species Occupancy Requirements for Select Species in Reserve System

Species Requirement	Status	Date	Notes	
Bay checkerspot butterfly	Reserve System			
4 core habitat units (Kirby, Metcalf, San Felipe, and Silver Creek Hills) occupied at least 4 out of every 10 consecutive years of the permit term	1 of 4 core habitat units occupied			
	Kirby	occupied	2008	
	Kirby	occupied	2009	
	Kirby	occupied	2010	
	Kirby	occupied	2011	
	Kirby	occupied	2012	
	Kirby	occupied	2013	
	Kirby	occupied	2014	
	Kirby	occupied	2015	
	Kirby	occupied	2016	
	Kirby	occupied	2017	
	Kirby	occupied	2018	
	Kirby	occupied	2019	
Source: Creekside 2020	Kirby	occupied	2020	
50% of satellite habitat units W. Hills of Santa Clara Valley, Tulare Hill, Santa Teresa Hills, Calero, Communication Hill, or North of Llagas Avenue occupied once by Year 45	N/A			
California red-legged frog	Reserve System			
40% of ponds and wetlands occupied (support full life-cycle) in each of the federal Recovery Units 4 and 6 in the Reserve System (which correspond to the two major watersheds in the study area) by year 45	25%: 2 of 8 ponds support full life cycle and occupied			
	<i>Recovery Unit 4</i>			
	CROSP-01	sheltering	2016	Targeted for Restoration in 2019
	CROSP-02	sheltering	2016	Targeted for Restoration in 2020
	CROSP-03	sheltering	2016	Targeted for Restoration in 2020
	CROSP-04		2016	Targeted for Restoration in 2019
	CROSP-05	breeding	2016	
	CROSP-06	breeding	2016	
	CROSP-07	sheltering	2016	
	CROSP-08		2016	
	Other Surveyed Areas			
	0%: 0 of 15 ponds support full life cycle and occupied			
	Calero Pond 1		2017	Low Restoration Priority
Calero Pond 2		2017	High Restoration Priority	
Calero Seep 3		2017	Lowest Restoration Priority	

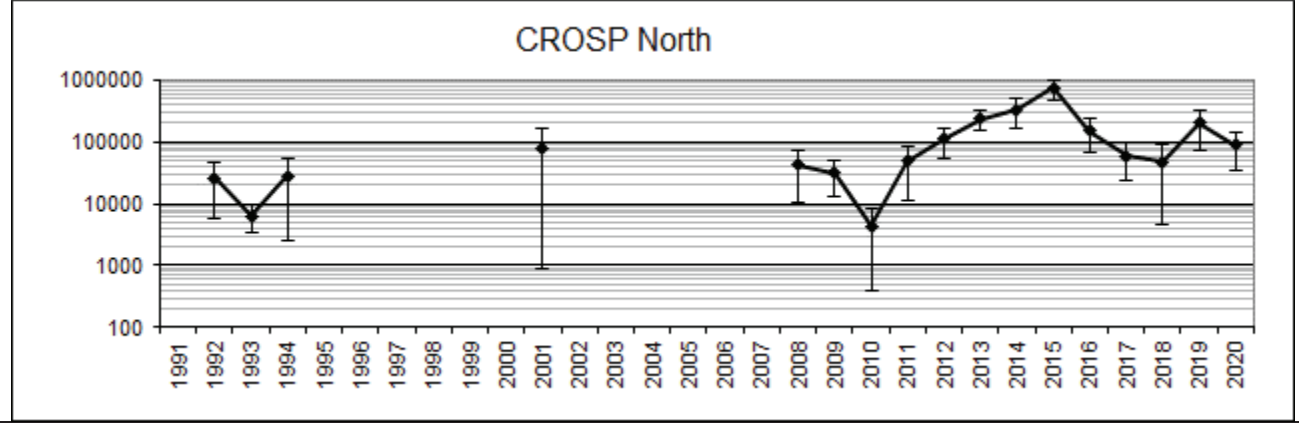
Table 18. Status of Species Occupancy Requirements for Select Species in Reserve System

Species Requirement	Status	Date	Notes	
California red-legged frog (continued)	Calero Pond 4	2017	Moderate Restoration Priority	
	Calero Pond 5	2017	Moderate Restoration Priority	
	Calero Pond 9	2016, 2017, 2018, 2019	Restored 2016	
	Calero Seep 10	2016, 2017, 2018, 2019	Restored 2016	
	Calero Pond 11	2017	Highest Restoration Priority	
	Calero Pond 12	2017	Moderate Restoration Priority	
	Calero Pond 13	2017	Moderate Restoration Priority	
	Calero Seep 14	2017		
	Calero Seep 15	2017		
	Calero Pond 16	2017	Moderate Restoration Priority	
	Calero Pond 17	2017	High Restoration Priority	
	Calero Pond 18	2017	Moderate Restoration Priority	
	Source: Vollmar 2016, Nomad 2018, HT Harvey 2019			
California tiger salamander	Reserve System			
30% of ponds and wetlands occupied (support the full life cycle) in the entire Reserve System by year 45	25%: 2 of 8 ponds support full life cycle and occupied			
	CROSP-01		2016	Targeted for Restoration in 2019
	CROSP-02		2016	Targeted for Restoration in 2020
	CROSP-03		2016	Targeted for Restoration in 2020
	CROSP-04		2016	Targeted for Restoration in 2019
	CROSP-05	breeding	2016	
	CROSP-06		2016	
	CROSP-07	breeding	2016	
	CROSP-08		2016	
	Other Surveyed Areas			
	20%: 3 of 15 ponds support full life cycle and occupied			
	Calero Pond 1		2017	Low Restoration Priority
	Calero Pond 2		2017	High Restoration Priority
	Calero Seep 3		2017	Lowest Restoration Priority
	Calero Pond 4		2017	Moderate Restoration Priority

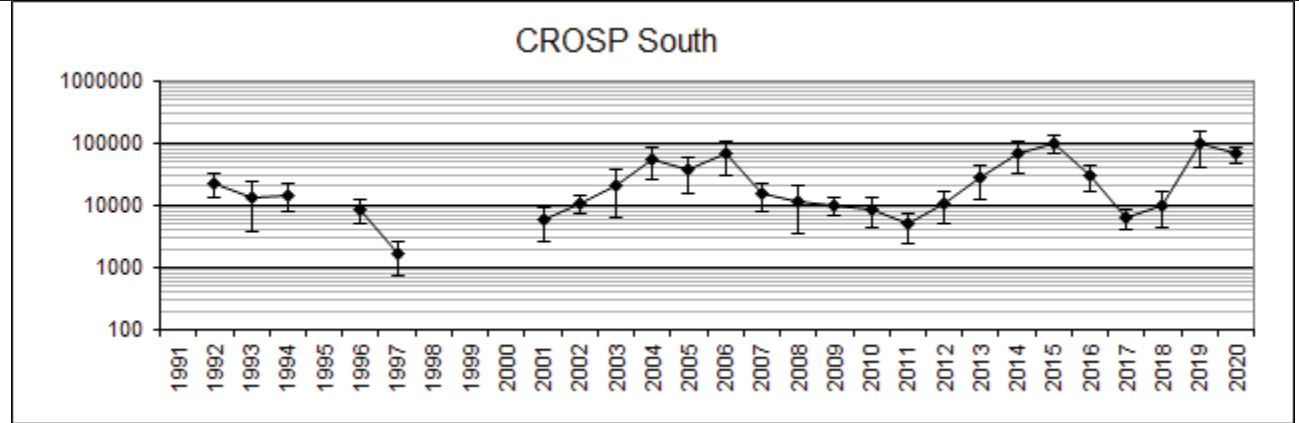
Table 18. Status of Species Occupancy Requirements for Select Species in Reserve System

Species Requirement	Status	Date	Notes	
Western pond turtle (continued)	Calero Pond 5	2017	Moderate Restoration Priority	
	Calero Pond 9	occupied	2016, Restored 2016	
			2017,	
			2018,	
			2019,	
			2020	
	Calero Seep 10		2016, Restored 2016	
			2017,	
			2018	
	Calero Pond 11	occupied	2017	Highest Restoration Priority
Calero Pond 12		2017	Moderate Restoration Priority	
Calero Pond 13		2017	Moderate Restoration Priority	
Calero Seep 14		2017		
Calero Seep 15		2017		
Calero Pond 16		2017	Moderate Restoration Priority	
Calero Pond 17		2017	High Restoration Priority	
Source: Vollmar 2016, Nomad 2018, HT Harvey 2018	Calero Pond 18	2017	Moderate Restoration Priority	
Foothill yellow-legged frog	Reserve System			
occupied habitat (perennial streams with an observation of egg masses) in the Reserve System in 4 watersheds as defined in Figure 3-6	No suitable habitat			
Source: Nomad 2019	Other Surveyed Areas			
	Llagas Creek - D4	occupied	2017	Llagas Watershed
	Llagas Creek, unnamed trib - D2	occupied	2017	Llagas Watershed
* For California red-legged frog, California tiger salamander, and western pond turtle occupancy requirements must also be met for the Reserve System at Year 30, minus 5% for each one (i.e., 35% for California red-legged frog, 25% for California tiger salamander, and 20% for western pond turtle). The measurement will be made based on the total Reserve System at Year 30.				

12a



12b



12c

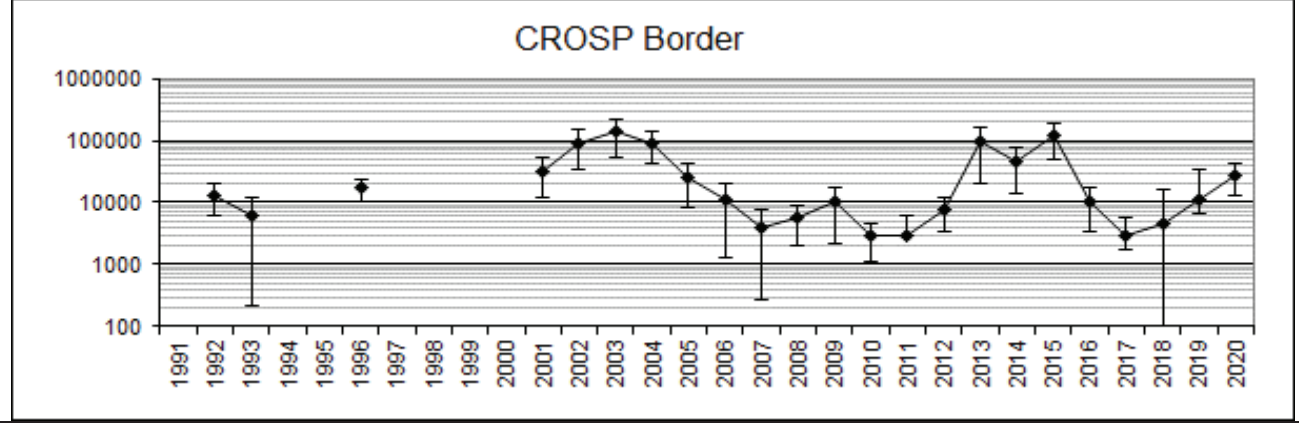


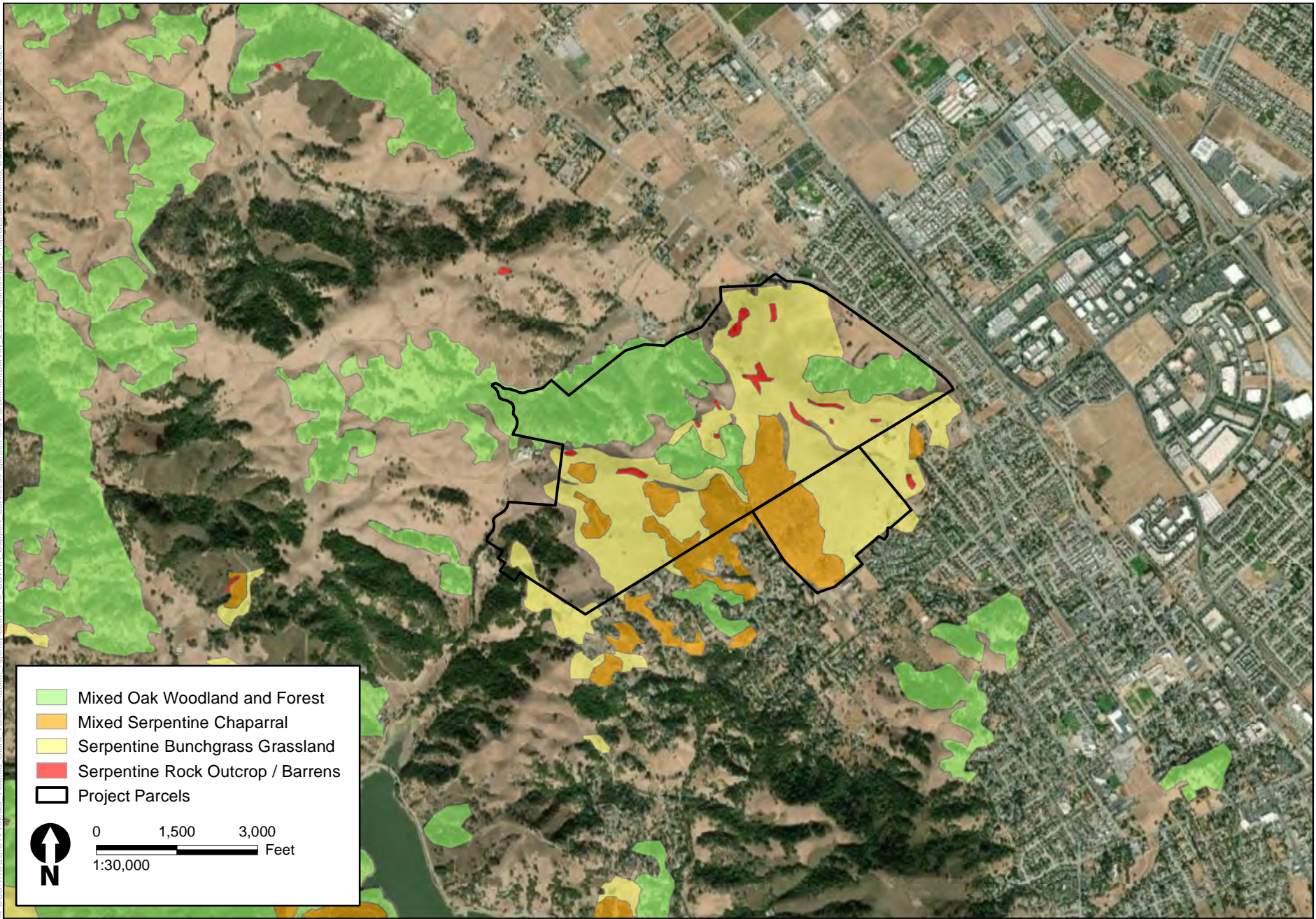
Figure 12a-c. Bay checkerspot population history on CROSP, \pm 95% CI

Graphics 00679;19 (3/31/21) AB

Source: Creekside Center for Earth Observation, 2020

Figure 12
Bay Checkerspot Butterfly Population
Trends Between 1991 and 2020

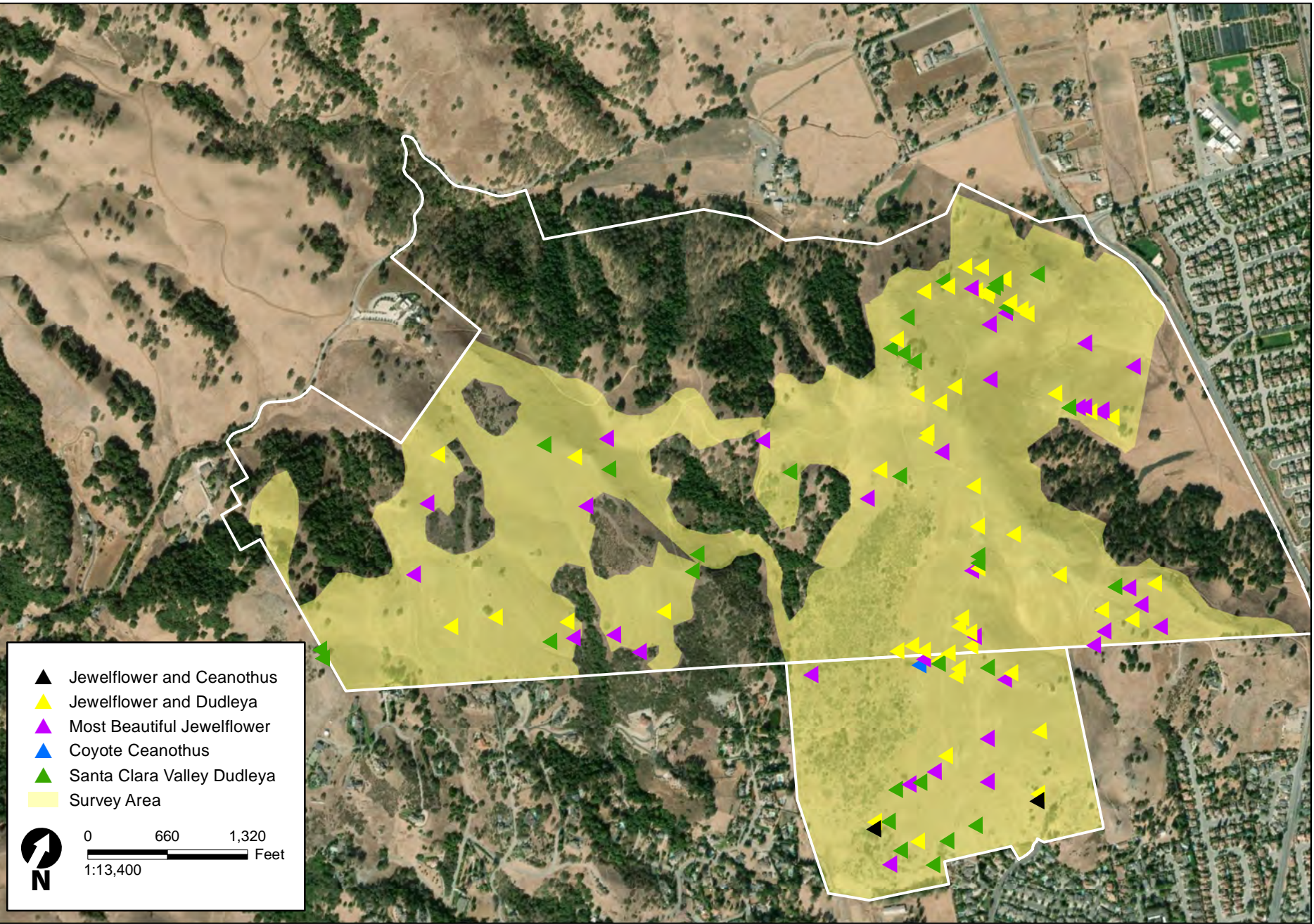
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Source: ICF, 2020

Figure 13
Project Location
Davidson & Tilton Ranch South Reserves
SCVHA Plant Surveys

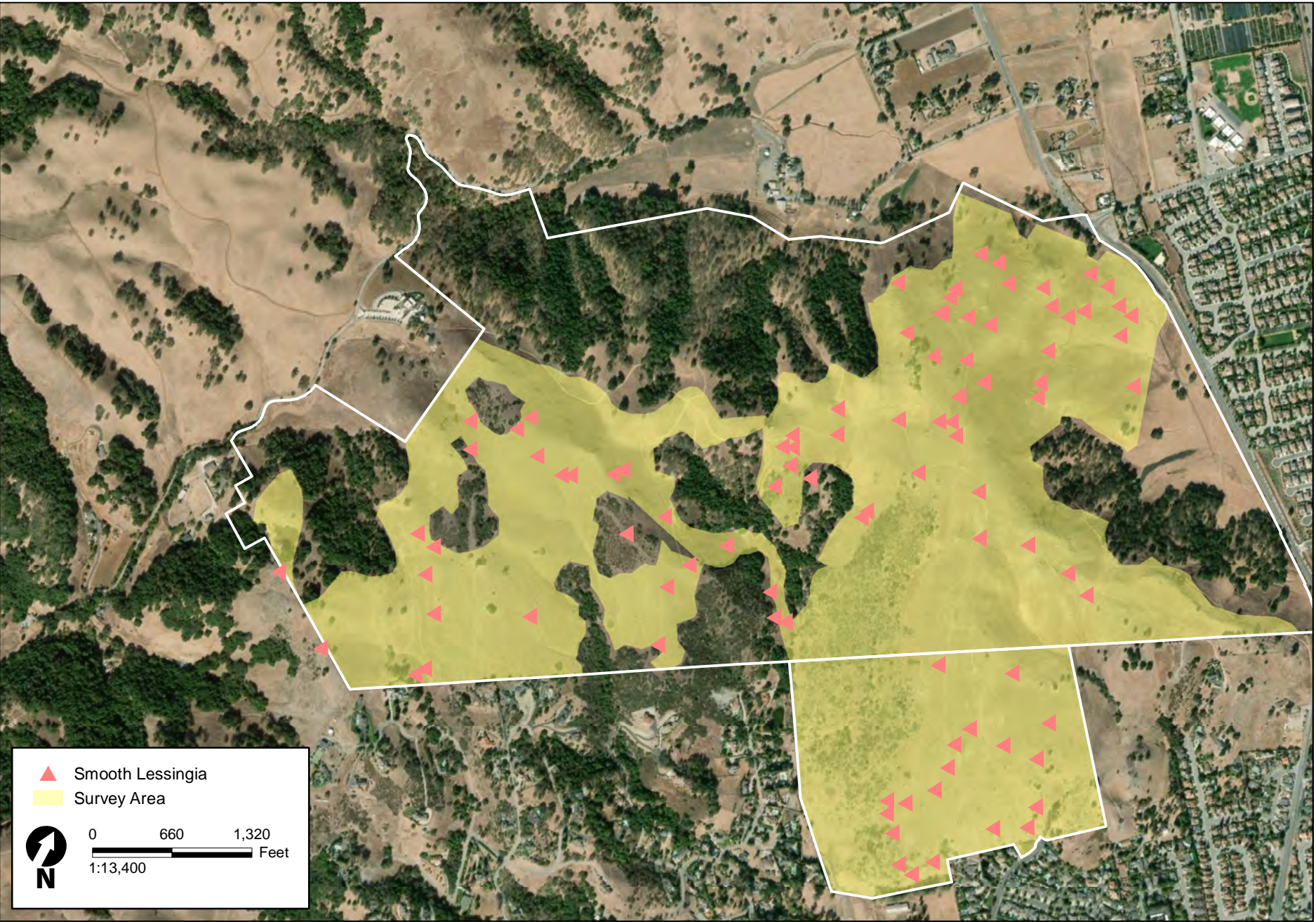
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Source: ICF, 2020

Figure 14
Spring Survey Plant Occurrences
Davidson & Tilton Ranch South Reserves
SCVHA Plant Surveys

\\PDC\OTDRS\GIS\Projects_1\Santa Clara Valley Habitat Agency\0067010_SCVHA_Support_Services\Figures\Figures\PlantSurveys_2020_Figures\Fig15 PlantOccurrences_S\2020_ave\1_Line_30352_Dat_0116/2020



Source: ICF, 2020

Figure 15
Summer Survey Plant Occurrences
Davidson & Tilton Ranch South Reserves
SCVHA Plant Surveys



Photo 1. View of Transect #20 within mixed serpentine chaparral in the southeastern section of the study area looking north on May 5, 2020. Coyote ceanothus and most beautiful jewelflower were observed in this transect. (Lat: 37.13736 N; Long: -121.67816 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 2. View of Transect #14 within serpentine bunchgrass grassland in the eastern section of the study area looking east on May 5, 2020. Santa Clara Valley dudleya and most beautiful jewelflower were observed in this transect. (Lat: 37.14053 N; Long: -121.67837 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 3. View of Transect #13 within serpentine rock outcrop in the central section of the study area looking north on May 5, 2020. None of the target species were observed in this transect.
(Lat: 37.14312 N; Long: -121.67880 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 4. View of Transect #3 within serpentine bunchgrass grassland in the northern section of the study area looking north on May 7, 2020. Santa Clara Valley dudleya was observed in this transect. (Lat: 37.14995 N; Long: -121.68227 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020

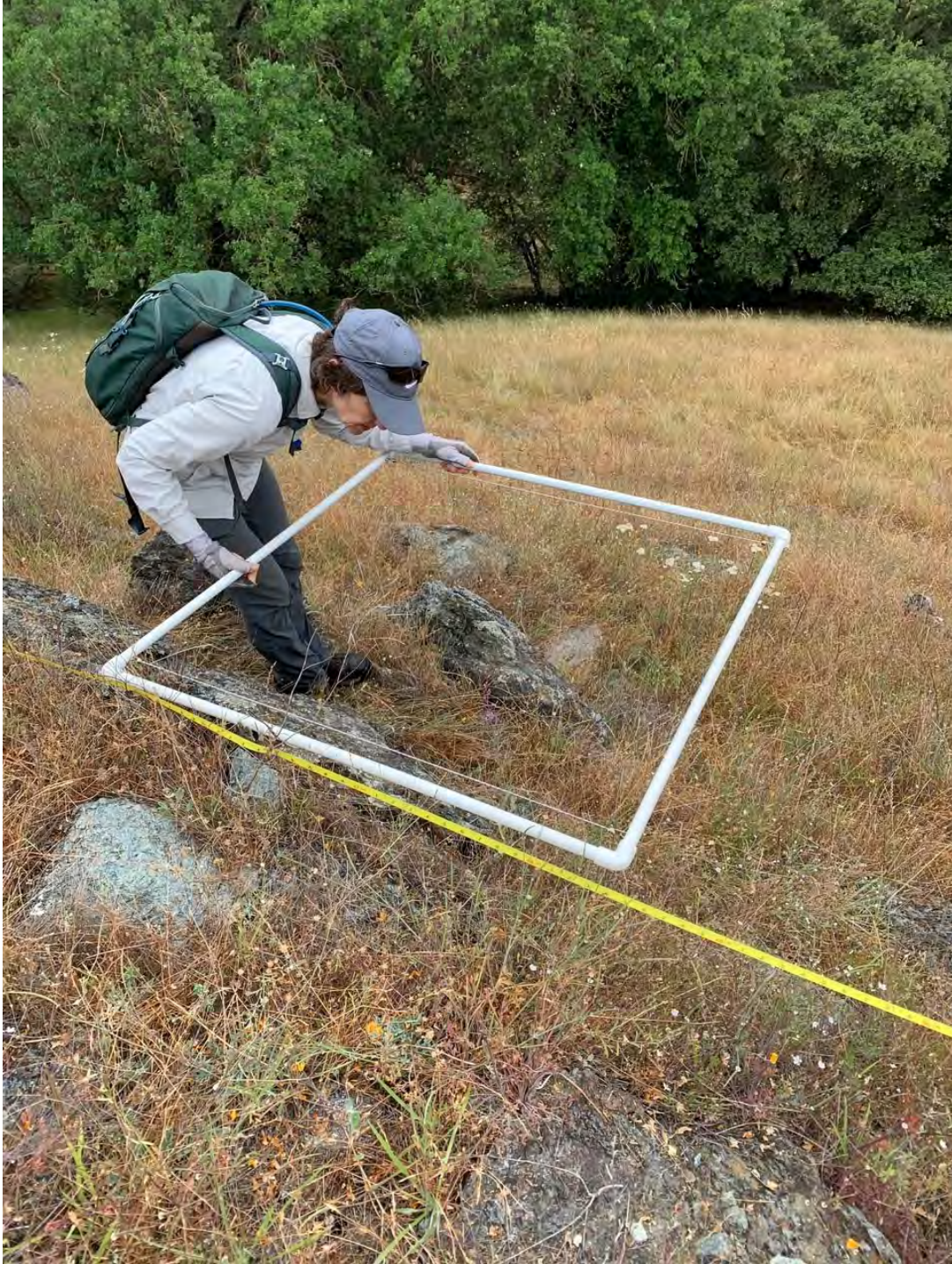


Photo 5. View of Transect #23 within serpentine bunchgrass grassland in the central section of the study area looking northeast on May 12, 2020. Santa Clara Valley dudleya and most beautiful jewelflower were observed in this transect. (Lat: 37.13992 N; Long: -121.68359 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 6. View of Transect #33 within serpentine bunchgrass grassland in the southwestern section of the study area looking west on May 12, 2020. Santa Clara Valley dudleya and most beautiful jewelflower were observed in this transect. (Lat: 37.13624 N; Long: -121.69661 W).

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 7. View of a healthy Santa Clara Valley dudleya in bud within serpentine bunchgrass grassland in the central section of the study area on May 14, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 8. View of healthy flowering most beautiful jewelflower within serpentine bunchgrass grassland in the southeastern section of the study area on May 5, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 9. View of a dense stand of most beautiful jewelflower on a southeast-facing slope within serpentine bunchgrass grassland with Coyote ceanothus shrubs in the background. Photo is taken looking west in the southeastern section of the study area on May 5, 2020 (Davidson Ranch Property).

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 10. View of a flowering Santa Clara Valley dudleya in fair condition with signs of nutrient deficiency beside a healthy flowering most beautiful jewelflower in serpentine rock outcrop in the western section of the study area on May 12, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 11. View of a healthy Coyote ceanothus fruiting within mixed serpentine chaparral near the Davidson/Baird Ranch boundary line in the central section of the study area on May 12, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 12. View of a dense stand of smooth lessingia on a ridgetop within serpentine outcrop surrounded by serpentine bunchgrass grassland. Photo is taken looking south in the northwestern section of the study area on August 25, 2020 (Baird Ranch Property).



Photo 13. View of Transect #21 within annual grassland in the central section of the study area looking south on August 25, 2020. Smooth lessingia was observed here in August and most beautiful jewelflower was observed in this transect in May 2020. (Lat: 37.143608 N; Long: -121.685253 W)

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 14. View of a dense stand of smooth lessingia on a northeast facing slope within serpentine bunchgrass grassland. Photo is taken looking east in the northeastern section of the study area on August 25, 2020 (Baird Ranch Property).

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 15. View of a dense stand of smooth lessingia on an east-facing slope within serpentine bunchgrass grassland. Photo is taken looking south in the southern section of the study area on August 25, 2020 (Davidson/Baird Ranch Property Line).

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 16. View of a healthy smooth lessingia plant in bloom within serpentine rock outcrop on the Baird Ranch property in the central section of the study area on August 18, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020



Photo 17. View of a dense stand of stinkwort on the southeast-facing hillside of the Davidson Ranch property. Photo is taken looking northwest in the southern section of the study area on August 25, 2020.

Graphics 00679;19 (4/7/21) AB

Source: ICF, 2020

Chapter 8

Stay-Ahead Provision

The Habitat Plan's Stay-Ahead provision requires that conservation is ahead of or proportional to impacts for natural communities, plants, and the burrowing owl conservation strategy. For natural communities and plants, this is achieved by acquiring land for the Reserve System in advance of impacts. For the burrowing owl conservation strategy land acquisition, management agreements, and conservation actions contribute to the Stay-Ahead requirements.

Stay-Ahead is tracked by natural community rather than land cover type to allow for flexibility in Reserve System assembly. Compliance is tracked as a proportion of conservation achieved/expected compared to impacts incurred/expected, while allowing for a 10% deviation. For example, if 25% of the expected impacts on the oak woodland natural community have occurred, then at least 25% of the required land acquisition for the oak woodland natural community must also have occurred. Conservation includes restoration, creation, and acquisition.

Stay-Ahead requirements for covered plants is tracked by covered plant occurrence and do not allow for 10% deviation or aggregation. Plant occurrences must be protected in advance of impacts. Only Coyote ceanothus creation or acquisition is allowed to deviate—a 5-year grace period is allowed from the first impact.

The western burrowing owl stay-ahead requirement measures two different compliance metrics—(1) **occupied nesting habitat**: impacts and conservation of occupied nesting habitat using a 3:1 ratio²¹ within a 10% deviation, and (2) **nesting habitat rough proportionality**: rough proportionality for impacts to occupied breeding habitat compared to conserved occupied nesting and potential breeding habitat²² within a 10-15% deviation. For both metrics, both lands enrolled in the Reserve System and lands under management agreements can be credited toward conservation. For the second metric, conservation actions implemented on managed lands allow for the 10% deviation to be increased to 15%. Additional detail on the burrowing owl stay-ahead requirement can be found on Habitat Plan pages 8-30 through 8-31.

Stay-Ahead requirement for protection of burrowing owl habitat applies to occupied and potential nesting habitat (not overwintering habitat) because these two habitat types are the most critical in

Reporting Requirements

- Cumulative summary of all impacts and conservation for all land cover types.
- Status of Habitat Plan natural community preservation.
- An assessment of compliance with the Stay-Ahead provision (Section 8.6.1, *Stay-Ahead Provision*, in the Habitat Plan) and a forecast of expected take and land acquisition needs for the next 2 years.

²¹ For example, if 50 acres of permanent impacts on occupied nesting habitat have occurred, then 150 acres of occupied nesting habitat must be under a management agreement or permanently protected.

²² For example, if 66 acres of the 198-acre impact cap for the species has been used (33%), then 33% of the 5,300 acres of occupied or potential nesting habitat must be under management or conservation easement.

meeting the conservation strategy goal of increasing the adult burrowing owl population by three birds per year. The habitat types are defined as follows:

- Occupied nesting habitat includes sites within the previous 3 years that are surrounded by at least 140 acres of foraging habitat within 0.5 mile of the nest site. This habitat type is revised annually.
- Potential nesting habitat is depicted in Figure 2 of the Appendix D species account for burrowing owl. It is defined as “any grassland, agricultural, or barren land cover types that are located outside of the 0.5-mile radius around occupied nest sites, and inside of one of the burrowing conservation zones.
- Overwintering habitat²³ is depicted in Figure 2 of the Appendix D species account for burrowing owl. It is defined as “all annual grassland, serpentine bunchgrass grassland, valley oak woodland, agricultural, and barren land cover types with flat (0-5%) or moderate (5-25%) slopes, outside of one of the burrowing owl conservation zones.

8.1 Compliance with the Stay-Ahead Provision

Reserve System lands with a conservation easement, restoration or creation projects approved by the Wildlife Agencies, and lands under management agreements count toward Stay-Ahead Provision compliance.²⁴ This includes the following lands or projects.

- Coyote Ridge Open Space Preserve: 1802 acres of mostly serpentine grassland acquired and protected under conservation easement, of which 1775 acres which counts toward the stay-ahead requirements for land cover types and species occurrences protected.
- Warm Springs Unit at Don Edwards National Wildlife Refuge Burrowing Owl Management Area: five-year management agreement 719 acres of nesting habitat for the burrowing owl.
- Santa Clara-San José Regional Wastewater Treatment Facility Bufferlands Burrowing Owl Management Area: 15-year management agreement over 201 acres of nesting habitat for the burrowing owl.
- County-wide Habitat Assessment for burrowing owl contributes to burrowing owl conservation actions.
- Western Burrowing Owl Supplemental Feeding Study at Shoreline Regional Wildlife Area and NASA Ames Research Center at Moffett Field contributes to burrowing owl conservation actions.
- Calero County Park Pond and Wetland Restoration Project: 0.62 acres of pond and wetland restored.
- Coyote Ceanothus Population Creation Project: a new population of Coyote ceanothus created in 530 planting basins within 5 years (which is short of the requirement for creation or protection of a population of Coyote ceanothus containing 2,000 plants within 5 years).
- Pacheco Creek Riparian Planting Project: 2 acres of riparian restored.

²³ Overwintering habitat is not subject to the stay-ahead requirement. Like all other modeled habitat types, it is subject to an impact cap and conservation requirements.

²⁴ Areas with “existing easements” (e.g., access, mitigation) or without conservation easements (e.g., Pacheco Creek Reserve) are not accounted for in the Stay-Ahead provision compliance.

- San Felipe Creek Restoration Project: 5.5 acres of riparian and wetland and 1.83 miles of stream restored
- Coyote Ridge Ponds 1 and 4 Restoration Project²⁵

Stay-Ahead requirements are being met for or exceeded the following resources (**Table 19, Table 20, Figure 17, Figure 18, and Figure 19**).

- Conifer woodlands
- Oak woodlands
- Riparian forest and scrub
- Ponds
- Streams
- Western burrowing owl occupied nesting habitat
- Mount Hamilton thistle
- Santa Clara Valley dudelya
- Fragrant fritillary
- Loma Prieta hoita
- Smooth lessingia
- Metcalf Canyon jewelflower
- Most beautiful jewelflower
- Coyote ceanothus²⁶

Stay-Ahead compliance is not being met for the following resources.

- Grasslands
- Chaparral northern coastal scrub
- Wetlands
- Burrowing owl occupied and breeding habitat (rough proportionality)

The Habitat Agency continues to work in good faith with the Wildlife Agencies and Co-Permittees to comply with the Stay-Ahead provision. There were five new Reserve System lands acquired during the FY1920 reporting year and several future land acquisitions will be completed within the six months of the close of the reporting year. Of the newly acquired sites, four contributed to

²⁵ Total acreage for the CROSP Ponds Restoration Project will be reported next year once finalized.

²⁶ The Santa Clara Valley Water District continues to successfully implement the Coyote ceanothus creation project—The Stay-Ahead requirement for the Coyote ceanothus requires the creation or protection of an occurrence of 2,000 plants within 5 years of the first impacts to Coyote ceanothus. Since the first impacts to Coyote ceanothus occurred in 2015, the Stay-Ahead provision requires the creation or protection of an occurrence of 2,000 Coyote ceanothus plants by 2020. The Santa Clara Valley Water District estimates in their November 2018 status report for the Coyote ceanothus pilot project, “At the current average of 100–200 new plants installed per year, at least 10 years of annual planting effort will be needed to achieve a final target population size of 2,000 individuals” (Hillman 2018).

compliance for grasslands and three to oak woodland compliance. Two have contributed to riparian forest and scrub, as well as wetlands. Two have contributed to a Coyote ceanothus occurrence. No new land acquisitions are planned for burrowing owl habitat. Enrollment of the Calero conservation easement area will result in compliance for grasslands, oak woodlands, riparian forest and scrub, and most beautiful jewelflower. Wetland compliance is likely to occur with the implementation of the planned restoration projects and the enrollment of Calero County Park in the Reserve System.

8.2 Stay-Ahead Compliance Calculations

The Stay-Ahead Compliance is calculated as follows:

Terrestrial and Aquatic Land Cover Types (Table 19 and Table 20)

- Conservation Required = (% of Allowable Impacts Accrued) * (Total Conservation Required)
- Compliance = (Conservation Achieved) / (Conservation Required)
- $\geq 90\%$ = in Compliance
- Acres Ahead = (Conservation Achieved) – (Conservation Required)

Western Burrowing Conservation Strategy (Table 19)

The Habitat Agency has a total of 861.9 acres of occupied nesting habitat and 431.6 acres of potential nesting habitat under management agreements or enrolled in the Reserve System. The occupied nesting habitat is present on the lands over which the Habitat Agency has management agreements—Warm Spring Unit at Don Edwards National Wildlife Refuge and the Santa Clara-San José Regional Wastewater Treatment Facility Bufferlands. The potential nesting habitat is present on these lands plus the Coyote Ridge Open Space Preserve, Tulare Hill Wedge Reserve and Tilton Ranch South Reserve. In addition, the Habitat Agency is implementing conservation actions on managed lands (i.e., captive breeding) and identifying new lands for future management or enhancement (i.e., surveys in Northern San Benito County). By Year 45 of the permit term a total of 5,300 acres of occupied and potential nesting habitat must be preserved or under management agreements. Of these, 600 acres must be permanently protected occupied nesting habitat.

The Habitat Plan allows for 198 acres of impact to occupied nesting habitat. To date, 126.4 acres of occupied nesting habitat have been impacted, 64% of the allowed.

Metric #1: Western burrowing owl occupied nesting habitat

Conservation required is calculated at a 3:1 ratio. Conservation achieved includes occupied nesting habitat under management agreements or enrolled in the Reserve System via Conservation Easements.

- Conservation Required = (Impacts Accrued) * (Required Preservation Ratio)
 $= 126.4 * 3$
 $= 379.2$ acres
- Compliance = (Conservation Achieved) / (Conservation Required)
 $= 861.9/379.2$
 $= 227\%$

- $\geq 90\%$ = in Compliance
227% = in Compliance
- Acres Ahead = (Conservation Achieved) – (Conservation Required)
= 861.9 – 379.2
= 482.7 acres

Metric #2: Western burrowing owl nesting habitat (rough proportionality)

Conservation required is calculated a percent of allowable impacts accrued multiplied by the total conservation required. Conservation action implementation on managed lands allows the stay-ahead compliance to have a 15% deviation (rather than the standard 10%).

- Conservation Required = (% of Allowable Impacts Accrued) * (Total Conservation Required)
= (126.4/198) * 5,300
= 3,383.4 acres
- Compliance = (Conservation Achieved) / (Conservation Required)
= 1,293.5/3,384.0
=38%
- $\geq 85\%$ = in Compliance
38% = Non-Compliance
- Acres Ahead = (Conservation Achieved) – (Conservation Required)
= 1,293.5 – 3,384
= -2,090.4 acres

Plants (Table 19 and Table 21)

- Conservation Required = (% of Allowable Impacts Accrued) * (Total Conservation Required)
- Compliance = (Conservation Achieved) / (Conservation Required)
- $\geq 90\%$ = in Compliance
- Occurrences Ahead = (Conservation Achieved) – (Conservation Required)

Land Cover Type	Impacts			Conservation			Stay-Ahead		
	Total Allowable Impacts (acres)	Impacts Accrued (acres)	% of Allowable Impacts Accrued	Total Conservation Requirements (acres)	Conservation Achieved (acres)	% of Required Conservation Achieved	Conservation Required (acres) ¹	Compliance	Acres Ahead ²
Grasslands	2,529	366.2	14%	17,440	2,041.4	12%	2,525.5	81%	-484.1
Chaparral Northern Coastal Scrub	405	17.0	4%	2,500	224.7	9%	105.2	214%	119.5
Oak Woodland	2,709	43	2%	12,900	629.8	5%	205.2	307%	424.6
Riparian Forest and Scrub	296	4.3	1%	971	109.6	11%	14.0	781%	95.6
Conifer Woodland	117	0.0	0%	10	0.0	0%	0.0	-	0.0
Wetland	40	2.69	7%	155	6.89	4%	10.44	66%	-3.5
Pond	52	0.06	0%	177	12.84	7%	0.21	6183%	12.6
Streams (miles)	9.4	0.12	1%	110.4	25.16	23%	1.40	1795%	23.8
Developed	3,760	899.7	24%	-	-	-	-	-	-
Agricultural	8,018	837	10%	-	-	-	-	-	-
Total	17,926	2,170.3	12%	34,153	4,795.5	14%	2,862.0		1,933.5
(1) Western Burrowing Owl Occupied Nesting Habitat (3:1) ⁴	198	126.4	3:1	379	861.9	227%	379	227%	482.7
(2) Western Burrowing Owl Nesting Habitat, rough proportionality	198	126.4	64%	5,300	1,293.5	24%	3,384.0	38%	-2,090.4
Plants (occurrences)									
Tiburon paintbrush	0	N/A	-	1	0	0%	-	-	-
Coyote ceanothus	3,650 individuals	527	14%	5	1%	20%	1	>100%	0
Mt. Hamilton thistle	6	0	0%	22	24	109%	0	>100%	24
Santa Clara Valley dudleya	11	1	9%	55	105	191%	5	>100%	100
Fragrant fritillary	1	0	0%	4	3	75%	0	>100%	3
Loma Prieta hoita	2	0	0%	8	5	63%	0	>100%	5
Smooth lessingia	6	0	0%	24	11	46%	0	>100%	11
Metcalf Canyon jewelflower	2	0	0%	10	8	80%	0	>100%	8
Most beautiful jewelflower	6	0	0%	17	8	47%	0	>100%	8
¹ Conservation Required = "% of Allowable Impacts Accrued" * "Total Conservation Requirements" ² Compliance = "Conservation Achieved"/"Conservation Required" ³ Acres Ahead = "Conservation Achieved" - "Conservation Required" ⁴ The Stay-Ahead requirement for protection of burrowing owl habitat applies to occupied and potential nesting habitat. The Stay-Ahead reporting is only tracking occupied nesting habitat. Managed or permanently protected occupied nesting habitat must remain within 10% deviation of permanent impacts on occupied nesting habitat based on a 3:1 ratio (management or protection to impacts). Stay-Ahead compliance is tracked based on this 3:1 ratio rather than the total impact vs. conservation requirements.									

Table 20. Detailed Stay-Ahead Provision for Aquatic Natural Community Conservation

Land Cover Type	Impacts			Conservation			Conservation Achieved				Stay-Ahead			Planning			
	Total Allowable Impacts (acres)	Impacts Accrued (acres)	% of Allowable Impacts Accrued	Required Protection (acres)	Required Restoration/Creation (acres)	Total	Preservation (acres)	Restoration (acres)	Total	% of Conservation Achieved	Conservation Required ¹	Compliance ²	Acres Ahead ³	Conservation Required (acres)		Conservation Difference (Achieved - Required)	
													Preserve	Restore	Preserve	Restore	
Willow riparian forest and scrub or mixed riparian forest and woodland	289	4.28	1%	578	339	917	58.79	4.90	63.69	7%	13.57		8.56	5.02	50.24	-0.12	
Central California sycamore alluvial woodland	7	-	0%	40	14	54	50.80	0.00	50.80	94%	-		-	-	0.00	0.00	
Riparian Total	296	4.278	1%	618	353	971	109.59	4.9	114.49	12%	14.03	816%	100.46				
Coastal and valley freshwater marsh (perennial wetland)	25	2.43	10%	50	45	95	-	0.30	0.30	0%	9.23		4.86	4.37	-4.86	-4.07	
Seasonal wetland	15	0.26	2%	30	30	60	2.59	4.00	6.59	11%	1.05		0.53	0.53	2.06	3.47	
Wetland Total	40	2.693	7%	80	75	155	2.59	4.30	6.89	4%	10.44	66%	-3.55				
Pond	52	0.06	0%	104	72	177	12.62	0.22	12.84	7%	0.21	6183%	12.63	0.12	0.08	12.50	0.14
Stream (miles)	9.4	0.12	1%	100.0	10.4	110.4	23.36	1.80	25.16	23%	1.40	1795%	23.76	1.27	0.13	22.09	1.67

¹ Conservation Required = % of Allowable Impacts accrued * Conservation Total
² Compliance = "Conservation Achieved"/"Conservation Required"
³ Acres Ahead = "Conservation Achieved" - "Conservation Required"

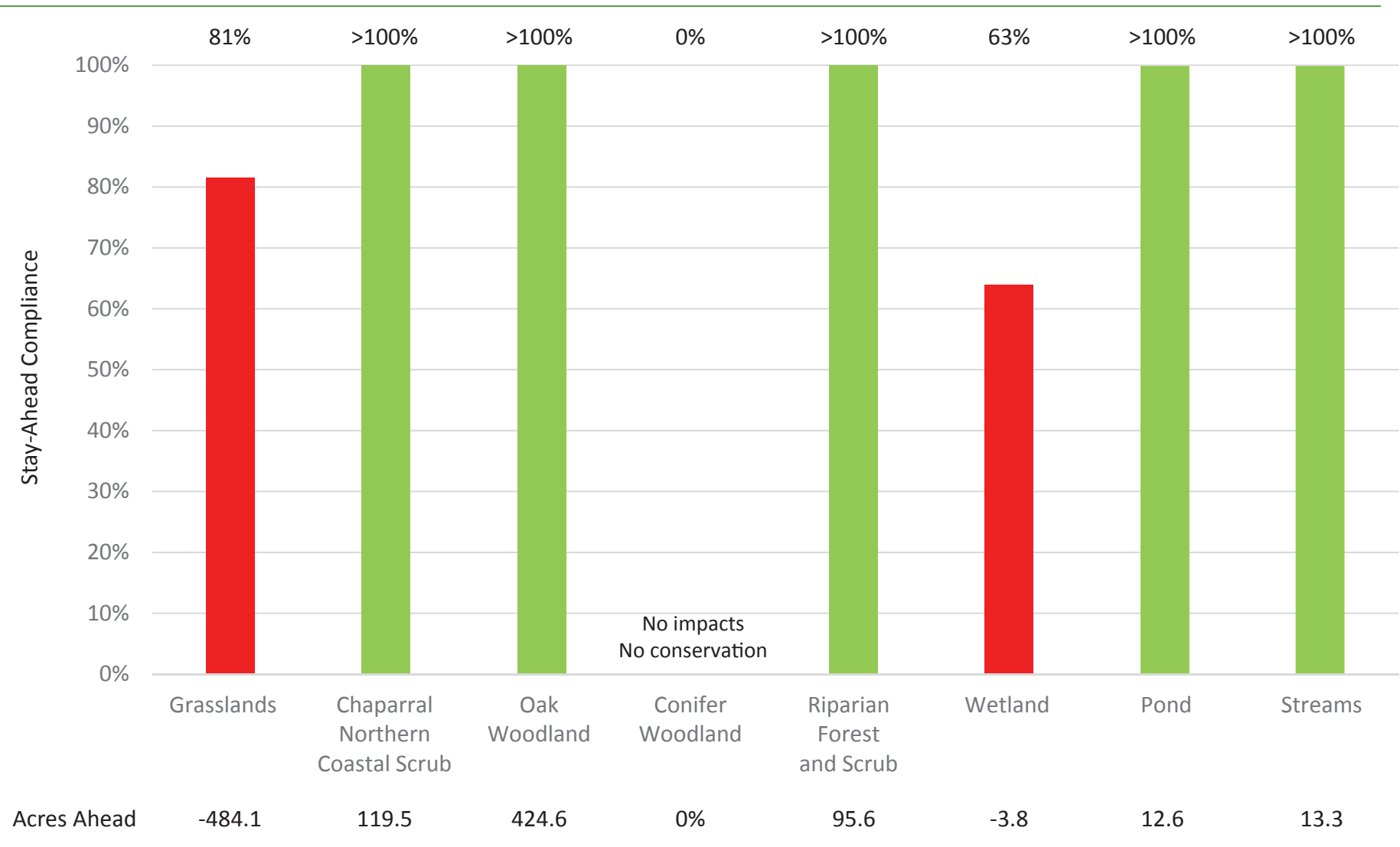
Table 21. Summary Status of the Stay-Ahead Provision for Plant Occurrences

Covered Species	Impacts To Date (occurrences)			Conservation Requirements				Conservation Achieved	% of Conservation Achieved	Stay-Ahead		
	Allowable Impact	Impacts to date	% of Allowable Impacts Accrued	Mitigation Ratio	Protected per Mitigation Ratio	Protected to Contribute to Recovery	Total Conservation Requirements			Conservation Required (occurrences) ¹	Conservation Achieved/Conservation Required	Occurrences Ahead ²
Tiburon paintbrush	0	N/A	-	N/A	0	1	1	0	0%	-	-	-
Coyote ceanothus	3,650 individuals	527	14%	N/A	0	5	5	1	20%	1	>100%	0
Mt. Hamilton thistle	6	0	0%	3	18	4	22	24	109%	0	>100%	24
Santa Clara Valley dudleya	11	1	9%	4	44	11	55	105	191%	5	>100%	100
Fragrant fritillary	1	0	0%	3	3	1	4	3	75%	0	>100%	3
Loma Prieta hoita	2	0	0%	2	4	4	8	5	63%	0	>100%	5
Smooth lessingia	6	0	0%	2	12	12	24	11	46%	0	>100%	11
Metcalf Canyon jewelflower	2	0	0%	N/A	0	10	10	8	80%	0	>100%	8
Most beautiful jewelflower	6	0	0%	2	12	5	17	8	47%	0	>100%	8

¹ Conservation Required = "% of Allowable Impacts Accrued" * "Total Conservation Requirements"
² Occurrences Ahead = "Conservation Required" - "Conservation Achieved"
³ Occurrence creation is underway. See text for status.

Figure 17. Stay-Ahead Compliance for Natural Communities

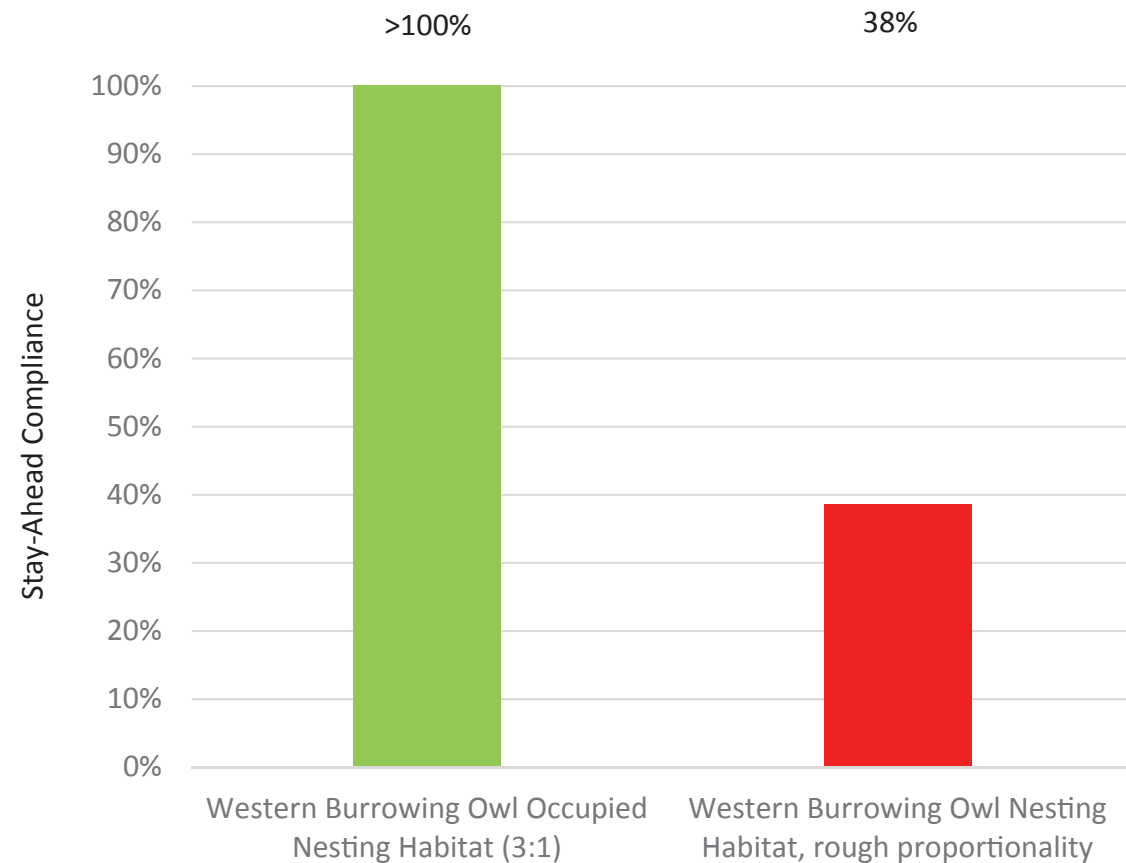
Conservation Required = (% of Allowable Impacts Accrued)*(Conservation Total)
 Compliance = (Conservation Achieved)/(Conservation Required)



= (Conservation Achieved) – (Conservation Required)

miles

Figure 18. Stay-Ahead Compliance for Western Burrowing Owl



The western burrowing owl stay-ahead requirement measures two different compliance metrics:

- 1) occupied nesting habitat:** impacts and conservation of occupied nesting habitat using a 3:1 ratio within a 10% deviation, and
- 2) nesting habitat rough proportionality:** rough proportionality for impacts to occupied breeding habitat compared to conserved occupied nesting and potential breeding habitat within a 10-15% deviation.

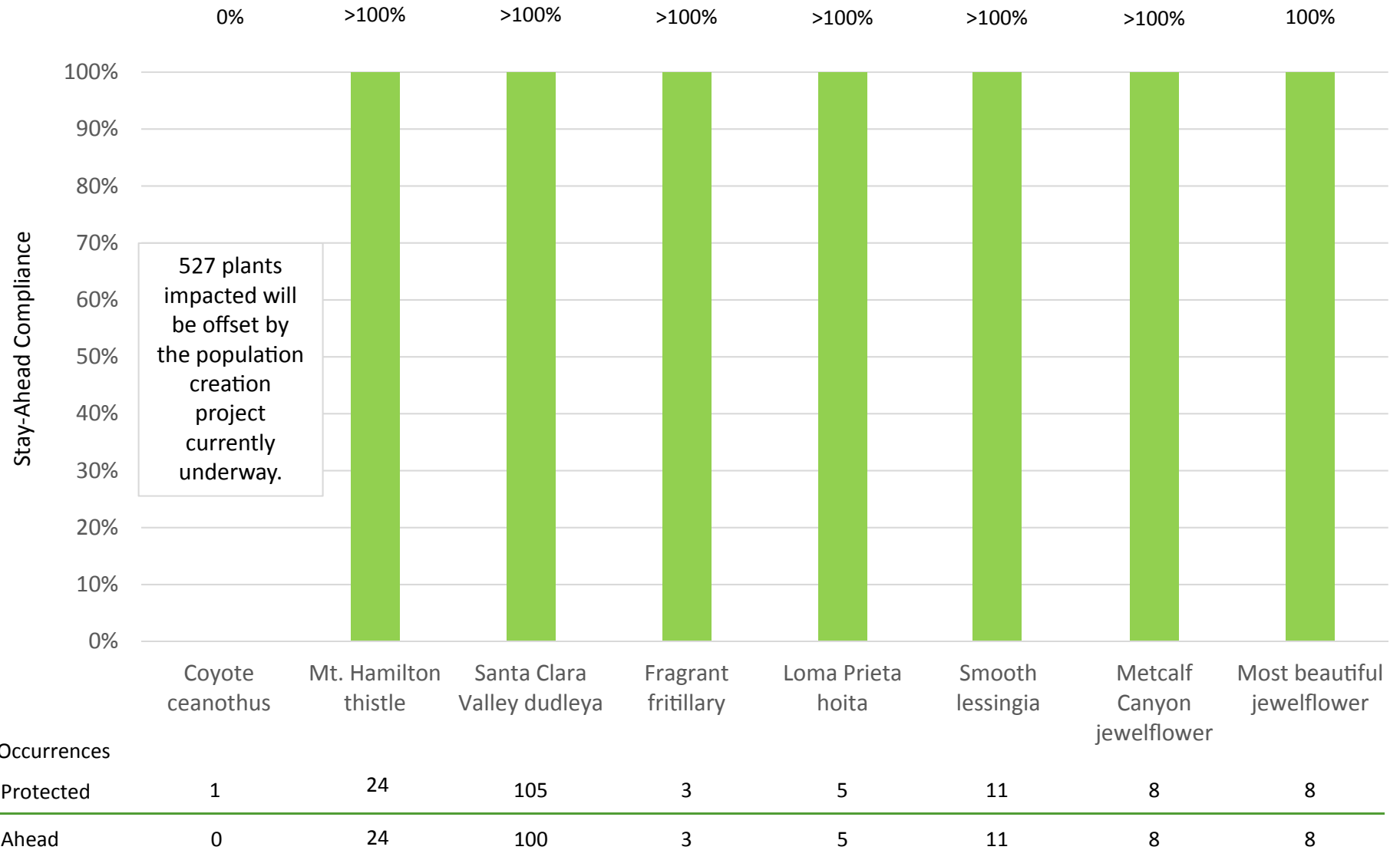
For both metrics, both lands enrolled in the Reserve System and lands under management agreements can be credited toward conservation. For the second metric, conservation actions implemented on managed lands allow for the 10% deviation to be increased to 15%.

Acres Ahead	482.7	-2,090.4
-------------	-------	----------

$$= (\text{Conservation Achieved}) - (\text{Conservation Required})$$

Figure 19. Stay-Ahead Compliance for Plants

Conservation Required = (% of Allowable Impacts Accrued)*(Conservation Total)
 Compliance = (Conservation Achieved)/(Conservation Required)



Changed and Unforeseen Circumstances

The No Surprises policy established by USFWS defines changed circumstances as those circumstances affecting a species or geographic area covered by an HCP that can be reasonably anticipated by the applicant or the USFWS and to which the parties preparing the HCP can plan a response. The NCCP Act has a similar provision for NCCPs. The changed circumstances identified by the Habitat Plan are the following.

- Covered species becoming listed
- Non-covered species becoming listed
- Global climate change
- Fire
- Nonnative species or disease
- Flooding
- Drought
- Earthquakes

Reporting Requirements

- A description of any unforeseen circumstances that arose and responses taken.
- An assessment of changes in temperature in the study area (see Chapter 10, Section 10.2.1, *Changed and Unforeseen Circumstances* in the Habitat Plan).
- A description of any actions taken or expected regarding changed circumstances, including remedial actions.

A changed circumstance requires the Habitat Agency to notify the Wildlife Agencies to determine the necessity for additional conservation or mitigation measures, called “remedial measures.” Specific remedial actions are described in the Habitat Plan as responses to each of the changed circumstances. However, the Habitat Agency will determine an appropriate response to a changed circumstance in collaboration with the Wildlife Agency and dependent on the context of the circumstance. If an environmental condition changes that is not described in the Plan (i.e., an unforeseen circumstance), the Wildlife Agencies cannot require additional mitigation or conservation measures, but the Habitat Agency may choose to voluntarily implement remedial actions in response.

9.1 Changed Circumstances

9.1.1 Covered Species Becoming Listed

9.1.1.1 Foothill Yellow-Legged Frog Listed as an Endangered Species

On March 10, 2020, the California Fish and Game Commission listed the West/Central Coast clade of the Foothill yellow-legged frog (*Rana boylei*) as endangered in addition to the Southwest/South Coast and East/Southern Sierra clades. Each covered species in the Habitat Plan has been treated as though it is listed under ESA and CESA. Under Section 2835 of the California Fish and Game Code, CDFW may issue take authorization for covered species (plants or wildlife) regardless of their listing

status. As stated in the NCCP Act, “At the time of plan approval, the [California] department [of Fish and Wildlife] may authorize by permit the taking of any covered species whose conservation and management is provided for in a natural community conservation plan approved by the department.”

9.1.2 Non-covered Species Becoming Listed

9.1.2.1 Mountain Lion Listed as a Candidate Species

On April 21, 2020, the California Fish and Game Commission listed the mountain lion (*Puma concolor*) as a candidate species. This species has historic and extant occurrence records within the Permit Area.

A changed circumstance due to new species listing **did occur** in the reporting period.

The Habitat Agency will evaluate the potential impacts of covered activities on the mountain lion and conduct an assessment of the presence of suitable habitat in areas of potential effect. The Habitat Agency will also implement measures to avoid take of the newly listed species, such as advising applicants they need seek separate take coverage for the lion.

9.1.3 Climate Change

Global climate change is occurring as a result of high concentrations of greenhouse gases in the Earth’s atmosphere (National Research Council 2010, Intergovernmental Panel on Climate Change 2007). Current global and regional trends suggest that climate change is likely to have an effect on the Plan Area. However, current or near-term forecasting technology for modeling changes in climate at the regional or county scale is not effective and there is much uncertainty in climate change predictions. Although uncertain, key climate change predictions project the average annual mean temperature in California will rise from 1.1 degrees Celsius (°C) to more than 2.8°C. More frequent drought years are also predicted, which in combination with more intense rainfall events would pose higher risks of soil erosion and drops in ground water levels (Dukes and Shaw 2007).

The conservation strategy, reserve design, and monitoring and adaptive management program anticipate possible effects of climate change using a multi-scale approach that views conservation through landscape, natural-community, and species level. This approach focuses on protecting and enhancing a range of natural communities, habitat types, and environmental gradients (e.g., altitude, aspect, slope), as well as other features that are important as global warming changes the availability of resources and habitat types in the Plan Area.

The Habitat Agency will use a method consistent with the California Climate Action Team for measuring temperature change within the study area. The baseline index, as measured from the Gilroy, Morgan Hill, and San José weather stations, will be historic temperatures from 1961 to 1990. For the purposes of the Plan, two baseline measurement periods will be set using 1961 to 1990 historic temperatures: average summer temperature (June, July, and August), and average winter temperature (December, January, and February). If modeled California climate-change trends are applied to the study area, one may anticipate that the temperature could increase up to 2.8°C during the permit term.

Under the Plan, the following is considered changed circumstances for which remedial measures will be funded.

- An increase in temperature of up to 2.8°C for any of the three baseline periods measured as a 10-year running average.

The Habitat Agency is tracking these two average annual temperatures, as shown in **Table 22**. The changed circumstance has not been met.

Year	Annual Average Temperature °C					
	Average Annual Summer Temperature			Average Annual Winter Temperature		
	Gilroy	Morgan Hill	San Jose	Gilroy	Morgan Hill	San Jose
2014	30.8	30.9	26.7	19.2	17.2	17.3
2015	29.8	29.7	26.7	18.3	17.4	17.1
2016	30.7	29.5	27.2	17.5	16.4	17.2
2017	30.3	30.0	28.3	16.3	15.3	16.4
2018	28.2	27.5	26.3	19.3	18.0	18.8
2019	23.9	28.2	25.7	14.4	15.3	14.7
2020	21.8	21.7	21.8	10.9	9.1	11.3

Source: <http://usclimatedata.com>, <http://agacis.rcc-acis.org>, and <http://accuweather.com>

This chapter provides an evaluation of the economic assumptions on which the Habitat Plan was based, an accounting of all revenues received, and an assessment of the post-permit term funding strategy. The *Budget* section provides an overview of the Habitat Plan cost categories, the annual budget, and expenditures. The budget and expenditures are compared to the Habitat Plan cost model assumptions. The *Revenue Sources* section provides an accounting of all revenue received by type. The *Funding in Perpetuity* section provides the status of the endowment required for post-permit term funding.

10.1 Budget

The Habitat Agency prepares and approves an annual budget based on anticipated revenues and program implementation costs. The Habitat Plan assumes the following cost categories for implementation.

- Land acquisition.
- Reserve management and maintenance, including adaptive management.
- Habitat and covered plant occurrence restoration/creation.
- Monitoring, research, and scientific review.
- Program administration.
- Costs in perpetuity.

Meetings with each of the Co-Permittees during the budget planning process were used to determine covered activities that will be permitted in the upcoming fiscal year. These revenues plus non-fee funding (e.g., grants) were used to develop the budget. The annual budget uses cost centers based on the Habitat Plan cost categories.

The Habitat Agency's allocated budget and expenditures varied from what was anticipated by the Habitat Plan (**Tables 23a** and **23b**). For Years 6-10, the Habitat Plan assumed \$11.7 million for its average annual budget. The FY1920 Habitat Plan implementation budget was \$4.1 million, 35% of the anticipated budget. The Habitat Agency's budget focused on program administration, land enrollment, land management activities, burrowing owl management, reserve management, monitoring, and restoration.

Reporting Requirements

- An evaluation of the economic assumptions on which the Habitat Plan was based (e.g., Habitat Plan costs, revenue rates, and grant funding projections).
- An accounting of all revenues received, by type (e.g., development fees, wetland fees, grants) and an assessment of progress towards total revenue goals. Funding from local, state, and federal sources must be tracked separately. Any fee adjustments must also be reported.
- An assessment of progress toward a complete funding strategy for implementation after the permit term.

10.2 Revenue Sources

The Habitat Plan anticipates 55% of funding from fees and 45% from non-fee sources. Private and public development-based fees fund mitigation to offset losses of land cover types, covered species habitat, and other biological values. These fees pay for the full cost of mitigating project effects on the covered species and natural communities addressed by the Habitat Plan. These fees are charged for permanent and temporary impacts and include an endowment fee and plan preparation cost recovery fee component. The endowment fee component is included in all development fees to build an endowment for post-permit term funding. Development fees paid by private entities include a cost recovery fee component to partially reimburse the Co-Permittees over time for the costs incurred related to development of the Habitat Plan between 2005 and 2013. Fee-based funding includes the following.

- Land cover fee
- Nitrogen deposition fee
- Serpentine fee
- Burrowing owl fee
- Wetland fee
- PSE charges

Non-fee based funding comes from local, state, and federal sources other than Habitat Plan fees. This includes land acquisitions and other conservation actions conducted by local organizations (e.g., Santa Clara Valley Open Space Authority, County Parks) and grants from federal, state, local, and private entities. These local funding sources typically require that their funds be used to contribute to the recovery of the covered species (i.e., the NCCP portion of the Habitat Plan) or used to mitigate the impacts of their own agency. For example, County Parks will be enrolling its land to mitigate impacts of County public projects.

The Habitat Agency received \$12.5 million in funds during the reporting period from fee and non-fee funding sources (**Table 24** and **Table 25**). Fee funding totaled \$2.6 million (21% of total revenues) across private, public, and PSE projects. Fee funding revenue was received across all fee types. Of this revenue source, land cover fees were \$1.5 million (15%), serpentine fees were 33,500 (<1%), nitrogen deposition fees were \$333,000 (3%), burrowing owl fees were \$635,000 (6%), wetland fees were \$53,400 (1%), PSE charges were \$42,600 (<1%), and Regional General Permit fees were \$39,000 (<1%).

Non-fee funding totaled approximately \$9.9 million (79%) (**Table 24**). Approximately \$16,000 came from mitigation-only projects and \$232,000 from voluntary contribution projects (**Table 25** and **Table 26**). Several land acquisition grants were awarded to the Habitat Agency totaling \$8.1 million for land acquisition (see Section 10.3, *Land Acquisition* for more details). Two Local Assistance Grants from the California Department of Fish and Wildlife totaling \$285,412 were also awarded to the Habitat Agency during the reporting year. One grant is for fire monitoring research at Coyote Ridge Open Space Preserve, whereas the other includes the planning and design for the restoration of stream and riparian woodlands along the Pajaro River. Land acquisition grants from local foundations and non-profits, including the GB Moore Foundation and Peninsula Open Space Trust, awarded the Habitat Agency a total of \$1.3 million during the reporting year (**Table 25**).

10.3 Grants and Funding

The Habitat Agency utilized the entire \$8 million dollars secured during the previous reporting year for two land acquisitions. This funding is based on partnership agreement between the SCVWD and the Habitat Agency that would support the acquisition and management of Reserve System lands that would also support the water supply strategies in the SCVWD's 2017 Water Supply Master Plan (Santa Clara Valley Water District 2018). The Habitat Agency also earmarked the two Cooperative Endangered Species Conservation Fund (Section 6 of the Endangered Species Act) Grant for \$2 million and \$5.9 million respectively (with a Wildlife Conservation Board match) for land acquisition. Although the Habitat Agency did not close on any properties during the reporting year, much of the legwork required to reach the purchase agreement was completed during the reporting year.

10.4 Land Acquisition

Coyote Ridge Open Space Preserve was acquired by the Santa Clara Valley Open Space Authority using funding from eight state, private, local, and federal sources totaling \$8.6 million. The State provided the majority of the funding (\$4.1M, 48%) via grants from the State Parks Recreational Trails Program, State Coastal Conservancy, and Wildlife Conservation Board. Federal funding (\$3M, 35%) was issued via grants from the BOR Central Valley Project and USFWS Section 6 Grant programs. Private funding was provided by the Resources Legacy Fund and Gordon and Betty Moore Foundation (\$1.5M, 17%). The Santa Clara Valley Open Space Authority contributed \$7,500 of local funding toward the purchase. Together these funding sources contributed to the Reserve System's first property.

The newest land acquisitions made in the reporting year were paid by the Habitat Agency using several land grants. Tilton Ranch South and Davidson Reserves were acquired using D7: Partnerships for the Conservation of Habitat Lands funds from Valley Water. Uvas South Reserve was acquired using Peninsula Open Space Trust Conservation Easement/Santa Clara County Parks Land Grant. Tulare Hill Wedge Reserve and the Ciraulo property were acquired using Habitat Agency funds.

10.5 Funding in Perpetuity

A set percentage of collected development fees is set aside for an endowment fund. For land cover and serpentine fees, the endowment is 20%. In the FY1920 reporting period, endowment funds were deposited to and managed by the Silicon Valley Community Foundation.

Cost Category	Cost Estimate from Habitat Plan			FY1920					
	Years 6-10	Average Cost Per Year (Years 6-10)	% of Total	Budget		Expenditures		Difference from FY1920 Budget	Difference from Habitat Plan Cost Estimate
					%		%		
Land Acquisition	\$ 31,020,000	\$ 6,204,000	53%	\$ 280,377	7%	\$ 262,746	8%	\$ (17,631)	\$ (5,941,254)
Reserve Management and Maintenance	\$ 8,580,000	\$ 1,716,000	15%	\$ 190,593	5%	\$ 57,092	2%	\$ (133,501)	\$ (1,658,908)
Monitoring, Research, and Scientific Review	\$ 2,180,000	\$ 436,000	4%	\$ 261,173	7%	\$ 298,625	9%	\$ 37,452	\$ (137,375)
Western Burrowing Owl Conservation Strategy	\$ 700,000	\$ 140,000	1%	\$ 446,614	11%	\$ 285,914	8%	\$ (160,700)	\$ 145,914
Habitat Restoration & Creation	\$ 10,750,000	\$ 2,150,000	18%	\$ 1,385,200	35%	\$ 1,130,010	33%	\$ (255,190)	\$ (1,019,990)
Program Administration	\$ 3,980,000	\$ 796,000	7%	\$ 1,386,474	35%	\$ 1,364,860	40%	\$ (21,614)	\$ 568,860
Contingency Fund	\$ 1,280,000	\$ 256,000	2%	\$ -	0%	\$ -	0%	\$ -	\$ (256,000)
Habitat Plan Implementation Total	\$ 58,490,000	\$ 11,698,000	100%	\$ 3,950,431	100%	\$ 3,399,247	100%	\$ (551,184)	\$ (8,298,753)
Waters Permitting				\$ 110,750		\$ 182,958			
Total Habitat Agency Budget				\$ 4,061,181		\$ 3,582,205		\$ (551,184)	

Table 23b. Comparison of Actual Expenditures to Habitat Plan Cost Estimate—Cumulative

Cost Category	Expenditures by Fiscal Year								Total (Years 1-7)	% of Total
	FY1314	FY1415	FY1516	FY1617	FY1718	FY1819	FY1920			
Land Acquisition	\$ 5,813	\$ 74,678	\$ 83,700	\$ 104,642	\$ 165,553	\$ 201,778	\$ 262,746	\$ 898,910	5%	
Reserve Management and Maintenance	\$ 9,895	\$ 33,289	\$ 170,343	\$ 109,740	\$ 75,877	\$ 100,560	\$ 57,092	\$ 556,796	3%	
Monitoring, Research, and Scientific Review	\$ -	\$ 7,205	\$ 120,764	\$ 382,976	\$ 312,044	\$ 204,456	\$ 298,625	\$ 1,326,070	8%	
Western Burrowing Owl Conservation Strategy	\$ 32,483	\$ 82,952	\$ 161,174	\$ 306,074	\$ 336,056	\$ 407,266	\$ 285,914	\$ 1,611,919	10%	
Habitat Restoration & Creation	\$ 4,294	\$ 60,604	\$ 223,726	\$ 772,351	\$ 312,209	\$ 2,004,376	\$ 1,130,010	\$ 4,507,570	27%	
Program Administration	\$577,723	\$1,147,212	\$1,196,607	\$1,294,296	\$ 913,857	\$1,013,174	\$1,364,860	\$ 7,507,729	46%	
Contingency Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%	
Total Habitat Plan	\$630,208	\$1,405,940	\$1,956,314	\$2,970,079	\$2,115,596	\$3,931,610	\$3,399,247	\$16,408,994	100%	
Waters Permitting	\$ 24,638	\$ 44,029	\$ 118,237	\$ 85,699	\$ 136,174	\$ 127,313	\$ 182,958	\$ 719,048		
Total Habitat Agency	\$ 654,846	\$ 1,449,969	\$ 2,074,551	\$3,055,778	\$2,251,770	\$4,058,923	\$3,582,205	\$ 17,128,042		

Table 24. Summary of Revenue—Reporting Period and Cumulative

Funding Source	Reporting Period		Cumulative							Habitat Plan Assumption
		% of Total	FY14 + FY15	FY16	FY17	FY18	FY19	Total	% of Total	% of Total
Fee Funding										
Land Cover Fee	\$ 1,503,791	12%	\$ 4,716,296	\$ 3,455,394	\$ 2,496,045	\$ 3,902,251	\$ 2,843,255	\$ 16,073,776	24%	
Serpentine Fee	\$ 33,530	0%	\$ 1,126,683	\$ 679,176	\$ 56,055	\$ 563,762	\$ 395,638	\$ 2,459,206	4%	
Nitrogen Deposition Fee	\$ 333,048	3%	\$ 327,132	\$ 145,684	\$ 147,123	\$ 392,548	\$ 216,142	\$ 1,345,534	2%	
Burrowing Owl Fee	\$ 634,877	5%	\$ 855,189	\$ 420,678	\$ 320,844	\$ 4,688,419	\$ 59,694	\$ 6,920,007	10%	
Wetland Fee	\$ 53,437	0%	\$ 980,663	\$ 71,420	\$ 54,896	\$ 531,250	\$ 212,537	\$ 1,691,666	3%	
Participating Special Entity Charges	\$ 42,614	0%	\$ 100,501	\$ 23,135	\$ 14,286	\$ 48,415	\$ 37,453	\$ 228,951	0%	
Regional General Permit Fee	\$ 39,000	0%	-	-	-	-	-	\$ 39,000	0%	
Total Fee Funding	\$ 2,640,297	21%	\$ 8,106,463	\$ 4,795,487	\$ 3,089,249	\$ 10,126,645	\$ 3,764,719	\$ 32,522,860	48%	55%
Non-Fee Funding										
Mitigation Only and Voluntary Contributions	\$ 248,337	2%	\$ 724,059	\$ 496,629	\$ 540,442	\$ -		\$ 2,009,466	3%	
Grants ^a	\$ 8,389,412	67%	\$ 319,292	\$ 2,430,548	\$ 945,925	\$ 2,106,543	\$ 8,824,671	\$ 14,191,720	21%	
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations	\$ 1,264,500	10%		\$ 8,607,500	\$ -	\$ -	\$ -	\$ 9,872,000	15%	
Total Non-fee Funding	\$ 9,902,249	79%	\$ 1,043,351	\$ 11,534,677	\$ 1,486,367	\$ 2,106,543	\$ 8,824,671	\$ 34,897,857	52%	45%
Total	\$ 12,542,546		\$ 9,149,814	\$ 16,330,164	\$ 4,575,616	\$ 12,233,188	\$ 12,589,390	\$ 67,420,718		

^a Excludes grant funding used for "Land Acquisition by Local Land Agencies, Non-Profits, and Foundations"

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
Land Cover Fee					
City of Gilroy	GIL-2020-002	Miller Ave/Town Center Multi-Family	\$ 238,937.42	6/1/2020	Private
City of Gilroy	GIL-2020-002T	Miller Ave/Town Center Multi-Family	\$ 528.04	6/1/2020	Private
City of Gilroy	GIL-2019-015	Gilroy Self Storage Project	\$ 42,555.25	1/1/2020	Public
City of Morgan Hill	MH-2020-003	225 Cochrane	\$ 177.56	6/1/2020	Private
City of Morgan Hill	MH-2020-002	Butterfield Apartments	\$ 388,108.30	6/1/2020	Private
City of Morgan Hill	MH-2019-005	Cochrane Evergreen	\$ 293,027.50	12/1/2019	Private
City of Morgan Hill	MH-2020-001	Carpenter's Training Center	\$ 60,372.50	4/1/2020	Private
City of San Jose	SJ-2020-009	Headworks improvements	\$ 167,128.33	6/1/2020	Public
City of San Jose	SJ-2020-009T	Headworks improvements	\$ 6,599.53	6/1/2020	Public
City of San Jose	SJ-2020-015	Monterey & Bernal Bridge	\$ 10,900.05	6/1/2020	Public
City of San Jose	SJ-2020-005	IBM Sports Field	\$ 25,213.84	6/1/2020	Private
City of San Jose	SJ-2019-020	Silver Creek Hotel	\$ 11,298.00	10/1/2019	Public
City of San Jose	SJ-2019-024T	FEMA Kelly Park Storm Drain	\$ 13.25	10/1/2019	Public
City of San Jose	SJ-2019-023	Alum Rock Mineral Springs Bridge Embankment	\$ 517.84	10/1/2019	Public
City of San Jose	SJ-2019-027	459 Willow St Bank Stabilization	\$ 19,309.78	1/1/2020	Private
City of San Jose	SJ-2019-024	FEMA Kelly Park Storm Drain	\$ 90.28	4/1/2020	Public
County of Santa Clara	SCPN-0218-008	Hendry Lane Turner	\$ 22,382.00	1/1/2020	Private
County of Santa Clara	SCPN-2018-008T	Hendry Lane Turner	\$ 282.72	1/1/2020	Private
County of Santa Clara	SCPN-2019-001	Casa De Fruita Water tanks	\$ 17,415.98	1/1/2020	Private
County of Santa Clara	SCPN-2019-001T	Casa De Fruita Water tanks	\$ 750.15	1/1/2020	Private
County of Santa Clara	SCPN-2019-002	22623 Country View Lane	\$ 144.43	3/1/2020	Private
County of Santa Clara	SCPN-2019-003	Watsonville Rd Kuchan	\$ 31,446.71	6/1/2020	Private
Valley Water	SVWD-2020-005	Wells-Vegetation	\$ 1,237.98	6/1/2020	Public
Valley Water	SVWD-2020-004T	Coyote Alamitos Canal/Tulare Hill	\$ 3,320.71	6/1/2020	Public
Valley Water	SVWD-2019-006	Anderson Dam Spillway	\$ 3,610.63	9/1/2019	Public
Valley Water	SVWD-2019-006T	Anderson Dam Spillway	\$ 16.99	9/1/2019	Public
Valley Water	SVWD-2019-007	Snell Pipeline Vault	\$ 4,979.25	10/1/2019	Public
PSE	PSE-2020-005	PG&E Pipeline Hendry Dr	\$ 80.32	6/1/2020	PSE
PSE	PSE-2020-003	PG&E Calaveras Fault	\$ 148,673.00	7/1/2019	PSE
PSE	PSE-2020-003T	PG&E Calaveras Fault	\$ 4,672.58	7/1/2019	PSE
Land Cover Fee subtotal			\$ 1,503,791		

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
Serpentine Fee					
City of Gilroy	GIL-2020-002	Miller Ave/Town Center Multi-Family	\$ 24,784.28	6/1/2020	Private
Valley Water	SVWD-2020-004T	Coyote Alamitos Canal/Tulare Hill	\$ 8,054.89	6/1/2020	Public
Valley Water	SVWD-2019-006	Anderson Dam Spillway	\$ 691.14	9/1/2019	Public
Serpentine Fee Subtotal			\$ 33,530		
Nitrogen Deposition Fee					
City of Gilroy	GIL-2020-002	Miller Ave/Town Center Multi-Family	\$ 12,218.45	6/1/2020	Private
City of Gilroy	GIL-2019-012	T&T Development Residence	\$ 48.33	10/1/2019	Private
City of Gilroy	GIL-2019-013	Lavender Way	\$ 48.33	10/1/2019	Private
City of Gilroy	GIL-2019-014	Wild Iris Drive	\$ 48.33	10/1/2019	Private
City of Gilroy	GIL-2019-015	Gilroy Sef-Storage Project	\$ 49.60	1/1/2020	Private
City of Gilroy	GIL-2019-016	Zhang Residence	\$ 48.33	1/1/2020	Private
City of Gilroy	GIL-2019-017	Coria Residence	\$ 48.33	1/1/2020	Private
City of Gilroy	GIL-2019-018	Wintergreen Court	\$ 48.33	1/1/2020	Private
City of Gilroy	GIL-2020-001	Saffron Court	\$ 48.33	6/1/2020	Private
City of Morgan Hill	MH-2020-006	Techon	\$ 1,565.22	6/1/2020	Private
City of Morgan Hill	MH-2020-002	Butterfield Apartments	\$ 16,854.53	6/1/2020	Private
City of Morgan Hill	MH-2020-004	Common Wealth	\$ 84.49	6/1/2020	Private
City of Morgan Hill	MH-2019-005	Cochrane Evergreen	\$ 49,917.44	12/1/2019	Private
City of Morgan Hill	MH-2020-001	Carpenter's Training Center	\$ 2,494.88	4/1/2020	Private
City of San Jose	SJ-2020-013	Belmont Assisted Living	\$ 4,766.06	6/1/2020	Private
City of San Jose	SJ-2020-014	Bascom Station	\$ 25,563.43	6/1/2020	Private
City of San Jose	SJ-2019-034	De Anza Blvd	\$ 80.04	6/1/2020	Private
City of San Jose	SJ-2020-015	Monterey & Bernal Bridge	\$ 3,243.90	6/1/2020	Private
City of San Jose	SJ-2020-003	4525 Union Ave	\$ 3,899.70	6/1/2020	Private
City of San Jose	SJ-2020-011	105 3rd Street	\$ 1,929.84	6/1/2020	Private
City of San Jose	SJ-2020-012	2001 Fortune Drive	\$ 702.57	6/1/2020	Private
City of San Jose	SJ-2020-016	Starbucks	\$ 5,189.23	6/1/2020	Private
City of San Jose	SJ-2019-018	Advanced Manufacturing Building	\$ 2,117.92	10/1/2019	Private
City of San Jose	SJ-2019-021	Coleman Highline Tranche 2	\$ 31,476.16	10/1/2019	Private
City of San Jose	SJ-2019-020	Silver Creek Hotel	\$ 5,267.52	10/1/2019	Private
City of San Jose	SJ-2019-026	Rotten Robbie #67	\$ 19,959.04	10/1/2019	Private
City of San Jose	SJ-2019-017	1605 Industrial Ave	\$ 578.10	10/1/2019	Private
City of San Jose	SJ-2019-016	5353 Prospect Road	\$ 307.52	10/1/2019	Private
City of San Jose	SJ-2019-025	449 S Winchester	\$ 49,906.72	10/1/2019	Private

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
City of San Jose	SJ-2019-010	477 S Market Street	\$ 5,954.00	10/1/2019	Private
City of San Jose	SJ-2019-022	North Berryessa Flea Market	\$ 36,044.32	1/1/2020	Private
City of San Jose	SJ-2019-032	200 Park Ave	\$ 27,096.48	1/1/2020	Private
City of San Jose	SJ-2019-012	2220 Oxford Street	\$ 2,335.80	1/1/2020	Private
City of San Jose	SJ-2019-037	Horning St Gas Station	\$ 10,500.32	4/1/2020	Private
City of San Jose	SJ-2019-009	455 Silicon Valley Blvd	\$ 2,941.28	4/1/2020	Private
City of San Jose	SJ-2020-001	1017 Bascom	\$ 5,461.29	4/1/2020	Private
City of San Jose	SJ-2020-006	1508 Murphy Ave	\$ 241.65	4/1/2020	Private
City of San Jose	SJ-2020-012	2220 Oxford Street	\$ 2,378.20	4/1/2020	Private
City of San Jose	SJ-2020-008	5775 Winfield Blvd	\$ 367.04	4/1/2020	Private
City of San Jose	SJ-2019-014	Virginia Studios	\$ 761.53	4/1/2020	Private
County of Santa Clara	SCPN-2018-008	Hendry Lane Turner	\$ 48.33	1/1/2020	Private
County of Santa Clara	SCPN-2019-003	Watsonville Road Kuchan	\$ 406.72	6/1/2020	Private
Nitrogen Fee Subtotal			\$ 333,048		
Burrowing Owl Fee					
City of San Jose	SJ-2020-009	Headworks Improvements	\$ 465,462.08	6/1/2020	Public
City of San Jose	SJ-2020-009T	Headworks Improvements	\$ 17,979.28	6/1/2020	Public
Valley Water	SVWD-2020-005	Wells-Vegetation	\$ 994.58	6/1/2020	Public
PSE	PSE-2020-003	PG&E Calaveras Fault	\$ 150,441.20	7/1/2019	Public
Burrowing Owl Fee Subtotal			\$ 634,877		
Wetland Fee					
City of San Jose	SJ-2020-009T	Headworks Improvements	\$ 460.60	6/1/2020	Public
City of San Jose	SJ-2019-024T	FEMA Kelly Park Storm Drain	\$ 931.50	10/1/2019	Public
City of San Jose	SJ-2019-023	Alum Rock Mineral Springs Bridge Embankment	\$ 33,592.00	10/1/2019	Public
City of San Jose	SJ-2019-023T	Alum Rock Mineral Springs Bridge Embankment	\$ 310.50	10/1/2019	Public
County of Santa Clara	SCPN-2018-007	Sandy Ct Bakshi	\$ 3,205.46	3/1/2020	Private
Valley Water	SVWD-2020-005	Wells-Vegetation	\$ 3,053.57	6/1/2020	Public
Valley Water	SVWD-2019-006	Anderson Dam Spillway	\$ 11,617.80	9/1/2019	Public
Valley Water	SVWD-2019-006T	Anderson Dam Spillway	\$ 265.42	9/1/2019	Public
Wetland Fee Subtotal			\$ 53,437		

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
Participating Special Entity Charge and Admin Fee					
PSE Charge	PSE-2020-005	PG &E Pipeline Hendry Drive	\$ 5,000.00	6/1/2020	PSE
PSE Charge	PSE-2020-003	P G &E Calaveras Fault	\$ 25,378.67	7/1/2019	PSE
PSE Charge	PSE-2020-005	PG &E Pipeline Hendry Drive	\$ 5,000.00	3/1/2020	PSE
PSE Charge	PSE-2020-006	Caltrans SC Bridge Substructure Rehabilitation	\$ 5,000.00	5/1/2020	PSE
PSE Admin Fee	PSE-2020-005	PG &E Pipeline Hendry Drive	\$ 1,081.50	6/1/2020	PSE
PSE Admin Fee	PSE-2020-003	P G &E Calaveras Fault	\$ 1,154.00	7/1/2019	PSE
Participating Special Entity Charge Subtotal			\$ 42,614		
Regional General Permit Fee					
City of Gilroy	RGP-2020-03	Meritage HOA Grading	\$ 9,750.00	3/1/2020	Private
City of Gilroy	RGP-2020-05	Red Fox Creek Bridge	\$ 9,750.00	4/1/2020	Public
City of San Jose	RGP-2020-02	Kelley Park Storm Drain	\$ 9,750.00	2/1/2020	Public
City of San Jose	RGP-2020-04	Alum Rock Repair	\$ 9,750.00	3/1/2020	Public
Regional General Permit Fee subtotal			\$ 39,000.00		
Mitigation Only and Voluntary Contributions					
City Morgan Hill	FY18, 19, 20	MH BUOW Fees	\$ 232,351.00	6/1/2020	Public
PG&E		PG&E Ceanothus Mitigation	\$ 15,985.81	5/1/2020	Public
Mitigation Only and Voluntary Contributions Subtotal			\$ 248,336.81		
Grants					
Local Assistance CDFW		Research (Fire Monitoring CROSP)	\$ 75,000.00		
NCCP Local Assistance CDFW		Project (PRAP)	\$ 210,412.00		
Non-Traditional Section 6 - UTC Coyote Ridge		Acquisition	\$ 1,774,000.00		
WCB - UTC Coyote Ridge		Acquisition	\$ 4,330,000.00		
WCB - UTC Coyote Ridge		Acquisition	\$ 1,500,000.00		
SCVOSA - UTC Coyote Ridge		Acquisition	\$ 500,000.00		
Grants subtotal			\$ 8,389,412		
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations					
GB Moore Foundation	Land Grant East Coyote Ridge	Acquisition	\$ 600,000.00	10/1/2019	Grant Easement
Peninsula Open Space Trust	Conservation Easement Tilton	Acquisition	\$ 664,500.00	12/1/2019	Grant Easement
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations Subtotal			\$ 1,264,500.00		
Total			\$ 12,542,546		

Table 26. Voluntary Contribution and Mitigation Only Projects

Year	Code	Project Name/Source	Type	Date	Revenue	Mitigation (Acres)			Notes
						Obligation	Fulfilled	Location	
FY1415	Voluntary Contribution-1	Valley Christian Serp Mitigation	private	7/1/2014	\$ 40,092.80				
FY1415	Voluntary Contribution-4	Intuit	private	9/1/2014	\$ 16,952.00				
FY1415	Voluntary Contribution-5	Apple	private	9/1/2014	\$ 126,381.60				
FY1415	Voluntary Contribution-2	WBO Fee CMH	public	11/1/2014	\$ 219,977.00				
FY1415	Voluntary Contribution-3	WBO Fee CMH	public	11/1/2014	\$ 171,182.17				
FY1415	Voluntary Contribution-6	Moffet Place, LLV	private	11/1/2014	\$ 16,635.60				
FY1415	Voluntary Contribution-7	UNFI West	private	11/1/2014	\$ 5,309.32				
FY1415	Mitigation Only-1	Caltrans - 152/Ferg Rd Inter	public	4/1/2015	\$ 127,528.41	8.43			CTS and CRLF
FY1516	Mitigation Only-2	PG&E - Compensatory Mitigation	public	8/21/2015	\$ 190,364.77	14.55			1.37 acres for CTS and CRLF, 0.3 acres for SJKF, 12.88 acres of serpentine for BCB
FY1516	Mitigation Only-3	Caltrans - Truck Climbing Lane Segment D	public	4/7/2016	\$ 266,171.13	13.44			CTS, CRLF, SJKF. Fees collected must be applied to Reserve System lands for these species. 14.64 acres Required (remaining 1.2 acres to be covered by Hecker Pass Project)

Table 26. Voluntary Contribution and Mitigation Only Projects

Year	Code	Project Name/Source	Type	Date	Revenue	Mitigation (Acres)			Notes
						Obligation	Fulfilled	Location	
FY1516	Mitigation Only-4	Caltrans - Watsonville Rd / Hecker Pass (152)	public	4/7/2016	\$ 683,251.80	34.5			CTS and CRLF
FY1516	Voluntary Contribution-8	Valley Christian Schools	private	9/9/2015	\$ 40,092.80				
FY1617	Mitigation Only-5	Uvas Creek Mitigation	public	7/28/2016	\$ 440,886.91	20.92			CFLF and LBV.Fees collected must be applied to Reserve System lands for these species. 20.92 acres
FY1617	Mitigation Only-6	San Jose Water Company/Calero Park Wetland Mitigation	public	7/20/2016	\$ 58,580.00	0.02	0.02	Calero Wetland	Creation/Restoration Fees collected to be applied to Wetland Creation and Maintenance, .02 acres
FY1617	Mitigation Only-7	Lower Silver Creek Trestle Removal	public	1/12/2017	\$ 882.00	140 lin ft stream impact			
FY1617	Voluntary Contribution-9	Valley Christian Schools	private	1/12/2017	\$ 40,092.80				
FY1718	n/a	n/a	n/a	n/a	n/a	n/a			
FY1819	n/a	n/a	n/a	n/a	n/a	n/a			
FY1415	Projects		8		\$ 724,058.90				
FY1516	Projects		4		\$ 496,628.70				
FY1617	Projects		4		\$ 540,441.71				
FY1718	Projects		0		\$ -				
FY1819	Projects		0		\$ -				

Table 26. Voluntary Contribution and Mitigation Only Projects

Year	Code	Project Name/Source	Type	Date	Revenue	Mitigation (Acres)			Notes
						Obligation	Fulfilled	Location	
FY1920	Mitigation Only-8	Ceanothus Mitigation P G &E	public	5/1/2020	\$ 15,985.81				PG&E & HA coordinated to purchase the Davidson Reserve which has coyote ceanothus occcurences
FY1920	Voluntary Contribution-10	WBO Fee CMH 2018	public	6/1/2020	\$ 122,220.00				
FY1920	Voluntary Contribution-11	WBO Fee CMH 2019	public	6/1/2020	\$ 81,074.00				
FY1920	Voluntary Contribution-12	WBO Fee CMH 2020	public	6/1/2020	\$ 29,057.00				
Total			16		\$ 2,009,466.12				

Table 27. Grants Awarded for Implementation of Santa Clara Valley Habitat Plan

Funding Source	Year	Agency	Purpose	Amount	Awarded to	Habitat Agency Match	Amount Expended	Remaining	Grant Close Date
CVPCP/HRP	2014	USBR & USFWS	Acquisition: Coyote Ridge	\$ 1,000,000	SCVOSA		\$1,000,000	\$0	Oct 2015
CVPCP/HRP	2017	USBR & USFWS	Acquisition: Richmond Ranch	\$ 1,000,000	SCVHA		Returned	\$0	
CVPCP/HRP	2017	USBR & USFWS	Restoration: Coyote Ridge	\$ 839,382	SCVOSA	\$118,000		\$839,382	
D3 Safe, Clean Water Program to Restore Wildlife Habitat	2018	SCVWD	Restoration: Pacheco Creek Reserve	\$ 500,000	SCVHA	included in NCCP LAG/ Prop 68 match		\$500,000	March 2024
D7 Safe, Clean Water Program	2018	SCVWD	Land Acquisition	\$ 8,000,000	SCVHA			\$8,000,000	
Gordon and Betty Moore Foundation	2014	Gordon and Betty Moore Foundation	Acquisition: Coyote Ridge	\$ 1,000,000	SCVOSA		\$1,000,000	\$0	Oct 2015
NCCP Local Assistance	2013	CDFW	Research: Corridor	\$ 26,800	SCVOSA		\$26,800	\$0	March 2016
NCCP Local Assistance	2013	CDFW	Research: BUOW	\$ 38,401	SCVAS		\$38,401	\$0	March 2016
NCCP Local Assistance	2013	CDFW	Research: Corridor	\$ 75,000	UCSC		\$75,000	\$0	March 2016
NCCP Local Assistance	2014	CDFW	Research: Sycamore	\$ 93,965	SFEI	\$4,698	\$93,965	\$0	March 2017
NCCP Local Assistance	2014	CDFW	Research: Grazing	\$ 85,126	SCVHA	\$8,513	\$85,126	\$0	March 2017
NCCP Local Assistance	2015	CDFW	Research: BUOW	\$ 68,840	SFBBO	\$20,000	\$68,840	\$0	March 2018
NCCP Local Assistance	2015	CDFW	Research: Hydroperiod	\$ 99,957	GCRCD	\$12,500	\$99,957	\$0	March 2018
NCCP Local Assistance	2015	CDFW	Research: Phytophthora	\$ 85,755	SCVHA		\$85,755	\$0	March 2018
NCCP Local Assistance	2016	CDFW	Research: Corridor	\$ 75,440	SCVOSA		\$75,440	\$0	March 2019
NCCP Local Assistance	2016	CDFW	Research: N-Dep	\$ 80,000	SCVHA	\$10,000	\$80,000	\$0	March 2019
NCCP Local Assistance	2016	CDFW	Research: TRBL	\$ 20,556	Talon	\$20,556	\$20,556	\$0	March 2019

Table 27. Grants Awarded for Implementation of Santa Clara Valley Habitat Plan

Funding Source	Year	Agency	Purpose	Amount	Awarded to	Habitat Agency Match	Amount Expended	Remaining	Grant Close Date
NCCP Local Assistance	2017	CDFW	Research: Corridor	\$ 30,450	SCVHA	\$15,000		\$30,450	March 2020
NCCP Local Assistance	2017	CDFW	Research: Sycamore	\$ 76,093	SCVHA	\$13,200		\$76,093	March 2020
NCCP Local Assistance	2018	CDFW	Research: Smooth Lessingia	\$ 48,640	SCVHA	\$7,500		\$48,640	March 2021
NCCP Local Assistance	2018	CDFW	Research: CV Herps	\$ 78,948	SCVOSA			\$78,948	March 2021
NCCP Local Assistance	2018	CDFW	Training: Hydroperiod	\$ 50,000	GCRCD	\$5,670		\$50,000	March 2021
NCCP Local Assistance/ Prop 68	2018	CDFW	Restoration: Pacheco Creek Reserve	\$ 143,010	SCVHA	\$996,990		\$143,010	March 2022
Resource Legacy Fund	2014	Resource Legacy Fund	Acquisition: Coyote Ridge	\$ 500,000	SCVOSA		\$500,000	\$0	Oct 2015
Section 6	2014	USFWS	Acquisition: Coyote Ridge	\$ 2,000,000	SCVOSA		\$2,000,000	\$0	Oct 2015
Section 6	2016	USFWS	Acquisition	\$ 2,000,000	SCVHA		\$0	\$2,000,000	
Section 6	2018	USFWS	Acquisition	\$ 2,000,000	SCVHA		\$0	\$2,000,000	
State Coastal Conservancy	2014	State Coastal Conservancy	Acquisition: Coyote Ridge	\$ 1,000,000	SCVOSA		\$1,000,000	\$0	Oct 2015
State Parks Recreational Trails Program	2014	CDPR	Acquisition: Coyote Ridge	\$ 400,000	SCVOSA		\$400,000	\$0	Oct 2015
Wildlife Conservation Board	2015	Wildlife Conservation Board	Acquisition: Coyote Ridge	\$ 2,700,000	SCVOSA		\$2,700,000	\$0	Oct 2015
Total				\$ 24,116,363					

Summary	FY14	FY15	FY16	FY17	FY18	FY19	Total
Number of Grants	3	9	4	5	3	6	30
Federal	\$ -	\$ 3,000,000	\$ 2,000,000	\$ 1,839,382	\$ 2,000,000	\$ -	\$ 8,839,382
State	\$ 140,201	\$ 4,279,091	\$ 254,552	\$ 175,996	\$ 106,543	\$ 320,598	\$ 5,276,981
Local	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,500,000	\$ 8,500,000
Private	\$ -	\$ 1,500,000	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000
Total	\$ 140,201	\$ 8,779,091	\$ 2,254,552	\$ 2,015,378	\$ 2,106,543	\$ 8,820,598	\$ 24,116,363

Chapter 11

Program Administration

This chapter highlights additional program advancements and noteworthy changes during the FY1920 reporting period. This period focused on continued advocacy and outreach to state and federal governments and participation in the National and California HCP coalitions. The Habitat Agency also continued their 5-year funding assessment and continued working toward the establishment of an In-Lieu-Fee Program for the Regional General Permit from the USACE.

11.1 Other Activities

11.2 New Staff

The Habitat Agency hired three new staff members in the FY1920 reporting year. Julie King was hired full-time as the Agency's first Principal Land Management Specialist; Will Spangler was hired full-time as the Agency's first Senior Conservation Biologist; and Kim Rook was hired part-time as a conservation planner.

11.3 Endowment

The Habitat Agency selected the Silicon Valley Community Foundation as its endowment holder and set up a 501 (c)(3), Friends of the Silicon Valley Community Foundation, to own the mitigation fund, during the FY1617 reporting year. In the FY1718 reporting year, the Friends of the Silicon Valley Community Foundation received tax exempt status, which allowed the Habitat Agency to invest their first payment with this group during this reporting year.

The Habitat Agency initiated their 5-year funding assessment during the FY1819 reporting year. Funding provided by interest on the endowment is expected to fully fund post-permit costs. Any shortfalls in the endowment during the permit term will be identified by the funding assessment. The funding assessment began in 2019. If the endowment is not growing fast enough to reach its target size, then the endowment fee portion of the development fees will be increased to make up the shortfall.

11.4 Regional General Permit

On January 15, 2016, the USACE, San Francisco District, issued a Regional General Permit (RGP) to the City of San José, City of Morgan Hill, City of Gilroy, County of Santa Clara, SCVWD, VTA, and the Santa Clara Valley Habitat Agency, for impacts on waters of the U.S. associated with many projects and activities covered by the Habitat Plan.

This 5-year permit provides a framework for integrating and streamlining waters permitting under Section 404 of the Clean Water Act with the endangered species permitting already in place under

the Habitat Plan. The RGP covers 17 categories of activities, setting thresholds for impacts that range from less than 0.1 acre to 0.5 acre and providing an expedited process for reviewing and processing project-specific waters permits. The RGP represents a major milestone in the implementation of the Habitat Plan. The RGP will help to ensure consistent and streamlined waters permitting for projects covered by the Habitat Plan that have impacts on waters of the U.S. This RGP is only the second issued in the United States associated with an approved HCP (the first was in East Contra Costa County).

Key RGP Accomplishments in the reporting period are as follows.

- Two public project applications were approved for expedited 404 coverage in the reporting period.
- The Agency continued to work on establishing an In-Lieu Fee Program to support the RGP as described below under *Permit Integration*.
- The fourth RGP Annual Report was submitted to USACE.

Cumulative Scenario

- Mitigation Restoration sites have generated a few acres of wetland mitigation credit and several thousand feet of stream restoration credit. The exact figures are currently being allocated into different categories of aquatic resource types and levels of restoration, enhancement or creation. It is anticipated that a final ledger that references all available 404 credits for the Habitat Agency will be completed in 2021 and will be included in a future Annual Report.
- The Calero County Park Pond and Wetland Restoration Project and the San Felipe Creek Restoration Project have resulted in wetland restoration credits. Stream credits are limited to the San Felipe Creek Restoration Project.

11.4.1 Permit Integration

The Habitat Agency is pursuing the establishment of an In-Lieu-Fee (ILF) program to support the Habitat Plan mitigation program and other wetland mitigation needs. In January 2018, following the preparation and public review of Draft ILF Prospectus, the Corps provided guidance to the Habitat Agency to commence development of the enabling instrument for the ILF program.

On April 30, 2019, the Habitat Agency submitted the Draft Enabling Instrument to the Interagency Review Team (IRT). By July 24, 2019, the Corps provided responses to the Draft ILF Enabling Instrument review and the ILF was placed on the IRT agenda for October 15, 2019. At the IRT meeting, the team discussed a credit release schedule, crediting factors and mitigation project proposal review process. On May 4, 2020, the Habitat Agency provided the Corps with an updated Draft Enabling Instrument and responses to comments from the IRT. Based on the extensive comments received by the IRT after a round of revisions to the Instrument, the Habitat Agency also provided a brown bag presentation to familiarize the IRT members with the Habitat Agency and its conservation strategy. By June 9, 2020, the Corps' informed the Habitat Agency that the ILF Draft Instrument is complete and shared it, with responses to comments with the IRT. For the remainder of 2020, the Habitat Agency met periodically with the IRT members to flush out all comments and reach consensus on the ILF Program implementation.

Many of the concerns of the Corps and other IRT members have been addressed through the series of meetings in late 2020 and early 2021. Remaining issues to be resolved include consensus on the

Conservation Easement template, changes to accommodate the RWQCB, who, in late 2020 revealed that they would now like to be signatories to the final ILF Instrument and crediting for past and future mitigation sites.

11.5 Interpretation and Clarification Memos

There were no new interpretation and clarification memorandum during the FY1920 reporting year.

11.6 Modifications to the Habitat Plan

There were no modifications to the Habitat Plan during the FY1920 reporting year.

11.7 Policies

There were no new policies to the Habitat Plan during the FY1920 reporting year.

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Appendix A
**Guidance for Plant Pathogen Prevention when
working at Contaminated Restoration Sites or
Sites with Rare Plants and Sensitive Habitat**

Guidance for plant pathogen prevention when working at contaminated restoration sites or sites with rare plants and sensitive habitat

Why follow this guidance? Many plant pathogens, including *Phytophthora* species may be spread by movement of infested soil or plant debris. To help maintain healthy native plant habitat, it is critical to prevent pathogen spread within contaminated (infested) sites and into noninfested sites. Within many contaminated sites, pathogens are not distributed throughout the entire site, so preventing further spread can keep a bad situation from becoming worse. The following measures are designed to minimize the risk of spreading soil-borne plant pathogens in the process of working at contaminated restoration sites, noninfested sensitive habitats, or areas containing or adjacent to rare plant populations.

Definitions

A **contaminated or infested site** is defined as a site that has been tested and confirmed to contain an infestation of *Phytophthora* spp., or a site that is suspected to be contaminated (due to proximity to a contaminated site or from being located directly downstream or downslope of a contaminated site).

A **sensitive site** contains rare or endangered plants or vegetation communities, or is located adjacent to pristine or high-quality wildland habitat. A sensitive site is often designated by a qualified biologist prior to project construction.

1. General protocols

1.1. Cleaning and sanitation required before entering either sensitive or contaminated sites to prevent introduction of contamination from other locations

Phytophthora contamination may be present in agricultural and landscaped areas, on nursery stock, and in some infested native or restored habitat areas. Contamination can be spread via soil, plant material and debris, and water from infested areas. Arriving at the site with clean vehicles, equipment, tools, footwear, and clothes helps prevent unintentional contamination of the site from outside sources. Continual vigilance is needed, even if a site is contaminated with one or more species of *Phytophthora* because introducing additional pathogens can make a bad situation worse.

1.2. Cleaning and sanitation required when leaving a contaminated site to prevent pathogen spread to other locations

The risk of acquiring and spreading *Phytophthora* contamination is much greater when work occurs in areas known to be infested with these pathogens. When leaving contaminated sites, equipment, vehicles, footwear, and clothing should be cleaned to prevent pathogen movement to other sites.

2. Cleaning vehicles, equipment, and tools

- 2.1. Before arrival at the site, equipment, vehicles and tools must be free of soil including debris on tires, wheel wells, vehicle undercarriages, and other surfaces. A high pressure washer and/or compressed air may be used to ensure that soil and debris are completely removed.

- 2.2. Vehicles may be cleaned at a commercial vehicle or appropriate truck washing facility. Vehicles that only travel and park on paved public roads do not require external cleaning.
- 2.3. The interior of vehicles and equipment (cabs, etc.) must be free of mud, soil, gravel and other debris (vacuumed, swept or washed).
- 2.4. Small tools and equipment must be washed to be free of soil or other contamination and sanitized as described in section 5.

3. Cleaning footwear and clothes

- 3.1. Soles and uppers of footwear must be free of debris and soil before arriving at the site. Clean and sanitize footwear as described in section 5.
- 3.2. At the start of work at each new job site, worker clothes should be free of all mud or soil. If clothes are not freshly laundered, remove all debris and adhered soil with a stiff brush.

4. Preventing potential spread of contamination to or within sites

In a partially infested site, the potential for *Phytophthora* to spread within the site needs to be addressed. It is not practical to identify every portion of a site that contains or is free of *Phytophthora*. Because *Phytophthora* contamination is not visible, work practices should minimize unnecessary movement of soil within locations to prevent potential pathogen spread.

Specific portions of a site may be designated as having high or low risk of contamination. Areas with higher risk of contamination include areas adjacent to planted landscaping, areas previously planted with *Phytophthora*-infected stock, areas with existing or recently removed woody vegetation, and riparian areas. Areas with low risk of contamination include upland sites with only grassy vegetation or sites where surface soils have been removed.

4.1. Worker training and site access

- 4.1.1. Before entering the job site, field workers should receive training that includes information on *Phytophthora* diseases and how to prevent the spread of these and other soil-borne pathogens by following approved phytosanitary procedures.
- 4.1.2. Do not bring more vehicles into work sites than absolutely necessary. Within the site, keep vehicles on surfaced or graveled roads whenever possible to minimize soil movement.
- 4.1.3. Travel off roads or on unsurfaced roads should be avoided when such roads are wet enough that soil will stick to vehicle tires and undercarriages. In intermittently wet areas, avoid visits when roads are wet; schedule activities during dry conditions when the risk of moving wet soil is minimal.
- 4.1.4. To minimize the amount of time needed to decontaminate equipment, tools, gloves, and shoes, avoid working at sites under wet conditions or when soils are saturated.

4.2. Minimize unnecessary movement of soil and plant material within the site, especially from higher to lower risk areas

- 4.2.1. Plan work to minimize movement between areas with high and low risk of contamination. Where possible, complete work in low risk areas before moving to higher risk areas. Alternatively, restrict personnel to working in either high or low risk areas exclusively to reduce the need for decontamination.

- 4.2.2. Clean soil and plant debris from equipment and sanitize hand tools, buckets, gloves, and footwear when moving from higher risk to lower risk areas or when moving between widely separated portions of a site.

5. Procedures for sanitizing tools, surfaces, and footwear

Surfaces and tools should be clean and sanitized before use. Wood handles on tools should be sealed with a waterproof coating to make them easier to sanitize.

Before sanitizing, remove all soil and organic material (roots, sap, etc.) from the surface. If necessary, use a detergent solution and brush to scrub off surface contaminants. The sanitizing agent may also be used as a cleaning fluid. Screwdrivers or similar implements may be needed to clean soil out of crevices or shoe treads. Brushes and other implements used to help remove soil need to be cleaned and sanitized after use.

After surface soil and contamination are removed, treat the surface with one of the following sanitizing agents, allowing the appropriate contact time before use or rinsing. If surfaces are clean and dry, wet surfaces thoroughly and allow for the appropriate contact time. If the sanitizer has been used to help clean the surface, use fresh sanitizer to rinse off any dirty solution and again allow the required contact time. If treated surfaces are wetted with water, the sanitizing solution will become diluted. Apply enough sanitizer to completely displace the water film and then allow the required contact time. Sanitizing agents may be applied by using spray bottles and applied to thoroughly wet the surface. Observe all appropriate safety precautions to prevent contact with eyes or skin when using these agents.

Sanitizing agents

- 70-90% ethyl or isopropyl alcohol - spray to thoroughly wet the surface and allow to air dry before use
- freshly diluted bleach solution (0.525% sodium hypochlorite, Table 1) for a minimum of 1 minute (due to corrosivity, not advised for steel or other materials damaged by bleach)
- 2000 ppm quaternary ammonium disinfectant for 1 min (or according to manufacturer recommendations) - freshly made or tested to ensure target concentrations

Table 1. Dilutions of commonly available bleach products needed to obtain approximately 0.525% sodium hypochlorite concentrations (5000 ppm available chlorine).

Percent sodium hypochlorite in bleach	Parts bleach	Parts water	Diluted bleach percent sodium hypochlorite
5.25%	1	9	0.525%
6.0%	1	10.4	0.526%
8.25%	1	14.6	0.529%
8.3%	1	14.8	0.525%

For example, adding 100 ml of 5.25% bleach to 900 ml of water will make 1000 ml of 0.525% NaOCl solution. If using 8.3% bleach, add 100 ml of bleach to 1480 ml of water to make 1490 ml of 0.525% NaOCl.