

**SANTA CLARA VALLEY HABITAT PLAN
5TH ANNUAL REPORT
FY2018–2019**

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Acronyms and Abbreviations

°C	Celsius
Balance	Balance Hydrologics
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CAZ	Conservation Analysis Zone
CDFW	California Department of Fish and Wildlife
CE	Conservation Easement
CNDDDB	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
County Parks	County of Santa Clara Parks and Recreation Department
Creekside Science	Creekside Center for Earth Observation
CROSP	Coyote Ridge Open Space Preserve
Friends	Friends of the Santa Clara Valley Habitat Agency
FY1819	Fiscal Year 2018–2019
GIS	geographic information system
Habitat Agency	Santa Clara Valley Habitat Agency
Habitat Plan	Santa Clara Valley Habitat Plan
HCP	Habitat Conservation Plan
HGM	Hydrogeomorphic Model
HWB	Hydroperiod Water Balance
LAG	Local Assistance Grant
lbs	pounds
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 San Francisco Bay National Wildlife Refuge
RGP	Regional General Permit
San Felipe Project	San Felipe Creek Restoration Project
SCVWD	Santa Clara Valley Water District
SJ-SCRWF	San José-Santa Clara Regional Wastewater Facility
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	Don Edwards San Francisco Bay National Wildlife Refuge Warm Springs
Wildlife Agencies	U.S. Fish and Wildlife Service and California Department of Fish and Wildlife

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Executive Summary

This is the fifth 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, 2018, through June 30, 2019) and cumulatively through permit term year 6 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.

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

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 6 of the 50-year permit term, or 12% 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.

avoidance, minimization, and compensation (i.e., conservation) for impacts on covered species and natural communities.

During the reporting period, 63 projects received coverage under the Habitat Plan: 40 private projects, 21 public projects, and 2 Participating Special Entity (PSE) projects (**Figure ES-1**). The covered projects consisted of 38 urban development projects, 5 in-stream operations and maintenance activities, 4 in-stream capital projects, 9 rural operations and maintenance projects, 5 rural development projects, 1 rural capital project and 1 conservation strategy implementation project.

The 63 projects resulted in 256 acres of permanent impacts and 27 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— Uvas, Guadalupe, and Pajaro. During the reporting period, five individual coyote ceanothus plants were removed.

A total of 289 projects have received take coverage under the Habitat Plan since permit issuance (**Figure ES-2** and **Figure ES-3**). Cumulative land cover impacts total 2,114 acres of permanent, 311 acres of temporary, and 218 feet of permanent and 812 feet of temporary impacts on streams (**Figure ES-3**). Of the 289 projects, 168 were private, 103 were public, and 18 were PSE projects. Covered activity types include 163 urban development projects, 14 in-stream operations and maintenance activities, 12 in-stream capital projects, 39 rural operations and maintenance projects, 34 rural development projects, 17 rural capital projects, and 10 conservation strategy implementation projects.

Project impacts have largely occurred in urban and agricultural areas, 43% and 37% respectively, with only 20% 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 1,867 acres with over 5% of the conservation target being achieved (**Figure ES-4**)². An additional 920 acres are under management agreements for western burrowing owl. The Reserve System includes 14 land cover types and nearly 14 miles of stream. Rare serpentine bunchgrass grassland is the most prevalent (1,237 acres). The Reserve System fulfills over 30% 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

² The Pacheco Creek Reserve is owned in fee title by the Habitat Agency. A portion of the reserve, 21 acres, fulfills a Caltrans mitigation requirement. Reserve System enrollment will occur when a conservation easement, anticipated in 2020, is placed over the property. For annual reporting purposes, it is accounted as a Reserve System property and included in the total Reserve System size. It is not included in the Stay-Ahead compliance calculations or the conservation target identified in Figure ES-4. The 21-acre Caltrans mitigation area is also excluded from these calculations and does not contribute to Habitat Plan requirements.

protected. The Reserve System contributes to the protection of four landscape linkages, two on the Coyote Ridge Open Space Preserve (CROSP; #6, #7) and two on the Pacheco Creek Reserve (#15 and #17).

No new land was acquired by the Habitat Agency during the reporting year. However, negotiations with multiple landowners have progressed well, and purchase agreements have been drafted for five new properties, which will be acquired before the end of Fiscal Year 2019–2020 (FY1920).

Habitat Restoration and Creation

No new restoration projects were initiated in Fiscal Year 2018–2019 (FY1819). 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 Alamos, 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 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 sixth annual breeding season survey, South Bay burrowing owl breeding locations decreased from five to four and the number of owls decreased from 52 to 33 adults between 2018 and 2019. Although the total number of adult owls decreased, the average number of offspring per pair remained relatively stable, with 3.24 offspring per pair in 2018 to 3.29 offspring per pair in 2019. The stable offspring rate is partly attributed to supplemental feeding.

In addition to the annual breeding season surveys described above, the Habitat Agency conducted point-count and call-broadcast surveys for burrowing owls in northern San Benito and southern Santa Clara County during the height of the 2019 breeding season (Menzel and Trulio 2019). The continued population decline triggered implementation of Tier 3 recovery actions in 2019. 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.

From June 6–23, researchers captured and retained 14 juvenile owls (12–25 days old) from Shoreline Regional Wildlife Area (2), NASA Ames Research Center (2), and SJ-SCRWF (10) and moved them into a captive-rearing facility hosted by the Peninsula Humane Society (PHS) in Burlingame. Except for one juvenile that died in August due to poor nutritional condition, all captive owls were healthy at the end of 2019 and are scheduled to be “soft” released into protected sites in March 2020.

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, road maintenance and fencing 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 approval of a grazing agreement with a neighboring rancher, installation of cattle fencing around restoration sites, trash removal and maintenance of the solar well pump and irrigation system.

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 2019 was approximately 300,000 individuals, which is the highest abundance recorded in the last five years. The 2019 larval population increase indicates a good weather year, primarily a cool spring in 2018 that extended the host plant growing season. The mostly cool spring of 2019 may indicate another good larva year in 2020.
- The middle portion of the CROSP had the highest habitat quality for the Bay checkerspot butterfly in 2019 although the northern portion of the reserve continues to have the highest densities of Bay checkerspot butterfly larvae. The middle portion stood out as having the highest cover of the Bay checkerspot butterfly’s primary larval host plant dwarf plantain, as well as annual forbs. It also had that highest cover of owl’s clover and the lowest annual grass cover, and subsequently nonnative cover.
- The northern portion of the CROSP had the highest larval densities and Bay checkerspot butterfly adult population, illustrating that vegetative composition parameters are not tightly

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

correlated with Bay checkerspot butterfly trends, but more closely indicate approach toward habitat thresholds. The northern portion of the CROSP had the highest cover of owl's clover, perennial forbs and native cover, however it also had the highest cover of nonnative annual grass and thatch and the lowest cover of dwarf plantain (Creekside Center for Earth Observations 2019).

- The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat. Bay checkerspot host plants and nectar sources were mostly stable, with some declines in dwarf plantain that remain within the range of historical variability seen throughout Coyote Ridge. There was a notable increase in owl's clover at the northern and middle portions of the CROSP. 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. High owl's clover is a predictor for high numbers the next year (Creekside Center for Earth Observations 2019).

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 six research projects.

- Wintering Burrowing Owl Monitoring
- Coyote Valley Bobcat and Gray Fox Connectivity Study: Wildlife Vehicle Collision Analysis
- Santa Clara County Tricolored Blackbird Nesting and Foraging Monitoring Project
- Monitoring Nitrogen Deposition in Santa Clara County
- Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to Inform Infrastructure and Restoration
- California Sycamore Hybridization Study

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

- Establish Baseline of Smooth Lessingia using High-Resolution Multispectral Aerial Imagery
- Pacheco Creek Restoration Project
- Open-sourcing the Hydroperiod Water Balance (HWB) model to allow wider implementation of hydrologic investigations for climate adaptive land use practices; initial applications for public lands containing habitat for native frogs, salamanders, and turtles
- Coyote Valley Reptile and Amphibian Linkage Study

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
- Ponds
- Streams
- Western burrowing owl occupied nesting habitat^{5,6}
- Mount Hamilton thistle
- Santa Clara Valley dudleya
- Fragrant fritillary
- Loma Prieta hoita
- Smooth lessingia⁷
- Metcalf Canyon jewelflower
- Most beautiful jewelflower⁸
- Coyote ceanothus

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
- Chaparral northern coastal scrub
- Oak woodlands
- Riparian forest and scrub

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. 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.

⁶ The Habitat Agency has a total of 861.9 acres of occupied nesting habitat under management agreements. The occupied nesting habitat is present on Warm Spring Unit at Don Edwards National Wildlife Refuge and the Santa Clara-San José Regional Wastewater Treatment Facility Bufferlands.

⁷ 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.

⁸ *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.

- Western burrowing nesting habitat (rough proportionality)^{9,10}
- 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 are planned within six months of the close of the reporting year. Of these sites, four will contribute to compliance for annual grasslands and three would contribute to oak woodland compliance. Two will contribute to riparian forest and scrub, chaparral scrub and wetlands. Three will contribute to various serpentine land covers. Additionally, three of the planned acquisitions will protect extant plant occurrences of most beautiful jewelflower, smooth lessingia, Santa Clara Valley dudleya and Coyote ceanothus. 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. 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 Coyote Ridge Ponds Restoration Project on the CROSP, 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—a project timeline to achieve the 2,000-plant target size will be available during FY1920. 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. In addition, Valley Water has earmarked grant funding to acquire a Coyote ceanothus occurrence when a property becomes available. Two properties identified for acquisition in FY1920, the Baird Ranch and Davidson Ranch properties, share an occurrence of Coyote ceanothus and Valley Water may contribute funding toward one or both of them.

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.

⁹ 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—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.

¹⁰ 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*.

- **Non-covered species becoming listed.** The crotch bumble bee (*Bombas crotchii*) and western bumble bee (*Bombas occidentalis*) were listed as a candidate species under the California Species Act in June 2019.

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 FY1819 expenditures were \$3.9 million, 34% of what was estimated in the Habitat Plan. The reduced expenditures reflect the fact that no land purchases occurred during the reporting period and previous reporting period. The Habitat Agency's budget continues to focus on program administration, burrowing owl management, reserve management and 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 \$12.6 million in funds during the reporting period from fee and non-fee funding sources. Fee funding totaled approximately \$3.8 million (30% of total revenues) across private, public, and PSE projects. Non-fee funding totaled approximately \$8.8 million (70%). This includes funds from six grants.

Fees are adjusted on an annual basis using an automatic inflation adjustment. From FY1718 to FY1819, land cover, serpentine, and nitrogen deposition fees increased by 5.3%. Burrowing owl and wetland fees increased by 3.0%.

Program Administration

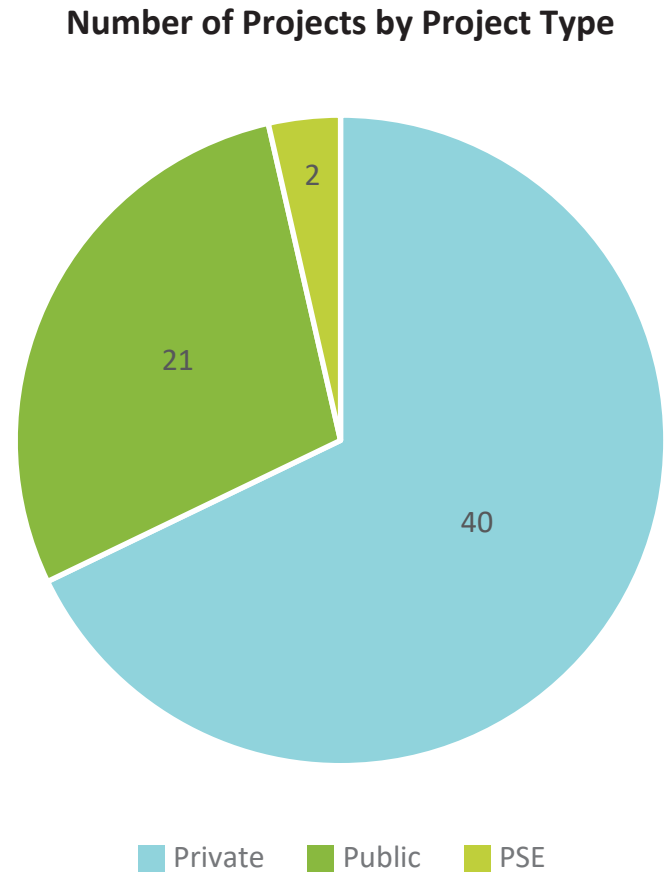
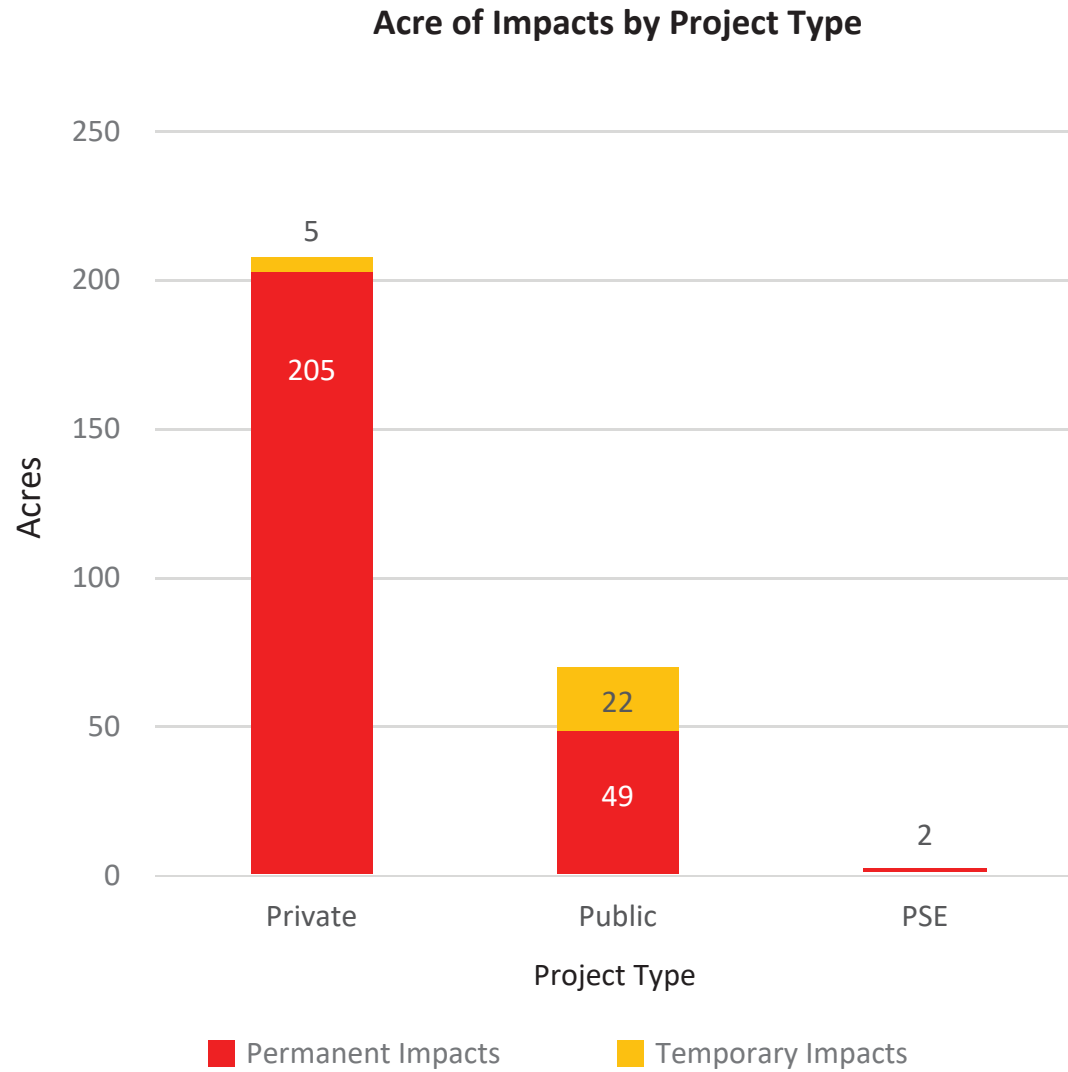
The Habitat Plan permits were issued in July 2013, and with the close of FY1819, the Habitat Agency neared 6 years of Habitat Plan implementation. This period focused on the advocacy and outreach, grants and funding, negotiations with landowners, monitoring of restoration projects, development of the in-lieu fee (ILF program) for the Habitat Agency's Regional General Permit, climate change, and other conservation efforts.

Major accomplishments include the following.

- **Endowment.** The Habitat Agency initiated their 5-year financial assessment, as required by the Habitat Plan, to ensure that the endowment fee portion of the development fees will be sufficient to fund post-permit costs.
- **Financial Audit.** The Habitat Agency hired the certified public accountant David Fransworth, CPA, to conduct a financial assessment for the FY1819 reporting year and believes that the audit evidence obtained during the course of the audit is sufficient and appropriate to provide a basis for their audit opinion. The Habitat Agency corrected all misstatements, which were not material, either individually or in the aggregate, to each opinion unit's financial statements taken as a whole.
- **Advocacy and Outreach.** The Habitat Agency continues to conduct legislative advocacy to ensure continued funding streams are still available for HCP/NCCP. The Habitat Agency also gives presentations to local groups to support public education and outreach.

- **Permit Integration.** The Habitat Agency developed 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 \$6.5 of the \$8 million dollars secured during the previous reporting year for land acquisition (which closed outside of the reporting year).
- **Policies.** The Habitat Agency developed a *Mitigation Only Policy* for projects or activities within the Habitat Plan area not covered by the Habitat Plan (non-covered project).
- **Other Conservation Efforts.** The Habitat Agency developed a draft climate change guidebook entitled *Climate Change Adaptation Approaches for Habitat Conservation Plans* (Jodi McGraw 2020) to identify adaptation, management, and resiliency principles from HCPs to help address climate change.

Figure ES-1. Covered Projects: Reporting Year



63 Projects
256 Acres permanent impacts
27 Acres temporary impacts

Figure ES-2. Covered Projects Impacts: Cumulative FY1314 through FY1819—Permit Year 6 of 50

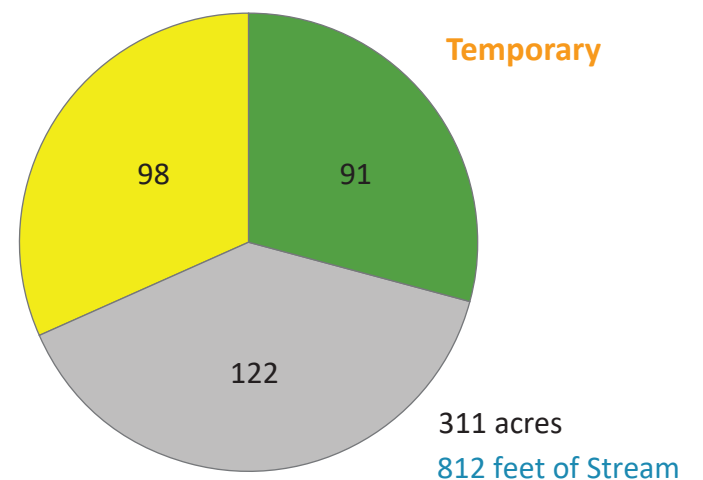
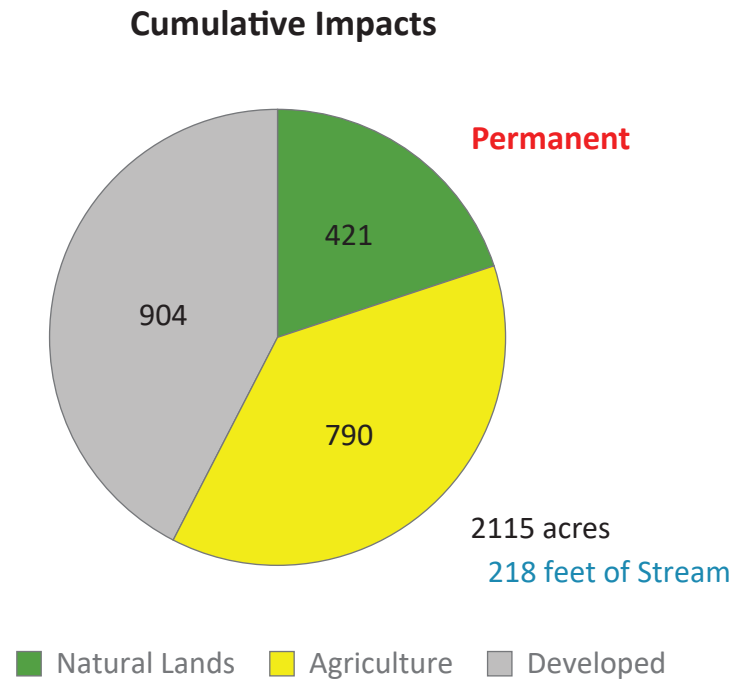
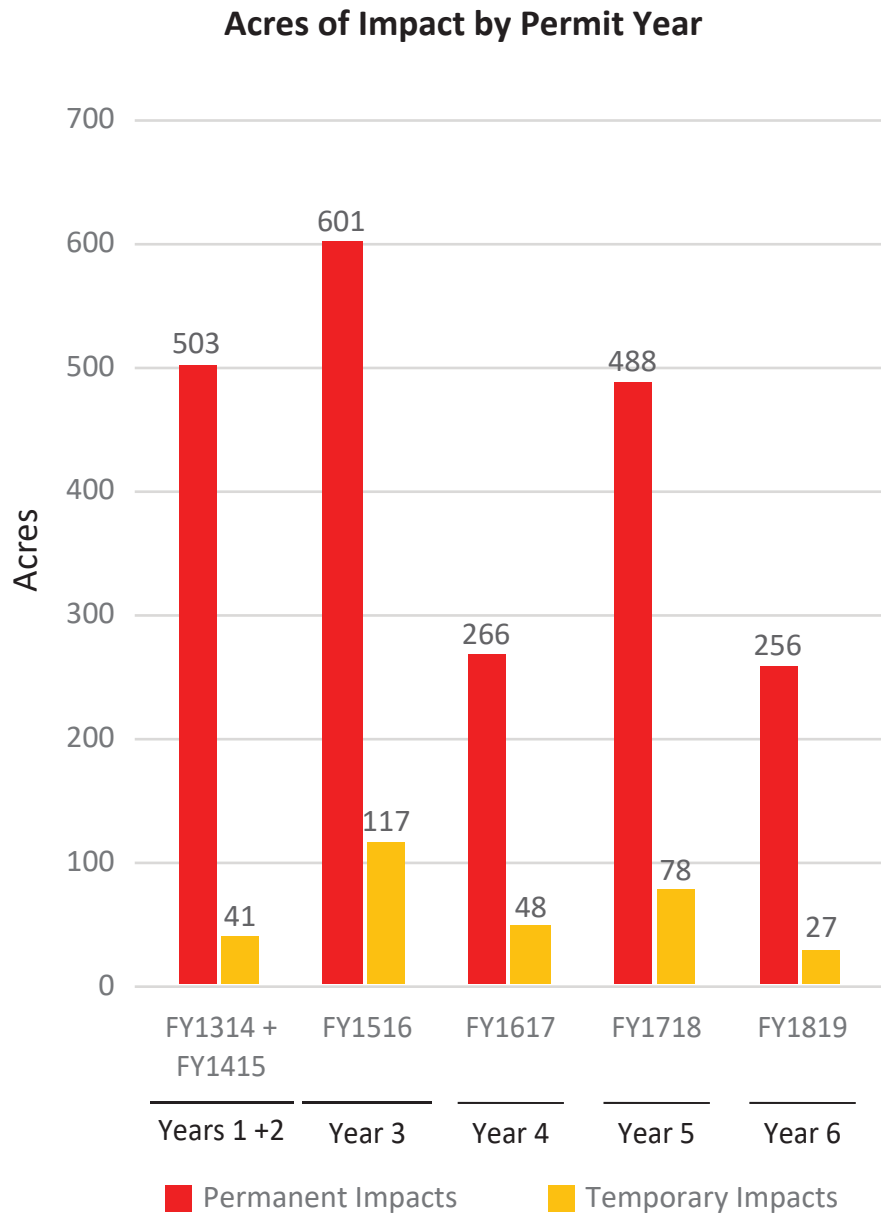
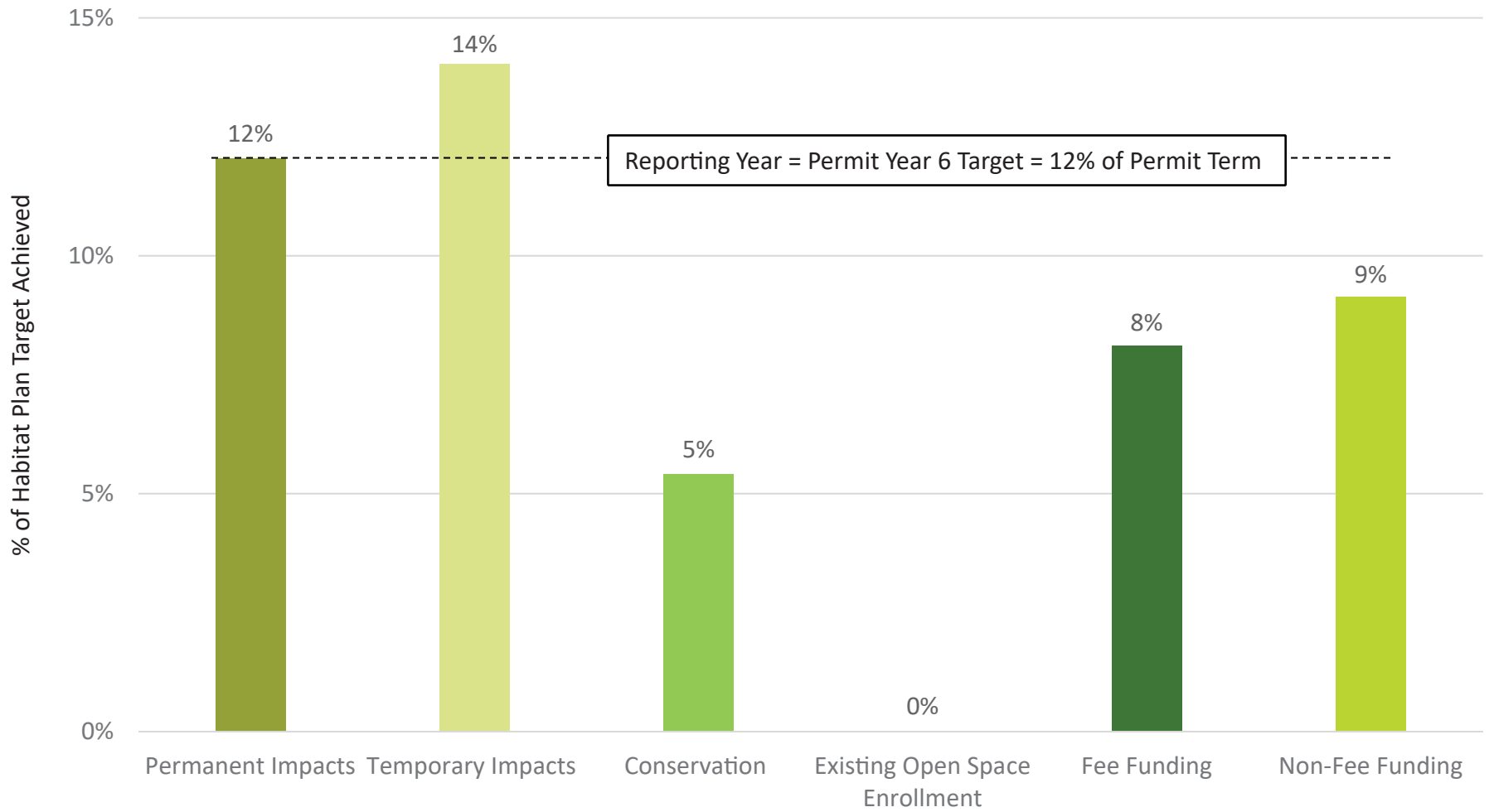


Figure ES-3. Covered Projects: Cumulative FY1314 through FY1819—Permit Year 6 of 50



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	2,114	311	1,784	0	\$30M	\$25M
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)

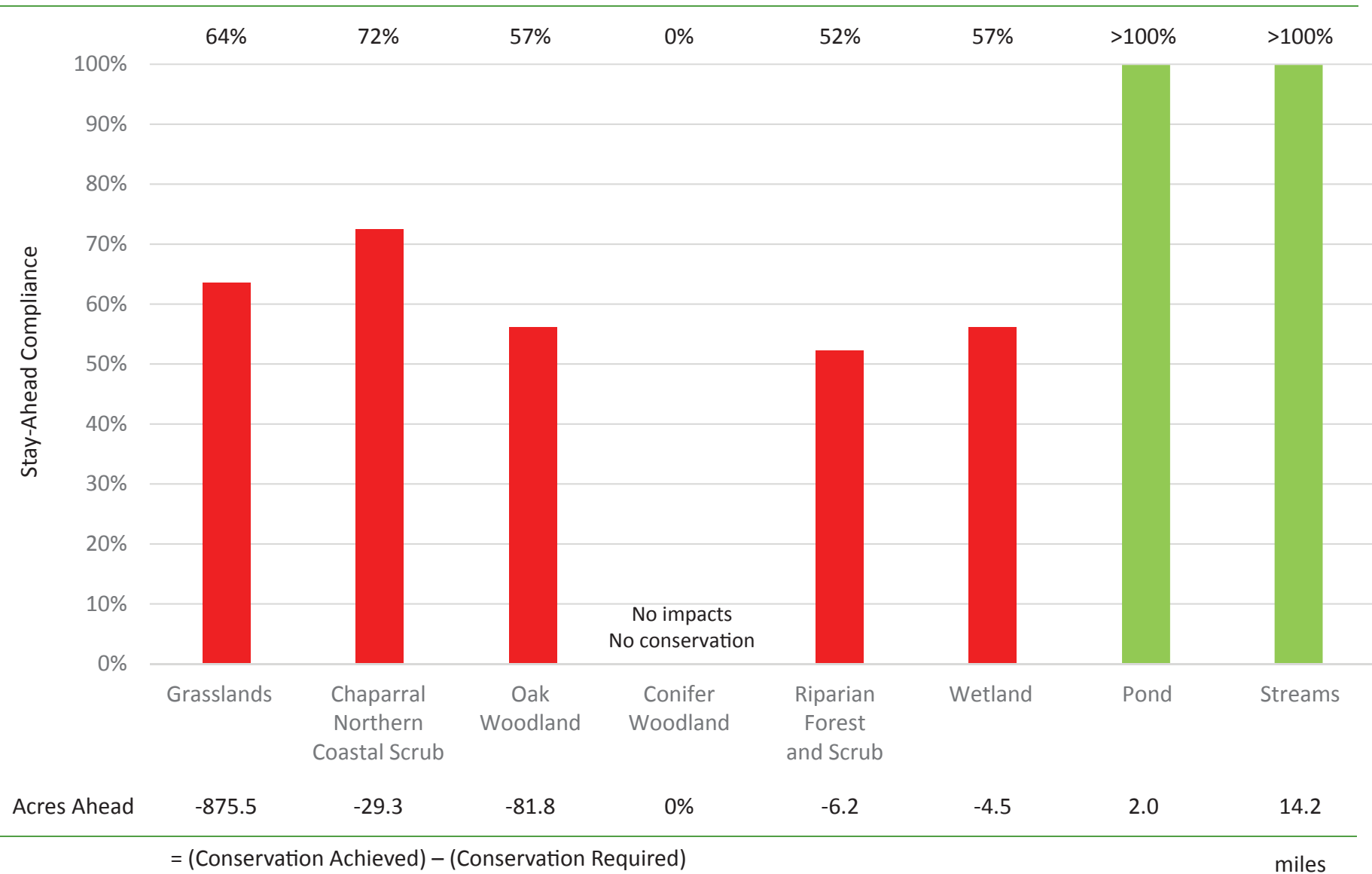
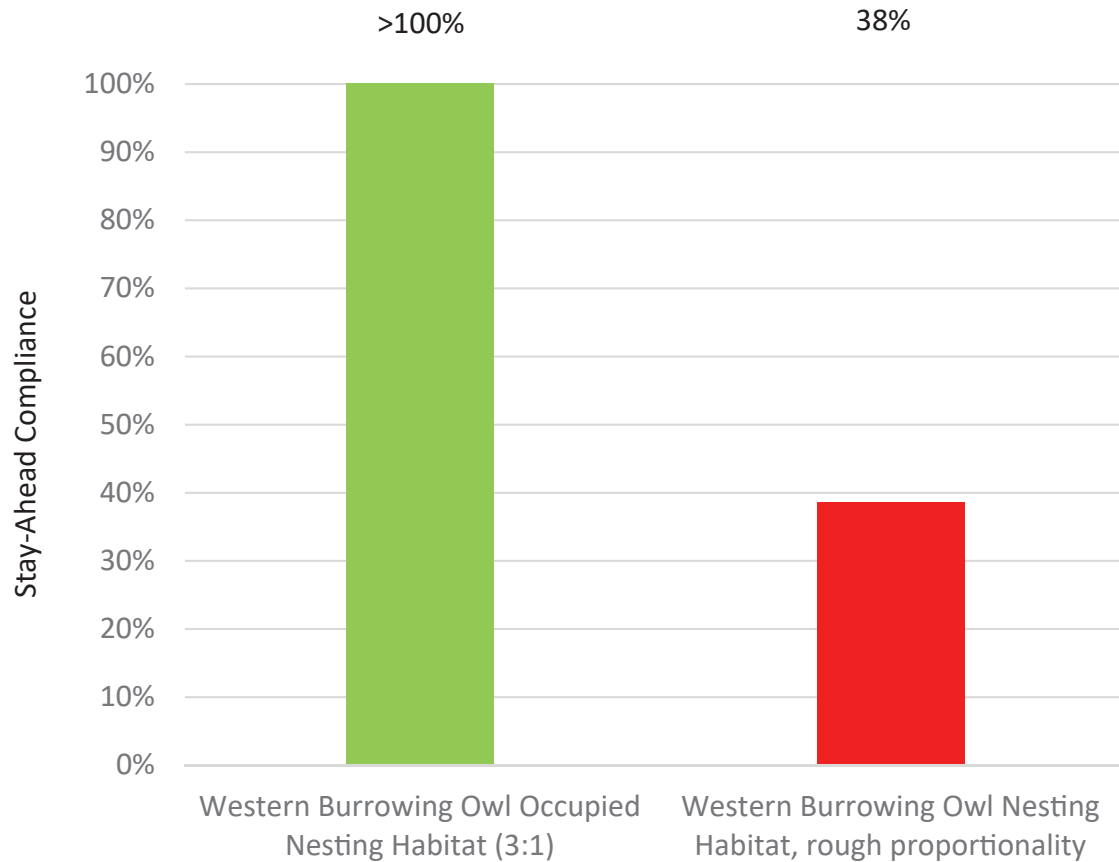


Figure ES-5b. Stay-Ahead Compliance for Western Burrowing Owl



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 510.8 -1,954.4

= (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)

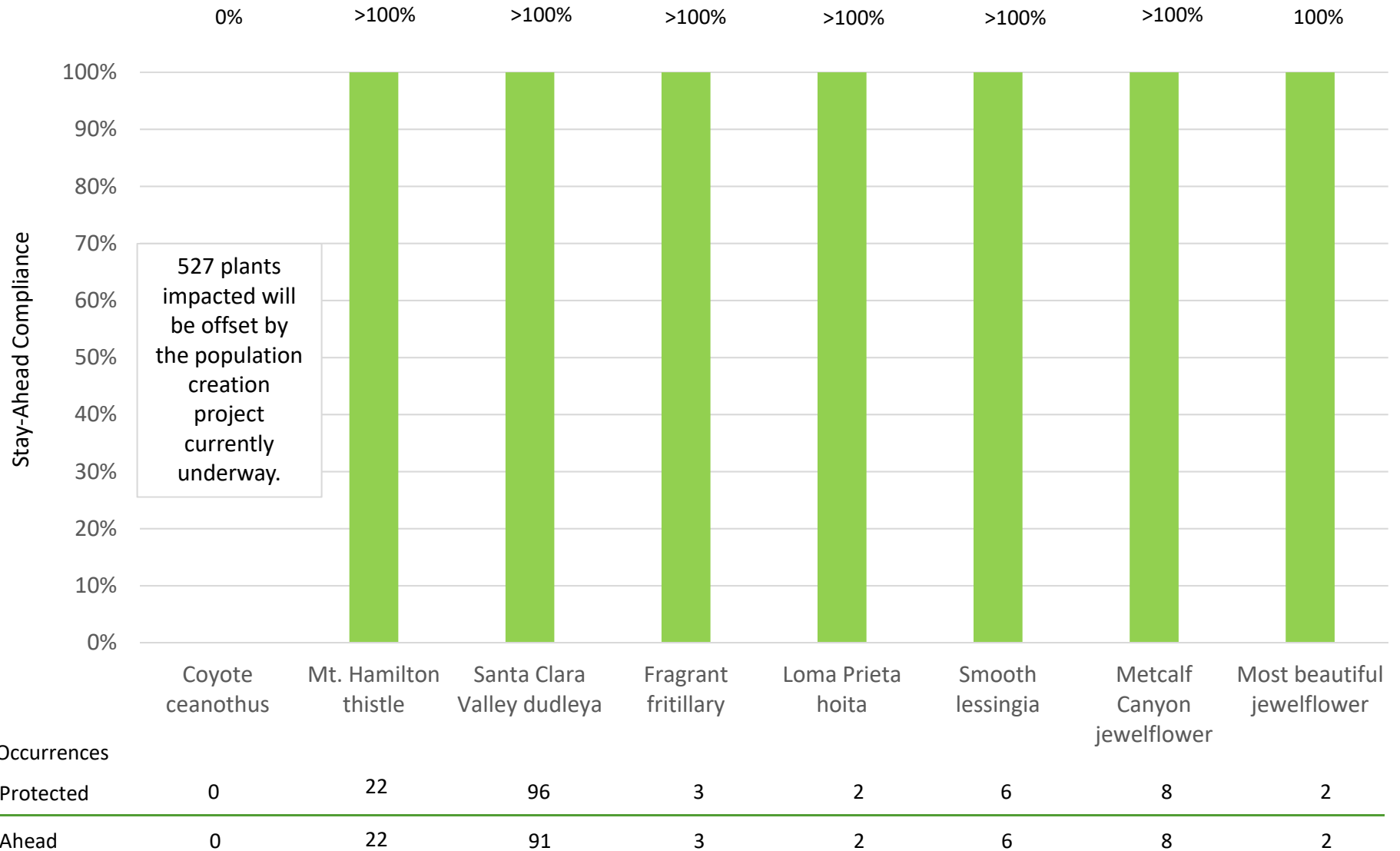


Figure ES-7. Revenue Summary by Reporting Year

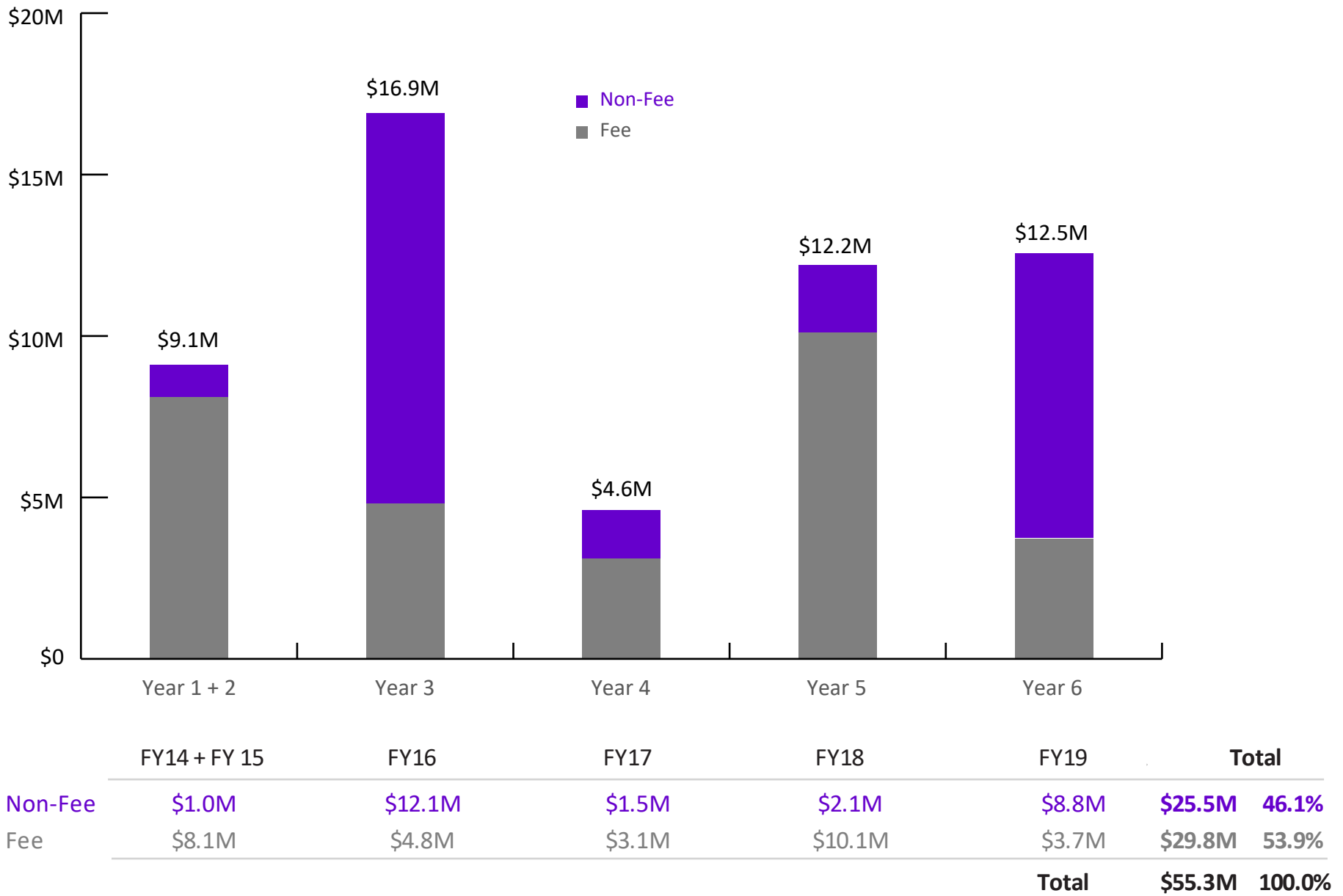
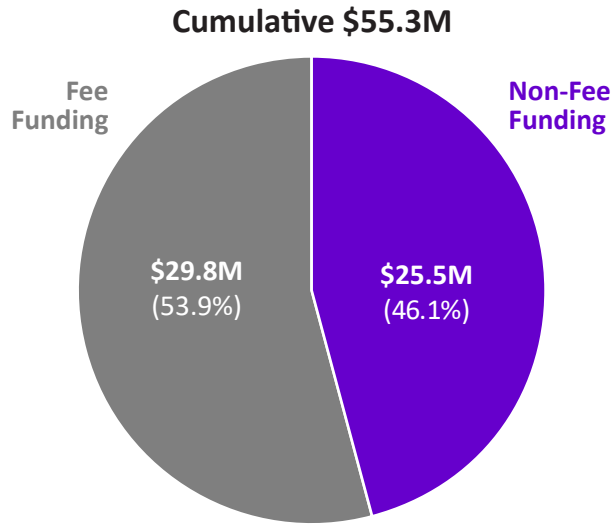
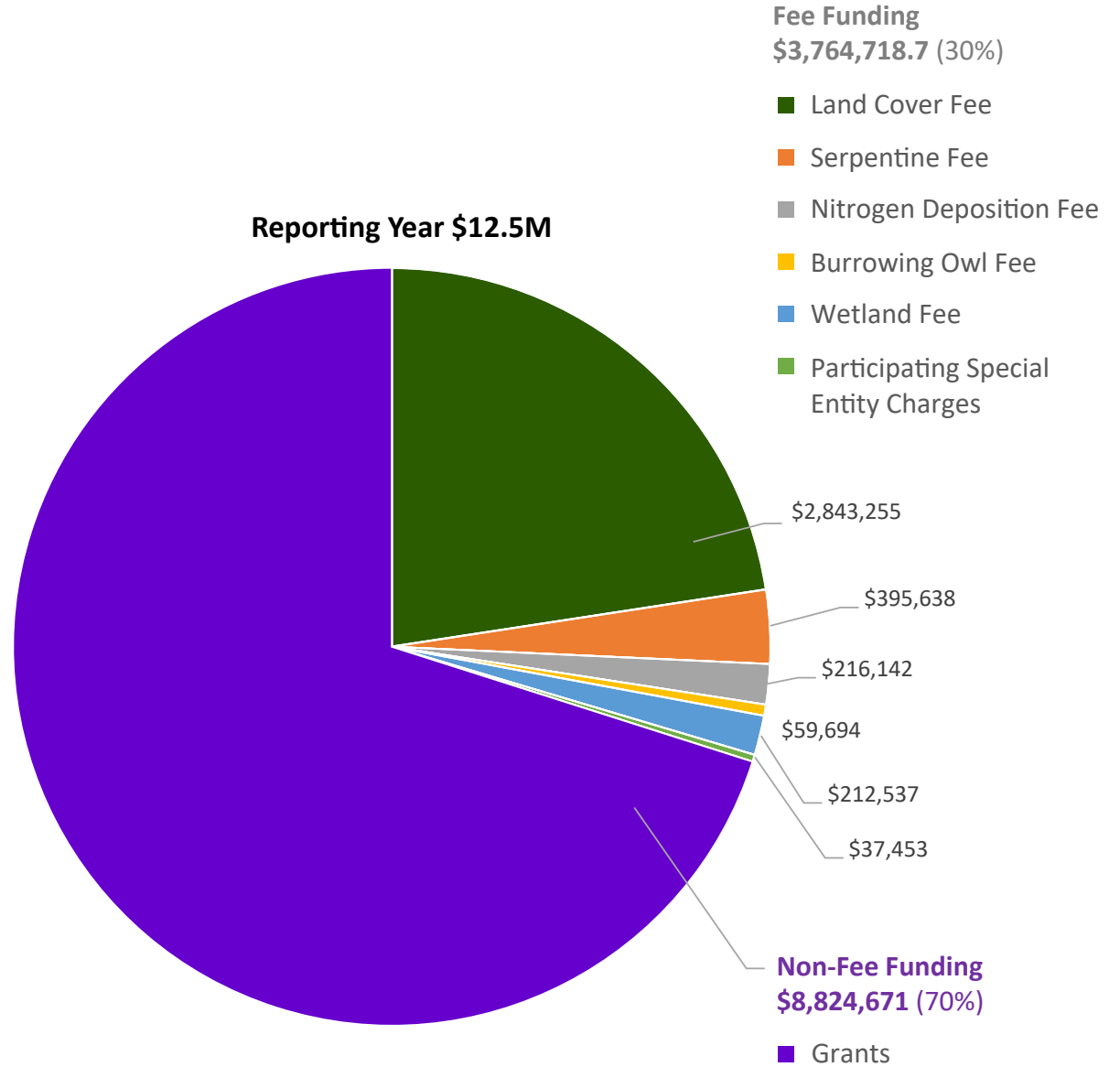


Figure ES-8. Revenue Summary—Detail

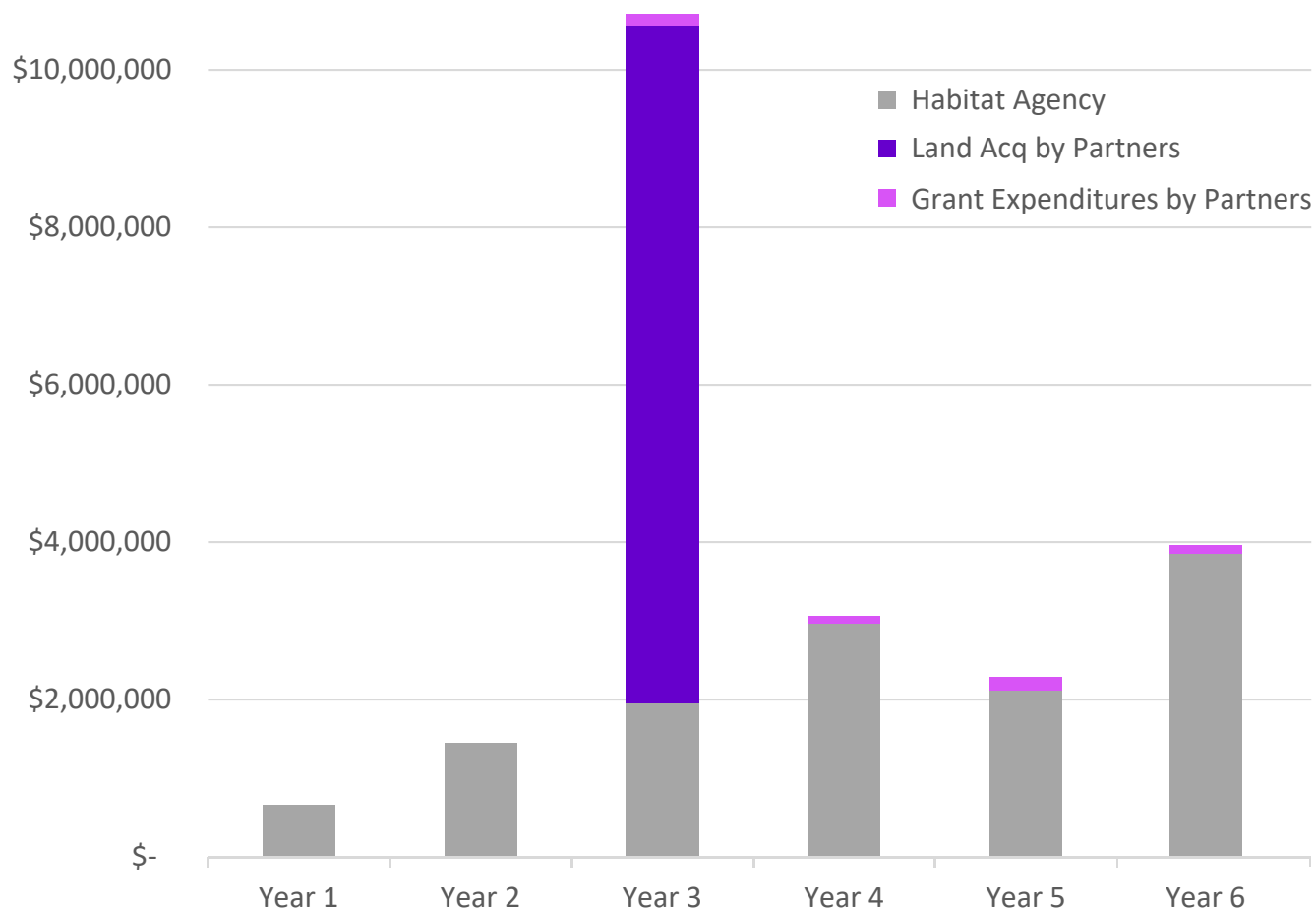


Reporting Year \$12.5M



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

Figure ES-9. Expenditure Summary



**\$22.2M
total
expenditures**

	Year 1 FY14	Year 2 FY15	Year 3 FY16	Year 4 FY17	Year 5 FY18	Year 6	Total
Habitat Agency	\$655K	\$1.5M	\$1.9M	\$3.0M	\$2.1M	\$3.9M	\$13.1M
Land Acq by Partners			\$8.6M				\$8.6M
Grants by Partners			\$140K	\$94K	\$169K	\$96K	\$499K

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

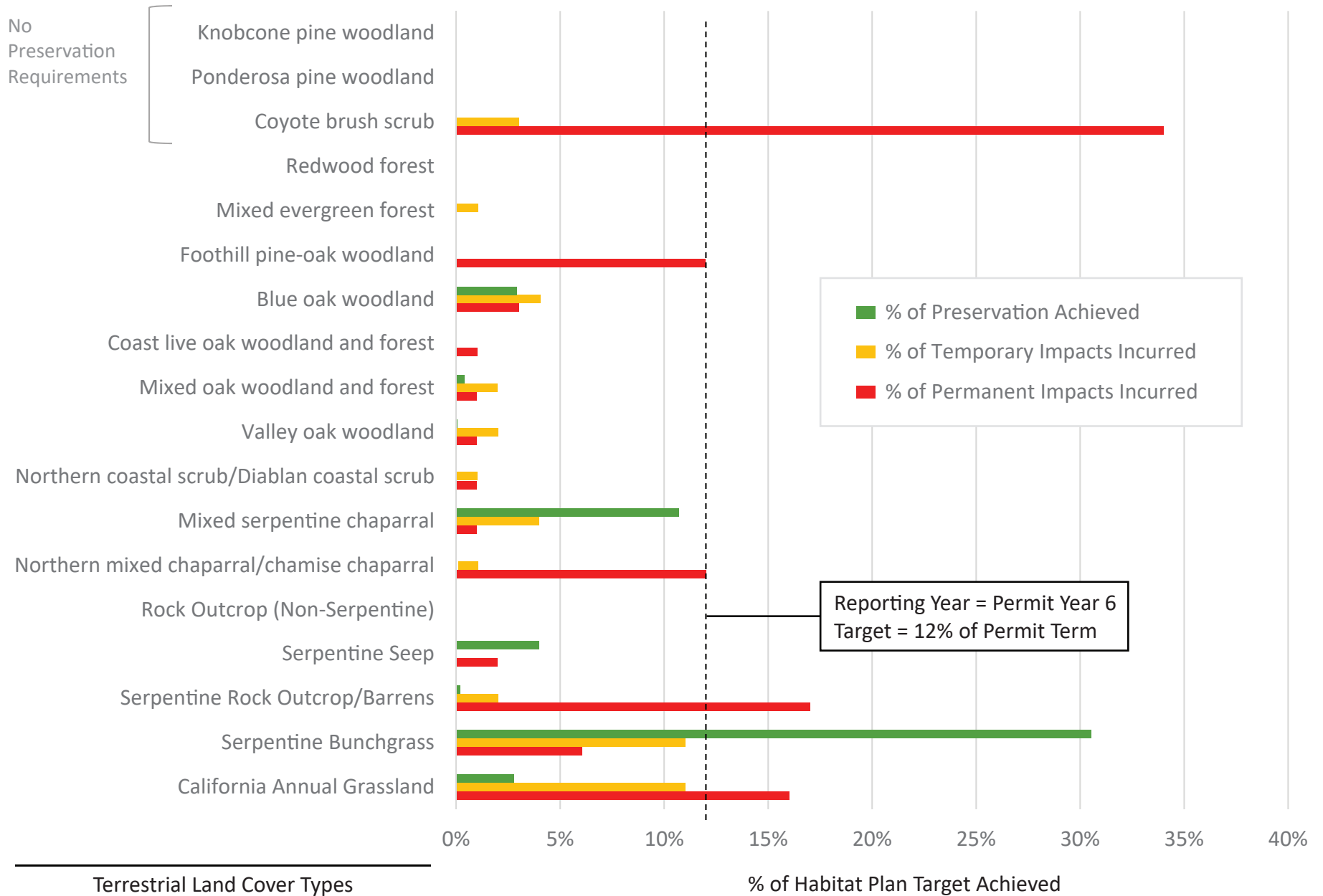


Figure ES-11. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Aquatic Land Cover Types

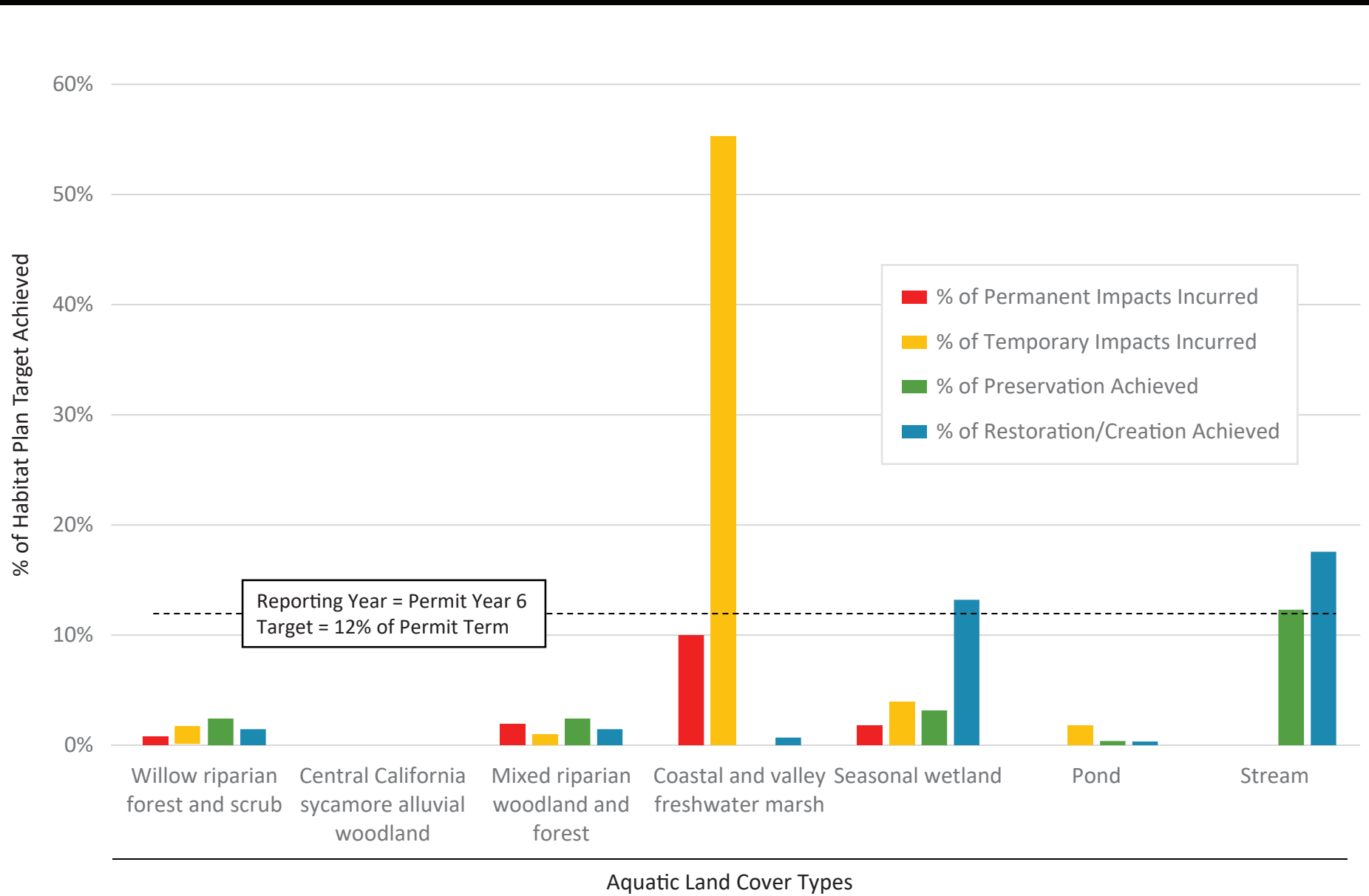
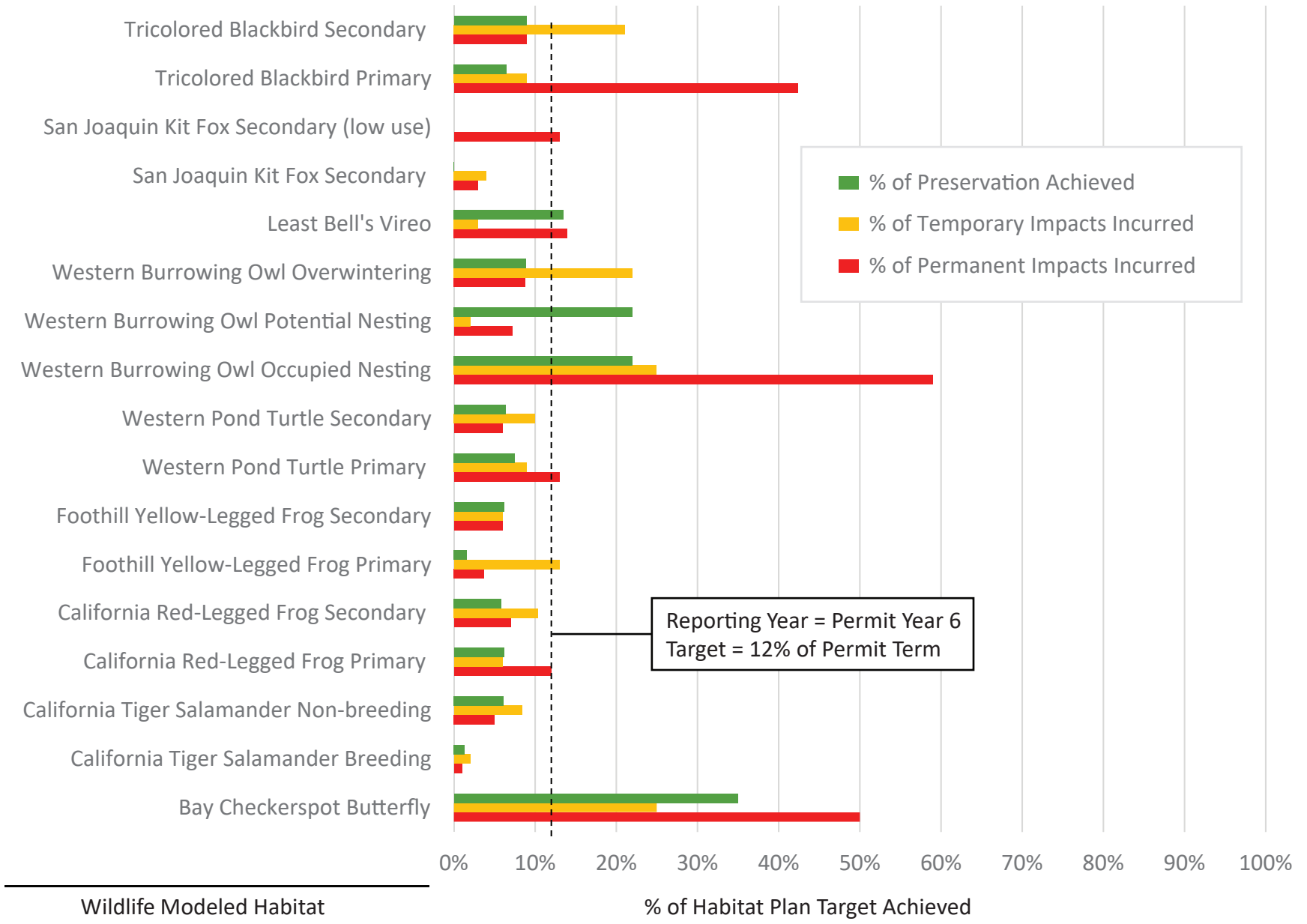
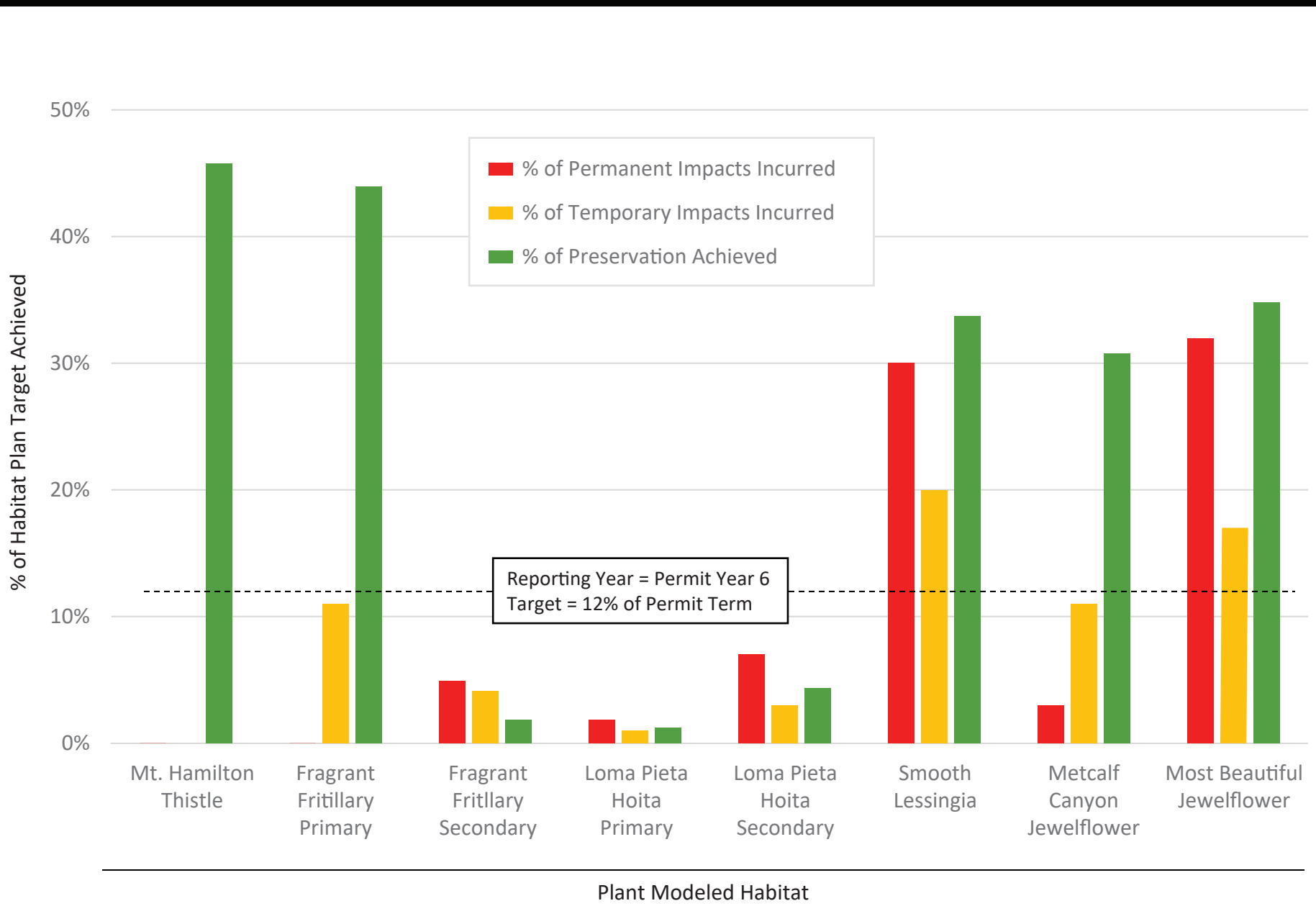


Figure ES-12. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Wildlife Habitat



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.¹¹

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

¹¹ 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 fifth Annual Report prepared by the Habitat Agency. This report summarizes implementation actions from July 1, 2018, through June 30, 2019.

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.

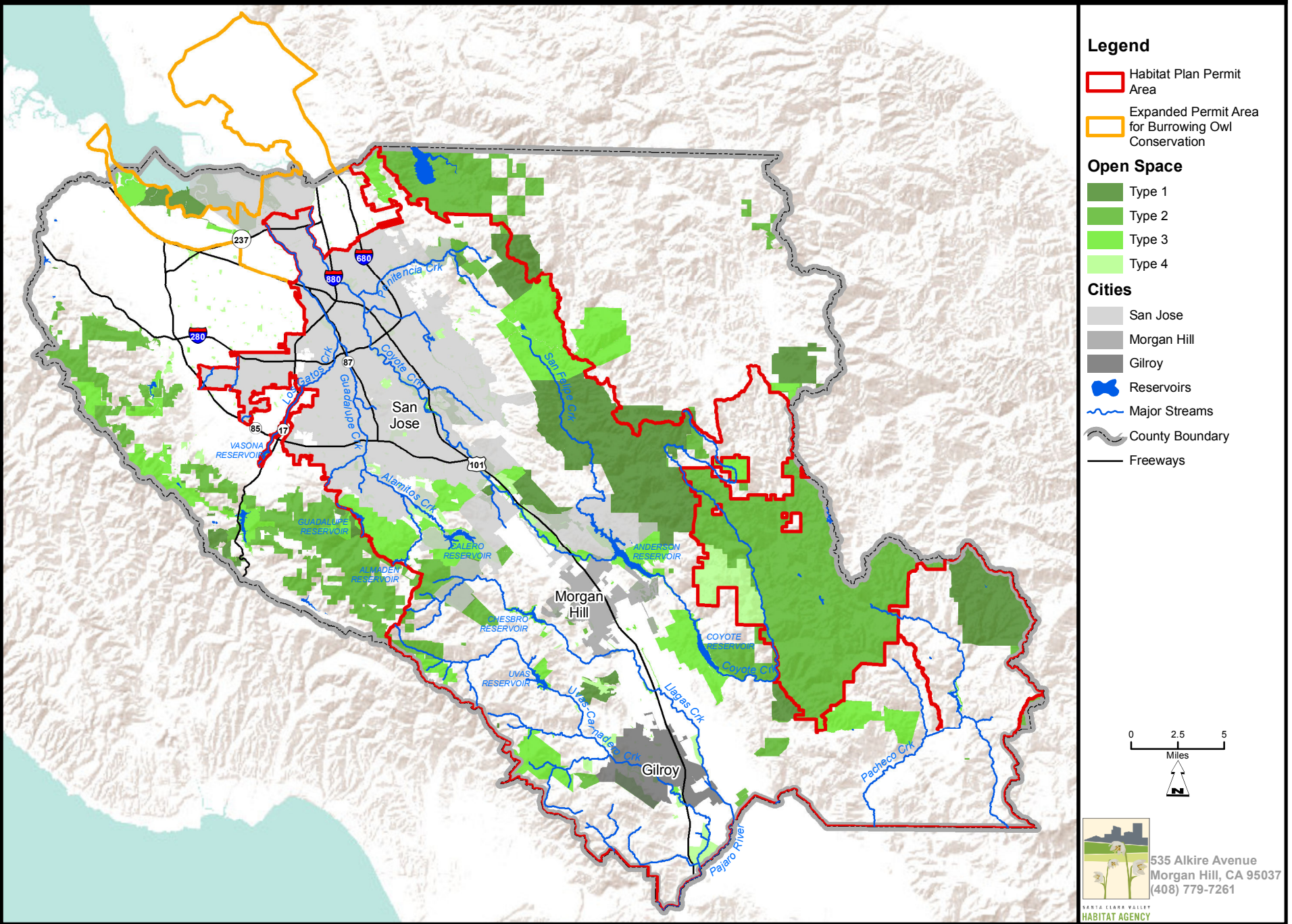
The required elements of the Annual Report as defined by the Habitat Plan are summarized below. Each topic is discussed separately in its own chapter in this Annual Report.

- 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,¹² including remedial actions.

¹² 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)



Legend

- Habitat Plan Permit Area
- Expanded Permit Area for Burrowing Owl Conservation

Open Space

- Type 1
- Type 2
- Type 3
- Type 4

Cities

- San Jose
- Morgan Hill
- Gilroy
- Reservoirs
- Major Streams
- County Boundary
- Freeways


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 Morgan Hill, CA 95037
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 SANTA CLARA VALLEY
 HABITAT AGENCY

Chapter 2 Covered Activities

A total of 63 projects received take coverage under the Habitat Plan during the reporting period, the majority of which were Urban Development Projects. Of these 63 projects, 40 were private projects, 21 were public projects, and 2 were Participating Special Entities (PSEs). Permanent impacts totaled 256 acres and temporary impacts totaled 27 acres. The applicable conditions on covered activities were enforced for each project to minimize and avoid impacts on covered species and natural communities. Since 2013, 285 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.

A total of 63 projects received take coverage under the Habitat Plan during the reporting period. **Table 1** provides a summary of all the covered activities permitted in the reporting period. The 63 projects resulted in 256 acres of permanent land cover impacts and 27 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 63 projects receiving take coverage during the reporting period, 40 projects were private projects, 21 were public projects, and 2 were PSE projects. Covered activities are summarized as follows.

- 38 Urban Development Projects
- 5 In-Stream Operations and Maintenance Activities
- 4 In-Stream Capital Project
- 9 Rural Operations and Maintenance Activities
- 5 Rural Development Projects
- 1 Rural Capital Project
- 1 Conservation Strategy Implementation Project

Covered activities mitigated impacts through the payment of Habitat Plan fees or land in lieu. Fees totaled \$3,764,719 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 289 projects have received take coverage under the Habitat Plan since permit issuance. Cumulative impacts total 2,114 acres of permanent impacts, 311 acres of temporary impacts, 218 feet of permanent impacts on streams, and 812 feet of temporary impacts on streams. Of the 285 projects, 168 were private, 103 were public, and 18 were PSE projects. Covered activity types are 163 urban development projects, 14 in-stream operations and maintenance activities, 12 in-stream capital projects, 39 rural operations and maintenance projects, 34 rural development projects, 17 rural capital projects, and 10 conservation strategy implementation projects.

The Habitat Plan covers flow releases and water transfers in the Uvas and Llagas watersheds as described in Habitat Plan Section 2.3.4 *In-Stream Operations and Maintenance*, subheading *Santa Clara Valley Water District*, subheading *Proposed Operating Rules for Water Supply Facilities in the Uvas and Llagas Watersheds*. While these activities are covered, they do not result in reportable land cover conversion as do most other activities covered by the Habitat Plan and do not require acreage-based reporting. These activities have been on-going throughout Habitat Plan implementation consistent with the operational rule curves at the time of Habitat Plan adoption.

During the reporting period, 40 private projects received streamlined permits through the Habitat Plan (**Table 1, Figure 2**). Permanent impacts totaled 205 acres and temporary impacts totaled 5 acres. The City of San José permitted 17 projects, the City of Morgan Hill permitted 7 projects, the City of Gilroy permitted 12 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 the Grove This project developed a 113-single-family-residential lot subdivision with a private open space and private/public street.
- *Industrial Development*: The City of Morgan Hill issued a permit for Butterfield/Golden State. This project developed a new 40,000 square-foot warehouse with loading docks, parking lot, and landscaping.
- *Commercial Development*: The City of San José issued a permit for Top Golf. This project developed a 72,000 square-foot indoor/outdoor entertainment facility on 27 acres of land.

Over the permit term, a total of 168 private projects have been permitted. These projects resulted in 1,433 acres of permanent impacts and 125 acres of temporary impacts. The City of San José permitted 74 projects, the City of Morgan Hill permitted 34 projects, the City of Gilroy permitted 32 projects, and the County permitted 29 projects.

2.1 Public Projects

During the reporting period, 21 public agency projects received streamlined permits through the Habitat Plan (**Table 1, Figure 3**). The City of Gilroy permitted 2 projects, the City of San José permitted 8 projects, the County permitted 1 project, and the Valley Water permitted 10 projects. Permanent impacts totaled 49 acres and temporary impacts totaled 22 acres. These projects include road and trail improvements, water supply, park facilities, 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.

- *Public Transportation Facilities.* The City of Gilroy built a paved bicycle-pedestrian multi-use trail with a single bridge crossing along Ronan channel.
- *Resource Management.* Valley Water conducted seven improvements to remediate pre-existing site conditions associated with streams or drainages, rehabilitate degraded portions of access roads, and upgrade cattle infrastructure.
- *Public Recreation Facilities.* The County Realigned the Grand Prix and Motocross Tracks to meet race standards, creating a training areas and improved the existing Beginner MX Track.

Over the permit term, a total of 103 public projects have been permitted. These projects resulted in 644 acres of permanent impacts and 151 acres of temporary impacts. The City of San José permitted 21 projects, the City of Gilroy permitted 3 projects, the County permitted 32 projects, Valley Water permitted 42 projects, VTA permitted 1 project, and the Habitat Agency permitted 3 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, one was conducted by the Santa Clara Valley Open Space Authority and the other was approved for Pacific Gas and Electric Company (PG&E). These projects resulted in a combined total of 2 acres of permanent impacts and no temporary impacts.

Over the permit term, a total of 18 PSE applications have been permitted by the Habitat Agency. These projects resulted in 37 acres of permanent impacts and 36 acres of temporary impacts.

2.3 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 63 covered activities implemented during the reporting period, Conditions 1 and 3 applied to every project, wildlife conditions were triggered 22 times, natural community conditions were triggered 16 times, plants conditions were triggered 8 times, and other covered project categories were triggered 29 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. Valley Water project, *Coyote Ridge Preserve Ponds*, permitted the Valley Water to remediate failing drainages and access roads and upgrade cattle infrastructure. Plant surveys were conducted and determined the smooth lessingia would be partially impacted, but the occurrence on Coyote Ridge is 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.

One stream and riparian setback exception request was approved in the FY1819 reporting year for the City of Morgan Hill. The request allowed for a reduction in the distance between a new retaining wall supporting an extension of Hale Avenue and Little Llagas Creek. This project also used the Habitat Agency's Regional General Permit for expedited Army Corps 404 permit approval.

2.4 Impacts on Land Cover Types

Reporting period impacts occurred on terrestrial and aquatic land cover types across four watersheds. There were 256 acres of permanent impacts and 27 acres of temporary impacts on non-stream land cover types. The majority of permanent impacts occurred in golf course/urban parks (81 acres), urban suburban (57 acres), grain and row crops (42 acres), orchard (30 acres), and California annual grassland (24 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 Pajaro. Impacts on aquatic land cover types included 1.19 acres of permanent impacts and 0.01 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 6 represents 12% of the permit term. If a constant rate of impacts is assumed, allowable impacts should be at about 12% of the impact cap. There are four land cover types for which 12% of the permanent impact cap is exceeded. California annual grasslands, serpentine rock outcrops/barren, coyote brush, and barren are being impacted at the fastest rates, with 16%, 17%,

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.

34%, and 218% 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, impacts on grassland only increased by 1% between the FY17-18 and current reporting years, so this impact may be leveling 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 no new projects impacting serpentine outcrops/barren or coyote brush during the reporting year. Impacts on the barren land cover type increased by 15% in the 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 the FY1718 and current reporting years.

2.5 Impacts on Modeled and Critical Habitat

One revision to the impact calculations occurred during the reporting period to accurately reflect the amount of cumulatively impacted occupied burrowing owl habitat. The amount of occupied burrowing owl habitat (i.e., Burrowing Owl Fee Zone) in the Habitat Plan area is dynamic; occupied nesting habitat is defined as a nesting site identified within the past 3 years plus 0.5 mile of foraging habitat surrounding the site (Santa Clara Valley Habitat Agency 2015). Over the last six years of Habitat Plan implementation the number of burrowing owls nesting in the Habitat Plan area has decreased (see Chapter 5, Western Burrowing Owl Management and Monitoring), the acres of occupied nesting habitat in the Habitat Plan area has likewise decreased. Impacts to burrowing owl habitat should have been calculated against the most current map of occupied habitat as updated annually. However, the previously reported amounts of impacted occupied burrowing owl habitat were calculated based on data from 2012 (or earlier) shown on Figure 5-11, Burrowing Owl Conservation Strategy-Habitat Types, of the Habitat Plan. This error has resulted in compliance tracking significantly over-reporting the amount of impacted occupied nesting habitat. With this annual report, the Habitat Agency is revising the amount of impacted occupied burrowing owl habitat based on the covered projects that were located in the Burrowing Owl Fee Zone at the time the project was permitted and paid burrowing owl fees. This change is reflected in **Table 6** and results in a 17% reduction in the amount of impacted occupied burrowing owl 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 City of San José. This is reflected in the increased total impacts on serpentine species habitat on Communications Hill and impacts on western burrowing owl breeding habitat near the San José-

Santa Clara Regional Wastewater Facility. Permanent impact accrual rates¹⁴ exceed 12% for Bay checkerspot butterfly (50%), western pond turtle primary habitat (13%), western burrowing owl occupied breeding habitat (66%), least Bell's vireo primary habitat (14%), San Joaquin kit fox secondary habitat low use (13%), tricolored blackbird primary habitat (42%), smooth lessingia (30%), and most beautiful jewelflower primary habitat (32%). Temporary impact accrual rates exceed 12% for Bay checkerspot butterfly (25%), foothill yellow-legged frog primary habitat (13%), western burrowing owl occupied nesting habitat (19%), western burrowing owl total habitat (13%), San Joaquin kit fox total habitat (36%), tricolored blackbird total habitat (21%), smooth lessingia primary habitat (20%), and most beautiful jewelflower primary habitat (17%).

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 one California red-legged frog, two California tiger salamander, and three Bay checkerspot butterfly critical habitat units. To date, total allowable permanent and temporary impacts on California red-legged frog critical habitat are 42.6 acres and 10.0 acres (4% and 4% of the total allowable). Permanent impacts are 39.0 acres and temporary impacts are 18.9 acres on California tiger salamander critical habitat (14% and 15% of the total allowable). Permanent impact are 56.2 acres and temporary impacts are 14.7 acres on Bay checkerspot butterfly critical habitat (10% and 17% of the total allowable).

2.6 Impacts on Covered Plants

The Santa Clara Valley Water District's *Anderson Dam Geotech Project (phase 5)* and spillway repair/rock rip rap removed five individual coyote ceanothus plants during the FY1819 reporting period. Cumulative impacts on plant occurrences are summarized in **Table 8** and are as follows.

- **Coyote Ceanothus.** A total of 527 individual Coyote ceanothus plants have been removed. *PG&E T-1065 Hydrotest* removed 225 individual Coyote ceanothus plants. *Anderson Dam Phase 1B Geotechnical Investigation* removed 290 individual Coyote ceanothus plants. *Anderson Dam Spillway Repair* and the *Anderson Dam Geotech Project (Phases 4 and 5)* have removed 9 individual Coyote ceanothus plants in the FY1718 and current reporting year.
- **Santa Clara Valley Dudleya.** One occurrence of Santa Clara Valley Dudleya has been removed. *Lands of Musallem* partially impacted an occurrence of Santa Clara Valley dudleya. The occurrence on site is composed of 9 rock outcroppings with a total of 502 plants. The project botanist observed that the occurrence continues off site. The project impacted 4 plants directly and an additional 118 plants indirectly (within disturbance buffers). The occurrence was assumed removed as this project and future development in the area is likely to affect its long-term viability. Future projects affecting this occurrence will be tracked; however, no additional occurrence impact will be deducted.

¹⁴ Year 6 represents 12% of the permit term. If a constant rate of impacts is assumed, 12% of impacts would be accrued by Year 6.

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
Urban Development								
Other	Public	Gilroy	GIL-2018-016	First Street Water Utility Upgrade	Temporary staging of construction materials for City of Gilroy's First St. Water Utility Upgrade	Urban Development	0.0	2.0
Residential	Private	Gilroy	GIL-2018-020	The Grove	113-lot, single-family subdivision with a private open space and private/public streets.	Urban Development	16.0	0.0
Commercial	Private	Gilroy	GIL-2019-001	Chevron	New Chevron Gas Station; Convenience Store; Car Wash	Urban Development	0.7	0.0
Residential	Private	Gilroy	GIL-2019-002	Milton Residence	3,060 sq. ft. single family residence & 1,095 sq. ft. garage.	Urban Development	0.4	0.0
Residential	Private	Gilroy	GIL-2019-003	Zargarian Residence	single-family residence	Urban Development	0.4	0.0
Residential	Private	Gilroy	GIL-2019-004	Eagle Ridge DDK	18 single-family residences along Eagle Ridge Court	Urban Development	4.4	0.0
Other	Public	Gilroy	GIL-2019-005	Ronan Channel	Paved bicycle-pedestrian multi-use trail approximately 5,500 linear feet with a single bridge crossing	Urban Development	1.5	0.0
Residential	Private	Gilroy	GIL-2019-006	Kaur Residence	N-deposition only	Urban Development	n/a	n/a
Commercial	Private	Gilroy	GIL-2019-007	First Street and Kelton	4,000 square-foot retail building and three restaurants, including two-drive through restaurants	Urban Development	1.4	0.0
Residential	Private	Gilroy	GIL-2019-008	Mimosa Court	4,418 square-foot single-family residence with a 1019sf garage	Urban Development	1.4	0.0

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
Commercial	Private	Gilroy	GIL-2019-009	Gilroy Nissan Dealership	New car dealership on approximately 3.04 acres on Automall Parkway in the City of Gilroy.	Urban Development	3.1	0.0
Residential	Private	Gilroy	GIL-2019-010	Lavender Court	single-family residence	Urban Development	0.6	
Commercial	Private	Gilroy	GIL-2019-011	850 Pacheco Pass	Shell gas station and convenience store	Urban Development	n/a	n/a
Residential	Private	Morgan Hill	MH-2018-001	Walnut Grove	9 lots fronting 3 streets of new construction	Urban Development	2.2	0.0
Residential	Private	Morgan Hill	MH-2018-002	Butterfield-Dividend (Valencia Phase II)	Project is comprised of two phases of development. This application is for Phase II which encompasses 43 lots, and 6.89 acres.	Urban Development	6.9	0.0
Residential	Private	Morgan Hill	MH-2018-003	Cochrane-Borello	75 single-family detached lots, public/private open space, private streets and amenities	Urban Development	39.9	0.0
Residential	Private	Morgan Hill	MH-2018-004	Dunne-Las Colinas	32 new single-family residences	Urban Development	4.8	0.0
Industrial	Private	Morgan Hill	MH-2019-002	Butterfield/Golden State	40,000 square-foot new warehouse building with loading docks, parking lot, and landscape.	Urban Development	2.6	0.0
Industrial	Private	Morgan Hill	MH-2019-003	Jarvis/Shoe Palace	503,400 gsf warehouse (including 70,000 sf of office space). Partial demolition of existing parking lot.	Urban Development	14.0	4.2

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
Commercial	Private	San Jose	SJ-2018-016	Top Golf The Shops @ Terra	72,000 square foot indoor/outdoor entertainment facility, hotel, and commercial/retail space.	Urban Development	27.6	0.0
Industrial	Private	San Jose	SJ-2018-020	Edenvale Self Storage	159,650 sq. ft. self-storage facility containing 1,097 self-storage units.	Urban Development	2.5	0.0
Residential	Private	San Jose	SJ-2018-022	7th & Empire Apartments	N-deposition only	Urban Development	1.3	0.0
Commercial	Private	San Jose	SJ-2018-023	Coleman Phase 1.2	340,700 sq. ft. of office/commercial.	Urban Development	8.8	0.0
Commercial	Private	San Jose	SJ-2018-024	Almaden Gas	Remodel 1,626 square-foot convenience store.	Urban Development	0.9	0.0
Recreational	Public	San Jose	SJ-2018-026	Iris Chang Park	The project is a new park in north San Jose, with sculptures, landscaping, paths, seating areas, water fountains, bike racks, and trash receptacles.	Urban Development	2.6	
Wastewater Management	Public	San Jose	SJ-2018-027	RWF Cogeneration Facility	The Cogeneration Facility is excavating soil from the north-eastern side of the San Jose-Santa Clara Regional Wastewater Facility (RWF). The excavated soil will be stored at a site on the western side of RWF. A temporary road within the Habitat Plan Permit Area (see Figure 2, Site Plan) will be used to transport soil.	Urban Development		1.0

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
Other	Private	San Jose	SJ-2018-028	Equinix	The proposed project would construct three data center buildings (SV-12, SV-13, and SV-14), each approximately 188,000 square feet in size, on an approximately 18-acre site.	Urban Development	18.0	0.0
Commercial	Private	San Jose	SJ-2018-029	Hilton Garden Inn		Urban Development	2.2	
Residential	Private	San Jose	SJ-2018-030	Gibson Girl Way	Five single-family homes on five separate lots with associated site improvements on a 3.18 gross acre site.	Urban Development	3.2	0.0
Residential	Private	San Jose	SJ-2018-031	777 W San Carlos	7-story mixed use building with 149 residential units and 1 commercial unit with a parking garage	Urban Development	1.3	0.0
Commercial	Private	San Jose	SJ-2018-032	Trojan Storage	Development of self-storage facility, totaling approximately 153,000 square feet located on 2.7 +/-acres (a portion of a 7.4 +/-acre parcel).	Urban Development	n/a	n/a
Residential	Private	San Jose	SJ-2018-033	Tiffany Canyon Ct	Single-family residence	Urban Development	0.5	0.0
Residential	Private	San Jose	SJ-2018-035	Japantown Mixed Use	Construction of 2 new 6-story apartment buildings, each with one level of underground parking.	Urban Development	4.5	0.0

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
Commercial	Private	San Jose	SJ-2018-036	Brokaw Phase II	Two (2) new eight-story office buildings and one (1) new four-story office building totaling 619,949 square feet, and one (1) above grade nine-story parking garage with a recreation area located on the top floor totaling 750,139 square feet, with associated site improvements on a 9.89-acre portion of a 16.95-acre parcel.	Urban Development	17.0	0.0
Other	Private	San Jose	SJ-2019-004	Adobe North Tower	The approved SPD allows the construction of a new 1,513,941-square foot 18-story building	Urban Development	3.0	0.0
Commercial	Private	San Jose	SJ-2019-005	Minnesota Ave (Primus Ventures)	New construction of a 3-story 17,634 square foot commercial office building shell and core with 2,694 square foot covered parking, on a 24,290 sf (0.558 acre) site.	Urban Development	0.6	0.0
Residential	Private	San Jose	SJ-2019-007	715 W Julian Street	Seven-story mixed use development containing 249 multi-family residential units and 26,585 square feet of ground level commercial space and a two-level underground parking structure on a 1.2 gross acre site.	Urban Development	1.2	0.0
Residential	Private	San Jose	SJ-2019-014	Virginia Studios	301 unit affordable apartment community for seniors with 151 parking stalls.	Urban Development	1.7	0.0

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
In-Stream Operations & Maintenance								
Other	Public	Santa Clara Valley Water District	SVWD-2018-008	Coyote Alamos Canal 1	The project would consist of mowing and overhead vegetation trimming on District fee and easement property along the canal.	In-Stream Operations & Maintenance		4.4
Other	Public	Santa Clara Valley Water District	SVWD-2018-010	Coyote Canal Emergency	Emergency placement of dirt on top of existing berm to redirect water away from Highway 101 to prevent flooding of the roadway.	In-Stream Operations & Maintenance		1.1
Other	Public	Santa Clara Valley Water District	SVWD-2018-012	Oka Ponds	O&M activities, including vegetation management, at the Oka Ponds industrial water production facility.	In-Stream Operations & Maintenance	8.8	
Other	Public	Santa Clara Valley Water District	SVWD-2019-003	Coyote Alamos Canal 2	Mowing and overhead vegetation trimming on District fee and easement property along the canal.	In-Stream Operations & Maintenance		4.4
Other	Public	Santa Clara Valley Water District	SVWD-2019-005	Penitencia & Piedmont Facilities	O&M activities, including vegetation management, along the Penitencia Ponds Canal and the Piedmont Ponds. The two facilities are utilized for groundwater recharge within Valley Water's Penitencia Reach	In-Stream Operations & Maintenance	0.7	
In-Stream Capital Projects								
Park Facilities	Private	Gilroy	GIL-2018-005	Cohansey Bridge	The project is the construction of a free span bridge at Cohansey Avenue across the West Branch Llagas Creek	In-Stream Capital Projects	2.0	0.0

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
Other	Public	San Jose	SJ-2018-021	Three Creeks Pedestrian Bridge	Replacement of existing Los Gatos Creek Trestle with a 210-foot-long, single-span steel truss bridge with a poured concrete deck.	In-Stream Capital Projects	0.3	1.7
Flood Protection	Public	Santa Clara Valley Water District	SVWD-2018-006	Cunningham Flood Detention Facility Certification Project	Stormwater capacity improvements at Lake Cunningham Park (LCP)	In-Stream Capital Projects	2.0	3.7
Other	Public	Santa Clara Valley Water District	SVWD-2018-007	Uvas Levee Reconstruction	The project on the Uvas Creek levee would consist of inboard and outboard side slope reconstruction.	In-Stream Capital Projects	10.5	
Rural Capital Projects								
Other	Public	Santa Clara County (Parks)	SCPK-2018-003	GP-Motocross Beginner MX Public	Realignment of the Grand Prix and Motocross Tracks to meet race standards, creation of a 4x4 training area, and improvements within the boundaries of the existing Beginner MX Track.	Rural Capital Projects	22.2	0.0
Rural Development Projects								
Residential	Private	Morgan Hill	MH-2019-004	Rolling Hills/Anderson	Single-family residence with associated driveway.	Rural Development	0.8	0.8
Residential	Private	Santa Clara County (Planning)	SCPN-2018-004	Oakleaf Drive	One single family home	Rural Development	3.0	0.2
Residential	Private	Santa Clara County (Planning)	SCPN-2018-005	Scenic Vista - Salah	Proposed single family residence, garage/barn, driveway, pool, tennis court, and associated improvements.	Rural Development	2.9	0.2

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
Residential	Private	Santa Clara County (Planning)	SCPN-2018-006	Scenic Vista - Loury	Single-family residence	Rural Development	2.1	0.2
Residential	Private	Santa Clara County (Planning)	SCPN-2018-007	Sandy Court	N-deposition only	Rural Development	1.5	0.2
Rural Operations and Maintenance								
Utilities	PSE	PG&E	PSE-2019-001	PG&E Pipeline Span Recoat	PG&E proposes to replace protective wrapping of three spans along Gas Transmission Pipeline 300A in Santa Clara County.	Rural Operations & Maintenance	2.2	0.0
Transportation	PSE	PG&E	PSE-2019-002	Upper Uvas Rd Repair	Repair four landslides along a rural road in Upper Uvas Open Space Preserve	Rural Operations & Maintenance	0.0	0.1
Facility Maintenance	Public	San Jose	SJ-2019-001	Sierra Road Landslide Repair-FEMA 8726	The proposed operations and maintenance project would stabilize the damaged areas at the two (2) locations on Sierra Road, prevent future washout, remove and restore damaged infrastructure and preserve vital City property.	Rural Operations & Maintenance	0.0	0.1
Facility Maintenance	Public	San Jose	SJ-2019-001M	Sierra Landslide Repair Modification	The proposed operations and maintenance project would stabilize the damaged areas at the two (2) locations on Sierra Road, prevent future washout, remove and restore damaged infrastructure and preserve vital City property.	Rural Operations & Maintenance	0.0	0.0

Covered Activity Type	Public/Private/PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Facility Maintenance	Public	San Jose	SJ-2019-002	Alum Rock Park Service Road	The proposed project would stabilize the damaged areas at the Service Road, just above the Alum Rock Park Visitor Center, prevent future washout, remove & restore damaged infrastructure, and preserve vital City property. This would be achieved by installing two (2) retaining walls, removing & replacing cracked roadway pavement, and improving the drainage capacity on the upslope side of the roadway by up-sizing the existing drainage inlet and outfall piping system.	Rural Operations & Maintenance	0.1	0.1
Facility Maintenance	Public	San Jose	SJ-2019-003	Alum Rock Park Mineral Springs Restroom and Visitor Center	The proposed project scope of work includes maintenance work on the Mineral Spring restroom and the Visitor Center. This maintenance work comprises of: Mineral Spring Restroom: replace wall vents and screens, repair a concrete wall of the restroom, remove and replace roof tiles, inspect roof integrity prior to replacement of roof tiles, repair concrete roof eaves damaged by large boulders. Visitor Center : Replacing the shed, its concrete pad and replacing damaged fencing.	Rural Operations & Maintenance	0.0	0.0

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
Other	Public	Santa Clara Valley Water District	SVWD-2018-011	Almaden Pipeline Emergency	During the emergency repairs two sites along the pipeline alignment (Sites #1 and #2) resulted in permanent and temporary impacts as they resulted in disturbance from equipment and the removal of vegetation.	Rural Operations & Maintenance	0.1	1.1
Facility Maintenance	Public	Santa Clara Valley Water District	SVWD-2019-002	Coyote Ridge Preserve Ponds	The SCVWD Coyote Ridge Preserve Initial Site Improvements Project consists of seven improvements intended to remediate pre-existing site conditions associated with streams or drainages, rehabilitate degraded portions of access roads, and upgrade cattle infrastructure.	Rural Operations & Maintenance	0.3	0.3
Other	Public	Santa Clara valley Water District	SVWD-2019-004	Cross Valley & Calero Pipeline Rehabilitation Project	Rehabilitation of the Cross Valley and Calero pipeline transmission systems would include inspection, maintenance and repair on approximately 10.5 miles of pipeline to ensure that it is operating effectively.	Rural Operations & Maintenance		1.5

Covered Activity Type	Public/Private/PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Conservation Strategy Implementation								
Vegetation Management	Public	San Jose	SJ-2018-025	Coleman Rd UC Off Site	The recently constructed City of San Jose Public Works Project 6327 - TRAIL: Guadalupe River / Coleman Road Under-Crossing project did not provide a suitable on-site location for tree and shrub mitigation in the Guadalupe River / Almaden Lake area. As part of this permit a minimum of 15 trees and 30 shrubs shall be planted at the mitigation site and invasive species weed abatement will also be performed in the creek.	Conservation Strategy Implementation	0.2	0.4
Total							256.6	27.4
Total minus Conservation Strategy Implementation Projects							256.4	27.0

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-2018-005	Cohansey Bridge	X		X																	
GIL-2018-016	First Street Water Utility Upgrade	X		X														X			
GIL-2018-020	The Grove	X		X												X	X				
GIL-2019-004	Eagle Ridge DDK	X		X						X						X	X				X
GIL-2019-005	Ronan Channel	X		X			X					X									
GIL-2019-006	Kaur Residence	X		X																	
GIL-2019-007	First Street and Kelton	X		X																	
GIL-2019-008	Mimosa Court	X		X																	
GIL-2019-009	Gilroy Nissan Dealership	X		X																	
GIL-2019-01	Chevron	X		X																	
GIL-2019-010	Lavender Court	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
GIL-2019-011	850 Pacheco Pass	X		X																	
GIL-2019-02	Milton Residence	X		X																	
GIL-2019-03	Zargarian Residence	X		X																	
MH-2018-001	Walnut Grove	X		X																	
MH-2018-002	Butterfield-Dividend (Valencia Phase II)	X		X																	
MH-2018-003	Cochrane-Borello	X	X	X																	
MH-2018-004	Dunne-Las Colinas	X		X																	
MH-2019-002	Butterfield/Golden State	X		X																	
MH-2019-003	Jarvis/Shoe Palace	X		X																	
MH-2019-004	Rolling Hills/Anderson	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
PSE-2019-001	PG&E Pipeline Span Recoat	X		X								X					X		X		
PSE-2019-002	Upper Uvas Rd Repair	X		X					X												
SCPK-2018-003	GP-Motocross Beginner MX Public	X		X				X													X
SCPN-2018-004	Oakleaf Drive	X		X				X						X							X
SCPN-2018-005	Scenic Vista - Salah	X		X				X													
SCPN-2018-006	Scenic Vista - Loury	X	X	X				X						X							
SCPN-2018-007	Sandy Court	X		X				X			X										
SJ-2018-016	Top Golf The Shops @ Terra	X		X							X					X		X			
SJ-2018-020	Edenvale Self Storage	X		X									X								X
SJ-2018-021	Three Creeks Pedestrian Bridge	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-2018-022	7th & Empire Apartments	X		X																	
SJ-2018-023	Coleman Phase 1.2	X		X																	
SJ-2018-024	Almaden Gas	X		X																	
SJ-2018-025	Coleman Rd UC Off Site	X		X																	
SJ-2018-026	Iris Chang Park	X		X																	
SJ-2018-027	RWF Cogeneration Facility	X		X												X					
SJ-2018-028	Equinix	X		X																	
SJ-2018-029	Hilton Garden Inn	X		X																	
SJ-2018-030	Gibson Girl Way	X		X																	
SJ-2018-031	777 W San Carlos	X		X																	
SJ-2018-032	Trojan Storage	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-2018-033	Tiffany Canyon Ct	X		X																	
SJ-2018-035	Japantown Mixed Use	X		X																	
SJ-2018-036	Brokaw Phase II	X		X											X						
SJ-2019-001	Sierra Road Landslide Repair-FEMA 8726	X		X					X												
SJ-2019-001M	Sierra Landslide Repair Modification	X		X					X												
SJ-2019-002	Alum Rock Park Service Road	X		X					X												
SJ-2019-003	Alum Rock Park Mineral Springs Restroom and Visitor Center	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-2019-004	Adobe North Tower	X		X														X			
SJ-2019-005	Minnesota Ave (Primus Ventures)	X		X																	
SJ-2019-007	715 W Julian Street	X		X																	
SJ-2019-014	Virginia Studios	X		X																	
SVWD-2018-003	Coyote Alamitos Canal 2	X		X		X			X					X		X					X
SVWD-2018-006	Cunningham Flood Detention Facility Certification Project	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
SVWD-2018-007	Uvas Levee Reconstruction	X		X	X												X	X			
SVWD-2018-008	Coyote Alamitos Canal 1	X		X		X					X			X		X					X
SVWD-2018-010	Coyote Canal Emergency	X		X		X												X			
SVWD-2018-011	Almaden Pipeline Emergency	X		X		X							X				X	X			
SVWD-2018-012	Oka Ponds	X		X		X					X							X			
SVWD-2019-002	Coyote Ridge Preserve Ponds	X		X	X	X					X			X	X						X
SVWD-2019-004	Cross Valley & Calero Pipeline Rehabilitation Project	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
SVWD-2019-005	Penitencia & Piedmont Facilities	X		X					X												
# of Times Condition Applied		63	2	63	4	7	1	5	9	0	1	5	3	6	2	6	5	10	1	0	8

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 Butterfly				
		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	
SVWD-2018-012	Oka Ponds									X												
SVWD-2018-008	Coyote Alamitos Canal 2	X																	X			
SVWD-2019-002	Coyote Ridge Preserve Ponds																		X			
SVWD-2019-004	Cross Valley & Calero Pipeline Rehabilitation Project																		X			
Total		20	6	2	0	0	5	0	0	0	10	1	0	0	1	1	0	0	6	0	0	0

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

Project #	Project Name	Species-Level Measures-Plants																	
		Smooth Lessingia		Fragrant Fritillary		Metcalf Canyon Jewelflower		Most Beautiful Jewelflower		Tiburon Paintbrush		Coyote Ceanothus		Santa Clara Valley		Mount Hamilton Thistle		Loma Prieta Hoita	
		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-2018-016	First Street Water Utility Upgrade																		
GIL-2018-020	The Grove																		
GIL-2019-004	Eagle Ridge DDK									X				X					X
PSE-2019-001	PG&E Pipeline Span Recoat																		
SCPK-2018-003	GP-Motocross Beginner MX Public	X	X																
SCPN-2018-004	Oakleaf Drive	X	X	X		X		X	X	X	X								
SJ-2018-016	Top Golf The Shops @ Terra																		
SJ-2018-036	Brokaw Phase II																		
SJ-2018-025	Coleman Rd UC Off Site																		
SJ-2018-020	Edenvale Self Storage	X						X		X		X		X		X			
SJ-2018-027	RWF Cogeneration Facility																		
SVWD-2018-006	Cunningham Flood Detention Facility Certification Project																		
SVWD-2018-007	Uvas Levee Reconstruction																		
SVWD-2018-008	Coyote Alamos Canal 1	X												X					
SVWD-2018-010	Coyote Canal Emergency																		
SVWD-2018-011	Almaden Pipeline Emergency																		

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

Project #	Project Name	Species-Level Measures-Plants																		
		Smooth Lessingia		Fragrant Fritillary		Metcalf Canyon Jewelflower		Most Beautiful Jewelflower		Tiburon Paintbrush		Coyote Ceanothus		Santa Clara Valley		Mount Hamilton Thistle		Loma Prieta Hoita		
		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	
SVWD-2018-012	Oka Ponds																			
SVWD-2018-008	Coyote Alamitos Canal 2	X												X						
SVWD-2019-002	Coyote Ridge Preserve Ponds	X																		
SVWD-2019-004	Cross Valley & Calero Pipeline Rehabilitation Project	X																		
Total		20	7	2	1	0	1	0	2	1	3	1	1	0	4	0	1	0	1	0

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	24.0	5.8	318.0	61.4	2,006	16%	574	11%	
Serpentine Bunchgrass	5.6	6.9	34.8	10.3	550	6%	91	11%	
Serpentine Rock Outcrop/Barrens	0.0	0.0	3.7	0.0	22	17%	2	2%	
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	7.4	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	0.3	0.0	2.5	0.5	178	1%	66	1%	
Coyote brush scrub	0.0	0.0	3.4	0.3	10	34%	10	3%	
Valley oak woodland	0.0	0.0	1.9	1.0	201	1%	45	2%	
Mixed oak woodland and forest	0.2	0.1	17.5	6.7	1,441	1%	302	2%	
Coast live oak woodland and forest	1.7	0.1	11.4	0.8	840	1%	181	0%	
Blue oak woodland	0.3	0.2	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	0.1	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%	
<i>Subtotal terrestrial</i>	39.4	13.2	413.7	84.5	5,810	7%	1,482	6%	
Aquatic									
Willow riparian forest and scrub	0.32	0.00	2.12	1.69	180	1%	103	1.6%	
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00	7	0%	6	0%	
Mixed riparian woodland and forest	0.87	0.01	2.04	0.97	109	2%	101	1%	
Coastal and valley freshwater marsh	0.00	0.00	2.42	3.87	25	10%	7	55%	
Seasonal wetland	0.00	0.00	0.26	0.07	15	2%	2	4%	
Pond	0.00	0.00	0.04	0.17	52	0%	9	2%	
Reservoir	0.00	0.00	32.80	0.30	-	-	-	-	
<i>Subtotal Aquatic</i>	1.19	0.01	39.68	7.07	388	10%	228	3%	

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 (%)
Stream (length in linear feet)								
Total stream length	36.00	75.00	218.0	812.0	49,632	0%	253,440	0%
Agricultural								
Orchard	29.7	0.0	65.8	4.6	625	11%	24	19%
Vineyard	0.0	0.0	0.0	0.2	37	-	3	8%
Agriculture developed	0.0	0.0	25.3	1.0	-	-	-	-
Grain, row-crop, hay and pasture, disked/short-	42.1	7.3	698.9	92.5	7,356	10%	284	33%
<i>Subtotal Agricultural</i>	71.8	7.3	790.0	98.3	8,018	10%	311	32%
Developed								
Rural residential	0.5	0.0	16.4	7.6	1,603	1%	139	5%
Golf courses/ Urban parks	81.3	0.0	175.3	11.0	2,095	8%	40	27%
Ornamental woodland	0.0	0.1	5.1	0.1	30	-	8	2%
Barren	5.0	0.0	69.8	1.1	32	218%	15	7%
Urban Suburban	57.3	6.3	604.7	101.6	-	-	-	-
<i>Subtotal Developed</i>	144.0	6.5	871.3	121.4	3,760	23%	202	60%
Totals								
Acres	256.4	27.0	2114.7	311.3	17976	12%	2,223	14%
Linear Feet	36.0	75.0	218.0	812.0	49632	0%	253,440	0%

Aquatic Land Cover Type (acres)	Impacts			
	Reporting Period		Cumulative	
Watershed	Permanent	Temporary	Permanent	Temporary
Coyote				
Willow riparian forests, woodlands, and scrub			1.36	0.97
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			0.35	0.01
Coastal and valley freshwater marsh			-	3.87
Seasonal wetland			0.03	0.03
Pond			-	-
Reservoir			-	-
Subtotal aquatic			1.74	4.88
Stream (linear feet)			16.00	-
Guadalupe				
Willow riparian forests, woodlands, and scrub	0.32		0.44	0.71
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.14	0.01	0.53	0.18
Coastal and valley freshwater marsh			-	-
Seasonal wetland			0.20	0.02
Pond			-	-
Reservoir			32.80	0.30
Subtotal aquatic			33.97	1.21
Stream (linear feet)		75.00	137.00	715.00
Pajaro				
Willow riparian forests, woodlands, and scrub			0.07	0.01
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.71		1.29	0.50
Coastal and valley freshwater marsh			0.04	-
Seasonal wetland			-	-
Pond			0.00	0.00
Reservoir			-	-
Subtotal aquatic			1.40	0.51
Stream (linear feet)			-	-
Uvas				
Willow riparian forests, woodlands, and scrub			0.01	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.02		0.03	0.28
Coastal and valley freshwater marsh			0.12	-
Seasonal wetland			0.03	-
Pond			0.04	0.00
Reservoir			-	-
Subtotal aquatic			0.23	0.28
Stream (linear feet)	36.00		65.00	-
Llagas				
Willow riparian forests, woodlands, and scrub			0.04	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			0.04	-

Aquatic Land Cover Type (acres)	Impacts			
	Reporting Period		Cumulative	
Watershed	Permanent	Temporary	Permanent	Temporary
Coastal and valley freshwater marsh			2.26	-
Seasonal wetland			-	0.02
Pond			-	0.17
Reservoir			-	-
Subtotal aquatic			2.34	0.19
Stream (linear feet)			-	97.00
San Tomas				
Willow riparian forests, woodlands, and scrub			-	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			-	-
Coastal and valley freshwater marsh			-	-
Seasonal wetland			-	-
Pond			-	-
Reservoir			-	-
Subtotal aquatic			-	-
Stream (linear feet)			-	-
Alamitos Creek				
Willow riparian forests, woodlands, and scrub			-	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			-	-
Coastal and valley freshwater marsh			-	-
Seasonal wetland			-	-
Pond			-	-
Reservoir			-	-
Subtotal aquatic			-	-
Stream (linear feet)			-	-
Total				
Willow riparian forests, woodlands, and scrub	0.32	-	1.9	1.7
Central California sycamore alluvial woodland	-	-	-	-
Mixed riparian woodland and forest	0.87	0.01	2.2	1.0
Coastal and valley freshwater marsh	-	-	2.4	3.9
Seasonal wetland	-	-	0.3	0.1
Pond	-	-	0.0	0.2
Reservoir	-	-	32.8	0.3
Total aquatic	1.19	0.01	39.7	7.1
Total stream length	36.00	75.00	218.0	812.0

Table 6. Summary of Impacts to Modeled Covered Species Habitat

Modeled Habitat	Reporting Period		Cumulative					
	(acres, unless otherwise)		(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	1.9	6.9	150.6	13.3	300	50%	54	25%
California Tiger Salamander								
Breeding Habitat	0.0	0.0	0.9	0.3	77	1%	14	2%
Non-breeding Habitat	93.4	11.5	666.5	140.7	12,855	5%	1,529	
<i>Total</i>	93.4	11.5	667.4	141.0	12,932	5%	1,543	9%
California Red-Legged Frog								
Primary Habitat	4.0	0.0	35.6	6.7	299	12%	116	6%
Secondary Habitat	115.4	11.2	958.2	170.7	12,937	7%	1,489	
<i>Total</i>	119.4	11.2	993.7	177.7	13,236	8%	1,605	11%
Foothill Yellow-Legged Frog (length in miles)								
Primary Habitat	0.0	0.0	0.1	0.1	2	4%	0.7	13%
Secondary Habitat	0.0	0.0	0.3	0.1	5	6%	1.3	
<i>Total</i>	0.0	0.0	0.4	0.2	7	5%	2.0	8%
Western Pond Turtle								
Primary Habitat	18.0	0.7	231.5	39.7	1,824	13%	440	9%
Secondary Habitat	55.7	5.8	445.5	95.2	7,825	6%	986	
<i>Total</i>	73.6	5.0	676.9	133.4	9,649	7%	1,426	9%
Western Burrowing Owl								
Occupied Nesting Habitat	2.0	1.0	117.0	4.9	198	59%	20	25%
Potential Nesting Habitat	101.2	3.8	282.3	12.8	4,000	7%	604	
Overwintering Habitat	102.3	10.8	864.1	170.5	9,671	9%	762	
<i>Total</i>	205.4	15.5	1,264.0	184.2	13,869	9%	1,385	13%
Least Bell's Vireo								
Primary Habitat	2.5	0.0	9.8	1.4	72	14%	43	3%

Table 6. Summary of Impacts to Modeled Covered Species Habitat

Modeled Habitat	Reporting Period		Cumulative					
	(acres, unless otherwise)		(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	0.0	0.0	6.2	2.0	198	3%	46	4%
Secondary Habitat (low use)	0.0	0.0	3.6	16.7	28	13%	6	
<i>Total</i>	0.0	0.0	9.8	18.8	226	4%	52	36%
Tricolored Blackbird								
Primary Habitat	10.7	0.0	115.5	8.6	276	42%	93	9%
Secondary Habitat	100.6	11.0	905.4	172.3	10,317	9%	768	
<i>Total</i>	111.3	11.0	1,020.9	181.0	10,593	10%	861	21%
Mt. Hamilton Thistle								
Primary Habitat	0.0	0.0	0.1	-	26	0%	4	0%
Fragrant Fritillary								
Primary Habitat	3.5	0.3	18.8	6.8	5503	0%	59	11%
Secondary Habitat	26.1	2.2	124.4	25.4	2,729	5%	655	
<i>Total</i>	29.7	2.5	143.1	32.1	3,279	4%	714	4%
Loma Prieta Hoita								
Primary Habitat	9.6	0.2	50.7	6.0	2,117	2%	413	1%
Secondary Habitat	4.7	0.0	19.8	1.6	266	7%	60	
<i>Total</i>	14.3	0.2	70.5	7.5	2,383	3%	473	2%
Smooth Lessingia								
Primary Habitat	3.5	6.9	162.6	13.7	550	30%	68	20%
Metcalf Canyon Jewelflower								
Primary Habitat	3.5	0.3	18.8	6.7	550	3%	62	11%
Most Beautiful Jewelflower								
Primary Habitat	3.5	6.9	177.0	15.6	550	32%	92	17%
Secondary Habitat	0.0	0.0	-	-	0	0%	0	
<i>Total</i>	3.5	6.9	177.0	15.6	550	32%	92	17%

Modeled Habitat	Reporting Period		Cumulative					
	(acres, unless otherwise		(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

^a Temporary Impact tracking was updated consistent with the memorandum *Tracking Temporary Impacts for Compliance Monitoring of the Santa Clara Valley Habitat Plan* 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).

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	0.1	0.1	19.9	7.2				
STC Unit 2	-	-	22.8	2.8				
ALA Unit 2	-	-	-	-				
<i>Total</i>	0.1	0.1	42.6	10.0	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	0.0	0.4	29.8	10.1				
EBR Unit 9	-	-	-	-				
EBR Unit 10a	-	-	0.2	-				
EBR Unit 10b	-	-	-	-				
EBR Unit 11	-	-	-	-				
EBR Unit 12	0.0	-	2.8	2.9				
<i>Total</i>	0.0	0.4	39.0	18.9	272	14%	125	15%
Bay Checkerspot Butterfly								
Tulare Hill	0.4	0.4	0.4	0.4				
Metcalf	-	-	1.7	2.4				
Santa Teresa Hills	5.0	0.4	7.5	1.0				
Calero Reservoir	-	-	13.5	6.3				
Kirby	0.1	0.2	32.8	4.6				
Kalana	-	-	0.3	-				
Hale	-	-	-	-				
Bear Ranch	-	-	-	-				
San Martin	-	-	-	-				
<i>Total</i>	5.5	1.0	56.2	14.7	550	10%	86	17%

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 FY18-19 Private Covered Projects

MAP by:BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2018-2019\Annual Report 2018-2019 Maps v5.aprx (5/11/2020)

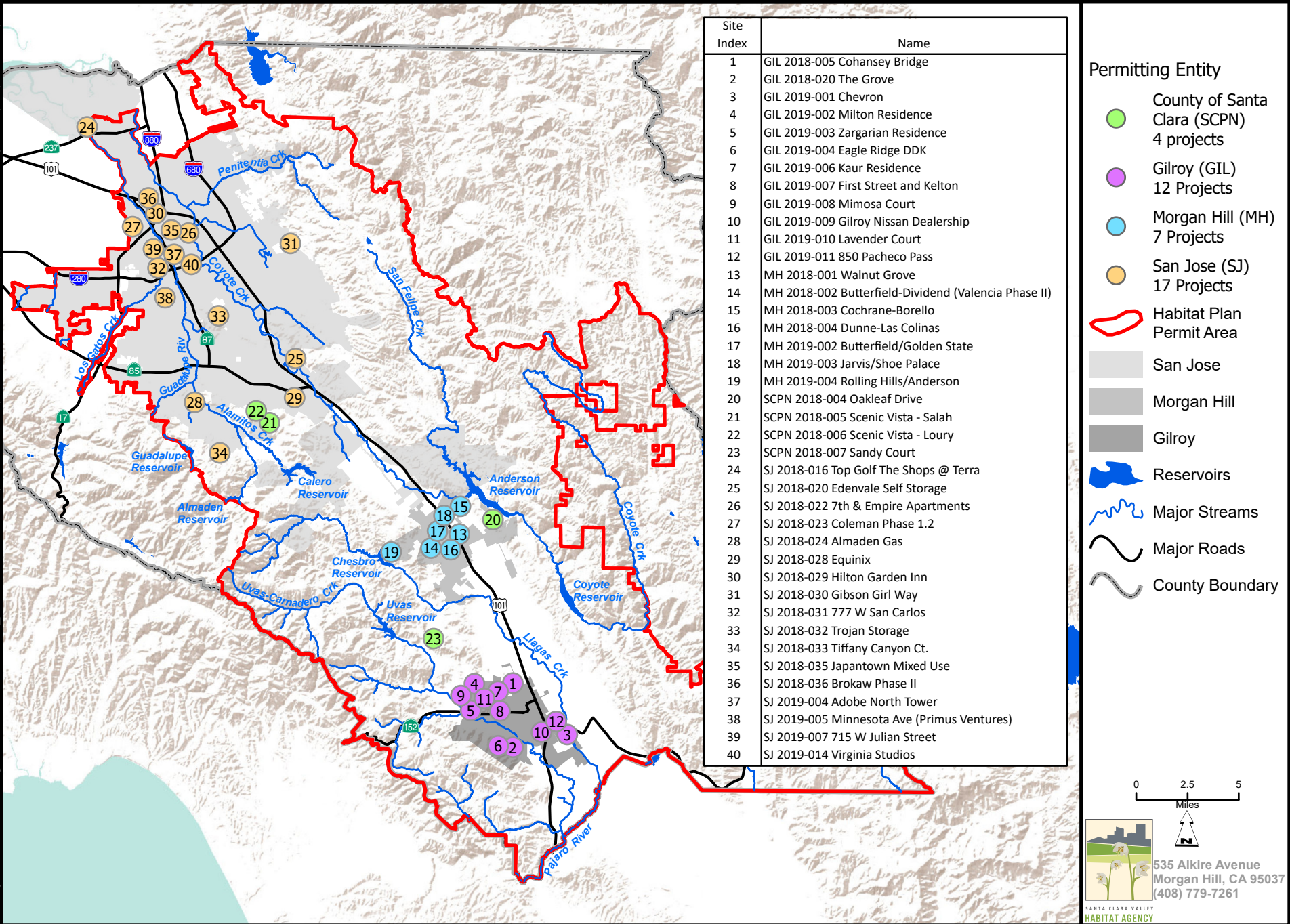
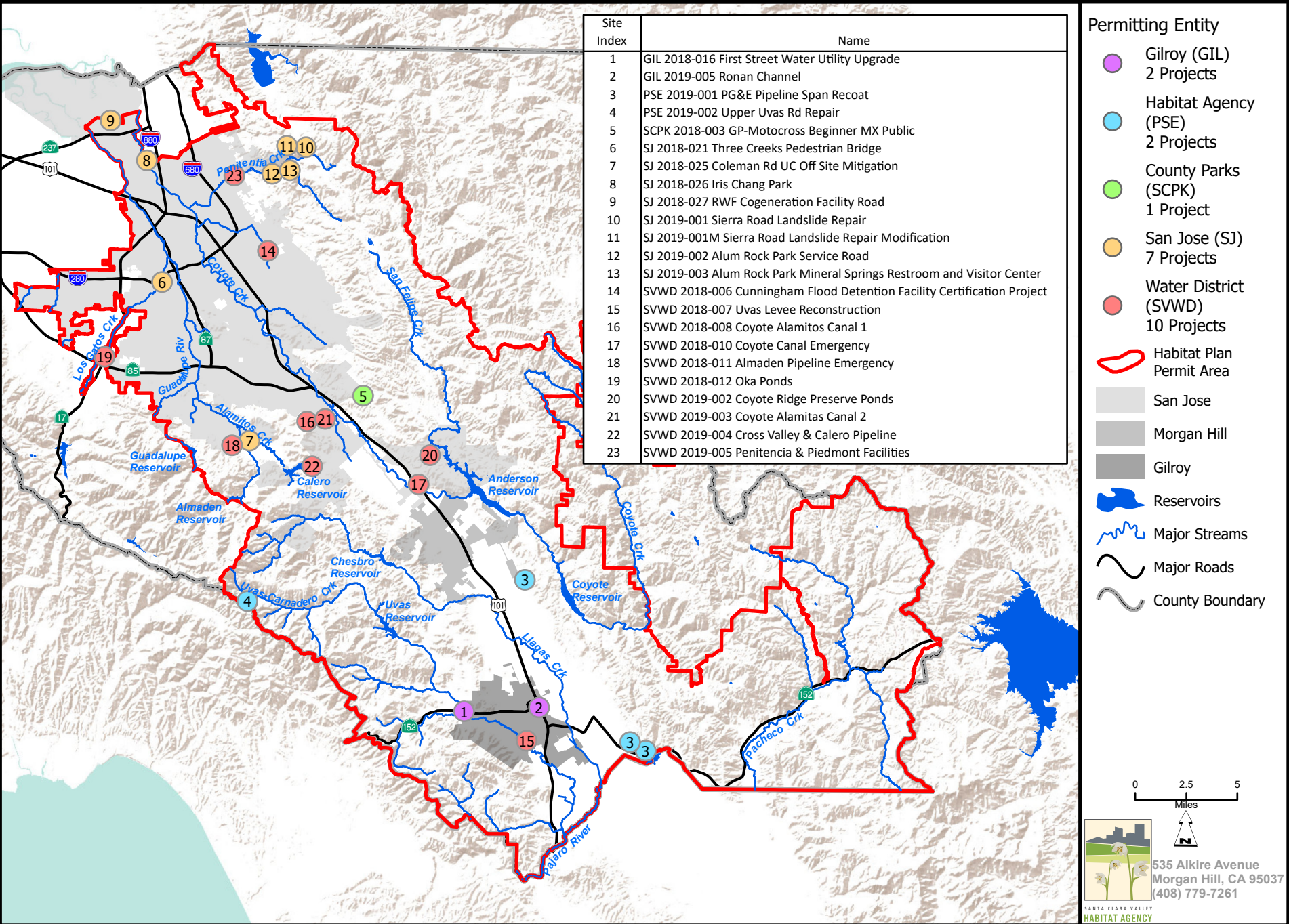


Figure 3. Location of FY18-19 Public Covered Projects

MAP by:BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2018-2019\Annual Report 2018-2019 Maps v5.aprx (5/11/2020)



3.1 Reserve System

The Reserve System includes two properties spanning 1,857.5 acres.¹⁵ These lands include habitat for 17 of the 18 covered species and are known to be occupied by ten species (three covered wildlife species and seven covered plant species). Land cover types include 13 of the 21 required for acquisition and span Coyote-4 and Pacheco-6 Conservation Analysis Zones. Protection of landscape linkages 6, 7, 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
- Preserve the highest-quality communities

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 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 This is the legally recorded acreage of the CROSP (1,802.1) and the Pacheco Creek Reserve (55.4). Acreages contributing to the Habitat Plan requirements are documented in the reference tables.

- 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 14**).

3.2.1 Reporting Period

No new properties were acquired during the FY1819 reporting year. However, as discussed below, negotiations with several potential sellers have been progressing throughout the reporting year and five new properties are expected to be acquired before the end of the FY19/20 reporting year.

3.2.2 Cumulative

The Reserve System includes two properties—the CROSP and the Pacheco Creek Reserve¹⁶—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 1,860 acres.¹⁷ Terrestrial land cover types comprise 1,781 acres, fulfilling approximately 5% 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: 1,220.6 acres (30.5%) of serpentine bunchgrass grassland, 371.6 acres (2.8%) of California annual grassland, 0.2 acre (0.2%) of serpentine rock outcrop/barren, 0.4 acre (4.0%) of serpentine seep, 75 acres (10.7%) of mixed serpentine chaparral, 1.1 acres (0.1%) of valley oak woodland, 28.1 acres (0.4%) of mixed oak woodland and forest, 84.3 acres (2.9%) of coast live oak forest and woodland, 22.2 acres (2.4%) of willow riparian forest and scrub and mixed riparian forest and woodland, 5.8 acres (10.7%) of Central California sycamore alluvial woodland, 1.9 acres (3.2%) of seasonal wetland, and 0.4 acre (0.4%) of pond. The Reserve System also includes 13.6 miles of streams, which is 12.3 % 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 30% 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 two CAZs, Coyote-4 and Pacheco-6, fulfilling 387 acres (2%) of the total 21,000 natural land cover acquisition requirements in conservation analysis zones (**Table 11**). The Reserve System also contributes to the protection of four landscape linkages, two on the Reserve (#6, #7) and two on the Pacheco Creek Reserve (#15 and #17) (**Table 12**). A summary of the number the protected covered plant occurrences in the Reserve System is shown in **Table 13**.

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. In case of the Pacheco Creek Reserve, there is a 21-acre parcel assigned to the California Department of Transportation (Caltrans). This area was generated in GIS and serves to quantify their mitigation area and excludes those acres (land cover and species) from Habitat Plan compliance tracking (**Figure 4b**). These areas do not count toward most Habitat Plan

¹⁶ The Pacheco Creek Reserve is owned in fee title by the Habitat Agency. Reserve System enrollment will occur when a conservation easement, anticipated in 2021, is placed over the property. For annual reporting purposes, it is accounted as a Reserve System property for the metrics reported in this chapter. It is not included in the Stay-Ahead compliance calculations reported in Chapter 8.

¹⁷ There are 48.5 acres of existing easements (e.g., access, mitigation) that are not credited toward certain Reserve System requirements.

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 acquisitions are under consideration by the Habitat Agency. **Figure 5** provides a map of these sites. These acquisition locations generally target areas with populations of covered species and covered natural communities, such as Tilton Ranch and the Calero Preserve (which is a 3,020-acre¹⁸ subset of Calero County Park.), and properties that will link to open space lands outside Reserve System, such as UTC-Shingle Valley (UTC 2) and Joseph D. Grant County Park, to protect wildlife corridors and large landscape areas that can buffer against the effects of climate change.

Negotiations on five properties have progressed so far that the Habitat Agency anticipates their acquisition in FY1920. These sites include the following:

- **Tulare Hill** (#3 on Figure 5). The property is 36 acres, consisting of annual grassland and serpentine soils in a strategic location preserving wildlife connectivity in Coyote Valley.
- **Baird Ranch** (#7 on Figure 5). 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** (#8 on Figure 5). The property is 80 acres of annual grassland and serpentine soils adjacent to the south of Baird Ranch. Acquisition of this site will protect the remaining portion of the Coyote ceanothus occurrence on Baird Ranch.
- **Uvas South** (#10 on Figure 5). 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** (#13 on Figure 5). 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.

¹⁸ 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.

Other acquisitions or existing open space enrollments under consideration include the following.

- **RWF CE (#1 on Figure 5).** Within the San José-Santa Clara Regional Wastewater Facility (SJ-SCRWF), the City of San José is anticipated to enroll 72 acres of their bufferlands via conservation easement in lieu of fees for previous Capital Improvement Projects. There is a concern by the Habitat Agency, burrowing owl experts, and the Wildlife Agencies that the size of the land in lieu area is not sufficient to support a breeding burrowing owl population. These entities requested that the entire 201 acres currently under a 5-year management agreement be included in the conservation easement area. This area is zoned by the City as a burrowing owl management area; however, at this time, the City of José is not willing to extend the conservation easement over the entire 201 acres. Rather, they will extend the short-term management agreement an additional 10 years (15 years total) and enroll the additional area at a future date, yet to be determined.
- **Joseph D. Grant County Park (#2 on Figure 5).** A subset of Joseph D. Grant County Park is proposed for enrollment in the Reserve System to offset impacts from County public projects and fulfill the mitigation permitting obligations of the San Felipe Creek Restoration Project. It is located in the Coyote Watershed in the Diablo Mountain Range. The park includes over 6,000 acres of oak woodlands and nearly 2,000 acres of grasslands. It protects a core wildlife linkage between Henry W. Coe State Park to the south and protected lands both inside and outside the permit area to the north. It protects known occurrences of California tiger salamander, California red-legged frog, and western pond turtle. Stream habitat for foothill yellow-legged frog is present. It contains 40 acres of seasonal wetlands and important stands of riparian woodlands.
- **UTC 2 – Shingle Valley (#4 on Figure 5).** This property is adjacent to the CROSP, a property already enrolled in the Reserve System. It is located in the Coyote Watershed in the Diablo Mountain Range. It features a habitat matrix of grasslands, oak woodlands, and coastal scrub. There are known occurrences of California tiger salamander and California red-legged frog and opportunities to restore additional breeding habitat for these species.
- **Calero Preserve (#5 on Figure 5).** A subset of Calero Preserve is proposed for enrollment in the Reserve System to offset impacts from County public projects and fulfill the mitigation permitting obligations of the Calero Pond and Wetland Restoration Project. It is located primarily in the Guadalupe Watershed in the lower foothills of the Santa Cruz Mountains. The park includes serpentine and annual grassland, oak woodlands, and riparian areas. It has known occurrences of many covered species—California tiger salamander, western pond turtle, Bay checkerspot butterfly, Santa Clara Valley dudleya, smooth lessingia, most beautiful jewelflower, and Mount Hamilton thistle. There are many opportunities for these species through habitat enhancement and restoration.
- **Tilton Ranch (#6 on Figure 5).** This property is a working ranch adjacent to the Coyote Valley Open Space Preserve. It is a habitat mosaic of grasslands, oak woodlands, and coastal scrub. It includes habitat for Bay checkerspot butterfly and other serpentine species. There are opportunities for aquatic habitat restoration.
- **Woodward/Bresani (#9 on Figure 5).** The property is comprised mostly of annual grassland, coastal scrub, and oak woodlands. It contains critical habitat for California red-legged frog. Suitable habitat is present for California tiger salamander, fragrant fritillary, Loma Prieta hoita, tricolored blackbird, western burrowing owl, western pond turtle, and foothill yellow-legged frog.

- **Bates (#11 on Figure 5).** The property is located in the Uvas watershed between Mount Madonna County Park and Uvas Reservoir. It protects a habitat mosaic that includes oak woodlands, annual grassland, coastal scrub, ponds and riparian woodlands along streams. It provides suitable habitat for 12 covered species.
- **Pajaro Ranch (#12 on Figure 5).** The property is located on the valley floor along the Pajaro River. Protection of this property provides a unique opportunity to improve connectivity between the Diablo Range and Santa Cruz Mountains.

Table 9. 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	-	0.0	0.0	0.0	0.0	371.6	23.0	394.6	3.2	2.8%	-
Serpentine Bunchgrass Grassland	10,308	4,000	-	0.0	0.0	0.0	0.0	1,220.6	16.5	1,237.1	0.0	30.5%	-
Serpentine Rock Outcrop/ Barrens	260	120	-	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.2%	-
Serpentine Seep	34	10	-	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0	3.6%	-
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	-	0.0	0.0	0.0	0.0	75.0	0.2	75.1	0.0	10.7%	-
Northern Coastal Scrub / Diablan Sage Scrub	10,306	1,400	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	-
Valley Oak Woodland	12,895	1,700	-	0.0	0.0	0.0	0.0	1.1	0.0	1.1	3.0	0.1%	-
Mixed Oak Woodland and Forest	84,488	7,100	-	0.0	0.0	0.0	0.0	28.1	4.4	32.4	0.0	0.4%	-
Blue Oak Woodland	11,160	1,100	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	-
Coast Live Oak Forest and Woodland	31,652	2,900	-	0.0	0.0	0.0	0.0	84.3	0.2	84.5	0.0	2.9%	-
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	0.0	0.0	0.0	0.0	22.2	1.6	23.8	4.9	2.4%	1.4%
Central California Sycamore Alluvial Woodland	373	54	14	0.0	0.0	0.0	0.0	5.8	2.4	8.1	0.0	-	-
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	0.0	0.0	0.0	0.0	1.9	0.0	1.9	3.7	3.1%	12.3%
Pond	1,110	104	72	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.2	0.4%	0.3%
Subtotal (acres)	305,263	34,080	500	0.0	0.0	0.0	0.0	1,811.6	48.5	1,860.1	15.3	5.3%	3.1%
Streams (miles)	2,392.0	110.4	10.4	0.0	0.0	0.0	0.0	13.6	0.1	13.7	1.8	12.3%	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	0.0	0.0
Ponderosa Pine Woodland	419	-	-	0.0	0.0	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	0.0	0.0
Reservoir	2,767	-	-	0.0	0.0	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	0.0	0.0
Vineyard	1,393	-	-	0.0	0.0	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	0.0	0.0
Grain, row-crop, hay and pasture, disked/short-term fallowed	33,648	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban-suburban	89,438	-	-	0.0	0.0	0.0	0.0	0.04	0.00	0.04	0.0	0.0	0.0
Rural - residential	12,414	-	-	0.0	0.0	0.0	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	0.0	0.0
Landfill	364	-	-	0.0	0.0	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	0.0	0.0
Ornamental woodland	95	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	154,944	0	0	0.00	0.0	0.0	0.0	0.04	0.0	0.04	0.0	0.0	0.0
TOTAL (acres)	460,207	34,080	500	0.0	0.0	0.0	15.0	1,811.6	48.5	1,860.1	9.1	5.3%	1.8%
TOTAL Streams (miles)	2,392.0	110.4	10.4	0.0	0.0	0.0	1.8	13.6	0.1	13.7	1.8	12.3%	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 10. Summary of Land Acquisition Contribution to Modeled Habitat Requirements to Date

Modeled Habitat Requirements (acres)				Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
Protection	Existing	Total		Protection	Existing	Existing	Total	Protection	Existing	Existing	Total	Protection	Existing	Total
	Open				Easement	Open			Easement	Open			Open	
	Space					Space				Space			Space	
Bay Checkerspot Butterfly														
Primary Habitat	3,800	754	4,554					1329.2	19.8	0.0	1349.0	35%	-	30%
California Tiger Salamander														
Breeding Habitat	150	45	195					2.0	0.0	0.0	2.0	1%	-	1%
Non-breeding Habitat	30,000	11,700	41,700					1809.5	48.5	0.0	1858.0	6%	-	4%
Total	30,150	11,745	41,895					1811.5	48.5	0.0	1860.0	6%	-	4%
California Red-Legged Frog														
Primary Habitat	1,300	130	1,430					55.1	19.0	0.0	74.1	4%	-	5%
Secondary Habitat	30,000	11,800	41,800					1754.6	29.5	0.0	1784.0	6%	-	4%
Total	31,300	11,930	43,230					1809.6	48.5	0.0	1858.1	6%	-	4%
Foothill Yellow-Legged Frog (length in miles)														
Primary Habitat	30	7	37					0.4	0.1	0.0	0.5	1%	-	1%
Secondary Habitat	50	17	67					3.1	0.0	0.0	3.1	6%	-	5%
Total	80	24	104					3.5	0.1	0.0	3.6	4%	-	3%
Western Pond Turtle														
Primary Habitat	7,000	2,800	9,800					520.5	8.0	0.0	528.5	7%	-	5%
Secondary Habitat	20,000	9,100	29,100					1251.7	38.9	0.0	1290.5	6%	-	4%
Total	27,000	11,900	38,900					1772.1	46.9	0.0	1819.1	7%	-	5%
Western Burrowing Owl														
Overwintering														
Habitat	17,000	4,310	21,310					1512.1	29.2	0.0	1541.3	9%	-	7%
Potential Nesting														
Habitat								316.8	6.4	0.0	323.2			
Occupied Nesting														
Habitat								861.9	0.0	0.0	861.9			
Subtotal potential and occupied nesting														
nesting	5,300	0	5,300					1178.7	6.4	0.0	1185.2	22%	-	22%
Total	22,300	4,310	26,610					2690.8	35.7	0.0	2726.5	12%	-	10%
Tricolored Blackbird														
Primary Habitat	1,000	40	1,040					39.6	19.0	0.0	58.6	4%	-	6%
Secondary Habitat	18,000	3,800	21,800					1609.5	29.3	0.0	1638.8	9%	-	8%
Total	19,000	3,840	22,840					1649.1	48.3	0.0	1697.4	9%	-	7%
Least Bell's Vireo														
Primary Habitat	460	2	462					36.9	18.8	0.0	55.7	8%	-	12%
San Joaquin Kit Fox														
Secondary Habitat	4,000	-	4,000					0.0	2.2	0.0	2.2	0%	-	0%

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

Modeled Habitat Requirements (acres)			Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
Protection	Existing	Total	Protection	Existing	Existing	Total	Protection	Existing	Existing	Total	Protection	Existing	Total
	Open			Easement	Open			Easement	Open			Open	
	Space				Space				Space			Space	
Secondary Habitat													
(Low Use)	100	-	100				0.0	0.0	0.0	0.0	0%	-	0%
Total	4,100	-	4,100				0.0	2.2	0.0	2.2	0%	-	0%
Mt. Hamilton Thistle													
Primary Habitat	150	60	210				68.6	0.2	0.0	68.9	46%	-	33%
Fragrant Fritillary													
Primary Habitat	3,000	1,000	4,000				1318.3	18.0	0.0	1336.3	44%	-	33%
Secondary Habitat	20,000	3,000	23,000				363.5	8.4	0.0	372.0	2%	-	2%
Total	23,000	4,000	27,000				1681.9	26.4	0.0	1708.3	7%	-	6%
Loma Prieta Hoita													
Primary Habitat	9,000	3,500	12,500				108.7	0.2	0.0	109.0	1%	-	1%
Secondary Habitat	1,000	600	1,600				43.2	0.0	0.0	43.2	4%	-	3%
Total	10,000	4,100	14,100				151.9	0.2	0.0	152.2	2%	-	1%
Smooth Lessingia													
Primary Habitat	4,000	1,100	5,100				1349.0	20.7	0.0	1369.7	34%	-	27%
Metcalf Canyon Jewelflower													
Primary Habitat	3,200	1,000	4,200				984.2	4.6	0.0	988.8	31%	-	24%
Most Beautiful Jewelflower													
Primary Habitat	4,000	1,700	5,700				1392.2	20.7	0.0	1412.9	35%	-	25%

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>2%</i>
Uvas-1	10,891	1,000		0	
Uvas-2	8,573	800		0	
Uvas-3	4,761			0	
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			0	
Pacheco-3	5,849			0	
Pacheco-4	5,477			0	
Pacheco-5	12,959			0	
Pacheco 6	8,278			64.5	-
<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		387.4	2%

Table 12. Summary of Land Acquisition Contributions to Wildlife Linkages

Wildlife Linkage Ref. # from Habitat Plan Figure 5-6	Linkage (Listed Generally from North to South)	Approx. Length ^a (miles)	General Linkage Purpose	Acquisitions that Contribute to Linkage	Reporting Year Total (acres)	Cumulative Total (acres)
5	Joseph Grant Co. Park to Henry W. Coe State Park	11.5	Provide connection between two large blocks of protected lands across a variety of land cover types, possibly along San Felipe Creek.			
6	Coyote Ridge from Silver Creek Hills to Anderson Dam	9.5	Provide connectivity for serpentine species within core habitat along Coyote Ridge. Link patches of protected lands along the ridge.	Coyote Ridge Open Space Preserve		1,803.0
7	Coyote Ridge to Anderson Lake County Park and Henry W. Coe State Park	7.5	Provide connectivity along an elevation gradient and between protected open space along Coyote Ridge and large blocks of protected open space centered on Henry W. Coe State Park. Provide connectivity among stands of valley oak woodland at different elevations.	Coyote Ridge Open Space Preserve		1,803.0
15	Henry W. Coe State Park southeast to San Benito County line	3.5	Provides linkage across Pacheco Creek and Highway 152 within the Diablo Range. Highway 152 is permeable to wildlife only in certain places.	Pacheco Creek Reserve		64.4
17	Main stem of Pacheco Creek	12	Provides passage for resident and anadromous fish between Monterey Bay, the Pajaro River, and potential spawning and rearing habitat on south fork of Pacheco Creek and Cedar Creek. Passage through main stem of Pacheco Creek is restricted in dry years.	Pacheco Creek Reserve		64.4

Table 13. Summary of Covered Plant Occurrences for Compliance Tracking

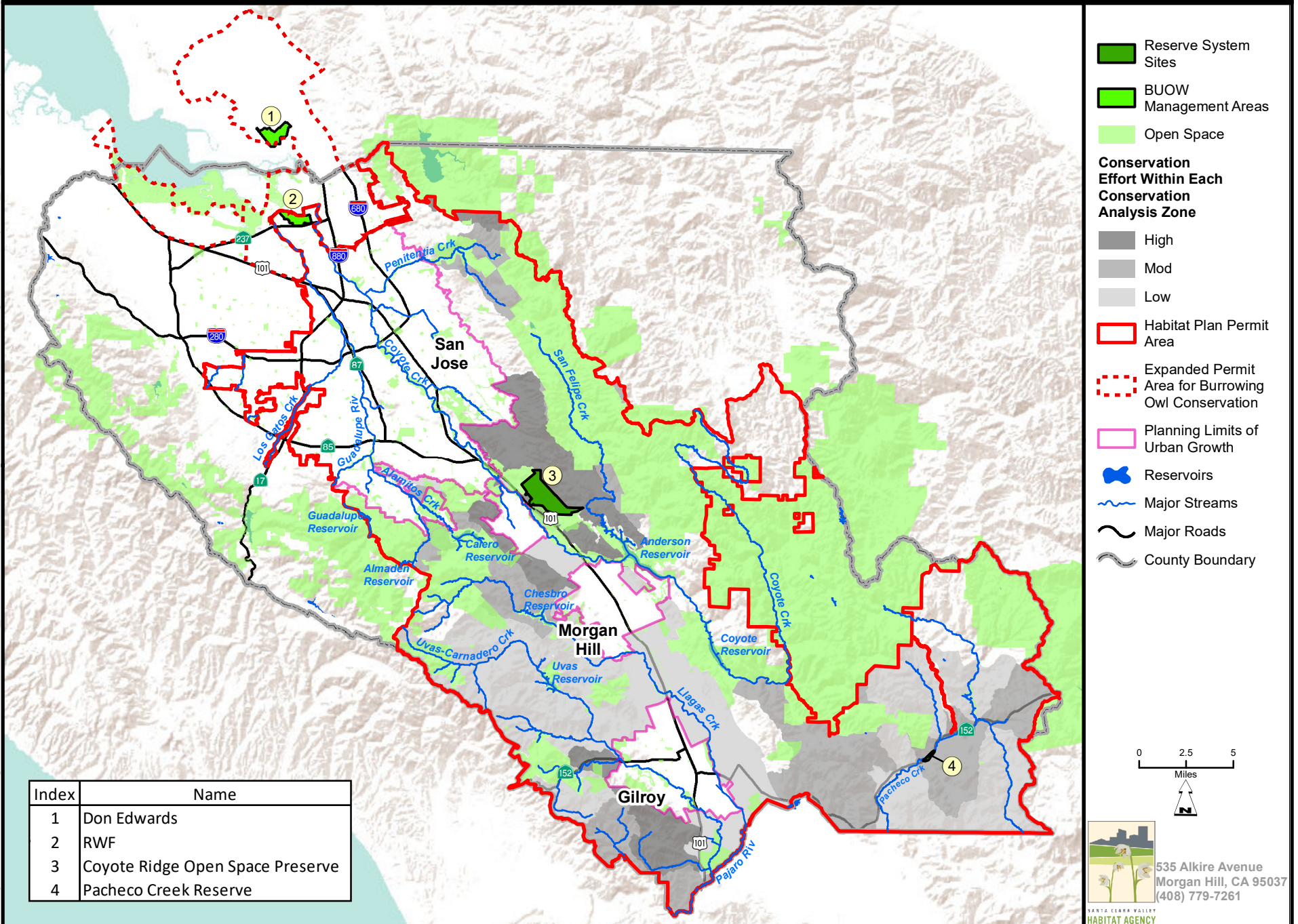
Species	Number of Covered Plant Occurrences						Total in Reserve System
	Coyote Ridge Open Space Preserve			Calero CE			
	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	
Mt. Hamilton Thistle	16	6	22	2	0	2	22
Santa Clara Valley Dudleya	99	-3	96	6	2	8	96
Fragrant Fritillary	3	0	3	1	-1	0	3
Loma Prieta Hoita	0	2	2	2	0	2	2
Smooth lessingia	6	0	6	3	1	4	6
Metcalf Canyon jewelflower	1 (45)	7	8	0	0	0	8
Most beautiful jewelflower	1 (45)	1	2	4	1	5	2
Total	225	13	139	19	16	21	139

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.

Table 14. Aquatic Land Cover Restoration and Creation by Watershed

Watershed	Aquatic Land Cover (acres)							Aquatic Land Cover Total
	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)	
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

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



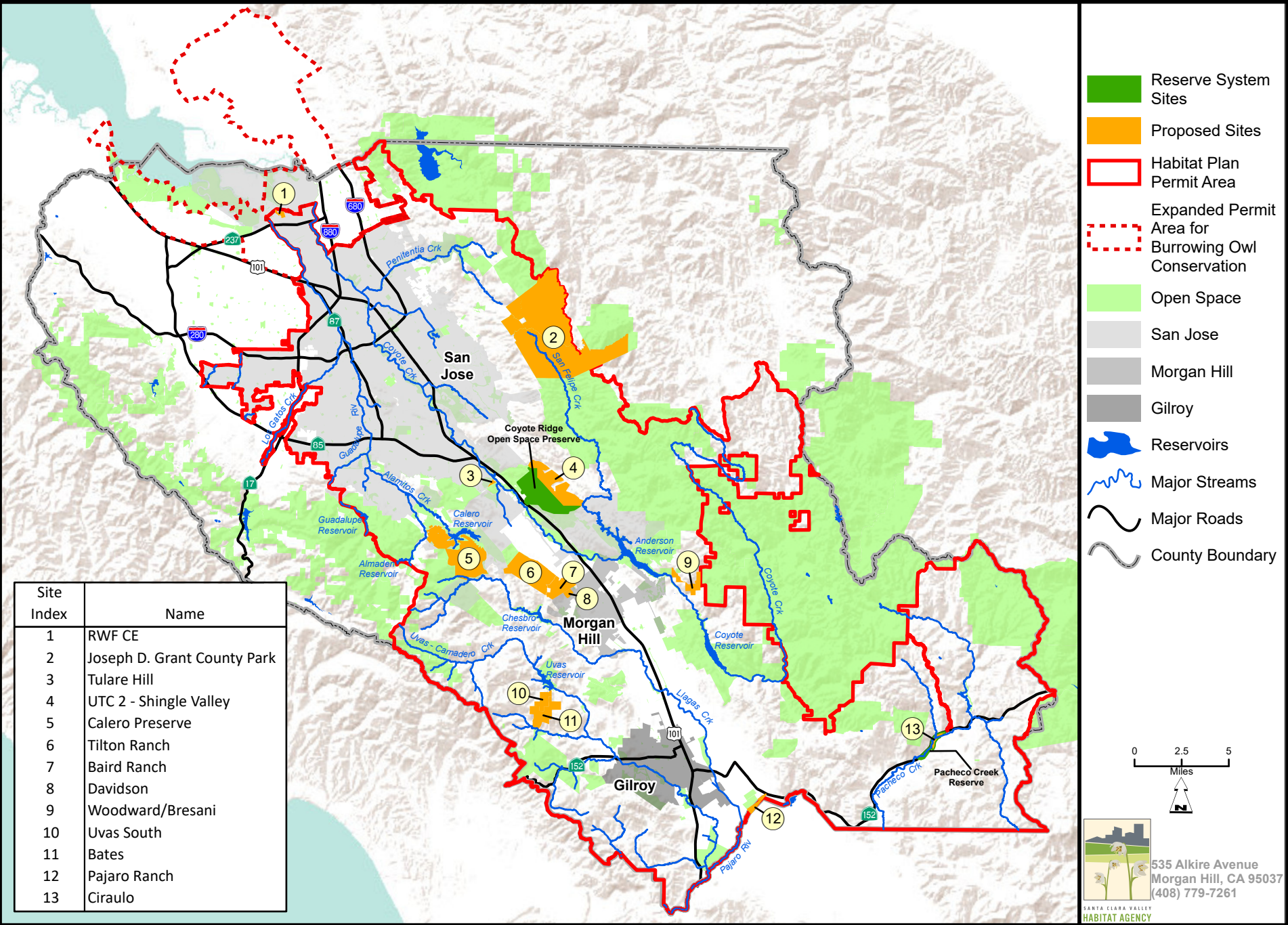
MAP by BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2017-2018\Fig 4 ReserveSystem_OS CAZs v1.mxd (1/8/2019)

535 Alkire Avenue
Morgan Hill, CA 95037
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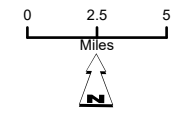
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HABITAT AGENCY

Figure 5. Reserve System Sites Under Review

MAP by BAZ - SCC D:\HCP - PROJECTS\AnnualReports\AnnualReport\2018-2019\Annual Report 2018-2019 Maps v5.aprx (4/27/2020)



- Reserve System Sites
- Proposed Sites
- Habitat Plan Permit Area
- Expanded Permit Area for Burrowing Owl Conservation
- Open Space
- San Jose
- Morgan Hill
- Gilroy
- Reservoirs
- Major Streams
- Major Roads
- County Boundary




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Chapter 4

Habitat Restoration and Creation

No new habitat restoration or creation projects were implemented in the reporting year; however the monitoring results for five 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 Alamos, Coyote, Pacheco, and Pajaro Watersheds. In addition, four projects were in the planning phase in the reporting year (**Figure 6**).

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

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 7**). 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 7**). 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 2019 calendar year, the following actions were completed (H.T. Harvey and Associates 2019).

- Controlled weeds including curly dock (*Rumex crispus*), bull thistle (*Cirsium vulgare*), purple star-thistle (*Centaurea calcitrapa*), and Himalayan blackberry (*Rubus armeniacus*), via hand removal; removed sediment from spring box and log jams located just upstream of spring box (February 25, 2019).
- Controlled weeds including curly dock, bull thistle, and whitetop (*Lepidium draba*) via hand removal and string trimming (April 11, 2019).
- Controlled weeds including yellow star-thistle (*Centaurea solstitialis*), purple star-thistle, and Italian thistle (*Carduus pycnocephalus*) via hand removal and harding grass (*Phalaris aquatica*) and Himalayan blackberry, via string trimming (May 15, 2019).
- Controlled weeds including stinkwort (*Dittrichia graveolens*), yellow star-thistle, and bull thistle, via hand removal, and Himalayan blackberry, via string-trimming (July 19, 2019).
- Controlled weeds including yellow star-thistle, purple star-thistle, and stinkwort, via hand removal (July 23, 2019).
- Removed sediment and debris from log weirs, spring box inlet, and the spring-fed channel between features (July 30, 2019).
- The seep inflow to the pond at the pond mitigation site was completely diverted to the storage tank to begin dewatering the pond (September 9, 2019).

- Captured and controlled aquatic predators by repeatedly seining the pond at the pond mitigation area (September 17, 2019).
- Controlled aquatic predators in the pond mitigation site by draining the pond completely (October 30, 2019).
- Installed mesh screen over the gate on the pond outlet structure and mounted staff plate on outlet structure at pond mitigation site (November 12, 2019).
- The seep inflow to the pond at the pond mitigation site was diverted back to the seep troughs to refill the pond (November 25, 2019).

4.1.1.3 Monitoring Results

Year 3 monitoring of the Calero Restoration Project occurred in 2019 and indicated that the pond and wetland mitigation sites are fulfilling the project's habitat restoration and establishment objectives (H.T. Harvey and Associates 2019). Year 3 monitoring shows positive trends in the Mt. Hamilton thistle population, and stable or increasing levels of wetland vegetative cover and special-status wildlife populations. 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 1–2 and were effectively controlled primarily via the gradual drawing down and complete draining of the pond in September-October 2019.

All Year 3 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. However, the target hydrologic regime to support California red-legged frog breeding was achieved at the pond mitigation site and site conditions were observed to be suitable for supporting California red-legged frog breeding during Year 3. Ecological performance standards and Year 3 monitoring results in the following list. The Year 3 success criteria are summarized in **Table 15a**.

- **Target Hydrologic Regime.** The maximum pond water depth exceeded 2 feet (2.49 feet) on August 31, 2019 and the target hydrologic regime was achieved.
- **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.** California tiger salamander continued to demonstrate successful breeding and the western pond turtle continued to occur at the pond mitigation site. 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 3 and does not require remedial actions.
- **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. The spatial extent of the population increased from Year 2 to Year 3.
- **Wetland Vegetation Percent Cover.** The average percent cover of wetland vegetation was 45.2% at the pond mitigation site and 75.8% 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-spring 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 third-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, Himalayan blackberry, 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).
- Remove sediment from the spring box and logjams to optimize seep flow to the pond mitigation site.
- 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.
- 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.

4.1.2 Hedgerow on Pajaro Ranch

The Habitat Agency contributed funding towards restoration plantings on the Pajaro Ranch, owned by The Nature Conservancy, to create/restore riparian habitat and encourage wildlife movement along the Pajaro River. The Pajaro River corridor provides movement habitat for anadromous fish between Monterey Bay and spawning habitat in the Pacheco Creek Watershed. It also provides an important linkage for upland and riparian wildlife between the Diablo Range and Santa Cruz Mountains. Now channelized in some locations, this project will create a hedgerow along the historical Pajaro River alignment. Restoration has occurred over the last four years (2016–2019) to provide a covered corridor that would encourage wildlife movement along the Pajaro River. The project area contains two restoration zones for the creation of the wildlife corridor: a riparian zone centered along the Pajaro River (Zones A, B, and C) and an upland hedgerow zone (Zones D and E) that connects the riparian zone to an adjacent wetland restoration bank. The planting area is approximately 7 acres between fence lines along 5,380 linear feet.

During the FY1819 reporting year, maintenance visits by Point Blue Conservation Science typically entailed the following activities:

- Running irrigation and checking water pressure
- Hand watering where water pressure didn't reach plants
- Walking drip line
- Repairing leaks in irrigation
- Weeding.
- Gathering and removing garbage and project supplies

The fourth annual monitoring report was received by the Habitat Agency in February 2020. The FY1819 reporting year was the third year (Year 3) to monitor plant survival in the upland hedgerow zone. Plant survival dropped from 37% in 2018 to 14% in 2019. The majority of surviving plants (81%) appear to have high vigor and exhibit new branching and foliage. Plant mortality seemed to occur as a result of rodent activity (girdling, burrowing, and chewing through irrigation lines) and low levels of soil moisture, although the saltbush die-off is unexplainable (Point Blue Conservation Science 2020a).

Taller gopher baskets with tree wrap were installed in an attempt to exclude the rodents, but they adapted by climbing onto the gopher basket and reaching vulnerable spots on the plants above the tree wrap line. To mitigate damage to the dripline, it was pulled up and laid on top of grasses and thatch in an effort to make rodents more visible when chewing. A potential solution includes mowing the hedgerow planting area in future years to make the rodents more visible to predators (Point Blue Conservation Science 2020a).

The other challenge during the reporting year was a lack of water pressure in each watering zone. Diverting water to temporary water troughs for the cattle likely reduced the water pressure. As a temporary solution, watering zones were divided into subzones to accommodate decreased pressure, and hand watering was employed. Increased communications between The Nature

Conservancy, the grazing tenant, and Point Blue Conservation Science is a potential longer term solution (Point Blue Conservation Science 2020a).

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 milestones in 2019, as reported by Janell Hillman of Valley Water (Hillman 2020 pers. comm.).

The Coyote Ceanothus mitigation project on Coyote Ridge accomplished several significant goals in 2019. The fenced portion of the mitigation site was expanded to include the entire mitigation area and connect three of the four test plots which were first installed in 2014 and which have been planted each year since. The purpose of expanding the fencing at the site is to allow planting of the larger mitigation area and connect the individual test plots, while protecting individual plants from cattle. In addition to expanded fencing, a new 5,000 water tank was also installed at the site to handle the increased size of the planted area and irrigation needs.

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 this 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 (pers comm Ted Swiecki) so the intent was to avoid transporting or handling plants during wet weather and get them planted prior to the first fall rains.

A total of 770 planting basins have been installed on the site since 2015. Results from the 2019 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 15b**. 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 15b**). 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.

Container stock generally has better survivorship than direct seeded material, but both methods of establishment are important in creating a genetically diverse, locally adapted population. Based on the low survivorship (10%; **Table 15b**) of direct seeded material in the Lower Sage plot in 2015, successive years of planting in that plot have focused on the installation of container plants only, which has been much more successful. It is likely that the large amounts of sagebrush in that plot provide cover for small mammals and lead to increased herbivory of seedlings. This plot also has the most damage to irrigation lines from rodents chewing hoses and tubing.

A majority of plants across all treatments and plots continue to exhibit health and vigor ratings in the “good” to “excellent” category. The first flowering and seed set of Coyote ceanothus plants in the mitigation site occurred in 2019, a huge milestone for the project. Flowers were observed on several plants in the Pine and Lower Sage test plots.

Limitations of the project continue to be late summer and fall herbivory of seedlings, chewing by rodents of the irrigation infrastructure, and fall heat stress on larger plants no longer on irrigation. Liquid Fence is regularly sprayed on seedlings to reduce herbivory during summer months. A typical pattern showing heat/drought stress is yellowing of foliage on Ceanothus plants in the mitigation site. Typically, by mid-winter all the plants have greened up and the stressor appears to be alleviated.

An additional challenge in 2019 was controlling invasive yellow star thistle (*Centaurea solstitialis*) and keeping it out of the test plots, as 2019 weather conditions appear to have favored an expansion of yellow star thistle along Coyote Ridge. All site access continues to follow strict phytosanitary procedures to avoid pathogen introduction (see 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 designed a restoration plan in coordination with the Habitat Agency for the *Pacheco Reserve Contingency Planting Project* (Appendix B), in order to fulfill the commitment to attempt a final 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). Coast live oak and coffeeberry had the best survival rates (82% and 64% respectively) and the best vigor, while sticky monkey flower and buckeye fared the worst (32% and 21% respectively). Replacement of failed plant material is planned for the winter of 2019/2020 in order to improve the overall survivability rate.

Plant establishment monitoring was performed on September 14th, 2018 and September 26th, 2019. Of the surviving plants, the vast majority of plants are of high vigor, exhibiting new height and foliage growth as well as flowering as is the case with Sticky Monkeyflower. Of note this maintenance season was a brief outbreak of a False Chinch Bug infestation in mid-August. Fortunately, the false chinch bug infestation in the Oak Contingency Planting area was very short-lived and confined to small area near the trough and mature live oak trees (Point Blue Conservation Science 2020b).

Since the Oak Contingency Planting area is quite large, mowing was focused on controlling poison hemlock and thistle patches in the planting area. Individual plants were weeded by hand-pulling inside browse protection caging. June weeding efforts focused on weed-whacking 2-foot perimeters around each plant and spot-treating dense clusters of hemlock and thistle.

4.1.5 Pacheco Reserve Riparian Restoration

Beginning in October 2017, Point Blue Conservation Science designed and finalized planting locations in coordination with the Habitat Agency for the *Pacheco Creek Riparian Planting Project* (Appendix B). 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 arbutifolia*], 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 second annual monitoring report was received by the Habitat Agency in February 2020. Although the oak, coffeeberry, and buckeye plantings were successful, resulting in a minimum 70% survival rate, this number is tempered by very poor survival rates for cottonwood, black walnut, toyon, and common elderberry, which all had survival rates of 20% or lower. The overall survival rate is 49% (Point Blue Conservation Service 2020c). Replacement plantings will be informed by the results of the Monitoring Report and are planned to occur through the winter of 2019/2020. Representative photographs are included in Figure 9 and Appendix B.

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 14). 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 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 monthly during 2019 to assess the condition of the roads, fencing, plantings, weeds, and irrigation. Maintenance activities that occurred as a result of these inspections included channel debris removal, replacing damaged straw wattles, fencing repairs, irrigation repairs, and road maintenance,

4.1.6.3 Monitoring Results

The first year of monitoring occurred during the FY1819 reporting year. Qualitative monitoring will be conducted quarterly during Year 1, and annually during Years 2 through 10. Quantitative monitoring (transects and plots) will be conducted in the late spring/early summer during Years 2 through 10. Based on the Year 1 qualitative monitoring, the wetland rehabilitation and enhancement areas are meeting interim performance standards. The ecological performance standards and Year 1 results for the wetlands rehabilitation and enhancement area and non-wetland waters (stream) and riparian buffer are shown in **Table 15c**. The wetland re-establishment and enhancement area met all of the performance standards. The stream and riparian buffer area met all but two of its performance standards: maximum cover of weed species and channel form. Yellow star-thistle, Italian thistle and yellow mustard are present in the stream area, especially along San Felipe Creek

proper, and will require aggressive management to contain. The channel form success criteria were not met due to above normal precipitation in the winter of 2018/2019 equivalent to a 2-year storm event that resulted in higher than average flows within the drainage system on site. Although some areas experienced erosion greater than 1 foot (most notably along San Felipe Creek), the changes are within the expected range of outcomes encompassed by the design. Thus, although some areas experienced greater than 1 foot of erosion, the system is functioning as intended. Additionally, establishment of the riparian vegetation will aid in stabilizing the banks and floodplains at the site to prevent further erosion (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 first year of establishment. The container plants are growing and received supplemental irrigation during the dry season of monitoring Year 1. The site is 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.

Adaptive management will include the utilization of regular qualitative assessments and quantitative data gathered in the field prior to and/or throughout the monitoring period to assess the health and vigor of habitat within the restoration site and whether the restoration is meeting success criteria and performance standards. Following an event that causes damage to all or part of the restoration site, these data will be used in part to drive management considerations for repair of the damaged areas (Dudek 2018).

The following management issues were identified during Year 1 monitoring, that may need to be addressed under an adaptive management approach (Dudek 2020).

- Weed management should be prioritized during Year 2 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.
- To ensure success of staked debris jams in the incised tributary (ID-02-01), it is recommended to add the second course of staked debris jams in 1 to 3 years, at which point all jams are likely to be completely full, and trapped sediment and debris would have had the opportunity to consolidate.
- If incision in excess of 1 foot begins to propagate extensively in the San Felipe Creek graded floodplain areas, placement of large wood, brush, or other grade control elements may be warranted. At this time, monitoring will continue, and action will be taken if necessary, based on the results of monitoring for Year 2.
- Pigs continue to be an issue in the restoration site. It is recommended to continue regular maintenance checks of the site and perimeter fencing, and to make prompt repairs of any damage.

4.1.7 Restoration Project Planning

4.1.7.1 Coyote Ridge Ponds Restoration Project on Coyote Ridge Open Space Preserve

The *Coyote Ridge Reserve Ponds Restoration Project* (**Figure 6**) will repair the two failed earthen dams, excavate and re-contour the prior pond basins, create new wetland areas and re-establish the vegetation. Midway along the northeast property line, two existing ponds are located high in the watershed, each cut into a separate natural drainage. Each pond has an earthen dam with a spillway that drains down the east face of the ridge and sends the water into tributaries feeding the San Felipe Creek within the Coyote Creek Watershed. Both of these ponds have lost functionality due to the degradation of their earthen dams. In both cases, a head cut in the dams is preventing water from collecting in the ponds. The resulting drainage from the ponds has severely eroded and incised the spillways that channel the water downhill. During the reporting year, design plans were completed and all necessary permit applications had been submitted for processing. This project is scheduled for construction in FY1920. Project goals are as follows.

- Creation and restoring of aquatic habitat.
- Creation of habitat for two or more covered species – the California red-legged frog and the California tiger salamander and possibly western pond turtle.
- Reduction in downstream sedimentation and improvements to the overall water quality of the Coyote Creek watershed.

4.1.7.2 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 will install a gradually sloped stream riffle-pool complex up to the existing railroad bridge abutment slab (fish barrier) and remove an existing dysfunctional fish ladder on Uvas-Carnadero Creek. Habitat complexity will be promoted within the channel by constructing pools, runs, and riffles to provide suitable depth and velocity conditions for fish migration, including for South-Central California Coast steelhead (*Oncorhynchus mykiss*). The modified channel will extend approximately 1,700 linear feet downstream of the existing slab. The modified channel will include nine riffle and pool structures (10 riffle keys anchoring the upstream and downstream ends of 9 pools). Associated bank work will include reshaping of the creek banks to achieve the bank stability required for installation of the riffle-pool complex.

The project will also include riparian habitat restoration, and enhancement will include two elements: planting of willows (*Salix* spp.) on the stream benches and understory revegetation and enhancement. These plantings will further stabilize the channel and introduce future sources of in-stream habitat complexity. The willow plantings will be installed from stem cuttings from narrowleaf willow (*Salix exigua*) and red willow (*Salix laevigata*) that are collected from the project area or immediately upstream. Understory revegetation and enhancement will consist of planting California blackberry (*Rubus ursinus*), California rose (*Rosa californica*), snowberry (*Symphoricarpos albus*), and California mugwort (*Artemisia douglasiana*), as well as hydroseeding with a simple sterile seed mixture (if hydroseeding equipment can access the channel) or hand seeding and covering with straw, mulch, or other appropriate material.

Bolsa Fish Passage Project proposes to restore approximately 1700 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.

4.1.7.3 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 the secondary channel and inundation of the floodplain has likely led to scouring and erosion of the north bank of the creek at the location of the site's most important infrastructure—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. Arresting the bank erosion and associated threat to infrastructure is an important land management task that will be necessary regardless of any future habitat enhancement or restoration activities.

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 years of drought, fire, flooding, and a lack of active management. In addition, sycamore alluvial woodland exists on the site, and because it is a rare land cover type, the Habitat Agency will have limited opportunities to restore the required acreage of this woodland. Because the site holds great potential for stream and riparian restoration, and because restoration of 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 Pacheco Creek was appropriate and necessary.

A watershed approach will be taken to understand the historic and current hydrologic and geomorphic conditions and direct and indirect effect of the distribution of water on the existing habitat types on the property. An initial feasibility study will be completed in 2020 to understand the hydrologic, geomorphic, and biological processes occurring on the site, and their inter-relationships and to inform project design. Through the development of the feasibility and on through project design and implementation, the Habitat Agency will work closely with Valley Water staff and consultants as they develop plans for the proposed Pacheco Dam Expansion Project upstream from the Reserve. It is anticipated that final designs and permitting will be completed in FY2021, with riparian work beginning in the fall of 2021 and in-stream construction occurring the following summer in 2022.

4.1.7.4 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 in Hollister. The project will include stream bank enhancement (Phase I), riparian restoration (Phase II), and stream confluence restoration. (Phase III). The project's goals include providing wildlife connectivity and habitat for least Bell's vireo, as well as potential habitat for monarch butterfly and fisheries. The Phase I feasibility study and 35% design are currently underway. Construction of stream bank enhancement will include soil prep and pollinator seed mix. Construction of Phase I is schedule for September and October of 2022 and Phase II is schedule for November and December 2022. The Habitat Agency and OSA will seek additional funding to implement Phase III.

Ecological Performance Standard	Year 3 Success Criteria	Year 3 Monitoring Results	Standard Met in Year 3
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.	The maximum pond water depth exceeded 2 feet (2.49 feet) on August 31, 2019 and the target hydrologic regime was achieved.	Yes
Sedimentation and Geomorphic Stability	The pond and wetland mitigation sites and springbox-seep water collection structures will demonstrate minimal sedimentation and geomorphic stability (includes cross-sectional surveys).	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.	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 tiger salamander continued to demonstrate successful breeding and the western pond turtle continued to occur at the pond mitigation site. California red-legged frog have not been observed during Years 1–3.	No
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 3 was similar to baseline conditions in Year 1. Predator control seining occurred on September 12, 2019 and the pond was drained on October 30, 2019.	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 abundance and percent cover of Mt. Hamilton thistle increased between Year 1 and Year 2. The spatial extent of the population remained similar between Years 1 and 2.	Yes

Ecological Performance Standard	Year 3 Success Criteria	Year 3 Monitoring Results	Standard Met in Year 3
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 45.2% at the pond mitigation site and 75.8% 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.	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 low density patches of invasive plants were observed at the pond mitigation site.	Yes
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.	NA
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 at the pond mitigation site and water was available until late spring from the trough at the wetland mitigation site.	Yes

Table 15b. Percent Survival of Coyote Ceanothus by Treatment and Test Plot for Planting Years 2015-2018

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

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

Ecological Performance Standard	Year 1 Success Criteria	Year 1 Monitoring Results	Standard Met in Year 1
Wetland Re-Establishment and Enhancement Area			
Standard 1: Container Plants	90% survivorship	97% survivorship	Yes
Standard 2: Cuttings Survivorship	70% survivorship	No cuttings were installed in the wetland rehabilitation or enhancement areas.	N/A
Standard 3: Seeded Areas Percent Cover	50% cover	100% cover	Yes
Standard 4: Maximum Cover of Weed Species	20% cover	20% cover	Yes
Standard 4: Absolute Cover of Wetland Species (OBL or FACW)	≥50% of reference absolute cover of wetland species	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	N/A
Standard 6: Relative Cover of Native Species	≥50% relative cover of native grasses	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	N/A
Standard 7: Target Species Richness	≥75% of reference site	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	Yes
Standard 8: Hydrology	≥14 days of ponding or saturated soils in an average or above-average precipitation year	≥14 days of ponding or saturated soils in an average or above-average precipitation year	Yes
Stream and Riparian Buffer Area			
Standard 1: Container Plants	90% survivorship	91% survivorship	Yes
Standard 2: Cuttings Survivorship	70% survivorship	93% survivorship	Yes

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

Ecological Performance Standard	Year 1 Success Criteria	Year 1 Monitoring Results	Standard Met in Year 1
Standard 3: Seeded Areas Percent Cover	50% cover	100% cover	Yes
Standard 4: Maximum Cover of Weed Species	20% cover	>20% cover	No
Standard 5: Absolute Cover of Wetland Species (OBL or FACW)	≥50% of reference absolute cover of wetland species	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	N/A
Standard 6: Relative Cover of Native Species	≥50% relative cover of native grasses	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	N/A
Standard 7: Target Species Richness	≥75% of reference site	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	Yes
Standard 8: Hydrology- Inset Floodplains on San Felipe Creek	Inset Floodplain inundation if peak flows exceed a 2-year event	All constructed floodplain benches were inundated during the 2019 monitoring year.	Yes
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	All five existing and created channels contained flows during the 2019 monitoring year	Yes
Standard 10: Channel Form	There will be less than 1 foot of channel bed elevation loss overall.	>1 foot of channel elevation loss	No
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.	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

Ecological Performance Standard	Year 1 Success Criteria	Year 1 Monitoring Results	Standard Met in Year 1
Standard 13: Staked Wood Jams	Staked material is intact and in such a condition to capture sediment and organic material transported by creek	Per the MMP, quantitative data and comparison with the reference population upstream will begin in monitoring Year 2.	N/A

Figure 6. Completed and Planned Restoration Projects

MAP by:BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2018-2019\Annual Report 2018-2019 Maps v6.aprx (5/12/2020)

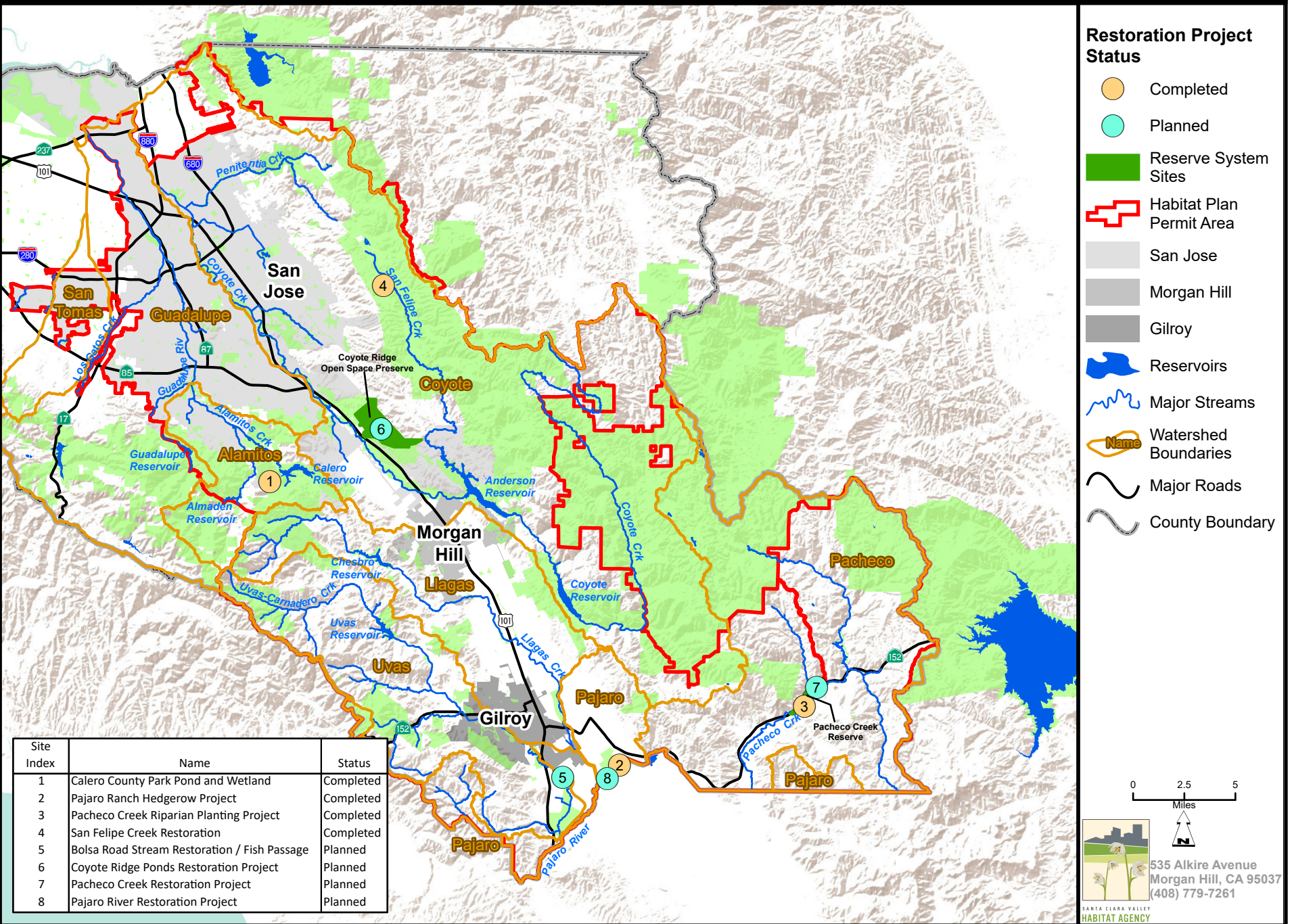




Photo 1. Year 1 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 2. Year 3 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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



Photo 4. Year 3 Conditions Looking East from Photo Point 1b during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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



Photo 6. Year 3 conditions at Photo Point 2 during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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



Photo 8. Year 3 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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



Photo 10. Year 3 Conditions at Photo Point 4 during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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Photo 11. Year 1 Conditions at Photo Point 5 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)



Photo 12. Year 3 Conditions at Photo Point 5 during Vegetation Monitoring at the Wetland Mitigation Site (June 3, 2019)

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Photo 13. Year 1 Conditions at Photo Point 6 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 14. Year 3 Conditions at Photo Point 6 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (June 3, 2019)

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Photo 15. Year 1 Conditions at Photo Point 7a during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 16. Year 3 Conditions at Photo Point 7a during Vegetation Monitoring at the Pond Mitigation Site (August 13, 2019)

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Photo 17. Year 1 Conditions at Photo Point 7b during Vegetation Monitoring, Showing the Wetland Establishment Area at the Pond Mitigation Site (August 8, 2017)



Photo 18. Year 3 Conditions at Photo Point 7b during Vegetation Monitoring, Showing the Wetland Establishment Area at the Pond Mitigation Site (August 13, 2019)

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Photo 19. Year 1 Conditions at Photo Point 7c during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 20. Year 3 Conditions at Photo Point 7c during Vegetation Monitoring at the Pond Mitigation Site (August 13, 2019)

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Photo 21. Year 1 Conditions at Photo Point 8 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 22. Year 3 Conditions at Photo Point 8 during Vegetation Monitoring at the Pond Mitigation Site (August 13, 2019)

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Photo 23. Year 1 Conditions at Photo Point 9 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 24. Year 3 Conditions at Photo Point 9 during Vegetation Monitoring at the Pond Mitigation Site (August 13, 2019)

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Photo 25. Year 1 Conditions at Photo Point 10 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)



Photo 26. Year 3 Conditions at Photo Point 10 during Vegetation Monitoring at the Pond Mitigation Site (August 13, 2019)

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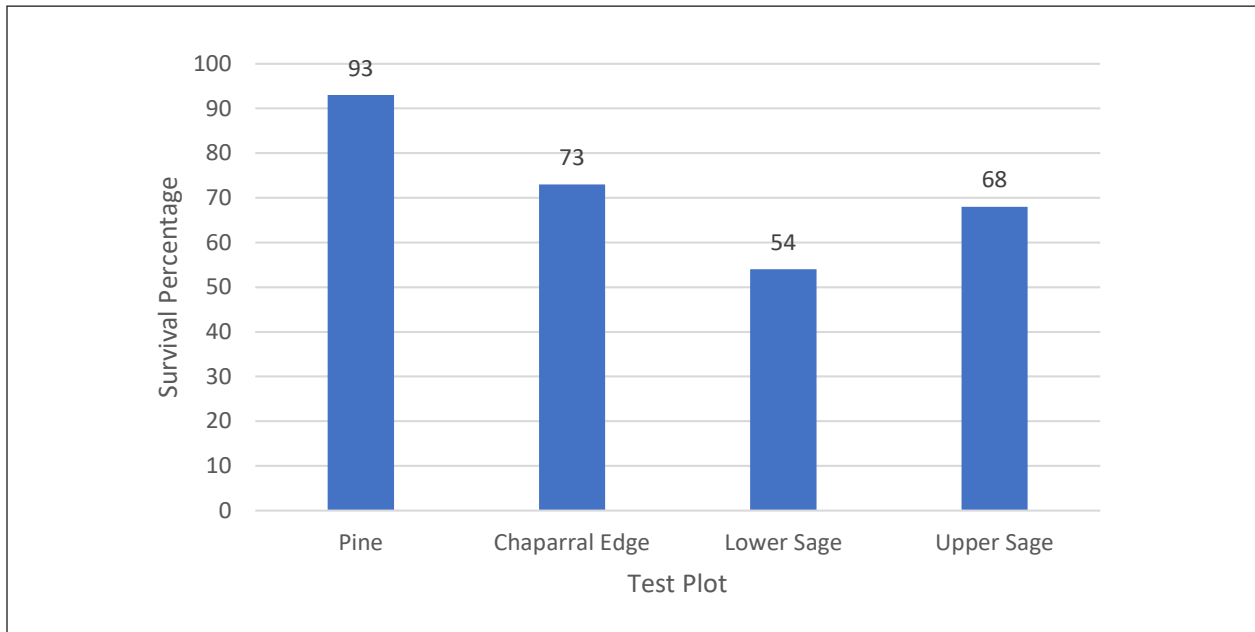


Figure 8a.
Percent Survival by Test Plot, Summer 2019 Monitoring



Figure 8b.
First Flowering of Planted Coyote Ceanothus Container Stock, Pine Test Plot

Photo date: February 2019



Figure 8c.
Visitation of Coyote Ceanothus Flower by Native Bee, Lower Sage Test Plot

Photo date: February 2019



Figure 8d.
Seed Set on Planted Coyote Ceanothus, Lower Sage Test Plot

Photo date: April 2019

Source: Santa Clara Valley Water District 2020

Figure 8
Coyote Ceanothus Population Creation Project:
Representative Photographs and Graph



Figure 9a. Photomonitoring Point, Pacheco Reserve Enhancement, Rest 1

Photo date: November 2018 (left) and September 2019 (right)



Figure 9b. Photomonitoring Point, Pacheco Reserve Enhancement, Rest 2

Photo date: November 2018 (left) and September 2019 (right)



Figure 9c. Photomonitoring Point, Pacheco Reserve Enhancement, Rest 3

Photo date: November 2018 (left) and September 2019 (right)

Graphics... 0067919 SCVHA (05-19-2020) tag

Figure 10a San Felipe Creek Restoration Project: Representative Photographs of Road Improvements



Pre-Treatment
Corral Trail from Hotel Trail Intersection R-01



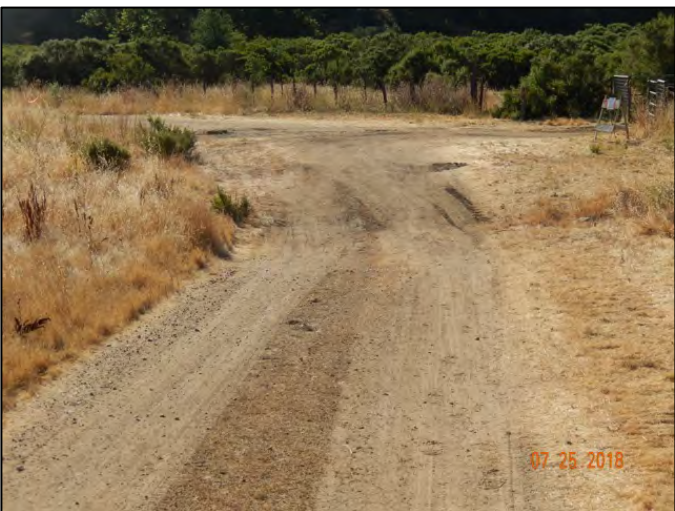
Post-Treatment
Corral Trail from Hotel Trail Intersection R-01



Pre-Treatment
Corral Trail Drainage Lenses R-01



Post-Treatment
Corral Trail Drainage Lenses R-01



Pre-Treatment
Hotel Trail Arizona Crossing R-02



Post-Treatment
Hotel Trail Arizona Crossing R-02

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10b. San Felipe Creek Restoration Project: Representative Photographs of Step Pools, Wood Jams, & Channel Plugs



Pre-Treatment
Incising Gully Step Pools ID03-05



Post-Treatment
Incising Gully Step Pools ID03-05



Pre-Treatment
Tributary Wood Jams ID02-01



Post-Treatment
Tributary Wood Jams ID02-01



Pre-Treatment
Irrigation Ditch Channel Plug ED03-04



Post-Treatment
Irrigation Ditch Channel Plug ED03-04

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10c. San Felipe Creek Restoration Project: Representative Photographs of Boyd's Creek and Inset Floodplain 1



Pre-Treatment
Boyd's Creek Main Stem at Fifth Log Structure ID01-01



Post-Treatment
Boyd's Creek Main Stem at Fifth Log Structure ID01-01



Pre-Treatment
Boyd's Creek Main Stem Grading Limits of Swale ED01-01



Post-Treatment
Boyd's Creek Main Stem Grading Limits of Swale ED01-01



Pre-Treatment
San Felipe Creek Inset Floodplain ID03-01



Post-Treatment
San Felipe Creek Inset Floodplain ID03-01

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10d. San Felipe Creek Restoration Project: Representative Photographs of Inset Floodplain 2



Pre-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-02



Post-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-02

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10e. San Felipe Creek Restoration Project: Representative Photographs of Inset Floodplain 3



Pre-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-03



Post-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-03

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10f. San Felipe Creek Restoration Project: Representative Photographs of Inset Floodplain 4



Pre-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-04



Post-Treatment
San Felipe Creek Inset Floodplain Panoramic ID03-04

Photo Credits: Richard Harris, PhD

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Figure 10g. San Felipe Creek Restoration Project: Representative Photographs of Pig Fence and Spring



Perimeter Fencing protects restoration site from pig rooting, as depicted in second photograph (no pre-treatment photographs available)



Pre-Treatment
Spring



Post-Treatment
Spring (fencing only)

Photo Credits: Richard Harris, PhD and Terah Donovan, Santa Clara Valley Habitat Agency

Figure 10
San Felipe Creek Restoration Project:
Representative Photographs

Western Burrowing Owl Management and Monitoring

The 2019 western burrowing owl surveys documented 33 breeding adult burrowing owls and 46 fledged young. The month of May was unusually cold and wet, likely contributing to the decreased number of breeding pairs and their offspring. Management agreements with the SJ-SCRWF and the Refuge include a total of 920 acres, approximately 17% of the total required under the Habitat Plan. Three burrowing owl studies were also conducted in the reporting year. Plus, Habitat Agency burrowing owl researchers (Debra Chromczak, Phil Higgins, Sandra Menzel, and Sandra Menzel) visited colleagues at the San Diego Zoo to observe captive breeding facilities to prepare for future Tier 3 conservation (i.e., recovery) actions.

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.

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 populations. 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. 2019).

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 SJ-SCRWF bufferlands (bufferlands) is home to the most successful burrowing owl breeding site in the Permit Area. The 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 being reviewed by the City of Santa Clara legal counsel and is expected to be approved in 2019.

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 2019, five pairs were observed, four of which were successful, and produced a total of 21 young. Productivity was 4.2 young/pair which was higher than the average of 3.5 young/pair at this breeding site. All pairs and their young were supplementally fed (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 this 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. 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 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 over Warm Springs of the Refuge with the San Francisco Bay Bird Observatory and 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 of this species in Warm Springs.

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 in the mitigation lands 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 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 six adults in 2015. In 2019, biologists observed three adults (one pair and one individual) in April but none during the following monthly breeding season surveys. Average productivity at this location is 2.0 young/pair. Since 2015, Debra Chromczak has banded adult and juvenile owls at this location.

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 2019 was conducted by SFBBO staff in coordination with 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).

5.1.1.3 Progress to Date

Number of Adults

- Decrease in the number of adults during the breeding season between previous reporting year (52–53 individuals) to current reporting year (33 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 FY1819 is Year 6 of Plan implementation, the Habitat Agency needs to protect or manage 636 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 6 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 SJ-SCRWF 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 FY1819 is Year 6 of Plan implementation, the Habitat Agency is ahead 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, SJ-SCRWF, 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 2019 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 first time since monitoring began in 2014, breeding burrowing owls were not observed at all five locations in the South Bay area in 2019 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, SJ-SCRWF, NASA Ames Research Center at Moffett Field, and the San José International Airport. In total, surveyors observed 33 adults during the 2019 breeding season, forming 14 pairs, 8 of which were successful (**Table 16a** and **Table 16b**). Pairs produced a total of 46 young, resulting in a reproductive rate of 3.29 young/pair. In comparison, in 2018, 50–53 adults produced 80–81 young (3.24 young/pair), and in 2017, 74 adults produced 64 young (1.94 young/pair).

No new breeding season locations were identified in 2019, though some single owls were observed very early in the breeding season (March) but did not initiate nests. **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 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 2019, the sixth year of Habitat Plan implementation, there should be 88 adult owls present during the breeding season. The 33 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 2019 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 Additional Research Studies

In addition to the annual breeding season surveys described above, the Habitat Agency conducted point-count and call-broadcast surveys for burrowing owls in northern San Benito and southern Santa Clara County during the height of the 2019 breeding season (Menzel and Trulio 2019). These surveys were conducted because of several incidental burrowing owl observations by Habitat Agency researchers and Valley Water near the County line (i.e., along Lake Road) in the 2018 breeding season. These observations spurred interest in the size of the burrowing owl population in this area and potential for enticing some of these owls to move onto protected lands in Santa Clara County, such as The Nature Conservancy's Pajaro Ranch or the nearby Wildlands Pajaro River Mitigation Bank. Sandra Menzel and Lynne Trulio conducted roadside point-count and call-broadcast surveys (Conway and Simon 2003) between June 17 and July 19, 2019 at 37 survey stations, including locations where owls were observed along Lake Road in 2018. They observed two owl pairs in this area, one of which had five young (they did not see any young with the second pair). No other burrowing owls were observed during the surveys. Almost half (43%) of the areas surveyed did not support California ground squirrels or their burrows. Only two of the remaining 21 areas, the Coyote Valley Open Space Preserve and Hollister Airport, had a high abundance (>20) of ground squirrels. Along agricultural fields throughout the region, Menzel and Trulio (2019) observed many hundreds of ground squirrel bait stations.

Despite pervasive ground squirrel eradication, the low-lying valley at the southern end of Santa Clara County has good potential for supporting breeding burrowing owls in the future, if managed properly. Recommended actions for 2020 and beyond include working with landowners along Lake Road to protect and manage occupied burrowing owl habitat, seeking opportunities for management of flat, open habitat for burrowing owls, reestablishing California ground squirrel colonies on protected lands, and, when appropriate, relocating burrowing owls from other areas to lands managed and protected for breeding burrowing owls in southern Santa Clara County (Menzel and Trulio 2019).

5.2.2.1 Western Burrowing Owl Supplemental Feeding Study: Breeding Season

Lynne Trulio, Phil Higgins, and Debra Chromczak began implementation of a supplemental feeding study in 2017 to investigate whether supplemental feeding of western burrowing owls with dead laboratory mice during breeding seasons (March/April to September) increases reproductive success as measured by the percent of pairs producing chicks and the number of chicks fledged per pair (Higgins et al. 2017). The study had its third and final year, in 2019. Increased nest success and chicks fledged are positive attributes for bird populations; ideally, this will lead to greater numbers of nesting pairs and local dispersal of young to increase the burrowing owl population in the Permit Area and the Expanded Burrowing Owl Conservation Area. In 2017, owls were fed at two breeding locations: Shoreline Regional Wildlife Area and NASA Ames Research Center at Moffett Field. 2017 was a poor reproductive year for all populations in the region.

In 2018 and 2019, feeding of the populations continued at Shoreline Regional Wildlife Area and NASA Ames Research Center at Moffett Field, as well as nests at SJ-SCRWF. During the three-year study period (2017–2019), nests with supplemental feeding produced more chicks ($\bar{x} = 3.6$) than nests with no feeding ($\bar{x} = 1.8$) (Mann-Whitney U test; $U = 250$, $df = 1$, $p = 0.012$). All supplemental feedings occurred at locations within the Permit Area or the Expanded Burrowing Owl Conservation Area.

5.2.2.2 Breeding Season Banding

Breeding season banding, which occurs concurrently with surveys for breeding owls, is designed to collect data on the population dynamics and began in the spring of 2015. This study facilitates management practices by allowing for a better understanding of owl nest location preference, mate selection, nesting success, and seasonal movement. During the 2019 breeding season, Habitat Agency researcher Debra Chromczak conducted nest monitoring, trapping and banding at two locations: the SJ-SCRWF and Warm Springs. During the course of the breeding season the two areas were monitored closely to understand in what phase of nesting the owls were being observed. Trapping and banding were timed to minimize disturbance during sensitive nesting phases such as incubation. Ms. Chromczak also conducts banding at Shoreline Regional Wildlife Area and NASA Ames Research Center but these activities are not funded by the Habitat Agency.

Results from the 2019 effort at Warm Springs include observations of 3 adults (one pair and one individual) in April and early May. None of these owls were observed during subsequent monthly surveys, however, and no other active burrows were seen. Between the 2018 and 2019 breeding seasons, the number of female owls at Warm Springs declined by 67% (3 females to 1 female), nest success declined from 33% to 0%, the number of chicks decreased 100% from 5–6 chicks to 0 chicks, and the mean brood size for all nests dropped from 1.67 chicks to 0.0 chicks per female (Chromczak 2019).

Results from the 2019 efforts at the SJ-SCRWF include observations of 12 adults and 21 chicks. No new adults were banded at the site, all adults captured had been previously banded. Seventeen young were banded at the site.

Banding will continue in future monitoring years, providing important information about movement between populations and habitat conditions that are most favorable to the owls, and will inform site-specific management decisions.

5.2.2.3 Tier 3 Recovery Actions

During this sixth annual breeding season survey, the number of owls decreased to a total of 33 adults in comparison to 52–53 adults in 2018. Although the total number of adult owls was down, the average number of offspring per pair slightly increased from 3.24 in 2018 to 3.29 juveniles per pair in 2019.

The Population Viability Analysis (PVA) for burrowing owls completed during preparation of the Habitat Plan suggested that in order to change the population trend from negative to positive within a 10-year time period at the three sites included in the PVA (Moffett Airfield, San Jose International Airport, and Shoreline), there would have to be an increase of three adult owls per year for all three sites combined (Appendix M and N of the Habitat Plan, ICF International 2012). The baseline count was 51 adult owls in 2009. Currently, the combined count of owls at these three sites is 18 adults.

Inbreeding has been observed at several sites over the last few years and likely contributes to the overall population decline through inbreeding depression. Inbreeding depression is the reduction in the average fitness of offspring born to parents that are closely related to each other, compared to the fitness of offspring born to unrelated parents. Inbreeding depression occurs because closely related parents share more genes, and thus their offspring are more likely to receive two copies (one from each parent) of alleles that cause deleterious traits or genetic diseases. Inbreeding data from bird and mammal populations suggest that inbreeding depression often significantly affects birth weight, survival, reproduction and resistance to disease, predation and environmental stress (Keller and Waller 2002).

In addition to a low number of individuals, burrowing owls in the South Bay were limited to only four breeding locations in 2019. This regional contraction in range exposes the breeding population to stochasticity and therefore a high risk of local extinction, especially because all of these sites have been facing increasing pressure from encroaching development. While burrow availability and foraging habitat have been reduced, the rate of disturbance and predation pressure has increased. Habitat protection and management at current breeding locations is imperative (Menzel et al. 2019).

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. From June 6–23, researchers captured and retained 14 juvenile owls (12–25 days old) from Shoreline Regional Wildlife Area (2), NASA Ames Research Center (2), and SJ-SCRWF (10) and moved them into a captive-rearing facility hosted by the Peninsula Humane Society (PHS) in Burlingame. Except for one juvenile that died in August due to poor nutritional condition, all captive owls were healthy at the end of 2019 and are scheduled to be “soft” released in March 2020: three male-female pairs at Shoreline Regional Wildlife Area and three single females at SJ-SCRWF. “Soft” release is a method of reintroduction in which captive-reared owls are confined to a field enclosure prior to “hard” release so they can acclimate to the immediate environment of their release site and has proven successful for endangered burrowing owls in British Columbia (Mitchell et al. 2011). The enclosures for this project have been designed in close coordination with researchers from British Columbia and the San Diego Zoo Institute for Conservation Research (ICR), which are embarking on their own active burrowing owl recovery

project in San Diego County.¹⁹ After the first soft release in March, researchers plan to capture additional juveniles in June and July for captive-rearing at PHS from August to March 2021. All activities under the project have been approved by and coordinated with the USFWS and CDFW and this will continue in 2020.

Habitat Agency researchers continued outreach to other organizations to learn more about captive-rearing and captive-breeding techniques. Lynne Trulio, Sandra Menzel, Phil Higgins, and Debra Chromczak made an April 26–28 trip to the San Diego Zoo where they toured the captive breeding facility in Safari Park and talked to researchers with the zoo’s Burrowing Owl Recovery Program, who have been implementing a captive breeding program since 2017. They also visited the Rancho Jamal Ecological Reserve in eastern San Diego County, which is a *receiver site* for burrowing owls that have been actively translocated from other sites in an attempt to establish new breeding populations (also known as *breeding nodes*) (Marczak et al. 2018). Lynne Trulio and Sandra Menzel also began contacting Bay Area animal rehabilitation facilities besides PHS to gauge interest on forming future partnerships for captive breeding of burrowing owls for eventual active translocation to new breeding sites similar to the San Diego Zoo ICR project. In 2020, they plan on submitting a proposal for such a project to the USFWS and CDFW.

¹⁹ Additional information available at <https://institute.sandiegozoo.org/species/burrowing-owl>.

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

Site Name/Location	Number of Adults Present During the Breeding Season 2018	Number of Adults Required to Meet Population Growth Target 2018	Number of Young Fledged in 2018	Number of Pairs 2018	Number of Successful Pairs 2018	Acreage
Within Permit Area						
San José International Airport	4	-	11	2	2	331
San José-Santa Clara Regional Wastewater Facility	12	-	21	5	4	492
Permit Area Subtotal	16	-	32	7	6	823
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View	2	-	6	1	1	750
Don Edwards National Wildlife Refuge - Warm Springs Unit	3	-	0	1	0	719
NASA Ames Moffett Airfield	12	-	8	5	1	700
Other Locations	0	-	0	0	0	70
Expanded Area Subtotal	17		14	7	2	2,239
Total Breeding Season Adults	33	88	46	14	8	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
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
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
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
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View						
2014	8	-	5			750

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
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
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
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
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
2019	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

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
2018	52-53	-	80-81	24-25	19-20	2,239
2019	17		14	7	2	2,239

^a These metrics were not tracked in 2014

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.

Reporting Requirements

- A summary of all land and water management activities undertaken on and off the reserves and a discussion of the management issues facing the Habitat Agency.

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.

The Rancho Santa Ana Botanic Garden (RSABG) established five permanent conservation seed collections at the California Seed Bank in the FY1819 reporting year.

6.1 Management Planning Activities

Management and monitoring plans are completed within five years of Reserve System acquisitions. The Habitat Agency completed and received Wildlife Agency approval for the *Coyote Ridge Open Space Preserve Management and Monitoring Plan* (CROSP MMP) in the FY1718 reporting year. The CROSP MMP provides a detailed prescription for the long-term management and monitoring. As stated in Chapter 3, *Sites Under Review*, at least five new properties will be acquired in FY1920. Management plans will 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. The CROSP MMP will be amended for those properties that are in the same Reserve Unit (i.e., additional properties on Coyote Ridge).

6.2 Management Implementation

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 2020 pers. comm.).

- Invasive plant control along ridge road and the south ascent roads (artichoke thistle (*Cynara cardunculus*), purple star-thistle, yellow star-thistle, black mustard, and milk thistle (*Silybum marianum*)).
- Initiated feral pig depredation program.
- General road maintenance along the ridge road.
- Performed basic road improvements on the lower road by adding rock along key sections to facilitate vehicle traffic along the ridge road.
- Fencing repair

The Rancho Santa Ana Botanic Garden (RSABG) established five permanent conservation seed collections at the California Seed Bank in the FY1819 reporting year. The RSABG processed, stored and tested seed from five covered species: 1) Santa Clara Valley dudleya 2) Mount Hamilton thistle 3) smooth lessingia 4) Tiburon paintbrush 5) Fragrant fritillary. The seed arrived at the RSABG on January 14, 2019. Seeds were processed in the California Seed Bank at RSABG using soil sieves, a hand debearder/deawner, and a seed aspirator unit to remove excess material and empty seeds (including those that had been predated) from the collections. Seed predating insects were observed in both the smooth lessingia and Mount Hamilton thistle seed collections. All collections with insects were placed in a sealed plastic box with a Hot Shot No-Pest Strip for 5 days in order to kill the insects. All collections were placed in an airtight drying chamber maintained at a relative humidity of 12-15%, where they remained for one week in order to dry them out and prepare them for storage. The seeds were then counted and split into three storage lots: an Active lot to be stored at RSABG and utilized for follow up germination testing and approved distribution, a Base lot to be stored at RSABG and kept sealed and frozen for long term genetic preservation, and a Backup lot sent to the National Laboratory for Genetic Resource Preservation (NLGRP) in Fort Collins, CO and kept sealed and frozen for long term genetic preservation. Collections with less than 500 total seeds (only fragrant fritillary) were only split into Base and Backup. The lots were packaged in double heat-sealed foil pouches and are currently being stored at -23 °C in the California Seed Bank. The Backup lots will be sent to NLGRP for backup storage before the end of the year. **Table 17** includes the estimated seed quantities (based on weight) for the five species.

One germination test was conducted for each of the five taxa in order to evaluate seed viability. A subset of seeds was randomly selected from the locality with the highest seed quantity and soaked for one minute in a sterilizing solution of bleach and Tween before being sown on a 0.5% agar solution on clear plastic examination plates. The five plates were placed in a temperature-controlled germination chamber maintained at 11 hours light cycle at 20° C and 13 hours dark cycle at 12° C. Seeds were monitored once a week, with each new germination being scored during monitoring. The results of the germination test are as follows:

- Tiburon paintbrush: 50.0 % seed germination
- Fragrant fritillary: 80.0 % seed germination
- Smooth lessingia: 87.5% seed germination
- Mount Hamilton thistle: 8.0 % seed germination
- Santa Clara Valley dudleya: 58.0% seed germination

Seeds were not collected and banked from the Metcalf Canyon jewelflower, most beautiful jewelflower, and Loma Prieta hoita. There is an area of interspeciation between the jewelflowers where they co-occur. The genetic difference between the plants needs to be determined before seeds of these species can be banked. No seeds were collected from Loma Prieta hoita because no reproductive plants were found.

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.
- Fencing and protection of sensitive wetland, riparian, and pond habitats.
- Removal of the cyclone fencing and replacing dilapidated fencing with wildlife-friendly fencing.
- Roads and trail inventory and repair.
- Ongoing invasive plant species management.

These management issues informed the 2020 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.

- Approved a grazing agreement with neighboring rancher
- Installed perimeter fencing around restoration sites by rancher in exchange for limited grazing access.
- Roadside and on-site trash clean-up and removal.
- Maintenance of solar powered water well for irrigation.

6.2.2.2 Management Issues

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

- Removal of remnant fencing and PVC piping from failed Caltrans restoration irrigation system.

- Weed abatement within restoration planting sites (trees and shrubs) within the upland areas.
- Invasive weed control for poison hemlock, star thistle, mustard, and other species.

Table 17. California Seed Bank Seed Collection Quantities

Species	Location	EO#	# of Plants Sampled	Total # of Seeds
Tiburon painbrush	Paintbrush Hill, Coyote Ridge	7	40	1,909
		9	59	2,853
Fragrant fritillary	Coyote Ridge Open Space Preserve	23	17	317
Smooth lessingia	Coyote Ridge Open Space Preserve	14	111	3,914
Santa Clara Valley dudleya	Coyote Ridge Open Space Preserve	4	450	147,946
Mt. Hamilton thistle	Coyote Ridge Open Space Preserve	7	237	13,658
		8	190	7,253

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 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 2019, the total number of larvae on the CROSP increased to approximately 307,000 +/- 138,000 (in comparison to 62,000 +/- 43,000 in 2018), which is approximately 30-40% of the

total Bay checkerspot butterfly population across Coyote Ridge. The surveys also documented high quality serpentine habitat. Bay checkerspot butterfly host plants and nectar sources were mostly stable in 2019, with some declines in dwarf plantain that remain within the range of historical variability seen throughout Coyote Ridge. 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 2019 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: 2019 Annual Report* (Creekside Center for Earth Observations 2019).

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 an additional 21 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 2018, 6 out of 49 plots along the ridgeline had zeros (in comparison to 13 plots in 2018 and 6 plots in 2017). In the mid and low elevations, 3 out of 21 plots had zeros (in comparison to 5 plots in 2018 and 8 plots in 2017).

Adults

Adult monitoring supplements larval surveys. Presence/absence surveys took place in the three larvae population zones, plus four additional zones. 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 were visited during peak flight season, on sufficiently warm (65°F +) and sunny days (less than ~50% cloud cover) with winds less than 15 mph.

Multiple adults were encountered on each of the four transects on the first visits. The encounter rate was highest (60 adults encountered per hour) at North Gun Range (northernmost portion of the Coyote Ridge Open Space Preserve), while the other three transects across the CROSP had half or less that encounter rate, with lower amounts to the south.

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 2019, the total number of larvae on the CROSP increased to approximately 307,000 +/- 138,000 (in comparison to 62,000 +/- 43,000 in 2018), which is approximately 30-40% of the total Bay checkerspot butterfly population across Coyote Ridge. 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 increase indicates a good weather year, primarily a cool spring in 2018 that extended the host plant growing season. The mostly cool spring of 2019 may indicate another good larva year in 2020.

Adult surveys illustrated that Bay checkerspot butterfly are found throughout the CROSP and were encountered at rates ranging from 11 to 60 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 higher adult encounter rates seen in CROSP compared to Kirby were echoed by the higher 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 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 2019). 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 (see Grazing Regime section above). Desired higher stocking rates to decrease nonnative annual grass cover have been communicated to the ranchers. We consider this an adaptive adjustment to the existing grazing regime, rather than

the institution of a new grazing regime. Both ranchers and their livestock 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.

Large population fluctuations are natural (Figure 12) 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 late March 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 2019 appear below, followed by survey details.

Bay Checkerspot Host Plants

Dwarf plantain cover decreased at CROSP North and CROSP Mid in 2019. It remained at moderate levels at CROSP South. Values ranged from 1.3% at the North cluster to 3.6% at the Mid cluster. Cover of owl's clover increased noticeably at the North and Mid sites after a drop in 2018, while owl's clover at the South site remained very low at 0.1%. Cover at the North cluster was 1.5%, the highest value since 2016 when data collection began at this site. Cover at the Mid cluster was 0.5%, which is still a good value for this site. 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. High owl's clover is a predictor for high population numbers the next year.

Bay Checkerspot Nectar Sources

Goldfields varied across sites. CROSP North had the highest cover again at 8.5% cover. CROSP South remained low at 0.7% cover. CROSP Mid had 2.6 % cover. Tidy tips were low across the three sites at

0.3% or less. They were not detected in plots at the South cluster 2019, nor were they detected in 2017 or 2018. Jeweled onion values were also low, below 0.08% cover. Muilla cover values were similar to 2108 cover values at all sites, ranging from 0.4% to 0.8% cover. Overall Muilla was at moderate to high amounts. Grasses and Thatch

The perennial grasses measured are all native. CROSP North had the highest value at 3.1% cover and CROSP South had the lowest at 1.2% cover. This is a moderate value for CROSP South. Nonnative annual grasses remained high this year. The highest cover value was seen at the CROSP North cluster was 24.5% cover. This is the second highest value seen since 2007 when CROSP South had 31.8% cover (data not shown). The lowest cover value was seen at CROSP Mid at 17.9% cover, still a high value for nonnative annual grass. Thatch cover was high at CROSP North (5.3% cover). Thatch decreased at CROSP South and CROSP Mid. Annual Forbs

Annual forbs are almost entirely native on CROSP's serpentine soils. They maintained low to moderate values across sites this year. Cover values ranged from 13.1% at CROSP South to 19.8% CROSP Mid. Cover values for perennial forbs, which are all native, were low and ranged from 2.3% to 3.1%.

Native cover increased at all sites in 2019. Cover ranged from 25.7% to 41.3%, which are moderate to high values. Native richness also increased across sites, ranging from 12.8 species at CROSP North to 13.7 species at both CROSP South and CROSP Mid. These are high values. Nonnative cover remained high this year at all sites. It was highest at CROSP North (24.5%) and lowest at CROSP South and CROSP Mid (21.6% and 18.0% cover, respectively). Nonnative cover throughout CROSP is driven mostly by nonnative annual grass.

Bare areas were variable across sites in 2019. It was high at CROSP South (49.4%), moderate at CROSP Mid (39.0%) and low at CROSP North (26.6%).

Discussion

The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat. Bay checkerspot butterfly host plants and nectar sources were mostly stable in 2019, with some declines in dwarf plantain that remain within the range of historical variability seen throughout Coyote Ridge. Native plant cover and richness increased throughout the CROSP, but nonnative annual grass cover also remained high.

The results indicate that: 1) vegetative composition parameters aren't tightly correlated with Bay checkerspot abundance and 2) 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 annual forb cover, but had low larval densities in 2019, whereas CROSP North and South had moderate to high annual grass cover and lower dwarf plantain cover, but Bay checkerspot butterfly populations were high at both sites.

Nonnative annual grass has been high the last three 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 increased even with high nonnative grass cover, there is little need to encourage ranchers to change their management techniques. If anything, the presence of high nonnative annual grass cover in conjunction with high 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 2019).

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. 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 larger scale graminicide (Envoy Plus) trials to control both barbed goatgrass and other nonnative annual grasses. The summit VTA border region (south of UTC/VTA) fence is recommended for a pilot treatment.
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 FY1819 reporting year.

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 Santa Clara County Tricolored Blackbird Nesting and Foraging Monitoring Project 2017–2018

The final report for the Santa Clara County tricolored blackbird nesting and foraging monitoring project was completed in the FY1819 reporting period. The following paragraph summarizes the project and its findings.

During 2017 and 2018, Talon Ecological Research Group (Talon) conducted a monitoring comprehensive survey of tricolored blackbirds (*Agelaius tricolor*) throughout Santa Clara County. Financial support for this project was provided by a Natural Community Conservation Program Local Assistance Grant with a matching grant from the Santa Clara Valley Habitat Agency. The goal of the project was to determine the breeding status of the species and better understand their local ecology. Tricolored blackbirds have declined at an alarming rate throughout their range. Recent surveys have shown an 80% decline over the past 90 years and a 63% decline between 2008 and 2014. Within the past 40 years, seven historical nesting colonies were recorded in Santa Clara County. Talon monitoring during the 2017 breeding season found only two of those seven sites had nesting Tricolored Blackbirds. This is a 71.4% decline of nesting colonies in Santa Clara County. This study found that 29 sites had adequate breeding habitat. However, only 4 of those 29 sites (9%) had tricolored blackbirds present. Two historic sites and one newly identified site (75% of occupied sites) successfully fledged young in 2017. Two nesting colonies were located on private property (Del Puerto Canyon Road and Highway 130 in San Antonio Valley) and one on public property (Cañada de Los Osos Ecological Reserve). During the non-breeding season (August-February), 24 of

122 (19.7%) locations surveyed for foraging tricolored blackbirds had them present. San Antonio Valley, Coyote Valley and Cañada Road had the largest numbers of breeding and non-breeding tricolored blackbirds. These areas are critical for tricolored blackbird conservation in Santa Clara County and should be included in a comprehensive management plan for the species.

7.2.1.3 Coyote Valley Bobcat and Gray Fox Connectivity Study: Wildlife-Vehicle Collision Analysis

In January 2017, the California Department of Fish & Wildlife awarded Santa Clara Valley Open Space Authority a Local Assistance Grant (LAG) to support the Coyote Valley Bobcat and Gray Fox Connectivity Study, a research study to assess habitat selection and movement across the Coyote Valley landscape. The Santa Clara Valley Habitat Agency, Peninsula Open Space Trust (POST), and the Gordon and Betty Moore Foundation provided additional funding for the project. Pathways for Wildlife was hired to assist with the radio collar study being conducted by the Wilmers Lab at the University of California, Santa Cruz, and to be the lead research team for the roadkill data component of the study, which entailed wildlife-vehicle collision data collection, analysis, and reporting.

The study area for the project was Coyote Valley between the cities of San Jose and Morgan Hill. Consisting of 7,400 acres, Coyote Valley is significant to wildlife connectivity because it is one of only two non-urbanized areas that provides wildlife the ability to move between millions of acres of core habitat in the Santa Cruz Mountains and Diablo Range.

The number of animals documented as roadkill within the study area came to a total of 103 animals. The species with the highest number of recorded animal-vehicle collisions were raccoon with 23 records, bobcat and coyote both with 15 records, and deer with 13 records. In addition, nine American badgers and two mountain lions were recorded as animal-vehicle collisions in Coyote Valley.

The wildlife-vehicle collision data suggest that there is some variation between the different months from the combined years of data collection. For example, in May there was a combined total of six wildlife-vehicle collision, and in June it increased to 11. The increase from six to 11 also occurred from August to September, and December to January. During June and July, juveniles were documented traveling with adults throughout Coyote Valley, which could account for the higher number of animals hit during those months (Diamond and Snyder 2016). Juvenile bobcats, coyotes, and raccoons were documented as roadkill on Monterey Road, Highway 101, Bailey Road, and Santa Teresa Blvd. during the months of June and July. In September and October, juveniles of various wildlife species disperse out of their parental home range (Bier 1995). This could account for higher numbers of animals being hit during September and October.

Wildlife-vehicle collision data were graphed out by road to identify the road with the highest number of wildlife-vehicle collisions. For the eight years of combined data collected, the road with the highest mortality is Monterey Road with 56 wildlife-vehicle collisions, while the road with the second highest mortality is Highway 101 with 19 wildlife-vehicle collisions. Monterey Road accounts for 54% of all animals recorded hit and killed in the Coyote Valley study area for all years combined.

The various analysis and data summaries each indicate that Monterey Road contributed to the majority of roadkill documented in Coyote Valley during the study period. This is an important finding as Monterey Road is a four-lane road compared to Highway 101, which has eight lanes.

Highway 101 has various sized culverts and bridges along the stretch through Coyote Valley. It has been documented that wildlife use many of these culverts and bridges to travel underneath the highway (Diamond and Snyder 2016, Phillips et al. 2012).

Monterey Road in comparison, has only one culvert at Fisher Creek. This culvert is semi functional at facilitating wildlife movement through it as the east side has large rip rap debris and a pool of water at the base acting as a barrier to large animal movement. The majority of species recorded using this culvert are raccoon and bobcat at a low use and rate of detection compared to the high use and rate of multiple species recorded traveling through several of the Highway 101 culverts and bridges (SCVWD unpublished data & Diamond and Snyder 2016).

7.2.1.4 Monitoring Nitrogen Deposition in Santa Clara County

The following is a summary of the results of a 2016 LAG awarded to the Habitat Agency, as presented in *Nitrate Sampling 2019 Report* (Weiss, Ph.D. et al. 2019), to investigate the use of spring water nitrate as an inexpensive and reliable method for monitoring long-term atmospheric nitrogen deposition (N-deposition) trends. The components include 1) review of regional N-deposition studies; 2) review and summary of N-cycling in serpentine grasslands; 3) surveys of springs and sampling for nitrate concentrations and isotopic composition; and 4) compilation of relevant hydrogeological studies to establish residence times of spring discharge. Samples were taken from 21 springs and wells in 2016 through 2019, with several sites sampled in 2015 and 2016. Samples were collected in cleaned Nalgene bottles at spring outlets, immediately filtered and frozen, and 2 subsamples were dropped off at Soil Control Laboratory in Watsonville soon thereafter. Soil Control Laboratory did their standard EPA certified nitrate assay. Paired t-tests across years looked for consistent trends across the ensemble. An analysis of covariance (ANCOVA) examined the 5-year trends at 3 sites. Total deposition (Tdep) maps (three-year averages 2016-2018) produced by the US EPA were downloaded and compared with 2012-2014 data to document recent trends. These maps provide coarse spatial patterns and include all nitrogen species so that the drivers of gradients can be determined.

The studies conclude that spring water nitrate is an effective method for long-term monitoring. Key observations and conclusions include:

1. The 2019 nitrate data show similar patterns to previous years. The highest nitrate levels are > 5 ppm, half the drinking water standard. Differences among years at most sites are small.
2. A few sites exhibited sharp drops in 2019. There are reasons to suspect that these may have some “plumbing” problems that could lead to reduced nitrate through exposure to biological activity, and inadequate flushing of pipes. But these will be sampled again next year to see if the anomalies persist. As spring boxes are replaced and upgraded, we will have more confidence that we are getting “clean” samples of groundwater free of biological processing, which can reduce nitrate concentrations.
3. No temporal trends could be determined from the short time series via paired t-tests. However, the 3 sites with 5 years of data are approaching a statistically significant upward trend. Longer time series at more sites will be more powerful in detecting trends.
4. The Tdep model shows slight increases from 2012-2014 to 2016-2018, suggesting that the upward trend may be real, but the magnitude was small.

5. Three-year averages are appropriate metrics because the LAG report estimated that residence time of shallow groundwater feeding these springs is on the order of 1-3 years.
6. The 2019 data show significant relationships with distance to San Jose and elevation, similar to the 2017 and 2018 data. These gradients are congruent with the passive sampler measurements from previous studies.
7. The spatial pattern from Tdep shows a strong gradient southwest away from San Jose. The gradient is dominated by NH₃ and NO₂.
8. Long-term downward trends in NO_x leveled off in the last three years (2016-2018), similar to other short periods in the record since 1988.

7.2.1.5 Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to Inform Infrastructure and Restoration

SR-152 Pacheco Pass bisects the Diablo Range-Inner Coast Linkage as identified by the Bay Area Critical Linkages Project. Pathways for Wildlife in collaboration with the Habitat Agency conducted the Wildlife Permeability and Hazards across SR-152 Pacheco Pass Project, which was funded by a CDFW LAG and the Habitat Agency. The following is the executive summary from the *Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to Inform Infrastructure and Restoration Report* (Pathways for Wildlife 2020).

The purpose of the study was to identify bridges and culverts that wildlife are using to cross under the highway within the study area and to make wildlife connectivity enhancement recommendations that would improve these structures for wildlife passages. The project involved 1) monitoring three bridges and two dual 5-foot-tall box culverts for wildlife passage and 2) conducting routine roadkill surveys along SR-152 Pacheco Pass within the study area for a twelve-month monitoring period from August 1, 2018 to July 31, 2019.

Within a 12-month monitoring period, multiple species including, deer (*Odocoileus hemionus*), American badger (*Taxidea taxus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and opossum (*Didelphis virginiana*) were recorded consistently traveling under each of the three bridges. Medium-sized mammals including coyote, bobcat, gray fox, raccoon, opossum and skunk, also consistently travelled through the box culverts. A total of 3,125 animals were recorded traveling under the bridges and through the culverts throughout the duration of the study. The same species recorded crossing under the bridges and culverts were also routinely found killed by vehicles on the highway. A total of 75 wildlife-vehicle collisions were recorded on SR-152 within the study area.

Based on the project results, Pathways for Wildlife recommends four wildlife connectivity enhancements that would improve both the ability for wildlife to safely cross SR-152 and the highway safety for drivers, as follows:

1. Install directional fencing to guide wildlife to existing bridges and culverts which had documented use of wildlife traveling through under the highway
2. Increase the ability for wildlife to walk along the riprap at bridge abutments as they act as a barrier to wildlife movement when bridges become flooded and banks are not available for use.

3. Remove dead and invasive vegetation along with restoring native vegetation to increase available bank for wildlife to travel along when the creeks associated with the bridges and culverts that become inundated with water from storm events.
4. Install “critter crossing” shelving units at culverts that become flooded during storm events to facilitate wildlife safe passage.

Given the high number of wildlife-vehicle collisions recorded on the highway, these proposed wildlife connectivity enhancements and improvements would benefit not just wildlife populations but would also improve the highway safety for people driving on SR-152 Pacheco Pass.

7.2.1.6 California Sycamore Hybridization Study

California sycamore (*Platanus racemosa*) is known to hybridize with a common non-native landscaping tree, London plane (*Platanus x hispanica*). Hybridization with non-native trees can dilute native genetics, lead to reduced fitness through outbreeding depression, and may threaten the existence of California sycamores as a species. California sycamore. London plane hybrids are known to occur in Santa Clara Valley. Habitat restoration and mitigation projects throughout California have typically used nursery container stock grown from wild-collected California sycamore seed because collecting and propagating seed is relatively easy compared to propagating from cuttings. However, wild-collected seed may have been fertilized with London plane pollen and may be resulting in the inadvertent outplanting of hybrid trees,

The majority of the LAG grant funding was dedicated to developing genetic identification methods. Secondly, the frequency of hybridization between California sycamore and London plane was tested to assess how common seed produced by genetically identified California sycamore trees is and if the prevalence of hybridization decreased with distance from urban centers with London plane trees. This study also determined the genetic identity of unknown trees to bolster the database of known California sycamore and hybrid trees in Santa Clara County.

Key findings from the study to date, including the following:

- An efficient and replicable method for identifying California sycamore, London plane, and hybrids was established.
- Hybrid seed was collected from genetically identified California sycamore trees from locations that cover the range of distances from urban centers, where London plane trees are common. Thus, it can be inferred that London plane pollen likely travels and successfully fertilizes California sycamore seeds over long distances and that there may not be a distance from urban centers that is safe for California seed collection without the use of genetic identification.
- A hybrid sapling was identified in a location where no habitat restoration or active planting has ever occurred. Thus, hybrids may be present in other locations where natural regeneration from seed is occurring.

7.2.2 Awarded Grant-funded Research Projects

7.2.2.1 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 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 will provide permit area-wide baseline data for the distribution and abundance of smooth lessingia to inform the conversation strategy, monitoring, and adaptive management implementation. This will be accomplished using high-resolution multispectral aerial imagery, image analysis software and field at collected in areas mapped as primary habitat. The project involves conducting a remote sensing-based analysis, with field data collection and targeted ground-truthing, to collect baseline information, such as population size, on smooth lessingia in areas of mapped primary habitat totaling approximately 10,491 acres. The grant terms end on March 30, 2021.

7.2.2.2 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 projects, plan for riparian habitat restoration, plan for restoration of floodplain function, and restore and enhance instream habitat. 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.

Initial assessments of the Pacheco Creek Reserve have revealed that, at the natural-community level, the site provides opportunities for restoration of riparian woodland natural communities (willow riparian forest and scrub, mixed riparian forest and woodland, and Central California sycamore alluvial riparian). 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.

Phase I of this project will involve a detailed planning phase and will be funded by this LAG grant. Phase II of this project will involve permitting and implementation and will not be covered under this grant.

7.2.2.3 Open-Sourcing the Hydroperiod Water Balance Model

The Santa Clara Valley Habitat Plan requires acquisition, enhancement, and restoration of aquatic land cover types that support covered species, as well as actions to promote their resilience to climate change. A major component of the Santa Clara Valley Habitat Plan conservation strategy is "development of a comprehensive aquatic conservation strategy to address the needs of covered amphibians and aquatic reptiles," including California tiger salamander, California red-legged frog, and western pond turtle. Understanding the characteristics of existing aquatic features and their habitat suitability for covered species under current and future climate scenarios will inform how such features are enhanced and the location and type of aquatic feature that should be created or restored.

The HWB model, developed under a previous Local Assistance Grant, is an invaluable tool for restoration site selection. It supports our needs for planning and implementing projects resilient to future climate change scenarios. The HWB model was built to infer pond hydroperiod in a range of climate conditions and can therefore be used in a range of environments and covered species across California, not limited to the Santa Clara Valley. Although the HWB model has currently been applied to salamander, frog, and turtle habitat, it can be similarly applied to any community sensitive to hydroperiod such as vernal pool fairy shrimp, various vegetation communities, and general wetland communities. The pond model can be used anywhere in the state to forecast changes in the water balance (and therefore the timing and frequency of pond-drying events) under future climate scenarios. As one indication of statewide applicability, much of the foundational work for the HWB model was based on the EPA's Hydrogeomorphic Model (HGM) for vernal pools and similar wetlands in Southern California.

The proposed project will enhance usability and broaden the user-base of this tool, including use by Habitat Agency staff, other regional partners, and approved and in-process NCCPs. The tool packaging and training program will allow for the tool to be used, rather than sit on a virtual shelf. The Guadalupe-Coyote Resource Conservation District is a trusted, like-minded conservation partner of the Habitat Agency. The Habitat Agency will contribute grant funds in the form of an in-kind match of \$5,670, as well as grant administration services.

7.2.2.4 Coyote Valley Reptile and Amphibian Linkage Study

Santa Clara County is the fastest-growing county in the San Francisco Bay Area. Coyote Valley, located just 20 miles south of downtown San Jose, has been identified as a critical wildlife linkage between the Santa Cruz Mountains and the Diablo Range. Much of the research on wildlife in Coyote Valley has been focused on mammal movement. Hydrological models identify Coyote Valley as a location to restore wetlands, streams, and ponds. However, a data gap exists on understanding the baseline conditions of Coyote Valley's listed herpetological species and how to best expand habitat for on the valley floor for these species. The results from this study will provide the Habitat Agency, planners, land conservation organizations, transportation agencies, the City of San José, and resource agencies with scientific data that will help inform land use, transportation, and conservation efforts in Coyote Valley. It is critical to do this research before extensive habitat loss, fragmentation, and modification have already occurred.

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	
Source: Creekside 2019 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	Kirby	occupied	2018	
	Kirby	occupied	2019	
	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	
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
California red-legged frog (continued)	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
Source: Vollmar 2016, Nomad 2018, HT Harvey 2019	Calero Pond 18	2017	Moderate Restoration Priority
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
Calero Pond 5	2017	Moderate Restoration Priority	

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

Species Requirement	Status	Date	Notes	
California tiger salamander (continued)	Calero Pond 9	breeding	2016, 2017, 2018, 2019	Restored 2016
	Calero Seep 10	breeding	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	breeding	2017	High Restoration Priority
Calero Pond 18		2017	Moderate Restoration Priority	

Source: Vollmar 2016, Nomad 2018, HT Harvey 2018

Western pond turtle	Reserve System			
25% of ponds and wetlands occupied (provide basking for adults and juveniles) in the entire Reserve System by year 45	0%: 0 of 8 ponds provide basking habitat for adults and juveniles 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		2016	
	CROSP-06		2016	
	CROSP-07		2016	
	CROSP-08		2016	
	Other Surveyed Areas			
	27%: 4 of 15 ponds provide basking habitat for adults and juveniles and occupied			
	Calero Pond 1		2017	Low Restoration Priority
	Calero Pond 2	occupied	2017	High Restoration Priority
	Calero Seep 3		2017	Lowest Restoration Priority
	Calero Pond 4		2017	Moderate Restoration Priority
	Calero Pond 5		2017	Moderate Restoration Priority

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

Species Requirement	Status	Date	Notes
	Calero Pond 9	occupied	2016, 2017, 2018 Restored 2016
	Calero Seep 10	occupied	2016, 2017, 2018 Restored 2016
Western pond turtle (continued)	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 Other Surveyed Areas		
	Llagas Creek - D4	occupied	2017 Llagas Watershed
Source: Nomad 2019	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.			

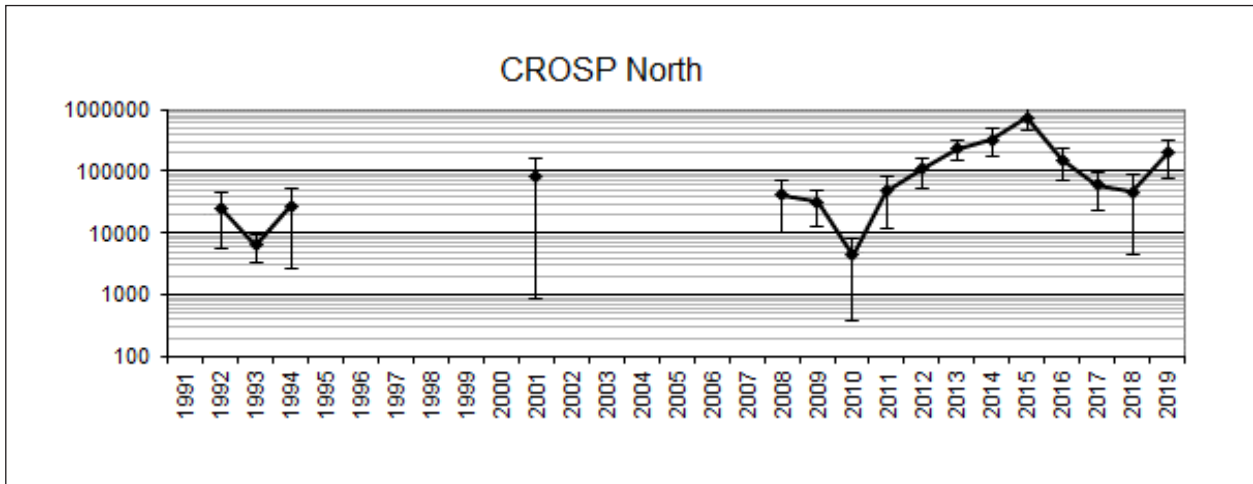


Figure 12a. CROSP North

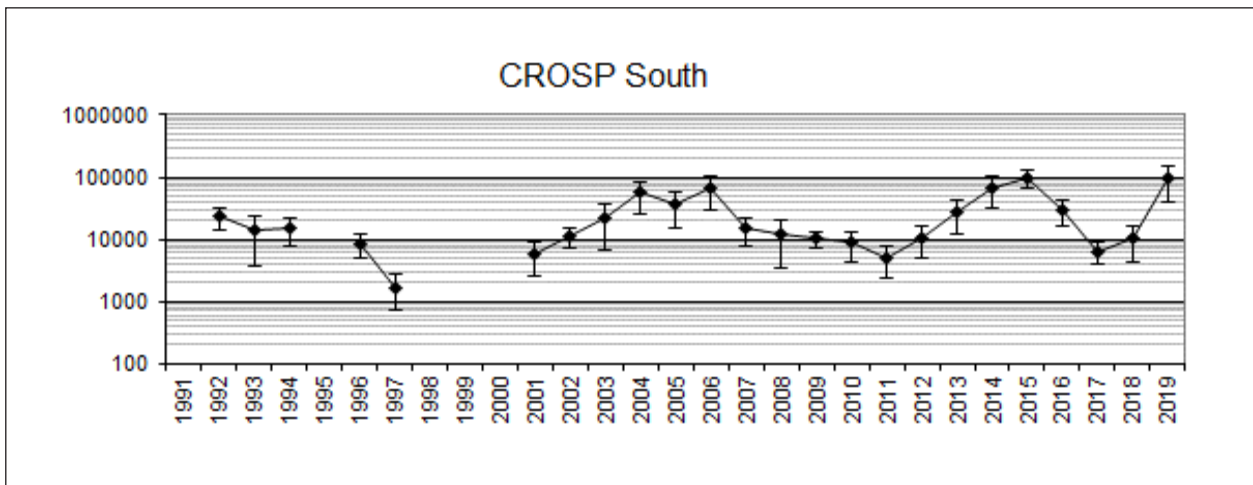


Figure 12b. CROSP South

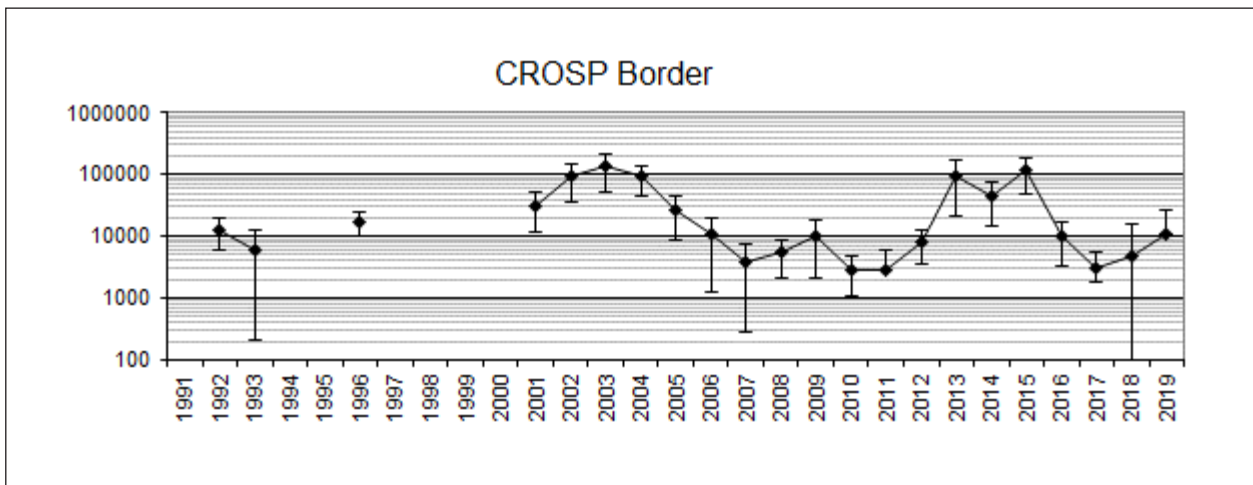


Figure 12c. CROSP Border

Graphics ... 0067919 SCVHA (05-19-2020) tag

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 ratio²⁰ 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 habitat²¹ 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 meeting the conservation strategy goal of increasing the adult burrowing owl population by three birds per year. The habitat types are defined as follows:

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.

²⁰ 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.

²¹ 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.

- 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 habitat²² 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.²³ 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: 6.5 acres of riparian restored.

²² 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.

²³ 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

Stay-Ahead requirements are being met for or exceeded the following resources (**Table 19, Table 20, and Figure 13, Figure 14, and Figure 15**).

- Conifer woodlands
- 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 ceanothus²⁴

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

- Grasslands
- Chaparral northern coastal scrub
- Oak woodlands
- Riparian forest and 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 no new Reserve System lands acquired during the FY1819 reporting year, however five (5) new land acquisitions are will be completed within the six months of the close of the reporting year. Of these sites, four will contribute to compliance for grasslands and three would contribute to oak woodland compliance. Two would contribute to riparian forest and scrub, as well as wetlands. No new land acquisitions are planned for burrowing owl habitat. Enrollment of the Calero conservation easement area will result in compliance for

²⁴ 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).

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. In addition, the Valley Water has earmarked grant funding to acquire a Coyote ceanothus occurrence when a property becomes available.

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 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—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. 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, 131.0 acres of occupied nesting habitat have been impacted, 66% 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)
 = 117.0 * 3
 = 351.0 acres
- Compliance = (Conservation Achieved) / (Conservation Required)
 = 861.9/351.0
 =245%

- $\geq 90\%$ = in Compliance
245% = in Compliance
- Acres Ahead = (Conservation Achieved) – (Conservation Required)
= 861.9 – 351.0
= 510.8 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)
= (117.0/198) * 5,300
= 3,133.1 acres
- Compliance = (Conservation Achieved) / (Conservation Required)
= (861.9 + 316.8)/3,133.1
= 38%
- $\geq 85\%$ = in Compliance
38% = Non-Compliance
- Acres Ahead = (Conservation Achieved) – (Conservation Required)
= 1,178.7 – 3,133.1
= -1,954.4 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	356.5	14%	17,440	1,583.1	9%	2,458.6	64%	-875.5
Chaparral Northern Coastal Scrub	405	16.9	4%	2,500	75.0	3%	104.3	72%	-29.3
Oak Woodland	2,709	40	1%	12,900	109.7	1%	191.5	57%	-81.8
Riparian Forest and Scrub	296	4.2	1%	971	7.5	1%	13.6	55%	-6.2
Conifer Woodland	117	0.0	0%	10	0.0	0%	0.0	-	0.0
Wetland	40	2.68	7%	155	5.89	4%	10.40	57%	-4.5
Pond	52	0.04	0%	177	2.11	1%	0.14	1509%	2.0
Streams (miles)	9.4	0.04	0%	110.4	14.70	13%	0.48	3031%	14.2
Developed	3,760	871.3	23%	-	0.0	-	-	-	-
Agricultural	8,018	765	10%	-	0.0	-	-	-	-
Total	17,926	2,056.5	11%	34,153	1,783.2	5%	2,779.0		-995.8
(1) Western Burrowing Owl									
Occupied Nesting Habitat	198	117.0	3:1	351	861.9	245%	351	245%	510.8
(3:1)⁴									
(2) Western Burrowing Owl									
Nesting Habitat, rough proportionality	198	117.0	59%	5,300	1,178.7	22%	3,133.1	38%	-1,954.4
Plants (occurrences)									
Tiburon paintbrush	0	N/A	-	1	0	0%	-	-	-
Coyote ceanothus	3,650 individuals	527	14%	5	occurrence creation in process	0%	1	occurrence creation in process	N/A
Mt. Hamilton thistle	6	0	0%	22	22	100%	0	>100%	22
Santa Clara Valley dudleya	11	1	9%	55	96	175%	5	>100%	91
Fragrant fritillary	1	0	0%	4	3	75%	0	>100%	3
Loma Prieta hoita	2	0	0%	8	2	25%	0	>100%	2
Smooth lessingia	6	0	0%	24	6	25%	0	>100%	6
Metcalf Canyon jewelflower	2	0	0%	10	8	80%	0	>100%	8
Most beautiful jewelflower	6	0	0%	17	2	12%	0	>100%	2

¹ Conservation Required = "% of Allowable Impacts Accrued" * "Total Conservation Requirements"

² Compliance = "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

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/Cr eation (acres)	Total	Preservation (acres)	Restoration (acres)	% of Conservation Total Achieved	Conservation Required ¹	Compliance ²	Acres Ahead ³	Preserve	Restore	Preserve	Restore	
Willow riparian forest and scrub or mixed riparian forest and woodland	289	4.16	1%	578	339	917	2.59	4.90	7.49	1%	13.19		8.32	4.88	-5.73	0.02	
Central California sycamore alluvial woodland	7	-	0%	40	14	54	-	0.00	-	0%	-		-	-	0.00	0.00	
Riparian Total	296	4.158	1%	618	353	971	2.59	4.9	7.49	1%	13.64	55%	-6.15				
Coastal and valley freshwater marsh (perennial wetland)	25	2.42	10%	50	45	95	-	0.30	0.30	0%	9.20		4.84	4.36	-4.84	-4.06	
Seasonal wetland	15	0.26	2%	30	30	60	1.89	3.70	5.59	9%	1.05		0.53	0.53	1.36	3.17	
Wetland Total	40	2.683	7%	80	75	155	1.89	4.00	5.89	4%	10.40	57%	-4.51				
Pond	52	0.04	0%	104	72	177	1.89	0.22	2.11	1%	0.14	1509%	1.97	0.08	0.06	1.80	0.16
Stream (miles)	9.4	0.04	0%	100.0	10.4	110.4	12.90	1.80	14.70	13%	0.48	3031%	14.22	0.44	0.05	12.46	1.75

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	0 ³	0%	1	occurrence creation in process	N/A
Mt. Hamilton thistle	6	0	0%	3	18	4	22	22	100%	0	>100%	22
Santa Clara Valley dudleya	11	1	9%	4	44	11	55	96	175%	5	1920%	91
Fragrant fritillary	1	0	0%	3	3	1	4	3	75%	0	>100%	3
Loma Prieta hoita	2	0	0%	2	4	4	8	2	25%	0	>100%	2
Smooth lessingia	6	0	0%	2	12	12	24	6	25%	0	>100%	6
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	2	12%	0	>100%	2

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 13. Stay-Ahead Compliance for Natural Communities

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

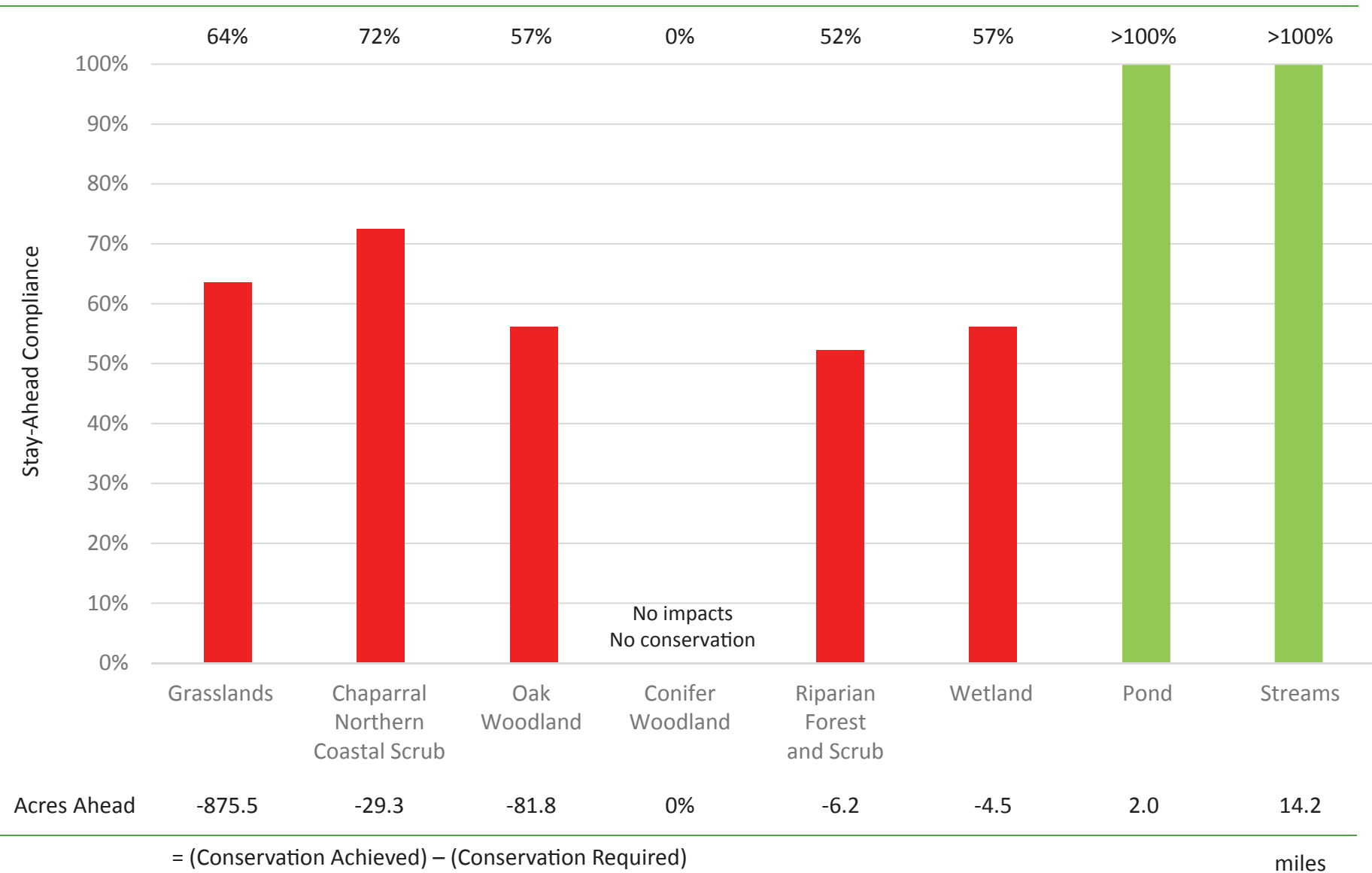


Figure 14. Stay-Ahead Compliance for Western Burrowing Owl



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.

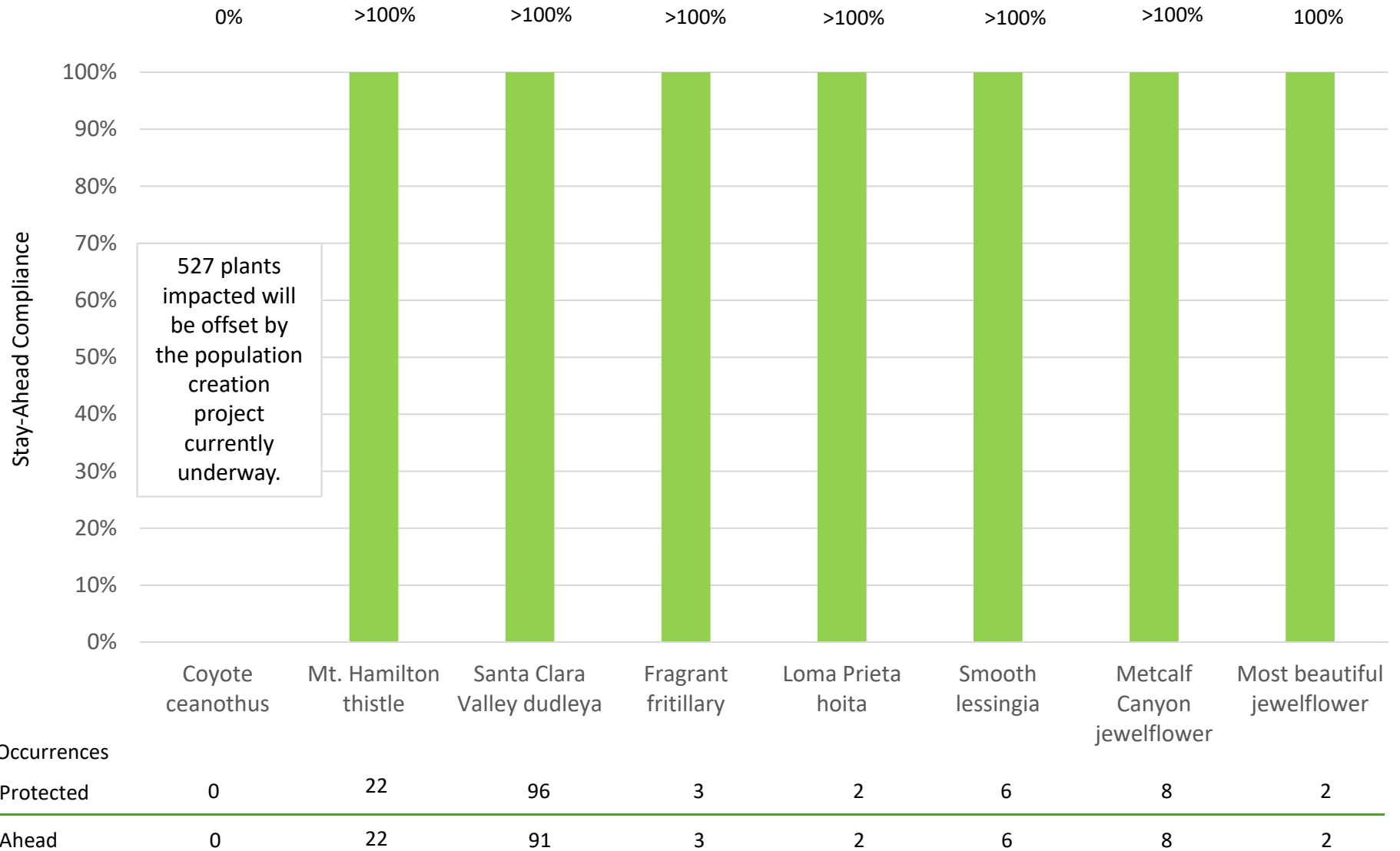
For both metrics, both lands enrolled in the Reserve System and lands under management agreements can be credited toward conservation. For the second metric, conservation actions implemented on managed lands allow for the 10% deviation to be increased to 15%.

Acres Ahead	510.8	-1,954.4
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= (Conservation Achieved) – (Conservation Required)

Figure 15. 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 Non-covered Species Becoming Listed

9.1.1.1 Crotch Bumble Bee and Western Bumble Bee Listed as a Candidate Species

On June 12, 2019, the California Fish and Game Commission listed the Crotch bumble bee (*Bombus crotchii*) western bumble bee (*Bombus occidentalis occidentalis*) as candidate species. Each of these species has historic 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 Crotch bumble bee and western bumble bee 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 bees.

9.1.2 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

Source: <http://usclimatedata.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 FY1819 Habitat Plan implementation budget was \$4.5 million, 34% of the anticipated budget. The driver of this difference is the lack of land acquisition. The Habitat Agency's budget focused on program administration, 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 \$12.6 million in funds during the reporting period from fee and non-fee funding sources (**Table 24** and **Table 25**). Fee funding totaled \$3.8 million (30% 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 \$2.8 million (23%), serpentine fees were \$397,000 (3%), nitrogen deposition fees were \$216,000 (2%), burrowing owl fees were \$60,000 (0%), wetland fees were \$213,000 (2%), and PSE charges were \$37,000 (0%).

Non-fee funding totaled approximately \$8.8 million (70%). There was no funding from mitigation-only or voluntary contribution projects (**Table 26**), but non-fee funding during the reporting year included six grants (**Table 24** and **Table 27**). The Santa Clara Valley Water District awarded \$8 million for land acquisition and \$500,000 for restoration to the Habitat Agency. Four Local Assistance Grants from the California Department of Fish and Wildlife totaling \$321,000 were awarded to the Habitat Agency and its partners. The Habitat Agency was awarded two Local Assistance Grants for covered plant research and riparian restoration totaling \$192,000. The other two Local Assistance Grants were awarded to the Santa Clara Valley Open Space Authority (\$79,000) for connectivity research and the Guadalupe Coyote Resource Conservation District for hydroperiod model development and training.

Fees are adjusted on an annual basis using an automatic inflation adjustment (see page 9-41 of the Habitat Plan). From FY1718 to FY1819, land cover, serpentine, and nitrogen deposition fees increased by 5.3%. Burrowing owl and wetland fees increased by 3.0%.

10.3 Land Acquisition

There was no land acquisition during the FY1819 reporting year (**Table 28**). Acquisitions to date are provided in **Table 28**.

10.4 Funding in Perpetuity

A set percentage of collected development fees is set aside for an endowment fund. For land cover, serpentine, nitrogen deposition, and burrowing owl fees, 10.35% of the fees is allocated to the endowment. For wetland mitigation fees, 10.74% is allocated to the endowment. In the FY1819 reporting period, endowment funds were deposited to and managed by the Silicon Valley Community Foundation.

Table 23a. FY1819 Budget: Expenditures and Comparison to Habitat Plan Cost Estimate

Cost Category	Cost Estimate from Habitat Plan			FY1819					
				Budget		Expenditures		Difference from FY1819 Budget	Difference from Habitat Plan Cost Estimate
	Years 6-10	Average Cost Per Year (Years 6-10)	% of Total		%		%		
Land Acquisition	\$ 31,020,000	\$ 6,204,000	53%	\$ 229,347	5%	\$ 201,778	5%	\$ (27,569)	\$ (6,002,222)
Reserve Management and Maintenance	\$ 8,580,000	\$ 1,716,000	15%	\$ 244,812	5%	\$ 100,560	3%	\$ (144,252)	\$ (1,615,440)
Monitoring, Research, and Scientific Review	\$ 2,180,000	\$ 436,000	4%	\$ 254,785	6%	\$ 204,456	5%	\$ (50,329)	\$ (231,544)
Western Burrowing Owl Conservation Strategy	\$ 700,000	\$ 140,000	1%	\$ 360,107	8%	\$ 407,266	10%	\$ 47,159	\$ 267,266
Habitat Restoration & Creation	\$ 10,750,000	\$ 2,150,000	18%	\$ 2,000,000	45%	\$ 2,004,376	51%	\$ 4,376	\$ (145,624)
Program Administration	\$ 3,980,000	\$ 796,000	7%	\$ 1,366,702	31%	\$ 1,013,174	26%	\$ (353,528)	\$ 217,174
Contingency Fund	\$ 1,280,000	\$ 256,000	2%	\$ -	0%	\$ -	0%	\$ -	\$ (256,000)
Habitat Plan Implementation Total	\$ 58,490,000	\$ 11,698,000	100%	\$ 4,455,753	100%	\$ 3,931,610	100%	\$ (524,143)	\$ (7,766,390)
Waters Permitting				\$ 211,000		\$ 127,313			
Total Habitat Agency Budget				\$ 4,666,753		\$ 4,058,923		\$ (524,143)	

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

Cost Category	Expenditures by Fiscal Year						Total (Years 1-6)	% of Total
	FY1314	FY1415	FY1516	FY1617	FY1718	FY1819		
Land Acquisition	\$ 5,813	\$ 74,678	\$ 83,700	\$ 104,642	\$ 165,553	\$ 201,778	\$ 636,164	5%
Reserve Management and Maintenance	\$ 9,895	\$ 33,289	\$ 170,343	\$ 109,740	\$ 75,877	\$ 100,560	\$ 499,704	4%
Monitoring, Research, and Scientific Review	\$ -	\$ 7,205	\$ 120,764	\$ 382,976	\$ 312,044	\$ 204,456	\$ 1,027,445	8%
Western Burrowing Owl Conservation Strategy	\$ 32,483	\$ 82,952	\$ 161,174	\$ 306,074	\$ 336,056	\$ 407,266	\$ 1,326,005	10%
Habitat Restoration & Creation	\$ 4,294	\$ 60,604	\$ 223,726	\$ 772,351	\$ 312,209	\$ 2,004,376	\$ 3,377,560	26%
Program Administration	\$577,723	\$1,147,212	\$1,196,607	\$1,294,296	\$ 913,857	\$1,013,174	\$ 6,142,869	47%
Contingency Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%
Total Habitat Plan	\$630,208	\$1,405,940	\$1,956,314	\$2,970,079	\$2,115,596	\$3,931,610	\$13,009,747	100%
Waters Permitting	\$ 24,638	\$ 44,029	\$ 118,237	\$ 85,699	\$ 136,174	\$ 127,313	\$ 536,090	
Total Habitat Agency	\$ 654,846	\$ 1,449,969	\$ 2,074,551	\$3,055,778	\$2,251,770	\$4,058,923	\$ 13,545,837	

Table 24. Summary of Revenue—Reporting Period and Cumulative

Funding Source	Reporting Period		Cumulative					Habitat Plan Assumption	
		% of Total	FY14 + FY15	FY16	FY17	FY18	Total	% of Total	% of Total
Fee Funding									
Land Cover Fee	\$ 2,843,255	23%	\$ 4,716,296	\$ 3,455,394	\$ 2,496,045	\$ 3,902,251	\$ 17,413,240	32%	
Serpentine Fee	\$ 395,638	3%	\$ 1,126,683	\$ 679,176	\$ 56,055	\$ 563,762	\$ 2,821,314	5%	
Nitrogen Deposition Fee	\$ 216,142	2%	\$ 327,132	\$ 145,684	\$ 147,123	\$ 392,548	\$ 1,228,628	2%	
Burrowing Owl Fee	\$ 59,694	0%	\$ 855,189	\$ 420,678	\$ 320,844	\$ 4,688,419	\$ 6,344,824	12%	
Wetland Fee	\$ 212,537	2%	\$ 980,663	\$ 71,420	\$ 54,896	\$ 531,250	\$ 1,850,766	3%	
Participating Special Entity Charges	\$ 37,453	0%	\$ 100,501	\$ 23,135	\$ 14,286	\$ 48,415	\$ 223,791	0%	
Total Fee Funding	\$ 3,764,719	30%	\$ 8,106,463	\$ 4,795,487	\$ 3,089,249	\$ 10,126,645	\$ 29,882,563	54%	55%
Non-Fee Funding									
Mitigation Only and Voluntary									
Contributions	\$ -	0%	\$ 724,059	\$ 496,629	\$ 540,442	\$ -	\$ 1,761,129	3%	
Grants ^a	\$ 8,824,671	70%	\$ 319,292	\$ 2,430,548	\$ 945,925	\$ 2,106,543	\$ 14,626,979	27%	
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations	\$ -	0%	\$ -	\$ 8,607,500	\$ -	\$ -	\$ 8,607,500	16%	
Total Non-fee Funding	\$ 8,824,671	70%	\$ 1,043,351	\$ 11,534,677	\$ 1,486,367	\$ 2,106,543	\$ 24,995,608	46%	45%
Total	\$ 12,589,390		\$ 9,149,814	\$ 16,330,164	\$ 4,575,616	\$ 12,233,188	\$ 54,878,171		

^aExcludes 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-2018-005	Cohansey Bridge	\$29,303	7/1/2018	Private
City of Gilroy	GIL-2018-020	The Grove	\$236,189	8/1/2018	Private
City of Gilroy	GIL-2019-005	Ronan Channel	\$29,303	8/1/2018	Public
City of Gilroy	GIL-2018-016	First Street Water Utility	\$1,178	10/1/2018	Private
City of Gilroy	GIL-2019-009	Gilroy Nissan Dealership	\$41,230	6/1/2019	Private
City of Morgan Hill	MH-2018-002	Butterfield-Dividend	\$101,455	11/1/2018	Private
City of Morgan Hill	MH-2018-004	Dunne-Las Colinas	\$66,263	11/1/2018	Private
City of Morgan Hill	MH-2018-003	Cochrane-Borello	\$587,528	11/1/2018	Private
City of Morgan Hill	MH-2018-001	Walnut Grove	\$31,953	6/1/2019	Private
City of Morgan Hill	MH-2019-002	Butterfield/Golden State	\$13,988	6/1/2019	Private
City of Morgan Hill	MH-2019-003	Jarvis Shoe Palace	\$147,282	6/1/2019	Private
City of Morgan Hill	MH-2019-004	Rolling Hills Anderson	\$18,083	6/1/2019	Private
City of San Jose	SJ-2018-020	Edenvale Self Storage	\$37,511	10/1/2018	Private
City of San Jose	SJ-2018-021	Three Creeks Pedestrian Bridge	\$4,712	10/1/2018	Private
City of San Jose	SJ-2018-028	Equinix	\$265,050	1/1/2019	Private
City of San Jose	SJ-2018-016	Topgolf	\$585,559	1/1/2019	Private
City of San Jose	SJ-2019-001	Sierra Rd Landslide Repair	\$459	4/1/2019	Public
City of San Jose	SJ-2018-036	Brokaw Phase II	\$249,589	4/1/2019	Private
City of San Jose	SJ-2019-002	Alum Rock Park Service Road	\$1,138	4/1/2019	Public
City of San Jose	SJ-2018-033	Tiffany Canyon Ct	\$9,558	4/1/2019	Private
City of San Jose	SJ-2019-001M	FEMA Sierra Rd Landslide Repairs	\$637	6/1/2019	Public
	SJ-2019-003	Alum Rock Park Mineral Springs Restroom	\$598		
City of San Jose				6/1/2019	Public
City of San Jose	SJ-2018-027	RWF Cogeneration Facility	\$673	1/1/2019	Public
County of Santa Clara	SCPN-2018-005	Scenic Vista-Salah	\$59,554	9/1/2018	Private
County of Santa Clara	SCPN-2018-004	Oak Leaf Drive	\$12,904	11/1/2018	Private
County of Santa Clara	SCPN-2018-006	Scenic Vista-Loury	\$45,214	11/1/2018	Private
County of Santa Clara	SCPN-2018-007	Sandy Court	\$23,302	11/1/2018	Private
Valley Water	SVWD-2018-008	Coyote Alamitos Canal	\$3,704	9/1/2018	Public
Valley Water	SVWD-2018-007	Uvas Levee Reconstruction	\$77,012	9/1/2018	Public
Valley Water	SVWD-2018-010	Coyote Canal Emergency	\$636	11/1/2018	Public
Valley Water	SVWD-2018-011	Almaden Pipeline Emergency	\$17,376	12/1/2018	Public
Valley Water	SVWD-2018-012	Oka Ponds	\$97,185	12/1/2018	Public
Valley Water	SVWD-2019-003	Coyote Alamitos Canal	\$3,704	6/1/2019	Public
Valley Water	SVWD-2019-004	Cross Valley & Calero Pipeline	\$818	6/1/2019	Public
Valley Water	SVWD-2019-005	Penitencia & Piedmont Facilities	\$8,285	6/1/2019	Public
Valley Water	SVWD-2019-002	Coyote Ridge Preserve Ponds	\$425	6/1/2019	Public
PSE	PSE-2019-001	PG&E Pipeline Recoat	\$32,283	10/1/2018	PSE

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
PSE	PSE-2018-001	Bridle Path	\$1,566	10/1/2018	PSE
PSE	PSE-2019-002	Upper Uvas Rd Repair OSA	\$51	5/1/2019	PSE
Land Cover Fee subtotal			\$ 2,843,255		
Serpentine Fee					
City of Gilroy	GIL-2018-020	The Grove	\$ 182,461	8/1/2018	Private
City of Gilroy	GIL-2019-004	Eagle Ridge DDK	\$ 3,940	2/1/2019	Private
City of San Jose	SJ-2018-020	Edenvale Self Storage	\$ 40,032	10/1/2018	Private
County of Santa Clara	SCPN-2018-004	Oak Leaf Drive	\$ 149,853	11/1/2018	Private
Valley Water	SVWD-2018-008	Coyote Alamosos Canal	\$ 8,985	9/1/2018	Public
Valley Water	SVWD-2019-003	Coyote Alamosos Canal	\$ 8,985	6/1/2019	Public
Valley Water	SVWD-2019-002	Coyote Ridge Preserve Ponds	\$ 1,382	6/1/2019	Public
Serpentine Fee Subtotal			\$ 395,638		
Nitrogen Deposition Fee					
City of Gilroy	GIL-2018-020	The Grove	\$2,175	8/1/2018	Private
City of Gilroy	GIL-2019-003	Zargarian Residence	\$46	9/1/2018	Private
City of Gilroy	GIL-2019-002	Milton Residence	\$46	9/1/2018	Private
City of Gilroy	GIL-2019-001	Chevron	\$1,022	9/1/2018	Private
City of Gilroy	GIL-2019-006	Kaur Residence	\$48	2/1/2019	Private
City of Gilroy	GIL-2019-011	Pacheco Pass	\$833	2/1/2019	Private
City of Gilroy	GIL-2019-004	Eagle Ridge DDK	\$870	2/1/2019	Private
City of Gilroy	GIL-2019-007	First Street and Kelton	\$14,042	4/1/2019	Private
City of Gilroy	GIL-2019-008	Mimosa Ct	\$48	4/1/2019	Private
City of Gilroy	GIL-2019-010	Lavender Court	\$48	6/1/2019	Private
City of Gilroy	GIL-2019-009	Gilroy Nissan Dealership	\$3,383	6/1/2019	Private
City of Morgan Hill	MH-2018-002	Butterfield-Dividend	\$2,078	11/1/2018	Private
City of Morgan Hill	MH-2018-004	Dunne-Colinas	\$1,547	11/1/2018	Private
City of Morgan Hill	MH-2018-003	Cochrane-Borello	\$3,625	11/1/2018	Private
City of Morgan Hill	MH-2018-001	Walnut Grove	\$435	6/1/2019	Private
City of Morgan Hill	MH-2019-002	Butterfield/Golden State	\$30	6/1/2019	Private
City of Morgan Hill	MH-2019-003	Jarvis/Shoe Palace	\$5,868	6/1/2019	Private
City of Morgan Hill	MH-2019-004	Rolling Hills/Anderson	\$48	6/1/2019	Private
City of San Jose	SJ-2018-022	7th & Empire Apts	\$4,693	10/1/2018	Private
City of San Jose	SJ-2018-023	Coleman Phase 1.2	\$18,590	10/1/2018	Private
City of San Jose	SJ-2018-024	Almaden Gas	\$5,000	10/1/2018	Private
City of San Jose	SJ-2018-030	Gibson Girl Way	\$242	10/1/2018	Private
City of San Jose	SJ-2018-028	Equinix	\$4,757	1/1/2019	Private
City of San Jose	SJ-2018-035	Japantown Mixed Use	\$27,520	1/1/2019	Private

Source	Project #	Project Name	Amount	Date	Type
City of San Jose	SJ-2018-016	Top Golf	\$33,187	1/1/2019	Private
City of San Jose	SJ-2018-031	W San Carlos	\$630	1/1/2019	Private
City of San Jose	SJ-2018-032	Trojan Storage	\$1,265	1/1/2019	Private
City of San Jose	SJ-2018-029	Hilton Garden Inn	\$3,859	1/1/2019	Private
City of San Jose	SJ-2018-020	Edenvale Self Storage	\$1,462	4/1/2019	Private
City of San Jose	SJ-2018-036	Brokaw Phase II	\$30,107	4/1/2019	Private
City of San Jose	SJ-2018-033	Tiffany Canyon Court	\$48	4/1/2019	Private
City of San Jose	SJ-2019-007	Julian Street	\$14,638	6/1/2019	Private
City of San Jose	SJ-2019-005	Minnesota Ave	\$193	6/1/2019	Private
City of San Jose	SJ-2019-014	Virginia Studios	\$13,759	6/1/2019	Private
City of San Jose	SJ-2019-004	Adobe North Tower	\$19,810	6/1/2019	Private
County of Santa Clara	SCPN-2018-005	Scenic Vista Salah	\$48	9/1/2018	Private
County of Santa Clara	SCPN-2018-004	Oak Leaf Drive	\$46	11/1/2018	Private
County of Santa Clara	SCPN-2018-006	Scenic Vista Loury	\$48	11/1/2018	Private
County of Santa Clara	SCPN-2018-007	Sandy Court	\$48	11/1/2018	Private
Nitrogen Fee Subtotal			\$ 216,142		
Burrowing Owl Fee					
City of San Jose	SJ-2018-016	Topgolf	\$57,862	1/1/2019	Private
City of San Jose	SJ-2018-027	RWF Cogeneration Facility	\$1,832	1/1/2019	Public
Burrowing Owl Fee Subtotal			\$ 59,694		
Wetland Fee					
City of San Jose	SJ-2018-021	Three Creeks Pedestrian Bridge	\$52,806	10/1/2018	Public
PSE	PSE-2019-001	PG&E Pipeline Recoat	\$112,992	10/1/2018	PSE
County of Santa Clara	SCPN-2018-007	Sandy Court	\$24,300	11/1/2018	Private
Valley Water	SVWD-2018-011	Almaden Pipeline Emergency	\$22,438	12/1/2018	Public
Wetland Fee Subtotal			\$ 212,537		
Participating Special Entity Charge and Admin Fee					
PSE Charge	PSE-2019-001	PG&E Pipeline Span Recoat	\$9,528	10/1/2018	PSE
PSE Charge	PSE-2018-001	PG&E Bridle Path Valve	\$5,000	10/1/2018	PSE
PSE Charge	PSE-2020-003	PG&E Calaveras Fault	\$5,000	5/1/2019	PSE
PSE Charge	PSE-2019-002	OSA Upper Uvas Road Repair	\$10,000	5/1/2019	PSE
PSE Charge	PSE-2020-001	Gavilan College II	\$5,000	6/1/2019	PSE
PSE Admin Fee	PSE-2019-001	PG&E Pipeline Span Recoat	\$1,360	10/1/2018	PSE
PSE Admin Fee	PSE-2018-001	PG&E Bridle Path Valve	\$803	10/1/2018	PSE
PSE Admin Fee	PSE-2019-002	OSA Upper Uvas Road Repair	\$763	5/1/2019	PSE
Participating Special Entity Charge Subtotal			\$ 37,453		

Table 25. Revenue Detail—Reporting Period

Source	Project #	Project Name	Amount	Date	Type
Mitigation Only and Voluntary Contributions					
None					
Mitigation Only and Voluntary Contributions Subtotal			\$	-	
Grants					
D7, Safe Clean Water Program	Valley Water	Acquisition	\$	8,000,000	10/9/2018 Grant
D3, Safe Clean Water Program	Valley Water	Restoration	\$	500,000	1/17/2019 Grant
NCCP Local Assistance Grant Scientific Research	CDFW	Research	\$	177,588	11/16/2019 Grant
NCCP Prop 68-Restoration	CDFW	Restoration	\$	147,083	1/17/2019 Grant
Grants subtotal			\$	8,824,671	
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations					
None					
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations Subtotal			\$	-	
Total			\$	12,589,390	

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)
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				

Table 26. Voluntary Contribution and Mitigation Only Projects

Year	Code	Project Name/Source	Type	Date	Revenue	Mitigation (Acres)	Notes
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 Creation/Restoration Wetland 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		\$ -		
Total			16		\$ 1,761,129.31		

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

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	2016	CDFW	Research: TRBL	\$ 20,556	Talon	\$20,556	\$20,556	\$0	March 2019
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

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
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	#####		

Coyote Ridge Open Space Preserve

Acquired by: Santa Clara County Open Space Authority
 Date Acquired: 10/21/2015 Acquisition
 Acres: 1,802.10
 Key land cover: serpentine grassland, California annual grassland, coast live oak forest and woodlands, steams
 Appraised value: \$ 15,650,000
 Purchase Price: \$ 8,607,500
 Difference: \$ 7,042,500
 Eligible for the following Section 6 grants: FY1314

Funding Source	Funding amount	Type	Percent	Source of non-federal match?
State Parks Recreational Trails Program	\$ 400,000	State	5%	Yes \$ 4,100,000
State Coastal Conservancy	\$ 1,000,000	State	12%	Yes \$ 1,500,000
Resource Legacy Fund	\$ 500,000	Private	6%	Yes \$ 7,500
Wildlife Conservation Board	\$ 2,700,000	State	31%	Yes \$ 3,000,000
Gordon and Betty Moore Foundation	\$ 1,000,000	Private	12%	Yes
Santa Clara County Open Space Authority	\$ 7,500	Local	0%	Yes
BOR Central Valley Project	\$ 1,000,000	Federal	12%	No
USFWS Section 6 Grant	\$ 2,000,000	Federal	23%	No
TOTAL	\$ 8,607,500		100%	

Non-Federal Match Needed: \$ 1,100,000 (amount necessary to achieve 55:45 ratio to match Section 6)

Match available:

Source

State Parks Recreational Trails Program	\$ 400,000
State Coastal Conservancy	\$ 1,000,000
Resource Legacy Fund	\$ 500,000
Wildlife Conservation Board	\$ 2,700,000
Gordon and Betty Moore Foundation	\$ 1,000,000
Santa Clara County Open Space Authority	\$ 7,500
	\$ 5,607,500
Excess match:	\$ 4,507,500

Pacheco Creek Reserve

Acquired by:	Santa Clara Valley Habitat Agency	
Date Acquired:	6/26/2017	Acquisition
Acres:	55.40	
Key land cover:	willow riparian forest and scrub, mixed riparian forest and woodland, Central CA sycamore alluvial woodland, California annual grassland, stream	
Appraised value:	N/A	
Purchase Price:	donation	(Cash equivalent of \$215,606)
Difference:	N/A	
Eligible for the following Section 6 grants:	N/A	

Funding Source

Property was donated to the Habitat Agency from Caltrans

This chapter highlights program accomplishments and other conservation efforts during the FY1819 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 began their 5-year funding assessment, continued to work toward the establishment of an ILF program, and developed a climate change guidebook.

11.1 Major Accomplishments

11.2 New Staff and Employee Policies

There were no new staff or employee policies in the FY1819 reporting year.

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 this 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 Financial Audit

The Habitat Agency commenced the audit of its financial statements of the government activities and major funds in November of 2018. The Habitat Agency hired the certified public accountant David Farnsworth, CPA, and facilitated and directed the completion of their audit report. David Farnsworth, CPA, published their findings on December 12, 2018. Significant audit findings were as follows:

- The financial statements provided present fairly, in all material respects, the respective financial position of the governmental activities and each major fund of the Santa Clara Valley Habitat Agency, as of June 30, 2018, and the respective changes in financial position for the fiscal year then ended in accordance with accounting principles generally accepted in the United States of America.

- David Farnsworth, CPA, encountered no significant difficulties in dealing with the Habitat Agency in performing and completing their audit.
- The Habitat Agency corrected all misstatements. In addition, none of the misstatements detected as a result of audit procedures and corrected by the Habitat Agency were material, either individually or in the aggregate, to each opinion unit's financial statements taken as a whole.
- No disagreements between David Farnsworth, CPA, and the Habitat Agency arose during the course of their audit.
- David Farnsworth, CPA, did not audit the Habitat Agency's required supplementary information and did not express an opinion or provide any assurance on the required supplementary information.
- David Farnsworth, CPA, believes that the audit evidence obtained during the course of the audit is sufficient and appropriate to provide a basis for their audit opinions.

11.4.1 Advocacy and Outreach

The Habitat Agency conducted legislative advocacy to ensure continued funding streams are still available for HCPs/NCCPs. This is an ongoing effort on the part of the Habitat Agency. For example, the Cooperative Endangered Species Conservation Fund (Section 6 of the Endangered Species Act) provides funding to states and territories for species and habitat conservation actions on non-federal lands. Edmund Sullivan, Executive Director of the Habitat Agency, traveled to both Washington and Sacramento in March with the California HCP Coalition and the National HCP Coalition to advocate for HCP/NCCPs and their continued staffing and funding with the federal and state governments. The Coalition met with House and Senate delegations from areas that have HCPs, as well as staff from House and Senate Appropriations Committees, the Senate Environment and Public Works Committee and the House Committee on Natural Resources. The Coalition also met with staff of the U.S. Fish and Wildlife Service, and the Office of Management and Budget, and appointees from the Department of Interior. The meetings focused on funding and building recognition of the value of HCPs (East Contra Costa Habitat Conservancy 2019).

The Habitat Agency attended both the National HCP Coalition and the California HCP Coalition annual conferences during the reporting year. The mission of the National HCP Coalition is to "further the use, effectiveness of and support for large-scale HCPs as local solutions to facilitate economic development and the conservation of threatened and endangered species and their habitats." The Habitat Agency is a founding member of the National HCP Coalition, and Edmund Sullivan is an active participant in the Coalition's national work to promote HCPs as a practical tool to streamline permits for development and infrastructure projects and for conservation. The National HCP Coalition annual meeting was held in October 16 to 18, 2018, in Pensacola Beach, Florida. The meeting included the following topics:

- Lessons learned about HCP preparation and implementation
- Stakeholder perspectives, including business and infrastructure interests
- Monitoring and adaptive management
- Mitigation policies and other federal administration matters
- Establishing an implementing entity
- Conservation strategies

- Highlighted HCPs
- Costs and funding
- Advocacy strategies for HCP managers and stakeholders

The California HCP Coalition includes local municipalities, agencies, conservation organizations, and business organizations supporting regional Habitat Conservation Plans. The California HCP Coalition annual meeting was hosted by the East Contra Costa County Habitat Conservancy in Martinez, California and covered the following range of topics:

- Approaches to mapping native grassland communities and invasive plants
- Wildlife movement and roads through the preserves
- State and federal funding
- Update on the state dredge and fill policy.

The annual meeting also included a field trip to Roddy Ranch in Antioch, California.

In support of public education and outreach, the Edmund Sullivan gave three presentations at the National HCP Coalition annual conference, which provided a general overview of the Habitat Plan to inform the public about its purpose and how it works.

11.4.2 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.

- One private project RGP application was approved for RGP coverage in the reporting period.
- One public restoration project was approved for RGP coverage in the reporting period. The CROSP Ponds CR-01 and CR-04 Restoration Project generated uniform credits from USACE and a variety of credits from the Regional Water Quality Control Board. Negotiations over the exact number of USACE-approved credits for the restoration are continuing, but the Habitat Agency anticipates the following:
 - 0.47 acres of wetland credits

- 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

- A total of 2.448 wetland mitigation credit acres, 0.28 preservation credits, and 5,002 stream credits (linear feet) have been generated by prior restoration projects undertaken by the Habitat Agency.
- The Calero County Park Pond and Wetland Restoration Project, San Felipe Creek Restoration Project, and CROSPPPonds CR-01 and CR-04 Restoration Project have resulted in uniform credit acres. Stream credits are limited to the San Felipe Creek Restoration Project.

11.4.3 Permit Integration

The Habitat Agency is pursuing the establishment of an ILF program to support the Habitat Plan mitigation program and other wetland mitigation needs. The Habitat Agency submitted the *Santa Clara Valley Habitat Plan Regional General Permit In-Lieu Fee Program Prospectus* to the Corps for distribution to the Interagency Review Team on February 17, 2017. The Corps issued a public notice to provide the public an opportunity to comment on the Prospectus. The public comment period was open from July 11, 2017, to August 11, 2017. Comments on the prospectus were received from the public and the Habitat Agency provided responses. The Habitat Agency drafted responses to comments received and submitted the Corps on November 16, 2017. In January 2018, the Corps provided guidance to the Habitat Agency to commence development of the enabling instrument for the ILF program.

As of the end of 2018, the Habitat Agency was finalizing development of the Enabling Instrument for the ILF program, which proposes integration of credits for impacts to Endangered Species Act-listed fish under the jurisdiction of the National Marine Fisheries Service.

11.4.4 Grants and Funding

The Habitat Agency utilized \$6.5 of the \$8 million dollars secured during the previous reporting year for land acquisition (which closed outside of the reporting year). 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 Cooperative Endangered Species Conservation Fund (Section 6 of the Endangered Species Act) Grant for \$2 million (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 a purchase agreement was completed during the FY1819 reporting year.

11.5 Interpretation and Clarification Memos

There were no new interpretation and clarification memorandum during the FY1819 reporting year.

11.6 Modifications to the Habitat Plan

There were no modifications to the Habitat Plan during the FY1819 reporting year.

11.7 Policies

The Habitat Agency developed a *Mitigation Only Policy* (Santa Clara Valley Habitat Agency 2019) to detail the process for an applicant to enter into a mitigation only agreement with the Santa Clara Valley Habitat Agency (**Table 26**). This policy applies when the applicant requests the Habitat Agency to provide the mitigation required for a project or activity within the Habitat Plan area (except for N-deposition impacts) not covered by the Habitat Plan (non-covered project), and the required project mitigation is a result of one or more Wildlife Agency permits or is required under CEQA and the mitigation is consistent and compatible with the Habitat Conservation Plan (HCP) and the Natural Communities Conservation Plan (NCCP). In these cases, the Habitat Agency will provide a project not covered by the Habitat Plan with mitigation, consistent with the requirements set forth in the Wildlife Agency permits or the applicable CEQA document, and the provisions of the Habitat Plan. The *Mitigation Only Policy* was approved by the USFWS during the reporting year and is under review by the CDFW; CDFW approval is expected in early 2020.

11.7.1 Other Conservation Efforts

The Habitat Agency spearheaded a climate change guidebook entitled *Climate Change Adaptation Approaches for Habitat Conservation Plans* (Jodi McGraw 2020) to identify adaptation, management, and resiliency principles from HCPs to help address climate change. This project was funded by the Resources Legacy Fund, the National Habitat Conservation Plan Coalition, and the Santa Clara Valley Habitat Agency. The specific objectives of the project were to:

- Identify a set of key climate adaptation strategies for HCPs based on a review of scientific literature, practitioners' guides, and other resources, including websites, to identify key methods for addressing each;
- Evaluate opportunities and constraints to addressing the key climate adaptation strategies through two case studies of HCPs in the planning and implementation phases; and
- Recommend approaches to increasing climate change resiliency in HCPs in a report and accompanying presentation for the National Habitat Conservation Plan Coalition.

The guidebook was drafted during the reporting year and is expected to be finalized in early 2020.

12.1 Literature Cited

- Cech, E., J. Scullen, and Y. Wang. 2019. *Burrowing Owl Monitoring and Habitat Management at Warm Springs Unit: 2019 Annual Report*. Prepared for Santa Clara Valley Habitat Agency and Don Edwards San Francisco Bay National Wildlife Refuge, Morgan Hill and Newark, CA. San Francisco Bay Bird Observatory, Milpitas, CA.
- Chromczak, D. 2019. Santa Clara Valley Habitat Agency Burrowing Owl Banding Study: Warm Springs Unit, Don Edwards San Francisco Bay National Wildlife Refuge Breeding Season Banding Report 2019. Submitted to the Santa Clara Valley Habitat Agency, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife. October 27.
- Conway, C. J., and J. C. Simon. 2003. Comparison of detection probability associated with burrowing owl survey methods. *Journal of Wildlife Management* 67:501–511.
- Creekside Center for Earth Observation. 2019. *Coyote Ridge Open Space Preserve: 2019 Annual Report*. December. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.
- Dudek. 2018. *San Felipe Creek Restoration Project Mitigation and Monitoring Plan*. Dudek. Oakland, California. June. Prepared for the Santa Clara Valley Habitat Agency.
- Dudek. 2020. *San Felipe Creek Restoration Project Mitigation Monitoring Annual Report Year 1-2019*. Auburn, CA. Prepared for the Santa Clara Valley Habitat Agency. Morgan Hill, CA.
- Dukes and Shaw. 2007. Responses to Changing Atmosphere and Climate. Pages 218–232 in M.R. Stromberg, J.D. Corbin, and C. D’Antonio (eds.), *California Grasslands: Ecology and Management*. Berkeley: UC Press.
- H. T. Harvey and Associates. 2016. *Calero County Park Pond and Wetland Restoration Project Mitigation and Monitoring Plan*. Prepared for the Santa Clara Valley Habitat Agency. September 6.
- H. T. Harvey and Associates. 2019. *Calero County Park Pond and Wetland Restoration Project – Year 3 Monitoring Report*. Los Gatos, California. December. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.
- Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.). Cambridge, UK and New York, NY: Cambridge University Press.
- Kakourous, A., and C. Burns. 2014. *Burrowing Owl Counts, Surveys, and Nesting Habitat Maintenance at Warm Springs Unit Proposed Scope of Work*. San Francisco Bay Bird Observatory. December 12.

- Lordeo, I., no date. *Santa Clara Valley Western Burrowing Owl Management Plan for the Warm Springs Unit*. Don Edwards National Wildlife Refuge Complex. Fremont, CA.
- Marczak, S., C. L. Wisinski, S. M. Hennessy, M. Stevens, S. Perez, D. Angel, R. R. Swaisgood, and L. A. Nordstrom. 2018. Project Report 2018: Advancing Burrowing Owl Mitigation in San Diego County through Mitigation Measures using Science and Adaptive Management. Institute for Conservation Research, San Diego Zoo Global, San Diego, CA.
- McGraw, J. Ph.D., 2020. *Climate Change Adaptation Approaches for Habitat Conservation Plans*. Jodi McGraw Consulting. Freedom, CA. Prepared for the National Habitat Conservation Plan Coalition, Institute for Ecological Health and the Santa Clara Valley Habitat Agency.
- Menzel, S. and L. Trulio. 2019. 2019 Burrowing Owl Point-Count and Call-Broadcast Surveys in Northern San Benito and Southern Santa Clara County. October. Prepared for Santa Clara Valley Habitat Agency, Morgan Hill, CA. Menzel, S., P. Higgins, D. Chromczak, and L. Trulio. 2019. *Santa Clara Valley Habitat Plan 2019 Burrowing Owl Breeding Season Survey Report*. October. Prepared for Santa Clara Valley Habitat Agency, Morgan Hill, CA.
- Mitchell, A. M., T. I. Wellicome, D. Brodie, and K. M. Cheng. 2011. Captive-reared burrowing owls show higher site-affinity, survival, and reproductive performance when reintroduced using a soft-release. *Biological Conservation* 144:1382–1391.
- Murphy, D. D. and S. B. Weiss. 1988. A long-term monitoring plan for a threatened butterfly. *Conservation Biology* 2(4): 367-374. National Research Council. 2010. *America's Climate Choices: Panel on Advancing the Science of Climate Change*.
- Pathways for Wildlife. 2020. *Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to Inform Infrastructure and Restoration*. February. Prepared for the Santa Clara Valley Habitat Agency.
- Point Blue Conservation Science. 2020a. *Pajaro Ranch Annual Monitoring Report*. Petaluma, California. Prepared for the Santa Clara Valley Habitat Agency.
- Point Blue Conservation Science. 2020b. *Pacheco Creek Reserve Annual Monitoring Report*. Petaluma, California. Prepared for the Santa Clara Valley Habitat Agency.
- Point Blue Conservation Science. 2020c. *Pacheco Creek Reserve Contingency Planting Project Annual Monitoring Report*. Petaluma, California. Prepared for the Santa Clara Valley Habitat Agency.
- Santa Clara Valley Water District. 2018. *Partnership for the Conservation of Habitat Lands*. Available: <https://www.valleywater.org/project-updates/grants-and-environmental-protection/partnerships-for-habitat-conservation>.
- Santa Clara Valley Habitat Agency. 2015. Multi-phase Project Burrowing Owl Fee Policy. Executive Officer Directive No. 5. No. Available: <https://www.scv-habitatagency.org/273/Policies>
- Santa Clara Valley Habitat Agency. 2019. Mitigation Only Policy. Executive Officer Directive No. 7. No. Available: <https://www.scv-habitatagency.org/273/Policies>
- Spencer, R. 2018. FY2017-18 Habitat Agency Development Fees Automatic Inflation Adjustment. Memo. Prepared for the Santa Clara Valley Habitat Agency. February 13.

- Trulio, 2019. *Winter Burrowing Owl Monitoring, 2016-2018*. Natural Community Conservation Planning Grant Agreement Number P1582105. Final Report. Prepared for the California Department of Fish and Wildlife and the San Francisco Bay Bird Observatory. February 28.
- Weiss, S. B. 1996. *Weather, Landscape Structure, and the Population Ecology of a Threatened Butterfly*. Biological Sciences. Stanford, Stanford University. Ph.D.: 119.
- Weiss, S.B. Ph.D., D.D. Murphy, and R.R. White. 1988. Sun, Slope, and Butterflies: Topographic Determinants of Habitat Quality for *Euphydryas editha bayensis*. *Ecology* 69:1486–1496.
- Weiss, S.B., Ph.D., Schwind, C., Quenelle, J. 2019. *Nitrate Sampling 2019 Report*. November 11. Creekside Science for Earth Observation. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.
- Wellicome, T.I, L.D. Todd, R.G. Poulin, G.L Holroyd, and R.J. Fisher. 2013. Comparing Food Limitation Among Three Stages of Nesting: Supplementation Experiments with the Burrowing Owl. *Ecology and Evolution* 3(8):2684–2695.

12.2 Personal Communication

- Galli Basson. 2020. Email to Torrey Edell. ICF. Coyote Ridge Open Space Preserve Management Actions. January 18.
- Janell Hillman. 2020. Coyote Ceanothus Creation Population. Email to Torrey Edell. ICF. January 15. Prepared for the Santa Clara Valley Habitat Authority. Morgan Hill, CA.

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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.

Appendix B
Pacheco Creek Planting Project



Point Blue Report

Annual Report

Pacheco Creek Reserve Contingency

Planting Project

Report to the Santa Clara Valley Habitat Agency

February, 2020

Conservation science for a healthy planet

3820 Cypress Drive, #11 Petaluma, CA 94954

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Annual Report

Pacheco Creek Reserve Contingency Planting Project

February, 2020

Point Blue Conservation Science

STRAW Project

Prepared by Jennifer Benson

Point Blue Conservation Science – Point Blue’s 140 staff and seasonal scientists conserve birds, other wildlife and their ecosystems through scientific research and outreach. At the core of our work is ecosystem science, studying birds and other indicators of nature’s health. Visit Point Blue on the web www.pointblue.org.

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PROJECT SUMMARY

The Pacheco Creek Preserve is a 55-acre property located in the southeastern portion of the Santa Clara County on the southeast side of Highway 152 (SR 152), approximately 13.6 miles east of Gilroy. There is a federally owned property to the east-southeast of the site which provides a buffer between the site and private land.

The acquisition of the Pacheco Creek property by the Santa Clara Valley Habitat Agency (Agency) provides key contributions to the Santa Clara Valley Habitat Plan (Summary, Pacheco Creek Mitigation Area, January 2016) in terms of management considerations. The Pacheco Creek property is located in conservation analysis zone Pacheco-6 (moderate conservation effort) and could contribute to conservation analysis zone requirements identified for Pacheco 1-6 and Plan-wide requirements. At the species-level, the site protects potential habitat for 9 of the 18 covered species. At the natural-community level, the site protects a healthy riparian woodland natural community (willow riparian forest and scrub and mixed riparian forest and woodland and Central California sycamore alluvial riparian) and provides opportunities for enhancement and restoration of these same land cover types. At the landscape level, the site protects land on either side of SR 152 at one of two key crossing points targeted under the Habitat Plan to protect and provide opportunities to enhance wildlife movement across the road. It protects 0.65 miles of Pacheco Creek and contributes to the protection of 2 linkages (#15 Henry W. Coe State Park southeast to San Benito County line and #17 Main stem of Pacheco Creek).

In October 2017, the Agency requested the assistance of Point Blue Conservation Science's (Point Blue) Students and Teachers Restoring A Watershed Program (STRAW) for contract in revegetation and habitat enhancement, local classroom involvement in restoration implementation, as well as maintenance and monitoring of plantings. STRAW sub-contracted Prunuske Chatham, Inc. (PCI) to assist with the revegetation planning and implementation.

The goal of the project is to enhance wildlife habitat with the establishment of a diverse palette of native tree and shrub species utilizing a climate-smart restoration approach to prepare the system for the consequences of climate change. Key considerations in the design plan include: 1) enhancement of Sycamore Alluvial Woodland Habitat (SAW); 2) inclusion of native heat/drought-tolerant woody species; 3) incorporating plant species that benefit special-status wildlife species such as the Least Bell's Vireo; California Red-legged Frog, California Tiger Salamander, and the San Joaquin Kit Fox; and 4) involving local schools and community members in hands-on restoration and stewardship.

Figure 1 illustrates the Oak Contingency Planting area which is a total of 7.25 acres. The planting zone and design plan were developed by PCI and adapted by STRAW and were chosen given the mix of Cortina very gravelly loam and Garretson gravelly loam soil types which support both upland oak woodland and riparian forest natural communities.

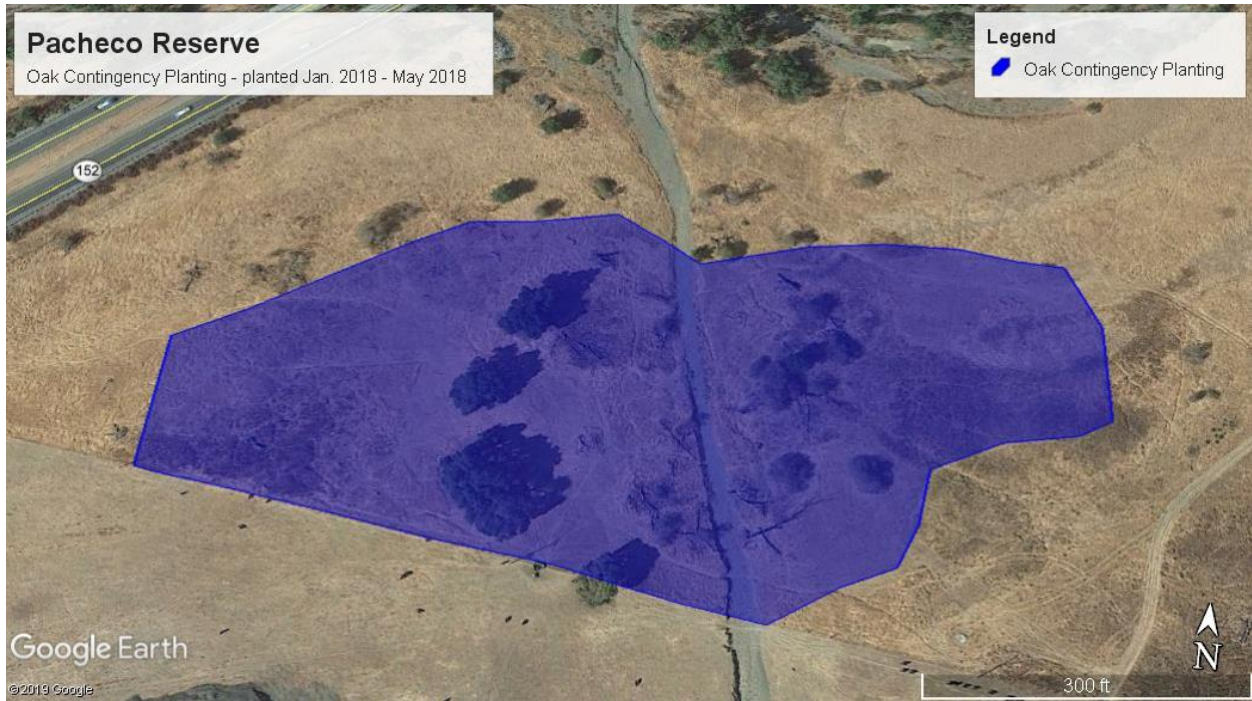


Figure 1. Oak Contingency Planting area.

PLANTING IMPLEMENTATION

For the 2017-18 season, student, community volunteers, and STRAW staff were involved in plant installation for the Oak Contingency Planting area. Table 1 describes the planting dates as well as schools and community volunteers involved.

Volunteers installed acorns and container plants with browse protection from deer and hare by using deer cages above ground. Seed baskets were used for oak plantings as direct acorn seed was utilized in planting. Seed baskets extended below-ground by 10 inches to protect roots from ground squirrel and gopher activity. Coir weed mats were also installed by volunteers to deter invasive plant growth directly around plants. Tree wrap was later used on trees and woodier shrubs to deter rodent girdling. STRAW staff installed dripline irrigation for each plant after installation.

Table 1. Volunteer participation in Pacheco Creek Reserve Contingency Planting Project at Pacheco Reserve in 2017-2018.

Date Installed	Community Volunteers	# of Volunteers
1/18/18	Tres Pinos Elementary	31
1/19/18	Rucker Elementary, Pinnacles NP Intern Volunteer	66
1/26/18	Cerra Vista Elementary, San Benito Arts Council Coordinator	139

4/17/18	R.O. Hardin Elementary, Pinnacles NP, Santa Clara County Parks, BioSITE, Bar SZ Ranch	109
5/15/18	Cerra Vista Elementary	67
5/16/18	Cerra Vista Elementary	65
	Total Volunteers	477



Figures 2 and 3. Students planting at Pacheco Creek!

PCI developed an initial plant list (Table 2) for STRAW restoration activities, and from that list Point Blue conducted a climate-smart restoration assessment. In general, climate models predict more extreme weather events along with warmer temperatures. Climate projections (Table 3) were collected from Cal-Adapt (cal-adapt.org) to give a sense for future climate conditions at Pacheco Reserve. Other climate models, such as Climate-Smart Watershed Analyst (climate.calcommons.org/tbc3/sf-bay-watershed-analyst), can provide even more insight for projecting seasonal water balances and seasonal precipitation patterns. The planting palette included drought tolerant species (e.g. live oak, buckeye, sagebrush) and species diversity to provide insurance against unknowns. Diverse food sources as well as structure and flowering/fruitleting timing help support wildlife facing climate stresses. To meet these needs, 18 species of trees, shrubs, and forbs were selected for the planting palette. Figures 4 and 5 below describe the planting palette’s climate-smart performance. As we began to source plants, we made adaptations to the original planting list and design plan based on limited plant stock availability onsite and at nurseries. These adaptations are described below. In some cases we bumped up numbers planted to fill in for species we were unable to locate.

Table 2. Planting palette for the Pacheco Creek Reserve Contingency Planting Project. The actual number planted reflects adjusted planting number totals due to available plant stock.

Scientific Name	Common Name	Original number to plant per design	Actual number planted	Plant Material
<i>Aesculus californica</i>	CA Buckeye	15	28	1-gal container pot
<i>Artemisia californica</i>	Coastal Sagebrush	40	8	1-gal container pot
<i>Baccharis pilularis</i>	Coyote Brush	40	0	1-gal container pot
<i>Frangula californica</i>	CA Coffeeberry	30	50	1-gal container pot
<i>Heteromeles arbutifolia</i>	Toyon	30	14	1-gal container pot
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	40	38	1-gal container pot
<i>Prunus ilicifolia</i>	Holly Leaf Cherry	30	36	1-gal container pot
<i>Quercus agrifolia</i>	Coast Live Oak	50	61	Direct seed
<i>Quercus douglasii</i>	Blue Oak	5	0	Direct seed
<i>Quercus lobata</i>	Valley Oak	25	8	Direct seed
<i>Platanus racemosa</i>	CA Sycamore	60	0	Container cuttings
<i>Rosa californica</i>	CA Rose	0	6	1-gal container pot
<i>Sambucus nigra ssp. caerulea</i>	Blue Elderberry	20	32	1-gal container pot
	Totals	385	281	

Table 3. Modeled climate projections for annual averages from Cal-Adapt, grid cell 37.03125, -121.34375. Historic values observed from 1950-1990, modeled projected values are for 2070-2099. Modeled projections feature two scenarios: RCP 4.5 – Emissions peak around 2040, then decline. RCP 8.5 – Emissions continue to rise strongly through 2050 and plateau around 2100.

Climate Variable	Historic Annual Mean	Modeled Projection RCP 4.5	Modeled Projection RCP 8.5
Maximum temperature	70.9 degrees F	76.0 degrees F	78.7 degrees F
Minimum temperature	44.1 degrees F	49.4 degrees F	52.5 degrees F
Precipitation	20.2 inches	22.1 inches	25.1 inches

Extreme heat days*	4 days	19 days	31 days
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*Extreme heat days are defined as a day in a year when the daily maximum temperature exceeds the 98th historical percentile of daily maximum temperatures based on observed historical data from 1961-1990 between April and October. The threshold temperature for this grid cell is 96.7 degrees F.

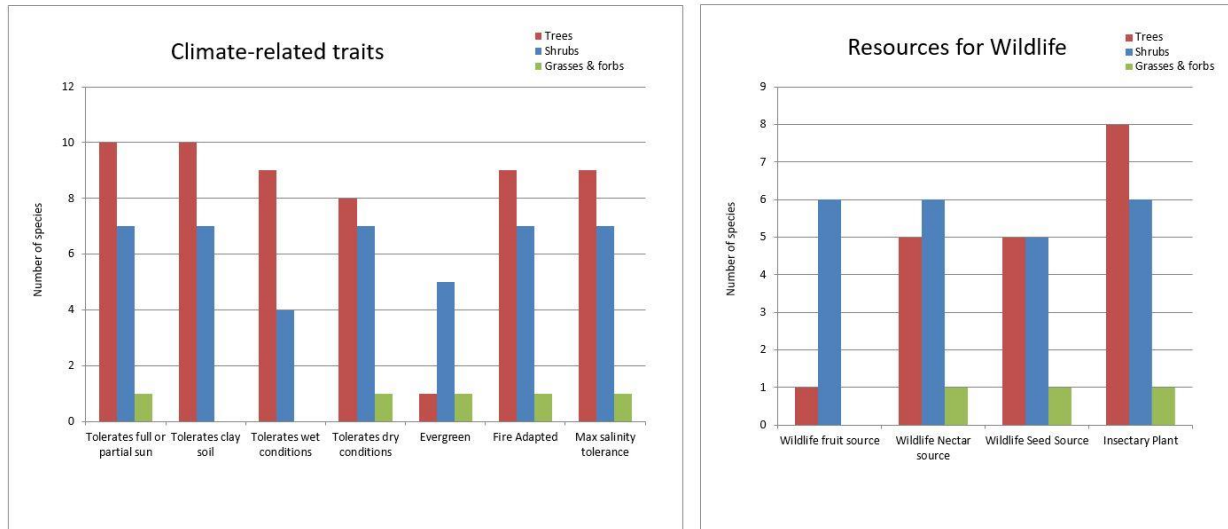


Figure 4. Evaluating the plant list with Point Blue’s Climate-Smart Restoration Toolkit, each chart shows the number of species that meet specific climate-related traits and number of species provide wildlife resources. Some species exhibit several traits.

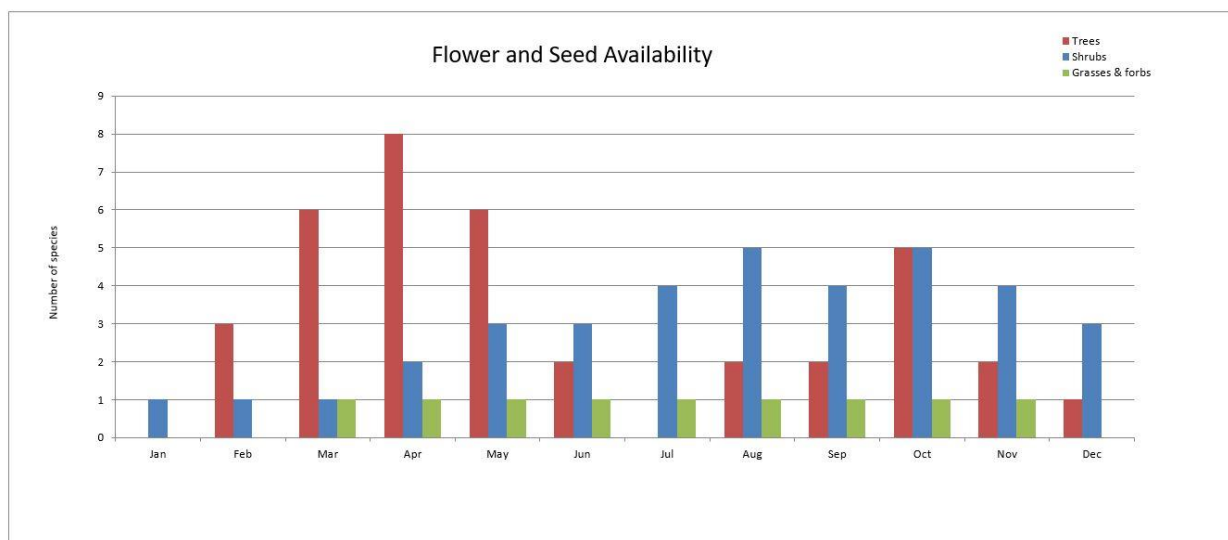


Figure 5. Evaluating the plant list with Point Blue’s Climate-Smart Restoration Toolkit, this chart depicts how many plant species in our palette provide wildlife resources throughout each month of the year. An optimal spread would be to have several species of varying vegetative structure (trees, shrubs, grasses &

forbs) providing wildlife resources for each month of the year. A year-round supply of wildlife resources buffers wildlife against changing climate conditions.

An additional change to our planting design was the omission of planting 80 sycamores (*Platanus racemosa*) in the planting area, for two reasons. First, STRAW staff was unable to locate confirmed non-hybridized sycamore plant stock at local native plant nurseries. Second, given a previous study conducted by San Francisco Estuary Institute (SFEI) and H.T. Harvey & Associates (HTH), in partnership with the Agency, we collectively determined that we didn't have enough information yet to appropriately assess non-hybridized sycamore stands to select planting material from nor an informed methodology for successful propagation techniques. We eagerly anticipate learning more from future studies in an effort for the highest success in restoring Sycamore Alluvial Woodland habitat.

STRAW staff procured all planting materials for restoration implementation. Acorns for Coast Live Oak (*Quercus agrifolia*) and Valley Oak (*Quercus lobata*) were sourced from several trees on site. Blue Oak (*Quercus douglasii*) was removed from the design plan as we determined that our planting zones were just below the elevation for optimal Blue Oak success. California Buckeye (*Aesculus californica*) seed was intended as planting material, but we found limited high-quality seed on site so instead purchased container plants. The remainder of plants were sourced from local nurseries who are utilizing phytosanitary best management practices for reduced risk of introducing plant pathogens to restoration sites via plant stock. Those nurseries are Central Coast Wilds, The Watershed Nursery, Capitol Wholesale Nursery, and California Flora Nursery.

For future plantings, we would highly recommend doing a contract grow and researching options for collecting our own seeds sources. Currently, Point Blue is doing extensive research into site-specific seed collection, propagation, and planting and monitoring for any trends in survival and climate change resilience. Seed collection methods and timing protocols have been developed so seeds can be stored and grown at the Casa Grande Nursery in Petaluma, California. For future projects, we encourage discussions for future plantings so that we may be able to collect and store seeds now.

CURRENT SURVIVAL AND SITE CONDITIONS FOR OAK CONTINGENCY PLANTING

The table below (Table 4) shows the species and number of plants installed as well as 2018 and 2019 plant survival numbers, height class, and health rating, either as high vigor (HV) showing healthy new growth or buds or as low vigor (LV) showing systemic stress. Plant establishment monitoring was performed on September 14th, 2018 and September 26th, 2019. The survival percentages in the Oak Contingency Planting area monitored for two summers after installation shows an overall survival percentage of 50%, down from 60% in last year's report. Of the surviving plants, the vast majority of plants are of high vigor, exhibiting new height and foliage growth as well as flowering as is the case with Sticky Monkeyflower.

Of note, Coast Live Oak acorns were harvested, sterilized and planted in existing seed baskets where oak seedlings failed to germinate or died the year prior. That’s why the Coast Live Oaks in Table 4 show increased survival from years 2018 to 2019.

Table 4. Oak Contingency Planting area survival data after summer 2019 (Year 2 of 5 for maintenance and monitoring):

Latin Name	Common Name	Total Planted	Alive 2018	Alive 2019	Survive 2019	<3ft -LV	<3ft -HV	>3ft -LV	>3ft -HV
<i>Quercus agrifolia</i>	Coast Live Oak	61	42	50	82%		39		11
<i>Prunus ilicifolia</i>	Holly leaf cherry	36	20	16	44%	1	15		
<i>Quercus lobata</i>	Valley Oak	8	2	2	25%		1		1
<i>Frangula californica</i>	CA Coffeeberry	50	41	32	64%	1	28		3
<i>Heteromeles arbutifolia</i>	Toyon	14	4	5	36%		2	1	2
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	38	15	12	32%	4	4	2	2
<i>Artemisia californica</i>	Coastal Sagebrush	8	6	3	38%		3		
<i>Aesculus californica</i>	CA Buckeye	28	21	6	21%	1	5		
<i>Sambucus nigra</i>	Blue Elderberry	32	15	14	44%	3	3	2	6
<i>Rosa californica</i>	California rose	6	3		0%				
Total		281	169	140	50%	10	100	5	25
					<i>Percent</i>	<i>4%</i>	<i>36%</i>	<i>2%</i>	<i>9%</i>

In this planting area, the irrigation line hooked up to the existing trough piping which exhibited excellent pressure throughout the summer. Irrigation was run only during maintenance visits which was typically every other week, and that amount proved to be sufficient.

The next section provides details on each maintenance visit over the summer. Of note, Point Blue subcontracted the San Jose Conservation Corps (SJCC) for 3 days in April and 3 days in June to help with mowing, weed-whacking, and hand pulling weeds inside cages. Mowing in April was a challenge as the crew had to move and replace drip lines in place. However, the grasses and weeds were dense in April so mowing seemed to be efficient and effective versus trying to weed-whack the entire area. Some of the SJCC crew members had done mowing in the previous season and therefore understood how to divide their crew so that some were tracking the irrigation lines and moving them while the others mowed. Since the Oak Contingency Planting area is quite large, mowing was focused on controlling

poison hemlock and thistle patches in the planting area. Individual plants were weeded by hand-pulling inside browse protection caging. June weeding efforts focused on weed-whacking 2-foot perimeters around each plant and spot-treating dense clusters of hemlock and thistle.

Overall rodent pressure on plants was way down this year and maintenance was pretty routine. Girdling was rarely observed during maintenance checks as compared to last year; however, there was a fair amount of nibbled $\frac{1}{4}$ " and $\frac{1}{2}$ " dripline that needed repairs throughout the summer. Perhaps the weed-whacking around individual plants aided in reduced rodent activity on the stems of plants.

Also of note this maintenance season was a brief outbreak of a [False Chinch Bug](#) infestation in mid-August (Figure 6). I have observed this infestation a year prior (summer 2018) on a different project site located in the Upper Pajaro River floodplain. In that instance, the infestation caused widespread damage to new seedlings where only the most robust seedlings survived. Thankfully, the false chinch bug infestation in the Oak Contingency Planting area was very short-lived and confined to small area near the trough and mature live oak trees. Figures 8 below show some of the bug activity.



Figure 6. False chinch bug infestation shown crawling on water trough and piping and completely engulfing a mustard plant. Thankfully the infestation was limited to only a couple of our seedling plantings and left minimal to no damage at all.

MAINTENANCE WORK PERFORMED FOR OAK CONTINGENCY PLANTING

Table 5. Maintenance work performed during summer of 2019 in the Oak Contingency Planting area. Maintenance visits typically entailed running irrigation, walking drip line and repairing leaks, and weeding.

Date	Water Duration	Work Hours	Activities	Site Health	Observations	Notes for next visit
4/10-4/12/19	sporadic	16 (with SJCC)	Focused efforts on weed-whacking a 2-foot radius around weed mats. All plants, hand-weeded directly around plants.			
4/19/19	sporadic	5	Fired up irrigation system, replaced filter, tightened loose connections, checked emitters to be sure they are pointed at plants.			
5/3/19	3 hrs	4	Fixed damaged spaghetti lines post SJCC. Set timers to automated and left trough valve in open position.	Irrigation running well.		
5/29/19	2 hours	4	Ran irrigation, fixed several leaks in ½" line, likely from SJCC weed-whacker work. Repaired main line split near trough.	Plants looking good!	Most mowed weeds starting to grow back, could be touched up with weed-whacker. Buckeyes fully blooming.	Can wait 2 weeks before returning.
6/12/19	~1.5 hours	4	Ran irrigation.	Plants look healthy overall.		For SJCC, focus on spot treatment of yellow start-thistle, milk thistle, and hemlock. Discuss fire safety to SJCC crew.
6/19-6/21/19	0 mins	16	SJCC weed-whacked most of the planting area, paying specific attn. to weeding a buffer around each plant cage. Also weed-whacked			Weed-whackers seemed just as effective as mowers and resulted in less cut irrigation lines and having to move irrigation lines. Mowing probably best

			dense patches of start-thistle and hemlock.			for first season pass due to dense grasses.
7/12/19	2 hrs	4	Ran irrigation.	West of tributary, evidence of activity: mowing, cows?, damaged emitters and spag. lines.	Saw a Western Kingbird and 2 Band-tailed Pigeons.	
7/22/19	~2 hours	4	Ran irrigation system.	A few plants have died off for no apparent reason.	Some ground squirrel activity, burrowing next to base of plants. Goldfish in cattle trough!	
8/6/19	2 hrs	4	Ran irrigation.		More (new) gopher burrows next to base of plants. Cattle enclosure fencing holding up nicely!	
8/21/19	2 hrs	4	Ran irrigation.	Overall, no rodent activity, yay! Plants looking good despite how hot it's been.	Noticed poss. chinch bug infestation on west side of trib. Bugs all over trough, on the ground, and covering mustard plants.	Monitor plants for evidence of chinch bug infestation.
9/10/19	1 hr	2.5	Ran irrigation.	No noticeable impact to plants post-bug infestation. Seemed to		

				be short-lived.		
9/26/19	2 hrs	4	Monitored all plants, ran irrigation.	Noted some minimal damage to plants after chinch bug infestation. Incl. yellow & dead leaves, residue.	There's been mountain lion activity as evidenced by remaining deer carcass on the bank of the tributary.	
10/30/19	1 hr	2	Ran irrigation. No acorns to be harvested.			
11/22/19	45 mins	2	Ran irrigation.	All plants looking fine.		Rain in the forecast!



Figure 7. Photo of dead coffeeberry and sticky monkey flower on 7/22/19 maintenance visit. No apparent evidence of the cause of mortality.

SITE MONITORING PHOTOS



Figure 8. 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.



Photomonitoring point Oak Contingency Planting_1 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_2 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_3 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_4 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_5 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_6 – Sept. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Oak Contingency Planting_7 – Sept. 2018 (left) and Sept. 2019 (right)



Point Blue Report

Annual Report

Pacheco Creek Reserve Riparian

Restoration Project

Report to the Santa Clara Valley Habitat Agency

February, 2020

Conservation science for a healthy planet

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Annual Report

Pacheco Creek Reserve Riparian Restoration Project

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Point Blue Conservation Science

STRAW Project

Prepared by Jennifer Benson

Point Blue Conservation Science – Point Blue’s 140 staff and seasonal scientists conserve birds, other wildlife and their ecosystems through scientific research and outreach. At the core of our work is ecosystem science, studying birds and other indicators of nature’s health. Visit Point Blue on the web www.pointblue.org.

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PROJECT SUMMARY

The Pacheco Creek Preserve is a 55-acre property located in the southeastern portion of the Santa Clara County on the southeast side of Highway 152 (SR 152), approximately 13.6 miles east of Gilroy. There is a federally owned property to the east-southeast of the site which provides a buffer between the site and private land.

The acquisition of the Pacheco Creek property by the Santa Clara Valley Habitat Agency (Agency) provides key contributions to the Santa Clara Valley Habitat Plan (Summary, Pacheco Creek Mitigation Area, January 2016) in terms of management considerations. The Pacheco Creek property is located in conservation analysis zone Pacheco-6 (moderate conservation effort) and could contribute to conservation analysis zone requirements identified for Pacheco 1-6 and Plan-wide requirements. At the species-level, the site protects potential habitat for 9 of the 18 covered species. At the natural-community level, the site protects a healthy riparian woodland natural community (willow riparian forest and scrub and mixed riparian forest and woodland and Central California sycamore alluvial riparian) and provides opportunities for enhancement and restoration of these same land cover types. At the landscape level, the site protects land on either side of SR 152 at one of two key crossing points targeted under the Habitat Plan to protect and provide opportunities to enhance wildlife movement across the road. It protects 0.65 miles of Pacheco Creek and contributes to the protection of 2 linkages (#15 Henry W. Coe State Park southeast to San Benito County line and #17 Main stem of Pacheco Creek).

In October 2017, the Agency requested the assistance of Point Blue Conservation Science's (Point Blue) Students and Teachers Restoring A Watershed Program (STRAW) for contract in revegetation and habitat enhancement, local classroom involvement in restoration implementation, as well as maintenance and monitoring of plantings. STRAW sub-contracted Prunuske Chatham, Inc. (PCI) to assist with the revegetation planning and implementation.

The goal of the project is to enhance wildlife habitat with the establishment of a diverse palette of native tree and shrub species utilizing a climate-smart restoration approach to prepare the system for the consequences of climate change. Key considerations in the design plan include: 1) enhancement of Sycamore Alluvial Woodland Habitat (SAW); 2) inclusion of native heat/drought-tolerant woody species; 3) incorporating plant species that benefit special-status wildlife species such as the Least Bell's Vireo; California Red-legged Frog, California Tiger Salamander, and the San Joaquin Kit Fox; and 4) involving local schools and community members in hands-on restoration and stewardship.

Figure 1 illustrates the Pacheco Reserve Enhancement/Restoration planting area which is a total of 2 acres. The planting zone and design plan was developed by PCI and adapted by STRAW and was chosen given the mix of Cortina very gravelly loam and Garretson gravelly loam soil types which support both upland oak woodland and riparian forest natural communities.



Figure 1. Pacheco Reserve Enhancement/Restoration planting area.

PLANTING IMPLEMENTATION

For the 2017-18 season, student, community volunteers, and STRAW staff were involved in plant installation for the Pacheco Reserve Enhancement/Restoration planting area. Table 1 describes the planting dates as well as schools and community volunteers involved.

Volunteers installed acorns and container plants with browse protection from deer and hare by using deer cages above ground. Seed baskets were used for oak plantings as direct acorn seed was utilized in planting. Seed baskets extended below-ground by 10 inches to protect roots from ground squirrel and gopher activity. Coir weed mats were also installed by volunteers to deter invasive plant growth directly around plants. Tree wrap was later used on trees and woodier shrubs to deter rodent girdling. STRAW staff installed dripline irrigation for each plant after installation.

Table 1. Volunteer participation in Pacheco Creek Reserve Riparian Restoration Project in 2017-2018.

Date Installed	Community Volunteers	# of Volunteers
12/14/17	Rucker Elementary	76
1/10/18	R.O. Hardin Elementary	80
1/12/18	R.O. Hardin Elementary, Pinnacles NP Intern Volunteer	85
2/15/18	Bradley Elementary	62

2/16/18	Bradley Elementary, Pinnacles NP Intern Volunteers	56
	Total Volunteers	359



Figures 2 and 3. Students planting at Pacheco Creek Reserve!

PCI developed an initial plant list (Table 2) for STRAW restoration activities, and from that list Point Blue conducted a climate-smart restoration assessment. In general, climate models predict more extreme weather events along with warmer temperatures. Climate projections (Table 3) were collected from Cal-Adapt (cal-adapt.org) to give a sense for future climate conditions at Pacheco Reserve. Other climate models, such as Climate-Smart Watershed Analyst (climate.calcommons.org/tbc3/sf-bay-watershed-analyst), can provide even more insight for projecting seasonal water balances and seasonal precipitation patterns. The planting palette included drought tolerant species (e.g. live oak, buckeye, sagebrush) and species diversity to provide insurance against unknowns. Diverse food sources as well as structure and flowering/fruitleting timing help support wildlife facing climate stresses. To meet these needs, 18 species of trees, shrubs, and forbs were selected for the planting palette. Figures 4 and 5 below describe the planting palette’s climate-smart performance. As we began to source plants, we made adaptations to the original planting list and design plan based on limited plant stock availability onsite and at nurseries. These adaptations are described below. In some cases we bumped up numbers planted to fill in for species we were unable to locate.

Table 2. Planting palette for the Pacheco Creek Reserve Riparian Restoration. The actual number planted reflects adjusted planting number totals due to available plant stock.

Scientific Name	Common Name	Original number to plant per design	Actual number planted	Plant Material
<i>Artemisia californica</i>	Coastal Sagebrush	20	21	1-gal container pot
<i>Baccharis pilularis</i>	Coyote Brush	40	38	1-gal container pot
<i>Frangula californica</i>	CA Coffeeberry	40	19	1-gal container pot
<i>Heteromeles arbutifolia</i>	Toyon	40	30	1-gal container pot
<i>Juglans hindsii</i>	CA Black Walnut	15	10	1-gal container pot
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	20	7	1-gal container pot
<i>Prunus ilicifolia</i>	Holly Leaf Cherry	10	0	1-gal container pot
<i>Quercus agrifolia</i>	Coast Live Oak	15	13	Direct seed
<i>Quercus douglasii</i>	Blue Oak	5	0	Direct seed
<i>Quercus lobata</i>	Valley Oak	20	19	Direct seed
<i>Platanus racemosa</i>	CA Sycamore	20	0	Container cuttings
<i>Populus fremontii</i>	Fremont Cottonwood	15	11	1-gal container pot
<i>Rosa californica</i>	CA Rose	40	26	1-gal container pot
<i>Sambucus nigra ssp. caerulea</i>	Blue Elderberry	40	44	1-gal container pot
	Totals	340	238	

Table 3. Modeled climate projections for annual averages from Cal-Adapt, grid cell 37.03125, -121.34375. Historic values observed from 1950-1990, modeled projected values are for 2070-2099. Modeled projections feature two scenarios: RCP 4.5 – Emissions peak around 2040, then decline. RCP 8.5 – Emissions continue to rise strongly through 2050 and plateau around 2100.

Climate Variable	Historic Annual Mean	Modeled Projection RCP 4.5	Modeled Projection RCP 8.5
Maximum temperature	70.9 degrees F	76.0 degrees F	78.7 degrees F
Minimum temperature	44.1 degrees F	49.4 degrees F	52.5 degrees F

Precipitation	20.2 inches	22.1 inches	25.1 inches
Extreme heat days*	4 days	19 days	31 days

*Extreme heat days are defined as a day in a year when the daily maximum temperature exceeds the 98th historical percentile of daily maximum temperatures based on observed historical data from 1961-1990 between April and October. The threshold temperature for this grid cell is 96.7 degrees F.

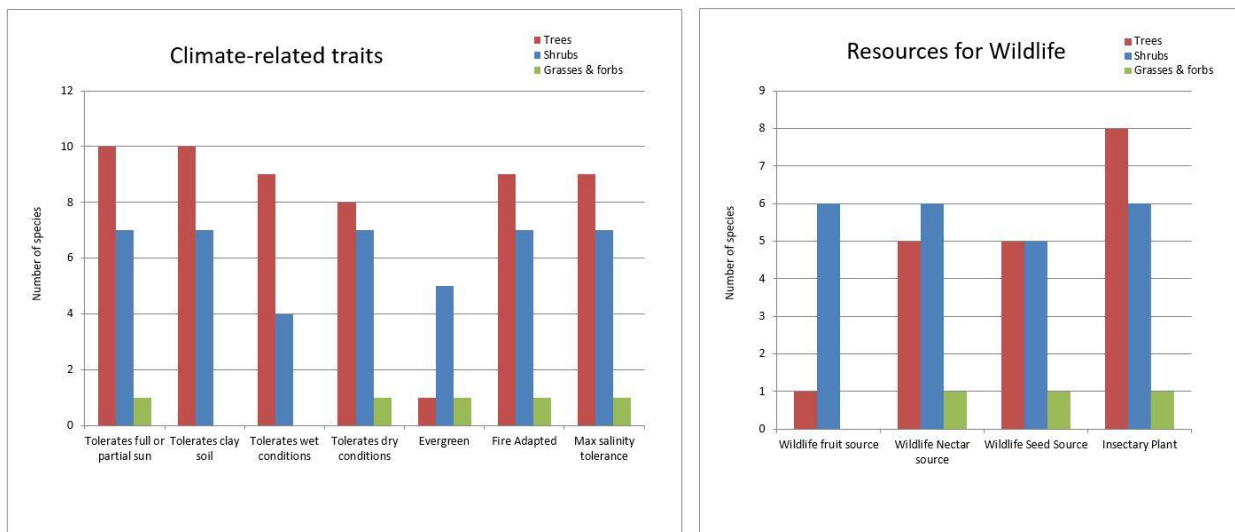


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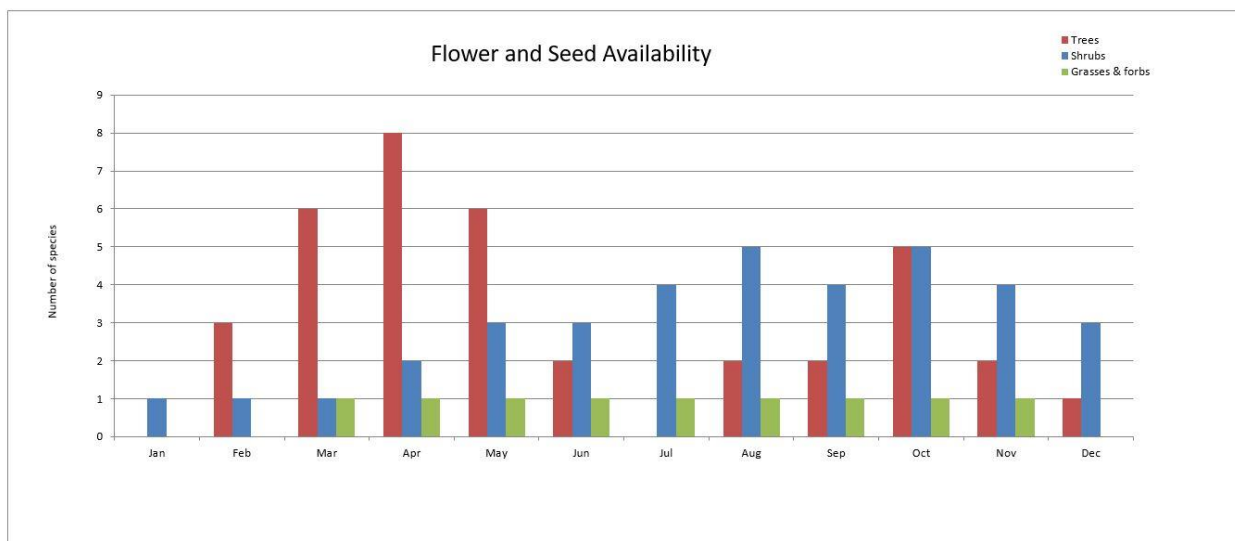


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forbs) providing wildlife resources for each month of the year. A year-round supply of wildlife resources buffers wildlife against changing climate conditions.

As for adaptations to our planting design, we collectively decided to omit from our design plan willow and cottonwood planting along the banks. The planting along the northern bank was intended for 3-foot sprigs of 20 cottonwood (*Populus fremontii*) and 3-foot sprigs of 77 willow (*Salix lasiandra* and *Salix lasiolepis*); however, the plant stock on site was not adequate. Further discussion with the Agency later in planning determined anticipated stream restructuring and the need to obtain a Lake & Streambed Alteration 1600 permit from CDFW, therefore sprigging was omitted from the plan at this time.

An additional change to our planting design was the omission of planting 80 sycamores (*Platanus racemosa*) in the Pacheco Reserve Enhancement/Restoration planting area, for two reasons. First, STRAW staff was unable to locate confirmed non-hybridized sycamore plant stock at local native plant nurseries. Second, given a previous study conducted by San Francisco Estuary Institute (SFEI) and H.T. Harvey & Associates (HTH), in partnership with the Agency, we collectively determined that we didn't have enough information yet to appropriately assess non-hybridized sycamore stands to select planting material from nor an informed methodology for successful propagation techniques. We eagerly anticipate learning more from future studies in an effort for the highest success in restoring Sycamore Alluvial Woodland habitat.

STRAW staff procured all planting materials for restoration implementation. Acorns for Coast Live Oak (*Quercus agrifolia*) and Valley Oak (*Quercus lobata*) were sourced from several trees on site. Blue Oak (*Quercus douglasii*) was removed from the design plan as we determined that our planting zones were just below the elevation for optimal Blue Oak success. The remainder of plants were sourced from local nurseries who are utilizing phytosanitary best management practices for reduced risk of introducing plant pathogens to restoration sites via plant stock. Those nurseries are Central Coast Wilds, The Watershed Nursery, Capitol Wholesale Nursery, and California Flora Nursery.

For future plantings, we would highly recommend doing a contract grow and researching options for collecting our own seeds sources. Currently, Point Blue is doing extensive research into site-specific seed collection, propagation, and planting and monitoring for any trends in survival and climate change resilience. Seed collection methods and timing protocols have been developed so seeds can be stored and grown at the Casa Grande Nursery in Petaluma, California. For future projects, we encourage discussions for future plantings so that we may be able to collect and store seeds now.

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The table below (Table 4) shows the species and number of plants installed as well as 2018 and 2019 plant survival numbers, height class, and health rating, either as high vigor (HV) showing healthy new

growth or buds or as low vigor (LV) showing systemic stress. Plant establishment monitoring was performed on September 14th, 2018 and September 26th, 2019. The survival percentage in the Pacheco Reserve Enhancement/Restoration planting area monitored for two summers after installation has an overall survival percentages of 31%, down from 35% last year. Of the surviving plants, the vast majority of plants are of high vigor, exhibiting new height and foliage growth as well as flowering and fruiting as is the case with one of the toyon plants (Figure 6).

Table 4. Pacheco Reserve Enhancement/Restoration planting area survival data after summer 2019 (Year 2 of 5 for maintenance and monitoring). Of note, Coast Live Oak survival increased from years 2018 to 2019. This was due to acorn harvesting and replanting in existing seed baskets where oak seedlings failed to germinate or died the year prior.

Latin Name	Common Name	Total Planted	Alive 2018	Alive 2019	Survive 2019	<3ft -LV	<3ft -HV	>3ft -LV	>3ft -HV
<i>Quercus lobata</i>	Valley Oak	19	17	17	89%	1	13	3	
<i>Quercus agrifolia</i>	Coast Live Oak	13	12	17	131%		16	1	
<i>Rosa californica</i>	California rose	26	4	3	12%		3		
<i>Artemisia californica</i>	Coastal Sagebrush	21	2		0%				
<i>Heteromeles arbutifolia</i>	Toyon	30	5	5	17%		3	2	
<i>Sambucus nigra</i>	Blue Elderberry	44	8	4	9%		3	1	
<i>Juglans hindsii</i>	CA Black Walnut	10	1	2	20%		2		
<i>Baccharis pilularis</i>	Coyote Brush	38	13	9	24%	3	4	2	
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower	7	1		0%				
<i>Frangula californica</i>	CA Coffeeberry	19	19	15	79%		12	3	
<i>Populus fremontii</i>	Fremont Cottonwood	11	2	1	9%	1			
Total		238	84	73	31%	5	56	12	
					<i>Percent</i>	<i>2%</i>	<i>24%</i>	<i>0%</i>	<i>5%</i>

The challenge again this summer was to ensure adequate watering capacity. Point Blue worked closely with the Habitat Agency to notify when the irrigation system wasn't operating and trouble-shooting the

issues as they arose. Many efforts were made by both parties the irrigation system operational. At the beginning of the summer in May and June, irrigation reboot focused on re-orienting drip line and removing excess tubing from plants that had died off in the previous year. Removing the excess tubing improved water pressure loss with a smaller system. During this timeframe, the pump still did not have enough juice to pump water through the irrigation system, so plants were bucket-watered using water from Pacheco Creek. From mid-June to mid-August, the Pacheco Creek had dried up, but bucket-watering was no longer needed as the irrigation system was functional. By mid-August, there was a small resurgence of water in the creek (Figure 7) with just enough pooled water to bucket-water plants as the irrigation system was having problems again. For future consideration, it is imperative to have a consistently functional irrigation system in order to maintain installed plants and ensure their best chance for survival. The Habitat Agency and Point Blue have discussed possible strategies which include an elevated, stationary water tank that would gravity-feed an irrigation system; run an extended mainline from the trough in the Oak Contingency Planting area that could be tapped into to water the Pacheco Reserve Enhancement/Restoration planting area; allocate resources to build up current pump and electricity infrastructure to operate current set-up; or utilize a mobile, water buffalo trailer that truck in water, and attached pump that can hook up to drip lines and provide water to the system. Point Blue has funding for a water buffalo trailer, but currently need a place to store it temporarily.

Again, we would highly recommend doing a contract grow and researching options for collecting our own seeds sources for future plantings. Currently, Point Blue is doing extensive research into site-specific seed collection, propagation, and planting and monitoring for any trends in survival and climate change resilience. Seed collection methods and timing protocols have been developed so seeds can be stored and grown at the Casa Grande Nursery in Petaluma, California. For future projects, we encourage discussions for future plantings so that we may be able to collect and store seeds now.

The next section provides details on each maintenance visit over the summer. Of note, Point Blue subcontracted the San Jose Conservation Corps (SJCC) for 3 days in April and 3 days in June to help with mowing, weed-whacking, and hand pulling weeds inside cages. Mowing in April was a challenge as the crew had to move and replace drip lines. However, the grasses and weeds were dense in April so mowing seemed to be efficient and effective versus trying to weed-whack the entire area and the SJCC crew was able to clear entire areas in the planting area west of the tributary. Weed-whacking efforts focused on knocking down some of the poison hemlock and thistles just east of the tributary. June weeding efforts focused on weed-whacking 2-foot perimeters around each plant and spot-treating dense clusters of hemlock and thistle. Overall rodent pressure on plants was way down this year and maintenance was pretty routine. Girdling was rarely observed during maintenance checks.



Figure 6. Flowering toyon!



Figure 7. Pacheco Creek in mid-August. Just enough water to gather for bucket-watering.

MAINTENANCE WORK PERFORMED FOR PACHECO RESERVE ENHANCEMENT/RESTORATION PLANTING

Table 5. Maintenance work performed during summer of 2019 at the Pacheco Reserve Enhancement/Restoration planting area. Maintenance visits typically entailed running irrigation, walking drip line and repairing leaks, and weeding. This year, the irrigation was not run on an automated system and only ran during maintenance visits.

Date	Water Duration	Work Hours	Activities	Site Health	Observations	Notes for next visit
4/10-4/12/19	sporadic	8 (with SJCC)	Mowed half of zone, weed-whacked around each plant a minimum 2-foot radius around weed mats.			

5/3/19	Bucket-watered	4	Bucket-watered 33 plants ~1 gallon each. All plants watered were west of the tributary.	Irrigation system not running well.	Coffeeberry showing yellow leaves, direct seed oaks look fabulous.	Bring an additional bucket for bucket-watering.
5/14/19	Bucket-watered: 1-2 gallons each	3	Bucket-watered all plants	Plants looking healthy overall, some yellow leaves.	Yellow star-thistle beginning to bolt. Hemlock & thistle mowed by SJCC has stunted growth, yay! Heard BHGR, ATFL, and BEKI.	Could probably wait 2 weeks before coming back out, keep eye on weather for rain and cooler temps.
5/29/19	Bucket-water 2 gallons/plant	4	Bucket-watered all plants.	Plants looking good!	Most mowed weeds starting to grow back, could be touched up with weed-whacker. Buckeyes fully blooming.	Can wait 2 weeks before returning.
6/12/19	Bucket-watered 1-2 gallon/plant	4	Bucket-watered all plants.	Elderberries look thirsty.	Pacheco Creek water is drying up quickly, will need another water source before long.	For SJCC, focus on spot treatment of yellow start-thistle, milk thistle, and hemlock. Discuss fire safety to SJCC crew.
6/19-6/21/19	0 mins	8	SJCC weed-whacked most of the planting area, paying specific attn. to weeding a buffer around each plant cage. Also weed-whacked dense patches of start-thistle and hemlock.	Plants looking good having been bucket-watered.		Weed-whackers seemed just as effective as mowers and resulted in less cut irrigation lines and having to move irrigation lines. Mowing probably best for first season pass due to dense grasses.
7/12/19	2 hrs, all sections!	4	Ran irrigation in all zones.		Irrigation is operating, but pressure is still a little low.	

7/22/19	~2 hours	4	PSI ~25 reading taken at end of day, some plants in Zone B east of trib., didn't adequately get watered given low PSI.	A few plants have died off for no apparent reason.	Some ground squirrel activity, burrowing next to base of plants.	
8/6/19	Bucket-watered 1 gal/plant	4	PSI below 10, no water coming out of pipe. Bucket-watered plants west of trib. with water out of Pacheco Creek, will need to come back and bucket-water east of trib.	Some plants looking water stressed – wilted leaves and senescing.	More (new) gopher burrows next to base of plants. Cattle enclosure fencing holding up nicely!	Bucket-water remaining plants.
8/9/19	Bucket-watered: 1 gal/plant	4	Bucket-watered remaining plants east of tributary.		Well still not producing water, only a trickle came out.	
8/21/19	2 hours	4	Ran irrigation in each mini zone.	Overall, no rodent activity, yay! Plants looking good despite how hot it's been.		
9/10/19	none	2	Solar-powered batteries did not have enough charge to run pump.		No water in Pacheco Creek.	Notify Gerry that battery isn't charged.
9/26/19	none	4	Monitored all plants. Battery still has low charge, unable to run irrigation.			Notify Gerry that battery isn't charged.
10/30/19	none	2	Harvested ~2 dozen buckeye seeds. No acorns to be harvested.	Some stress on plants, most looking okay even		Notify Gerry that battery is not charged.

				without water.		
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SITE MONITORING PHOTOS



Figure 8. 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.



Photomonitoring point Pacheco Reserve Enhancement/Rest_1 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Pacheco Reserve Enhancement/Rest_2 – Nov. 2018 (left) and Sept. 2019 (right)



Photomonitoring point Pacheco Reserve Enhancement/Rest_3 – Nov. 2018 (left) and Sept. 2019 (right)