SANTA CLARA VALLEY HABITAT PLAN
4TH ANNUAL REPORT
FY2017–2018

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Acronyms and Abbreviations

°C	Celsius
Balance	Balance Hydrologics
Calero Restoration Project	Calero County Park Pond and Wetland Restoration Project
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
CNDDB	California Natural Diversity Database
Co-Permittees	Cities of San José, Gilroy, and Morgan Hill; County of Santa Clara; Santa Clara Valley Water District; Santa Clara Valley Transportation Authority
County	County of Santa Clara
County Parks	County of Santa Clara Parks and Recreation Department
Creekside Science	Creekside Center for Earth Observation
CROSP	Coyote Ride Open Space Preserve
Friends	Friends of the Santa Clara Valley Habitat Agency
FY	Fiscal Year
GIS	geographic information system
Habitat Agency	Santa Clara Valley Habitat Agency
Habitat Plan	Santa Clara Valley Habitat Plan
HCP	Habitat Conservation Plan
LAG	Local Assistance Grant
lbs	pounds
Management and Monitoring Plan	Coyote Ridge Reserve Management and Monitoring Plan
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
PBCS	Point Blue Conservation Science
PCI	Prunuske Chatham, Inc.
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

Executive Summary

This is the fourth 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, 2017, and June 30, 2018) and cumulatively through permit term year 5 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-Permittees[1] to comply with the federal Endangered Species Act and California's Natural Community Conservation Planning Act. Over the 50-year permit term, impacts from urban development and rural infrastructure projects will be offset by the creation of a Reserve System managed for the benefit of 18 covered species, as well as the natural communities that they—and hundreds of other species—depend on for habitat.

At a Glance

The Annual Report is a complex and metric heavy document. There are several figures at the end of the Executive Summary that summarize Habitat Plan progress based on program assumptions and permit requirements. The reporting year is 5 of the 50-year permit term, or 10% 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.

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

[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, 61 projects received coverage under the Habitat Plan: 41 private projects, 18 public projects, and 2 Participating Special Entity (PSE) projects (**Figure ES-1**). The covered projects consisted of 38 urban development projects, 1 in-stream operation and maintenance activity, 2 in-stream capital projects, 7 rural operations and maintenance projects, 4 rural development projects, 5 rural capital projects, and 4 conservation strategy implementation projects.

The 61 projects resulted in 488 acres of permanent impacts and 78 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 four different watersheds—Coyote, Guadalupe, Pajaro, and Llagas. During the reporting period, two individual coyote ceanothus plants were removed.

A total of 226 projects have received take coverage under the Habitat Plan since permit issuance (**Figure ES-2** and **Figure ES-3**). Cumulative land cover impacts total 1,858 acres of permanent, 331 acres of temporary, and 182 feet of permanent and 737 feet of temporary impacts on streams (**Figure ES-3**). Of the 226 projects, 128 were private, 82 were public, and 16 were PSE projects. Covered activity types include 125 urban development projects, 9 in-stream operations and maintenance activities, 8 in-stream capital projects, 30 rural operations and maintenance projects, 29 rural development projects, 16 rural capital projects, and 9 conservation strategy implementation projects.

Project impacts have largely occurred in urban and agricultural areas, 41% and 38% respectively, with only 21% occurring in natural lands. This results in lower fees paid as most project 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 protected. The Reserve System contributes to the protection of four landscape linkages, two on the Coyote Ridge Open Space Preserve (#6, #7) and two on the Pacheco Creek Reserve (#15 and #17). No new land was enrolled into the Reserve System during the reporting period.

[2] The Pacheco Creek Reserve is own 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 2019, 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.

Habitat Restoration and Creation

Five restoration and creation projects were implemented, and two projects are in the planning phase through the reporting year. Projects 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, and Coyote ceanothus. One project improved a regional connection between the Diablo Range and Santa Cruz Mountains. Restoration projects span the Alamitos, Coyote, Pacheco, and Pajaro Watersheds.

Western Burrowing Owl Management and Monitoring

The Habitat Agency manages two of five western burrow 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. Three burrowing owl studies were also conducted in the reporting year. Members of the burrowing owl research team visited colleagues in British Columbia to observe captive breeding facilities to prepare for future Tier 3 recovery actions.

During this fifth annual breeding season survey, the number of owls decreased to a total of 52–53 adults in comparison to 74 adults in 2017. Although the total number of adult owls was down, the average number of offspring per pair increased from 1.94 in 2017 to 3.24 juveniles per pair in 2018. This increase is partly attributed to supplemental feeding (Trulio et at 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 29 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, Trulio et al 2019).

In addition to a low number of individuals, burrowing owls in the South Bay were limited to only five breeding locations. 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 (Trulio et al 2019).

The continued population decline will trigger the implementation of Tier 3 recovery actions in 2019. These actions will include the following actions (Higgins and Chromczak 2019).

- Overwintering of juvenile burrowing owl to reduce mortality and increase the number of owls breeding owls for the next year.
- Release of overwintered owls at existing and new breeding sites to establish expand existing colonies and establish new ones. These sites will also be managed by the Habitat Agency via a management agreement.
- Continued supplemental feeding during the breeding season at select sites to improve nesting success, brood size, and health of adult owls and their chicks.

Implementation of these actions will be included in the FY1819 annual report.

Reserve System Management

The Habitat Agency manages two Reserve System properties—the Coyote Ridge Open Space Preserve[3] and Pacheco Creek Reserve. Treatment of invasive plant species, conservation grazing to achieve residual dry matter (RDM) targets, basic road improvements, a cultural resources inventory, seed collection, and a property boundary survey were completed at the Coyote Ridge Open Space Preserve. The Habitat Agency completed the *Coyote Ridge Open Space Preserve Management and Monitoring Plan*, which provides a detailed prescription for the long-term management and monitoring.

Management actions performed on the Pacheco Creek Reserve included a number of maintenance activities, such as installing solar powered well pumps, small fencing repairs, signage, weed control, and trash removal. The Habitat Agency began the Pacheco Creek restoration planning process to improve creek conditions on the Pacheco Creek Reserve.

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 larvae, land cover mapping, serpentine grassland composition, fragrant fritillary (*Fritillaria liliacea*), Loma Prieta hoita (*Hoita strobilina*), and RDM. The following summarizes the results.

- The number of Bay checkerspot butterfly (*Euphydryas editha bayensis*) larvae in 2016 was approximately 200,000 individuals. However, in 2018 there were approximately 62,000 larvae on the Coyote Ridge Reserve, the fifth lowest since annual population monitoring began in 2008 (Creekside Center for Earth Oberservations 2019). The recent declines over the past 3 years do not indicate patterns outside the normal historical variability.
  - The middle portion of the Coyote Ridge Reserve had the highest habitat quality for the Bay checkerspot butterfly in 2018 although the northern portion of the reserve continues to have

[3] The Coyote Ridge Open Space Preserve is managed by the Santa Clara Valley Open Space Authority via a management agreement with the Habitat Agency.

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 both perennial and annual forbs. It also has the lowest annual grass cover, and subsequently nonnative cover. On the down side, the middle portion had the highest thatch cover.

- The northern portion of Coyote Ridge Reserve had the highest Bay checkerspot butterfly population, illustrating that vegetative composition parameters are not tightly correlated with Bay checkerspot butterfly trends, but more closely indicate approach toward habitat thresholds. The northern portion of the Coyote Ridge Reserve had the highest cover of Bay checkerspot butterfly nectar plants, perennial grass, annual forbs, native cover, and native richness. It is also high in perennial forbs and native richness, and has moderate cover of the Bay checkerspot butterfly's primary larval host plant dwarf plantain. However, the northern portion of the Coyote Ridge Reserve had the lowest cover of dwarf plantain and the highest cover of nonnative annual grasses (Creekside Center for Earth Oberservations 2019).
- The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat, although the last two years have seen declines. It appeared the high rains of the 2017 growing season favored nonnative annual grass at the expense of native richness and cover. While the 2018 growing season was less wet, timing still appeared to favor nonnative annual grass (and associated thatch) at the expense of native annual forbs. Bay checkerspot butterfly host and nectar sources were fairly low across the board this year. The dramatic increase in nonnative annual grass cover the last two seasons is the main issue throughout the property. It appears that legacy effects of the high rains and high annual grass cover and seed production set the stage for grassier habitat this year, and perhaps will in future years (Creekside Center for Earth Oberservations 2019).
- The number of individuals of both fragrant fritillary and Loma Prieta hoita increased on the reserve (the latter due to the discovery of additional undocumented individuals during seed collection efforts). However, Loma Prieta hoita plants at the reserve have never been observed flowering during surveys during its bloom period which questions the productivity and sustainability of Loma Prieta hoita at the reserve given the lack of evidence of reproduction. Fragrant fritillary at the reserve is threatened by grazing as observed by the high levels of herbivory on flowering stalks (Creekside Center for Earth Oberservations 2019).
- Grass production was near or above normal production in 2018. The majority (over 50%) of the reserve maintained RDM levels between 1,000 pounds (lbs)/acre and 1,500 lbs/acre, while approximately 30% of the reserve maintained RDM levels between 700 lbs/acre and 1,000 lbs/acre.

Pacheco Creek Reserve

Vegetation mapping was conducted by Prunuske Chatham, Inc. (PCI) in order to update the extent and distribution of the land cover types on the Pacheco Creek Reserve. The original Habitat Plan land cover mapping classified nearly the entirety of the Pacheco Creek Reserve as the mixed riparian forest and woodland land cover type, with a small amount of the willow riparian forest and scrub and pond land cover types. The field survey conducted by PCI mapped seven Habitat Plan land cover

types on the Pacheco Creek Reserve, including the Caltrans mitigation area, and adjacent Bureau of Recreation land[4].

- Mixed oak woodland (7.8 acres)
- Central California sycamore alluvial woodland (9.1 acres)
- Mixed riparian forest and woodland (6.5 acres)
- Willow riparian forest and scrub (16.4 acres)
- California annual grassland (28.4 acres)
- Northern coastal/Diablan sage scrub (0.3 acre)
- Pond (0.6 acre)

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 three research projects.

- Wintering Burrowing Owl Monitoring
- Evaluating Threats Posed by Exotic Phytophthora Species to Endangered Coyote Ceanothus and Selected Natural Communities in the Habitat Plan Area, and
- Modeling Climate Change Effects on Pond Hydroperiods in the Coyote Valley.

On-going and awarded LAG-funded projects during the reporting period include the following.

- Coyote Valley Bobcat and Gray Fox Connectivity Study (FY17)
- Monitoring Nitrogen Deposition in Santa Clara Valley (FY17)
- Tricolored Blackbird Nesting and Foraging Monitoring Project (FY17)
- Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to inform Infrastructure and Restoration (FY18)
- Genetics Study of Hybridization between California Sycamore and London Plane Tree (FY18)

Tiburon Indian Paintbrush

The two known locations of Tiburon Indian Paintbrush in the Habitat Plan area were monitored during the reporting year. The Habitat Agency partnered with Creekside Science in 2018 to complete the following tasks.

- Paintbrush Hill census and California Natural Diversity Database (CNDDB) submission
- Paintbrush Hill covered species surveys/maps/reporting
- Paintbrush Canyon macroplot, seeded plot census, and CNDDB submission

[4] The list identifies all the revised mapping. Table 9 accounts for the Caltrans Mitigation area as an "existing easement" and does not credit those acreages towards Reserve System Requirements. Bureau of Reclamation lands are not included in the Reserve System.

- Seed collection at both sites

The Paintbrush Hill census documented 224 individuals. The distribution of plants across Paintbrush Hill has changed relatively little from 2006 to 2018. Additionally, covered species surveys documented approximately 1,500 Santa Clara Valley dudleya individuals and 10,200 smooth lessingia individuals on Paintbrush Hill.

The Paintbrush Canyon occurrence is estimated (with 80% confidence) at 415 ± 189 plants. Comparing old macroplot data, this was a decrease from 795 ± 138 in 2013, with higher numbers in previous years. The total estimate for the site, however, which includes an extended macroplot and plots seeded between January 2013 and December 2016, is 1,900 ± 375.

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.[5] Stay-Ahead requirements are being met or exceeded the following resources (**Figure ES-5** and **Figure ES-6**).

- Chaparral northern coastal scrub
- Conifer woodlands
- Ponds
- Streams
- Western burrowing owl occupied nesting habitat[6,7]
- Mount Hamilton thistle
- Santa Clara Valley dudleya
- Fragrant fritillary
- Loma Prieta hoita
- Smooth lessingia[8]
- Metcalf Canyon jewelflower

[5] 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.

[6] 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.

[7] 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.

[8] 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.

- Most beautiful jewelflower[9]
- Coyote ceanothus

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

- Grasslands
- Oak woodlands
- Riparian forest and scrub
- Western burrowing nesting habitat (rough proportionality)[10],[11]
- Wetlands

The Habitat Agency continues to work in good faith with the Wildlife Agencies and Co-Permittees to comply with the Stay-Ahead provision. 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 Coyote Ridge Open Space Preserve, Bolsa Fish Passage Project on Uvas-Carnadero Creek, and the Pacheco Creek Stream and Riparian Restoration Project.

The Santa Clara Valley Water District continues to successfully implement the Coyote ceanothus creation project—a project timeline to achieve the 2,000-plant target size will be available during Fiscal Year (FY) 2019–2020 (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 addition, the Santa Clara Valley Water District has earmarked grant funding to acquire a Coyote ceanothus occurrence when a property becomes available.

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. Two changed circumstances occurred during the reporting period.

[9] *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.

[10] 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.

[11] 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.*

- **Cover species became listed**. The foothill yellow-legged frog listed was listed as a candidate species under the California Species Act in June 2017. Under Section 2835 of the California Fish and Game Code, CDFGW may issue take authorization for covered species (plants or wildlife) regardless of their listing status. As stated in the NCCP Act, "At the time of plan approval, the [California] department [of Fish and Game] may authorize by permit the taking of any covered species whose conservation and management is provided for in a natural community conservation plan approved by the department."
- **Nonnative species or disease**. Dead foothill yellow-legged frogs were found in three locations in upper Coyote Creek above Coyote Lake in October 2018. The apparent cause of death is from chytrid fungus, not previously thought to affect this species. Previously some foothill yellow-legged frog experts had thought that foothill yellow-legged frogs were only carriers of chytrid. It was not documented as cause of death until dead foothill yellow-legged frogs were found in upper Coyote Creek that appeared to have been killed by chytrid or some other pathogen. The Habitat Plan mentions chytrid as a threat to foothill yellow-legged frog.

The Habitat Agency established a remedial measures fund. Chapter 9 of the HCP describes remedial measures funding requirements on pages 9-9 and 9-10. Remedial measure costs are estimated to address the Reserve System management response to changed circumstances, if and when they occur (see Chapter 10, *Assurances*, of the HCP for a description of all possible changed circumstances and remedial measures). As required by the HCP, the Habitat Agency will maintain sufficient financial reserves in the remedial measures fund to pay for remedial actions described in Chapter 10 of the HCP, when they are needed to respond to any of the changed circumstances in the Plan. Starting in FY1718, the Habitat Agency contributed to a contingency fund in order to pay for the more expensive remedial actions that might occur. Remedials measures under development or implemented to date are the following for the nonnative species or disease changed circumstance.

- **Chytrid fungus and foothill yellow-legged frog**. The Santa Clara Valley Water District is assembling best management practices, including decontamination procedures, to prevent the introduction or spread of chytrid fungus and other pathogens whenever working within foothill yellow-legged frog streams or California red-legged frog and California tiger salamander breeding ponds.
- **Phytophthora**. Best management practices to prevent the spread of Phytophthora are implemented at all restoration projects completed under the Habitat Plan, In the reporting year, these were implemented at the Calero County Park Pond and Wetland Restoration Project, San Felipe Creek Restoration Project, and the Coyote Ceanothus Creation Project. Examples of best management practices are included in Appendix A.

Finances

The Habitat Agency's available revenue, allocated budget, and expenditures varied from what was anticipated by the Habitat Plan. For Years 1–5, the Habitat Plan assumed $9.7 million for its average annual expenditures. The FY1617 expenditures were $3.4 million, 35% 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 $12.2 million in funds during the reporting period from fee and non-fee funding sources. Fee funding totaled approximately $10.1 million (83% of total revenues) across private, public, and PSE projects. Non-fee funding totaled approximately $2.1 million (17%). This includes funds from three grants.

Fees are adjusted on an annual basis using an automatic inflation adjustment. From FY1617 to FY1718, land cover, serpentine, and nitrogen deposition fees increased by 5.3%. Burrowing owl and wetland fees increased by 2.5%.

Program Administration

The Habitat Plan permits were issued in July 2013, and with the close of FY1718, the Habitat Agency neared 5 years of Habitat Plan implementation. This period focused on growth of the Habitat Agency by hiring staff, finalizing policies and guidance documents from previous years, conducting advocacy and outreach to state and federal governments, and securing grants and funding for future land acquisition and restoration projects.

The Habitat Agency developed a covered plant compliance tracking approach that can be applied consistently across the Reserve System (Appendix B [ICF 2018b]). Covered plant occurrence data used to develop the Habitat Plan is an important piece of baseline information needed to track permit compliance. Current conditions, however, may differ from the original plan occurrence data, sometime substantially. Plant occurrences are variable by nature, contracting and expanding over time. Plants can appear where they once were not known to be present, combine with nearby occurrences, or become locally extirpated. This issue has become especially apparent on the Habitat Agency's Coyote Ridge Open Space Preserve, where smooth lessingia, which was not common in the past, is now abundant throughout the entire Reserve, in what appears to be a single population of millions of individuals. The Habitat Agency compared the differences in the number and extent of the covered plant occurrences identified in specific locations at the time of Habitat Plan development to what was identified during the more recent baseline surveys. This information was used to documenting Habitat Plan compliance in terms of the number of occurrences identified in the Habitat Plan anticipated to be protected that are now actually protected in implementation.

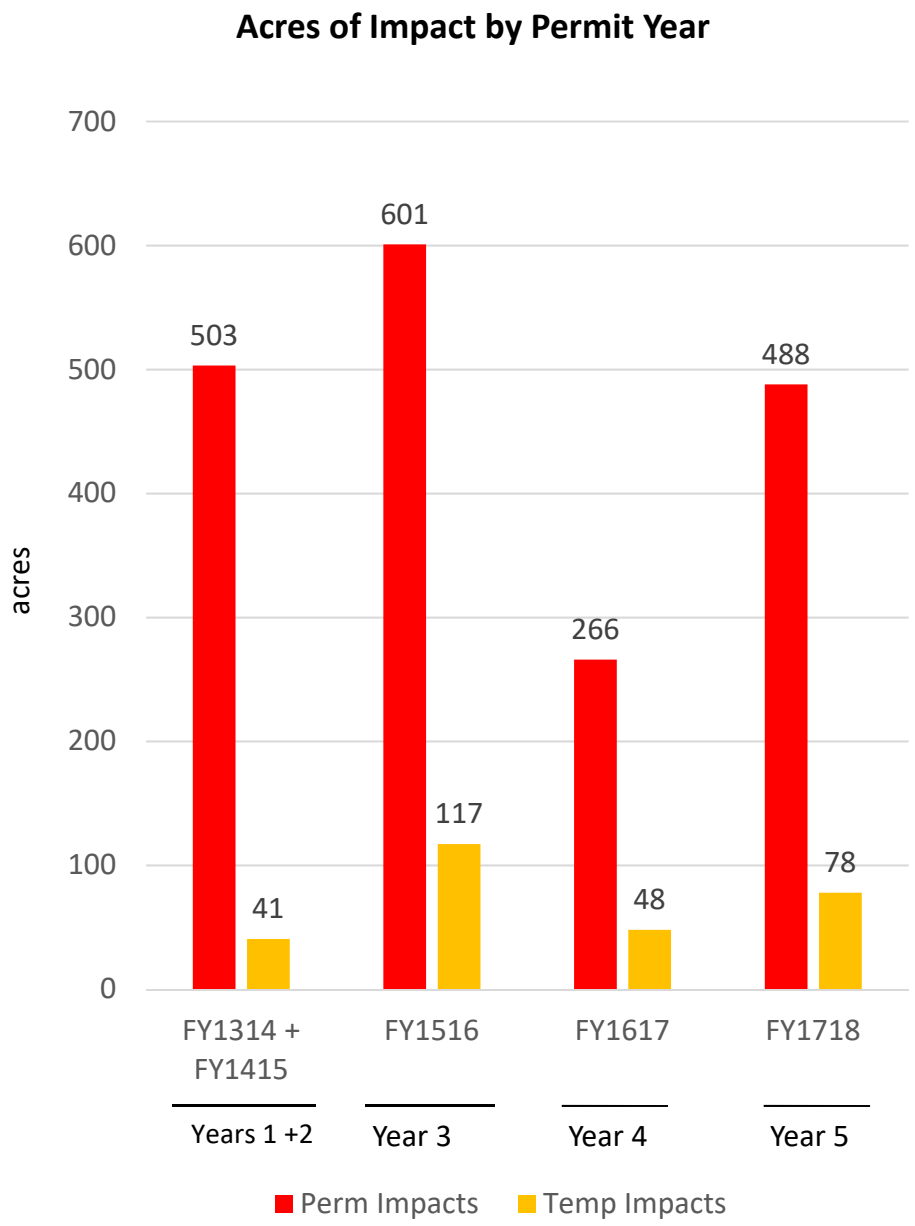
Major accomplishments include the following.

- **Staff**. Robin Glazer was hired as a senior real estate agent and works for the Habitat Agency 30% of the time.
- **Employee Policies**. The Habitat Agency updated their employee handbook.
- **Nonprofit Entity**. The nonprofit entity—The Friends of the Santa Clara Valley Habitat Agency—became a tax exempt organization.
- **Financial Assessment.** The Habitat Agency hired the certified public accountant Moss, Levy & Harzheim LLP to conduct a financial assessment for the FY1718 reporting year and found the Habitat Agency to be in good standing. 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.

- **Regional General Permit.** The Habitat Agency utilized the Regional General Permit (RGP) for the San Felipe Creek Restoration Project. This project was permitted under the RPG and received uniform credits for stream (5002.5 linear feet), seasonal wetlands (1.76 acres) , perennial seep wetland (0.0375 acre), and stream buffer establishment (0.16 acre or 120 linear feet). The Habitat Agency submitted the third RGP Annual Report to the U.S. Army Corps of Engineers. The Habitat Agency also completed a final draft of the In-Lieu Fee Program and RGP programmatic Biological Opinion.
- **Permit Integration.** The Habitat Agency continued working with the San Francisco Bay and Central Coast Regional Water Quality Control Boards to develop a permit compliance strategy for state and federal water quality regulations and with the National Marine Fisheries Service regarding establishing a programmatic Biological Opinion to support the RGP.
- **Grants and Funding**. The Habitat Agency secured $10 million dollars in grants and funding for land acquisition.[12]
- **Covered Plant Compliance Tracking**. The Habitat Agency developed a compliance tracking system to document the protection of plant occurrences in the Reserve System (ICF 2018b). Under this system, the Habitat Agency will receive credit for the number of plant occurrences assumed to be present during development of the Habitat Plan (as long as more recent surveys document that they are still extant). A tracking system to determine cumulative impacts on plant occurrences from multiple projects impacting the same occurrence will be developed.
- **Interpretation and Clarification Memorandums**. *Lake and Streambed Alteration Agreement Clarification* was approved during the reporting year.
- **Modifications to the Habitat Plan**. One modification to the Habitat Plan was approved during the reporting period, *Modification of Table 6-2 (Aquatic Avoidance and Minimization Measures).*
- **Other Conservation Efforts.** The Habitat Agency serves as a stakeholder on many of the other conservation efforts in the San Francisco Bay Area including, but not limited to, USFWS Recovery Plans, the Wildlife Connectivity Working Group, the Santa Clara Valley Regional Conservation Investment Strategy, and High-Speed Rail.

[12] Grant funding allocated or received during the reporting year is included in this annual report as non-fee funding. These secured funds will be included as non-fee funding in subsequent annual reports.

Figure ES-2. Covered Projects Impacts: Cumulative FY1314 thru FY1718 – Permit Year 5 of 50



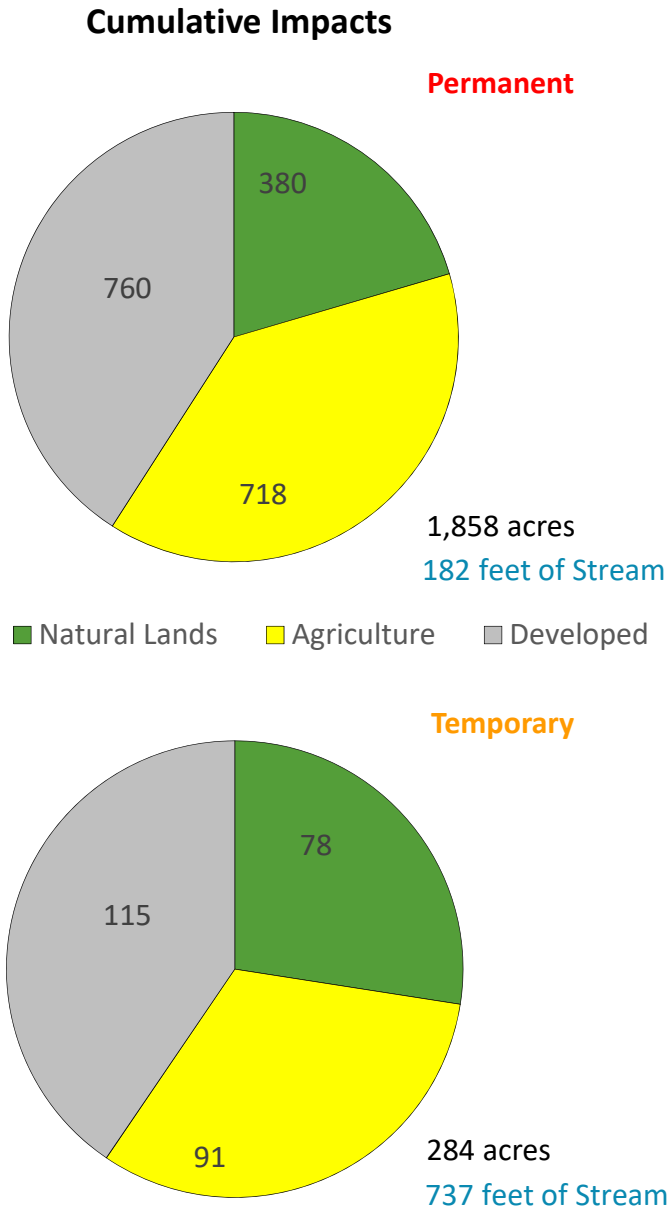
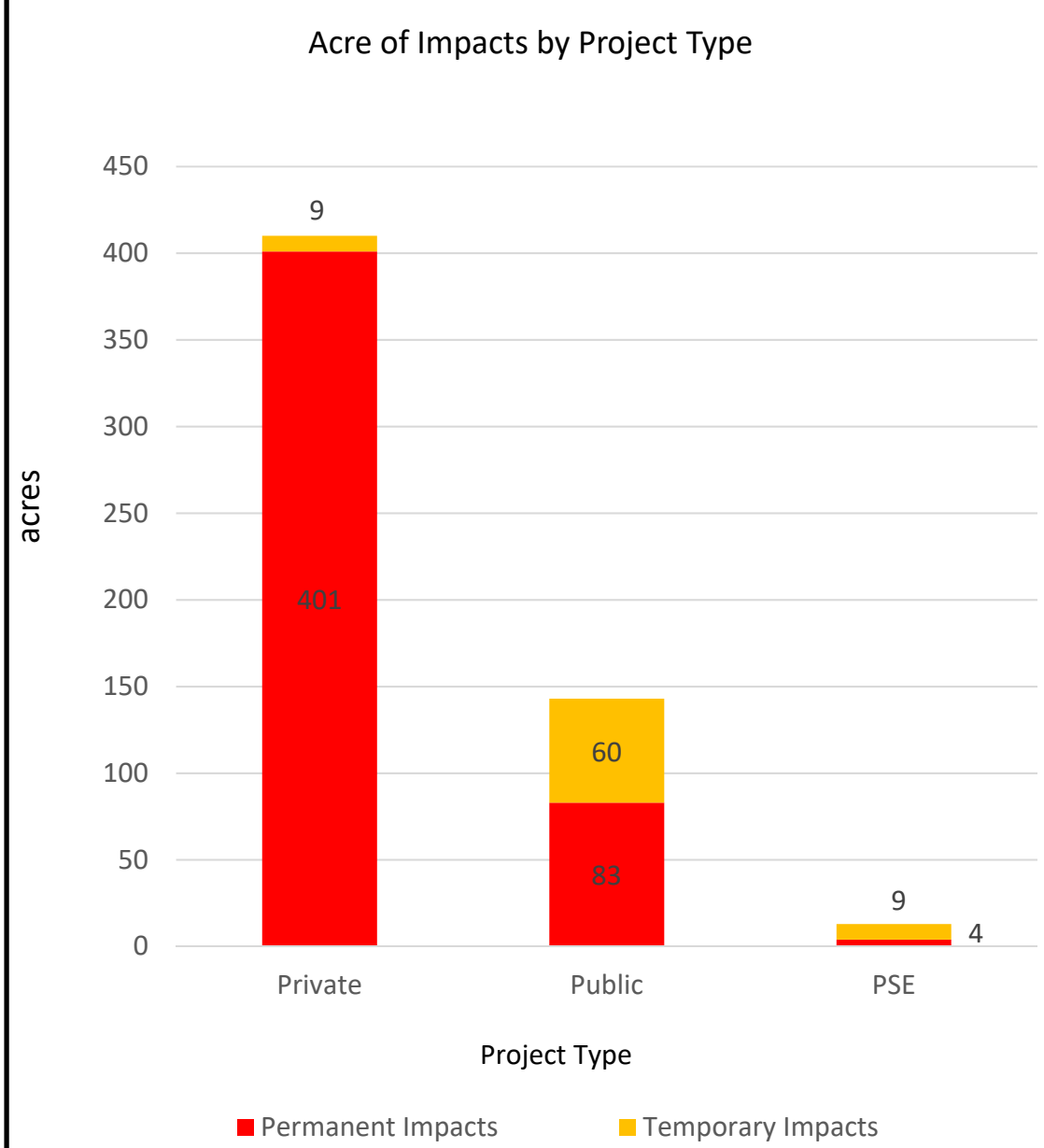
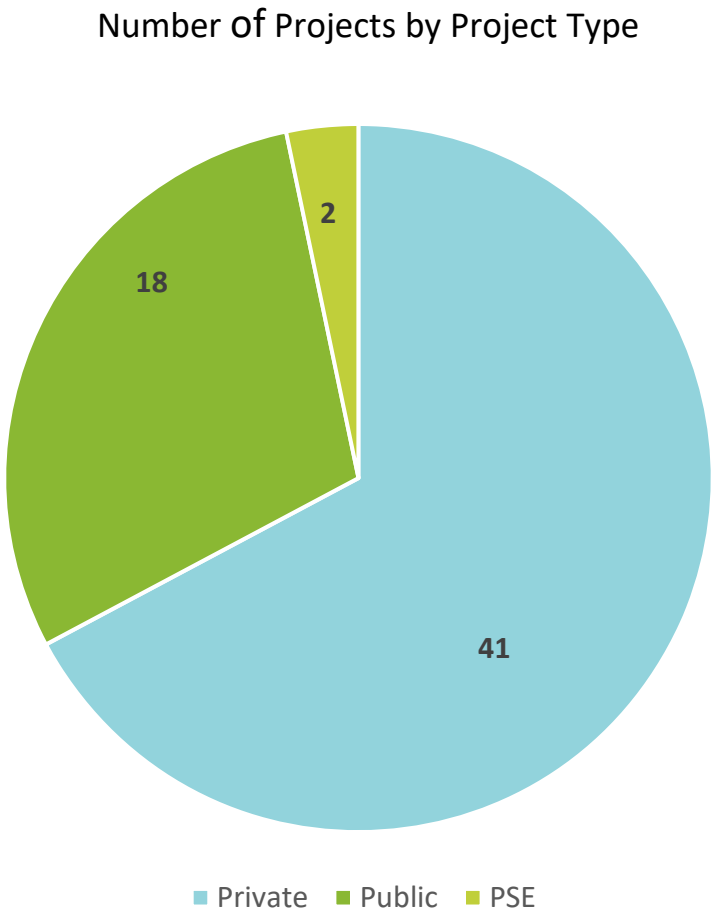


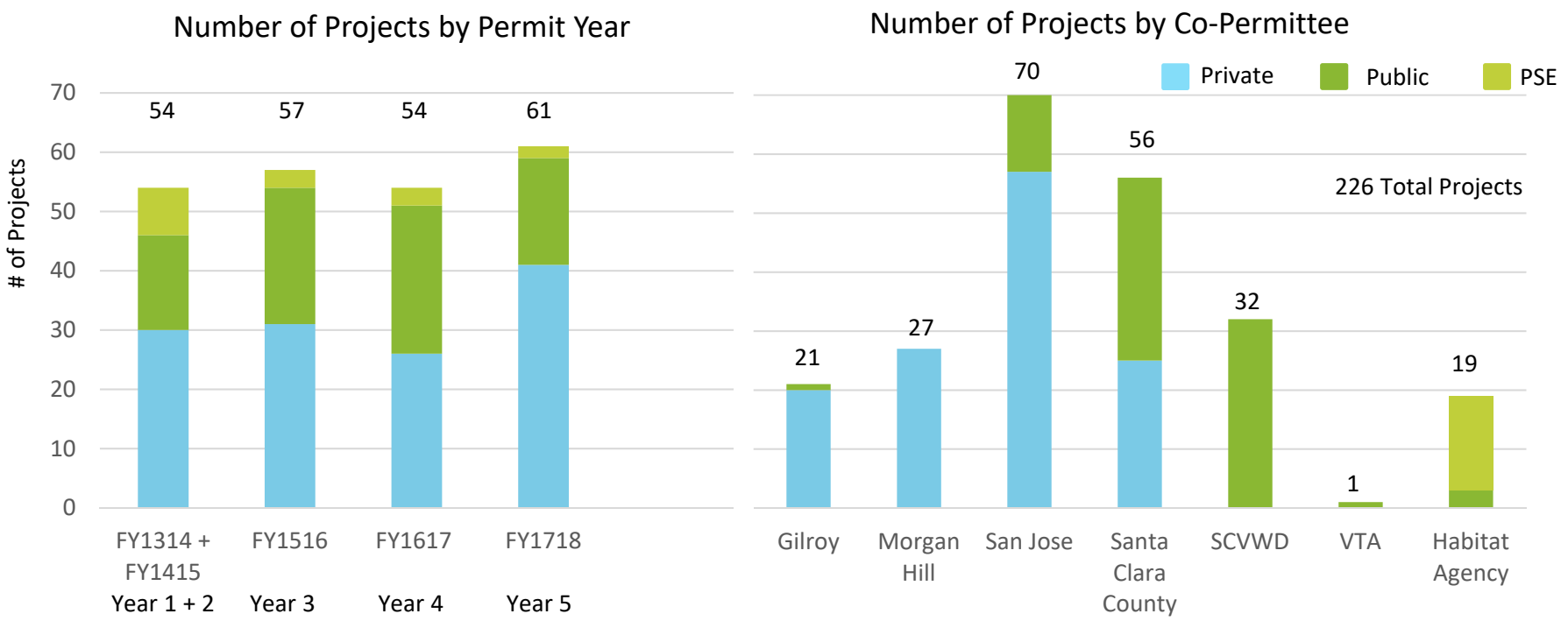
Figure ES-1. Covered Projects : Reporting Year





61 Projects
488 acres permanent impacts
78 acres temporary impacts

Figure ES-3. Covered Projects: Cumulative FY1314 thru FY1718 – Permit Year 5 of 50



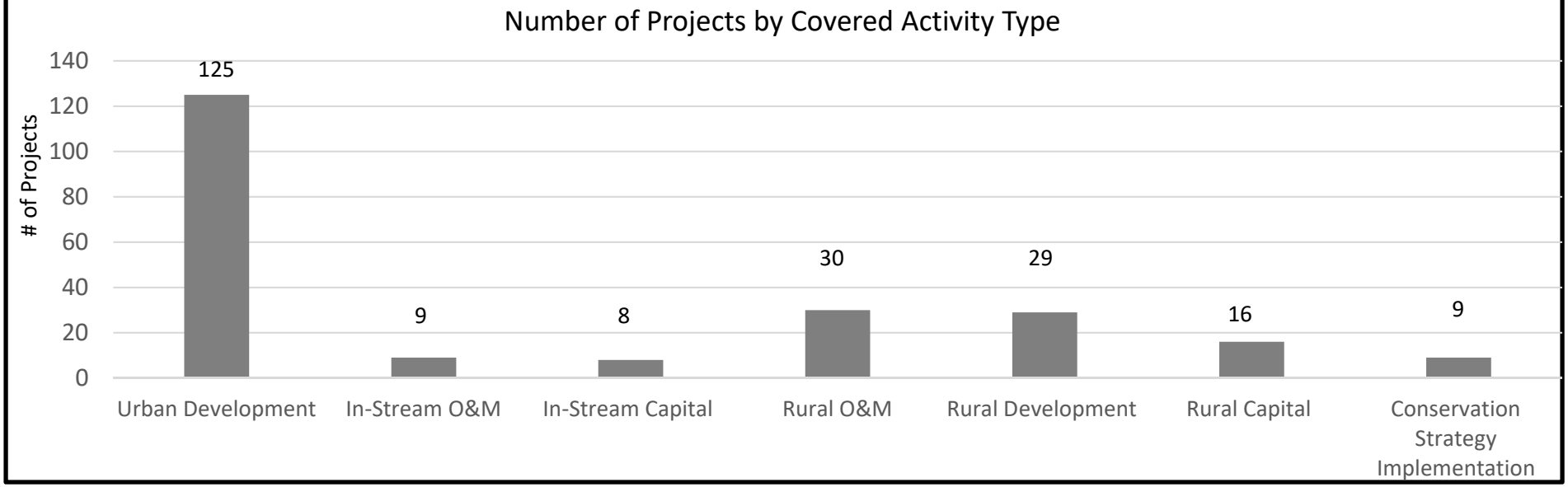
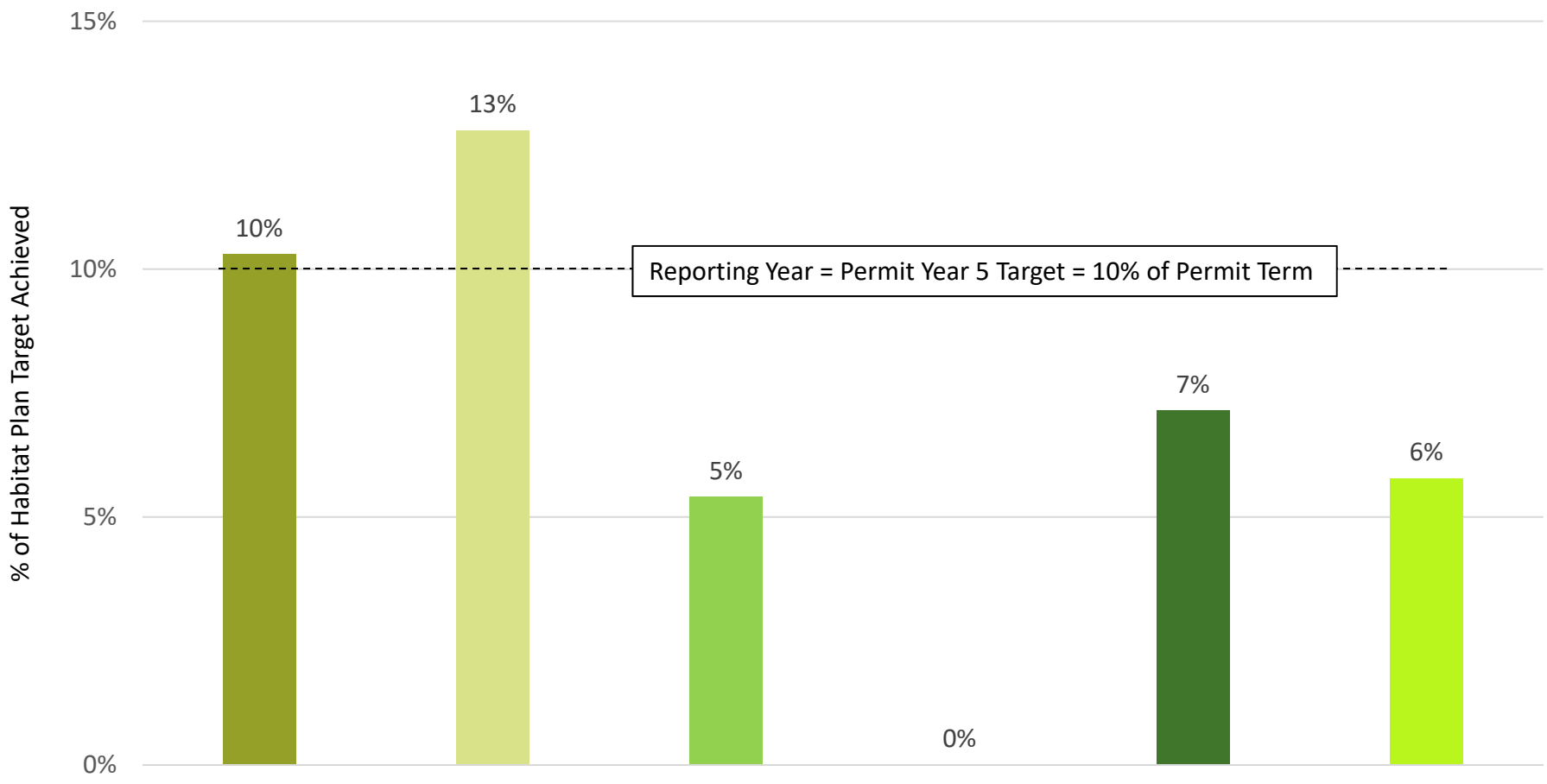


Figure ES-4. Habitat Plan Progress Summary: Impacts Incurred, Conservation Achieved, and Funding Received as Percent of Anticipated by Habitat Plan over 50-Year Permit Term

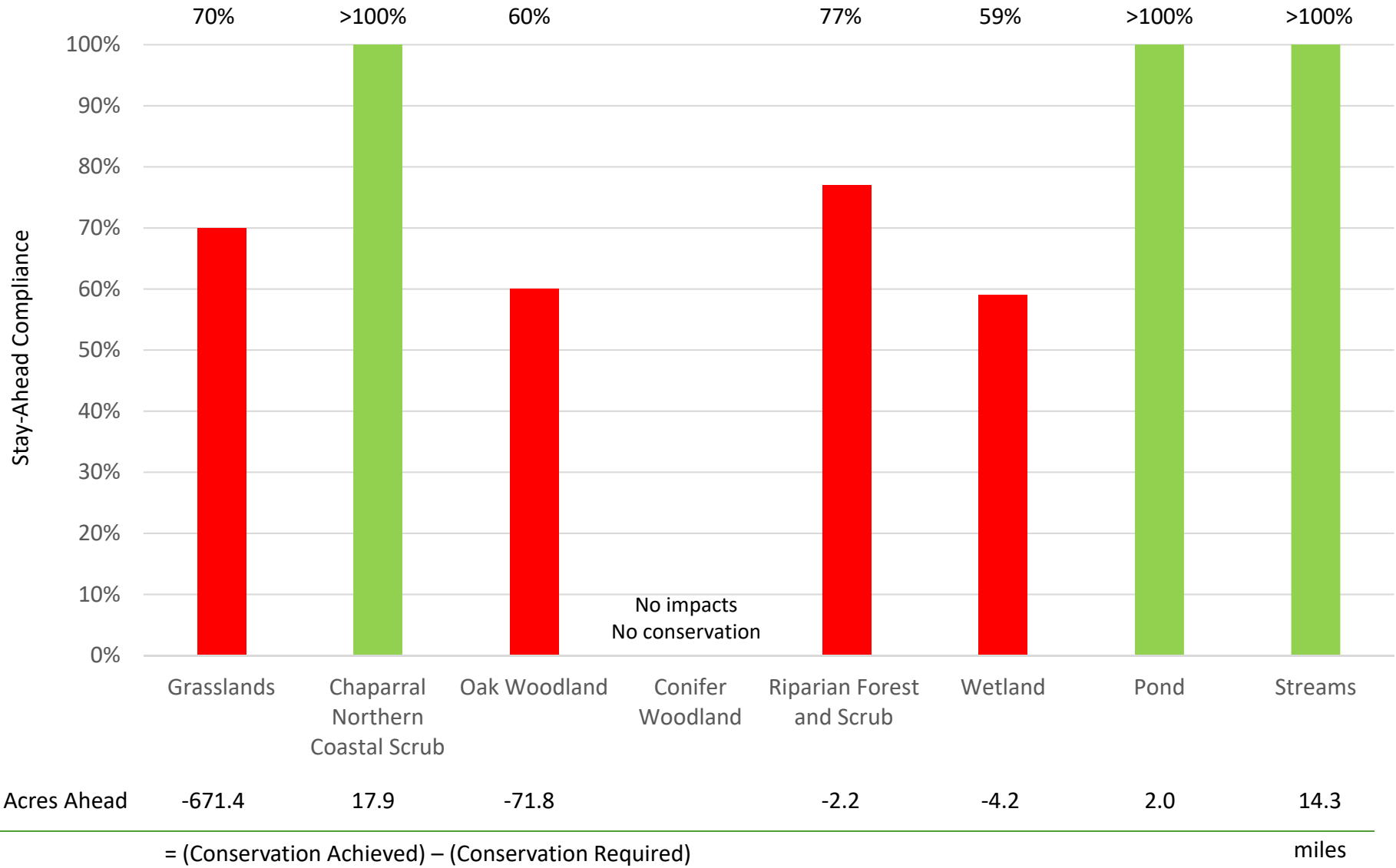


	Permanent Impacts	Temporary Impacts	Conservation	Existing Open Space Enrollment	Fee Funding	Non-Fee Funding
Status	1,858	284	1,784	0	$26M	$17M
Habitat Plan Target	17,976 acres	2,223 acres	34,580 acres (protection, restoration + creation)	13,291 acres	$364M	$294M

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

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

Compliance = (Conservation Achieved)/(Conservation Required)

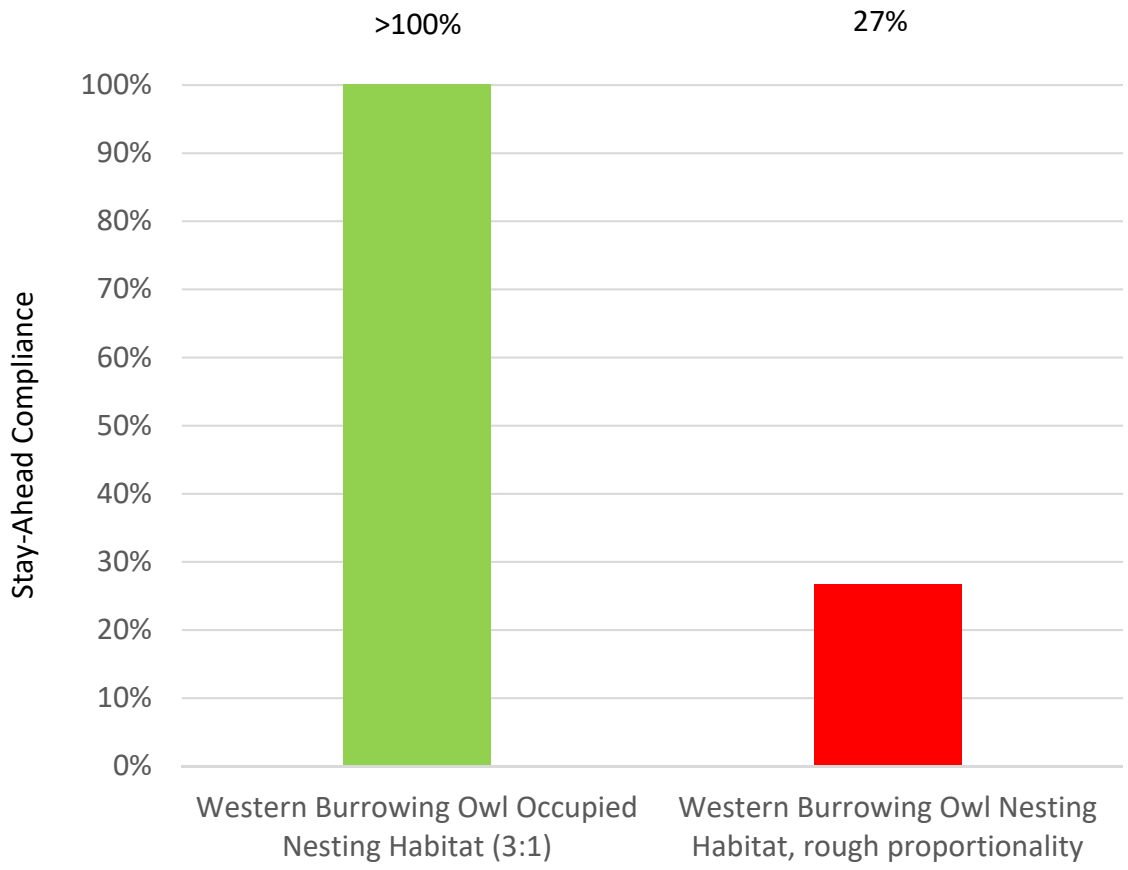


	Grasslands	Chaparral Northern Coastal Scrub	Oak Woodland	Conifer Woodland	Riparian Forest and Scrub	Wetland	Pond	Streams
Acres Ahead	-671.4	17.9	-71.8		-2.2	-4.2	2.0	14.3

= (Conservation Achieved) – (Conservation Required)

miles

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%.

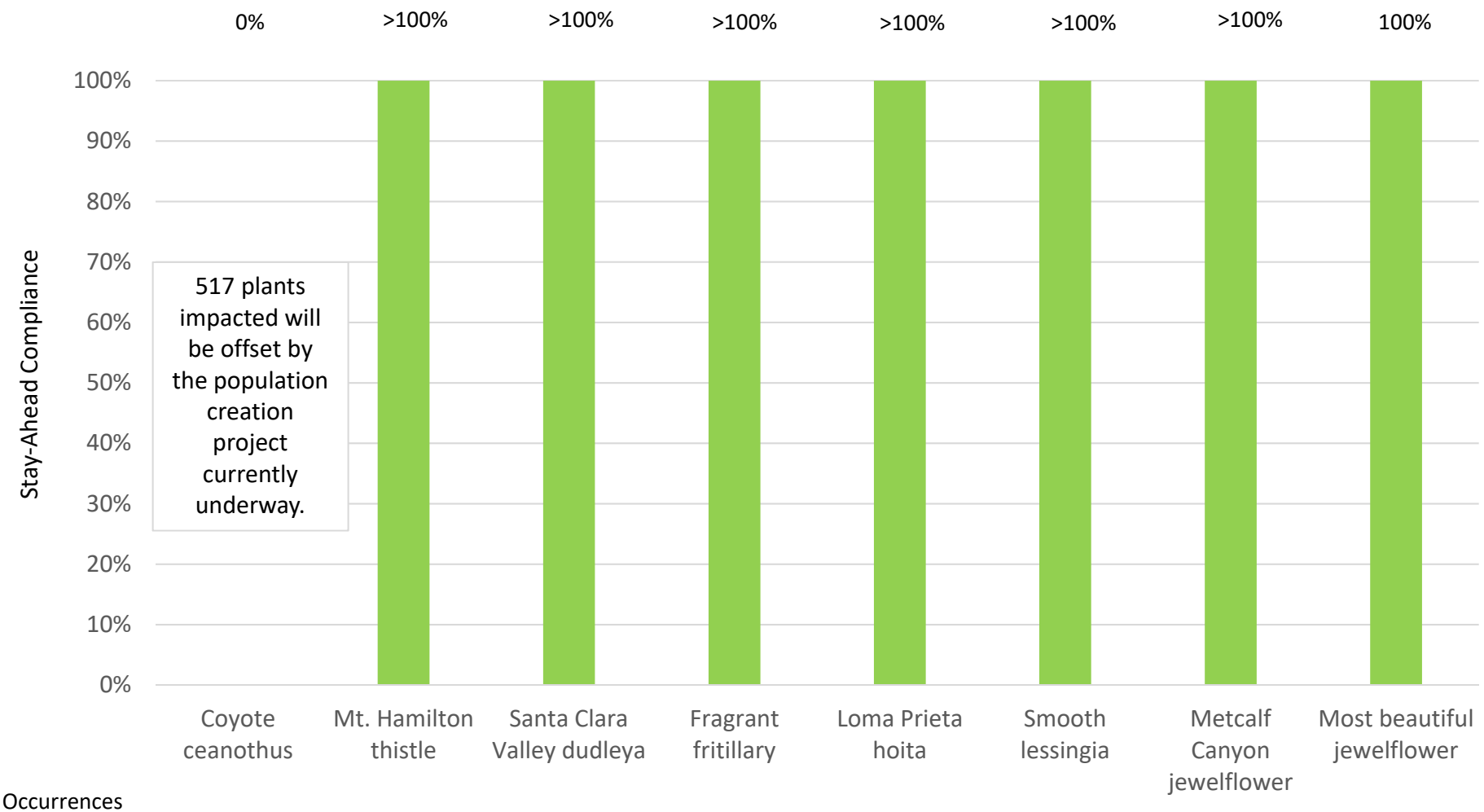
Acres Ahead	367.4	-3,234

= (Conservation Achieved) – (Conservation Required)

Figure ES-6. Stay-Ahead Compliance for Plants

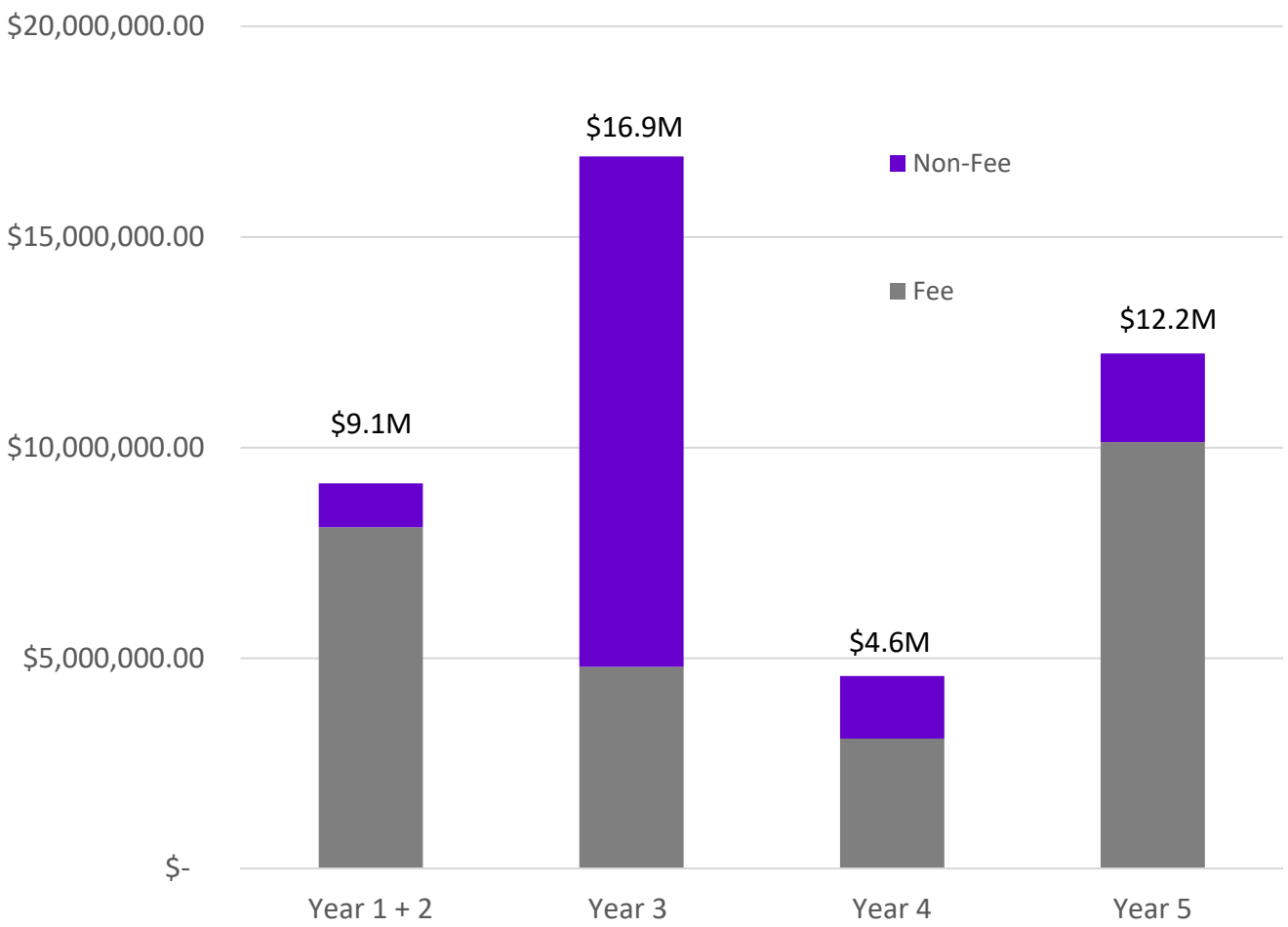
Conservation Required = (% of Allowable Impacts Accrued)*(Conservation Total)

Compliance = (Conservation Achieved)/(Conservation Required)



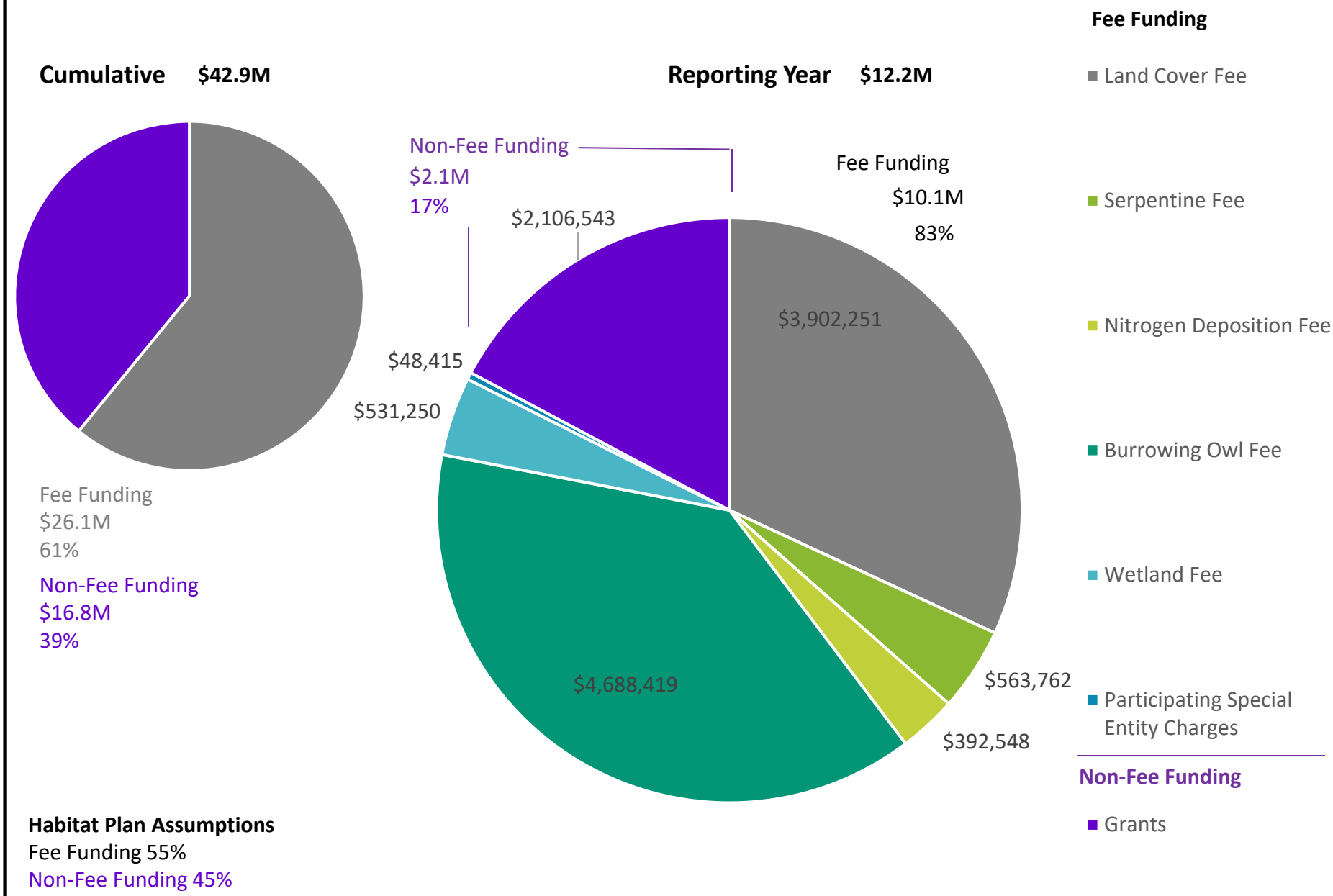
Occurrences								
Protected	0	22	96	3	2	6	8	2
Ahead	0	22	91	3	2	6	8	2

Figure ES-7. Revenue Summary



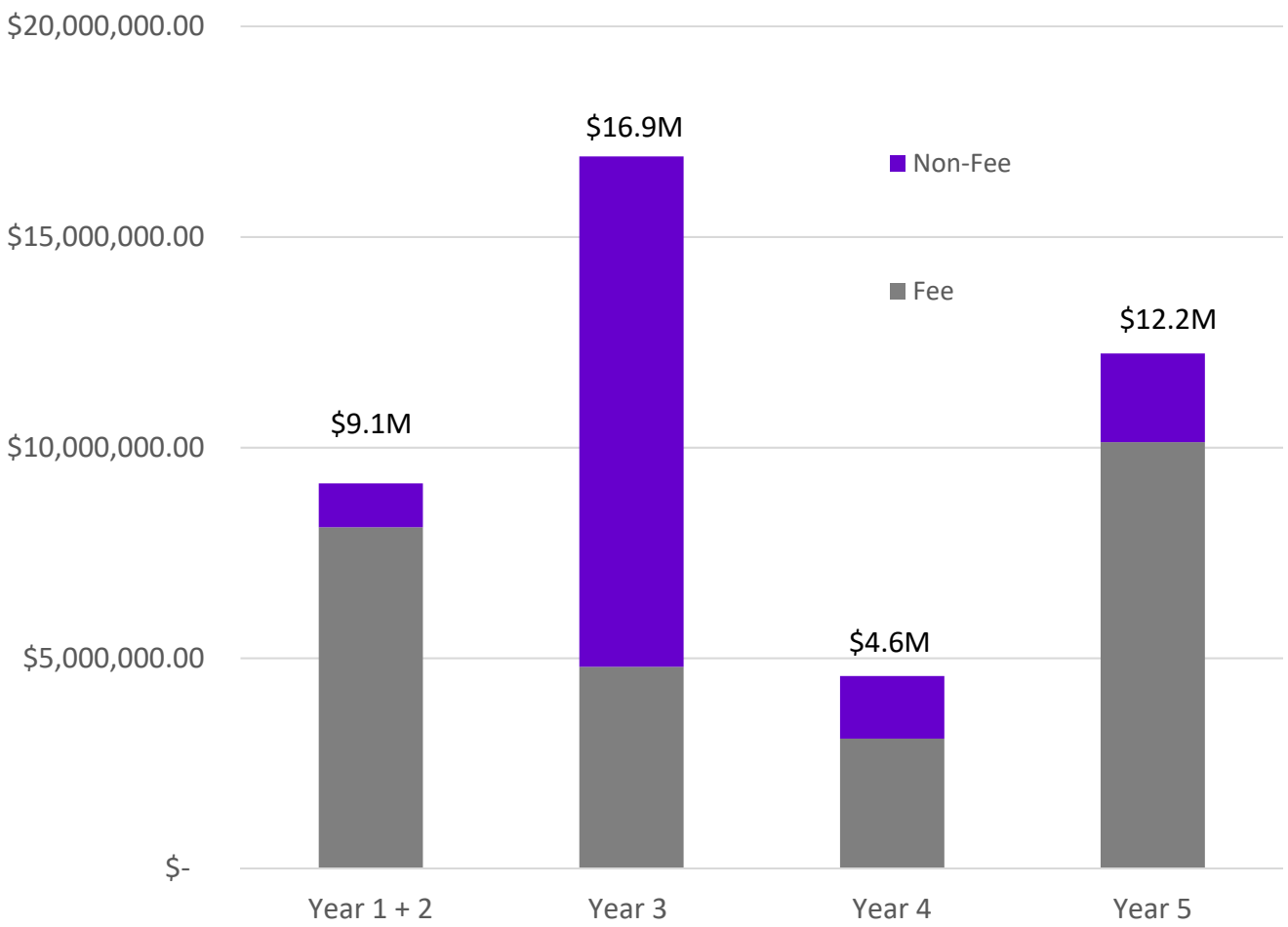
	FY14 + FY 15	FY16	FY17	FY18	Total	**$42.9M total revenue**
Fee	$8.1 M	$4.8 M	$3.1 M	$10.1 M	$26.1M	61%
Non-Fee	$1.0M	$12.1 M	$1.5M	$2.1M	$16.6M	39%

Figure ES-7. Revenue Summary - Detail



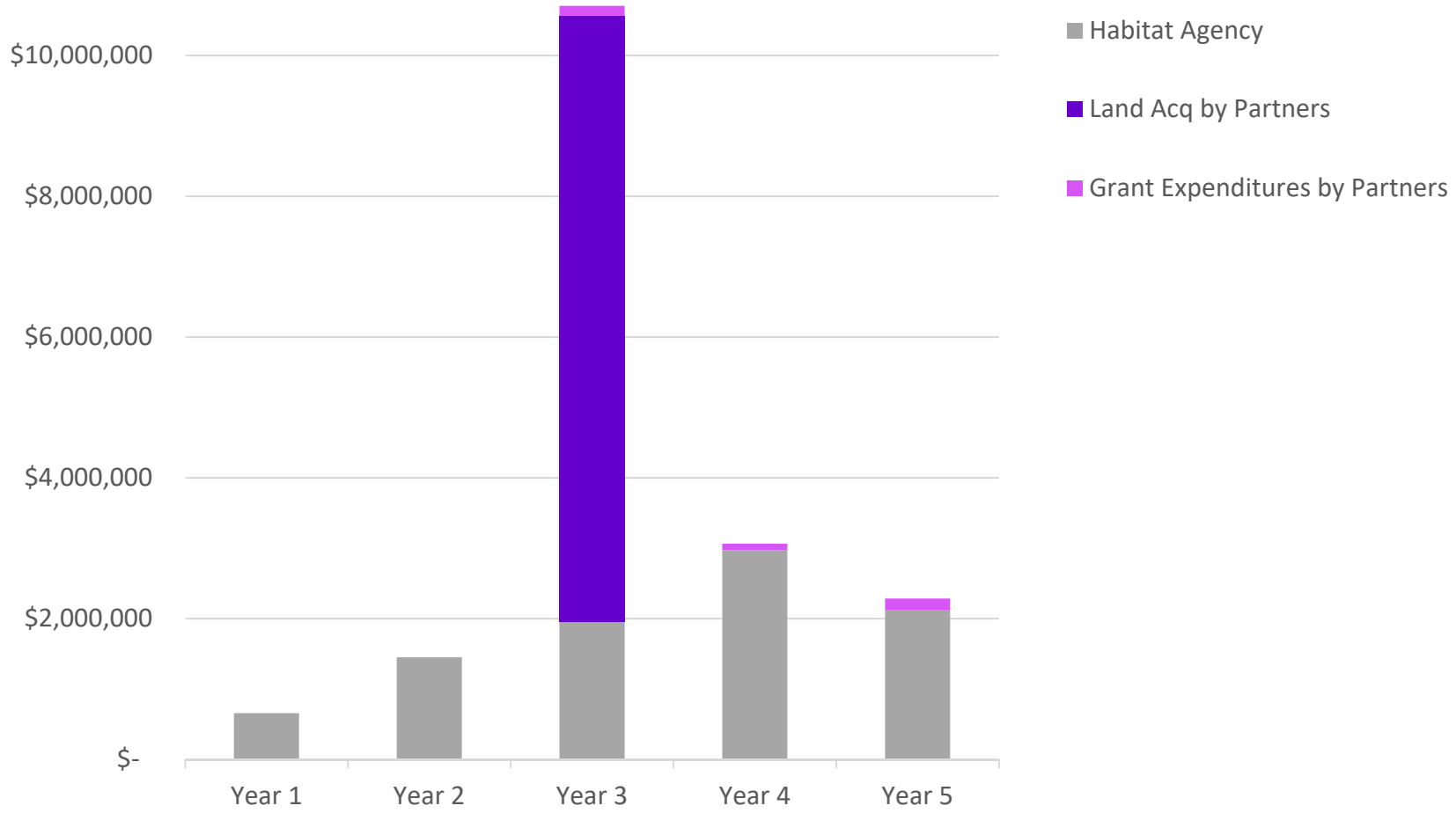
Habitat Plan Assumptions
Fee Funding 55%
Non-Fee Funding 45%

Figure ES-8. Revenue Summary by Reporting Year



	FY14 + FY 15	FY16	FY17	FY18	Total	**$42.9M total revenue**
Fee	$8.1 M	$4.8 M	$3.1 M	$10.1 M	$26.1M	61%
Non-Fee	$1.0M	$12.1 M	$1.5M	$2.1M	$16.6M	39%

Figure ES-9. Expenditure Summary



	FY14	FY15	FY16	FY17	FY18	Total	**$18.2M total expenditures**
Habitat Agency	$655K	$1.5M	$1.9M	$3.0M	$2.1M	$9.1M	
Land Acq by Partners			$8.6M			$8.6M	
Grants by Partners			$140K	$94K	$169K	$402K	

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

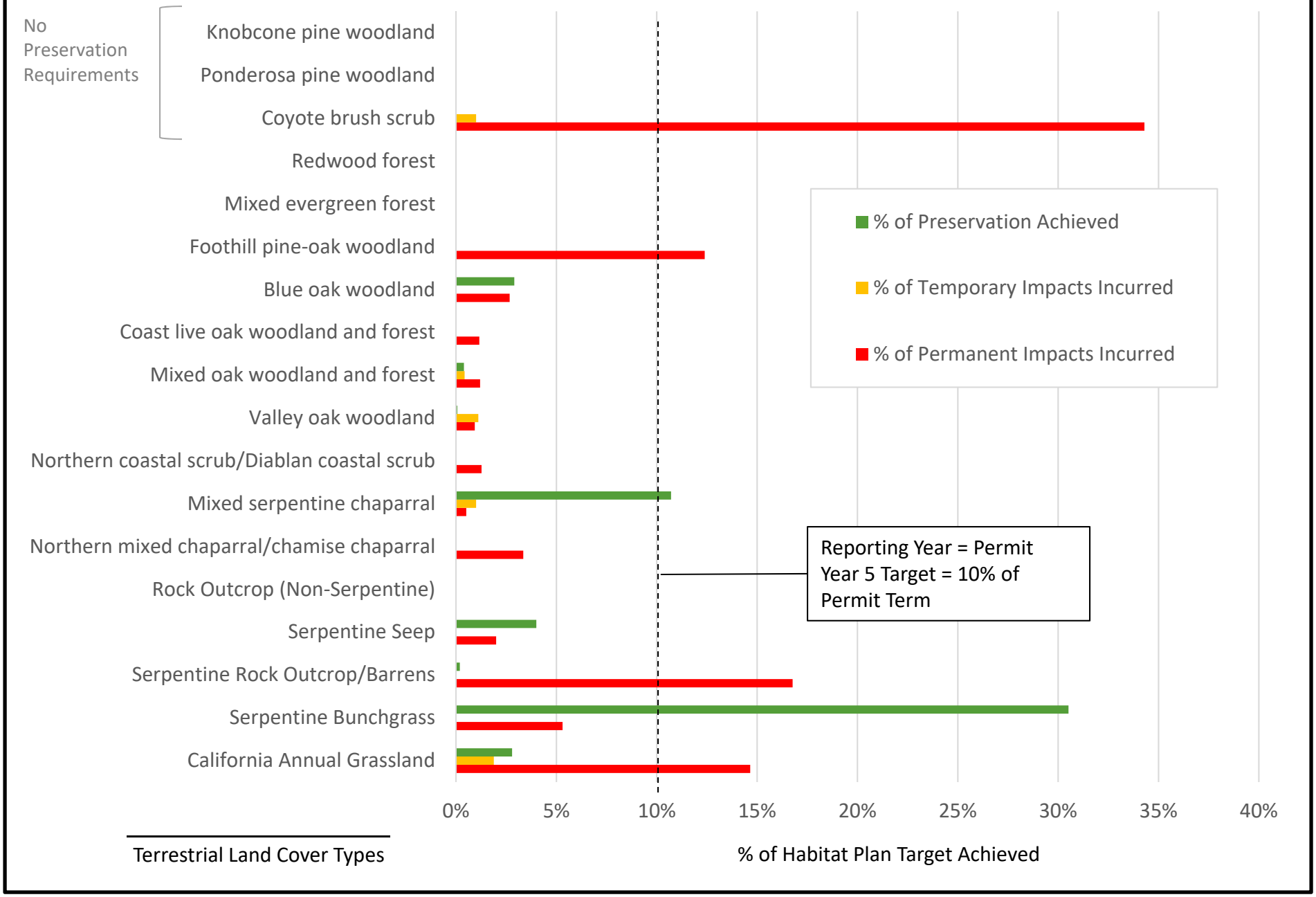


Figure ES-11. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Aquatic Land Cover Types

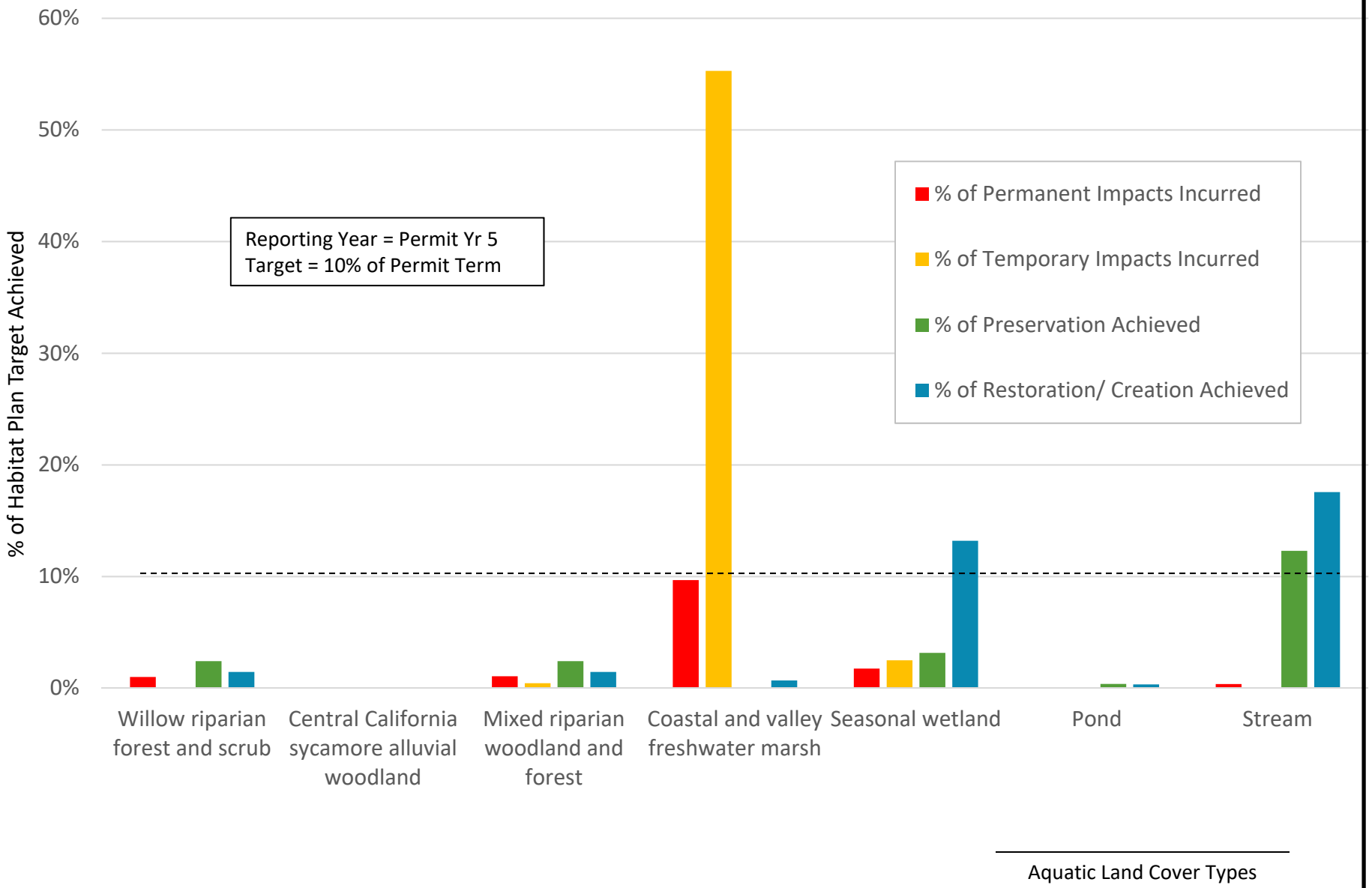
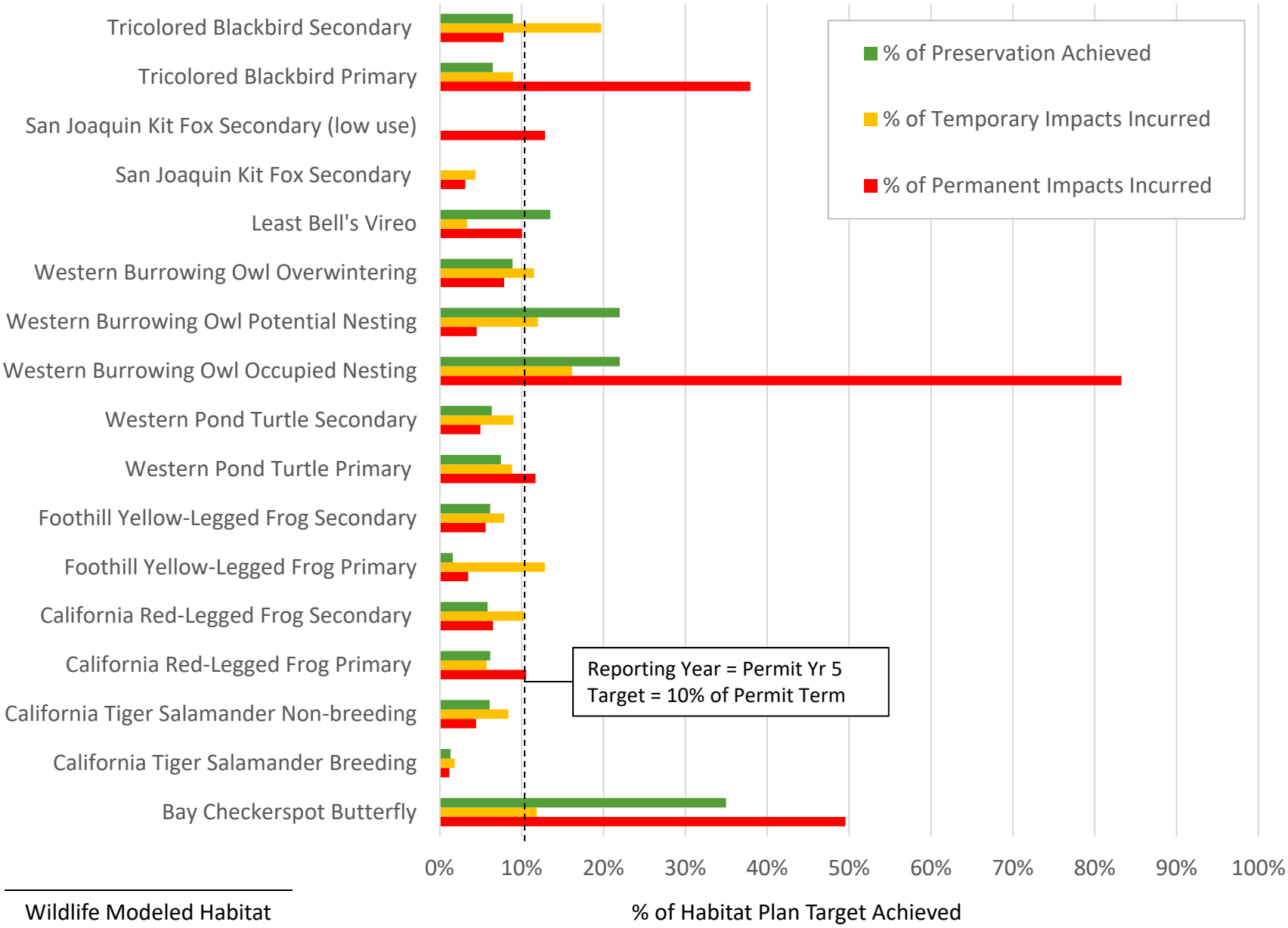
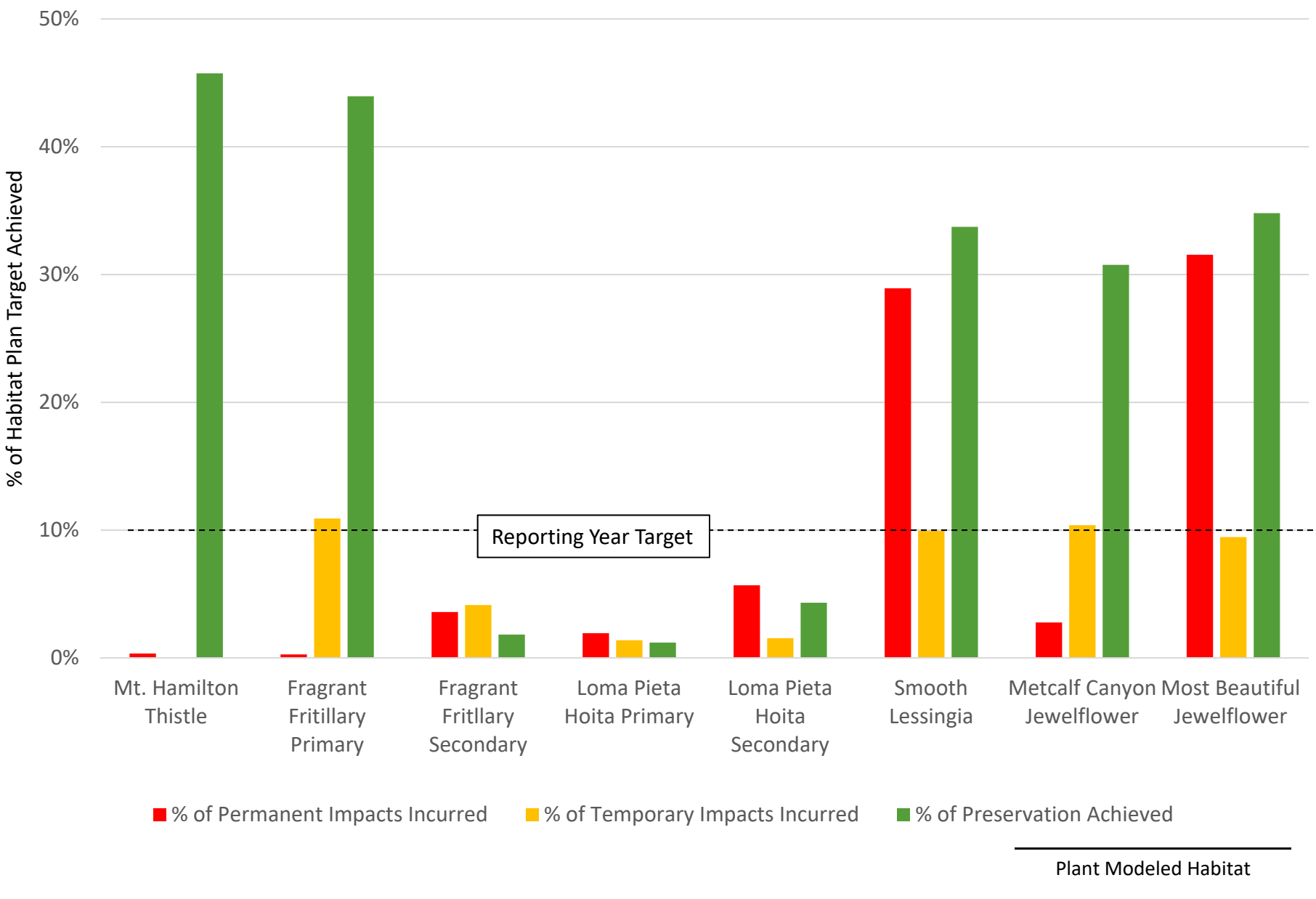


Figure ES-12. Habitat Plan Progress Summary: Impacts Incurred and Conservation Achieved for Wildlife Habitat



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



Chapter 1
Introduction

Santa Clara Valley Habitat Plan Background

The Santa Clara Valley Habitat Plan (Habitat Plan) provides an effective 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 the agency primarily 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.[13]

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

[13] 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. For the Co-Permittees with two representatives, one must be an elected official. The Implementation Board is responsible for reviewing and approving the Annual Report prior to submittal to the Wildlife Agencies.

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.

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) and are to be completed by March 15 following the reporting fiscal year.

This is the fourth Annual Report prepared by the Habitat Agency. This report summarizes implementation actions from July 1, 2017, through June 30, 2018.

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.

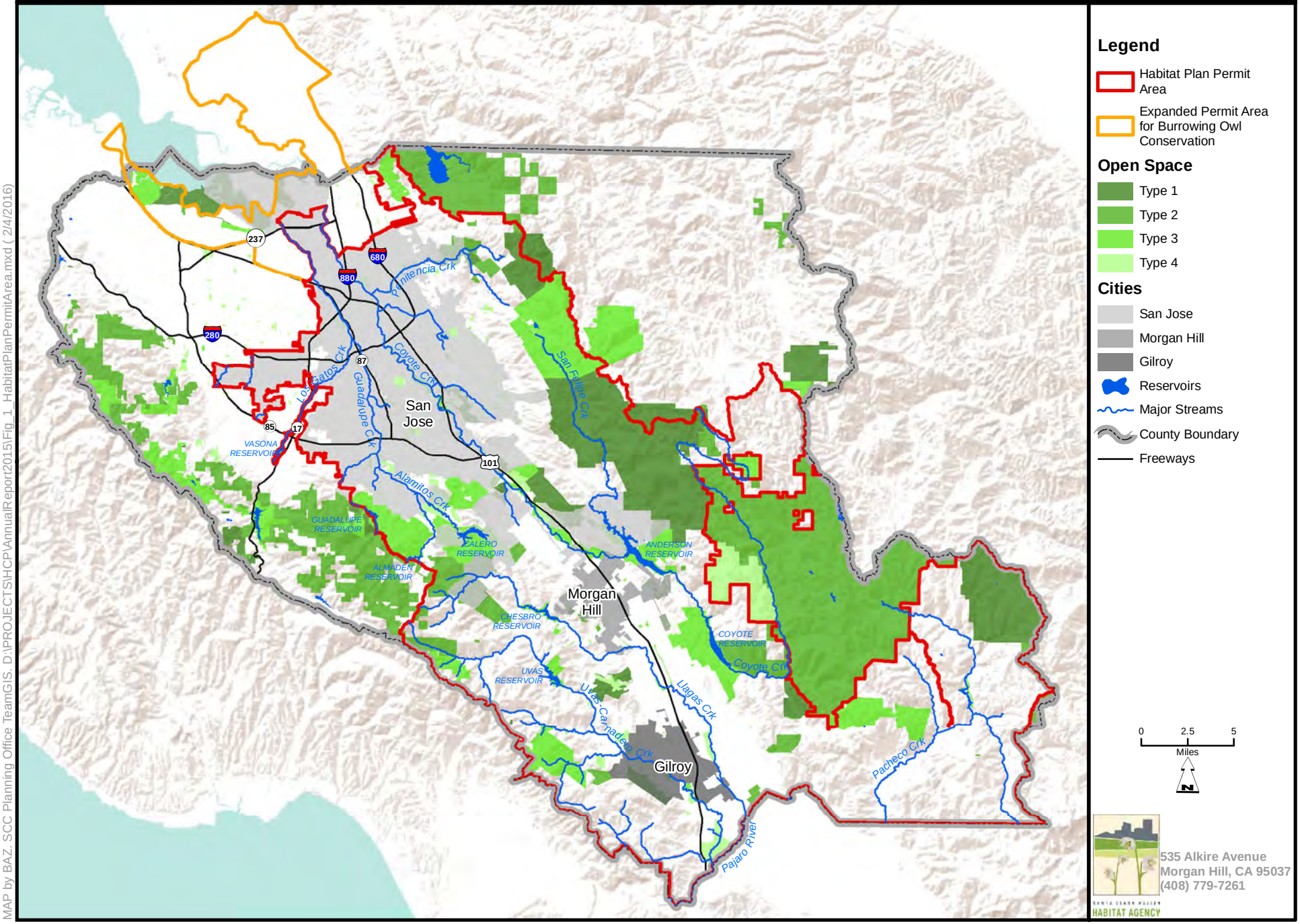
- Identify administrative or minor changes to Habitat Plan components required to increase the success of implementation, including the success of meeting conservation measures.

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 untaken 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,[14] including remedial actions.

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

Figure 1. Santa Clara Valley Habitat Plan Permit Area



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

Chapter 2
Covered Activities

A total of 61 projects received take coverage under the Habitat Plan during the reporting period, the majority of which were Urban Development Projects. Of these 61 projects, 41 were private projects, 18 were public projects, and 2 were Participating Special Entities (PSEs). Permanent impacts totaled 497 acres and temporary impacts 593 acres. The applicable conditions on covered activities were employed for each project to minimize and avoid impacts on covered species and natural communities. Since 2013, 226 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.

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.

- **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

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.

Covered Activities Receiving Take Coverage

A total of 61 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 61 projects resulted in 497 acres of permanent land cover impacts and 593 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 61 projects receiving take coverage during the reporting period, 41 projects were private projects, 18 were public projects, and 2 were PSE projects. Covered activities are summarized as follows.

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

Covered activities mitigated impacts through the payment of Habitat Plan fees or land in lieu. Fees totaled $10,126,645 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 and the County continue to work in good faith to enroll County lands into the Reserve System (see Habitat Plan, Section 5.23, *Reserve System*, *Existing Open Space in the Reserve System*).

A total of 226 projects have received take coverage under the Habitat Plan since permit issuance. Cumulative impacts total 1,867 acres of permanent impacts, 846 acres of temporary impacts, 182 feet of permanent impacts on streams, and 737 feet of temporary impacts on streams. Of the 226 projects, 128 were private, 82 were public, and 16 were PSE projects. Covered activity types are 125 urban development projects, 9 in-stream operations and maintenance activities, 8 in-stream capital projects, 30 rural operations and maintenance projects, 29 rural development projects, 16 rural capital projects, and 9 conservation strategy implementation projects.

Private Projects

During the reporting period, 41 private projects received streamlined permits through the Habitat Plan (**Table 1, Figure 2**). Permanent impacts totaled 401 acres and temporary impacts totaled 9 acres. The City of San José permitted 29 projects, the City of Morgan Hill permitted 3 projects, the City of Gilroy permitted 4 projects, and the County permitted 5 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 Glen Loma Ranch Phase 1A. This project developed a 179 single-family residential lot subdivision with associated private and public open space and circulations.
- *Residential Housing*: The City of Morgan Hill issued a permit for Altamira-Dividend. This project developed 7 new single-family homes.
- *Mixed Use Development:* The City of San José issued a permit for Arcadia Evergreen. This project developed 315,000 ft^2 of commercial and retail space and 250 single-family homes.

Over the permit term, a total of 129 private projects have been permitted. These projects resulted in 1,229 acres of permanent impacts and 120 acres of temporary impacts. The City of San José permitted 57 projects, the City of Morgan Hill permitted 27 projects, the City of Gilroy permitted 20 projects, and the County permitted 25 projects.

Public Projects

During the reporting period, 18 public agency projects received streamlined permits through the Habitat Plan (**Table 1, Figure 3**). The City of San José permitted 4 projects, the County permitted 7 projects, SCVWD permitted 5 projects, and the Habitat Agency permitted 2 projects. Permanent impacts totaled 92 acres and temporary impacts totaled 576 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.

- *Utilities.* The SCVWD inspected, maintained, and repaired both their Pacheco Pipeline and Almaden Valley Pipeline.

- *Park Facilities.* The County built the Almaden and North Ridge Trails in Calero County Park. The trails connects a future staging area on Almaden Road to the new staging area on McKean Road and the Lisa Killough Trail. Trail construction consisted of approximately 1.6 miles of single-track, natural surface, multi-use trail. This project implements a portion of the Calero County Park Trails Master Plan.

Over the permit term, a total of 82 public projects have been permitted. These projects resulted in 604 acres of permanent impacts and 691 acres of temporary impacts. The City of San José permitted 13 projects, the City of Gilroy permitted 1 project, the County permitted 31 projects, SCVWD permitted 32 projects, VTA permitted 1 project, and the Habitat Agency permitted 3 projects.

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, and both were approved for Pacific Gas and Electric Company (PG&E). These projects resulted in a combined total of 4 acres of permanent impacts and 9 acres of temporary impacts.

Over the permit term, a total of 16 PSE applications have been permitted by the Habitat Agency. These projects resulted in 34 acres of permanent impacts and 35 acres of temporary impacts.

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 61 covered activities implemented during the reporting period, Conditions 1 and 3 applied to every project, wildlife conditions were triggered 28 times, natural community conditions were triggered 40 times, plants conditions were triggered 5 times, and other covered project categories were triggered 17

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 (CNDDB) forms were submitted for most species surveys indicating presence. Projects that triggered plants surveys and covered species documented are as follows.

- PSE-2018-02 Metcalf Evergreen documented one new occurrence of Metcalf Canyon jewelflower. CNDDB was submitted.
- SCPK-2018-002 Oak Cove North Shore Trail conducted plant surveys but discovered no covered plant occurrences.
- SCPN-2018-001 Felter Road conducted plant surveys discovered no covered plant occurrences
- SCRD-2017-002 Uvas Road Safety observed smooth lessingia and Santa Clara Valley dudleya adjacent to roadway in the vicinity of the project site but not within the project footprint. Impacts to covered plants were avoided and no CNDDB forms filled out.
- SCRD-2017-010 Communications Hill II identified serpentine soils on the site were heavily disturbed and contained no covered species.
- SVWD-2018-005 Anderson Dam Geotech impacted Coyote ceanothus. This is a previously known occurrence.

There were no riparian setback exemption requests approved in the FY1718 reporting year.

Impacts on Land Cover Types

Reporting period impacts occurred on terrestrial and aquatic land cover types across four watersheds. There were 487.9 acres of permanent impacts and 78.5 acres of temporary impacts on non-stream land cover types. The majority of permanent impacts occurred in urban suburban (138.4 acres), grain and row crops (123.7 acres), and California annual grassland (99.1 acres) land cover types. **Table 4** summarizes covered activity impacts, tracked by land cover type. Impacts on aquatic land cover types occurred in four different watersheds—Coyote, Guadalupe, Pajaro, and Llagas. Impacts on aquatic land cover types included 2.87 acres of permanent impacts and 0.97 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.[15] Year 5 represents 10% of the permit term. If a constant rate of impacts is assumed, allowable impacts should be at about 10% of the impact cap. There are five land cover types for which 10% of the permanent impact cap is exceeded. Grasslands, serpentine rock outcrops/barren, coyote brush, foothill pine-oak woodland, and barren are being impacted at the fastest rates, with 15%, 17%, 34%,

[15] 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. Memorandums developed in the reporting year can be found in Chapter 11, *Program Administration.*

12%, and 203% of total allowable permanent impacts incurred, respectively. The reasons for these higher impact accruals are as follows.

- **Prevalence of land cover type**. Grassland is the most widely distributed landcover type and is being developed at a fast rate in Permit Area. There are no predictions at this time on when and if this will level off.
- **Finer-scale mapping**. Higher impacts on serpentine rock outcrops/barrens, foothill pine-oak woodland, 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. Looking at the location of projects impacting barren land cover, these areas were previously mapped as urban suburban. For coyote brush, additional guidance was provided to Co-Permittee planners on what qualifies as this land cover types. There have been no new projects impacting this land cover type as a result. A similar approach may be appropriate for the other land cover types.

Temporary impacts on coastal and valley freshwater marsh continue to be at 55%. Additional guidance was provided to Co-Permittee to flag impacts on this land cover type and to work with project proponents to ensure projects are avoiding impacts.

Impacts on Modeled and Critical Habitat

Two revisions to species modeled habitat and impact calculations occurred during the reporting period. Compliance tracking was revised for temporary impacts on species modeled habitat during the permit term. It was agreed with the Wildlife Agencies that temporary impacts would be tracked cumulatively over the permit term against the total allowable impacts for each species (inclusive of all modeled habitat types), while ensuring that impacts on breeding habitat, primary habitat, or occupied nesting habitat (as applicable by species) are not exceeded (in the case of San Joaquin kit fox, this limitation applies to secondary habitat). This change in compliance tracking is reflected in **Table 6.** In addition, tricolored blackbird modeled habitat was revised based on guidance provided by the Technical Advisory Committee to be consistent with the revised survey areas. This revised habitat model was used to calculate impacts for the reporting year.

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 rates[16] exceed 10% for Bay checkerspot butterfly (50%), California red-legged frog primary habitat (11%), western pond turtle primary habitat (12%), western burrowing owl occupied breeding habitat (83%), San Joaquin kit fox secondary habitat low use (13%), tricolored blackbird primary habitat (38%)[17], smooth lessingia (29%), and most beautiful jewelflower primary habitat (32%). Temporary impact accrual

[16] Year 5 represents 10% of the permit term. If a constant rate of impacts are assumed, 10% of impacts would be accrued by Year 5.

rates exceed 10% for Bay checkerspot butterfly (12%), foothill yellow-legged frog primary habitat (13%), western burrowing owl occupied nesting habitat (16%), western burrowing owl total habitat (12%), San Joaquin kit fox total habitat (36%), tricolored blackbird total habitat (20%), and fragrant fritillary primary habitat (11%). A few points to consider regarding species habitat impacts.

- **Temporary Impacts**. Temporary impact tracking for species habitat 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).
- **Bay checkerspot butterfly**. The Communications Hill development impacted a large amount of habitat during the reporting period. Now, 50% of the allowable permanent impacts have be incurred. Other than Participating Special Entities already in process, no additional take coverage will be extended to Participating Special Entities with permanent impacts to this species habitat.
- **Western burrowing owl**. Impacts to occupied breeding habitat are reaching a plateau. There are few developable sites remaining. Once the impact cap is reach, no further projects impacts to western burrowing owl occupied breeding habitat can be permitted.
- **Tricolored blackbird**. Impacts to tricolored blackbird primary habitat from projects reported in reporting years FY13 – FY17 were based on the habitat plan model adopted at permit issuance. Impacts from project permitted from FY18 forward are based on the revised definition of tricolored blackbird habitat.

Table 7 provides a summary of impacts on critical habitat from covered activities during the reporting period and cumulatively. There are impacts on three California red-legged frog, five California tiger salamander, and five Bay checkerspot butterfly critical habitat units cumulatively. To date, total allowable permanent and temporary impacts incurred for each are 4.1% and 3.6% for California red-legged frog, 14.3% and 14.8% for California tiger salamander, and 14.3% and 14.8% for Bay checkerspot butterfly.

Geographic information system (GIS) data was not available for projects permitted by County Roads at the time of annual report preparation. Their species impact calculations (modeled and critical habitat) will be incorporated into the report when it becomes available; however, their project impacts are included for all other resources. These projects totaled 2.17 acres of permanent impacts and 39.62 acres of temporary impacts.

Impacts on Covered Plants

Two Coyote ceanothus individuals were removed during the FY1718 reporting period. The Santa Clara Valley Water District's *Anderson Dam Geotech* project removed two coyote ceanothus individual plants.

Cumulative impacts on plant occurrences are summarized in **Table 8** and are as follows.

- **Coyote Ceanothus**. A total of 517 Coyote ceanothus individual plants have been removed. *PG&E T-1065 Hydrotest* removed 225 Coyote ceanothus individual plants. *Anderson Dam Phase 1B Geotechnical Investigation* removed 290 Coyote ceanothus individual plants. *Anderson Dam Geotech* removed 2 Coyote ceanothus individual plants.
- **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.

Previous reporting identified the removal of a smooth lessingia occurrence (6 plants) and most beautiful jewelflower (110 plants) by the *Almaden Dam Improvement Project Geotechnical Investigations* project. Subsequent surveys determined that the project did not impact 5% of the occurrences; therefore, the impacted occurrences are removed from compliance accounting (ICF 2018a, ICF 2019).

Temporary Project Impact Assessment

Temporary impact fees are collected for certain covered projects or project components that do not result in permanent impacts to land cover. The reduced fee rate for temporary impacts reflects the minimal temporal site disturbance associated with these projects. To qualify as a temporary impact, the project impact duration must not exceed 12 months, and the site must be returned to preexisting or better conditions within one year of project completion (Habitat Plan page 4-2).

In 2017, the Wildlife Agencies requested an explanation of how the Habitat Agency could be certain that "temporary impact" site restoration is achieved following individual project completion for all Co-Permittees. If site restoration is unsuccessful, then the site impacts are considered permanent, and this distinction is critical to the Habitat Agency's fee collection, reporting, and conservation requirements.

Habitat Agency staff conducted a Temporary Project Impact Assessment (Assessment) to determine how Co-Permittees were monitoring completed projects with temporary impacts that have been approved or conducted by each Co-Permittee since the Habitat Plan was approved.

FINDING 1: **All Co-Permittees currently engage in some level of post-project monitoring for projects with temporary impacts.**

Among Co-Permittees, there is not a single uniform approach to monitoring project impacts following completion of the approved actions. This is because each approving authority relies on a separate set of guidelines or policies when applying standard mitigation measures or conditions of approval. Also, post-project monitoring is administered by different agency departments or divisions, which approach monitoring differently across agencies. However, while it is not possible to have all Co-Permittees adhere to the same monitoring process, it is evident that monitoring of projects with temporary impacts has been occurring and will continue to occur through the life of the Plan.

During quarterly completeness review of project applications, Habitat Agency staff confirms that all projects for which temporary impact fees have been submitted have also provided pre-project site photographs. This practice will continue to provide necessary oversight of projects with temporary impacts, and the Habitat Agency, or Wildlife Agencies can, at any time request evidence of project compliance with Plan policy in regard to temporary impact assessments.

FINDING 2: **Of the 18 applicable projects with Temporary Impacts reviewed in this Assessment, only two (2) projects failed to document compliance with the Habitat Plan requirement of site restoration within one year of project completion.**

Most Co-Permittees successfully demonstrated that all projects which paid temporary impact fees actually resulted in no permanent impacts. The attached individual project assessments provide examples of how the Assessments were presented and completed. Of the 18 projects that were reviewed, there were only two instances where a project paid temporary impact fees for site disturbance that was later found to exceed one year in duration. In both cases (private San Jose projects), the property owners were informed that the impact areas are now subject to permanent fees, and the City is attempting to recover those fees.

FINDING 3: **Coordinating the Assessment over a series of Implementation Committee meetings led to an open discussion of techniques and procedures to ensure that temporary impact fees are only being applied to temporary projects.**

The Assessment, and discussions concerning it, had the effect of prompting the County of Santa Clara to change their policy regarding acceptance of temporary impact fees. The following standard language as a condition of approval for all entitled projects was adopted in May 2018:

> *"All temporary development that exceeds 2 years from the onset of construction will be subject to permanent impact fees."*

The Assessment also led to the City of San Jose instituting a change in policy whereby private projects are automatically assessed permanent impact fees. In confirmation of this change in policy, Supervising Planner David Keyon provided the following statement on April 20, 2018:

> *"From the City's experience, projects with small areas of temporary disturbance (i.e., less than one acre) undertaken by smaller developers have not managed to complete their grading and restoration within a year. Furthermore, it is difficult to compel the applicant to submit biological reports with photographs showing restoration work after the project is completed. Therefore, the City is now charging permanent impact fees with the provision that if portions of the site are temporarily disturbed for a period of less than one year and are restored, they applicant may be eligible for a refund of the difference between permanent and temporary impact fees. This places the burden of proof on the applicant and adds an incentive to complete development activities in temporary impact areas."*

CONCLUSION: The temporary project impact assessment conducted by the Habitat Agency has revealed that most projects that are covered by the Habitat Plan through payment of temporary impact fees have successfully demonstrated the impacts are truly temporary and no permanent impacts have resulted from these projects. In the two cases where a project has taken longer to

build than originally anticipated, the Co-Permittee (San Jose) has engaged with the applicant to secure permanent fees and Habitat Agency staff will change the impacts analysis to reflect the permanent impacts within the database.

The Habitat Agency and all Co-Permittees will continue to document with pre- and post-project photographic evidence that the sites for which temporary impact fees are accepted will not result in permanent impacts.

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Urban Development								
Commercial	Private	Gilroy	GIL-2018-001	San Ysidro Storage	Construction of new self-storage consisting of 6 one-story buildings and 1 two-story office/manager building and associated improvements.	Urban Development	4.6	0
Residential	Private	Gilroy	GIL-2018-002	Glen Loma Ranch Phase 1A	A 179 single family residential lot subdivision with associated private and public open space and circulations.	Urban Development	49.64	2.48
Residential	Private	Gilroy	GIL-2018-003	Monterey Gateway Apartments	An affordable senior housing apartment building with approximately 75 units with site amenities and parking.	Urban Development	2	0
Recreational	Private	Gilroy	GIL-2018-004	Hecker Pass Trail	An approximately 7,200 linear feet Class I Trail with a paved 12-foot wide trail that connects to the Uvas Creek Class 1 Trail and Class 11 bike lane on Santa Teresa Blvd.	Urban Development	2.7	0
Residential	Private	Morgan Hill	MH-2017-003	Altimira-Dividend	New single family home development-7 new homes.	Urban Development	3.04	0
Residential	Private	Morgan Hill	MH-2017-004	Cory Steadfast	Assisted living and memory care congregate facility for the elderly.	Urban Development	1.73	0
Residential	Private	Morgan Hill	MH-2017-005	Murphy-Mana	74 residential units: 14 detached, 60 townhome-style condominiums.	Urban Development	18.2	0
Commercial	Private	San Jose	SJ-2017-006	Steven's Creek Hotel	Demolition of existing improvements (gas station) and development of a 10 story-175 room hotel.	Urban Development	0.538	0
Residential	Private	San Jose	SJ-2017-007	SJSC Towers	Construction of two 28-story residential towers to include 298 residential units in the west tower and 312 residential units in the east tower.	Urban Development	1	0
Industrial	Private	San Jose	SJ-2017-008	King Road Mini Storage	Construction of seven ministorage buildings (approximately 133,000 sq ft) and associated roadways and parking areas	Urban Development	4.931	0
Other	Private	San Jose	SJ-2017-009	Foundation for Hispanic Education	Construction of a two-story, 20,040 sq ft building for educational uses to house the B. Roberto Cruz Leadership Academy.	Urban Development	10.63	0

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Residential	Private	San Jose	SJ-2017-010	Communications Hill II	Development of approximately 108.14 acres (gross) and will consist of up to 486 single family detached and attached homes, townhomes, public & private streets, public trails, and public & private open space, retaining walls, grading, stormwater treatment facilities, off-site utilities.	Urban Development	124.87	0
Recreational	Public	San Jose	SJ-2017-012	Arcadia Softball	Softball facility within a 14.5 acre footprint, which includes two championship fields and two smaller fields that utilize tall fencing to maintain an average home run distance of 300 feet.	Urban Development	14.4	0.04
Commercial	Private	San Jose	SJ-2017-013	Piercy and Hellyer Whse	Development of a 166,740 sq ft warehouse building on a 9.3 acre site at the southwest corner of Piercy Road and Hellyer Ave.	Urban Development	8.7	0
Residential	Private	San Jose	SJ-2017-014	Bassett Street Apartments	Development of a 135 unit building that contains 118 studio units, 16 one bedroom units and one manager's unit.	Urban Development	1	0
Residential	Private	San Jose	SJ-2017-016	Ohlone Block B	Construction of 269 apartment units in an 8-story building	Urban Development	2	0
Residential	Private	San Jose	SJ-2017-017	Elden Glen	Divide two lots into six parcels in order to build new single family homes.	Urban Development	0.8	0
Residential	Private	San Jose	SJ-2017-018	Renascent Place	A permanent supportive housing development for individuals with disabilities who have experienced long or multiple episodes of homelessness. The development consists of new construction of 160 affordable studo units and 2 two-bedroom manager units in a four story building.	Urban Development	2.56	0
Residential	Private	San Jose	SJ-2017-019	San Pedro Blocks ACD	Construction of 78 townhouses on North San Pedro Blocks A, C, and D.	Urban Development	2.34	0

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Residential	Private	San Jose	SJ-2017-020	Holden Assisted Living	Redvelop the existing commercial nursery site and surface parking lot into a 200 unit residential care facility, with the first floor serving assisted care and the 2nd, 3rd, and 4th floors serving assisted living.	Urban Development	3.45	0.07
Recreational	Private	San Jose	SJ-2017-021	San Pedro Square Residences	381 Unit Apartment Complex- consisting of 4 levels of wood frame construction housing over a two-level concrete podium/parking garage.	Urban Development	2.35	0
Recreational	Private	San Jose	SJ-2017-022	Arujas Villas	Nine single family housing subdivision.	Urban Development	0.61	0
Commercial	Private	San Jose	SJ-2017-023	Senter and Alma Self Storage	Thirteen self-storage facility buildings (approximately 89,537 sqft).	Urban Development	5	0
Other	Private	San Jose	SJ-2017-024	Arcadia Evergreen	Construction of 314,898 sq ft of commercial/retail space, 25 single-family dtached residences, and the removal of 134 trees (63 ordinance sized and 71 non-ordinance sized).	Urban Development	64.23	0
Residential	Private	San Jose	SJ-2017-025	The Graduate	19-story mixed use student housing project with ground floor retail (14,800sf) and structured parking for 262 cars.	Urban Development	1	0
Residential	Private	San Jose	SJ-2018-001	Villas on the Park	Construction of a six-story building of affordable housing units that includes 84 units.	Urban Development	0.35	0
Residential	Private	San Jose	SJ-2018-002	Oakmont Evergreen	Ninety four unit assisted living facility.	Urban Development	4.46	0
Commercial	Private	San Jose	SJ-2018-004	Chik-Fil-A Blossom Hill	Chick-Fil-A in General Commercial zone upon demolition of vacant video store.	Urban Development	1	0
Residential	Private	San Jose	SJ-2018-005	Quimby Road Holdings	Seven single family homes on a 2.84 gross acre site, located 500 feet east of Quimby Road and Deedham Drive.	Urban Development	2.84	0
Commercial	Private	San Jose	SJ-2018-006	353 West Julian Street	Six-story, 194,178 sq ft office building and a surface parking lot.	Urban Development	2.95	0

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Residential	Private	San Jose	SJ-2018-007	Delmas Pro	The project applicant proposes to demolish three existing single-family residences and associated accessory buildings, remove five ordinance-size trees, and redevelop the site with a five-story residential building containing 120 residences.	Urban Development	0.8	0
Commercial	Private	San Jose	SJ-2018-008	1610 Meridian	Construct 2,187 sq ft convenience store w/743 sq ft storage/utility basement & attached 1121 sq ft carwash tunnel with 235 sq ft carwash equipment room, construct 3000 sq ft fueling canopy covering 4 fuel dispensers, various miscellaneous site work, install two new underground storage tanks.	Urban Development	0.5	0
Commercial	Private	San Jose	SJ-2018-009	Westfield Expansion	650,000 sq ft expansion of an existing commercial shopping mall	Urban Development	52	0
Residential	Private	San Jose	SJ-2018-010	7008 San Felipe Road	Construction of a 6884 sq ft residence with five bedrooms and attached three car garage and an 800 sq ft second unit with one bedroom.	Urban Development	0.79	0
Commercial	Private	San Jose	SJ-2018-012	2230 Stevens Creek Blvd	Urban redevelopment.	Urban Development	0.65	0
Residential	Private	San Jose	SJ-2018-014	2979 Huff Ave	Construct a new 16 unit multi-family condominium project.	Urban Development	0.525	0
Commercial	Private	San Jose	SJ-2018-015	In-N-Out Burger	Developing a new In-N-Out Burger Restaurant with outdoor patio seating, indoor dining and a drive through lane.	Urban Development	2.424	0
Recreational	Public	San Jose	SJ-2018-018	Coyote Creek Trail-Story to Phelan	Approximately 4,000-linear-foot (3/4-mile) trail between Story Road and Phelan Avenue of Class I (off-street, paved) pedestrian and bicycle facility with approximately two 6-foot lanes and unpaved hard-packed gravel shoulders along the top of the eastern bank of Coyote Creek.	Urban Development	1.316	0

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
In-Stream Operations & Maintenance								
Other	Public	Santa Clara Valley Water District	SVWD-2018-003	Madrone Channel Vegetation Management	Vegetation removal within certain areas of the manufactured Madrone Channel Percolation Basins.	In-Stream Operations and Maintenance	33.66	0
In-Stream Capital Projects								
Other	Public	San Jose	SJ-2017-015	Coyote Creek Trail - Brokaw	New multi-purpose trail along the eastern side of Coyote Creek from Brokaw Road to just south of the Union Pacific Railroad (UPRR). The new trail is 12 feet wide, primarily surfaced with asphalt concrete pavement, with 2-foot compacted base rock shoulders on each side.	In-Stream Capital Projects	0.66	1.05
Other	Public	Santa Clara Valley Water District	SVWD-2018-005	Anderson Dam Geotech	Geotechnical and geologic investigations in the Basalt Hill Borrow Area and on the right abutment of Anderson Dam.	In-Stream Capital Projects	11.1	0
Rural Operations & Maintenance								
Other	PSE	PG&E	PSE-2018-001	Bridle Path Valve Automation	Automate the Bridal Path Station, which entails expanding the station, installing a permanent access road, and grading and filling the work area surrounding the station.	Rural Operations & Maintenance	0.1	0.6
Other	PSE	PG&E	PSE-2018-002	Metcalf Evergreen Reconductoring	Reconductor the existing Metcalf-Evergreen Line between Metcalf Substation and Yerba Buena Rd in the City of San Jose- a distance of approximately seven miles.	Rural Operations & Maintenance	4.1	8.2
Other	Private	Santa Clara County (Planning)	SCPN-2018-003	Metcalf Road - UTC Middle	Creation of a geomorphically appropriate and ecologically functioning channel that would facilitate management of contamination in Oxidizer Creek.	Rural Operations & Maintenance	2.141	4.599

Covered Activity Type	Public/ Private/ PSE	Covered By	Project #	Project Name	Project Description	Covered Activity Category	Permanent Impacts	Temporary Impacts
Transportation	Public	Santa Clara County Roads and Airports	SCRD-2017-003	Clayton Road Safety Implementation	Paving shoulders and turnout lanes, install new signs and repaint road striping at selected locations, remove vegetation, install plastic roadside delineators, and clear roadside sediment and debris along Clayton Road.	Rural Operations & Maintenance	0.33	12.09
Transportation	Public	San Jose	SJ-2018-011	Alum Rock Falls Road	Restore the damaged roadway to its original condition before the storm without making any additional improvements. The work included installing soldier pile and timber lagging retaining walls to stabilize downslopes, reconstructing the existing asphalt concrete pavement, and debris removal.	Rural Operations & Maintenance	0.04	0.04
Other	Public	Santa Clara Valley Water District	SVWD-2017-012	Pacheco Pipeline Rehab	Inspections, repair and rehabilitation of the Pacheco Pipeline.	Rural Operations & Maintenance	0.1	10.47
Other	Public	Santa Clara Valley Water District	SVWD-2018-001	Almaden Valley Pipeline	Rehabilitation of the Almaden Valley Pipeline (AVP) pipeline transmission system (approximately 12.6 miles) to ensure thast it is operating effectively.	Rural Operations & Maintenance	0.57	0.92
Rural Development								
Residential	Private	Santa Clara County (Planning)	SCPN-2017-007	W. San Martin-Swing	Development of a residence with a pool, a guest house, a barn, solar arrat, and a leach field and will observe a 35-foot setback from the top of bank/edge of riparian for the unnamed drainage	Rural Development	2.8	0.41
Residential	Private	Santa Clara County (Planning)	SCPN-2017-008	Heritage Alosi	Construction of a 6,000 sq ft house on a lot (3.57 acre net) of subdivision.	Rural Development	1.33	0.4
Residential	Private	Santa Clara County (Planning)	SCPN-2018-001	Felter Road	Construction of new simple family residence, driveway, water tanks, and sewer system (septic tank & leach field).	Rural Development	4.59	0.56

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-2018-002	Gilroy Hot Springs - Nuno	Construction of a single family residence with attached garage, driveway, septic system with leech field, water storage tanks on 20 acre parcel.	Rural Development	2.718	0.118
Rural Capital Projects								
Other	Public	Santa Clara County Parks	SCPK-2018-001	Almaden and North Ridge Trails	Construction of the Almaden and North Ridge Trails in Calero County Park. The trails connects a future staging area on Almaden Road to the new staging area on McKean Road and the Lisa Killough Trail. Trail construction will consist of approximately 1.6 miles of single-track, natural surface, multi-use trail.	Rural Capital Projects	1.98	0
Other	Public	Santa Clara County Parks	SCPK-2018-002	Oak Cove North Shore Trails	Construction of an approximately 4.6-mile Oak Cove Trail, and an approximately 2.0-mile North Shore Trail.	Rural Capital Projects	8.05	0
Transportation	Public	Santa Clara County Roads and Airports	SCRD-2017-001	Watsonville Road Safety Improvements	Roadway safety improvements on Watsonville Road to minimize the potential for bicycle and vehicle related collisions. The Project included the following improvements: paved shoulder widening to enhance visibility and sefety, new traffic signs and striping, and traffic control devices at various locations.	Rural Capital Projects	0.73	20.14
Transportation	Public	Santa Clara County Roads and Airports	SCRD-2017-002	Uvas Road Safety Implementation	Saftey improvements on Uvas Road to minimize the potential for bicycle and vehicle related collisions. The Project would included the following improvements: installing new and improving the existing metal beam guard rail, paved shoulder widening to enhance visibility and safety, new traffic signs and striping, and traffic control devices at various locations.	Rural Capital Projects	1.6	15.72

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-2018-002	Main Ave Madrone Pipeline	Restore the Main Avenue and Madrone Pipeline pipeline system to its full capacity to allow for groundwater recharge via the Main Avenue Groundwater Recharge Ponds and the Madrone Channel from Anderson Reservoir or the Santa Clara Conduit.	Rural Capital Projects	8.29	0
Conservation Strategy Implementation								
Vegetation Management	Public	Santa Clara County Parks	SCPK-2017-002	Grant Prescribed Burns-Spring 2017	Prescribed burning of annual grassland, chapparal, and oak woodland in Joseph D Grant County Park. The purpose of the prescribed burn is to increase the diversity of the native grasses and forbs, control noxious and invasive weeds, increase germination and survival potential of developing oak seedlings, decrease the decadence of and control brush encroachment into grassland areas, and provide live fire training opportunities for fire agency personnel.	Conservation Strategy Implementation	0.0	36.5
Vegetation Management	Public	Santa Clara County Parks	SCPK-2017-003	Grant Prescribed Burns-Fall 2017	Prescribed burning of annual grassland, chapparal, and oak woodland in Joseph D Grant County Park. The purpose of the prescribed burn is to increase the diversity of the native grasses and forbs, control noxious and invasive weeds, increase germination and survival potential of developing oak seedlings, decrease the decadence of and control brush encroachment into grassland areas, and provide live fire training opportunities for fire agency personnel.	Conservation Strategy Implementation	0.0	470.7

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 Habitat Agency	SCVHA-2018-01	San Felipe Creek Restoration Project	Restorion and enhancement of portions of an approximately one mile long reach of San Felipe Creek by modifying in-channel habitat and restoring sustainable natural channel and floodplain functions between the Corral and Canada de Pala trails.	Conservation Strategy Implementation	8.8	1.9
Other	Public	Santa Clara Valley Habitat Agency	SCVHA-2018-02	Pacheco Oak and Riparian Planting	Oak and riparian planting on Pacheco Creek Reserve site in the Habitat Agency Reserve System.	Conservation Strategy Implementation	0	0
Total							**497**	**587**
Total minus Conservation Strategy Implementation Projects							**488**	**78**

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 Mimimization	**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-2018-001	San Ysidro Storage	x		x																	
GIL-2018-002	Glen Loma Ranch Phase 1A	x		x													x	x			
GIL-2018-003	Monterey Gateway Apartments	x		x																	
GIL-2018-004	Hecker Pass Trail	x		x													x	x			
MH-2017-003	Altimira-Dividend	x		x																	
MH-2017-004	Cory Steadfast	x		x																	
MH-2017-005	Murphy-Mana	x		x																	
PSE-2018-001	Bridle Path Valve Automation	x		x					x								x	x			
PSE-2018-002	Metcalf Evergreen Reconductoring	x		x					x				x	x				x			x
SCPK-2017-002	Grant Prescribed Burns-Spring 2017	x		x											x						

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 Mimimization	**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
SCPK-2017-003	Grant Prescribed Burns-Fall 2017	x		x									x		x						
SCPK-2018-001	Almaden and North Ridge Trails	x		x				x							x						
SCPK-2018-002	Oak Cove North Shore Trails	x		x	x			x						x	x						x
SCPN-2017-007	W. San Martin-Swing	x		x				x				x			x						
SCPN-2017-008	Heritage Alosi	x		x				x													
SCPN-2018-001	Felter Road	x		x				x						x							
SCPN-2018-002	Gilroy Hot Springs - Nuno	x		x				x				x	x								
SCPN-2018-003	Metcalf Road - UTC Middle	x		x	x																
SCRD-2017-001	Watsonville Road Safety Improvements	x		x	x		x	x				x					x	x			
SCRD-2017-002	Uvas Road Saftey	x		x			x		x				x	x	x		x	x			x

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 Mimimization	**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
SCRD-2017-003	Clayton Road Safety Implementation	x		x			x	x								x		x			
SCVHA-2018-01	San Felipe Creek Restoration Project	x		x	x	x							x		x			x			
SCVHA-2018-02	Pacheco Oak and Riparian Planting	x		x																	
SJ-2017-006	Steven's Creek Hotel	x		x																	
SJ-2017-007	SJSC Towers	x		x																	
SJ-2017-008	King Road Mini Storage	x		x												x					
SJ-2017-009	Foundation for Hispanic Education	x		x																	
SJ-2017-010	Communications Hill II	x		x							x			x		x					
SJ-2017-012	Arcadia Softball	x		x												x					
SJ-2017-013	Piercy and Hellyer Whse	x		x								x						x			
SJ-2017-014	Bassett Street Apartments	x		x																	

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-2017-015	Coyote Creek Trail - Brokaw	x		x	x							x						x			
SJ-2017-016	Ohlone Block B	x		x																	
SJ-2017-017	Elden Glen	x		x																	
SJ-2017-018	Renascent Place	x		x																	
SJ-2017-019	San Pedro Blocks ACD	x		x																	
SJ-2017-020	Holden Assisted Living	x		x								x						x			
SJ-2017-021	San Pedro Square Residences	x		x																	
SJ-2017-022	Arujas Villas	x		x																	
SJ-2017-023	Senter and Alma Self Storage	x		x																	
SJ-2017-024	Arcadia Evergreen	x		x												x					
SJ-2017-025	The Graduate	x		x																	
SJ-2018-001	Villas on the Park	x		x																	
SJ-2018-002	Oakmont Evergreen	x		x																	
SJ-2018-004	Chik-Fil-A Blossom Hill	x		x																	

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 Mimimization	**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-2018-005	Quimby Road Holdings	x		x																	
SJ-2018-006	353 West Julian Street	x		x																	
SJ-2018-007	Delmas Pro	x		x																	
SJ-2018-008	1610 Meridian	x		x																	
SJ-2018-009	Westfield Expansion	x		x																	
SJ-2018-010	7008 San Felipe Road	x	x	x								x									
SJ-2018-011	Alum Rock Falls Road	x		x					x												
SJ-2018-012	2230 Stevens Creek Blvd	x		x																	
SJ-2018-014	2979 Huff Ave	x		x																	
SJ-2018-015	In-N-Out Burger	x		x																	
SJ-2018-018	Coyote Creek Trail-Story to Phelan	x		x								x									
SVWD-2017-012	Pacheco Pipeline Rehab	x		x											x		x	x	x		

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-2018-001	Almaden Valley Pipeline	x		x	x	x							x				x	x			
SVWD-2018-002	Main Ave Madrone Pipeline	x		x									x					x			
SVWD-2018-003	Madrone Channel Vegetation Management	x		x	x	x												x			
SVWD-2018-005	Anderson Dam Geotech	x		x	x									x				x		x	x
# of Times Condition Applied		**61**	**1**	**61**	**8**	**3**	**3**	**8**	**4**	**0**	**1**	**8**	**7**	**6**	**8**	**4**	**7**	**16**	**1**	**1**	**4**

		Species-Level Measures-Wildlife																			
		Western Burrowing Owl				Least Bell's Vireo				Tricolored Blackbird				San Joaquin Kit Fox				Bay Checkerspot Butterfly			
Project #	Project Name	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring	Habitat Survey	Preconstruction Surveys	AMM	Construction Monitoring
GIL-2018-002	Glen Loma Ranch Phase 1A					x	x			x	x										
GIL-2018-004	Hecker Pass Trail					x				x											
PSE-2018-001	Bridle Path Valve Automation					x	x			x	x										
PSE-2018-002	Metcalf Evergreen Reconductoring									x								x			
SCRD-2017-001	Watsonville Road Safety Improvements					x	x			x											
SCRD-2017-002	Uvas Road Saftey Improvements					x	x			x	x										
SCRD-2017-003	Clayton Road Safety Implementation									x											
SCVHA-2018-01	San Felipe Creek Restoration Project									x	x										
SJ-2017-008	King Road Mini Storage	x	x																		
SJ-2017-010	Communications Hill II	x	x	x	x																
SJ-2017-012	Arcadia Softball	x	x																		
SJ-2017-013	Piercy and Hellyer Whse									x											
SJ-2017-015	Coyote Creek Trail - Brokaw									x											
SJ-2017-020	Holden Assisted Living									x											
SJ-2017-024	Arcadia Evergreen	x	x	x																	
SJ-2018-005	Quimby Road Holdings	x	x																		
SVWD-2017-012	Pacheco Pipeline Rehab					x	x			x	x			x	x						
SVWD-2018-001	Almaden Valley Pipeline					x	x			x	x										
SVWD-2018-002	Main Ave Madrone Pipeline									x	x										
SVWD-2018-003	Madrone Channel Vegetation Management									x											
SVWD-2018-005	Anderson Dam Geotech																	x			
Total	**21**	**5**	**5**	**2**	**1**	**7**	**6**	**0**	**0**	**15**	**7**	**0**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**

		Species-Level Measures-Plants																	
		Smooth Lessingia		Fragrant Fritillary		Metcalf Canyon Jewelflower		Most Beautiful Jewelflower		Tiburon Paintbrush		Coyote Ceanothus		Santa Clara Valley Dudleya		Mount Hamilton Thistle		Loma Prieta Hoita	
Project #	**Project Name**	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-2018-002	Glen Loma Ranch Phase 1A																		
GIL-2018-004	Hecker Pass Trail																		
PSE-2018-001	Bridle Path Valve Automation																		
PSE-2018-002	Metcalf Evergreen Reconductoring																		
SCRD-2017-001	Watsonville Road Safety Improvements																		
SCRD-2017-002	Uvas Road Saftey Improvements																		
SCRD-2017-003	Clayton Road Safety Implementation																		
SCVHA-2018-01	San Felipe Creek Restoration Project																		
SJ-2017-008	King Road Mini Storage																		
SJ-2017-010	Communications Hill II																		
SJ-2017-012	Arcadia Softball																		
SJ-2017-013	Piercy and Hellyer Whse																		
SJ-2017-015	Coyote Creek Trail - Brokaw																		
SJ-2017-020	Holden Assisted Living																		
SJ-2017-024	Arcadia Evergreen																		
SJ-2018-005	Quimby Road Holdings																		
SVWD-2017-012	Pacheco Pipeline Rehab																		
SVWD-2018-001	Almaden Valley Pipeline																		
SVWD-2018-002	Main Ave Madrone Pipeline																		
SVWD-2018-003	Madrone Channel Vegetation Management																		
SVWD-2018-005	Anderson Dam Geotech																		
Total	**21**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Reporting Period		Cumulative					
	(acres, unless otherwise noted)		(acres, unless otherwise noted)					
Land Cover Type	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	99.1	22.8	294.0	55.6	2,006	15%	574	1.9%
Serpentine Bunchgrass	5.5	0.01	29.2	3.5	550	5%	91	0.0%
Serpentine Rock Outcrop/Barrens	3.7	0.0	3.7	0.0	22	17%	2	0.0%
Serpentine Seep	0.0	0.0	0.0	0.0	0.5	2%	0.4	0.0%
Rock Outcrop (Non-Serpentine)	0.0	0.0	0.0	0.0	0.5	0%	0.2	0.0%
Northern mixed chaparral/chamise chaparral	2.2	0.4	2.9	0.4	86	3%	31	0.0%
Mixed serpentine chaparral	0.0	0.0	0.7	1.2	131	1%	30	1.0%
Northern coastal scrub/Diablan coastal scrub	0.9	0.16	2.3	0.5	178	1%	66	0.0%
Coyote brush scrub	0.04	0.1	3.4	0.3	10	34%	10	1.0%
Valley oak woodland	0.4	0.5	1.9	1.0	201	0.9%	45	1.1%
Mixed oak woodland and forest	3.5	0.78	17.3	6.6	1,441	1.2%	302	0.4%
Coast live oak woodland and forest	2.5	0.0	9.7	0.7	840	1.2%	181	0.0%
Blue oak woodland	2.0	0.1	3.5	1.5	131	2.7%	39	0.0%
Foothill pine-oak woodland	5.5	0.0	5.7	0.0	46	12.4%	26	0.0%
Mixed evergreen forest	0.0	0.1	0.0	0.1	50	0.0%	25	0.0%
Redwood forest	0.0	0.0	0.0	0.0	109	0.0%	56	0.0%
Ponderosa pine woodland	0.0	0.0	0.0	0.0	0	--	1	0.0%
Knobcone pine woodland	0.0	0.0	0.0	0.0	8	0.0%	2	0.0%
Subtotal terrestrial	125.4	24.8	*374.3*	*71.3*	*5,810*	*6.4%*	*1,482*	*0.9%*
Aquatic								
Willow riparian forest and scrub	0.36	0.97	1.80	1.69	180	1.0%	103	0.0%
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00	7	0.0%	6	0.0%
Mixed riparian woodland and forest	0.22	0.00	1.17	0.96	109	1.1%	101	0.4%
Coastal and valley freshwater marsh	2.26	0.00	2.42	3.87	25	9.7%	7	55.3%
Seasonal wetland	0.03	0.00	0.26	0.07	15	1.8%	2	2.5%
Pond	0.00	0.00	0.04	0.17	52	0.1%	9	0.0%

	Reporting Period		Cumulative					
	(acres, unless otherwise noted)		(acres, unless otherwise noted)					
Land Cover Type	**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 (%)**
Reservoir	0.00	0.00	32.80	0.30	-	-	-	-
Subtotal Aquatic	2.87	0.97	*38.49*	*7.06*	*388*	*9.9%*	*228*	*2.0%*
Stream (length in linear feet)								
Total stream length	0.00	0.00	182.0	737.0	*49,632*	*0.4%*	*253,440*	*0.0%*
Agricultural								
Orchard	11.0	0.1	36.1	4.6	625	5.8%	24	-
Vineyard	0.0	0.2	0.0	0.2	37	-	3	-
Agriculture developed	0.0	0.0	25.3	1.0	-	-	-	-
Grain, row-crop, hay and pasture, disked/short-	123.7	13.6	656.8	85.2	7,356	8.9%	284	5.1%
Subtotal Agricultural	134.7	13.9	*718.2*	*91.0*	*8,018*	*9.0%*	*311*	*4.9%*
Developed								
Rural residential	3.1	5.7	16.0	7.6	1,603	1.0%	139	0.1%
Golf courses/ Urban parks	16.0	1.0	94.0	10.9	2,095	4.5%	40	0.2%
Ornamental woodland	3.8	0.0	5.1	0.1	30	-	8	-
Barren	63.6	0.1	64.9	1.1	32	202.7%	15	2.0%
Urban Suburban	138.4	31.9	547.4	95.3	-	-	-	-
Subtotal Developed	225.0	38.8	*727.3*	*114.9*	*3,760*	*19.3%*	*202*	*3.8%*
Totals								
Acres	**487.9**	**78.5**	**1858.2**	**284.3**	**17,976**	**10.3%**	**2,223**	**12.8%**
Linear Feet	**0.00**	**0.00**	**182.00**	**737.00**	**49,632**	**0.4%**	**253,440**	**0.3%**

	Impacts			
Aquatic Land Cover Type (acres)	**Reporting Period**		**Cumulative**	
Watershed	**Permanent**	**Temporary**	**Permanent**	**Temporary**
Coyote				
Willow riparian forests, woodlands, and scrub	0.06	0.97	1.36	0.97
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.26		0.35	0.01
Coastal and valley freshwater marsh			-	3.87
Seasonal wetland	0.03		0.03	0.03
Pond			-	-
Reservoir			-	-
Subtotal aquatic	***0.35***	***0.97***	***1.74***	***4.88***
Stream (linear feet)			16.00	-
Guadalupe				
Willow riparian forests, woodlands, and scrub			0.12	0.71
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.12		0.39	0.17
Coastal and valley freshwater marsh			-	-
Seasonal wetland			0.20	0.02
Pond			-	-
Reservoir			32.80	0.30
Subtotal aquatic	***0.12***	***-***	***33.51***	***1.20***
Stream (linear feet)			137.00	640.00
Pajaro				
Willow riparian forests, woodlands, and scrub	0.06		0.07	0.01
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			0.58	0.50
Coastal and valley freshwater marsh			0.04	-
Seasonal wetland			-	-
Pond			0.00	0.00
Reservoir			-	-
Subtotal aquatic	***0.06***	***-***	***0.69***	***0.51***
Stream (linear feet)			-	-
Uvas				
Willow riparian forests, woodlands, and scrub			0.01	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest			0.01	0.28
Coastal and valley freshwater marsh			0.12	-
Seasonal wetland			0.03	-
Pond			0.04	0.00
Reservoir			-	-
Subtotal aquatic	-	-	***0.21***	***0.28***
Stream (linear feet)			29.00	-
Llagas				

	Impacts			
Aquatic Land Cover Type (acres)	**Reporting Period**		**Cumulative**	
Watershed	**Permanent**	**Temporary**	**Permanent**	**Temporary**
Willow riparian forests, woodlands, and scrub	0.04		0.04	-
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.04		0.04	-
Coastal and valley freshwater marsh	2.26		2.26	-
Seasonal wetland			-	0.02
Pond			-	0.17
Reservoir			-	-
Subtotal aquatic	***2.34***	-	***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	0.16	0.97	1.60	1.69
Central California sycamore alluvial woodland			-	-
Mixed riparian woodland and forest	0.42	-	1.37	0.96
Coastal and valley freshwater marsh	2.26		2.42	3.87
Seasonal wetland	0.03		0.26	0.07
Pond			0.04	0.17
Reservoir			32.80	0.30
Total aquatic	**2.87**	**0.97**	**38.49**	**7.06**
Total stream length	**-**	**-**	**182.00**	**737.00**

Table 6. Summary of Impacts to Modeled Covered Species Habitat

	Reporting Period (acres, unless otherwise		Cumulative (acres, unless otherwise noted)					
Modeled Habitat	**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	78.5	2.1	148.7	6.4	300	50%	54	12%
California Tiger Salamander								
Breeding Habitat	0.0	0.0	0.9	0.3	77	1%	14	2%
Non-breeding Habitat	101.2	21.0	573.2	129.2	12,855	4%	1,529	
Total	101.2	21.0	574.1	129.5	12,932	4%	1,543	8%
California Red-Legged Frog								
Primary Habitat	7.9	0.5	31.6	6.7	299	11%	116	6%
Secondary Habitat	191.4	21.3	842.8	159.5	12,937	7%	1,489	
Total	199.3	21.8	874.3	166.5	13,236	7%	1,605	10%
Foothill Yellow-Legged Frog (length in miles)								
Primary Habitat	0.00	0.00	0.1	0.1	2	4%	0.7	13%
Secondary Habitat	0.00	0.00	0.3	0.1	5	6%	1.3	
Total			0.4	0.2	7	5%	2.0	8%
Western Pond Turtle								
Primary Habitat	16.1	2.2	213.6	39.0	1,824	12%	440	9%
Secondary Habitat	98.1	17.0	389.8	89.4	7,825	5%	986	
Total	114.2	19.2	603.3	128.4	9,649	6%	1,426	9%
Western Burrowing Owl								
Occupied Nesting Habitat	93.1		164.9	3.2	198	83%	20	16%
Potential Nesting Habitat	181.2	9.0	181.2	9.0	4,000	5%	604	
Overwintering Habitat	182.9	21.4	761.8	159.7	9,671	8%	762	
Total	457.2	30.4	1,058.6	168.7	13,869	8%	1,385	12%
Least Bell's Vireo								
Primary Habitat	4.97	0.1	7.3	1.4	72	10%	43	3%

Table 6. Summary of Impacts to Modeled Covered Species Habitat

	Reporting Period (acres, unless otherwise		Cumulative (acres, unless otherwise noted)					
Modeled Habitat	**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	10.8	3.6	16.7	28	13%	6	
Total	0.0	10.8	9.8	18.8	226	4%	52	36%
Tricolored Blackbird								
Primary Habitat	5.1	0.3	104.8	8.6	276	38%	93	9%
Secondary Habitat	197.8	21.3	804.8	161.4	10,317	8%	768	
Total	202.9	21.6	909.6	170.0	10,593	9%	861	20%
Mt. Hamilton Thistle								
Primary Habitat	0.1	0.0	0.1	-	26	0%	4	0%
Fragrant Fritillary								
Primary Habitat	1.1	2.1	15.3	6.4	5503	0%	59	11%
Secondary Habitat	26.7	3.0	98.2	23.2	2,729	4%	655	
Total	27.8	5.0	113.5	29.6	3,279	3%	714	4%
Loma Prieta Hoita								
Primary Habitat	6.4	0.1	41.1	5.7	2,117	2%	413	1%
Secondary Habitat	0.0	0.0	15.1	1.6	266	6%	60	
Total	6.4	0.1	56.3	7.3	2,383	2%	473	2%
Smooth Lessingia								
Primary Habitat	87.5	2.1	159.1	6.8	550	29%	68	10%
Metcalf Canyon Jewelflower								
Primary Habitat	1.1	2.1	15.3	6.4	550	3%	62	10%
Most Beautiful Jewelflower								
Primary Habitat	87.5	2.5	173.5	8.7	550	32%	92	9%
Secondary Habitat	0.0	0.0	-	-	0	0%	0	
Total	87.5	2.5	173.5	8.7	550	32%	92	9%

Table 6. Summary of Impacts to Modeled Covered Species Habitat

	Reporting Period (acres, unless otherwise		Cumulative (acres, unless otherwise noted)					
Modeled Habitat	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

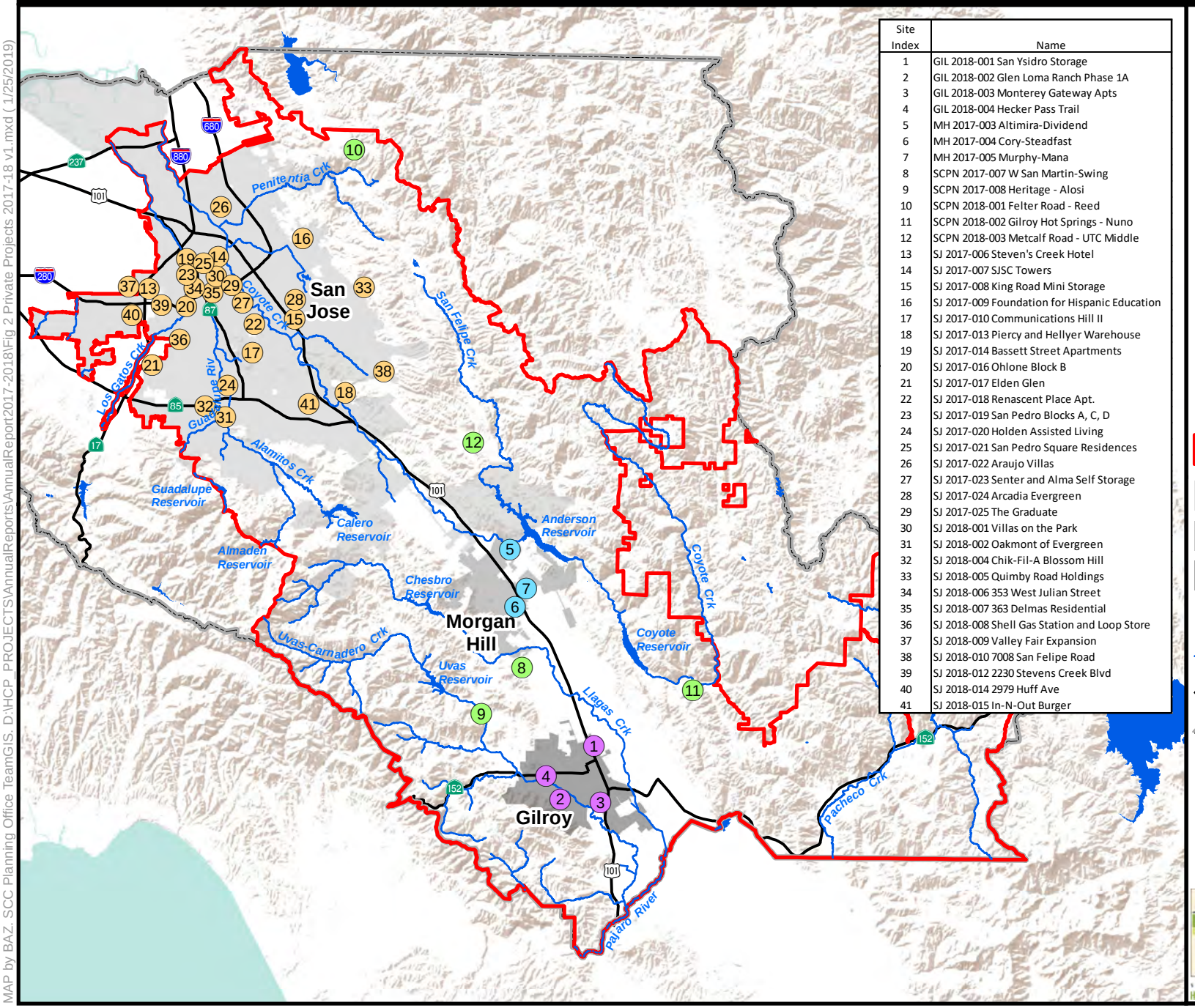
	Reporting Period (acres)		Cumulative (acres)					
Species	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impact to Critical Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impact to Critical Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%)
California Red-Legged Frog								
STC Unit 1	7.0	5.3	19.8	7.1				
STC Unit 2	2.8	0.7	22.8	2.8				
ALA Unit 2			-	-				
Total	9.8	6.1	42.5	9.9	1,035	4.1%	277	3.6%
California Tiger Salamander								
EBR Unit 5			-	-				
EBR Unit 6			4.2	1.1				
EBR Unit 7	2.1	4.7	2.1	4.7				
EBR Unit 8	7.6		29.8	9.8				
EBR Unit 9			-	-				
EBR Unit 10a	0.2		0.2	-				
EBR Unit 10b			-	-				
EBR Unit 11			-	-				
EBR Unit 12		2.8	2.8	2.9				
Total	9.9	7.6	39.0	18.5	272	14.3%	125	14.8%
Bay Checkerspot Butterfly								
Tulare Hill			-	-				
Metcalf	0.1	2.3	1.7	2.4				
Santa Teresa Hills			2.5	0.6				
Calero Reservoir	5.2		13.5	6.3				
Kirby	2.8	0.2	32.6	4.4				
Kalana			0.3	(0.0)				
Hale			-	-				
Bear Ranch			-	-				
San Martin			-	-				
Total	8.0	2.5	50.7	13.7	550	9.2%	86	16.0%

			Impacts (Occurrences)			
Common Name	**Scientific Name**	**Known Occurrences that May Be Removed by Covered Activities[1]**	**Reporting Period**		**Cumulative**	
			Extant	New	Extant	New
Tiburon paintbrush	*Castilleja affinis ssp. Neglecta*	0	0	0	0	0
Coyote ceanothus[2]	*Ceanothus ferrisiae*	3,650	2	0	517	0
Mt. Hamilton thistle	*Cirsium fontinale var. campylon*	6	0	0	0	0
Santa Clara Valley dudleya	*Dudleya abramsii ssp. Setchellii*	11	0	0	0	1
Fragrant fritillary	*Fritillaria liliacea*	1	0	0	0	0
Loma Prieta hoita	*Hoita strobilina*	0	0	0	0	0
Smooth lessingia	*Lessingia micradenia var. glabrata*	6	0	0	0	0
Metcalf Canyon jewelflower	*Streptanthus albidus ssp. albidus*	2	0	0	0	0
Most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	6	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.

[2] 3,650 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 FY17-18 Private Covered Projects



Site Index	Name
1	GIL 2018-001 San Ysidro Storage
2	GIL 2018-002 Glen Loma Ranch Phase 1A
3	GIL 2018-003 Monterey Gateway Apts
4	GIL 2018-004 Hecker Pass Trail
5	MH 2017-003 Altimira-Dividend
6	MH 2017-004 Cory-Steadfast
7	MH 2017-005 Murphy-Mana
8	SCPN 2017-007 W San Martin-Swing
9	SCPN 2017-008 Heritage - Alosi
10	SCPN 2018-001 Felter Road - Reed
11	SCPN 2018-002 Gilroy Hot Springs - Nuno
12	SCPN 2018-003 Metcalf Road - UTC Middle
13	SJ 2017-006 Steven's Creek Hotel
14	SJ 2017-007 SJSC Towers
15	SJ 2017-008 King Road Mini Storage
16	SJ 2017-009 Foundation for Hispanic Education
17	SJ 2017-010 Communications Hill II
18	SJ 2017-013 Piercy and Hellyer Warehouse
19	SJ 2017-014 Bassett Street Apartments
20	SJ 2017-016 Ohlone Block B
21	SJ 2017-017 Elden Glen
22	SJ 2017-018 Renascent Place Apt.
23	SJ 2017-019 San Pedro Blocks A, C, D
24	SJ 2017-020 Holden Assisted Living
25	SJ 2017-021 San Pedro Square Residences
26	SJ 2017-022 Araujo Villas
27	SJ 2017-023 Senter and Alma Self Storage
28	SJ 2017-024 Arcadia Evergreen
29	SJ 2017-025 The Graduate
30	SJ 2018-001 Villas on the Park
31	SJ 2018-002 Oakmont of Evergreen
32	SJ 2018-004 Chik-Fil-A Blossom Hill
33	SJ 2018-005 Quimby Road Holdings
34	SJ 2018-006 353 West Julian Street
35	SJ 2018-007 363 Delmas Residential
36	SJ 2018-008 Shell Gas Station and Loop Store
37	SJ 2018-009 Valley Fair Expansion
38	SJ 2018-010 7008 San Felipe Road
39	SJ 2018-012 2230 Stevens Creek Blvd
40	SJ 2018-014 2979 Huff Ave
41	SJ 2018-015 In-N-Out Burger

Permitting Entity

- City of Gilroy (GIL) 4 Projects
- City of Morgan Hill (MH) 3 Projects
- County of Santa Clara (SCPN) 5 Projects
- City of San Jose (SJ) 29 Projects
- Habitat Plan Permit Area
- San Jose
- Morgan Hill
- Gilroy
- Reservoirs
- Major Streams
- Major Roads
- County Boundary

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Miles

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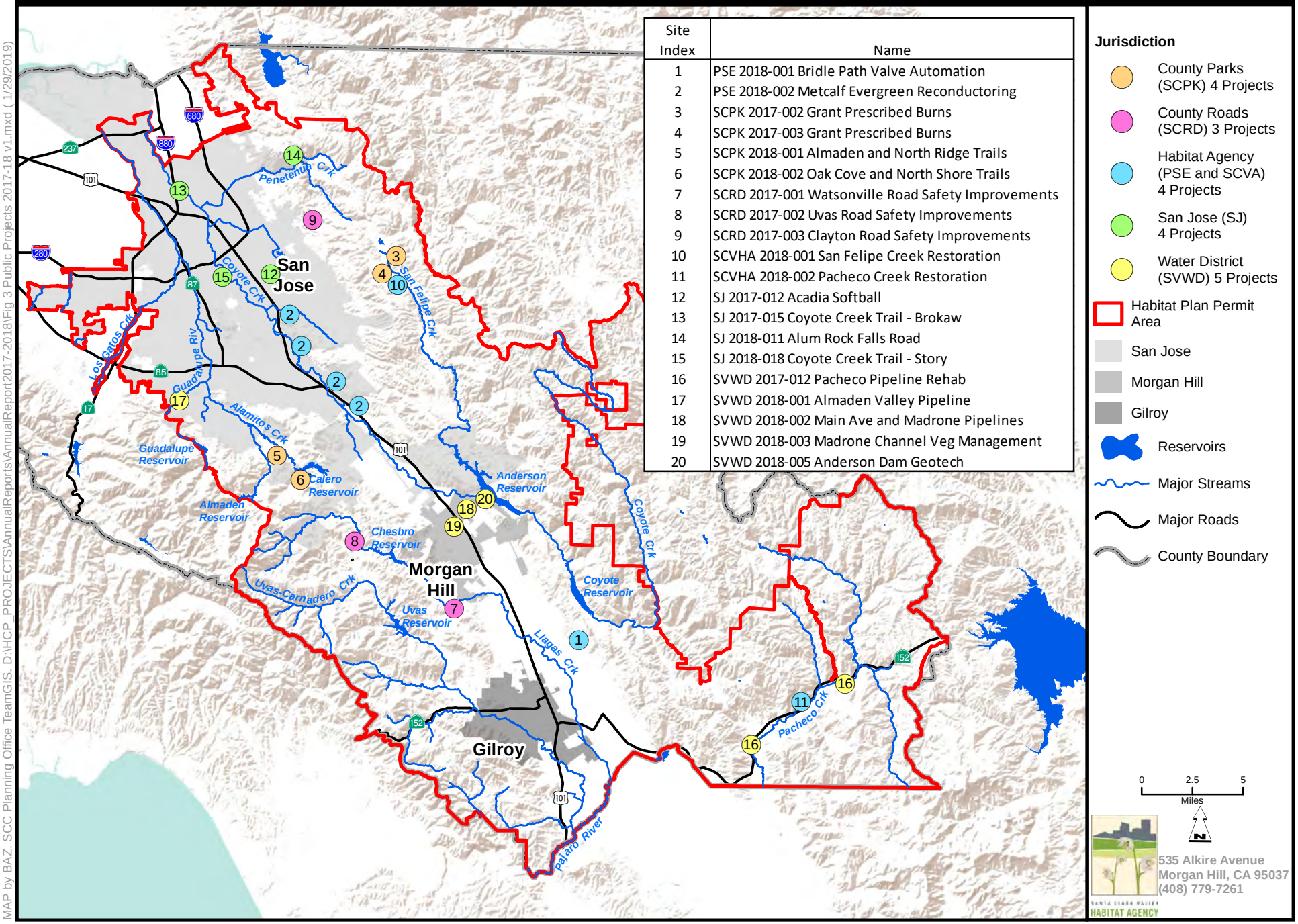
SANTA CLARA VALLEY HABITAT AGENCY

MAP by BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2017-2018\Fig 2 Private Projects 2017-18 v1.mxd (1/25/2019)

Figure 3. Location of FY 17-18 Public Covered Projects



Site Index	Name
1	PSE 2018-001 Bridle Path Valve Automation
2	PSE 2018-002 Metcalf Evergreen Reconductoring
3	SCPK 2017-002 Grant Prescribed Burns
4	SCPK 2017-003 Grant Prescribed Burns
5	SCPK 2018-001 Almaden and North Ridge Trails
6	SCPK 2018-002 Oak Cove and North Shore Trails
7	SCRD 2017-001 Watsonville Road Safety Improvements
8	SCRD 2017-002 Uvas Road Safety Improvements
9	SCRD 2017-003 Clayton Road Safety Improvements
10	SCVHA 2018-001 San Felipe Creek Restoration
11	SCVHA 2018-002 Pacheco Creek Restoration
12	SJ 2017-012 Acadia Softball
13	SJ 2017-015 Coyote Creek Trail - Brokaw
14	SJ 2018-011 Alum Rock Falls Road
15	SJ 2018-018 Coyote Creek Trail - Story
16	SVWD 2017-012 Pacheco Pipeline Rehab
17	SVWD 2018-001 Almaden Valley Pipeline
18	SVWD 2018-002 Main Ave and Madrone Pipelines
19	SVWD 2018-003 Madrone Channel Veg Management
20	SVWD 2018-005 Anderson Dam Geotech

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Chapter 3
Land Acquisition

Reserve System

Reporting Requirements

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

The Reserve System includes two properties spanning 1,857.5 acres.[18] 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 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

[18] This is the legally recorded acreage of the Coyote Ridge Open Space Preserve (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.

Conservation Analysis Zones

The Plan Area is subdivided into 34 discrete CAZs to develop priorities and identify potential locations for acquisition (**Figure 4a**). 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 4a** illustrates the relative level of land acquisition effort that would be required in each CAZ (high, moderate, or low).

Sites Acquired

This section summarizes the progress toward land acquisition requirements during this reporting period and to date (**Table 9 through Table 12**).

Reporting Period

No new properties were acquired during the FY1718 reporting year.

Cumulative

The Reserve System includes two properties—the Coyote Ridge Open Space Preserve and the Pacheco Creek Reserve[19]—with an additional two properties under short-term management

[19] The Pacheco Creek Reserve is owned in fee title by the Habitat Agency. Reserve System enrollment will occur when a conservation easement, anticipated in 2019, 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.

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.[20] 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. 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) (**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**).

Pre-Existing Easements, Access Routes, and Leases

Reserve System properties—Coyote Ridge Open Space Preserve 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 Coyote Ridge Open Space Preserve, 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 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.

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

Sites Under Review

Acquisitions Under Consideration

A total of 17 potential acquisitions are currently under consideration by the Habitat Agency. **Figure 5** provides a map of these sites. Most of these properties are located in the central and eastern portions of the Habitat Plan area. These acquisition locations target areas with populations of covered species and covered natural communities, such as the Calero Conservation Easement (which is a 3,020-acre[21] subset of Calero County Park.), and properties that will link to lands within the Reserve System, such as UTC-2-Shingle Valley, Castle and Cook, and El Toro, protecting wildlife corridors and large landscape areas that can buffer against the effects of climate change.

The San José-Santa Clara Regional Wastewater Facility (SJ-SCRWF) (#6 on **Figure 5**) is the most successful western burrowing breeding site in the Permit Area. The City of San José will enroll 72 acres, via conservation easement, of their bufferlands in lieu of fees for four 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.

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

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

	Land Cover Requirements (acres)			Reporting Period (acres)				Cumulative (acres)[a,b]				Percent Complete (%)	
Land Cover Type	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	-				3.2	371.6	23.0	394.6	3.2	2.8%	-
Serpentine Bunchgrass Grassland	10,308	4,000	-					1,220.6	16.5	1,237.1	0.0	30.5%	-
Serpentine Rock Outcrop/ Barrens	260	120	-					0.2	0.0	0.2	0.0	0.2%	-
Serpentine Seep	34	10	-					0.4	0.0	0.4	0.0	3.6%	-
Rock Outcrop	87	10	-					0.0	0.0	0.0	0.0	-	-
Northern Mixed Chaparral / Chamise Chaparral	23,763	400	-					0.0	0.3	0.3	0.0	-	-
Mixed Serpentine Chaparral	3,712	700	-					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%	-
Valley Oak Woodland	12,895	1,700	-				3.0	1.1	0.0	1.1	3.0	0.1%	-
Mixed Oak Woodland and Forest	84,488	7,100	-					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%	-
Coast Live Oak Forest and Woodland	31,652	2,900	-					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%	-
Mixed Evergreen Forest	5,775	20	-					0.0	0.0	0.0	0.0	-	-
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland	6,310	917	339				4.9	22.2	1.6	23.8	4.9	2.4%	1.5%
Central California Sycamore Alluvial Woodland	373	54	14					5.8	2.4	8.1	0.0	-	-
Redwood Forest	9,693	10	-					0.0	0.0	0.0	0.0	-	-
Coastal and Valley Freshwater Marsh (Perennial Wetland)	381	95	45				0.2	0.0	0.0	0.0	0.3	-	0.7%
Seasonal Wetland	201	60	30				3.7	1.9	0.0	1.9	4.0	3.1%	13.2%
Pond	1,110	104	72					0.4	0.0	0.4	0.2	0.4%	0.3%
Subtotal (acres)	**305,263**	**34,080**	**500**				**15.0**	**1,811.6**	**48.5**	**1,860.1**	**9.4**	**5.3%**	**1.9%**
Streams (miles)	2,392.0	110.4	10.4				1.8	13.6	0.1	13.7	1.8	12.3%	17.6%
Land Cover Types without Acquisition, Restoration, or Creation Requirements													
Coyote brush scrub	180	-	-					0.0	0.0	0.0	0.0		
Ponderosa Pine Woodland	419	-	-					0.0	0.0	0.0	0.0		
Knobcone Pine Woodland	711	-	-					0.0	0.0	0.0	0.0		
Reservoir	2,767	-	-					0.0	0.0	0.0	0.0		
Orchard	2,697	-	-					0.0	0.0	0.0	0.0		
Vineyard	1,393	-	-					0.0	0.0	0.0	0.0		
Agriculture developed / covered agriculture	1,935	-	-					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		
Urban-suburban	89,438	-	-					0.04	0.00	0.04	0.0		
Rural - residential	12,414	-	-					0.0	0.0	0.0	0.0		
Barren	211	-	-					0.0	0.0	0.0	0.0		
Landfill	364	-	-					0.0	0.0	0.0	0.0		
Golf courses / urban parks	8,673	-	-					0.0	0.0	0.0	0.0		
Ornamental woodland	95	-	-					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**		
TOTAL (acres)	**460,207**	**34,080**	**500**	**0.0**	**0.0**	**0.0**	**15.0**	**1,811.6**	**48.5**	**1,860.1**	**9.4**	**5.3%**	**1.9%**
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.

	Land Acquisition and Restoration Properties (acres, unless otherwise noted)															
	Total				Coyote Ridge Open Space Preserve				Pacheco Creek Reserve				Calero County Park			
Land Cover Type	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation
California Annual Grassland	371.6	23.0	394.6	3.2	364.0	10.4	374.37		7.6	12.6	20.2	3.2				
Serpentine Bunchgrass Grassland	1220.6	16.5	1237.1	0.0	1220.6	16.5	1237.15				0.0					
Serpentine Rock Outcrop/ Barrens	0.2	0.0	0.2	0.0	0.2		0.23				0.0					
Serpentine Seep	0.4	0.0	0.4	0.0	0.4		0.36				0.0					
Rock Outcrop	0.0	0.0	0.0	0.0			0.00				0.0					
Northern Mixed Chaparral / Chamise Chaparral	0.0	0.3	0.3	0.0			0.00			0.3	0.3					
Mixed Serpentine Chaparral	75.0	0.2	75.1	0.0	75.0	0.2	75.13				0.0					
Northern Coastal Scrub / Diablan Sage Scrub	0.0	0.0	0.0	0.0			0.00		0.0		0.0					
Valley Oak Woodland	1.1	0.0	1.1	3.0	1.1		1.12				0.0	3.0				
Mixed Oak Woodland and Forest	28.1	4.4	32.4	0.0	24.3		24.27		3.8	4.4	8.2					
Blue Oak Woodland	0.0	0.0	0.0	0.0			0.00				0.0					
Coast Live Oak Forest and Woodland	84.3	0.2	84.5	0.0	84.3	0.2	84.50				0.0					
Foothill Pine—Oak Woodland	0.0	0.0	0.0	0.0			0.00				0.0					
Mixed Evergreen Forest	0.0	0.0	0.0	0.0			0.00				0.0					
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland	22.2	1.6	23.8	4.9	2.6	0.2	2.75		19.6	1.5	21.1	3.3				
Central California Sycamore Alluvial Woodland	5.8	2.4	8.1	0.0			0.00		5.8	2.4	8.1					
Redwood Forest	0.0	0.0	0.0	0.0			0.00				0.0					
Coastal and Valley Freshwater Marsh (Perennial Wetland)	0.0	0.0	0.0	0.3			0.00				0.0					0.16
Seasonal Wetland	1.9	0.0	1.9	4.0	1.9		1.89				0.0					0.24
Pond	0.4	0.0	0.4	0.2	0.2		0.24		0.2		0.2					0.22
Subtotal (acres)	**1811.6**	**48.5**	**1860.1**	**15.6**	**1774.52**	**27.50**	**1802.02**		**37.0**	**21.0**	**58.1**	**9.50**	**0.0**	**0.0**	**0.0**	**0.62**
Streams (miles)	13.6	0.1	13.7	1.8	12.8		12.80		0.8	0.1	0.9					
Land Cover Types without Acquisition, Restoration, or Creation Requirements	0.0	0.0	0.0	0.0												
Coyote brush scrub	0.0	0.0	0.0	0.0												
Ponderosa Pine Woodland	0.0	0.0	0.0	0.0												
Knobcone Pine Woodland	0.0	0.0	0.0	0.0												
Reservoir	0.0	0.0	0.0	0.0												
Orchard	0.0	0.0	0.0	0.0												
Vineyard	0.0	0.0	0.0	0.0												
Agriculture developed / covered agriculture	0.0	0.0	0.0	0.0												
Grain, row-crop, hay and pasture, disked/short-term fallowed	0.0	0.0	0.0	0.0												
Urban-suburban	0.0	0.0	0.0	0.0	0.0		0.04									
Rural - residential	0.0	0.0	0.0	0.0												
Barren	0.0	0.0	0.0	0.0												
Landfill	0.0	0.0	0.0	0.0												
Golf courses / urban parks	0.0	0.0	0.0	0.0												
Ornamental woodland	0.0	0.0	0.0	0.0												
Subtotal	0.0	0.0	0.0	0.0	**0.04**	**0.00**	**0.04**	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TOTAL	1811.6	48.5	1860.1	15.6	**1774.56**	**27.50**	**1802.07**	**0.00**	**37.0**	**21.0**	**58.1**	**9.5**	**0.0**	**0.0**	**0.0**	**0.62**
Streams (miles)	13.6	0.1	13.7	1.8	**12.80**	**0.00**	**12.80**	**0.00**	**0.8**	**0.1**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Note: Reporting year conservation and restoration highlighted in green					Purchased: 9/17/2015 Conservation Easement: 9/17/2015 Land Cover Revisions: 2/21/2019 Restoration Revisions: N/A Existing Easements: Various; documented in MMP				Purchased: 8/29/2017 Conservation Easement: N/A Land Cover Revisions: 2/21/2019 Restoration Revisions: 2/21/2019 Riparian Restoration (Pt. Blue, 2017, 2018) Existing Easements: Caltrans Mitigation Area (21 acres) Annual grass restoration (3.2 acres) and oak planting (3.0) fulfill Caltrans 100 oaks requirement				Purchased: N/A Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: 2/21/2019 Pond and Wetland Restoration (HTH, 2016)			

Table 9b. Land Cover Acquisition and Restoration by Site

	Joseph D. Grant County Park			
Land Cover Type	Protection	Existing Easements	Total Protection + Easement	Restoration + Creation
California Annual Grassland				
Serpentine Bunchgrass Grassland				
Serpentine Rock Outcrop/ Barrens				
Serpentine Seep				
Rock Outcrop				
Northern Mixed Chaparral / Chamise Chaparral				
Mixed Serpentine Chaparral				
Northern Coastal Scrub / Diablan Sage Scrub				
Valley Oak Woodland				
Mixed Oak Woodland and Forest				
Blue Oak Woodland				
Coast Live Oak Forest and Woodland				
Foothill Pine—Oak Woodland				
Mixed Evergreen Forest				
Willow Riparian Forest and Scrub and Mixed Riparian Forest and Woodland				1.64
Central California Sycamore Alluvial Woodland				
Redwood Forest				
Coastal and Valley Freshwater Marsh (Perennial Wetland)				0.15
Seasonal Wetland				3.72
Pond				
Subtotal (acres)	**0.0**	**0.0**	**0.0**	**5.51**
Streams (miles)				1.83
Land Cover Types without Acquisition, Restoration, or Creation Requirements				
Coyote brush scrub				
Ponderosa Pine Woodland				
Knobcone Pine Woodland				
Reservoir				
Orchard				
Vineyard				
Agriculture developed / covered agriculture				
Grain, row-crop, hay and pasture, disked/short-term fallowed				
Urban-suburban				
Rural - residential				
Barren				
Landfill				
Golf courses / urban parks				
Ornamental woodland				
Subtotal	**0.0**	**0.0**	**0.0**	**0.0**
TOTAL	**0.0**	**0.0**	**0.0**	**5.51**
Streams (miles)	**0.0**	**0.0**	**0.0**	**1.8**
Note: Reporting year conservation and restoration highlighted in green	Purchased: N/A Conservation Easement: N/A Land Cover Revisions: N/A Restoration Revisions: 2/21/2019 San Felipe Creek (HRS, 2018)			

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 Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Open Space	Total
Bay Checkerspot Butterfly														
Primary Habitat	3,800	754	4,554					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	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%

	Modeled Habitat Requirements (acres)			Reporting Period (acres)			Cumulative (acres)				Percent Complete (%)		
	Protection	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Open Space	Total
San Joaquin Kit Fox														
Secondary Habitat	4,000	-	4,000					0.0	2.2	0.0	2.2	0%	-	0%
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 10b. Land Acquisition Contribution to Modeled Habitat Requirements by Site

	Land Acquisition, Conservation Easement or Management Area							
	Culmative (acres)				Coyote Ridge Open Space Preserve			
Modeled Habitat	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total
Bay Checkerspot Butterfly								
Primary Habitat	1329.2	19.8	0.0	1349.0	1329.2	19.8	-	1349.0
California Tiger Salamander								
Breeding Habitat	2.0	0.0	0.0	2.0	1.9	-		1.9
Non-breeding Habitat	1809.5	48.5	0.0	1858.0	1772.6	27.5	-	1800.1
Total	1811.5	48.5	0.0	1860.0	1774.5	27.5	0.0	1802.0
California Red-Legged Frog								
Primary Habitat	55.1	19.0	0.0	74.1	18.1	0.2	-	18.3
Secondary Habitat	1754.6	29.5	0.0	1784.0	1754.6	27.3	-	1781.9
Total	1809.6	48.5	0.0	1858.1	1772.6	27.5	0.0	1800.1
Foothill Yellow-Legged Frog (length in miles)								
Primary Habitat	0.4	0.1	0.0	0.5	0.3	0.0	-	0.3
Secondary Habitat	3.1	0.0	0.0	3.1	2.8	0.0	-	2.8
Total	3.5	0.1	0.0	3.6	3.1	0.0	0.0	3.1
Western Pond Turtle								
Primary Habitat	520.5	8.0	0.0	528.5	496.7	2.5	-	499.2
Secondary Habitat	1251.7	38.9	0.0	1290.5	1238.4	23.4	-	1261.8
Total	1772.1	46.9	0.0	1819.1	1735.1	25.9	0.0	1761.0
Western Burrowing Owl								
Overwintering Habitat	1512.1	29.2	0.0	1541.3	1512.1	27.1	-	1539.2
Potential Nesting Habitat	316.8	6.4	0.0	323.2	258.3	6.4	-	264.7
Occupied Nesting Habitat	861.9	0.0	0.0	861.9				
Subtotal potential and occupied nesting	1178.7	6.4	0.0	1185.2	258.3	6.4	0.0	264.7
Total	2690.8	35.7	0.0	2726.5	1770.4	33.5	0.0	1803.9
Tricolored Blackbird								
Primary Habitat	39.6	19.0	0.0	58.6	2.6	0.2	-	2.8
Secondary Habitat	1609.5	29.3	0.0	1638.8	1609.5	27.1	-	1636.6
Total	1649.1	48.3	0.0	1697.4	1612.1	27.3	0.0	1639.4
Least Bell's Vireo								
Primary Habitat	36.9	18.8	0.0	55.7	-	-	-	0.0
San Joaquin Kit Fox								
Secondary Habitat	0.0	2.2	0.0	2.2	-	-	-	0.0
Secondary Habitat (Low Use)	0.0	0.0	0.0	0.0	-	-	-	0.0
Total	0.0	2.2	0.0	2.2	-	-	-	0.0
Mt. Hamilton Thistle								
Primary Habitat	68.6	0.2	0.0	68.9	68.6	0.2	-	68.9
Fragrant Fritillary								
Primary Habitat	1318.3	18.0	0.0	1336.3	1318.3	18.0	-	1336.3
Secondary Habitat	363.5	8.4	0.0	372.0	363.5	6.3	-	369.8
Total	1681.9	26.4	0.0	1708.3	1681.9	24.2	0.0	1706.1
Loma Prieta Hoita								
Primary Habitat	108.7	0.2	0.0	109.0	108.7	0.2	-	109.0
Secondary Habitat	43.2	0.0	0.0	43.2	43.2	-		43.2
Total	151.9	0.2	0.0	152.2	151.9	0.2	0.0	152.2
Smooth Lessingia								
Primary Habitat	1349.0	20.7	0.0	1369.7	1349.0	20.7	-	1369.7
Metcalf Canyon Jewelflower								
Primary Habitat	984.2	4.6	0.0	988.8	984.2	4.6	-	988.8
Most Beautiful Jewelflower								
Primary Habitat	1392.2	20.7	0.0	1412.9	1392.2	20.7	-	1412.9
					Purchased:	N/A		
					Conservation Easement:	9/17/2015		
					Species habitat revisions:	2/22/2019		

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

	Pacheco Creek Reserve				Regional Waste Water Facility (BUOW only)			
Modeled Habitat	Protection	Existing Easement	Existing Open Space	Total	Protection	Existing Easement	Existing Open Space	Total
Bay Checkerspot Butterfly								
Primary Habitat				0.0				
California Tiger Salamander								
Breeding Habitat	0.2			0.2				
Non-breeding Habitat	36.9	21.0		57.9				
Total	37.0	21.0	0.0	58.0	0.0	0.0	0.0	0.0
California Red-Legged Frog								
Primary Habitat	37.0	18.8		55.8				
Secondary Habitat		2.2		2.2				
Total	37.0	21.0	0.0	58.0	0.0	0.0	0.0	0.0
Foothill Yellow-Legged Frog (length in miles)								
Primary Habitat	0.1	0.1		0.2				
Secondary Habitat	0.3			0.3				
Total	0.4	0.1	0.0	0.5	0.0	0.0	0.0	0.0
Western Pond Turtle								
Primary Habitat	23.8	5.5		29.3				
Secondary Habitat	13.2	15.5		28.7				
Total	37.0	21.0	0.0	58.0	0.0	0.0	0.0	0.0
Western Burrowing Owl								
Overwintering Habitat		2.2		2.2				0.0
Potential Nesting Habitat				0.0				0.0
Occupied Nesting Habitat					201.5			201.5
Subtotal potential and occupied nesting	0.0	0.0	0.0	0.0	201.5	0.0	0.0	201.5
Total	0.0	2.2	0.0	2.2	201.5	0.0	0.0	201.5
Tricolored Blackbird								
Primary Habitat	37.0	18.8		55.8				
Secondary Habitat		2.2		2.2				
Total	37.0	21.0	0.0	58.0	0.0	0.0	0.0	0.0
Least Bell's Vireo								
Primary Habitat	36.9	18.8		55.7				
San Joaquin Kit Fox								
Secondary Habitat		2.2		2.2				
Secondary Habitat (Low Use)				0.0				
Total	0.0	2.2	0.0	2.2	0.0	0.0	0.0	0.0
Mt. Hamilton Thistle								
Primary Habitat				0.0				
Fragrant Fritillary								
Primary Habitat				0.0				
Secondary Habitat		2.2		2.2				
Total	0.0	2.2	0.0	2.2	0.0	0.0	0.0	0.0
Loma Prieta Hoita								
Primary Habitat				0.0				
Secondary Habitat				0.0				
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smooth Lessingia								
Primary Habitat				0.0				
Metcalf Canyon Jewelflower								
Primary Habitat				0.0				
Most Beautiful Jewelflower								
Primary Habitat				0.0				
	Purchased: 8/29/2017 Conservation Easement: N/A Species habitat revisions: 2/22/2019				Management Agreement (5-year)			

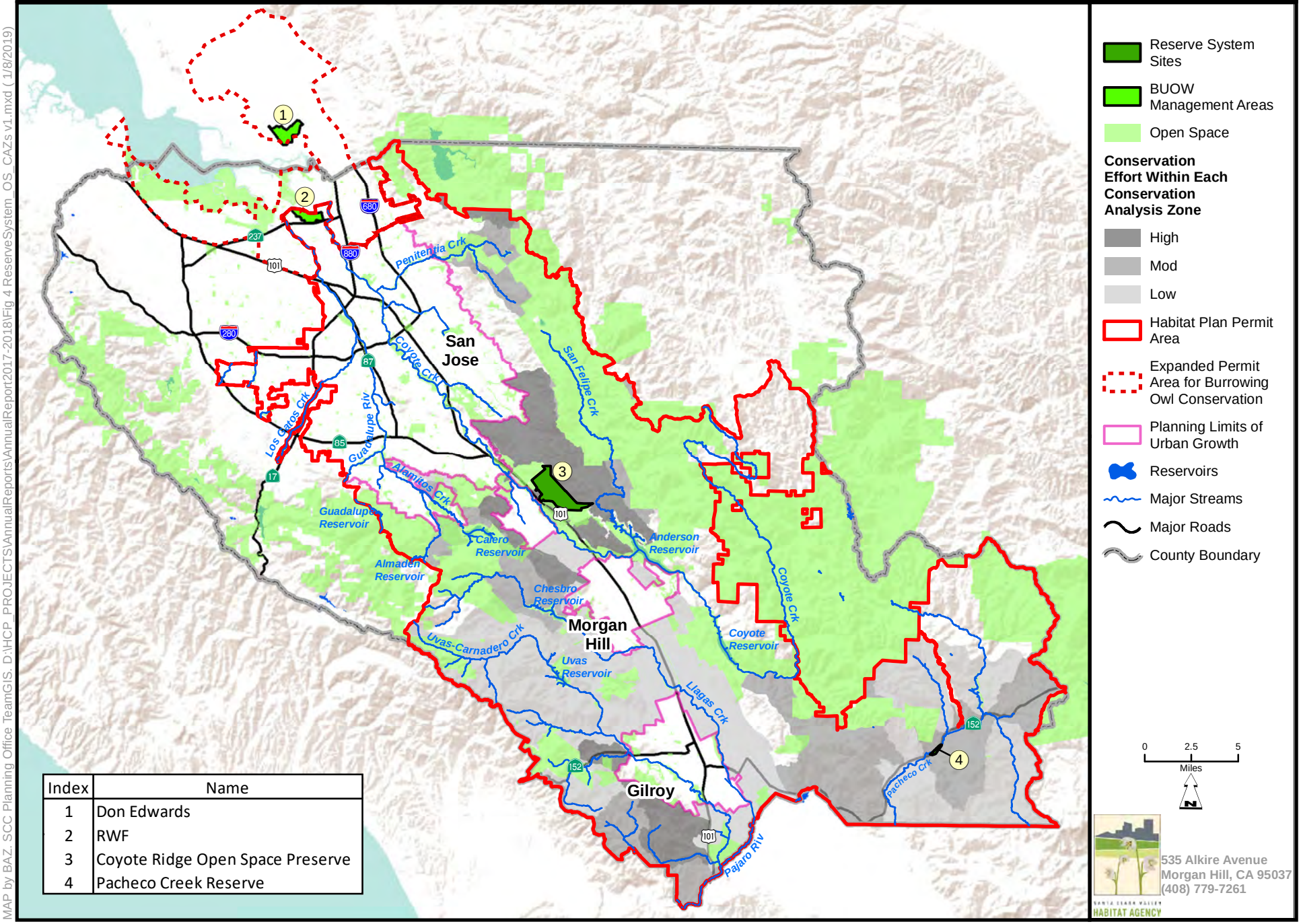
Table 10b. Land Acquisition Contribution to Modeled Habitat Requirements by Site

	Don Edwards (BUOW only)			
Modeled Habitat	Protection	Existing Easement	Existing Open Space	Total
Bay Checkerspot Butterfly				
Primary Habitat				
California Tiger Salamander				
Breeding Habitat				
Non-breeding Habitat				
Total	0.0	0.0	0.0	0.0
California Red-Legged Frog				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Foothill Yellow-Legged Frog (length in miles)				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Western Pond Turtle				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Western Burrowing Owl				
Overwintering Habitat				0.0
Potential Nesting Habitat	58.5			58.5
Occupied Nesting Habitat	660.5			660.5
Subtotal potential and occupied nesting	719.0	0.0	0.0	719.0
Total	719.0	0.0	0.0	719.0
Tricolored Blackbird				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Least Bell's Vireo				
Primary Habitat				
San Joaquin Kit Fox				
Secondary Habitat				
Secondary Habitat (Low Use)				
Total	0.0	0.0	0.0	0.0
Mt. Hamilton Thistle				
Primary Habitat				
Fragrant Fritillary				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Loma Prieta Hoita				
Primary Habitat				
Secondary Habitat				
Total	0.0	0.0	0.0	0.0
Smooth Lessingia				
Primary Habitat				
Metcalf Canyon Jewelflower				
Primary Habitat				
Most Beautiful Jewelflower				
Primary Habitat				
	Management Agreement (5-year)			

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	
Subtotal	*5,905*	*2,300*		0	
Coyote-4	9,146	4,200		322.9	8%
Subtotal	*9,146*	*4,200*		*322.9*	*2%*
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	
Subtotal	*38,043*	*6,600*		*0*	
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	-
Subtotal	*49,190*	*2,400*		*64.5*	*3%*
Coyote 2	4,954	900		0	
Pacheco 8	11,706	3,800		0	
Subtotal	*21,697*	*5,500*		0	
Total	**123,981**	**21,000**		**387.4**	**2%**

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)
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

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



Index	Name
1	Don Edwards
2	RWF
3	Coyote Ridge Open Space Preserve
4	Pacheco Creek Reserve

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

Figure 4b. Pacheco Creek Reserve and Caltrans Mitigation Area

Pacheco Creek Reserve

Caltrans Mitigation Area

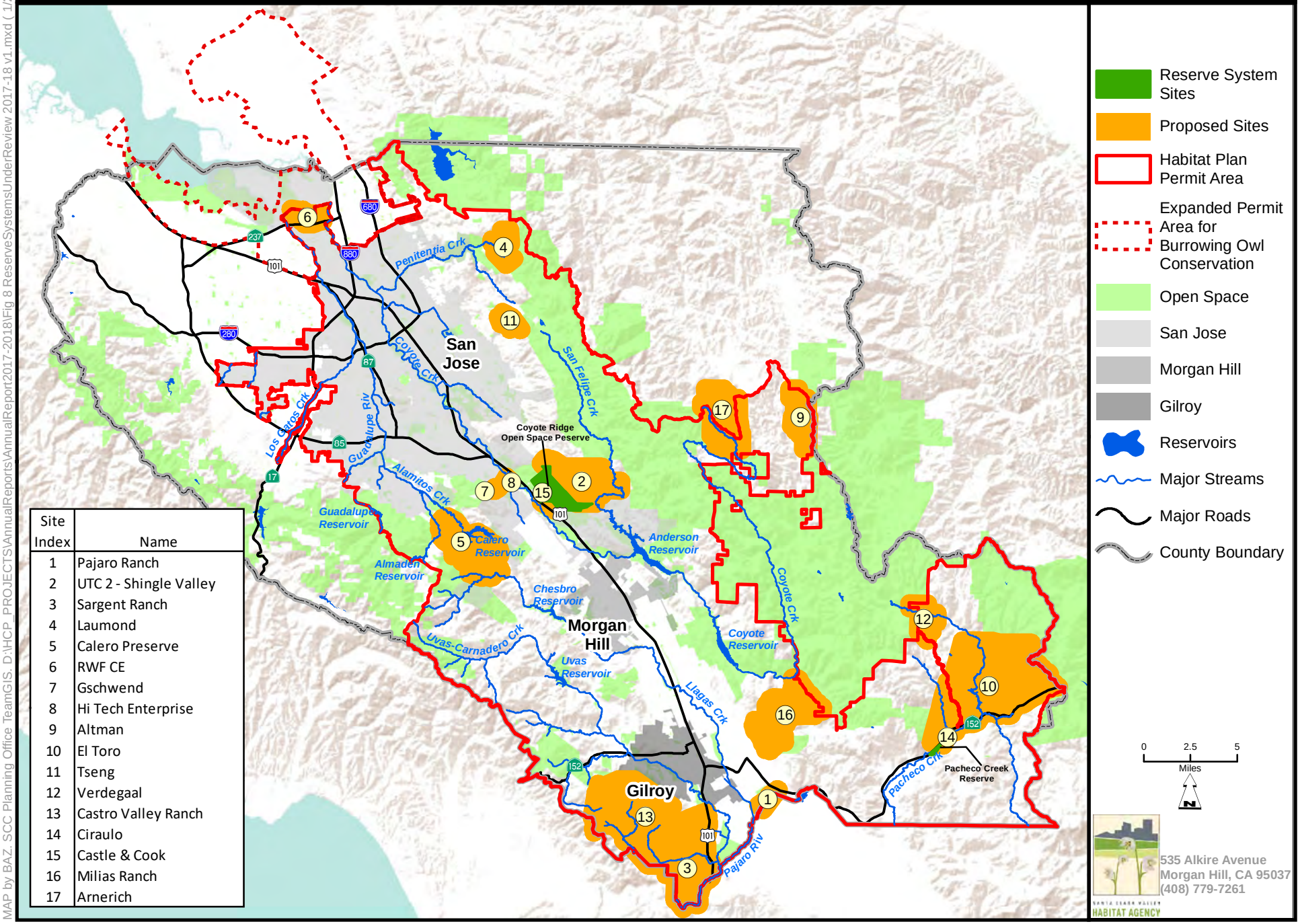
0 250 500
Feet

N

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

HABITAT AGENCY

Figure 5. Reserve System Sites Under Review



Site Index	Name
1	Pajaro Ranch
2	UTC 2 - Shingle Valley
3	Sargent Ranch
4	Laumond
5	Calero Preserve
6	RWF CE
7	Gschwend
8	Hi Tech Enterprise
9	Altman
10	El Toro
11	Tseng
12	Verdegaal
13	Castro Valley Ranch
14	Ciraulo
15	Castle & Cook
16	Milias Ranch
17	Arnerich

MAP by BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2017-2018\Fig 8 ReserveSystemsUnderReview 2017-18 v1.mxd (1/22/2019)

Chapter 4
Habitat Restoration and Creation

Five restoration and creation projects were implemented and two projects are in the planning phase through the reporting year (**Figure 6**). Projects restored nearly 5 acres of riparian woodlands, 4.5 acres of perennial and seasonal wetlands and ponds, and 1.83 miles of streams. They benefitted 5 of 18 covered species—California red-legged frog, California tiger salamander, western pond turtle, Mount Hamilton thistle (*Cirsium fontinale* var. *campylon*), and Coyote ceanothus. One project improved a regional connection between the Diablo Range and Santa Cruz Mountains. Restoration projects span the Alamitos, Coyote, Pacheco, and Pajaro Watersheds.

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.

Restoration and Creation Projects

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**

7a and **Figure 7b**). Calero County Park is located in the eastern foothills of the Santa Cruz Mountains in the Alamitos 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 13**). Water conveyance systems for cattle were installed to ensure sufficient year-round water for the park's pastures.

Project Description

The project focused on improving aquatic natural communities, improving covered species habitat, and installing water conveyance infrastructure for cattle at a pond (**Figure 7a**) and wetland sites (**Figure 7b**). 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.

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 calendar year 2018, the following actions were completed.

- Controlled weeds, including Himalayan blackberry (*Rubus armeniacus*), via mowing and string trimming (May 4).
- Removed purple star-thistle (*Centaurea calcitrapa*) by hand (May 30).
- Removed yellow star-thistle (*Centaurea solstitialis*) by hand, mowed Himalayan blackberry, mustards (*Brassica* sp.) and Harding grass (*Phalaris aquatica*), and other nonnative species (June 13).
- Removed purple star-thistle and yellow star-thistle by hand (July 12).
- Diverted seep inflow at pond mitigation site to the storage tank to completely dewater pond; removed sediment from springbox, and removed purple star-thistle and yellow star thistle by hand from around troughs (September 12).
- Removed purple star-thistle and yellow star-thistle by hand (October 3).
- Dispatched goldfish (*Carassius* sp.) and Louisiana red swamp crayfish (*Procambarus clarkii*) from the troughs at the pond mitigation site and bullfrogs (*Lithobates catesbeianus*) from the wetland mitigation site during temporary draining for predator control on October 16.
- Removed sediment from springbox and logjams (November 6).

Monitoring Results

Year 2 monitoring of the Calero Restoration Project occurred in 2018 and indicated that the pond and wetland mitigation sites are fulfilling the project's habitat restoration and establishment objectives. Year 2 monitoring showed positive trends in plant populations and vegetative cover, and stable special-status wildlife populations. Wetland conditions were observed to be establishing quickly in the target wetland areas, and wildlife were seen using wetland and aquatic habitats at the pond and wetland mitigation sites. All Year 2 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. Ecological performance standards and Year 2 monitoring results are summarized in **Table 14a** and in the following list.

- **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, to create suitable California red-legged frog habitat. The maximum water depth at the pond mitigation site fell below 2 feet on July 12, 2018. Water levels drew down at a consistent rate from March through June and then drew down at an increased rate from June through August 26, 2018, when the pond was observed to be completely dry. However, 2017–2018 was a dry water year with well below average precipitation. Therefore, the performance standard was not applicable in Year 2.
- **Sedimentation and Geomorphic Stability.** Minimal sedimentation (~0.1 feet) was visually observed at the pond mitigation site. These observations will be confirmed in Year 3 with cross-section surveys. Overall, these observations demonstrate that the pond and wetland mitigation sites continued to show minimal sedimentation and are geomorphically stable.
- **California Red-legged Frog/California Tiger Salamander Surveys**. California tiger salamander demonstrated successful breeding and the western pond turtle continued to occur at the pond mitigation site. California red-legged frog were not observed during Year 2.

  The performance standard for the California red-legged frog is for successful breeding at the pond site in at least 1 of the first 5 monitoring years. The California red-legged frog was not observed in the pond or wetland sites; although this performance standard was not met it was not required to be completed in Year 2 and does not require remedial actions.
- **Aquatic Predator Presence/Absence.** The abundance of aquatic predators at the pond mitigation site in Year 2 was similar to Year 1. The pond was completely dry during the September 7, 2018, predator survey, so no management activities such as pond draining were recommended.
- **Mount Hamilton Thistle Abundance**. The abundance and percent cover of Mount Hamilton thistle increased between Year 1 and Year 2. The spatial extent of the population remained similar between Years 1 and 2. The occurrence size increased from 111 individuals (2017) to 123 individuals.
- **Wetland Vegetation Percent Cover**. The average percent cover of wetland vegetation was 60.9% at the pond mitigation site and 72.1% at the wetland mitigation site. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present across both mitigation sites.
- **Invasive plant cover**. Invasive plant cover was less than 5% at each mitigation site and across the mitigation sites combined. One low density and one moderate density patch 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 late spring from the trough at the wetland mitigation site.

Adaptive Management

No adaptive management actions took place in 2018.

Management Recommendations

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

- Conduct invasive and nonnative plant species control and removal.
- Remove sediment from the springbox and logjams to optimize seep flow to the pond mitigation site.
- Evaluate 2019 survey data on aquatic predators and special-status species to determine the need for pond draining in late summer/fall 2019.

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 three years (2016–2018) 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 FY1718 reporting year, community volunteers lead by Point Blue Conservation Science (PBCS) continued plant installation in the Zone E portion of the hedgerow. Students and schools were not engaged this season. Volunteers installed plants with browse protection from deer, hare, and rodents by using deer cages above ground and gopher baskets below ground. Weed mats were also installed by volunteers to deter growth around plants. PBCS staff installed dripline irrigation for each plant after installation. Each zone was watered weekly on an automated timer system. Maintenance visits by PBCS staff typically entailed running irrigation, walking drip line and repairing leaks, and weeding.

The third annual monitoring report was received by the Habitat Agency in January 2019. The FY1718 reporting year was the final year (Year 3) to monitor plant survival in the riparian zone (Zones A and B), and the second year (Year 2) to monitor plant survival in the upland hedgerow zone. Plant installations in Zones A and B had survival rates of 5% and 20%, respectively. These survival rates are lower than those recorded during the FY1617 reporting year, which were 9% and 23%, respectively. Survival rates for plant installations within the upland hedgerow were approximately 37%. The high levels of plant mortality on the Pajaro Ranch can be attributed to a number of factors including rodent activity, herbivory, wild pig uprooting and trampling, drought, flooding, and a false chinch bug (*Nysius raphanus*) infestation (Point Blue Conservation Service 2019a).

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. The SCVWD 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 SCVWD on Coyote Ridge, in an area located north of the Anderson Dam population. The following is a summary of the project milestones in 2018, as reported by Janell Hillman of the SCVWD (Hillman 2019 pers. comm.).

The *Coyote Ceanothus Population Creation Project* on Coyote Ridge accomplished several significant goals in 2018. Remediation of the *Phytophthora* plant pathogen was successfully completed in the mitigation site, 4 years after the infestation was first documented. Remediation was completed via the use of solar ovens installed at the site, which baked contaminated soil from shady areas to a high temperature to kill the pathogen.

Annual planting using a combination of direct seeding and container material continues at the site. A total of 510 planting basins have now been installed on the site. Results of the 2017 monitoring effort indicated an overall plant survival rate of 58% for the pilot project, which is well within expectations for this type of novel introduction project. From 2 years of direct seeding, it appears that an average total percent germination of Coyote ceanothus of approximately 66% is typical. Between 98% and 99% of all direct seeded basins had at least one seed germinate (four are planted). These are excellent results as many rare plants are typically limited by seed viability or issues with successful germination from seed dormancy or other factors. For 2016 installed container stock monitored in 2017, all four test plots in the pilot project had high percentages of container stock seedlings categorized in the “good” to “excellent” categories, and a range of mortality values from 0–20% (**Figure 8**).

Seedling predation in the late summer months until the first rains come has been an issue at the site. Liquid Fence is regularly sprayed on seedlings to prevent predation, exclusion cages on young seedlings are used, and a motion camera has been set up in the plots to try to determine the type of herbivore causing predation.

Goals in 2019 include expansion of the existing fencing at the site so that the planting areas can be expanded and cattle excluded from the mitigation site. This will allow the annual plant installation to double in size to meet the project goals in a timely manner. An additional water tank may also need to be installed as the planting effort is scaled up.

All site access continues to follow strict phytosanitary procedures to avoid pathogen introduction (see Appendix A).

Pacheco Creek Riparian Planting Project

PBCS designed and finalized planting locations and project designs in coordination with the Habitat Agency for the *Pacheco Creek Riparian Planting Project*. From December 2017 to April 2018, native riparian species were planted in three planting zones along Pacheco Creek and its tributary in the Pacheco Creek Reserve. PBCS installed a total of 812 native trees (e.g., box elder [*Acer negundo*]), shrubs (e.g., California grape [*Vitis californica*], toyon [*Heteromeles artbutifolia*], California rose [*Rosa californica*]), and grasses and forbs (e.g., mugwort [*Artemisia douglasiana*], meadow barley [*Hordeum brachyantherum*], Mexican rush [*Juncus mexicanus*]), which included native plants from local nurseries and willow (*Salix* spp.), cottonwood (*Populus* spp.), 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 approximately 24 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 (**Figure 9**). For a period of 3 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 October 30, 2020.

The first annual monitoring report was received by the Habitat Agency in January 2019. 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 2019b). Replacement plantings will be informed by and planted as part of the *Pacheco Creek Stream and Riparian Restoration Project*, described below, to ensure success criteria are achieved.

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

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. 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 (Monarres 2018). Photographs of the project are included in **Figure 10a through Figure 10g**.

Management and Maintenance

The San Felipe Project was completed in November 2018. 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. The maintenance contractor will be responsible for periodic weed/exotic species treatment and removals, trash and debris removals, fence and signage maintenance, adjustments to the irrigation system, and similar site maintenance functions (Monarres 2018).

Monitoring Results

The first year of monitoring occurred outside of the FY1718 reporting period and will be reported in next year's annual report (FY1819). 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. The complete list of ecological performance standards for the wetlands rehabilitation and enhancement area and non-wetland waters (stream) and riparian buffer are shown in **Table 14b.** The San Felipe Project must also meet the following wetland re-establishment success criteria (Monarres 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.

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.

If monitoring or other information indicates the mitigation site is not progressing toward meeting its performance standards as anticipated, the Habitat Agency will notify the regulatory agencies as soon as possible. The Habitat Agency, in consultation with the regulatory agencies, will evaluate and pursue measures to address deficiencies in the mitigation site to try and bring the project into compliance with the approved performance standards. In the event performance standards still cannot be met, the performance standards may be revised in accordance with an approved adaptive management plan (Monarres 2018).

Restoration Project Planning

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. This project is scheduled for construction in FY1819. 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.

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.

Pacheco Creek Stream and Riparian Restoration Project

The Habitat Agency acquired the Pacheco Creek Reserve (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 2019 to understand the hydrologic, geomorphic, and biological processes occurring on the site, and their inter-relationships and to inform project design.

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

Ecological Performance Standard	Year 2 Success Criteria	Year 2 Monitoring Results	Standard Met in Year 2
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 water depth at the pond mitigation site fell below 2 feet on July 12, 2018. However, 2017-2018 was a very dry water year with well below average precipitation. Therefore, the performance standard was not applicable in Year 2.	**N/A**
Sedimentation and Geomorphic Stability	The pond and wetland mitigation sites and springbox-seep water collection structures will demonstrate minimal sedimentation and geomorphic stability.	Minimal sedimentation (~0.1 feet) was visually observed at the pond mitigation site. These observations will be confirmed in Year 3 with cross-section surveys. Overall, these observations 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 demonstrated successful breeding and the western pond turtle continued to occur at the pond mitigation site. California red-legged frog were not observed during Year 2.	**No**
Aquatic Predator Presence/Absence	Abundance of bullfrogs and 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 2 was similar to Year 1. The pond was completely dry during the September 7, 2018 predator survey, so no management activities such as pond draining were recommended.	**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**
Wetland Vegetation Percent Cover	25% wetland vegetation cover in planting zones; less than 50% in open water pond habitat; at least three wetland species will be present. Average percent cover of wetland vegetation will exhibit an increasing temporal trend across monitoring years at the pond and wetland mitigation sites; evaluated separately.	The average percent cover of wetland vegetation was 60.9% at the pond mitigation site and 72.1% at the wetland mitigation site. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present across both mitigation sites.	**Yes**

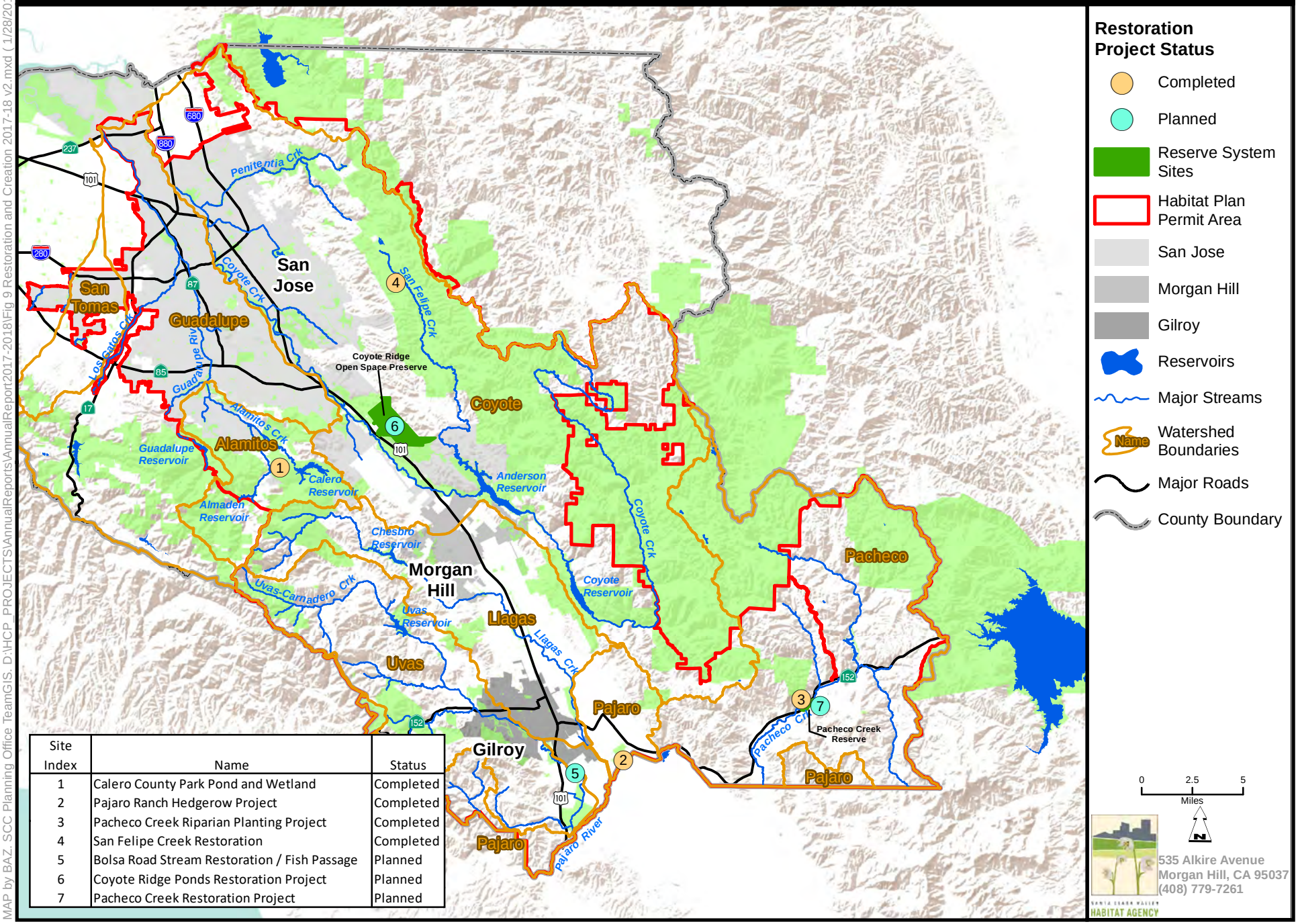
Ecological Performance Standard	Year 2 Success Criteria	Year 2 Monitoring Results	Standard Met in Year 2
Invasive Plant Cover	Less than 5%	Invasive plant cover was less than 5% at each mitigation site and across the mitigation sites combined. One low density and one moderate density patch of invasive 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**

Ecological Performance Standard	Year 1 Success Criteria	Year 2 Success Criteria	Year 3 Success Criteria	Year 4 Success Criteria	Year 5 Success Criteria	Year 6 Success Criteria	Year 7 Success Criteria	Year 8 Success Criteria	Year 9 Success Criteria	Year 10 Success Criteria
Container Plants	90% survivorship	85% survivorship	25% vegetated cover	30% vegetated cover	35% vegetated cover	40% vegetated cover	45% vegetated cover	50% vegetated cover	55% vegetated cover	60% vegetated cover
Cuttings Survivorship	70% survivorship	65% survivorship	15% vegetated cover	20% vegetated cover	25% vegetated cover	30% vegetated cover	35% vegetated cover	40% vegetated cover	45% vegetated cover	50% vegetated cover
Seeded Areas Percent Cover	50% cover	55% cover	60% cover	65% cover	70% cover	70% cover	70% cover	70% cover	70% cover	70% cover
Maximum Cover of Weed Species	20% cover	15% cover	10% cover	10% cover	10% cover	10% cover	10% cover	10% cover	10% cover	10% cover
Absolute Cover of Wetland Species (OBL or FACW)	≥50% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species	≥75% of reference absolute cover of wetland species
Relative Cover of Native Species	≥50% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses	≥75% relative cover of native grasses
Target Species Richness	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site	≥75% of reference site

Ecological Performance Standard	Year 1 Success Criteria	Year 2 Success Criteria	Year 3 Success Criteria	Year 4 Success Criteria	Year 5 Success Criteria	Year 6 Success Criteria	Year 7 Success Criteria	Year 8 Success Criteria	Year 9 Success Criteria	Year 10 Success Criteria
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	≥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	≥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	≥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	≥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
Hydrology- Inset Floodplains on San Felipe Creek	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event	Inset Floodplain inundation if peak flows exceed a 2-year event
Hydrology- Boyds Creek Alluvial Fan- Living Log Jams	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season	Flows in 2 or more channels during the winter season
Channel Form	Sufficient water to support the same grazing intensity of the Reserve lands as the existing conditions.	<1 foot of channel elevation loss	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint	<1 foot of channel elevation loss, averaged over reach and absent of significant knickpoint

Ecological Performance Standard	Year 1 Success Criteria	Year 2 Success Criteria	Year 3 Success Criteria	Year 4 Success Criteria	Year 5 Success Criteria	Year 6 Success Criteria	Year 7 Success Criteria	Year 8 Success Criteria	Year 9 Success Criteria	Year 10 Success Criteria
Corral Trail Drainage Lenses	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged	During- and post- storm: If Corral Trail is/was overtopped, postiive flow off of road maintained with no significnat erosion of road or fill prism. Dry season: pipes are not plugged

Figure 6. Completed and Planned Restoration Projects



Site Index	Name	Status
1	Calero County Park Pond and Wetland	Completed
2	Pajaro Ranch Hedgerow Project	Completed
3	Pacheco Creek Riparian Planting Project	Completed
4	San Felipe Creek Restoration	Completed
5	Bolsa Road Stream Restoration / Fish Passage	Planned
6	Coyote Ridge Ponds Restoration Project	Planned
7	Pacheco Creek Restoration Project	Planned

MAP by BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2017-2018\Fig 9 Restoration and Creation 2017-18 v2.mxd (1/28/2019)

Figure 7a. Calero County Park Pond and Wetland Restoration Project – Pond Site Representative Photographs

Year 1 Conditions at Photo Point 6 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Year 2 Conditions at Photo Point 6 during Vegetation Monitoring at the Pond Mitigation Site (July 25, 2018)

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

Year 2 Conditions at Photo Point 7a during Vegetation Monitoring at the Pond Mitigation Site (July 25, 2018)

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

Year 2 Conditions at Photo Point 9 during Vegetation Monitoring at the Pond Mitigation Site (July 25, 2018)

Photo credits: H.T. Harvey & Associates

Figure 7b. Calero County Park Pond and Wetland Restoration Project – Wetland Site Representative Photographs

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

Year 2 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (July 25, 2018))

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

Year 2 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (July 25, 2018)

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

Year 2 Conditions at Photo Point 5 during Vegetation Monitoring at the Wetland Mitigation Site (July 25, 2018)

Figure 8. Coyote Ceanothus Population Creation Project: Representative Photographs

Mature Coyote ceanothus in flower at Anderson Dam

Chaparral Edge 2016 container plant. Excellent growth in the first year (10/3/17)

Pine plot 2016 direct seeded. Multiple recruits in this basin and excellent growth in the first year (10/3/17)

Lower sage plot 2015 seedling with auger treatment. Excellent growth in the second year (10/3/17)

Upper Sage plot 2015 seedling with fertilizer treatment. Not much growth and a bit chlorotic (10/3/17)

Vole with predated seedlings in Chaparral Edge plot (7/17/17)

Photo Credits: Janell Hillman, Santa Clara Valley Water District

Figure 9. Pacheco Creek Riparian Restoration Planting Project: Representative Photographs

Student and Teachers Restoring a Watershed (STRAW) program participants lining up for supplies

STRAW program participants planting trees and shrubs

Irrigated planting area

Solar Pump irrigation system

Photomonitoring point Zone A4 (Nov. 2018)

Photomonitoring point Zone B1 (Nov. 2018)

Photo credits: Gerry Haas, Santa Clara Valley Habitat Agency and Pt. Blue

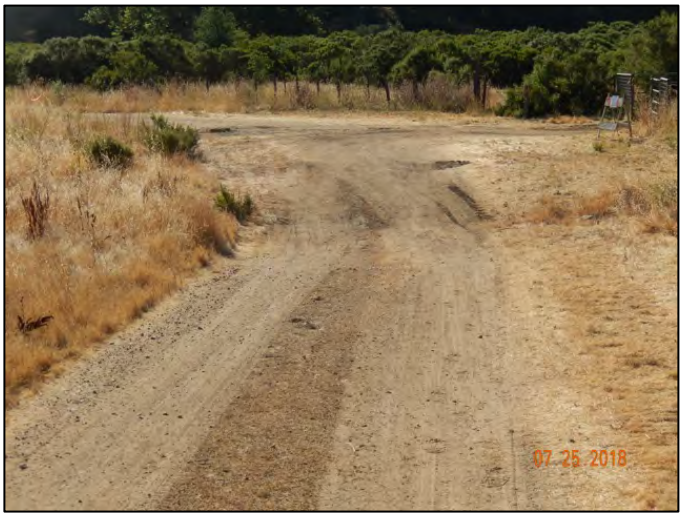
Figure 10a. San Felipe Creek Restoration Project: Representative Photographs of Road Improvements

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 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 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 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 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 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 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

Chapter 5
Western Burrowing Owl Management and Monitoring

The 2018 western burrowing owl surveys documented 52–53 breeding adult burrowing owls and 80–81 fledged young. The number of breeding season adults at the Santa Clara Regional Wastewater facility was the highest recorded, with 18 adults observed. 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, some members of the burrowing owl research team visited colleagues in British Columbia to observe captive breeding facilities to prepare for future Tier 3 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 Repor*t (Trulio et al. 2018a).

Protection of Western Burrowing Owl Habitat

Management Agreements

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 2018, nine pairs were observed, seven of which were successful, and produced a total of 23 young (Santa Clara Valley Audubon Society 2018). Average productivity at this location is 3.33 young/pair, but in 2018 productivity was lower, at 2.56 young/pair (1.28 young/adult). Six of the nine pairs and their young have been supplementally fed (Wellicome et al. 2013) throughout the breeding season. Adult and juvenile birds have been banded at this location for the past several years.

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. During 2016 and 2017, areas to the northeast along Disk Drive were developed, and as a result the adjacent foraging habitat has been drastically reduced. In 2018, observable habitat conditions were favorable. The two pairs closest to the new development along Disk Drive failed to produce fledglings; the cause for this failure is unclear.

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 2018, 5–6 adults formed 2–3 pairs and produced a total of 5–6 young. Average productivity at this location is 2.39 young/pair, but 2018 productivity was slightly down to 2.0 young/pair (1.0 young/adult). 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.

In Warm Springs, western burrowing owls nest in upland areas. They have been repeatedly observed foraging in the vernal pool areas during the summer once the ponds have dried. Since the initiation of the management agreement, western burrowing owl management has focused on conducting vegetation management in the immediate area around occupied burrows across all of Warm Springs. The goal is to maintain vegetation height at 6 inches or shorter during the breeding season. In addition, vegetative islands and debris piles to increase the prey base for burrowing owls were installed. In order to reduce predation pressure and enhance survival of burrowing owls at Warm Springs, predator management activities were implemented by the U.S. Department of Agriculture Animal and Plant Health Inspection Service across the entire 719 acres.

Recommendations for vegetation management include spraying herbicide in February to combat weeds, mowing in the spring, and increased staffing. Other management recommendations include reducing the height of artificial rock piles to avoid attracting predators and fixing/increasing the use of artificial burrows in the management area.

Progress to Date

Number of Adults

- Decrease in the number of adults during the breeding season between previous reporting year (74 individuals) to current reporting year (52–53 individuals) (**Table 15a and Table 15b**).

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 FY1718 is Year 5 of Plan implementation, the Habitat Agency needs to protect or manage 530 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 5 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 FY1718 is Year 5 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.

Monitoring Actions

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.

2018 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.

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.

Burrowing Owl Survey Results

As in previous years, breeding burrowing owls were observed at five locations in the South Bay area in 2018: Shoreline at Mountain View, San José-Santa Clara Regional Wastewater Facility, Don Edwards San Francisco Bay National Wildlife Refuge – Warm Springs Unit, NASA Ames Research Center at Moffett Field, and the San José International Airport. Additionally, fresh burrowing owl sign was detected at one historical burrow in the seasonal wetlands adjacent to Sunnyvale Baylands Park, but no owls were observed there this year. In total, surveyors observed 52–53 adults during the 2018 breeding season, forming 24–25 pairs, 2 of which were unsuccessful, and at 1–2 nests the nesting success was undetermined (**Table 15a** and **Table 15b**). Pairs produced a total of 80–81 young, resulting in a reproductive rate of 3.24 young/pair. In comparison, in 2017, 74 adults produced 64 young (1.94 young/pair), and in 2016, 61 adults produced 108 young (3.48 young/pair).

No new breeding season locations were identified in 2018, though some single owls were observed very early in the breeding season (March) but did not initiate nests. **Table 15a** and **Table 15b** show 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 2018, the fifth year of Habitat Plan implementation, there should be 85 adult owls present during the breeding season. The 52–53 adult owls observed was well below the modeled estimate. In 2014 the population exceeded expectations, and in 2015 the population met expectations, but in 2016, 2017, and 2018 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.

Additional Research Studies

County-Wide Habitat Assessment

The Habitat Agency conducted a GIS-based Santa Clara County-wide burrowing owl habitat assessment of public lands in 2017 (Menzel et al. 2017). This first phase determined the distribution of high-quality burrowing owl habitat. The second phase, which occurred in 2018, included surveys of 20–30 sample sites on the lands identified from phase one. The sample sites were surveyed for owls once in the winter and once during the breeding season. No new breeding locations were discovered as the result of this effort, but one new wintering site was located at Harvey Bear County Park. The lands identified from this effort may be targeted for future management or enhancement actions to either attract burrowing owls naturally or to support them if/when they are relocated from other nesting locations. This study can also be used to identify sites appropriate for reintroducing relocated owls, and potentially initiating new breeding sites.

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 continued in 2018 and will have a 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. Results of the statistical analysis based on 2017 observations did not show a difference for any of the measured factors between fed and unfed nests. However, 2017 was a poor reproductive year for all populations in the region and additional years of data are needed to assess the benefits of supplemental feeding.

In 2018 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. Though the analysis is not complete, and another year of the study remains, and it seemed that nesting pairs were producing more young in locations where they were fed than in locations where they were not fed. All supplemental

feedings occurred at locations within the Permit Area or the Expanded Burrowing Owl Conservation Area. Preliminary results from 2018 showed a considerable difference in productivity between fed and unfed nesting burrowing owls (**Table 15a** and **Table 15b**).

Wintering Burrowing Owl Monitoring

The information on the movement and ecology of wintering western burrowing owls is quite limited. In Santa Clara County, it is well known that a number of owls are year-round residents; however, there is no systematic data on how many wintering owls come to Santa Clara County each winter, nor information on where they spend their time or where they go the next breeding season. Philip Higgins, Lynne Trulio, and Debra Chromczak (Trulio et al. 2018b) received a Local Assistance Grant to study burrowing owls from February 1, 2016, to March 1, 2018. This research was designed to fill in gaps with respect to wintering owls in Santa Clara County and adjacent southern Alameda, San Mateo, and San Benito Counties. This study investigated whether burrowing owls in the Habitat Plan area observed during the wintering, non-breeding season (September–January) were remaining to nest at their original locations, moving to other locations in north Santa Clara County where most owls breed, or moving outside of the area at the start of the breeding season. To make this determination, burrowing owls were located and banded in the 2016–2017 and 2017–2018 winter seasons, and the banding sites were resurveyed in the summers of 2016 and 2017 to relocate as many banded owls as possible.

During the summer 2016 season, owls were only observed at recent breeding locations. Forty-nine owls were observed at recent breeding locations, and no birds were found at the winter locations in the foothills. In the 2016–2017 winter season, 83 owls were observed at the recent breeding locations and 41 at foothill sites in the Diablo and Santa Cruz ranges. During the summer 2017 season, 66 owls were observed at recent breeding locations and none at the winter foothill locations.

During the winter 2017-2019, owls were observed at recent breeding and foothill sites. Ninety-one owls were observed at the recent breeding locations and 23 at foothill sites. During winter surveys and banding, none of the owls found at foothill sites had been previously banded during any previous breeding season in the study area. No owls banded at foothill sites in any previous winter moved to breeding sites in northern Santa Clara County.

The Habitat Plan area supports four general groups of burrowing owls: (1) year-round residents at recent breeding locations, (2) winter migratory owls at foothills sites, (3) winter migratory owls at recent breeding locations, (4) summer migratory owls at recent breeding locations. Birds present at recent breeding locations during the breeding season either reside at these locations year-round or migrate outside the Plan area in the winter. They have not been documented to overwinter at foothill sites. Similarly, owls that overwinter at foothill sites do not stay to breed in the Plan Area.

These findings illustrate that the Habitat Plan area attracts numerous winter migratory owls that then leave the region in the spring to breed elsewhere. All the owls banded or observed in winter at foothill sites disappeared from those sites—and the study area—before nesting during the next breeding season, as did some owls found in winter at recent breeding sites. Thus, there is separation in time and space between the wintering foothill owls and breeding birds at recent nesting sites. Foothill areas are very important habitat for winter birds and the recent breeding sites are critical, not only for reproduction, but also for year-round resident owls and winter migrants (Trulio et al. 2018b).

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 will facilitate management practices by allowing for a better understanding of owl nest location preference, mate selection, nesting success, and seasonal movement. During the 2016 and 2017 breeding seasons nest monitoring, trapping and banding occurred 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.

Results from the 2018 effort at Warm Springs include observations of 5–6 adults, which formed 2–3 pairs and produced a total of 5–6 young. Average productivity at this location is 2.39 young/pair, but this year productivity was slightly down to 2.0 young/pair (1.0 young/adult). Since 2015, Debra Chromczak has banded adult and juvenile owls at this location.

Results from the 2018 efforts at the SJ-SCRWF include observations of 18 adults and 22 chicks. No new adults were banded at the site, all adults captured had been previously banded. The average distance moved[22] based on these observations was 0.12 mile, much less than in previous years. Sixteen 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.

Tier 3 Recovery Actions

During this fifth annual breeding season survey, the number of owls decreased to a total of 52–53 adults in comparison to 74 adults in 2017. Although the total number of adult owls was down, the average number of offspring per pair increased from 1.94 in 2017 to 3.24 juveniles per pair in 2018. This increase is partly attributed to supplemental feeding (Trulio et at 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 29 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, Trulio et al 2019).

[22] This is the average distance moved year-to-year between nest locations.

In addition to a low number of individuals, burrowing owls in the South Bay were limited to only five breeding locations. 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 (Trulio et al 2019).

The Habitat Agency spent time investigating the possibility of, and preparing for, implementation of Tier 3 Recovery Actions, in addition to supplemental feeding. Researchers made a trip to central British Columbia where the Burrowing Owl Conservation Society of British Columbia has been implementing a captive breeding program for burrowing owls for more than two decades. Researchers toured two captive breeding facilities, in Penticton and Kamloops, and talked with researchers about techniques and methodologies. Researchers were joined by veterinary technicians from the Peninsula Humane Society (PHS). When the Habitat Agency initiates captive overwintering activities in 2019, owls will be held at PHS. Habitat Agency researchers met several times with PHS staff and toured facilities, planning for projects in 2019. Habitat Agency researchers also drafted proposals for both supplemental feeding and captive overwintering of burrowing owls and coordinated with the USFWS and CDFW on the approval and implementation of those plans.

Table 15a. Breeding Burrowing Owl Survey Observation Results - Reporting Period

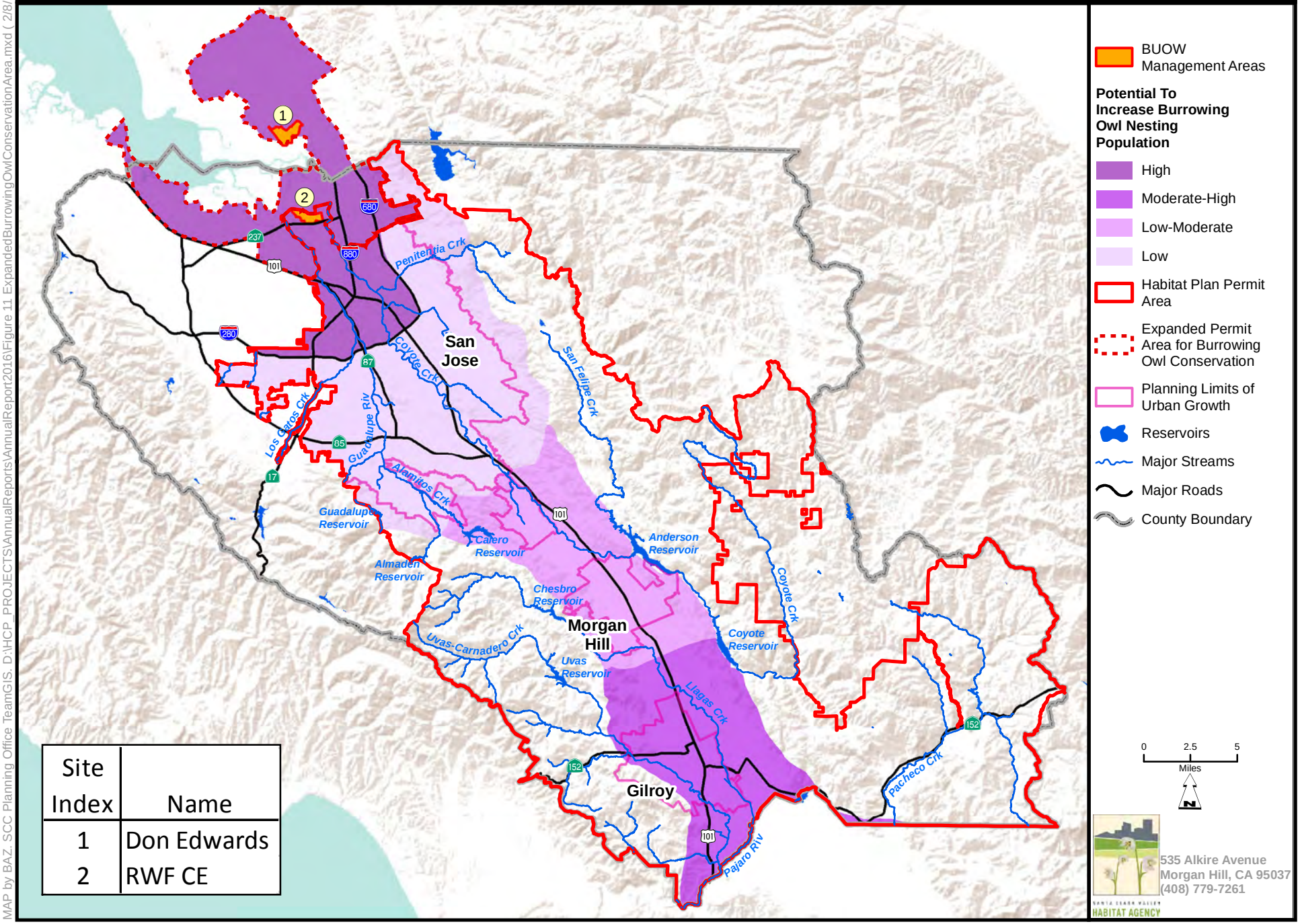
Site Name/Location	Number of Adults Present During the Breeding Season 2018	Number of Adults Required to Meet Population Growth Target 2018	Number of Young Fledged in 2018	Number of Pairs 2018	Number of Successful Pairs 2018	Acreage
Within Permit Area						
San José International Airport	10	-	8	5	3	331
San José-Santa Clara Regional Wastewater Facility	18	-	23	9	7	492
Permit Area Subtotal	**28**	-	**31**	**14**	**10**	**823**
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View	4	-	14	2	2	750
Don Edwards National Wildlife Refuge - Warm Springs Unit	5-6	-	5-6	2-3	1-2	719
NASA Ames Moffett Airfield	15	-	30	6	6	700
Other Locations	0	-	0	0	0	70
Expanded Area Subtotal	**24-25**		**49-50**	**10-11**	**9-10**	**2,239**
Total Breeding Season Adults	**52-53**	**85**	**80-81**	**24-25**	**19-20**	**3,062**

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
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
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
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
Within Expanded Burrowing Owl Conservation Area						
Shoreline at Mountain View						
2014	8	-	5			750
2015	6	-	3	3	0	750
2016	4	-	4	2	1	750
2017	5	-	0	2	1	750
2018	4	-	14	2	2	750
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
NASA Ames Moffett Airfield						
2014	24	-	20			700

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	17	-	11	8	3	700
2016	12	-	12	6	3	700
2017	13	-	13	6	4	700
2018	15	-	30	6	6	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
Expanded Area Subtotal						
2014	53	-	30			2,239
2015	34	-	27	14	7	2,239
2016	25	-	29	12	6	2,239
2017	32	-	21	13	7	2,239
2018	52-53	-	80-81	24-25	19-20	2,239

[a] These metrics were not tracked in 2014

Figure 11. Expanded Burrowing Owl Conservation Area with Management Areas



Site Index	Name
1	Don Edwards
2	RWF CE

MAP by BAZ. SCC Planning Office TeamGIS. D:\HCP_PROJECTS\AnnualReports\AnnualReport2016\Figure 11 ExpandedBurrowingOwlConservationArea.mxd (2/8/2017)

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 Habitat Agency completed the *Coyote Ridge Reserve Management and Monitoring Plan (Final Management and Monitoring Plan)* for the Coyote Ridge Open Space Preserve (CROSP). The Management and Monitoring Plan includes conceptual ecological models for natural communities and covered species that occur on CROSP. In addition, the Santa Clara Valley Open Space Authority performed several management actions on CROSP including invasive species control, grazing, management planning, 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 number of maintenance activities, such as installing solar powered well pumps, small fencing repairs, signage, weed control, and trash removal. The Habitat Agency began the Pacheco Creek restoration planning process to improve creek conditions on the Pacheco Creek Reserve.

Management Planning Activities

The Habitat Agency completed the Management and Monitoring Plan, which provides a detailed prescription for the long-term management and monitoring of the Coyote Ridge Open Space Preserve. The Habitat Plan requires the development of reserve management and monitoring plans. Each plan will 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 Management and Monitoring Plan is based on the *Management and Monitoring Plan for the Coyote Ridge Open Space Preserve*, prepared by Jodi McGraw for the Santa Clara Valley Open Space Authority. However, the plan goes beyond the Santa Clara Valley Open Space Authority document to address issues specifically required by the Habitat Plan as well as more robust monitoring requirements that are tied to the Habitat Plan's biological goals and objectives.

The monitoring portion of the Management and Monitoring Plan assesses the status of Habitat Plan covered species and natural communities and tracks the progress and effectiveness of management activities over time. Management actions will be informed by monitoring and will allow adaptive

management actions to be implemented more effectively. The Final Management and Monitoring Plan is focused solely on the Coyote Ridge Open Space Preserve, although the Habitat Agency may expand it if adjacent lands are acquired in the future.

Conceptual Ecological Models

Conceptual ecological models for natural communities and covered species occurring on, or with modeled habitat on, the Coyote Ridge Open Space Preserve were included as part of the Management and Monitoring Plan. Conceptual ecological models identify cause-and-effect relationships between ecological processes and management actions. These "living" models serve as a framework for management decisions, and they function as reference points for the Habitat Agency's understanding of how management actions affect the natural communities and covered species in the Reserve System. A critical task in the development of these models is the identification of uncertainties related to ecosystem management and threats or stressors to natural communities and covered species.

The conceptual ecological models contain management actions or objectives that are specific to the Coyote Ridge Open Space Preserve but are still expected to apply to natural communities or species throughout the Reserve System. Accordingly, many of the reserve-specific management actions and objectives developed for the Coyote Ridge Open Space Preserve will also likely be applied—with adjustments based on site-specific conditions and adaptive management—to other reserves with the same natural communities and species habitat.

Management Implementation

Coyote Ridge Open Space Preserve

Management Activities

The following management activities were conducted on the Coyote Ridge Reserve by the Santa Clara Valley Open Space Authority (Galli Basson 2018 pers. comm.).

- Treated several invasive plant species (purple starthistle (*Centaurea calcitrapa*), yellow starthistle (*Centaurea solstitialis*), black mustard (*Brassica nigra*), and milk thistle (*Silybum marianum*)).
- Performed basic road improvements by adding rock along key sections to facilitate vehicle traffic along the ridge road.
- Completed a reserve-wide cultural resources survey.
- Achieved conservation grazing RDM targets to support Bay checkerspot butterfly host plants.
- Completed a boundary survey between the Coyote Ridge Reserve and adjacent VTA property to prepare for realigning the fence to more closely match property boundaries.

- Collected and preserved covered plant species seed for seed banking at Rancho Santa Ana Botanical Garden.[23] Seeds were collected from all of the protected occurrences documented in the baseline surveys (**Table 17b**) except for Metcalf Canyon Jewelflower, most beautiful jewelflower, and Loma Prieta hoita.

    - **Santa Clara Valley dudleya**: Seeds were collected from a total of 450 plants across the two occurrences documented in the baseline surveys. To maximize genetic diversity, seeds were collected at five sublocations from a minimum of 50 plants dispersed through the geographic area of the largest occurrence, with a range of plant sizes selected. To minimize impacts on the wild population, well under 5% was collected.

    - **Mount Hamilton thistle:** Seeds were collected from a total of 461 plants across the 13 occurrences documented in the baseline surveys. To maximize genetic diversity, seeds were collected at each occurrence, at two times if possible. To minimize impacts on the wild population, seed were collected from less than 5% plants. An attempt was made to collect from at least 50 individuals at each occurrence while abiding by the 5% threshold. In some locations, seeds from less than 50 individuals were collected.

    - **Smooth lessingia**: Seeds were collected from a total of 220 plants at four sublocations dispersed through the geographic area of the single occurrence, with a range of plant sizes selected.

    - **Fragrant fritillary**: Seeds were collected from the largest, northernmost occurrence in order to minimize the impact on the wild population. Seeds were collected from a total of 17 plants. The occurrences may need experimental fencing in future years to exclude cattle.

  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 were collected because no reproductive plants were found.

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 2019 work plan. Progress on these will be reported on in next year's annual report.

[23] Collection and preservation of seed is a Habitat Plan requirement (STUDIES-12. Ensure seeds from natural occurrences in the Study Area are stored and maintained at a minimum of one Center for Plant Conservation certified botanic garden.)

Pacheco Creek Reserve

Management Activities

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

- Solar powered well pump installed on an open-air water well near the primary site access.
- Fence repair to replace barbed wire bottom strands with wildlife-friendly wires in front of the large box culvert immediately east of the primary access.
- Repair of corner post and fencing after unknown vehicle left the State Route 152 roadway and slid into the perimeter fence.
- Weed abatement of approximately 5 acres of grassland by San Jose Charter School and Conservation Corps.
- Production and installation of public sign at primary site access.
- Ongoing trash removal at site access location and throughout property.
- Released Request for Proposals for future restoration project to enhance habitat, stream health and protect infrastructure from eroding banks of creek.
- 3.2 acres of annual grassland plantings and 3.0 acres of oak planting that fulfills the oak planting requirement for Caltrans (100 oaks) within the Caltrans Conservation Easement (CE) area. These plantings do not count towards Habitat Plan requirements.

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.

- Fencing and protection of restoration planting sites.
- Removal of remnant fencing and PVC piping from failed Caltrans restoration irrigation system.
- Weed abatement within restoration plantings (trees and shrubs) within the upland areas.
- Protection of infrastructure from eroding bank of Pacheco Creek.
- Re-establishment of access road or trail across Pacheco Creek to provide the only means of legal access across creek from primary site entry to the southern half of the site.
- Replace sections of barbed wire fencing with wildlife friendly wire.
- Coordination with Bureau of Reclamation to manage large pond for control of aquatic predators.
- Invasive weed control for poison hemlock, star thistle, mustard, and other species.

Chapter 7
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 conservations 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 Coyote Ridge Open Space Preserve, Pacheco Creek Reserve, future Calero CE, and burrowing owl management areas during the reporting period. On the Coyote Ridge Open Space Preserve, monitoring included surveys for Bay checkerspot butterfly larvae, land cover mapping, serpentine grassland composition, fragrant fritillary (*Fritillaria liliacea*), Loma Prieta hoita (*Hoita strobilina*), and RDM. The surveys documented a stable Bay checkerspot butterfly population (although the population has declined in the last three years), high quality serpentine grassland, and

an increased number of both fragrant fritillary and Loma Prieta hoita individuals (but the productivity of fragrant fritillary is threatened by grazing of flowering stalks and the productivity of Loma Prieta hoita is threatened by the lack of evidence of flowering and reproduction). On the Pacheco Creek Reserve, vegetation mapping recorded seven land cover types, refining the original Habitat Plan mapping, which included only three. On the future Calero CE, monitoring included a census of the number of individuals at the Mount Hamilton thistle occurrence within the *Calero County Park Pond and Wetland Restoration Project* and incorporation of the SCVWD's covered plant survey data along the Almaden Calero Canal property that bisects the future Calero CE. The Mount Hamilton thistle occurrence increased by 12 individuals during the FY1718 reporting year, and SCVWD documented large expanses of Santa Clara Valley dudleya, smooth lessingia, and most beautiful jewelflower on their property, which are contiguous with the covered plants located on the Calero CE.

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.

Monitoring

Coyote Ridge Open Space Preserve

Creekside Center for Earth Observation (Creekside Science) collected additional baseline data and initiated status and trends monitoring in 2018 on the Coyote Ridge Open Space Preserve. Taxa included in the survey effort were Bay checkerspot butterfly (*Euphydryas editha bayensis*), fragrant fritillary, and Loma Prieta hoita. Creekside Science also updated the land cover mapping and continued to collect serpentine vegetation composition data on the Coyote Ridge Reserve. Except where otherwise stated, the following subsections summarize the *Final Coyote Ridge Open Space Preserve Baseline Surveys Report* (Creekside Center for Earth Observations 2017) and the *Final Coyote Ridge Open Space Preserve 2018 Annual Report* (Creekside Center for Earth Observations 2019).

Bay Checkerspot Butterfly Surveys

Surveys for Bay checkerspot butterfly estimated species population and distribution. The Coyote Ridge Open Space Preserve 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). 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. These additional plots are used to establish breeding occupancy and a density estimate for local areas. In 2018, 13 out of 49 plots along the ridgeline had zeros (in comparison to 6 plots in 2017). In the mid and low elevations, 5 out of 21 plots had zeros (in comparison to 8 plots in 2017).

In 2018, the total number of larvae on the Coyote Ridge Open Space Preserve decreased to approximately 62,000, with between 200,000 and 400,000 larvae across Coyote Ridge. The decrease at Coyote Ridge Open Space Preserve was smaller relative to the decrease across the population complex.

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 visit. The encounter rate was significantly highest (53 adults encountered per hour) at the North Gun Range (northernmost portion of the Coyote Ridge Open Space Preserve), while the other three transects across the Coyote Ridge Open Space Preserve had similar rates (average of 15.67 adults per hour). For regional context, the adult per hour encounter rate at the nearby Kirby Canyon Butterfly Reserve for the 2018 flight season was 2.1. The much higher adult encounter rates seen on the Coyote Ridge Open Space Preserve compared to Kirby Canyon Butterfly Reserve were echoed by the higher larval densities surveyed at Coyote Ridge Open Space Preserve.

Trends

The Coyote Ridge ridgetop population complex—extending from north of Metcalf Canyon to Anderson Dam—is the core of the Bay checkerspot butterfly distribution. The Coyote Ridge Open Space Preserve supports a high fraction of the overall population. In 2016, we estimate there were ~200,000 larvae on CROSP, which was 25–50% of the entire Bay checkerspot butterfly population on Coyote Ridge. In 2017, the total number of larvae on Coyote Ridge Open Space Preserve decreased to ~70,000, the sixth lowest since annual population monitoring began consistently in

2008. While similar declines were seen across the majority of Coyote Ridge, the number of larvae in the area north of Metcalf Road about doubled in 2017. The total number of larvae on Coyote Ridge was similar in 2016 and 2017 (~400,000 to 800,000), but the proportion on Coyote Ridge Open Space Preserve dropped to less than 20% in 2017. In 2018, there were an estimated ~62,000 larvae on Coyote Ridge Open Space Preserve (the fifth lowest since annual population monitoring began in 2008), with ~200,000 to 400,000 across Coyote Ridge. The decrease at Coyote Ridge Open Space Preserve was smaller relative to the decrease across the population complex.

Adult surveys illustrated that Bay checkerspot butterfly are found throughout the preserve. For regional context, the adult per hour encounter rate at the nearby Kirby Canyon Butterfly Reserve for the 2018 flight season was 2.1, compared with higher rates (11-53 adults/hour) on Coyote Ridge. The much higher adult encounter rates seen at Coyote Ridge compared to Kirby were echoed by the higher larval densities surveyed at Coyote Ridge.

The larvae and adult surveys illustrate some of the variability inherent in Bay checkerspot populations. The recent declines over the past 3 years do not indicate patterns outside the norm of historical variability. The Coyote Ridge Open Space Preserve encompasses key Bay checkerspot butterfly habitat, and the current grazing management is a critical part of this taxon's long-term success here. 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 the current grazing regime in the different pastures on the Coyote Ridge Reserve. The dramatic increase in nonnative annual grass cover the last two seasons is the main issue throughout the property. 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 (Creekside Center for Earth Observations 2019). Both the rancher and his 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.
2. Continue annual monitoring to track population changes. Large population fluctuations are natural, but require ongoing data collection to detect problematic declines.
3. To better assist ranchers in meeting both resource management and beef production goals, consider creating smaller "sacrifice" pastures. This is a method ranchers 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 (Creekside Center for Earth Observations 2019).
4. Consider larger scale graminicide (Envoy Plus) trials to control both barbed goatgrass and other nonnative annual grasses Creekside Center for Earth Observations 2019).
5. Introduce prescribed fire on a trial basis (Creekside Center for Earth Observations 2019).

Land Cover Mapping

In 2018, Creekside Science, with assistance from Greg Bazhaw of the Santa Clara County Planning Department, updated the land cover map. Bazhaw provided an updated land cover file in February 2018 with some holes and overlaps. In GIS, Creekside Science updated obvious land cover types (i.e., serpentine grassland to annual grassland). Ground truthing was conducted in August 2018 to confirm updates, including identifying dominant trees and boundaries between chaparral and woodland. Bazhaw provided additional GIS assistance to ensure the final product maintained topology (no gaps or overlays) and was consistent with other Coyote Ridge Reserve data files. Notable changes between the updated mapped and the original Habitat Plan land cover mapping include the deletion of foothill pine-oak woodland (the nearest foothill pines are on Paintbrush Hill to the south), increase of California annual grassland and mixed serpentine chaparral, and reclassification of some coast live oak forest and woodland to mixed oak woodland and forest, mainly on the east side of the summit. The updated land cover mapping[24] is reflected in **Table 9**.

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 2018 appear below, followed by survey details.

Bay Checkerspot Host Plants

Dwarf plantain cover returned to moderate levels in 2018 after a spike in 2017. Values ranged from 2.5% at the North cluster to 6.8% at the Mid cluster. Cover of owl's clover decreased across sites to very low levels. Cover at the South cluster was 0.1%, the third lowest value since 2005 at this site. The North and Mid sites were similarly low at 0.2% and 0.08%, respectively. A bad sign for Bay checkerspot butterfly was low owl's clover across the property. While the butterfly doesn't require owl's clover, it does extend the prediapause feeding season, which tends to lead to higher numbers

[24] Land cover mapping was finalized in FY1819, but the results are included in the present FY1718 annual report.

in the next season when postdiapause larvae are monitored (Creekside Center for Earth Observations 2019).

Bay Checkerspot Nectar Sources

Goldfields varied across sites. The North cluster had the highest cover at 7.5%. The South cluster remained low at 0.6%. Tidy tips were uniformly low across the three sites at 0.2% or less. They were not detected in plots at the South cluster this year. Jeweled onion values were also low, below 0.03%, also not showing up in plots again at the South cluster. Muilla cover values were similar to last year's at the North cluster and the Mid cluster, at 0.7% and 0.3%, respectively. Cover at the South cluster increased from 0.2% to 0.7%. Overall, Muilla was at moderate to high amounts.

Grasses and Thatch

The perennial grasses measured are all native. The North cluster had the highest value at 2.5%, and the South cluster had the lowest at 0.8%. This is a moderate to low value for the South cluster. Nonnative annual grasses either remained high or increased even more this year. The highest cover value was seen at the North cluster at 26.0%. This is the highest value seen since 2007 when the South cluster had 31.8% cover. The lowest cover value was seen at the Mid cluster at 16.3%, still a high value for nonnative annual grass. Thatch cover remained moderate at the South cluster (3.4%) but increased from low values at the North cluster and the Mid cluster to 4.0% and 4.3%, respectively.

Annual Forbs

Annual forbs are almost entirely native on the Coyote Ridge Reserve's serpentine soils. They decreased across the clusters this year. The largest decrease was seen at the North cluster (from 28.6% to 17.7%). Overall, cover values ranged from 13.6% to 20.6% which are low to moderate values. Cover values for perennial forbs, which are all native, were low and ranged from 2.1% to 2.3%.

Native Cover

Native cover decreased at all sites in 2018. The most notable decrease was seen at the North cluster (from 46.1% to 30.9%), although this cluster still had the highest native cover of the year. Across the clusters, values ranged from 21.0% to 30.9%. The changes in native cover were driven by annual forbs. Native richness was stable at the South cluster (12.1 species) but decreased at the North cluster (11.2 species) and Mid (10.9 species). These are low to moderate values. Nonnative cover increased this year at the South cluster (from 15.7% to 20.8%) and at the North cluster (from 16.3% to 26.0%). Native richness remained stable at the Mid cluster. Nonnative cover is driven almost entirely by nonnative annual grass.

Discussion

The Coyote Ridge Reserve continues to have high quality serpentine grassland habitat, although the last 2 years have seen declines. It appeared the high rains of the 2017 growing season favored nonnative annual grass at the expense of native richness and cover. While the 2018 growing season was less wet, timing still appeared to favor nonnative annual grass (and associated thatch) at the expense of native annual forbs. Bay checkerspot butterfly host and nectar sources were fairly low this year. The dramatic increase in nonnative annual grass cover the last two seasons is the main

management issue throughout the property. It appears that legacy effects of the high rains and high annual grass cover and seed production set the stage for grassier habitat this year, and perhaps will in future years (Niederer et al. 2018).

Covered Plant Surveys

Loma Prieta Hoita

Coyote Ridge Open Space Preserves has two documented occurrences of Loma Prieta hoita. An enlargement to the larger occurrence,CROSP-LMHO02, was documented in 2018 during seed collection efforts. CROSP-LMHO02 increased from 265 in 2016 to 465 individuals in 2018. Similar to the 2016 surveys, no flowering individuals were found, although adults appeared to be healthy and free of disease and excessive herbivory (Table 17c). The smaller occurrence CROSP-LMHO01 was not surveyed in 2018 and had only 11 individuals in 2016.

Fragrant Fritillary

Two of the three previously mapped CNDDB occurrences of fragrant fritillary, CROSP-FRFA02 and CROSP-FRFA03, were surveyed in 2018. Targeted searches took place in a 200-meter radius of the mapped occurrences. CROSP-FRFA02 was censured and contained 104 plants in 2018, in comparison to 41 plants in 2017. CROSP-FRFA03 contained between 689 and 1,297 individuals in 2018, but zero individuals in 2017 because the occurrence could not be found. CROSP-FRFA01 was not surveyed in 2018 but had 18,680 individuals in 2017 (Table 17c). All three fragrant fritillary occurrences were visited in 2018 and had low numbers of flowering/fruiting individuals. To minimize impacts to the wild population of fragrant fritillary, seeds were only collected from the largest CROSP occurrence, FRFA-01 for seed banking at Rancho Santa Ana Botanical Garden. The low number of fruiting plants in this occurrence, especially with the high effort given to locating them over an appropriate phenological window, was disconcerting. Broken inflorescences were common. Plants appeared to be reproducing, growing vigorously, and had no obvious signs of disease. Experimental fencing to exclude cattle is likely the quickest and cheapest action to enhance recovery.

Mount Hamilton Thistle

Surveys were not conducted for Mount Hamilton thistle in 2018, but five of the 13 occurrences at the Coyote Ridge Open Space Preserve were visited for seed collection for seed banking at the Rancho Santa Ana Botanical Garden. Seed herbivory was high at most locations, with seed-eating larvae common (likely the weevil *Rhinocyllus conicus*) (Creekside Center for Earth Oberservations 2019). While the seed predation raises a red flag, the current assumption is that seed predation is not presently an existential threat to Mount Hamilton thistle on the Coyote Ridge Preserve because populations seem to be persisting over time, populations seem to be occupying nearly all available habitat, multiple size classes are present at each occurrence, and because seed predation rates for the taxon have been documented at high but sustainable levels (Hillman 2007).

Santa Clara Valley Dudleya

Surveys were not conducted for Santa Clara Valley dudleya in 2018, but seeds were collected from a total of 450 Santa Clara Valle dudleya plants at five sublocations at the Coyote Ridge Open Space Preserve for seed banking at the Rancho Santa Ana Botanical Garden. The sheer numbers and wide

distribution of this taxon are good indications of a healthy population. Herbivory is noted throughout the preserve, especially in the form of broken inflorescences (perhaps rodents or rabbits) (Creekside Center for Earth Oberservations 2019).

Smooth Lessingia

Smooth lessingia was not surveyed in 2018. Seeds were collected for seedbanking from four sublocations within one large occurrence. The large numbers and wide distribution of this taxon are good indications of a healthy population (Creekside Center for Earth Oberservations 2019).

Metcalf Canyon Jewelflower/Most Beautiful Jewelflower

Metcalf Canyon jewelflower and most beautiful jewelflower were not surveyed in 2018. Studies are needed to address how to distinguish between these two taxa since variations in flower color within these taxa make monitoring and identification difficult. These two taxa hybridize and fluctuate wildly in numbers and distribution from year to year. We recommend a stakeholder meeting to hammer out taxonomic and other issues so that seeds can be collected for seedbanking (Creekside Center for Earth Oberservations 2019).

Residual Dry Matter

The most commonly used parameter to measure grazing intensity over a grazing season is the RDM left on the ground at the end of the grazing year. The RDM monitoring program developed for the reserve is based on guidelines included in the 2015 interim grazing plan. The recommended RDM objectives stated in the report are as follows.

- California annual grassland – 1,250 lbs/acre
- Serpentine grassland – 750 lbs/acre

In 2018, there were a total 21 references sites, 17 of which had been previously established on the Reserve.

The results of the RDM monitoring on the Reserve indicated that grass production was near or above normal production in 2018. The majority (over 50%) of the Reserve maintained RDM levels between 1,000 lbs/acre and 1,500 lbs/acre, while approximately 30% of the reserve maintained RDM levels between 700 lbs/acre and 1,000 lbs/acre.

There were seven RDM reference sites within the California annual grassland vegetation type. The sites varied from 400 lbs/acre RDM at site 11 to 3,100 lbs/acre RDM at site 5. Site 11 is located along the northern-central boundary of the Reserve, and site 5 is located in the extreme northern corner. The average RDM for the California annual grassland sites was 1,970 lbs/acre.

There were ten RDM reference sites within the serpentine grassland vegetation type. The RDM levels observed at the serpentine grassland reference sites varied from 650–1,600 lbs/acre. The average RDM for the serpentine grassland sites was 1,120 lbs/acre (Guenther 2019).

Species Occupancy and Occurrence Requirements

The Reserve System is required to support occupied habitat for five covered wildlife species (**Table 16**) and protect occurrences of all nine covered plant species (**Tables 17a, 17b,** and **17c**). 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 Coyote Ridge Reserve in the FY1718 reporting year.

Species surveys were also conducted in the Calero County Park Conservation Easement Area. In Table 16, these are identified as "Other Surveyed Areas." This area is not yet enrolled in the Reserve System and does not count toward the species occupancy requirements.

Pacheco Creek Reserve

Vegetation mapping was conducted by PCI in order to update the extent and distribution of the land cover types on the Pacheco Creek Reserve. Prior to the field survey, PCI reviewed a number of background materials including aerial imagery, soils maps, and previous land cover mapping data from both Caltrans (which previously owned the Pacheco Creek Reserve) and the Habitat Plan. The Habitat Plan's land cover classification system was used for the mapping effort to facilitate comparisons with the original Habitat Plan land cover mapping of the Pacheco Creek Reserve.

The original Habitat Plan land cover mapping classified nearly the entirety of the Pacheco Creek Reserve as the mixed riparian forest and woodland land cover type, with a small amount of the willow riparian forest and scrub and pond land cover types. The field survey conducted by PCI mapped seven Habitat Plan land cover types on the Pacheco Creek Reserve.

- Mixed oak woodland (7.8 acres)
- Central California sycamore alluvial woodland (9.1 acres)
- Mixed riparian forest and woodland (6.5 acres)
- Willow riparian forest and scrub (16.4 acres)
- California annual grassland (28.4 acres)
- Northern coastal/Diablan sage scrub (0.3 acre)
- Pond (0.6 acre)

These seven vegetation types have somewhat diffuse boundaries and overlapping species composition. A narrow strip of heavily disturbed Northern coastal/Diablan sage scrub vegetation is located along the highway berm on the property's southwest border. Changes to some of the land cover types on the Pacheco Creek Reserve have resulted from the loss of mature sycamores in recent decades, as well as historic and ongoing restoration plantings. The high creek flows of winter 2016–2017 appear to have temporarily reduced riparian cover along the Pacheco Creek channel, but woody species in that zone have resprouted or regenerated, and no significant changes to the riparian vegetation types were evident (Schwan 2018). The land cover mapping from this survey has been used to update the Habitat Conservancy's land cover acquisitions shown in **Table 9**. This mapping will serve as the baseline land cover data for the Pacheco Creek Reserve.

Calero Conservation Easement

The Calero CE is the first site targeted for existing open space enrollment by the County. It was anticipated to be enrolled in 2018, but the timeline was extended to allow for updates to the conservation easement agreeable to the County, Habitat Agency, and Wildlife Agencies. Baseline surveys were contracted ahead of enrollment due to the seasonal species survey requirements in 2017. Survey results were presented in the previous annual report and are summarized in **Tables 16, 17a, 17b,** and **17c**.

Research

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.

Winter Burrowing Owl Monitoring

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

Evaluating Threats Posed by Exotic *Phytophthora* Species to Endangered Coyote Ceanothus and Selected Natural Communities in the Habitat Plan Area

Phytophthora species are currently impacting populations of Coyote ceanothus in the Habitat Plan area and have potential to seriously degrade populations of other covered plants and natural communities in Habitat Plan area. The Habitat Agency was awarded a grant from CDFW to study *Phytophthora* in the Habitat Plan area and utilize this information to develop a management strategy to minimize introductions of pathogens and limit/contain impacts in affected areas. Phytosphere Research developed a sampling strategy that uses GIS data to determine where various priority habitat types might be exposed to contamination from roads, trails, past restoration plantings, or other known risk factors. The candidate areas to sample identified through this process were prioritized in a plan that was submitted to the Habitat Agency.

A total of 189 *Phytophthora* samples were collected from all the Santa Clara County Parks and Santa Clara Valley Open Space Authority preserves and other Reserve System areas with high priority vegetation types. A total of 20 *Phytophthora* taxa were identified across all samples. *Phytophthora* species were recovered from 59% of the periodically flooded sites, and 9% of samples of natural vegetation from drier upland and flat/lowland sites. *Phytophthora* was found at five locations within or adjacent to Coyote ceanothus stands: (1) in seasonal stream water below the Kirby Canyon Coyote ceanothus population, (2) a pond edge adjoining the Llagas population, (3) an upland area on the western abutment of Anderson Dam within the Anderson Coyote ceanothus population traced to a restoration planting in 1993 that used nursery-grown Coyote ceanothus transplants, (4) along the high-water line of the Anderson Reservoir immediately below the Anderson Coyote ceanothus

population (the reservoir receives runoff from a residential development landscaped with nursery-grown plants above the west shore of the reservoir's south arm (Holiday Lake Estates)), and (5) an upland area in association with symptomatic toyons on the Lake View trail south of Anderson Dam. *Phytophthora* species detected in stream water and the pond and reservoir edge differed from those infecting the upland stand of Coyote ceanothus on the Anderson Dam abutment. No *Phytophthora* species were found in the sampled Coyote ceanothus stands on Coyote Ridge. The data collected during this study indicates that infestations are uncommon in and near the Coyote Ridge Reserve and are mostly associated with known risk factors for *Phytophthora* introduction (e.g., nursery stock, grazing, trail users, vehicles) (Swiecki and Bernhardt 2018).

Based on sampling to date, the greatest threat to Coyote ceanothus populations is associated with the extensive infestation involving multiple *Phytophthora* species in Coyote ceanothus habitat on the Anderson Dam abutment. Preventing spread of contamination from this site to nearby stands should be a high priority. To date, the infestation along the Lake View trail is the only upland sampling site away from the infested Anderson Dam abutment where *Phytophthora* has been detected; this detection along the Lake View trail south of the Anderson Dam demonstrates a likely vector for *Phytophthora* from infested areas via trail users or vehicles. The Santa Clara Valley Water District's Anderson Dam Seismic Retrofit Project includes construction within or near stands of Coyote ceanothus that are infested with *Phytophthora*; the Santa Clara Valley Water District has committed to implementing best management practices to avoid the introduction and spread of *Phytophthora* within stands of Coyote ceanothus.

Modeling Climate Change Effects on Pond Hydroperiods in the Coyote Valley

The Guadalupe-Coyote Resource Conservation District was awarded a FY1516 LAG to: (1) collect hydrologic and bathymetric data from a representative sample of ponds within the future Reserve System, (2) develop predictive models to identify which ponds would likely be most susceptible to future climate change effects (e.g., drought), and (3) develop a rapid hydrologic assessment tool that could be used by land managers and the Habitat Agency to prioritize ponds for enhancement and/or restoration in the early stages of implementation.

In late 2016, the subcontractor, Balance Hydrologics (Balance), collected baseline topographic data from 26 ponds. Pond monitoring and field surveys were conducted in 2017 at these locations, which included collecting hydrologic gauge data and conducting pond vegetation mapping. Using this data, Balance built, calibrated, and validated a hydroperiod water balance model to evaluate the historical and projected water-surface elevation for all 26 ponds. The study results indicated that ponds with larger watershed sizes and active groundwater inputs have a longer hydroperiods, while those ponds with more permeable materials in the berm or pond bottom tend to have shorter hydroperiods. In addition, the model projections using long-term average climate change projections did not indicate that the pond hydroperiods in Coyote Valley will change considerably due to climate change, with the exception of three ponds that may be affected by high-intensity flooding and one pond that may be affected by increased air temperature and evapotranspiration (Balance Hydrologics Inc. 2018).

This study was envisioned as the first step in developing a management plan for pond habitat resources in the foothills west of Coyote Valley (e.g., Almaden Quicksilver, Santa Teresa, and Calero County parks). The development of a hydroperiod water balance model for each pond informs pond restoration when selecting the appropriate hydroperiod for the target species. During enhancement planning and design, the model may be used to develop restoration plans that do not require active

management such as pond-bottom drains or other management draw-down infrastructure. Additional funding could be used as follows (Balance Hydrologics Inc. 2018):

- Evaluate the connectivity of pond and other aquatic resources in the Coyote Valley and surrounding foothills, and develop the hydroperiod data further to determine the feasibility of habitat enhancement and restoration alternatives for priority ponds.
- Identify areas within habitat corridors that merit acquisition, preservation, or enhancement.
- Identify potential habitat alternatives to support habitat corridors.

On-going and Awarded Grant-funded Research Projects

On-going and awarded LAG-funded projects during the reporting period include the following.

- Coyote Valley Bobcat and Gray Fox Connectivity Study (FY17)
- Monitoring Nitrogen Deposition in Santa Clara Valley (FY17)
- Tricolored Blackbird Nesting and Foraging Monitoring Project (FY17)
- Wildlife Permeability and Hazards across Highway 152 Pacheco Pass: Establishing a Baseline to inform Infrastructure and Restoration (FY18)
- Genetics Study of Hybridization between California Sycamore and London Plane Tree (FY18)

Tiburon Indian Paintbrush Projects

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

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

The following is a summary of the covered species monitoring results described in the *Tiburon Paintbrush Projects* (Creekside Center for Earth Observations 2018b).

Paintbrush Hill Results

The Paintbrush Hill census documented 224 individuals. The number of individuals at Paintbrush Hill increased from the 2006 census (135) to the 2018 census (224), despite the dip in 2009 (109) and 2013 (100, estimate). The occurrence currently occupies less than 200 square meters over an area of approximately 1 hectare. The low total number of plants and the small occupied area,

however, still point to an extremely vulnerable occurrence, especially in light of threats from herbivory, trampling, climate change, and other concerns.

The distribution of plants across Paintbrush Hill has changed relatively little from 2006 to 2018. Importantly, there has not been establishment of new patches or expansions of more than a few meters from the 2006 patches. The 2018 numbers show a range from 1 to 74 plants per patch. Abundance within the patches has changed. Large increases were noted in two patches that support more than half the occurrence (75 and 66 plants), and another increased from 8 to 34 plants. The largest decrease was a patch that decreased from 22 in 2006 to 1 in 2018. One outlying patch with 7 plants in 2006 went extinct by 2009.

Cages were monitored in the reporting year to determine if they had an effect on the viability of Tiburon Indian Paintbrush. Five plots were caged and five uncaged (control) plots were staked in 2012, and data were taken in 2012, 2013, 2016, and 2018, including plant and flowering stalk counts at various intervals in each season. The conclusions from the caging study in FY1718 are as follows.

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

Additionally, covered species surveys documented approximately 1,500 Santa Clara Valley dudleya individuals and 10,200 smooth lessingia individuals on Paintbrush Hill.

Paintbrush Canyon Results

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

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	Kirby	occupied	2018	
50% of satellite habitat units W. Hills of Santa Clara Valley, Tulare Hill, Santa Teresa Hills, Calero, Communication Hill, or North of Llagas Avenue occupied once by Year 45	N/A			
California red-legged frog	**Reserve System**			
40% of ponds and wetlands occupied (support full life-cycle) in each of the federal Recovery Units 4 and 6 in the Reserve System (which correspond to the two major watersheds in the study area) by year 45	**25%: 2 of 8 ponds support full life cycle and occupied**			
	Recovery Unit 4			
	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
	Calero Pond 5		2017	Moderate Restoration Priority

Species Requirement	Status		Date	Notes
California red-legged frog (continued)	Calero Pond 9		2016, 2017, 2018	Restored 2016
	Calero Seep 10		2016, 2017, 2018	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 2018	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
	Calero Pond 9	breeding	2016, 2017, 2018	Restored 2016

Species Requirement	Status		Date	Notes
California tiger salamander (continued)	Calero Seep 10	breeding	2016, 2017, 2018	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
	Calero Pond 9	occupied	2016, 2017, 2018	Restored 2016
	Calero Seep 10	occupied	2016, 2017, 2018	Restored 2016

Species Requirement	Status		Date	Notes
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
	Llagas Creek, unnamed trib - D2	occupied	2017	Llagas Watershed
Source: Nomad 2019				

* 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.

Table 17a. Covered Plant Occurrences for Compliance Tracking: Summary

	Number of Covered Plant Occurrences						
	Coyote Ridge Open Space Preserve			**Calero CE**			**Total in Reserve System**
Species	Habitat Plan Occurrences	New Occurrences Indentified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Indentified 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 occcurrences 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.

Coyote Ridge			Calero CE			Total in Reserve System
Habitat Plan Occurrences[1]	Baseline Surveys [2]	Compliance	Habitat Plan Occurrences[1]	Baseline Surveys[2]	Compliance	
Mt Hamilton Thistle						
#2	CROSP-HOST02	**22 occurrences**	n/a	CCE-HOST01	**2 occurrences**	**22 occurrences**
#3			#15	CCE-HOST02		
#29						
#4	CROSP-HOST04					
#30						
#5	CROSP-HOST03					
#6	CROSP-HOST08					
#7						
#8						
#9						
#10	CROSP-HOST09					
#11						
#21						
#24	CROSP-HOST10					
#39	CROSP-HOST011					
#40						
n/a	CROSP-HOST12					
n/a	CROSP-HOST13					
n/a	CROSP-HOST07					
n/a	CROSP-HOST05					
n/a	CROSP-HOST01					
n/a	CROSP-HOST06					

Santa Clara Valley Dudleya						
Various (99 occurrences)	CROSP-DUABSE01 (only 95 occurrences documented)	**96 occurrences**	#3	CCE-DUABSE01	**6 occurrences**	**96 occurrences**
n/a	CROSP-DUABSE02		#4	n/a		
			#193	n/a		
			n/a	CCE-DUABSE02		
			#170	CCE-DUABSE03		
			n/a	CCE-DUABSE04		
			#201	CCE-DUABSE05		
			n/a	CCE-DUABSE06		
Fragrant Fritillary						
#1	CROSP-FRFA01	**3 occurrence**	#4	n/a	**0 occurrences**	**3 occurrences**
#2	CROSP-FRFA02					
#3	CROSP-FRFA03					
Loma Prieta Hoita						
n/a	CROSP-LMHO01	**2 occurrences**	#14	CCE-LMHO01	**2 occurrences**	**2 occurrences**
n/a	CROSP-LMHO02		#6	CCE-LMHO02		
Smooth Lessingia						
#29	CROSP-LEMIGL01	**6 occurrences**	#14	CCE-LEMIGLO1	**3 occurrences**	**6 occurrences**
#3			#19 (counted as two)	CCE-LEMIGLO2		
#7			n/a	CCE-LEMIGLO3		
#21						
#27						
#28						

Metcalf Canyon Jewelflower						
#6	CROSP-STALAL01	**8 occurrences**			**0 occurrences**	**8 occurrences**
n/a	CROSP-STALAL02					
n/a	CROSP-STALAL03					
n/a	CROSP-STALAL04					
n/a	CROSP-STALAL05					
n/a	CROSP-STALAL06					
n/a	CROSP-STALAL07					
n/a	CROSP-STALAL08					
Most Beautiful Jewelflower						
#9	CROSP-STALPE01	**2 occurrences**	#5	CCE-STALPE01	**5 occurrences**	**2 occurrences**
n/a	CROSP-STALPE02		#33			
			#12	CCE-STALPE02		
			#29	CCE-STALPE03		
			n/a	CCE-STALPE04		

[1] The number of occurrences known at the time of habitat plan development

[2] The number of additional occurrences documented during baseline surveys

Coyote Ridge Open Space Preserve			Calero Conservation Easement		
Baseline Surveys	Number of Plants	Year Data Collected	Baseline Surveys	Number of Plants	Year Data Collected
Mount Hamilton Thistle					
CROSP-HOST01	729	2017	CCE-HOST01	488	2017
CROSP-HOST02	7,286	2017	CCE-HOST02	123	2018
CROSP-HOST03	3,756	2017			
CROSP-HOST04	7,579	2017			
CROSP-HOST05	368	2017			
CROSP-HOST06	708	2017			
CROSP-HOST07	7,273	2017			
CROSP-HOST08	4,889	2017			
CROSP-HOST09	28,128	2017			
CROSP-HOST10	172	2017			
CROSP-HOST011	14,045	2017			
CROSP-HOST12	19	2017			
CROSP-HOST13	4,121	2017			
Santa Clara Valley Dudleya					
CROSP-DUABSE01	66885	2017	CCE-DUABSE01	4,782	2017
CROSP-DUABSE02	20	2017	CCE-DUABSE02	548	2017
			CCE-DUABSE03	1,868	2017
			CCE-DUABSE04	86	2017
			CCE-DUABSE05	1,004	2017
			CCE-DUABSE06	93	2017
Fragrant Fritllary					
CROSP-FRFA01	18680	2017	n/a		
CROSP-FRFA02	104	2018			
CROSP-FRFA03	993	2018			
Loma Prieta Hoita					
CROSP-LMHO01	11	2016	CCE-LMHO01	110	2017
CROSP-LMHO02	465	2018	CCE-LMHO02	13	2017
Smooth Lessingia					
CROSP-LEMIGL01[a]	21,730,000	2017	CCE-LEMIGLO1	13,203,353	2017
			CCE-LEMIGLO2	3,948,844	2017
			CCE-LEMIGLO3	135,235	2017
Metcalf Canyon Jewelflower[b]					
CROSP-STALAL01	21,913	2017	n/a		
CROSP-STALAL02	0	2017			
CROSP-STALAL03	9	2017			
CROSP-STALAL04	0	2017			
CROSP-STALAL05	0	2017			
CROSP-STALAL06	20	2017			
CROSP-STALAL07	350	2017			
CROSP-STALAL08	912	2017			

Coyote Ridge Open Space Preserve			Calero Conservation Easement		
Baseline Surveys	Number of Plants	Year Data Collected	Baseline Surveys	Number of Plants	Year Data Collected
Most Beautiful Jewelflower					
CROSP-STALPE01	16,147	2017	CCE-STALPE01	408	2017
CROSP-STALPE02	770,800	2017	CCE-STALPE02	23	2017
			CCE-STALPE03	38	2017
			CCE-STALPE04	30	2017

[a] Smooth lessingia occurrence CROSP-LEMIGL01 at Coyote Ridge is considered 6 occurrences for compliance tracking but will be monitored as one large population made up of 6 contiguous occurrences

[b] Jewelflowers on Coyote Ridge are known to change in distribution and abundance annually. For example, data collected on the adjacent VTA property in 2011 and 2014 fluctuated from 31% to 61% occupancy across the 100-m grid. Such wide changes in occupation also occur on CROSP, which could dramatically change the number of occurrences. For Metcalf Canyon jewelflower, distribution and abundance were first mapped in 2016 and sampling plots were set up. When revisiting the sample plots the following year, the distribution and abundance had shifted, which resulted in some of the occurrences declining to zero. This is documented in the 2018 baseline report for CROSP (Creekside 2018). Additional surveys have not bee conducted to determine the subsequent changes in distribution and abundance. The eight occurrences of Metcalft Canyon jewelflowr are more than 0.25 mile from one another, and therefore would be considered separate occurrences by the definitation used in the Habitat Plan.

Chapter 8
Stay-Ahead Provision

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.

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 ratio[25] 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[26] 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:

[25] 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.

[26] 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 habitat[27] 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.

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.[28] 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.

[27] 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.

[28] 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 18, Table 19,** and **Figure 12** and **Figure 13**).

- Chaparral northern coastal scrub
- 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 ceanothus[29]

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

- Grasslands
- 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. Enrollment of the Calero conservation easement area will result in compliance for grasslands, oak woodlands, riparian forest and scrub, and most beautiful jewelflower. Wetland compliance is likely to occur with the implementation of the planned restoration projects and the enrollment of Calero County Park in the Reserve System. In addition, the Santa Clara Valley Water District has earmarked grant funding to acquire a Coyote ceanothus occurrence when a property becomes available.

[29] 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).

Stay-Ahead Compliance Calculations

The Stay-Ahead Compliance is calculated as follows:

Terrestrial and Aquatic Land Cover Types (Table 18 and Table 19)

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

Western Burrowing Conservation Strategy (Table 18)

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., supplemental feeding) and identifying new lands for future management or enhancement (i.e., County-wide habitat assessments). 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, 164.9 acres of occupied nesting habitat have been impacted, 83% 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)

  = 164.9 * 3

  = 495 acres

- Compliance = (Conservation Achieved) / (Conservation Required)

  = 861.9/495

  =174%

- ≥90% = in Compliance

  174% = in Compliance

- Acres Ahead = (Conservation Achieved) – (Conservation Required)

  = 861.9 – 495

  = 367.4 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)

  = (164.9/198) * 5,300

  = 4,413

- Compliance = (Conservation Achieved) / (Conservation Required)

  = (861.9 + 316.8)/4,413

  =27%

- ≥85% = in Compliance

  27% = Non-Compliance

- Acres Ahead = (Conservation Achieved) – (Conservation Required)

  = 1,178.7 – 4,413

  = -3,234.3 acres

Plants (Table 18 and Table 20)

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

Table 18a. Summary Status of the Stay-Ahead Provision for Natural Communities, Burrowing Owl Nesting Habitat, and Plants - Actual

	Impacts			Conservation			Stay-Ahead		
Land Cover Type	**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	326.9	13%	17,440	1,583.1	9%	2,254.4	70%	-671.4
Chaparral Northern Coastal Scrub	405	9.2	2%	2,500	75.0	3%	57.0	131%	17.9
Oak Woodland	2,709	38	1%	12,900	109.7	1%	181.5	60%	-71.8
Riparian Forest and Scrub	296	3.0	1%	971	7.5	1%	9.7	77%	-2.2
Conifer Woodland	117	0.0	0%	10	0.0	0%	0.0	-	0.0
Wetland	40	2.68	7%	155	6.16	4%	10.40	59%	-4.2
Pond	52	0.04	0%	177	2.11	1%	0.14	1509%	2.0
Streams (miles)	9.4	0.03	0%	110.4	14.73	13%	0.40	3638%	14.3
Developed	3,760	727.3	19%	-	0.0	-	-	-	-
Agricultural	8,018	693	9%	-	0.0	-	-	-	-
Total	17,926	1,800.2	10%	34,153	1,783.5	5%	2,513.7		-730.1
(1) Western Burrowing Owl Occupied Nesting Habitat (3:1)[4]	198	164.9	3:1	495	861.9	174%	495	174%	367.4
(2) Western Burrowing Owl Nesting Habitat, rough proportionality	198	164.9	83%	5,300	1,178.7	22%	4,413.0	27%	-3,234.3
Plants (occurrences)									
Tiburon paintbrush	0	N/A	-	1	0	0%	-	-	-
Coyote ceanothus	3,650 individuals	517	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"

	Impacts			Conservation			Stay-Ahead		
Land Cover Type	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 19. Detailed Stay-Ahead Provision for Aquatic Natural Community Conservation

	Impacts			Conservation			Conservation Achieved				Stay-Ahead			Planning			
Land Cover Type	Total Allowable Impacts (acres)	Impacts Accrued (acres)	% of Allowable Impacts Accrued	Required Protection (acres)	Required Restoration/ Creation (acres)	Total								Conservation Required (acres)		Conservation Difference (Achieved - Required)	
							Preservation (acres)	Restoration (acres)	Total	% of Conservation Achieved	Conservation Required1	Compliance[2]	Acres Ahead[3]	Preserve	Restore	Preserve	Restore
Willow riparian forest and scrub or mixed riparian forest and woodland	289	2.97	1%	578	339	917	2.59	4.94	7.53	1%	9.42			5.94	3.48	-3.35	1.46
Central California sycamore alluvial woodland	7	-	0%	40	14	54	-	0.00	-	0%	-			-	-	0.00	0.00
Riparian Total	**296**	**2.968**	**1%**	**618**	**353**	**971**	**2.59**	**4.94**	**7.53**	**1%**	**9.74**	**77%**	**-2.21**				
Coastal and valley freshwater marsh (perennial wetland)	25	2.42	10%	50	45	95	-	0.31	0.31	0%	9.20			4.84	4.36	-4.84	-4.05
Seasonal wetland	15	0.26	2%	30	30	60	1.89	3.96	5.85	10%	1.05			0.53	0.53	1.36	3.43
Wetland Total	**40**	**2.683**	**7%**	**80**	**75**	**155**	**1.89**	**4.27**	**6.16**	**4%**	**10.40**	**59%**	**-4.24**				
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	0.03	0%	100.0	10.4	110.4	12.90	1.83	14.73	13%	0.40	3638%	14.32	0.37	0.04	12.53	1.79

[1] Conservation Required = % of Allowable Impacts accrued * Conservation Total

[2] Compliance = "Conservation Achieved"/"Conservation Required"

[3] Acres Ahead = "Conservation Achieved" - "Conservation Required"

Table 20. Summary Status of the Stay-Ahead Provision for Plant Occurences

	Impacts To Date (occurrences)			Conservation Requirements						Stay-Ahead		
Covered Species	Allowable Impact	Impacts to date	% of Allowable Impacts Accrued	Mitigation Ratio	Protected per Mitigation Ratio	Protectd to Contribute to Recovery	Total Conservation Requirements	Conservation Achieved	% of Conservation Achieved	Conservation Required (occurrences)[1]	Conservation Achieved/ Conservation Required	Occurences Ahead[2]
Tiburon paintbrush	0	N/A	-	N/A	0	1	1	0	0%	-	-	-
Coyote ceanothus	3,650 individuals	517	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 Accrured" * “Total Conservation Requirements"

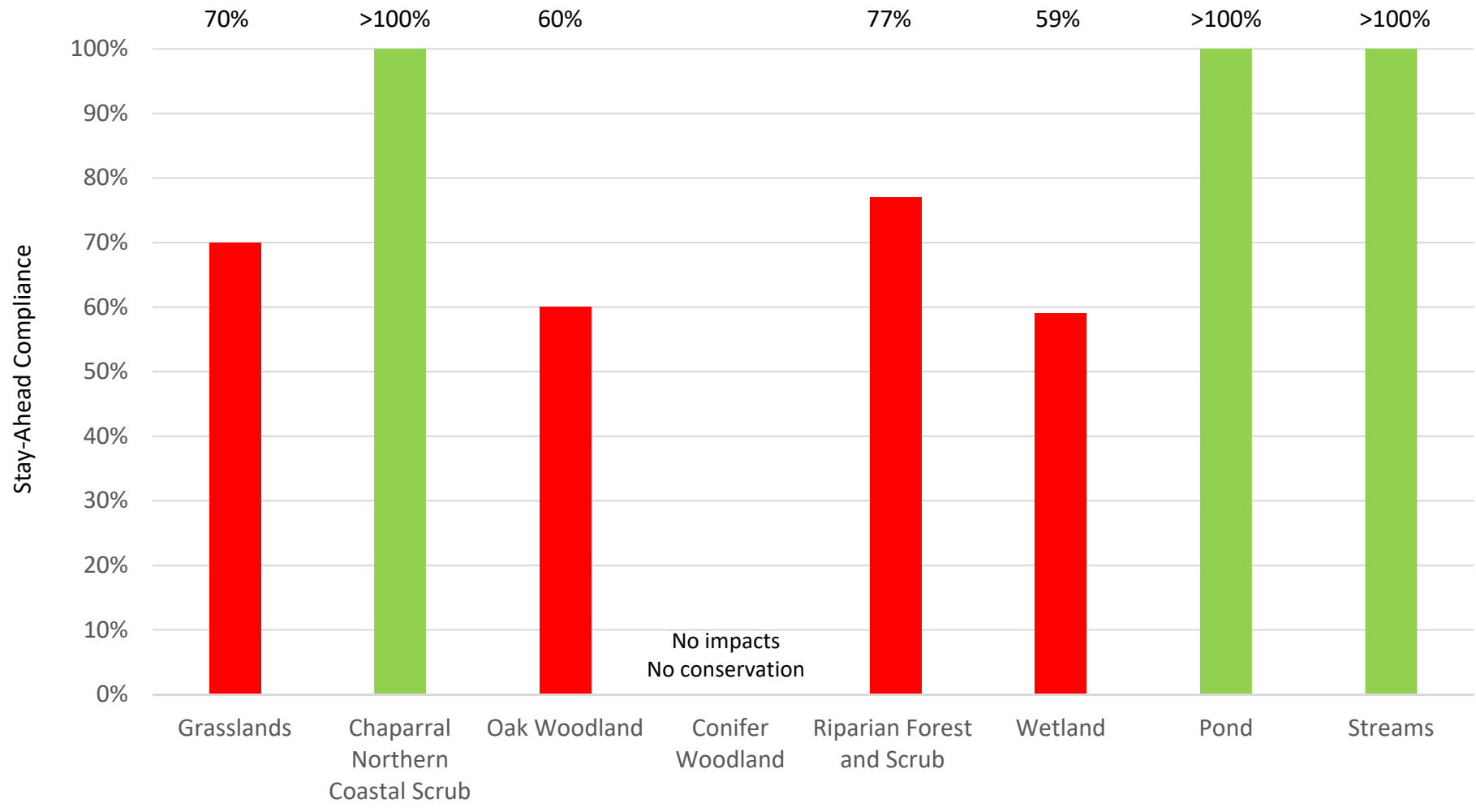
[2] Occurrences Ahead = "Conservation Required" - "Conservation Achieved"

[3] Occurrence creation is underway. See text for status.

Figure 12a. Stay-Ahead Compliance for Natural Communities

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

Compliance = (Conservation Achieved)/(Conservation Required)

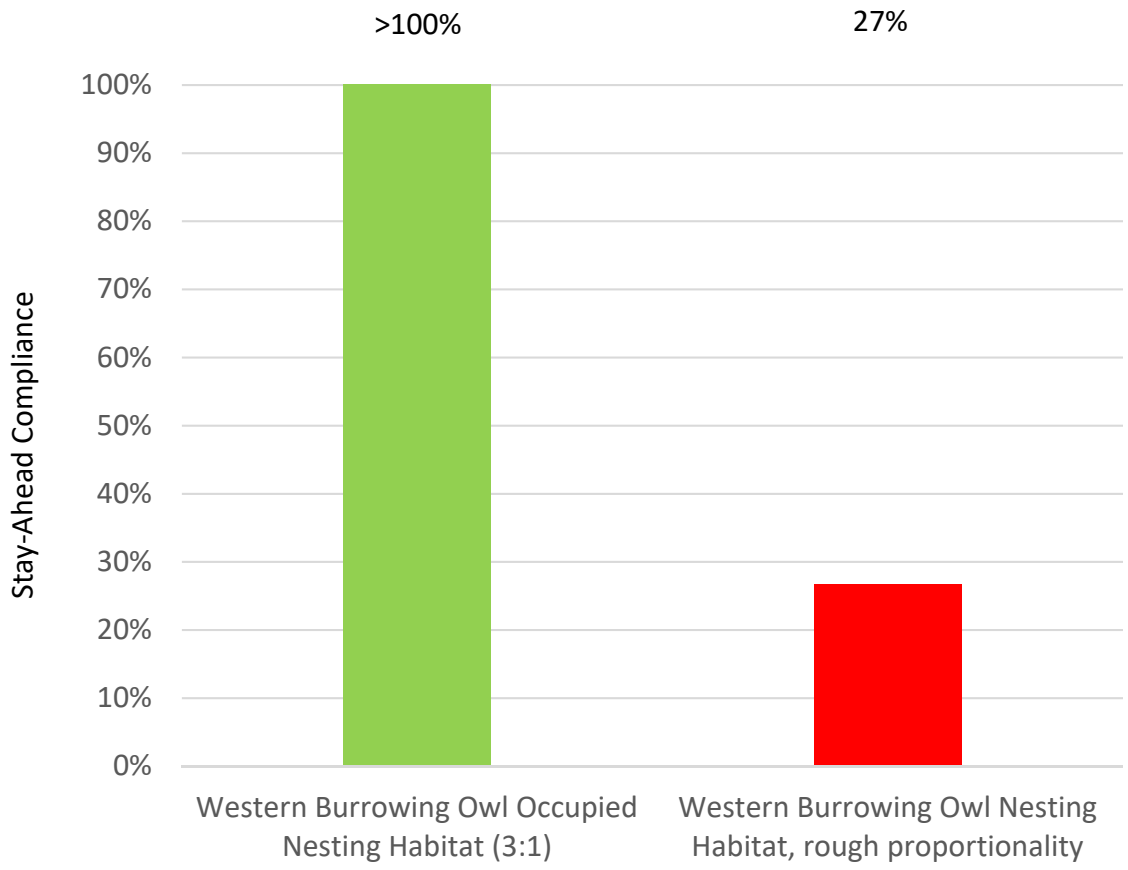


	Grasslands	Chaparral Northern Coastal Scrub	Oak Woodland	Conifer Woodland	Riparian Forest and Scrub	Wetland	Pond	Streams
Acres Ahead	-671.4	17.9	-71.8		-2.2	-4.2	2.0	14.3

= (Conservation Achieved) – (Conservation Required)

miles

Figure 12b. 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%.

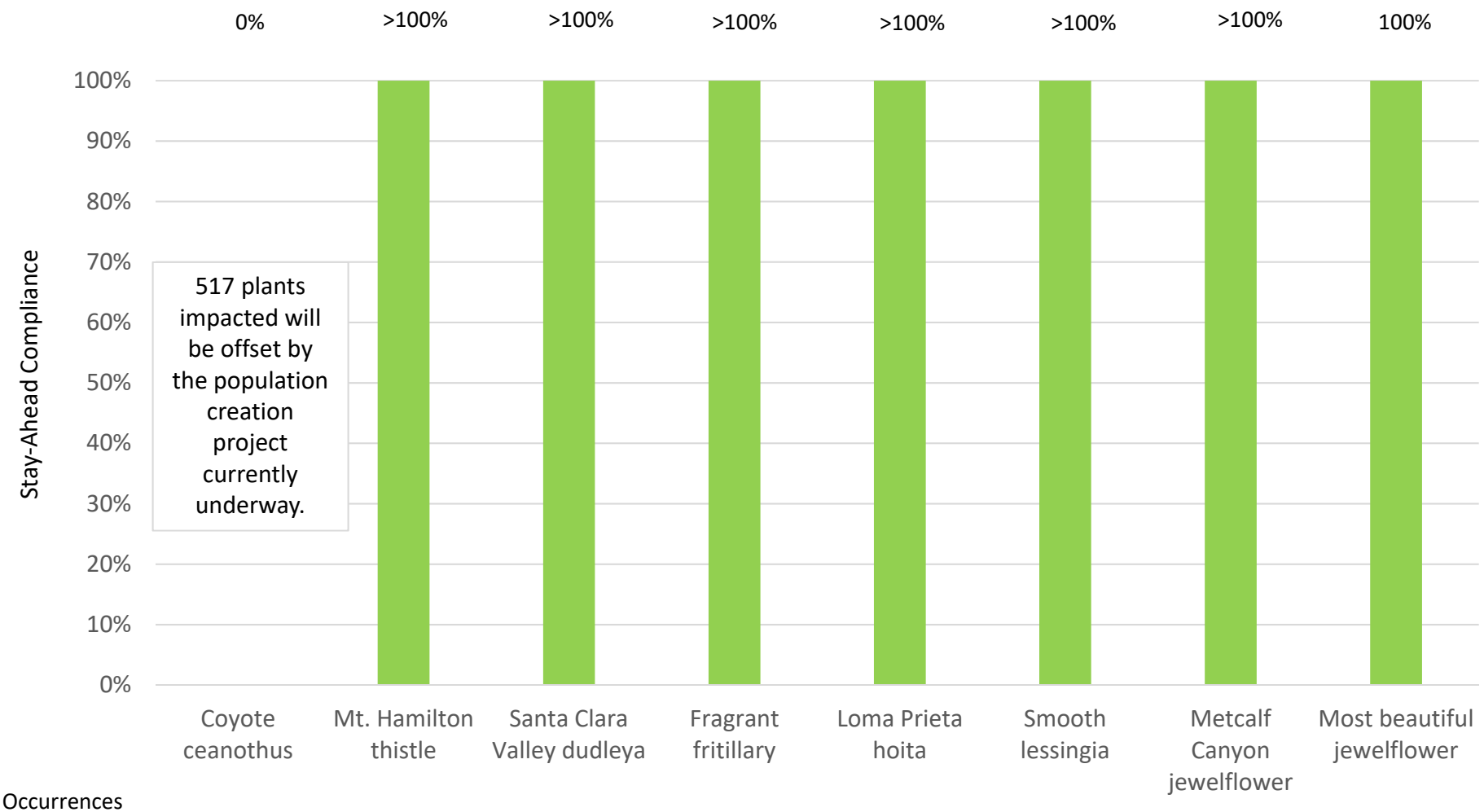
Acres Ahead	367.4	-3,234

= (Conservation Achieved) – (Conservation Required)

Figure 13. Stay-Ahead Compliance for Plants

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

Compliance = (Conservation Achieved)/(Conservation Required)



Occurrences								
Protected	0	22	96	3	2	6	8	2
Ahead	0	22	91	3	2	6	8	2

Chapter 9
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.

Changed Circumstances

Covered Species becoming listed

Foothill Yellow-legged Frog Listed as a Candidate Species

The foothill yellow-legged frog, a covered species, was listed as a candidate species under the California Endangered Species Act in June 2017. Under Section 2835 of the California Fish and Game Code, CDFGW may issue take authorization for covered species (plants or wildlife) regardless of their listing status. As stated in the NCCP Act, "At the time of plan approval, the [California] department [of Fish and Game] may authorize by permit the taking of any covered species whose

conservation and management is provided for in a natural community conservation plan approved by the department."

Nonnative Species or Disease

Chytrid Fungus and Foothill Yellow-legged Frog

Dead foothill yellow-legged frogs were found in three locations in upper Coyote Creek above Coyote Lake in October 2018. The apparent cause of death is from chytrid fungus, not previously thought to affect this species. Previously some foothill yellow-legged frog experts had thought that foothill yellow-legged frogs were only carriers of chytrid. It was not documented as cause of death until dead foothill yellow-legged frogs were found in upper Coyote Creek that appeared to have been killed by chytrid or some other pathogen. The Habitat Plan mentions chytrid as a threat to foothill yellow-legged frog.

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 21**.

Remedial Measures

In the event that a changed circumstance occurs that is described in the Habitat Plan, the Habitat Agency must assess the changed circumstance and determine if an appropriate remedial measure must be undertaken. Remedial measures are corrective actions that are funded and implemented by the Habitat Agency.

Covered Species becoming listed

No remedial measures are proposed for the change in status of the foothill yellow-legged frog. Each covered species in the Habitat Plan has been treated as though it is listed under ESA and CESA. All listed and nonlisted covered species are included on the permits.

Nonnative Species or Disease

Chytrid Fungus and Foothill Yellow-legged Frog

The Santa Clara Valley Water District is assembling best management practices, including decontamination procedures, to prevent the introduction or spread of chytrid fungus and other pathogens whenever working within foothill yellow-legged frog streams or California red-legged frog and California tiger salamander breeding ponds.

Phytophthora

Best management practices to prevent the spread of Phytophthora are implemented at all restoration projects completed under the Habitat Plan, In the reporting year, these were implemented at the Calero County Park Pond and Wetland Restoration Project, San Felipe Creek Restoration Project, and the Coyote Ceanothus Creation Project. Best management practices are included in Appendix A.

Annual Average Temperature °C

	Average Annual Summer Temperature			Average Annual Winter Temperature		
Year	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

http://usclimatedata.com

Chapter 10
Finances

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.

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.

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 22a** and **22b**). For Years 1–5, the Habitat Plan assumed $9.7 million for its average annual budget. The FY1718 Habitat Plan implementation budget was $3.4 million, 35% of the anticipated budget. For Years 1–5, the Habitat Plan assumed almost $49 million for its total budget. Over the first 5 years of Habitat Plan implementation, only $9 million was expended, which is 18% of the anticipated budget. The drivers of these differences are due to the lack of land acquisition. The Habitat Agency's budget focused on program administration, burrowing owl management, reserve management, monitoring, and restoration.

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 $12.2 million in funds during the reporting period from fee and non-fee funding sources (**Table 23** and **Table 24**). Fee funding totaled $10.1 million (83% 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 $3.9 million (32%), serpentine fees were $564,000 (5%), nitrogen deposition fees were $393,000 (3%), burrowing owl fees were $4.7 million (38%), wetland fees were $531,000 (5%), and PSE charges were $48,000 (0.4%).

Non-fee funding totaled approximately $2.1 million (17%). There was no funding from mitigation-only or voluntary contribution projects (**Table 25**), but non-fee funding during the reporting year included three grants (**Table 23** and **Table 26**). The three grants received were one $2,000,000 Section 6 Grant from the U.S. Fish and Wildlife Service and two Local Assistance Grant from the California Department of Fish and Wildlife ($30,450 and $76,093) all issued to the Santa Clara Valley Habitat Agency. In addition, the Wildlife Conservation Board and Santa Clara Valley Water District have committed grant funds for land acquisition. The Wildlife Conservation Board stated they will match the Section 6 grants. The Santa Clara Valley Water District earmarked $8 million for land acquisition by the Habitat Agency.

Fees are adjusted on an annual basis using an automatic inflation adjustment (see page 9-41 of the Habitat Plan). From FY1617 to FY1718, land cover, serpentine, and nitrogen deposition fees increased by 5.3%. Burrowing owl and wetland fees increased by 2.5% (Spencer 2017).

Land Acquisition

There was no land acquisition during the FY1718 reporting year (the Pacheco Creek Reserve was acquired on June 27, 2017, a few days before the start of the FY1718 reporting year, and therefore, wad credited toward the FY1617 reporting year) (**Table 27**). Acquisitions to date are provided in **Table 27**.

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. Currently, the Local Agency Investment Fund through the State of California holds the endowment portion of the fees. The Habitat Agency selected the Silicon Valley Community Foundation as the long-term endowment holder. In the FY1718 reporting period, all endowment funds were moved to the Silicon Valley Community Foundation.

Table 22a. FY1718 Budget: Expenditures and Comparison to Habitat Plan Cost Estimate

	Cost Estimate from Habitat Plan			FY1718 Budget		FY1718 Expenditures			
Cost Category	Years 1-5	Average Cost Per Year (Years 1-5)	% of Total		%		%	Difference from FY1718 Budget	Difference from Habitat Plan Cost Estimate
Land Acquisition	$ 27,380,000	$ 5,476,000	56%	$ 108,112	3%	$ 165,553	8%	$ 57,441	$ (5,310,447)
Reserve Management and Maintenance	$ 3,750,000	$ 750,000	8%	$ 232,312	7%	$ 75,877	4%	$ (156,435)	$ (674,123)
Monitoring, Research, and Scientific Review	$ 2,140,000	$ 428,000	4%	$ 335,689	10%	$ 312,044	15%	$ (23,645)	$ (115,956)
Western Burrowing Owl Conservation Strategy	$ 320,000	$ 64,000	1%	$ 228,452	7%	$ 336,056	16%	$ 107,604	$ 272,056
Habitat Restoration & Creation	$ 10,420,000	$ 2,084,000	21%	$ 1,231,800	36%	$ 312,209	15%	$ (919,591)	$ (1,771,791)
Program Administration	$ 3,740,000	$ 748,000	8%	$ 1,316,238	38%	$ 913,857	43%	$ (402,381)	$ 165,857
Contingency Fund	$ 1,010,000	$ 202,000	2%	$ -	0%	$ -	0%	$ -	$ (202,000)
Habitat Plan Implementation Total	$ 48,760,000	$ 9,752,000	100%	$ 3,452,603	100%	$ 2,115,596	100%	$ (1,337,097.00)	$ (7,636,404)
Waters Permitting				$ 171,000		$ 136,174			
Total Habitat Agency Budget				$ 3,623,603		$ 2,251,770		($1,337,097)	

Table 22b. Comparison of Actual Expenditures to Habitat Plan Cost Estimate - Cumulative

	Cost Estimate from Habitat Plan			Expenditures by Fiscal Year							
Cost Category	Years 1-5	Average Cost Per Year (Years 1-5)	% of Total	FY1314	FY1415	FY1516	FY1617	FY1718	Total (Years 1-5)	% of Total	Difference from Habitat Plan Cost Estimate Years 1-5
Land Acquisition	$27,380,000	$5,476,000	56%	$ 5,813	$ 74,678	$ 83,700	$ 104,642	$ 165,553	$ 434,386	5%	$ (26,945,614)
Reserve Management and Maintenance	$ 3,750,000	$ 750,000	8%	$ 9,895	$ 33,289	$ 170,343	$ 109,740	$ 75,877	$ 399,144	4%	$ (3,350,856)
Monitoring, Research, and Scientific Review	$ 2,140,000	$ 428,000	4%	$ -	$ 7,205	$ 120,764	$ 382,976	$ 312,044	$ 822,989	9%	$ (1,317,011)
Western Burrowing Owl Conservation Strategy	$ 320,000	$ 64,000	1%	$ 32,483	$ 82,952	$ 161,174	$ 306,074	$ 336,056	$ 918,739	10%	$ 598,739
Habitat Restoration & Creation	$10,420,000	$2,084,000	21%	$ 4,294	$ 60,604	$ 223,726	$ 772,351	$ 312,209	$ 1,373,184	15%	$ (9,046,816)
Program Administration	$ 3,740,000	$ 748,000	8%	$577,723	$1,147,212	$1,196,607	$1,294,296	$ 913,857	$ 5,129,695	57%	$ 1,389,695
Contingency Fund	$ 1,010,000	$ 202,000	2%	$ -	$ -	$ -	$ -	$ -	$ -	0%	$ (1,010,000)
Total Habitat Plan	**$48,760,000**	**$9,752,000**	**100%**	**$630,208**	**$1,405,940**	**$1,956,314**	**$2,970,079**	**$2,115,596**	**$9,078,137**	**100%**	$ (39,681,863.00)
Waters Permitting				$ 24,638	$ 44,029	$ 118,237	$ 85,699	$ 136,174	$ 408,777		
Total Habitat Agency				**$ 654,846**	**$1,449,969**	**$2,074,551**	**$3,055,778**	**$2,251,770**	**$ 9,486,914**		

Table 23. Summary of Revenue – Reporting Period and Cumulative

	Reporting Period		Cumulative					Habitat Plan Assumption
Funding Source		**% of Total**	**FY14 + FY15**	**FY16**	**FY17**	**FY18**	**Total**	**% of Total**	**% of Total**
Fee Funding									
Land Cover Fee	$ 3,902,251	32%	$ 4,716,296	$ 3,455,394	$ 2,496,045	$ 3,902,251	$ 14,569,985	34%	
Serpentine Fee	$ 563,762	5%	$ 1,126,683	$ 679,176	$ 56,055	$ 563,762	$ 2,425,676	6%	
Nitrogen Deposition Fee	$ 392,548	3%	$ 327,132	$ 145,684	$ 147,123	$ 392,548	$ 1,012,486	2%	
Burrowing Owl Fee	$ 4,688,419	38%	$ 855,189	$ 420,678	$ 320,844	$ 4,688,419	$ 6,285,130	15%	
Wetland Fee	$ 531,250	4%	$ 980,663	$ 71,420	$ 54,896	$ 531,250	$ 1,638,229	4%	
Participating Special Entity Charges	$ 48,415	0.4%	$ 100,501	$ 23,135	$ 14,286	$ 48,415	$ 186,337	0%	
Total Fee Funding	***$ 10,126,645***	***83%***	***$ 8,106,463***	***$ 4,795,487***	***$ 3,089,249***	***$ 10,126,645***	***$ 26,117,844***	***61%***	***55%***
Non-Fee Funding									
Mitigation Only and Voluntary Contributions	$ -	0%	$ 724,059	$ 1,077,674	$ 540,442	$ -	$ 2,342,175	5%	
Grants[a]	$ 2,106,543	17%	$ 319,292	$ 2,430,548	$ 945,925	$ 2,106,543	$ 5,802,308	14%	
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations	$ -	0%		$ 8,607,500	$ -	$ -	$ 8,607,500	20%	
Total Non-fee Funding	***$ 2,106,543***	***17%***	***$ 1,043,351***	***$ 12,115,722***	***$ 1,486,367***	***$ 2,106,543***	***$ 16,751,983***	***39%***	***45%***
Total	**$ 12,233,188**						***$ 42,869,827***		

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

Source	Project #	Project Name	Amount	Date	Type
Land Cover Fee					
City of Gilroy	GIL-2018-001	San Ysidro Storage	$ 8,389	11/1/2017	Private
City of Gilroy	GIL-2018-002	Glen Loma Ranch Phase 1A	$ 693,921	3/1/2018	Private
City of Gilroy	GIL-2018-004	Hecker Pass Trail	$ 37,751	6/1/2018	Private
City of Morgan Hill	MH-2017-003	Altimira-Dividend	$ 42,505	2/1/2018	Private
City of Morgan Hill	MH-2017-004	Cory-Steadfast	$ 24,189	2/1/2018	Private
City of Morgan Hill	MH-2017-005	Murphy-Mana	$ 254,472	2/1/2018	Private
City of San Jose	SJ-2017-008	King Road Mini Storage	$ 22,649	10/1/2017	Private
City of San Jose	SJ-2017-012	Arcadia Softball	$ 187,598	10/1/2017	Public
City of San Jose	SJ-2017-010	Communication Hill II	$ 830,488	1/1/2018	Private
City of San Jose	SJ-2017-024	Arcadia Evergreen	$ 897,924	1/1/2018	Private
City of San Jose	SJ-2017-013	Piercy and Hellyer Warehouse	$ 117,449	1/1/2018	Private
City of San Jose	SJ-2017-015	Coyote Creek Trail-Brokaw	$ 5,380	1/1/2018	Public
City of San Jose	SJ-2018-005	Quimby Road Holdings	$ 38,843	4/1/2018	Private
City of San Jose	SJ-2018-011	Alum Rock Falls	$ 734	6/1/2018	Public
City of San Jose	SJ-2018-018	Coyote Creek Trail-Story to Phelan	$ 15,990	6/1/2018	Public
County of Santa Clara	SCPN-2017-007	W. San Martin-Swing	$ 50,922	12/1/2017	Private
County of Santa Clara	SCPN-2018-002	Gilroy Hot Springs-Nuno	$ 53,134	5/1/2018	Private
County of Santa Clara	SCPN-2017-008	Heritage Alosi	$ 21,058	6/1/2018	Private
County of Santa Clara	SCPN-2018-001	Felter Road	$ 78,659	6/1/2018	Private
County of Santa Clara	SCPN-2018-003	Metcalf Road-UTC Middle	$ 43,924	6/1/2018	Private
SCVWD	SVWD-2017-012	Pacheco Pipeline Rehab	$ 6,048	8/1/2017	Public
SCVWD	SVWD-2018-01	Almaden Valley Pipeline	$ 8,125	10/1/2017	Public
SCVWD	SVWD-2018-002	Main Ave Madrone Pipeline	$ 10,633	2/1/2018	Public
SCVWD	SVWD-2018-003	Madrone Channel Veg Management	$ 141,980	2/1/2018	Public
SCVWD	SVWD-2018-005	Anderson Dam Geotech	$ 221,837	2/1/2018	Public
PSE	PSE-2018-002	Metcalf Evergreen Reconductoring	$ 87,646	5/1/2018	PSE
Land Cover Fee subtotal			***$ 3,902,251***		
Serpentine Fee					
City of San Jose	SJ-2017-010	Communication Hill II	$ 241,507	1/1/2018	Private
County of Santa Clara	SCPN-2018-001	Villas on the Park	$ 46,621	6/1/2018	Private
SCVWD	SVWD-2018-005	Anderson Dam Geotech	$ 6,563	6/1/2018	Public
PSE	PSE-2018-002	Metcalf Evergreen Reconductoring	$ 269,071	5/1/2018	PSE
Serpentine Fee Subtotal			***$ 563,762***		
Nitrogen Deposition Fee					
City of Gilroy	Gil-2018-001	San Ysidro Storage	$ 1,340	11/1/2017	Private

Source	Project #	Project Name	Amount	Date	Type
City of Gilroy	Gil-2018-002	Glen Loma Ranch Phase 1A	$ 8,198	3/1/2018	Private
City of Gilroy	Gil-2018-003	Monterey Gateway Apartments	$ 1,227	6/1/2018	Private
City of Morgan Hill	MH-2017-003	Altimira-Dividend	$ 321	2/1/2018	Private
City of Morgan Hill	MH-2017-004	Cory-Steadfast	$ 677	2/1/2018	Private
City of Morgan Hill	MH-2017-005	Murphy-Mana	$ 11,725	2/1/2018	Private
City of San Jose	SJ-2017-007	SJSC Towers	$ 46,541	10/1/2017	Private
City of San Jose	SJ-2017-025	The Graduate	$ 13,700	10/1/2017	Private
City of San Jose	SJ-2017-009	Foundation for Hispanic Education	$ 5,085	10/1/2017	Private
City of San Jose	SJ-2017-006	Steven's Creek Hotel	$ 5,212	10/1/2017	Private
City of San Jose	SJ-2017-013	Piercy and Hellyer Warehouse	$ 3,920	10/1/2017	Private
City of San Jose	SJ-2017-014	Bassett Street Apartments	$ 6,183	10/1/2017	Private
City of San Jose	SJ-2017-016	Ohlone Block B	$ 12,320	10/1/2017	Private
City of San Jose	SJ-2017-012	Arcadia Softball	$ 1,257	10/1/2017	Public
City of San Jose	SJ-2017-017	Elden Glen	$ 229	10/1/2017	Private
City of San Jose	SJ-2017-010	Communication Hill II	$ 22,259	1/1/2018	Private
City of San Jose	SJ-2017-021	San Pedro Square Residence	$ 17,450	1/1/2018	Private
City of San Jose	SJ-2017-024	Arcadia Evergreen	$ 92,436	1/1/2018	Private
City of San Jose	SJ-2017-022	Araujo Villas	$ 412	1/1/2018	Private
City of San Jose	SJ-2017-023	Senter and Alma Self Storage	$ 1,048	1/1/2018	Private
City of San Jose	SJ-2017-020	Holden Assisted Living	$ 1,255	1/1/2018	Private
City of San Jose	SJ-2017-019	San Pedro Blocks ACD	$ 3,572	1/1/2018	Private
City of San Jose	SJ-2017-018	Renascent Place Apt	$ 7,420	1/1/2018	Private
City of San Jose	SJ-2018-007	Delmas Pro	$ 5,359	4/1/2018	Private
City of San Jose	SJ-2018-005	Quimby Road Holdings	$ 321	4/1/2018	Private
City of San Jose	SJ-2018-004	Chick-Fil-A Blossom Hill	$ 6,876	4/1/2018	Private
City of San Jose	SJ-2018-006	353 West Julian Street	$ 9,438	4/1/2018	Private
City of San Jose	SJ-2018-001	Villas on the Park	$ 3,847	4/1/2018	Private
City of San Jose	SJ-2018-012	2230 Stevens Creek Blvd	$ 3,633	4/1/2018	Private
City of San Jose	SJ-2018-009	Westfield Expansion	$ 79,167	6/1/2018	Private
City of San Jose	SJ-2018-008	1610 Meridian	$ 12,479	6/1/2018	Private
City of San Jose	SJ-2018-014	2979 Huff Ave	$ 687	6/1/2018	Private
City of San Jose	SJ-2018-015	In-N-Out Burger	$ 2,332	6/1/2018	Private
City of San Jose	SJ-2018-002	Oakmont Evergreen	$ 4,305	6/1/2018	Private
City of San Jose	SJ-2018-010	7008 San Felipe Road	$ 92	6/1/2018	Private
County of Santa Clara	SCPN-2017-007	W San Martin-Swing	$ 92	12/1/2017	Private
County of Santa Clara	SCPN-2018-002	Gilroy Hot Springs-Nuno	$ 46	5/1/2018	Private

Source	Project #	Project Name	Amount	Date	Type
County of Santa Clara	SCPN-2017-008	Heritage-Alosi	$ 46	6/1/2018	Private
County of Santa Clara	SCPN-2018-001	Felter Road	$ 46	6/1/2018	Private
Nitrogen Fee Subtotal			***$ 392,548***		
Burrowing Owl Fee					
City of San Jose	SJ-2017-008	King Road Mini Storage	$ 246,456	10/1/2017	Private
City of San Jose	SJ-2017-012	Arcadia Softball	$ 87	10/1/2017	Public
City of San Jose	SJ-2017-024	Arcadia Evergreen	$ 4,386,049	1/1/2018	Private
City of Morgan Hill	BUOW Fee	Annual CMH Habitat Mitigation Fees	$ 55,827	2/1/2018	Public
Burrowing Owl Fee Subtotal			***$ 4,688,419***		
Wetland Fee					
City of Gilroy	Gil-2018-002	Glen Loma Ranch Phase 1A	$ 9,335	3/1/2018	Private
City of San Jose	SJ-2017-010	Communication Hill II	$ 4,174	1/1/2018	Private
City of San Jose	SJ-2017-015	Coyote Creek Trail-Brokaw	$ 19,229	1/1/2018	Public
City of San Jose	SJ-2017-020T	Holden Assisted Living	$ 272	1/1/2018	Private
City of San Jose	SJ-2018-018	Coyote Creek Trail-Story to Phelan	$ 14,905	6/1/2018	Public
County of Santa Clara	SCPK-2018-001	Almaden and North Ridge Trails	$ 9,220	2/1/2018	Public
County of Santa Clara	SCPN-2018-002	Gilroy Hot Springs-Nuno	$ 27,844	5/1/2018	Private
County of Santa Clara	SCPN-2018-003	Metcalf Road-UTC Middle	$ 7,499	6/1/2018	Private
SCVWD	SVWD-2018-003	Madrone Channel Veg Management	$ 438,772	2/1/2018	Public
Wetland Fee Subtotal			***$ 531,250***		
Participating Special Entity Charge and Admin Fee					
PSE Charge	PSE-2018-003		$ 5,000	5/1/2018	PSE
PSE Charge	PSE-2018-002		$ 30,672	5/1/2018	PSE
PSE Admin Fee	PSE-2018-001		$ 5,000	3/1/2018	PSE
PSE Admin Fee	PSE-2018-002		$ 5,000	4/1/2018	PSE
PSE Admin Fee	PSE-2018-002		$ 2,743	5/1/2018	PSE
Participating Special Entity Charge Subtotal			***$ 48,415***		
Mitigation Only and Voluntary Contributions					
None					
Mitigation Only and Voluntary Contributions Subtotal			$ -		
Grants					
Section 6	USFWS	Acquistion	$ 2,000,000	6/25/2018	Grant
NCCP Local Assistance	CDFW	Research: Corridor	$ 30,450	11/17/2017	Grant
NCCP Local Assistance	CDFW	Research: Sycamore	$ 76,093	11/17/2017	Grant
Grants subtotal			***$ 2,106,543***		

Source	Project #	Project Name	Amount	Date	Type
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations			*$* -		
None			**$** -		
Land Acquisition by Local Land Agencies, Non-Profits, and Foundations Subtotal			**$** -		
Total			**$ 12,233,188**		

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	$	40,092.80	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	$	266,171.13	34.5			CTS and CRLF
FY1617	Mitigation Only-5	Uvas Creek Mitigation	public	7/28/2016	$	440,886.91	20.92			CFLF and LBV.Fees collected must be applied to Reserve System lands for these species. 20.92 acres
FY1617	Mitigation Only-6	San Jose Water Company/Calero Park Wetland Mitigation	public	7/20/2016	$	58,580.00	0.02	0.02	Calero Wetland	Creation/Restoration Fees collected to be applied to Wetland Creation and Maintenance, .02 acres

Year	Code	Project Name/Source	Type	Date	Revenue	Mitigation (Acres)	Notes
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	
FY1415	Projects	8			$ 724,058.90		
FY1516	Projects	3			$ 496,628.70		
FY1617	Projects	4			$ 540,441.71		
FY1718	Projects	0			$ -		
Total		**15**			**$ 1,761,129.31**		

Table 26. 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	
State Parks Recreational Trails Program	2014	CDPR	Acquisition: Coyote Ridge	$ 400,000	SCVOSA		$400,000	$0	Oct 2015
State Coastal Conservancy	2014	State Coastal Conservancy	Acquisition: Coyote Ridge	$ 1,000,000	SCVOSA		$1,000,000	$0	Oct 2015
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	Acquistion	$ 2,000,000	SCVHA		$0	$2,000,000	
Wildlife Conservation Board	2015	Wildlife Conservation Board	Acquisition: Coyote Ridge	$ 2,700,000	SCVOSA		$2,700,000	$0	Oct 2015
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	March 2019

Table 26. 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: N-Dep	$ 80,000	SCVHA	$10,000		$80,000	March 2019
NCCP Local Assistance	2016	CDFW	Research: TRBL	$ 20,556	Talon	$20,556		$20,556	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		$76,093	March 2020
Total				**$ 15,295,765**					
Summary	FY14		FY15	FY16	FY17	FY18	Total			
Number of Grants	3		9	4	5	3	24			
Federal	$ -		$ 3,000,000	$ 2,000,000	$ 1,839,382	$ 2,000,000	$ 8,839,382			
State	$ 140,201		$ 4,279,091	$ 254,552	$ 175,996	$ 106,543	$ 4,956,383			
Local	$ -		$ -	$ -	$ -	$ -	$ -			
Private	$ -		$ 1,500,000	$ -	$ -	$ -	$ 1,500,000			
Total	**$ 140,201**		**$ 8,779,091**	**$ 2,254,552**	**$ 2,015,378**	**$ 2,106,543**	**$ 15,295,765**			

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

Chapter 11
Program Administration

The Habitat Plan permits were issued in July 2013, and with the close of FY1718, the Habitat Agency neared 5 years of Habitat Plan implementation. This period focused on growth of the Habitat Agency by hiring staff, finalizing policies and guidance documents from previous years, conducting advocacy and outreach to state and federal governments, and securing grants and funding for future land acquisition and restoration projects. The Habitat Agency also developed a covered plant compliance tracking approach that can be applied consistently across the Reserve System.

This chapter highlights implementation accomplishments and provides a summary of executive officer directives, interpretation and clarification memorandums, mitigation agreements, and administrative changes and minor modifications to the Habitat Plan and other conservation efforts during the Annual Reporting period.

Major Accomplishments

New Staff and Employee Policies

The Habitat Agency hired one new staff member, Robin Glazer, as a senior real estate agent to assist with land acquisition and grant writing. She works 70% for the County of Santa Clara and 30% for the Habitat Agency.

The Habitat Agency updated their employee handbook to reflect new state laws and fix inconsistencies identified by their auditor and an internal review.

Endowment

The Habitat Agency selected the Silicon Valley Community Foundation as its endowment holder in the FY1617 reporting year. For investment with the Silicon Valley Community Foundation, the Habitat Agency set up a 501(c)(3) organization—Friends of the Santa Clara Valley Habitat Agency (Friends)—to own the mitigation fund, and the 501(c)(3) will invest the fund through a Nonprofit Investment Fund at Silicon Valley Community Foundation.

During the reporting year, the Internal Revenue Service and the State Franchise Tax Board approved the tax exempt status of the Friends, which will allow the Habitat Agency to invest their first payment with this group in 2019. The Friends also registered with the California Attorney General's Registry of Charitable Trusts. The Friends Board of Directors increased from three to five members and held two meetings.

Financial Audit

The Habitat Agency commenced the audit of its financial statements of the government activities and major funds in November of 2017. The Habitat Agency hired the certified public accountant Moss, Levy & Hartzheim LLP, and facilitated and directed the completion of their audit report. Moss,

Levy & Hartzheim LLP, published their findings on February 14, 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, 2017, 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.
- Moss, Levy & Hartzheim LLP, 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 Moss, Levy & Hartzheim LLP, and the Habitat Agency arose during the course of their audit.
- Moss, Levy & Hartzheim LLP, 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.
- Moss, Levy & Hartzheim LLP, believes that the audit evidence obtained during the course of the audit is sufficient and appropriate to provide a basis for their audit opinions.

Advocacy and Outreach

The Habitat Agency conducted legislative advocacy to ensure continued funding streams are still available for HCP/NCCP. 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 traveled to both Washington and Sacramento in April to advocate for HCP/NCCPs and their continued funding with the federal and state governments.

The Habitat Agency attended both the National HCP Coalition and the California HCP Coalition 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 California HCP Coalition was hosted by the Coachella Valley Conservation Commission in Palm Springs, California, included approximately 60 attendees, and covered a range of topics from habitat connectivity, LAG grants, and implementation challenges, to cross plan coordination, species at the urban edge, and managing uncertainty (e.g., climate change),

In support of public education and outreach, the Habitat Agency also gave presentations to local groups, when requested. Edmund Sullivan presented at approximately five outreach events during the reporting year, which included organizations such as the Cattleman's Association, a relator group, and the Kiwanis. These presentations provided a general overview of the Habitat Plan to inform the public about its purpose and how it works. The Habitat Agency also created a three-page

brochure that was distributed at these events, which included a summary of how the Habitat Plan works, conservation strategy and economic development achievements, and a flow chart depicting how a project gets permitted through the Habitat Plan. The brochure is available on the Habitat Agency's website. The Habitat Agency also developed several posters for these events, depicting and describing restoration, the Reserve System, and burrowing owls.

The Habitat Agency held a phone conference with Beth Honing and Sandra Scoggin from the San Francisco Bay Joint Venture (SFBJV) to introduce the Habitat Plan's goals and objectives and explore potential partnership and grant funding opportunities. The SFBJV is a non-profit, non-regulatory partnership focused on wetland acquisition and restoration at the ecosystem scale. Prior to the meeting, the SFBJV representatives perceived the Habitat Plan's (and all Habitat Conservation Plans') purpose as a collector of "mitigation for development." After hearing Edmund Sullivan provide more details on the Habitat Plan's landscape- and natural community-level approach to conservation and non-development funding mechanisms, their perceptions changed. As the next step, they proposed having the Habitat Agency make a presentation to the SFBJV Conservation Delivery Committee in 2019 to provide additional detail on existing and future large-scale wetland and riparian restoration projects in Coyote Valley and Soap Lake. Expanding this relationship will be one of the Habitat Agency's priorities for its 2019 grant program.

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.

- No private project RGP applications were approved in the reporting period.
- One public restoration project was approved for RGP coverage in the reporting period. The San Felipe Creek 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:
    - 5,002.5 linear feet of stream rehabilitation and creation credits
    - 1.76 acres of seasonal wetland rehabilitation/re-establishment/enhancement credits
    - 0.0375 acre of perennial seep wetland credits

- 1.64 acres of stream buffer establishment (0.16 acre or 120 linear feet) credits

- The Agency continued to work on establishing an In-Lieu Fee Program to support the RGP.
- Final drafts of the In-Lieu Fee Program and RGP Programmatic Biological Assessment are both awaiting final submittal, having been delayed by the Federal Government shutdown.
- The third RGP Annual Report was submitted to USACE.

Cumulative Scenario

- A total of 0.18 uniform pond and wetland mitigation credit acres (plus a potential 1.76 from San Felipe Restoration) and 0.12 preservation credits have been generated by prior restoration projects undertaken by the Habitat Agency.
- The San Felipe Creek Restoration Project will result in additional stream and stream buffer uniform credit acres.

Permit Integration

The Habitat Agency continued working with the San Francisco Bay and Central Coast Regional Water Quality Control Boards to develop a permit compliance strategy for state and federal water quality regulations. Work focused on defining the suite of activities that could be covered by a Clean Water Act 401 water quality certification or a program-level waste discharge requirement.

The Habitat Agency also continued a dialog with the National Marine Fisheries Service (NMFS) regarding establishing a programmatic Biological Opinion to support the RGP. NMFS has tentatively agreed to work with the Habitat Agency in developing a programmatic Biological Assessment that would apply to projects using the RGP but that cannot meet the *not likely to adversely affect* requirements for listed salmonid currently tied to the RGP.

Grants and Funding

The Habitat Agency worked with the SCVWD to secure $8 million dollars for the future acquisition of property for land conservation in FY1819. The SCVWD and the Habitat Agency negotiated a partnership agreement 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 received a Cooperative Endangered Species Conservation Fund (Section 6 of the Endangered Species Act) Grant for $2 million with a Wildlife Conservation Board match.

Covered Plant Compliance Tracking

The Habitat Agency finalized a compliance tracking system to document the protection of plant occurrences in the Reserve System. Impacts on plant occurrences are only allowed after a certain number of plant occurrences are protected in the Reserve System. The Habitat Plan commits to the protection of a certain number of plant occurrences, regardless of impacts, to contribute to species recovery (for Natural Community Conservation Planning Act compliance). The Habitat Agency will count and track the number of protected plant occurrences in the Reserve System as they were identified in the original Habitat Plan covered plant dataset. That is, the Habitat Agency will receive credit for the number of plant occurrences assumed to be present during development of the

Habitat Plan (as long as more recent surveys document that they are still extant). If a covered plant population found in the field overlaps with the plant occurrence point in the Habitat Plan data, or can be otherwise aligned (e.g., the same CNDDB number), the population is identified for the purposes of Habitat Plan compliance tracking as the plant occurrence identified in the Habitat Plan. If there is no overlap, then the plant population is considered a new occurrence not identified in the original Habitat Plan. Large populations that occur over a wide area (e.g., Santa Clara Valley dudleya or smooth lessingia) may overlap with multiple plant occurrences as identified in the Habitat Plan. A summary of the protected covered plant occurrences in the Reserve System is shown in **Table 17a**. Once occurrence protection is documented for the purposes of compliance tracking, the Habitat Agency will conduct status and trends monitoring for covered plants in a manner that responds to specific plant characteristics and site conditions (**Tables 17b** and **17c**) (ICF 2018b). The Habitat Agency is also tracking the cumulative effects of multiple covered projects on a plant occurrence to ensure the Habitat Agency is accurately assessing whether a plant occurrence has been impacted.

Interpretation and Clarification Memos

The Co-Permittees approved one new interpretation and clarification memorandum to allow for consistent application of requirements across all covered projects. This memorandum was initiated by the Implementation Committee and then submitted for review and approval by the Technical Advisory Committee. A complete record of this memorandum can be found on the Habitat Agency website.[30]

- **2017-006 – 1600/Lake and Streambed Alteration Agreement Clarification.** Provides guidance to public and private projects that are covered by the Habitat Plan and which require a CDFW Lake or Streambed Alteration Agreement. Streamlines CDFW review of such permits when Habitat Plan coverage is cited.

Modifications to the Habitat Plan

The Habitat Plan or incidental take permits can be modified in accordance with USFWS and CDFW regulations and the terms of the Implementing Agreement. Habitat Plan modifications are not anticipated on a regular basis. Modifications can be requested by a Co-Permittee or by the permitting agencies. The categories of modification are administrative changes, minor modifications, and amendments. There was one modification to the Habitat Plan in 2017. **Table 28** summarizes Technical Advisory Committee Accomplishments and Wildlife Agencies' Approvals. The memoranda describing the approved modifications to the Habitat Plan are available at: http://scv-habitatagency.org/335/Plan-Modifications.

- **Modification of Table 6-2 (Aquatic Avoidance and Minimization Measures**). This Modification allows applicants to demonstrate compliance with Table 6-2 through adherence to existing stormwater management plans. This Modification was approved by the Governing Board in March 2016 and by the Wildlife Agencies on January 30, 2018.

[30] http://scv-habitatagency.org/297/Interpretations

Other Conservation Efforts

The Habitat Agency provides stakeholder input for a number of conservation efforts in the Habitat Plan area and the greater San Francisco Bay Area. Conservation efforts that the Habitat Agency participated in during the reporting year include the following.

- Conservations Lands Network updates
- Regional Advance Mitigation Program
- Santa Clara Valley Regional Conservation Investment Strategy
- High-Speed Rail
- Pajaro Compass
- Wildlife Connectivity Working Group and Coyote Valley subgroup

Table 28. Reporting Period Technical Advisory Committee Accomplishments and Wildlife Agencies' Approvals

	Meeting Date Assigned	Action Item	Date Complete	Notes
1	8/25/2016	Terah will provide spreadsheet for wetland tracking of stay ahead	June 2017	
2	9/22/2016	Joseph will provide LBV to Eric for review.	July 2017	USFWS approved condition modification July 2017
3	6/22/2017	**Terah** will find language about origin of stream restoration obligation for SCVWD	July 2017	Riparian and stream restoration that is counted towards the total conservation benefit of the Plan (Table 5-13) is allowed on private or public lands outside the Reserve System (i.e., without a conservation easement) as long as the following conditions are met.
				Restoration is conducted by a Permittee, including the Implementing Entity, or a third party under contract with a Permittee.
				Restoration is done consistent with the Reserve Design and Assembly Principles described in Section 5.2.3
				The site is restored to pre-project or ecologically improved conditions within 5 years of the end of the covered activity.
				A Wildlife Agency-approved site restoration plan is developed consistent with the requirements in Section 5.3.6 Riverine and Riparian Forest and Scrub Conservation and Management, subheading Riparian Restoration, subheading Site Restoration Plan.
				There are no suitable and feasible restoration sites within the Reserve System.
				The restoration project meets the riverine and riparian and requirements described below in Section 5.3.6 Riverine and Riparian Forest and Scrub Conservation and Management.
				The site is maintained in perpetuity according to the terms of the Plan by the Implementing Entity or a Permittee. If the site is maintained by a third party, the third party must enter into a contract with the Implementing Entity to ensure management according to the terms of the Plan.
				The Implementing Entity, or its designated third party, monitors the restoration site in accordance with Chapter 7.
				The Implementing Entity and Wildlife Agencies approve the project.

Table 28. Reporting Period Technical Advisory Committee Accomplishments and Wildlife Agencies' Approvals

	Meeting Date Assigned	Action Item	Date Complete	Notes
				One exception to the requirement that the site be maintained in perpetuity is that restoration projects occurring on streams managed for flood control and human safety purposes may be adversely modified (i.e., modified such that the restoration no longer serves the functions for which it was designed) by future covered activities. In such cases, any adverse modification of a restoration site will be off-set by new restoration in an alternative location(s). New restoration actions must be initiated in advance of the new covered activity that would adversely modify the restoration site. All such arrangements will be discussed and approved by the Wildlife Agencies as soon as the Permittees or Implementing Entity become aware of such a need.
				All restoration conducted outside of the Reserve System will be tracked by the Implementing Entity to ensure that the site is monitored and managed consistent with the requirements of the Plan for the Reserve System. These projects will also be identified in the annual report.
4	N/A	Habitat Agency will draft Coyote Brush memo	Aug. 2017	This is EO-6; Requested an update to include decision tree for selecting land cover type.
5	4/28/2016	Ed, Troy, Steve R. will do a more comprehensive memo to clarify how to implement LBV condition re: site access	Sept. 2017	8/19/16 – Ed reviewed draft memo
				9/22/16 – Provided to TAC for review/comment
				12/7/16 – meeting with Wildlife Agencies
				2017 – Revisions underway
				June 2017 – Revisions finalized, **Gerry** will send minor modification letters for the LBV and TRBL survey protocol updates to Dave and Joseph
				Report out at 9/28/17 TAC
6	8/25/2016	TRBL: stream-lining survey requirements - drafted	Sept. 2017	June 2017 – Revisions finalized, **Gerry** will send minor modification letters for the LBV and TRBL survey protocol updates to Dave and Joseph
		May need to update the geobrowser mapping to reflect any updates in this condition		Report out at 9/28/17 TAC
		Greg will look into how the survey map grew for this species (Takes into account habitats that tri-colored blackbirds uses).		July 2017 – USFWS and CDFW approved modification.

Table 28. Reporting Period Technical Advisory Committee Accomplishments and Wildlife Agencies' Approvals

	Meeting Date Assigned	Action Item	Date Complete	Notes
		Terah: Will this affect the take assessment? (Habitat Plan does allow for revision of habitat models)		Report out at 9/28/17 TAC
7	2/23/2017	County Parks will write up their issue with CE in plain speaks	Sept. 2017	There will be a meeting on this in April 2017
				Terah and Don met June 2017 to discuss and identify issues.
				Habitat Agency and County Parks met 9/2017 to review key issues
				Report out at 9/28/17 TAC
8	7/27/2017	**Terah** will send out RDMapper final report	Sept. 2017	Report out at 9/28/17 TAC
9	7/27/2017	**Terah** will send the D7 grant program description (on the website)	Sept. 2017	Report out at 9/28/17 TAC
				This was completed as an interpretation. 2017-004 *Land Cover Classifications where Coyote Brush is a Common or Dominant Species. Dated 11/6/17 and posted to website.*
10	9/28/2017	Debra will send Valerie Habitat Agency formation MOU for the D7 grant agreement	Sept. 2017	Debra sent Valerie some info and on Oct. 4. Valerie sent her a draft MOU; Debra acknowledged receipt and Valerie has not heard back further.
11	9/28/2017	Gerry will check in with Jill to make sure the Debra and Mason received updated payment information for fees.	Sept. 2017	Completed immediately following September TAC
12	9/28/2017	Terah will send FYLF info to Brenda from Calero	Sept. 2017	Completed immediately following September TAC
13	6/23/2016	Habitat Agency will continue to coordinate with Mountain View; Ed will talk with Eric about Mountain View and BUOW impacts. (Update: Coverage of Mountain View impacts would trigger an amendment)	Jan. 2018	8/19/17 – meeting with Mt. View planned
				Updates will be provided as necessary
14	10/27/2016	Habitat Agency. Tiburon Paintbrush - Add proposal to next TAC	Jan. 2018	Submitted to SCVWD for review 3/14/17
				Comment provided to Creekside 4/2017 revised proposal will be provided to WAs
				Meeting with Water District 9/2017
				Meetings with SCVWD, Water District, Habitat Agency and Creekside: 10/26/17, 12/11/17

Table 28. Reporting Period Technical Advisory Committee Accomplishments and Wildlife Agencies' Approvals

	Meeting Date Assigned	Action Item	Date Complete	Notes
				This is being completed outside the TAC. Contract underway for preliminary work.
15	3/22/2017	Habitat Agency will create typical survey periods as a calendar year graphic	Jan. 2018	Completed via plant memos – no graphic will be created.
16	5/24/2017	Ed, Rob, Gerry, Joseph will work on a standard letter regarding N-deposition to ensure equity in mitigation requirements within and outside the Habitat Plan permit area.	Jan. 2018	Habitat Agency has a standard letter.
17	3/22/2018	Habitat Agency (Terah) will provide Wildlife Agencies with approval requirements for the Anderson Dam and schedule conference call (circulate to the TAC as well)	March 2018	
18	3/22/2018	Habitat Agency (Terah) will distribute Coyote Ceanothus powerpoint	March 2018	
19	3/22/2018	Habitat Agency (Gerry) will set up phone call with biologist with HTH, Janell, and Rob/Kim	March 2018	
20	3/22/2018	Habitat Agency (Gerry) will bring up San Jose Roads at the IC - are there projects that should be going through the Habitat Plan? (Planner assigned to public works?) Need to do outreach to City Department of Transportation.	March 2018	
21	3/22/2017	Gerry will put together a memo on 1600 compliance and NCCP streamlining.	May 2018	Report out in January 2018
				Final provided at March 2018 meeting
				Request by CDFW and SCVWD for additional review at March 2018 TAC
				Posted to Habitat Agency website May 2018

Chapter 12
References Cited

Literature Cited

Balance Hydrologics, Inc. 2018. A New Model for Modeling Pond Habitat in a Changing Climate: Observed and Modeled Pond Hydroperiods in Central Santa Clara County. Prepared for the Guadalupe-Coyote Resource Conservation District.

Creekside Center for Earth Observation. 2017. *Final Coyote Ridge Open Space Preserve Baseline Surveys 2016–2017*. October. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Creekside Center for Earth Observation. 2019*. Final Coyote Ridge Open Space Preserve: 2018 Annual Report*. December. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Creekside Center for Earth Observation. 2018b. *Tiburon Paintbrush Projects*. December. Prepared for Santa Clara Valley Habitat Authority. 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.

Guenther, K. 2019. *Coyote Ridge Open Space Preserve 2018 RDM Survey.* Wildland Solutions, Concord, CA, USA.

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. 2018. *Calero County Park Pond and Wetland Restoration Project – Year 2 Monitoring Report*. Los Gatos, California. December. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Higgens, P., D. Chromczak, and L. Trulio, Ph.D. 2017. *Burrowing Owl Supplemental Feeding Study – Progress Report Number 1.* December. Prepared for the Santa Clara Valley Habitat Agency.

Hillman, J. 2018. *Coyote Ceanothus Mitigation Pilot Project Report and Occurrence Plan Results for 2017*. Santa Clara Valley Water District. November 15.

Hillman, J., L. Garrison, M. Parsons, and S. Lockwood. 2018. *Almaden Calero Canal Rare Plant Surveys, 2016-2017*. Santa Clara Valley Water District.

ICF. 2018a. *Covered Plant Survey Results for Lands Adjacent to Almaden Reservoir*. Memo. September. Prepared for the Santa Clara Valley Habitat Agency.

ICF 2018b. *Summary of Covered Plant Occurrences.* Memo. September. Prepared for the Santa Clara Valley Habitat Agency.

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.

Menzel, S., L. Trulio, Ph.D., and C. Kortman. 2017. *Burrowing Owl Habitat Assessment of Public Lands throughout Santa Clara County.* May.

Monarres, L. 2018. *San Felipe Creek Restoration Project Mitigation and Monitoring Plan.* Dudek. Oakland, California. June. Prepared for the Santa Clara Valley Habitat Agency.

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*.

Niederer, C., S. Weiss, J. Quenelle, M. Kent, and C. Schwind. 2018. *VTA-Coyote Ridge Property. 2017 Annual Report: Year 11.* Prepared by Creekside Center for Earth Observation for Santa Clara Valley Open Space Authority. 118 pages.

Point Blue Conservation Service. 2019a. *Pajaro Ranch Annual Monitoring Report*. Petaluma, California. Prepared for the Santa Clara Valley Habitat Agency.

Point Blue Conservation Service. 2019b. *Pacheco Creek Reserve Annual Monitoring Report*. Petaluma, California. Prepared for the Santa Clara Valley Habitat Agency.

Santa Clara Valley Habitat Agency. 2017. *Burrowing Owl Breeding Season Survey Report*. October.

Santa Clara Valley Habitat Agency. 2018. *Western Burrowing Owl Management and Monitoring Plan for San Jose-Santa Clara Regional Wastewater Facility Bufferlands*. January.

Santa Clara Valley Audubon Society. 2018. San José-Santa Clara Regional Wastewater Facility Bufferlands Burrowing Owl Management, Year 1: October 2016–September 2017; Summary Report for the Burrowing Owl Expert Adaptive Management Team. Unpublished report, January 2018. 20 pp.

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.

Schwan, J. 2018. Pacheco Creek Reserve Vegetation Mapping. Memo. Prunuske Chatham, Inc. Prepared for the Santa Clara Valley Habitat Agency. May 16.

Spencer, R. 2018. FY2017-18 Habitat Agency Development Fees Automatic Inflation Adjustment. Memo. Prepared for the Santa Clara Valley Habitat Agency. February 13.

Swiecki, T, Ph.D., and E. Bernhardt, Ph.D. 2018. *An Evaluation of the Threats Posed by Exotic Phytophthora Species to the Endangered Coyote Ceanothus and Selected Natural Communities in*

the Plan Area. Phytosphere Research. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Trulio, L., D. Chromczak, and P.G. Higgins 2018a. *Santa Clara Valley Habitat Plan 2018 Burrowing Owl Breeding Season Survey Report*. Burrowing Owl Expert Team. Prepared for the Santa Clara Valley Habitat Agency. October.

Trulio, L., D. Chromczak, and P.G. Higgins. 2018b. *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. 2017. *Annual Progress Report on Nitrogen LAG Grant: Monitoring Nitrogen Deposition in the Santa Clara Valley.* January 19. Prepared for Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Weiss, S.B., 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.

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.

WRA. 2011. *Grazing Management Plan Evaluation Report Warm Springs Seasonal Wetland Unit*.

Personal Communication

Galli Basson. 2018. Email to Terah Donovan. Santa Clara Valley Habitat Authority. Coyote Ridge Open Space Preserve Management Actions. December 18.

Janell Hillman. 2019. Coyote Ceanothus Creation Population. Email to Terah Donovan. Santa Clara Valley Habitat Authority. January 15. Prepared for the Santa Clara Valley Habitat Authority. Morgan Hill, CA.

Chapter 13
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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

Summary of Plant Occurrences

Memorandum

To:	Edmund Sullivan Santa Clara Valley Habitat Agency
From:	Torrey Edell Kathryn Gaffney David Zippin, Ph.D.
Date:	September 28, 2018
Re:	**Summary of Covered Plant Occurrences**

Introduction

Covered plant occurrence data used to develop the Santa Clara Valley Habitat Plan (Habitat Plan) is an important piece of baseline information needed to track permit compliance. Current conditions, however, may differ from the original plan occurrence data, sometime substantially. Plant occurrences are variable by nature, contracting and expanding over time. Plants can appear where they once were not known to be present, combine with nearby occurrences, or become locally extirpated. This issue has become especially apparent on the Habitat Agency's Coyote Ridge Open Space Preserve (Reserve), where smooth lessingia, which was not common in the past, is now abundant throughout the entire Reserve, in what appears to be a single population of millions of individuals. The Habitat Agency wants to understand the differences in the number and extent of the covered plant occurrences identified in specific locations at the time of Habitat Plan development, and compare this information to what was identified during the more recent baseline surveys. This information will assist the Habitat Agency in documenting Habitat Plan compliance in terms of the number of occurrences identified in the Habitat Plan anticipated to be protected that are now actually protected in implementation, an essential task.

Background

The Habitat Plan used *plant occurrences* as the key metric for impacts and conservation because that is how plant data was (and still is) reported in the California Natural Diversity Database (CNDDB), the most extensive and widely-used species occurrence dataset in California. The wildlife agencies (California Department of Fish and Wildlife and U.S. Fish and Wildlife Service) accepted this approach as the best available data.

The Habitat Plan defines a plant occurrence as "a group of individuals that are separated by at least 0.25 mile from other groups of individuals of the same species or subspecies" (Page 5-45)[1]. This dataset of plant occurrences defines the Habitat Plan's limits on impacts (Table 4-6) and required conservation (Table 5-16). Therefore, the Habitat Plan's compliance must also be measured in terms of impacts to and conservation of plant occurrences. However, the Habitat Agency has found during covered plant surveys that some of the covered plants occur far more extensively than was documented in the Habitat Plan and are therefore difficult to fit into the Habitat Plan definition and accounting of plant occurrences.

Covered plant surveys in the Reserve were conducted in 2016 and 2017 and in the Calero County Park Conservation Easement (Calero CE) in 2017. The purpose of these surveys was to document the current extent of known occurrences and to identify any unknown occurrences. The Habitat Plan definition of a plant occurrence was used to facilitate compliance monitoring[2]. In addition, the Reserve and Calero CE covered plant surveys utilized CNDDB data to identify locations where plant populations have been previously identified. Based on the result of the surveys, the plant populations were separated into occurrences using the 0.25 mile occurrence definition (as described above) or other biologically meaningful ways[3] to facilitate effectiveness monitoring (i.e., are the management and monitoring actions successful at achieving the desired outcome). These surveys will also be used to guide the management and monitoring actions on the reserves.

However, the field survey work done since Habitat Plan adoption did not consider the locations of plant occurrences assumed in the Habitat Plan. Understanding how current conditions relate to conditions at the time of Habitat Plan adoption is a critical step in compliance monitoring. To satisfy compliance requirements, plants identified in the field must be assigned to either 1) an occurrence assumed in the Habitat Plan, or 2) to a new occurrence not documented in the Habitat Plan. This memo includes three tables documenting plant occurrence information at the time of Habitat Plan approval in comparison to current conditions. Tables 1 and 2 provide specific details on each covered plant species occurrence in the Reserve and in the Calero CE, respectively. Table 3 identifies the number of covered plant occurrences anticipated to be protected in the Reserve System.

Covered Plant Occurrence Summary Tables

This section includes two tables comparing the plant occurrence data used in the Habitat Plan to field data collected by the Habitat Agency during Habitat Plan implementation.

Tables 1 and 2 correlate each Habitat Plan occurrence to a baseline survey population to identify which populations were known at the time of Habitat Plan development and which were new for the purposes of compliance tracking. Occurrences from the Habitat Plan were assumed to be associated with a baseline survey population when they were either overlapping or within 0.25 mile of one

[1] The Habitat Plan uses this definition for all covered plants except one, Santa Clara Valley dudleya, for which the Plan defines an occurrence as "a group of individuals on a rock outcrop" because those outcrops typically occur much less than 0.25 miles apart.

[2] See the Habitat Agency's Clarification and Interpretation Memo *Definition of a Covered Plant Occurrence and Tracking Occurrences* from May 30, 2017 for more information.

[3] Occurrences of Mt. Hamilton thistle on the Reserve were defined as all those individuals with a discrete drainage.

another (i.e., when they were outside of the Reserve System but likely contiguous with an occurrence inside the Reserve System). Since the baseline surveys mapped large population groups, one baseline population can be associated with multiple Habitat Plan occurrences. The Habitat Plan dataset displays occurrences as points while the baseline populations are displayed as polygons making these comparisons fairly simple (i.e., a polygon overlaps a point). These tables also provide a detailed history of each covered plant occurrence in the Reserve System. The "ICF_ID" column was created to give each data point a unique occurrence number. The occurrence numbers correspond to the total number of occurrences presented in Table 5-16 of the Plan. For example, if Table 5-16 shows there are three occurrences of coyote ceanothus, then each coyote ceanothus data point will be assigned to one of three occurrence numbers. The "Reserve_ID" column identifies the number assigned to each population during the baseline survey.

Table 1. Covered Plant Occurrences on the Coyote Ridge Open Space Preserve for Habitat Plan Compliance and Monitoring

Habitat Plan ICF_ID	Habitat Plan Source and Metadata, if any	Baseline Survey Populations (2016 or 2017)*	Reserve_ID for Monitoring
Mt. Hamilton Thistle			
#2	UTC- No metadata	7,286 plants	CROSP-HOST02
#3	UTC- No metadata	#3 is part of same group as #2 (7,286 plants)	
#29	CNDDB EO #38- 2 plants in 2011	#29 is part of same group as #2 (7,286 plants)	
#4	UTC- No metadata	7,579 plants	CROSP-HOST04
#30	CNDDB EO #39- 400 plants in 1989	#30 is part of same group as #4 (7,579 plants)	
#5	UTC- No metadata	3,756 plants	CROSP-HOST03
#6	UTC- No metadata	4,889 plants	CROSP-HOST08
#7	UTC- No metadata, completely overlaps #9	#7 is part of same group as #5 (4,889 plants)	
#8	UTC- No metadata	#8 is part of same group as #5 (4,889 plants)	
#9	UTC- No metadata, completely overlaps #7	#9 is part of same group as #5 (4,889 plants)	
#10	UTC- No metadata	28,128 plants	CROSP-HOST09
#11	UTC- No metadata	#11 is part of same group as #10 (28,128 plants)	
#21	CNDDB EO #8- 51,000 plants in 1989	#9 is part of same group as #10 (28,128 plants)	
#24	CNDDB EO #11- 70 plants in 2011	172 plants	CROSP-HOST10
#39	UTC- No metadata	14,045 plants	CROSP-HOST11
#40	UTC- No metadata	#40 is part of same group as #10 (14,045 plants)	
n/a	n/a	New occurrence- 19 plants	CROSP-HOST12
n/a	n/a	New occurrence- 4,121 plants	CROSP-HOST13
n/a	n/a	New occurrence 7,273 plants.	CROSP-HOST07

Habitat Plan ICF_ID	Habitat Plan Source and Metadata, if any	Baseline Survey Populations (2016 or 2017)*	Reserve_ID for Monitoring
n/a	n/a	New occurrence 368 plants.	CROSP-HOST05
n/a	n/a	New occurrence- 729 plants	CROSP-HOST01
n/a	n/a	New occurrence- 708 plants	CROSP-HOST06
Fragrant Fritillary			
#1	CNDDB EO #25, 500 plants in 2003	18,000 +/- 5,000 plants	CROSP-FRFA01
#2	CNDDB EO #26, 150 plants in 1989	993 +/- 304 plants	CROSP-FRFA02
#3	CNDDB EO #27, 35 plants in 1989	41 plants	CROSP-FRFA03
Most Beautiful Jewelflower			
#9	CNDDB EO#8, 17,000+ plants in 1989, 2,000+ in 1998, 370 in 2004, 21,000+ in 2012, 128,400+ in 2014, 52,000+ in 2015	3,160,000 in 2016 and 770,800 plants in 2017	CROSP-STALPE01
		New occurrence- 16,147 plants	CROSP-STALPE02
Metcalf Canyon Jewelflower			
#6	CNDDB EO #4, 1000's of plants in 1986 and 1991, 11,000+ in 2013, 250,000 + in 2014, 10,000 + in 2015, 5,000+ in 2016.	21,913 plants in 2016, 7,040 in 2017	CROSP-STALAL01
n/a	n/a	New occurrence- 350 in 2017	CROSP-STALAL02
n/a	n/a	New occurrence- 9 plants in 2016, 840 in 2017	CROSP-STALAL03
n/a	n/a	New occurrence- 2,050 in 2017	CROSP-STALAL04
n/a	n/a	New occurrence- 960 in 2017	CROSP-STALAL05
n/a	n/a	New occurrence- 20 plants in 2016, 2,860 plants in 2017	CROSP-STALAL06
n/a	n/a	New occurrence- 350 plants in 2016, 760 plants in 2017	CROSP-STALAL07
n/a	n/a	New occurrence- 912 plants in 2016	CROSP-STALAL08

Habitat Plan ICF_ID	Habitat Plan Source and Metadata, if any	Baseline Survey Populations (2016 or 2017)*	Reserve_ID for Monitoring
Smooth Lessingia			
#29	SCVWD-No metadata	27,500,000 plants in 2016 and 21,730,000 plants in 2017. Is currently identified as CNDDB EO #14 which states 100 plants in 2000; 59,125 plants in 2004; <10,000 plants in 2011; 1,000s in 2016. This occurrence has merged with six ICF_ID occurrences that outside of the Reserve boundary: #3, #7, #21, #24, #27, and #28 (of which only 5 are in discrete locations – See Figure 1).	CROSP-LEMIGL01
Loma Prieta Hoita			
n/a	n/a	New occurrence- 11 plants	CROSP-LMHO01
n/a	n/a	New occurrence- 265 plants	CROSP-LMHO02
Santa Clara Valley Dudleya			
Various (99 occurrences)	UTC- No metadata. Because this species reproduces almost exclusively vegetatively, the standard 0.25-mile rule to determine an "occurrences" was not applied. Each individual or group of individuals on a rock outcrop was identified as one occurrence	66,885 plants. Overlaps 95 ICF_ID occurrences (four of 99 occurrences in the extreme northwest corner of the Reserve were not rediscovered and are assumed missing).	CROSP-DUABSE01
n/a	n/a	New occurrence- 20 plants.	CROSP-DUABSE02

* Source data is Creekside Center for Earth Observation 2017 – *Coyote Ridge Open Space Preserve Baseline Surveys 2016-2017*

Table 2. Covered Plant Occurrences on the Proposed Calero County Park Conservation Easement for Plan Compliance and Monitoring

Habitat Plan ICF_ID	Habitat Plan Source and Metadata, if any	Baseline Survey Populations (2017)*	Reserve_ID for Monitoring
Mt. Hamilton Thistle			
		New occurrence- 110 plants.	CCE-HOST01
#15	CNDDB EO #1. 100 plants in 1981.	22 plants.	CCE-HOST02
Fragrant Fritillary			
#4	CNDDB EO #30. 9 plants observed in 1993.	Not found during baseline survey	N/A
Most Beautiful Jewelflower			
#5	CNDDB EO #23. More than 150 plants observed in 2004 in the northern colony.	408 plants.	CCE-STALPE01
#33	CNDDB EO #82. Approximately 175 plants observed in 2004, 8,850 plants observed in 2016.	#33 is part of same group as #4 (408 plants).	CCE-STALPE02
#12	CNDDB EO #13. 7,528 plants observed in 1993. 482 plants observed in western portion of occurrence in 2012.	77 plants.	CCE-STALPE03
#29	CNDDB EO #64- No population estimate provided.	38 plants.	CCE-STALPE04
n/a	n/a	New occurrence- 30 plants.	CCE-STALPE05
Smooth Lessignia			
#14	CNDDB EO #20. Thousands of plants observed in 2005.	727,964 plants.	CCE-LEMIGL01
#19	CNDDB EO #33. Unknown number of plants in 2003.	13,203,353 plants. This occurrence has merged with ICF_ID #19, which is located on the northwestern boundary of the Reserve.	CCE-LEMIGL02
n/a	n/a	New occurrence- 3,948,844 plants.	CCE-LEMIGL03
Loma Prieta Hoita			
#14	Tom Cochrane- No metadata.	110 plants.	CCE-LMHOT01
#6	CNDDB EO #22. 20 plants observed in 2005.	22 plants.	CCE-LPHO02

Habitat Plan ICF_ID	Habitat Plan Source and Metadata, if any	Baseline Survey Populations (2017)*	Reserve_ID for Monitoring
Santa Clara Valley Dudleya			
#3	SSCPRD- No metadata.	4,782 plants. This occurrence has merged with ICF_ID #54, which is located 50 feet outside of the northwestern corner of the Reserve.	CCE-DUABSE01
#4	SSCPRD- No metadata.	n/a	n/a
#193	CNDDB EO#26. 75 plants observed in two western polygons in 2004. 36 plants in middle polygon in 2013. In 2016, 133 plants in northern polygon and 876 plants in three western polygons.	n/a	n/a
n/a	n/a	New occurrence- 548 plants.	CCE-DUABSE02
#170	CNDDB EO#2. 1000+ plants in 1988, 475 in 1993. IN 2000, 1,200 plant scattered along Javelina loop trail, 173 at junction of Pena/Javelina Trails, 170 above E arm of Cherry Cove. 366 along Javelina loop trail in 2012.	1,868 plants.	CCE-DUABSE03
n/a	n/a	New occurrence- 86 plants.	CCE-DUABSE04
#201	CNDDB EO#44. Approximate number of plants observed in 2005 in each colony, going from north to south: 300, 700, 300, 50.	1,004 plants.	CCE-DUABSE05
n/a	n/a	New occurrence- 93 plants.	CCE-DUABSE06

*Source data is Nomad Ecology 2017 – *2017 Covered Plant Species Inventory*

Discussion

As stated above and illustrated in Tables 1 and 2, plant occurrences can change considerably over time (Figure 1). One trend identified in the Habitat Plan occurrence data is that the annual plant occurrences have expanded in area, in number, and in number of plants per occurrence. This may be a real trend or it may represent inaccurate or incomplete data from before the Habitat Plan was approved. Regardless, we do know that annual plants can go through large "boom and bust" cycles from year to year. At both the Coyote Ridge Reserve and the Calero CE, small plant occurrences that were located just outside the property boundaries have expanded into these reserves and merged with occurrences located inside the Reserve System. This trend has been observed for smooth lessignia on both properties, as well as Santa Clara Valley dudleya and most beautiful jewelflower on the Calero CE. As such, it is critical that the Habitat Agency have an approach for tracking plant occurrences both for Habitat Plan compliance purposes as well as for effectiveness monitoring. Biologically, what was once several small groups of plants in the Habitat Plan may now have grown and merged into a single, large population. The Habitat Agency can treat the large population as a single unit for effectiveness monitoring, but the Habitat Agency must still count that large population as the original several occurrences for the purpose of compliance monitoring.

The Habitat Agency must make decisions on how to track occurrences on each new reserve that is enrolled in the Reserve System through a case-by-case evaluation of the Habitat Plan data and the baseline survey data when properties are first acquired. At all times, the Habitat Agency must always maintain consistency with the Habitat Plan data and any assumptions that were made in that dataset because the Habitat Plan permits are predicated on the original data.

Recommendations

The Habitat Agency must continue to track protection of plant occurrences as defined by the Habitat Plan in order to document compliance for plant conservation. Impacts to plant occurrences are only allowed after a certain number of plant occurrences are protected in the Reserve System. And the Habitat Plan commits to some protection plant occurrences regardless of impacts, to contribute to species recovery (for NCCP Act compliance).

For most covered plants it is relatively simple to align the Habitat Plan occurrences with the results of site inventories. In these cases, site surveys have documented plants in approximately the same location, similar aerial extent, and in similar numbers to what was documented in the Habitat Plan. It is more challenging to align Habitat Plan occurrences with site inventory data for three covered species: Santa Clara Valley dudleya, smooth lessingia, and most beautiful jewelflower. In these cases plant survey data indicates substantially more plants and more plant locations than what was assumed in the Habitat Plan. In addition, groups of plants are often close by, and much less than the 0.25 mile minimum distances for occurrences defined by the Habitat Plan. ICF proposes the following approach to align these data sets.

The large contiguous population of smooth lessingia on the Coyote Ridge Reserve (Figure 2) was unanticipated by the Habitat Plan. At the time of Habitat Plan development such a large population would have been counted as multiple occurrences based on the extent and distribution of plants the Habitat Plan assumed to be present. Therefore, the large new population must be "converted" to a reasonable number of new occurrences that the Habitat Plan may count towards its preservation requirements.

To estimate the number of new occurrences that should be counted as protected within this large population, we used the following approach. We identified the number of Habitat Plan occurrences within the Reserve (one) and we reviewed the CNDDB data to determine how many Habitat Plan occurrences had merged to form the large smooth lessingia occurrence (six) (as shown in Table 1) (however one pair of occurrences overlaps almost completely so there are only five discrete points outside of the Reserve) (Figure 1). We then used the spacing between the six Habitat Plan occurrences (one inside and five outside the Reserve) as a rough approximation to the spacing of occurrences that would have been defined by the large population within the Reserve had it been known during Habitat Plan development. This spacing exceeds the minimum 0.25 mile rule in the Habitat Plan, so we consider it conservative (i.e., returns a number of new occurrences less than what could be argued). Using this spacing, we divide the large smooth lessingia population within the Reserve into six occurrences. Using this approach, the Habitat Agency will count protection of five new occurrences of smooth lessingia within the Reserve as shown in Table 3. This approach was also necessary on the proposed Calero CE because one habitat plan occurrence (ICF ID# 19) has merged with a large population of smooth lessingia (CCE-LEMIGL01) (Table 2). Using the methodology described above, one additional occurrence of smooth lessingia was counted as protected (Table 3). Each future reserve should be reviewed on case-by-when large, unanticipated populations are identified during baseline surveys.

Once occurrence protection is documented and counts against the requirements of the Plan (and reported in the annual report), the Habitat Agency has the freedom to monitor covered plants differently, in ways that make more sense biologically. For species where occurrence boundaries are easily distinguished, the Habitat Agency will monitor each occurrence. In cases where occurrence boundaries blur and cannot be distinguished in the field, the Habitat Agency will monitor covered plants according to the "Reserve ID for Monitoring" identified in the last column of Tables 1 and 2. For example, what might be considered multiple occurrences of smooth lessingia in the Habitat Plan can be monitored now as a single, large population of smooth lessingia. This approach will simplify monitoring, allow repeatable results, and make results more meaningful biologically.

Table 3. Summary of Covered Plant Occurrences of Reserve System for Plan Compliance

	Coyote Ridge Reserve			Proposed Calero County Park Conservation Easement		
Species	**Habitat Plan Occurrences**	**New Occurrencs[1]**	**Total**	**Habitat Plan Occurrence**	**New Occurrences[1]**	**Total**
Mt. Hamilton thistle	16	+6	22	2	0	2
Santa Clara Valley dudleya	99	-3	96	6	+2	8
Fragrant fritillary	3	0	3	1	-1	0
Loma Prieta hoita	0	+2	2	2	0	2
Smooth lessingia	1	5[2]	6	2	+2[2]	3
Metcalf Canyon jewelflower	1	+7	8	0	0	0
Most beautiful jewelflower	1	+1	2	4	+1	5
Total	**121**	**13**	**139**	**16**	**3**	**19**

[1]New occurrences are identified during baseline surveys.

[2]5 new ew occurrences of smooth lessingia on the Coyote Ridge Reserve and one new occurrence on the Calero CE are identified using the grid point spacing methodology described in the memo.

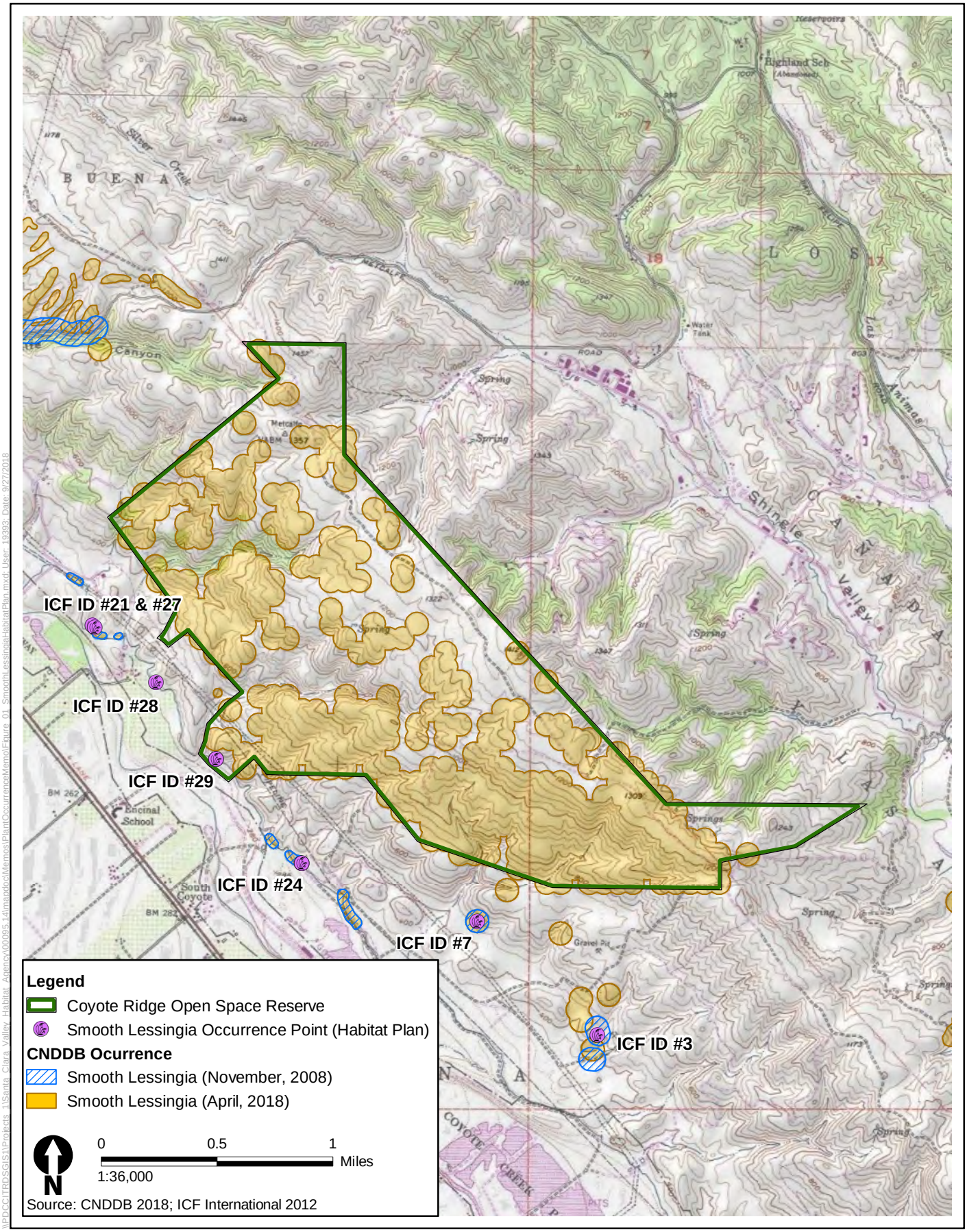

Figure 1
Species Occurrence Data for Smooth Lessingia

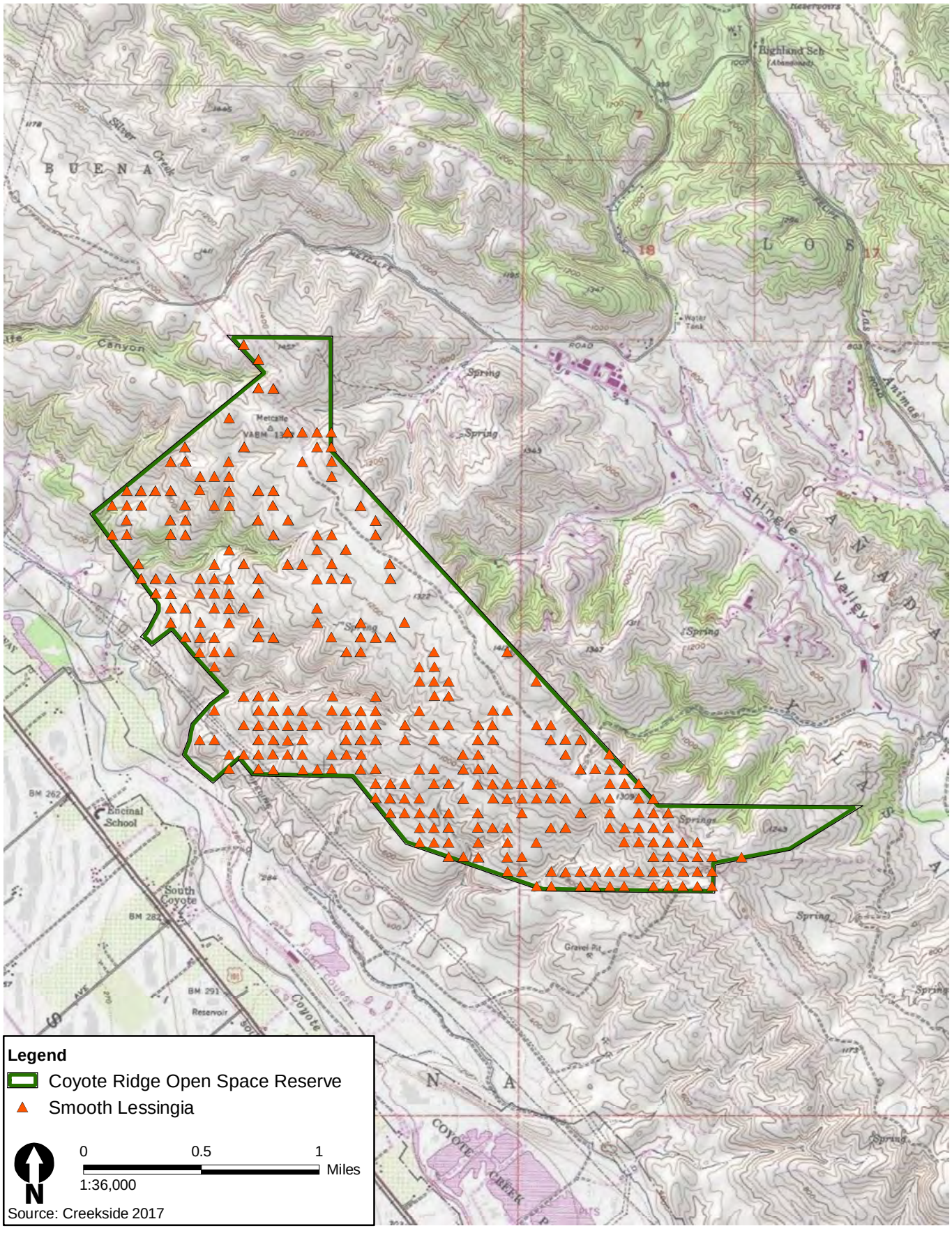

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Figure 2
Smooth Lessingia Baseline Surveys

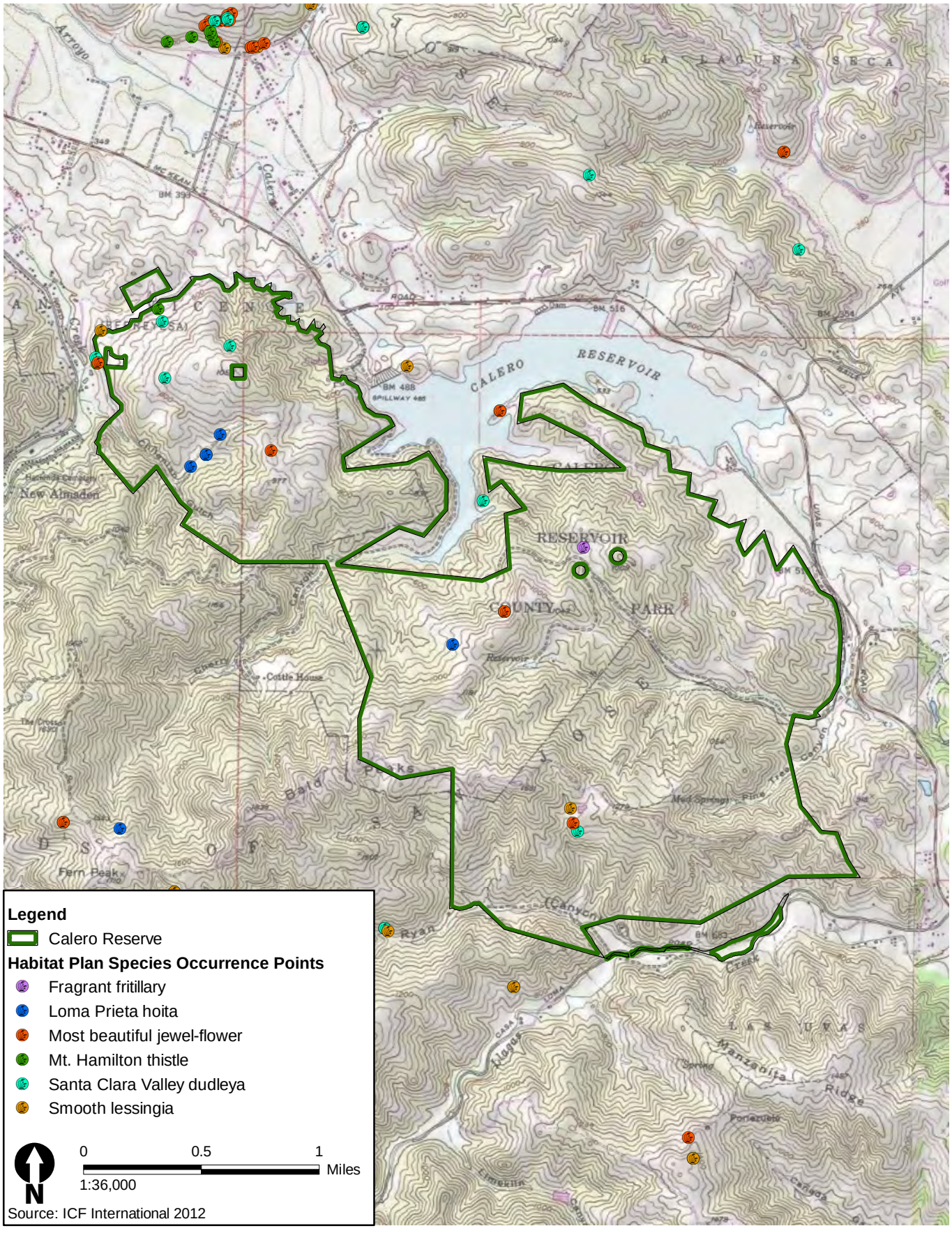

Figure 3
Species Occurrence Data from Habitat Plan in Proposed Calero Reserve

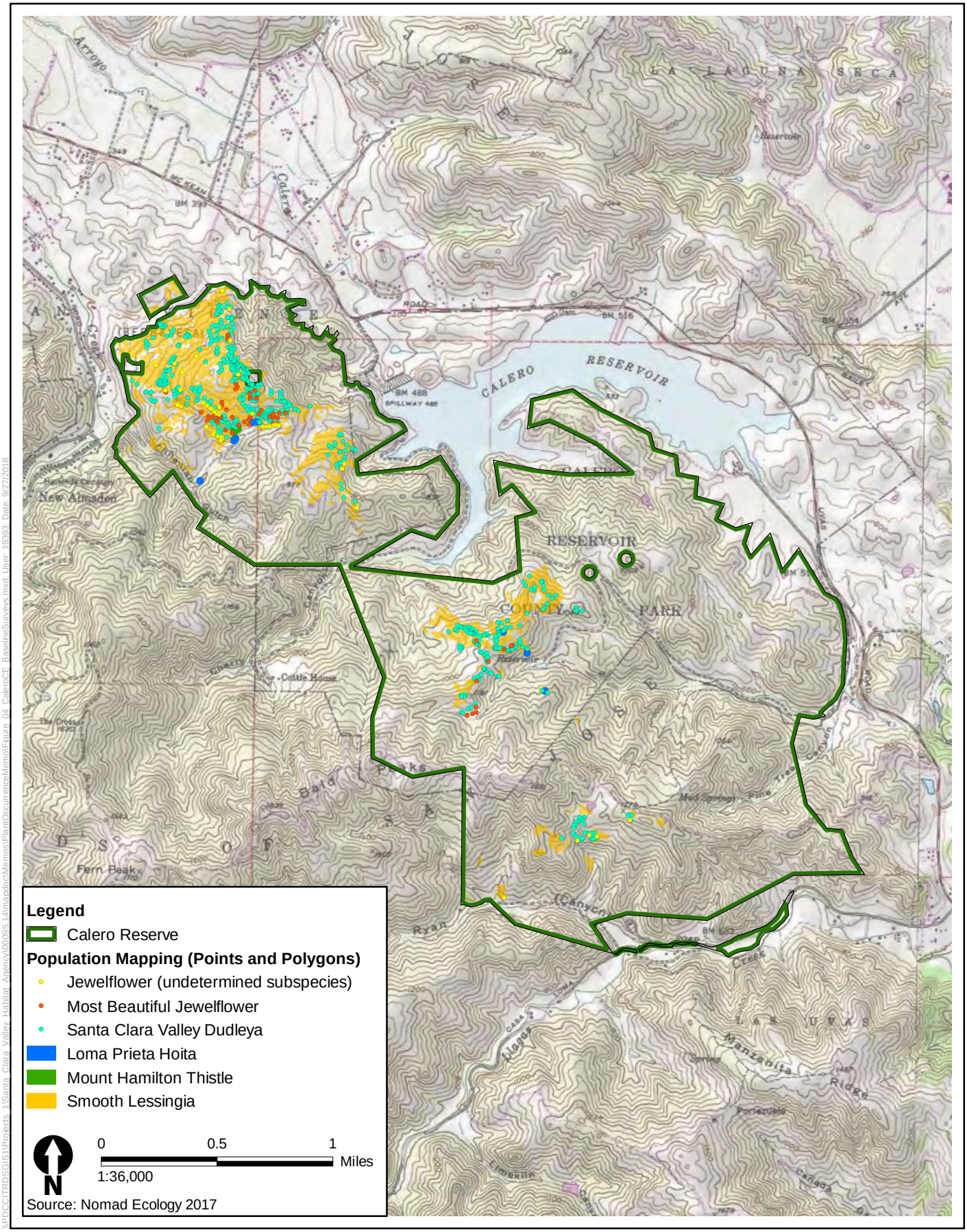

Figure 4
Species Population Mapping on Proposed Calero Reserve from 2017 Baseline Survey