



SANTA CLARA VALLEY  
HABITAT AGENCY

# **Santa Clara Valley Habitat Plan Annual Report FY2021-2022**

**Santa Clara Valley Habitat Agency**

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**April 2023**



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# Abbreviations

Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
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
ESA	federal Endangered Species Act
FY	fiscal year
Habitat Agency	Santa Clara Valley Habitat Agency
Habitat Plan	Santa Clara Valley Habitat Conservation Plan / Natural Community Conservation Plan
HCP	habitat conservation plan
NCCP	natural community conservation plan
OSA	Santa Clara Valley Open Space Authority
O&M	operations and maintenance
Permit Area	Habitat Plan Permit Area
PSE	Participating Special Entity
USFWS	U.S. Fish and Wildlife Service
Valley Water	Santa Clara Valley Water District
VTA	Santa Clara Valley Transportation Authority
WCB	State of California Wildlife Conservation Board



# Introduction

This document is the eighth Annual Report for the Habitat Plan. It summarizes implementation activities undertaken during the FY2021–2022 reporting period (July 1, 2021–June 30, 2022) and since plan inception, and it charts progress toward achieving the Habitat Plan’s biological goals and objectives.

Prepared by the Santa Clara Valley Habitat Agency (Habitat Agency), this annual report summarizes implementation activities undertaken during the reporting period (Fiscal Year [FY] 2021–2022, or July 1, 2021, through June 30, 2022) and cumulatively through permit term Year 9 of 50 per the conditions of the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP, or Habitat Plan).

The Habitat Plan offers a streamlined federal Endangered Species Act (ESA) and California Endangered Species Act (CESA) permitting process for development activities in the Permit Area while protecting, enhancing, and restoring valuable natural resources in Santa Clara County and contributing to the recovery of threatened and endangered species. 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 to comply with the ESA and California’s Natural Community Conservation Planning Act. The Habitat Plan’s Co-Permittees are the City of Gilroy, City of Morgan Hill, City of San José, County of Santa Clara (County), Santa Clara Valley Water District (Valley Water), and the Santa Clara Valley Transportation Authority (VTA).

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 (**Table 1**) as well as the natural communities that they—and hundreds of other species—depend on for habitat.

**Table 1.** Covered Species of the Habitat Plan

Common Name	Scientific Name	Status—State/CNPS <sup>a,b</sup>	Status—Federal <sup>c</sup>
<b>Invertebrates</b>			
Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	—	FT
<b>Amphibians and Reptiles</b>			
California tiger salamander	<i>Ambystoma californiense</i>	ST	FT
California red-legged frog	<i>Rana draytonii</i>	CSC	FT
Foothill yellow-legged frog	<i>Rana boylei</i>	SE	FPT
Western pond turtle	<i>Clemmys marmorata</i>	CSC	FC
<b>Birds</b>			
Western burrowing owl	<i>Athene cunicularia hypugea</i>	CSC	MBTA
Least Bell's vireo	<i>Vireo bellii pusillus</i>	SE	FE, MBTA
Tricolored blackbird	<i>Agelaius tricolor</i>	ST	MBTA
<b>Mammals</b>			
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	ST	FE
<b>Plants</b>			
Tiburon Indian paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	ST/1B	FE
Coyote ceanothus	<i>Ceanothus ferrisiae</i>	1B	FE
Mount Hamilton thistle	<i>Cirsium fontinale</i> var. <i>campylon</i>	1B	—
Santa Clara valley dudleya	<i>Dudleya abramsii</i> ssp. <i>setchellii</i>	1B	FE
Fragrant fritillary	<i>Fritillaria liliacea</i>	1B	—
Loma Prieta hoita	<i>Hoita strobilina</i>	1B	—
Smooth lessingia	<i>Lessingia micradenia</i> var. <i>glabrata</i>	1B	—
Metcalfe Canyon jewelflower	<i>Streptanthus albidus</i> ssp. <i>albidus</i>	1B	FE
Most beautiful jewelflower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	1B	—

<sup>a</sup> **State Status:**

- SE State Listed as Endangered
- ST State Listed as Threatened
- CSC California Special Concern Species

<sup>b</sup> **California Native Plant Society (CNPS):**

- 1B Rare, Threatened, or Endangered in California and Elsewhere

<sup>c</sup> **Federal Status:**

- FE Federally Listed as Endangered
- FT Federally Listed as Threatened
- FPT Federally Proposed as Threatened
- FC Federal Candidate
- MBTA Migratory Bird Treaty Act



## Covered Activities

This section describes covered activities—undertaken during the reporting period and cumulatively—and their impacts on land cover type, modeled species habitat, and covered plants.

The Habitat Plan allows incidental take coverage for the following covered activities, as described in Chapter 2 of the Habitat Plan.

- Urban development projects
- In-stream capital projects
- In-stream operations and maintenance (O&M) activities
- Rural capital projects
- Rural O&M activities
- Rural development projects
- Conservation strategy implementation
- Nitrogen deposition only projects\*

**Figures 1–3** and **Tables 2 and 3** summarize covered activities undertaken during the reporting period and since Habitat Plan inception. **Figures 4 and 5** and **Tables 3–8** quantify impacts associated with these covered activities.

\* Nitrogen deposition only projects are development projects that do not contribute to land cover impacts in the Permit Area but do contribute to cumulative nitrogen deposition impacts.

## Covered Activity Highlight

### Singleton Road Bridge over Coyote Creek

One of this year's covered activities enhanced habitat for the western pond turtle, a covered species, as well as the Central California Coast steelhead (federally listed as threatened) and the non-listed Central Valley fall-run Chinook salmon. This enhancement occurred along Coyote Creek by replacing an earthen dam and a metal culvert with a free span bridge at Singleton Road. This road crossing had been a major impediment to fish passage and contributed to the degradation of western pond turtle habitat in the vicinity.

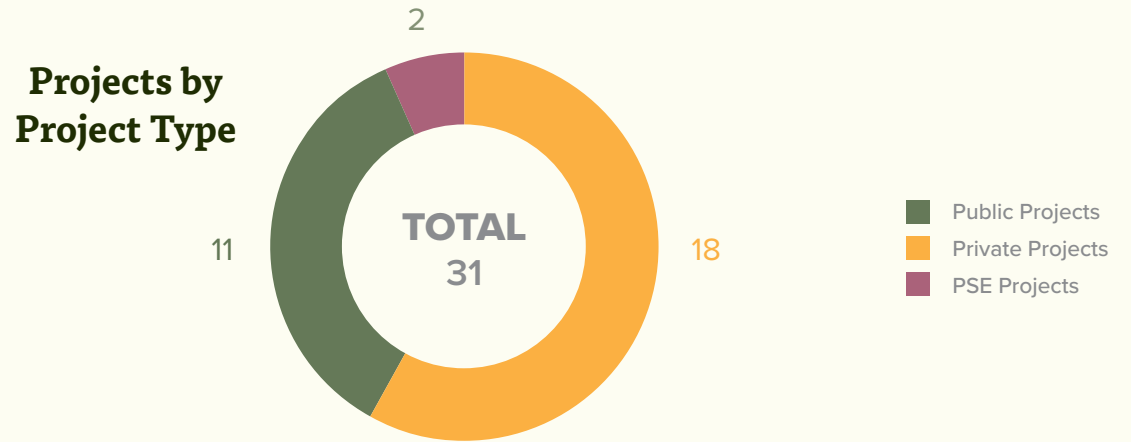
The Singleton Road Bridge over Coyote Creek Project proposed by Valley Water added features to the bridge design that would strictly benefit the western pond turtle population known from this reach. These features included rock spurs for basking habitat and an upgraded chain-link fence with openings at the base to allow passage to suitable nesting and aestivation habitats in the adjacent uplands.

Through consultation with the Habitat Agency and USFWS and CDFW, fees for this conservation action were reduced after new project features were added to restore western pond turtle habitat in this reach of Coyote Creek.



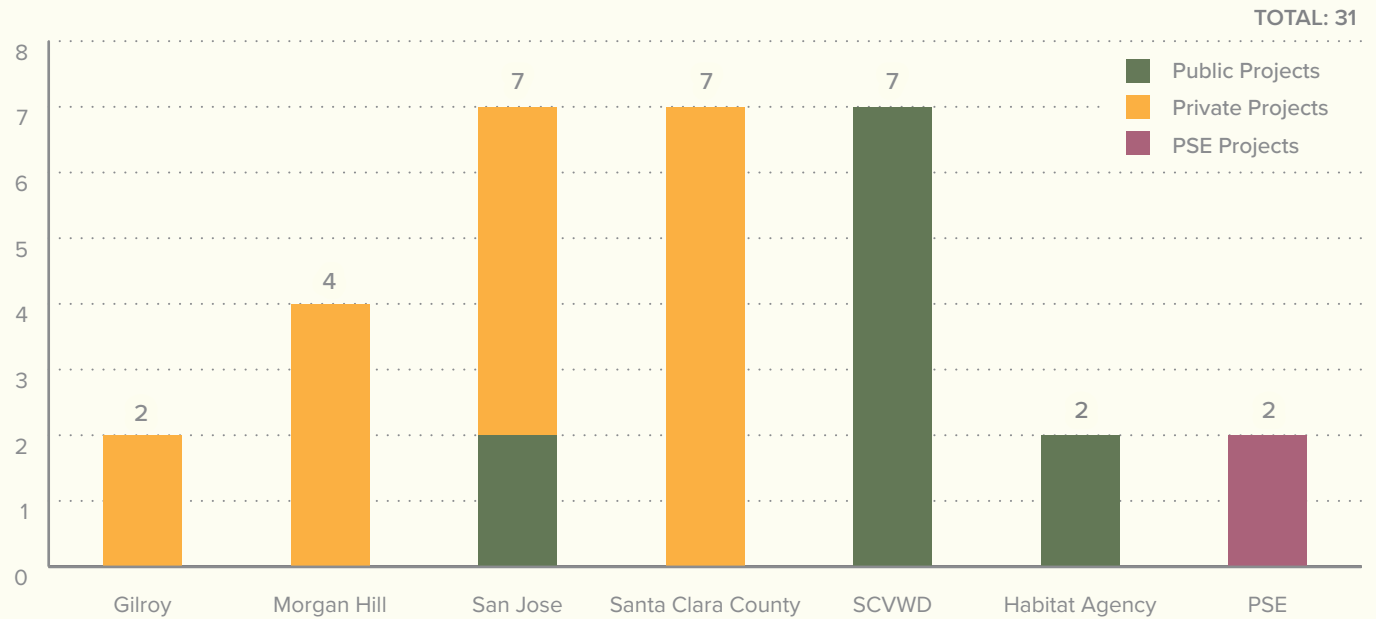
**Coyote Creek at Singleton Road Crossing prior to bridge installation (left) and after installation (right), looking upstream.**

**Figure 1. Covered Projects—Reporting Period**



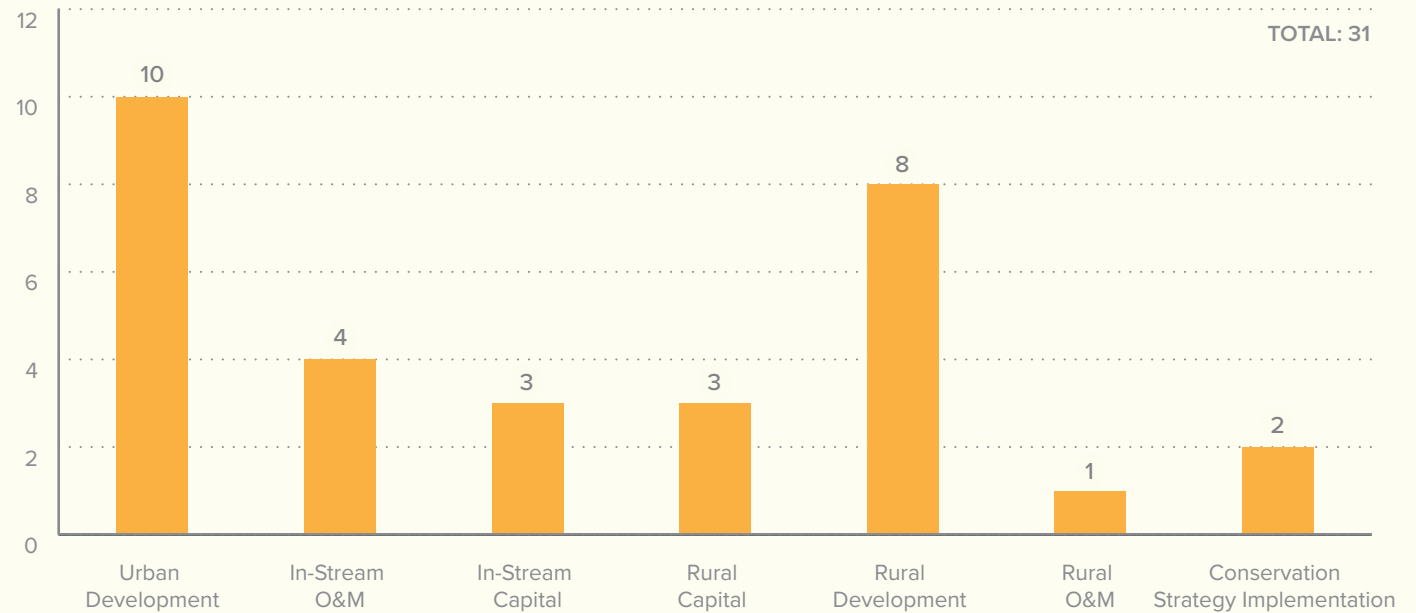
During the reporting period, 31 projects received coverage under the Habitat Plan: 18 private projects, 11 public projects, and 2 Participating Special Entity (PSE) projects. The PSE projects were carried out by the California Department of Transportation (Caltrans) and the Santa Clara Valley Open Space Authority.

**Projects by Project Type and Co-Permittee**

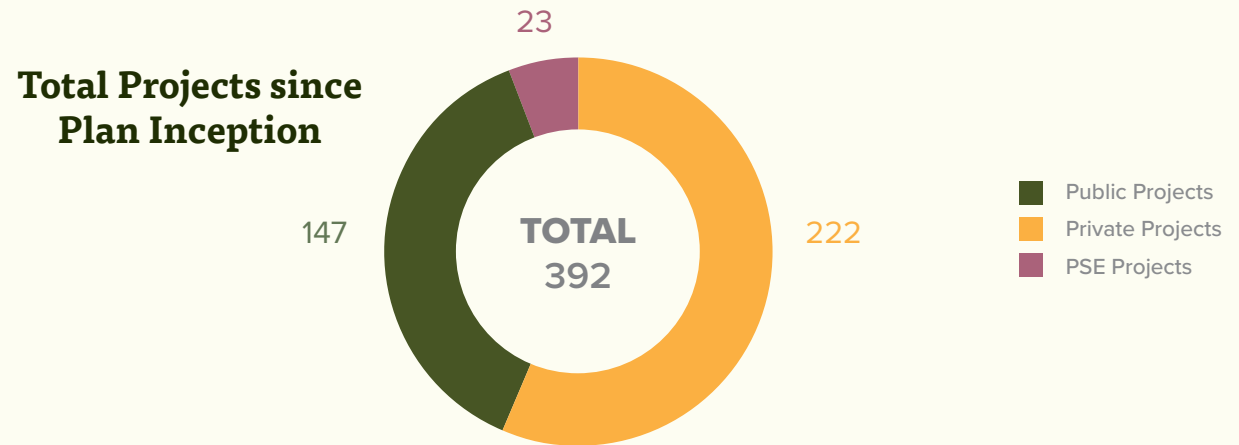


Covered projects consisted of 10 urban development projects, 4 in-stream O&M activities, 3 in-stream capital projects, 3 rural capital projects, 8 rural development projects, 1 rural O&M project, and 2 conservation strategy implementation projects. Table 2 lists all projects.

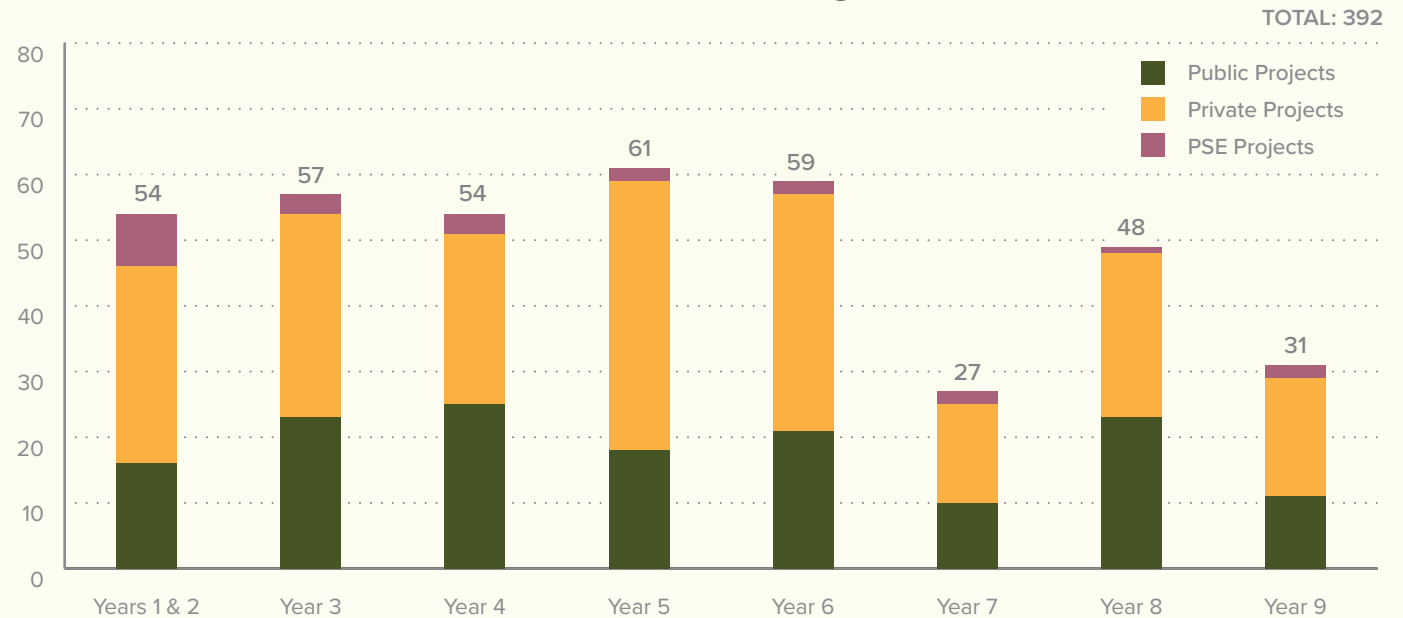
### Figure 2. Covered Projects by Activity Type—Reporting Period



### Figure 3. Covered Projects—Cumulative



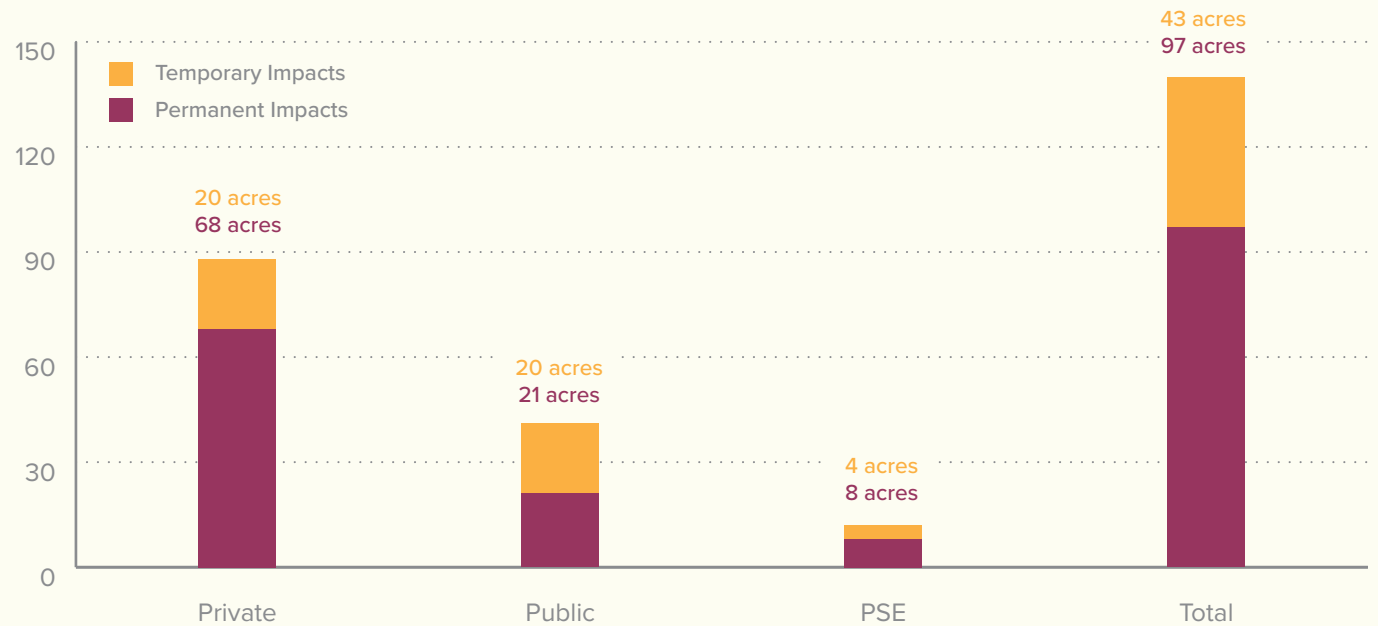
### Projects by All Reporting Periods



A total of 392 projects have received take coverage under the Habitat Plan since permit issuance. Note that this number excludes the 59 nitrogen deposition only projects that have been reported since FY2018–2019. The Habitat Agency omits these projects from the cumulative total because they have no land cover impacts.

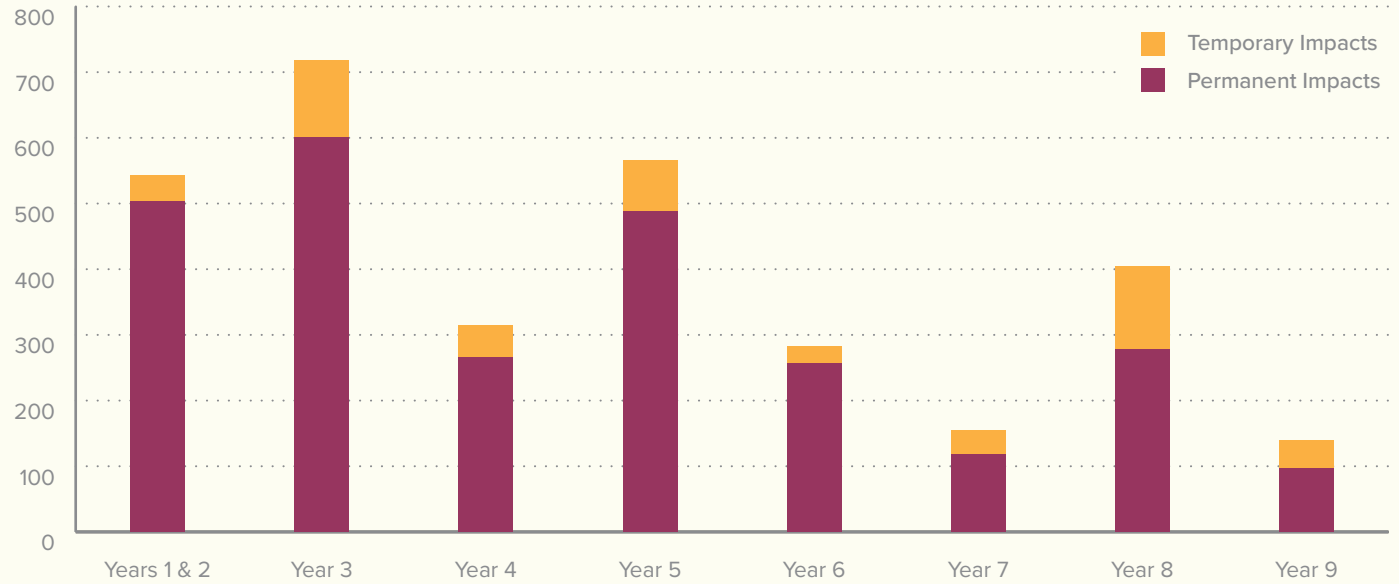
The 31 projects undertaken during the reporting period resulted in 96.6 acres of permanent impacts and 43.4 acres of temporary impacts on land cover. Impacts on aquatic land cover types during the reporting period spanned four different watersheds—Coyote, Uvas, Llagas, and Pajaro (Table 5). During the reporting period, no covered plants were removed.

**Figure 4. Acres of Land Cover Impact by Project Type—Reporting Period**



## Figure 5. Covered Projects—Cumulative

### Acres of Land Cover Impact by All Reporting Periods

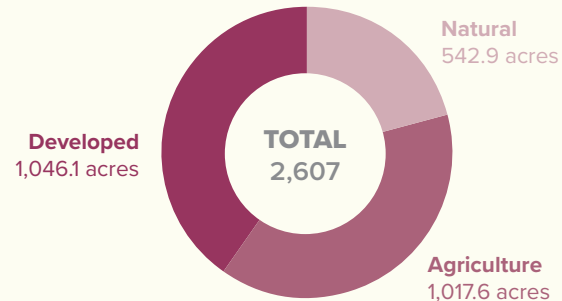


Cumulative land cover impacts total 2,607 acres of permanent, 521\* acres of temporary, and 2,987 feet of permanent and 4,777 feet of temporary impacts on streams.

### Permanent Impacts

TOTAL ACRES = 2,607 | TOTAL FEET (STREAMS) = 2,987

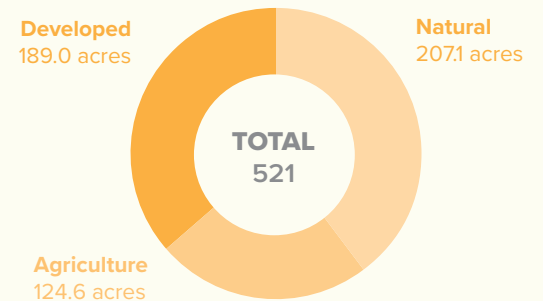
See breakdown below



### Temporary Impacts

TOTAL ACRES = 521 | TOTAL FEET (STREAMS) = 4,777

See breakdown below



\* This number was corrected based on changes reported in FY2020–2021.

**Table 2.** Applied Conditions by Covered Activity—Reporting Period

Project Number	Project Name	Condition <sup>a</sup>																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
GIL-2021-11	Kern Cottages	•		•									•								
MH-2022-001	Borello Ranch Estates Phase 4	•																			
MH-2021-003	Condit-Wanja CDR+J	•				•						•									
MH-2022-002	Crossing on Watsonville Rd	•		•								•			•						
MH-2022-003	Rosewood	•		•																	
MH-2022-005	Vida MH	•		•								•						•			
PSE-2021-001	Malech Road Public Access	•		•									•						•		•
PSE-2022-001	Caltrans Veg Management	•		•			•		•			•		•			•	•	•		
PSE-2022-002	OSA Spreckles	•		•								•						•			
SCPN-2021-001	Chatha Residence & ADU	•		•					•												
SCPN-2021-002	Lands of Ambroseo	•		•					•				•								
SCPN-2021-003	Pacheco Pass Perez	•		•					•				•								
SCPN-2021-004	Lands of Stein Grading Abatement	•		•					•									•			
SCPN-2021-005	Homer Bhrad	•		•					•												
SCPN-2021-006	Cesar & Margarita Quezada	•		•					•				•								
SCPN-2021-007	Lands of Saxena	•		•					•												
SJ-2021-018	Headworks Dewatering	•		•																	
SJ-2021-020	4786 San Felipe	•		•																	
SJ-2021-021	Singleton Interim Bridge	•		•																	
SJ-2021-024	2661 Carol Dr	•		•												•				•	•
SJ-2021-010	4349 San Felipe	•		•									•						•		
SJ-2021-022	555 Bailey Avenue	•	•	•									•						•		
SJ-2021-003	6321 San Ignacio Ave	•		•	•				•				•						•		•
SVWD-2019-001	Bolsa Road Fish Passage Project	•		•																	
SVWD-2021-010	Coyote-Alamitos Canal-Tulare Hill Veg Mgmt	•		•					•					•		•					•
SVWD-2021-011	Fellows Dike Culvert Replace	•		•		•			•				•				•	•			
SVWD-2021-013	Anderson Geotech Stage 3	•		•	•	•								•				•		•	•
SVWD-2022-001	SCRWP Phases	•		•													•	•			
SVWD-2022-003	Upper Page Ditch Weed Abatement	•		•		•			•				•					•			
SVWD-2022-004	Coyote Canal & Ext Maint (Bailey to Metcalf)	•		•		•			•				•	•	•			•		•	•
SCVHA-2021-001	CROSP Public Access Project	•		•																	
<b># of Times Condition Applied</b>		<b>31</b>	<b>1</b>	<b>31</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>8</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>12</b>	<b>1</b>	<b>4</b>	<b>6</b>

<sup>a</sup> **Habitat Plan Conditions:**

- |              |  |              |  |
|--------------|--|--------------|--|
| Condition 1  | Avoid Direct Impacts on Legally Protected Plant and Wildlife Species         | Condition 11 | Stream and Riparian Setbacks   |
| Condition 2  | Incorporate Urban-Reserve System Interface Design Requirements               | Condition 12 | Wetland and Pond Avoidance and Minimization                          |
| Condition 3  | Maintain Hydrologic Conditions and Protect Water Quality                     | Condition 13 | Serpentine and Associated Covered Species Avoidance and Minimization |
| Condition 4  | Avoidance and Minimization for In-Stream Projects                            | Condition 14 | Valley Oak and Blue Oak Woodland Avoidance and Minimization          |
| Condition 5  | Avoidance and Minimization Measures for In-Stream Operations and Maintenance | Condition 15 | Western Burrowing Owl  |
| Condition 6  | Design and Construction Requirements for Covered Transportation Projects     | Condition 16 | Least Bell's Vireo   |
| Condition 7  | Rural Development Design and Construction Requirements                       | Condition 17 | Tricolored Blackbird   |
| Condition 8  | Implement Avoidance and Minimization Measures for Rural Road Maintenance     | Condition 18 | San Joaquin Kit Fox  |
| Condition 9  | Prepare and Implement a Recreation Plan                                      | Condition 19 | Plant Salvage when Impacts are Unavoidable                           |
| Condition 10 | Fuel Buffer  | Condition 20 | Avoid and Minimize Impacts to Covered Plant Occurrences              |

**Table 3.** Species Conditions for Covered Activities—Reporting Period

Project #	Project Name	Western Burrowing Owl				Least Bell's Vireo				Tricolored Blackbird				San Joaquin Kit Fox				Bay Checkerspot Butterfly				Smooth Lessingia		Fragrant Fritillary		Metcalf Canyon Jewelflower		Most Beautiful Jewelflower		Tiburon Paintbrush		Coyote Ceanothus		Santa Clara Valley Dudleya		Mount Hamilton Thistle		Loma Prieta Hoita	
		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	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM	Preconstruction Surveys	AMM				
MH-2022-005	Vida MH									•																													
PSE-2022-001	Caltrans Veg Management					•				•				•																									
PSE-2022-002	OSA Spreckles									•																													
SCPN-2021-003	Pacheco Pass Perez													•	•	•	•																						
SJ-2021-018	Headworks Dewatering	•	•	•	•																																		
SCPN-2021-004	Lands of Stein Grading Abatement									•	•	•	•																										
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SJ-2021-022	555 Bailey Avenue									•																													
SJ-2021-024	2661 Carol Dr	•	•	•	•																																		
SVWD-2021-010	Coyote-Alamitos Canal-Tulare Hill Veg Mgmt	•	•	•	•													•	•	•	•																		
SVWD-2019-001	Bolsa Road Fish Passage Project					•				•																													
SVWD-2021-011	Fellows Dike Culvert Replace					•	•	•	•	•	•	•	•																										
SVWD-2021-013	Anderson Geotech Stage 3									•	•	•	•																										
SVWD-2022-004	Coyote canal & Ext Maint (Bailey to Metcalf)									•	•	•	•					•	•	•	•																		
SVWD-2022-001	SCRWP Phases					•	•	•	•	•	•	•	•																										
SVWD-2022-003	Upper Page Ditch Weed Abatement									•																													
<b>Total</b>	<b>17 projects</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>13</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		

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

Land Cover Type	Reporting Period		Cumulative					
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Total Allowable Permanent Impact (acres)	Percentage Used of Total Allowable Permanent Impacts	Total Allowable Temporary Impact (acres)	Percentage Used of Total Allowable Temporary Impacts
<b>Terrestrial</b>								
California annual grassland	11.1	7.4	398.1	119.4	2,006	20%	574	21%
Serpentine bunchgrass	8.0	3.8	45.1	19.5	550	8%	91	21%
Serpentine rock outcrop/barrens	0.0	0.0	3.7	0.2	22	17%	2	10%
Serpentine seep	0.1	0.0	0.1	0.0	0.5	18%	0.4	0%
Rock outcrop (non-serpentine)	-	-	0.0	0.0	0.5	0%	0.2	0%
Northern mixed chaparral/chamise chaparral	0.0	0.0	10.3	0.4	86	12%	31	1%
Mixed serpentine chaparral	0.1	0.0	0.8	1.3	131	1%	30	4%
Northern coastal scrub/Diablan coastal scrub	1.5	0.0	8.4	0.9	178	5%	66	1%
Coyote brush scrub	0.1	0.0	3.6	0.3	10	36%	10	3%
Valley oak woodland	0.1	0.0	3.4	6.7	201	2%	45	15%
Mixed oak woodland and forest	0.9	0.3	20.2	18.5	1,441	1%	302	6%
Coast live oak woodland and forest	0.0	0.0	20.5	11.1	840	2%	181	6%
Blue oak woodland	-	-	3.8	1.7	131	3%	39	4%
Foothill pine-oak woodland	0.0	0.0	6.6	3.6	46	14%	26	14%
Mixed evergreen forest	-	-	0.0	0.1	50	0%	25	1%
Redwood forest	-	-	0.0	0.0	109	0%	56	0%
Ponderosa pine woodland	-	-	0.0	0.0	0	-	1	0%
Knobcone pine woodland	-	-	0.0	0.0	8	0%	2	0%
Non-serpentine native grassland	-	-	0.2	0.0	-	-	-	-
<i>Subtotal terrestrial</i>	<i>22.0</i>	<i>11.6</i>	<i>524.8</i>	<i>183.6</i>	<i>5,810</i>	<i>9%</i>	<i>1,482</i>	<i>12%</i>
<b>Aquatic</b>								
Willow riparian forest and scrub	0.11	0.0	2.8	3.5	180	2%	103	3.4%
Central California sycamore alluvial woodland	-	-	0.0	0.0	7	0%	6	0%
Mixed riparian woodland and forest	1.33	2.5	11.6	9.8	109	11%	101	10%
Coastal and valley freshwater marsh	0.21	0.0	2.7	4.7	25	11%	7	68%
Seasonal wetland	0.10	0.0	0.9	0.2	15	6%	2	11%
Pond	0.00	1.8	0.1	5.1	52	0%	9	57%
Reservoir	0.00	0.0	69.3	0.5	-	-	-	-
<i>Subtotal Aquatic</i>	<i>1.76</i>	<i>4.37</i>	<i>94.4</i>	<i>24.0</i>	<i>388</i>	<i>23%</i>	<i>228</i>	<i>11%</i>
<b>Stream (length in linear feet)</b>								
<i>Total stream length</i>	<i>25.0</i>	<i>177.0</i>	<i>2,987.0</i>	<i>4,777.0</i>	<i>49,632</i>	<i>6%</i>	<i>253,440</i>	<i>2%</i>
<b>Agricultural</b>								
Orchard	13.3	0.4	79.6	5.2	625	13%	24	22%
Vineyard	-	-	0.2	0.3	37	-	3	11%
Agriculture developed	16.6	0.0	44.8	1.2	-	-	-	-
Grain, row-crop, hay and pasture, disked/short-term fallowed	30.4	5.6	892.9	117.9	7,356	12%	284	42%
<i>Subtotal Agricultural</i>	<i>60.4</i>	<i>6.0</i>	<i>1,017.6</i>	<i>124.6</i>	<i>8,018</i>	<i>13%</i>	<i>311</i>	<i>40%</i>

Table continues on following page

**Table 4.** Summary of Impacts on Land Cover Types—Reporting Period and Cumulative (continued)

Land Cover Type	Reporting Period		Cumulative					
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Total Allowable Permanent Impact (acres)	Percentage Used of Total Allowable Permanent Impacts	Total Allowable Temporary Impact (acres)	Percentage Used of Total Allowable Temporary Impacts
<i>Developed</i>								
Rural residential	4.5	3.2	30.3	16.2	1,603	2%	139	12%
Golf courses/ urban parks	1.1	0.0	188.3	16.4	2,095	9%	40	41%
Ornamental woodland	0.0	0.2	6.1	1.0	30	-	8	12%
Barren	1.1	0.0	71.9	1.1	32	225%	15	7%
Urban suburban	5.7	17.9	680.2	153.8	-	-	-	-
<i>Subtotal Developed</i>	<i>12.5</i>	<i>21.3</i>	<i>976.8</i>	<i>188.5</i>	<i>3,760</i>	<i>26%</i>	<i>202</i>	<i>93%</i>
<b>Total</b>								
<b>Acres</b>	<b>96.6</b>	<b>43.2</b>	<b>2,606.6</b>	<b>520.7</b>	<b>17,976</b>	<b>15%</b>	<b>2,223</b>	<b>23%</b>
<b>Linear Feet</b>	<b>25.0</b>	<b>177.0</b>	<b>2,987.0</b>	<b>4,777.0</b>	<b>49,632</b>	<b>6%</b>	<b>253,440</b>	<b>2%</b>

**Table 5.** Impacts on Aquatic Land Cover Types by Watershed—Reporting Period and Cumulative

Watershed	Reporting Period		Cumulative	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
<b>Coyote</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	1.80	2.77
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	1.77	0.24	4.67	5.43
Coastal and valley freshwater marsh	0.21	0.01	0.31	4.64
Seasonal wetland	0.00	0.00	0.03	0.11
Pond	0.00	0.00	0.02	0.00
Reservoir	0.00	0.03	0.00	0.03
<i>Subtotal aquatic</i>	<i>1.98</i>	<i>0.28</i>	<i>9.16</i>	<i>12.98</i>
<i>Stream (linear feet)</i>	<i>25.00</i>	<i>177.00</i>	<i>2,462.00</i>	<i>1,227.00</i>
<b>Guadalupe</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.56	0.73
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.53	0.20
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.20	0.02
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	32.80	0.30
<i>Subtotal aquatic</i>	<i>0.00</i>	<i>0.00</i>	<i>34.09</i>	<i>0.54</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>137.00</i>	<i>715.00</i>
<b>Pajaro</b>				
Willow riparian forests, woodlands, and scrub	0.12	0.00	0.19	0.01
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	1.59	1.17
Coastal and valley freshwater marsh	0.00	0.00	0.04	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.09
Reservoir	0.00	0.00	0.00	0.00
<i>Subtotal aquatic</i>	<i>0.12</i>	<i>0.00</i>	<i>1.82</i>	<i>1.27</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>806.00</i>

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**Table 5.** Impacts on Aquatic Land Cover Types by Watershed—Reporting Period and Cumulative (continued)

Watershed	Reporting Period		Cumulative	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
<b>Uvas</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.01	0.01
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.56	2.29	4.98	3.44
Coastal and valley freshwater marsh	0.00	0.00	0.13	0.10
Seasonal wetland	0.00	0.00	0.44	0.07
Pond	0.00	0.00	0.04	0.00
Reservoir	0.00	0.00	0.00	0.00
<i>Subtotal aquatic</i>	<i>0.56</i>	<i>2.29</i>	<i>5.60</i>	<i>3.62</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>358.00</i>	<i>1191.00</i>
<b>Llagas</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.04	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.05	0.09
Coastal and valley freshwater marsh	0.00	0.00	2.26	0.00
Seasonal wetland	0.10	0.00	0.21	0.02
Pond	0.00	1.80	0.00	5.06
Reservoir	0.00	0.00	0.00	0.00
<i>Subtotal aquatic</i>	<i>0.10</i>	<i>1.80</i>	<i>2.56</i>	<i>5.17</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>30.00</i>	<i>838.00</i>
<b>San Tomas</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.00	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.00	0.00
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	0.00	0.00
<i>Subtotal aquatic</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>

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**Table 5.** Impacts on Aquatic Land Cover Types by Watershed—Reporting Period and Cumulative (continued)

Watershed	Reporting Period		Cumulative	
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)
<b>Alamitos Creek</b>				
Willow riparian forests, woodlands, and scrub	0.00	0.00	0.00	0.00
Central California sycamore alluvial woodland	0.00	0.00	0.00	0.00
Mixed riparian woodland and forest	0.00	0.00	0.00	0.00
Coastal and valley freshwater marsh	0.00	0.00	0.00	0.00
Seasonal wetland	0.00	0.00	0.00	0.00
Pond	0.00	0.00	0.00	0.00
Reservoir	0.00	0.00	0.00	0.00
<i>Subtotal aquatic</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
<i>Stream (linear feet)</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
<b>Total</b>				
<b>Willow riparian forests, woodlands, and scrub</b>	<b>0.12</b>	<b>0.00</b>	<b>2.60</b>	<b>3.52</b>
<b>Central California sycamore alluvial woodland</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Mixed riparian woodland and forest</b>	<b>1.33</b>	<b>2.53</b>	<b>11.81</b>	<b>10.33</b>
<b>Coastal and valley freshwater marsh</b>	<b>0.21</b>	<b>0.01</b>	<b>2.74</b>	<b>4.74</b>
<b>Seasonal wetland</b>	<b>0.10</b>	<b>0.00</b>	<b>0.88</b>	<b>0.22</b>
<b>Pond</b>	<b>0.00</b>	<b>1.80</b>	<b>0.06</b>	<b>5.15</b>
<b>Reservoir</b>	<b>0.00</b>	<b>0.03</b>	<b>32.80</b>	<b>0.33</b>
<b>Total aquatic</b>	<b>1.76</b>	<b>4.37</b>	<b>50.90</b>	<b>24.29</b>
<b>Total stream length</b>	<b>25.00</b>	<b>177.00</b>	<b>2,987.00</b>	<b>4,777.00</b>

**Table 6.** Summary of Impacts on Modeled Covered Species Habitat

Modeled Habitat	Reporting Period		Cumulative					
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Maximum Allowable Permanent Impacts on Modeled Habitat (acres)	Percentage Used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impacts on Modeled Habitat (acres)	Percentage Used of Total Allowable Temporary Impacts (%) <sup>a</sup>
<b><i>Bay Checkerspot Butterfly</i></b>								
Primary habitat	6.1	7.8	158.8	25.3	300	53%	54	47%
<b><i>California Tiger Salamander</i></b>								
Breeding habitat	0.0	0.0	0.9	0.3	77	1%	14	2%
Non-breeding habitat	45.4	27.5	943.9	255.3	12,855	7%	1,529	17%
Total	45.4	27.5	944.8	255.6	12,932	7%	1,543	17%
<b><i>California Red-Legged Frog</i></b>								
Primary habitat	2.1	4.6	53.4	23.5	299	18%	116	20%
Secondary habitat	67.9	24.4	1,228.0	531.7	12,937	9%	1,489	36%
Total	70.0	29.0	1,281.4	555.2	13,236	10%	1,605	35%
<b><i>Foothill Yellow-Legged Frog (length in miles)</i></b>								
Primary habitat	0.0		0.3	0.2	2	15%	0.7	29%
Secondary habitat	0.0	0.0	0.4	0.3	5	8%	1.3	24%
Total	0.0	0.0	0.7	0.5	7	10%	2.0	26%
<b><i>Western Pond Turtle</i></b>								
Primary habitat	5.5	6.7	288.4	71.1	1,824	16%	440	16%
Secondary habitat	24.9	17.6	649.1	196.5	7,825	8%	986	20%
Total	30.4	24.3	937.5	267.7	9,649	10%	1,426	19%
<b><i>Western Burrowing Owl</i></b>								
Occupied nesting habitat	0.0	0.0	161.9	19.0	198	82%	20	95%
Potential nesting habitat	35.4	17.8	505.2	82.5	4,000	13%	604	14%
Overwintering habitat	50.5	23.2	1,120.9	509.1	9,671	12%	762	67%
Total	85.9	41.0	1,793.7	625.5	13,869	13%	1,385	45%
<b><i>Least Bell's Vireo</i></b>								
Primary habitat	1.0	2.5	19.8	6.2	72	27%	43	14%
<b><i>San Joaquin Kit Fox</i></b>								
Secondary habitat	0.4	1.3	7.5	9.4	198	4%	46	20%
Secondary habitat (low use)	0.0	0.0	4.6	18.0	28	17%	6	
Total	0.5	0.0	11.7	23.1	226	5%	52	44%

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**Table 6.** Summary of Impacts on Modeled Covered Species Habitat (continued)

Modeled Habitat	Reporting Period		Cumulative					
	Permanent (acres)	Temporary (acres)	Permanent (acres)	Temporary (acres)	Maximum Allowable Permanent Impacts on Modeled Habitat (acres)	Percentage Used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impacts on Modeled Habitat (acres)	Percentage Used of Total Allowable Temporary Impacts (%) <sup>a</sup>
<b><i>Tricolored Blackbird</i></b>								
Primary habitat	3.0	4.2	132.7	20.0	276	48%	93	21%
Secondary habitat	67.3	23.7	1,179.1	508.4	10,317	11%	768	66%
Total	70.3	27.8	1,311.8	528.3	10,593	12%	861	61%
<b><i>Mount Hamilton Thistle</i></b>								
Primary habitat	0.0	0.0	0.1	0.0	26	0%	4	0%
<b><i>Fragrant Fritillary</i></b>								
Primary habitat	1.2	3.7	20.7	11.0	5503	0%	59	19%
Secondary habitat	1.6	1.8	154.3	72.1	2,729	6%	655	11%
Total	2.8	5.4	175.0	83.0	3,279	5%	714	12%
<b><i>Loma Prieta Hoita</i></b>								
Primary habitat	0.4	0.5	57.0	29.7	2,117	3%	413	7%
Secondary habitat	0.6	0.3	20.6	1.9	266	8%	60	3%
Total	1.1	0.7	77.7	31.5	2,383	3%	473	7%
<b><i>Smooth Lessingia</i></b>								
Primary habitat	8.3	7.8	178.5	26.3	550	32%	68	39%
<b><i>Metcalf Canyon Jewelflower</i></b>								
Primary habitat	0.5	3.6	20.0	10.9	550	4%	62	18%
<b><i>Most Beautiful Jewelflower</i></b>								
Primary habitat	8.9	7.8	193.6	28.3	550	35%	92	31%
Secondary habitat	0.0	0.0	0.0	0.0	0	0%	0	0%
Total	8.9	7.8	193.6	28.3	550	35%	92	31%

<sup>a</sup> 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 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).

**Table 7.** Summary of Impacts on Critical Habitat from Covered Activities

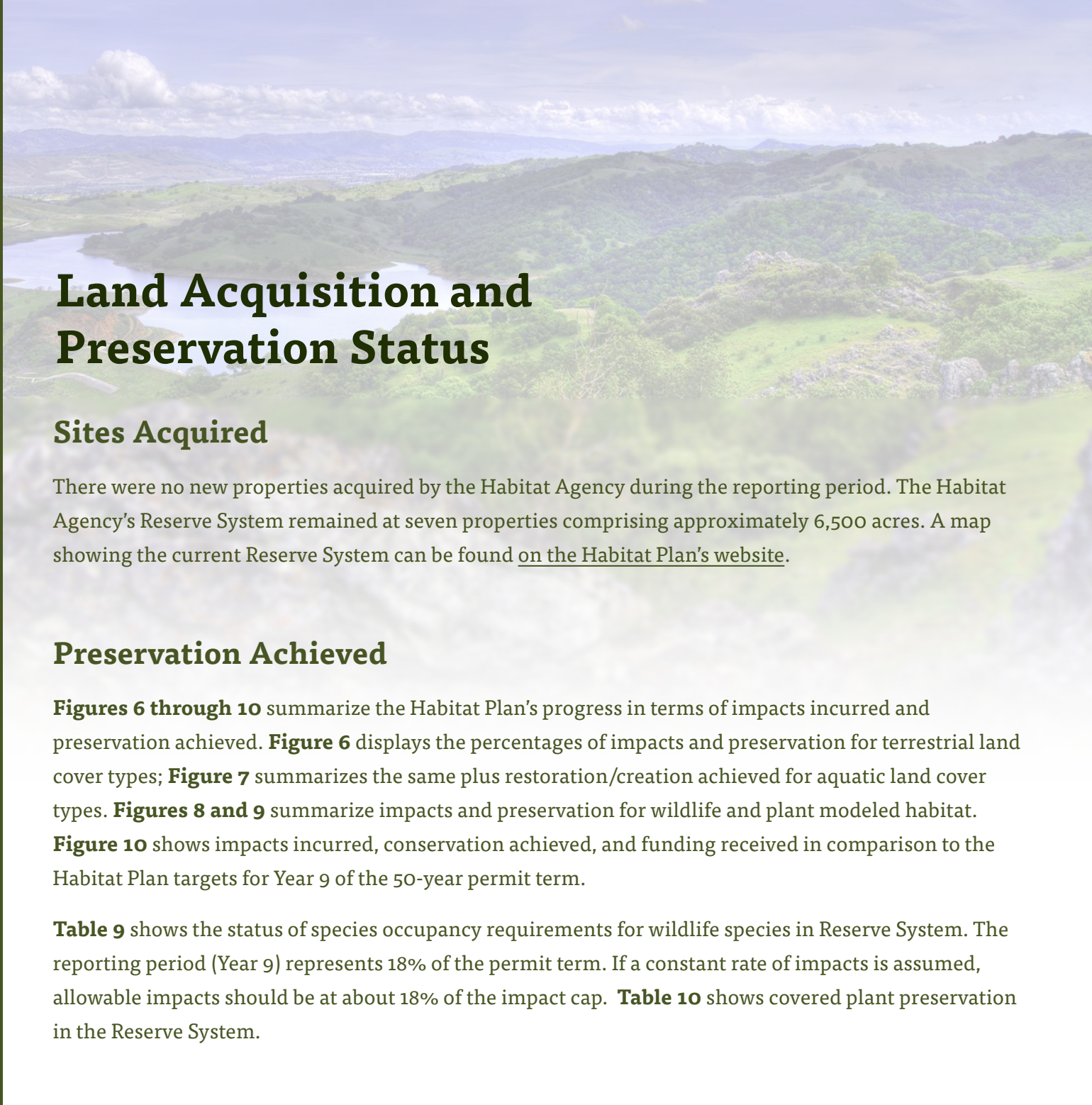
Species	Reporting Period		Cumulative					
	Permanent	Temporary	Permanent	Temporary	Maximum Allowable Permanent Impact on Critical Habitat (acres)	Percentage used of Total Allowable Permanent Impacts (%)	Maximum Allowable Temporary Impact on Critical Habitat (acres)	Percentage used of Total Allowable Temporary Impacts (%)
<b><i>California Red-Legged Frog</i></b>								
STC Unit 1	0.8	0.1	20.8	7.9	-	-	-	-
STC Unit 2	2.6	1.0	26.3	6.4	-	-	-	-
ALA Unit 2	-	-	-	-	-	-	-	-
<b>Total</b>	<b>3.4</b>	<b>1.0</b>	<b>47.1</b>	<b>14.2</b>	<b>1,035</b>	<b>5%</b>	<b>277</b>	<b>5%</b>
<b><i>California Tiger Salamander</i></b>								
EBR Unit 5	-	-	-	-	-	-	-	-
EBR Unit 6	-	-	4.2	1.1	-	-	-	-
EBR Unit 7	-	-	2.1	4.7	-	-	-	-
EBR Unit 8	0.2	-	30.0	10.1	-	-	-	-
EBR Unit 9	-	-	-	-	-	-	-	-
EBR Unit 10a	-	-	0.2	-	-	-	-	-
EBR Unit 10b	-	-	-	-	-	-	-	-
EBR Unit 11	-	-	-	-	-	-	-	-
EBR Unit 12	0.1	0.2	4.3	7.9	-	-	-	-
<b>Total</b>	<b>0.3</b>	<b>0.2</b>	<b>40.7</b>	<b>23.9</b>	<b>272</b>	<b>15%</b>	<b>125</b>	<b>19%</b>
<b><i>Bay Checkerspot Butterfly</i></b>								
Tulare Hill	-	0.4	0.4	1.2	-	-	-	-
Metcalf	-	-	1.7	2.4	-	-	-	-
Santa Teresa Hills	-	-	7.5	1.0	-	-	-	-
Calero Reservoir	-	-	13.5	6.3	-	-	-	-
Kirby	9.0	4.7	42.6	10.3	-	-	-	-
Kalana	-	-	0.3	-	-	-	-	-
Hale	-	-	-	-	-	-	-	-
Bear Ranch	-	-	-	-	-	-	-	-
San Martin	-	-	-	-	-	-	-	-
<b>Total</b>	<b>9.1</b>	<b>5.1</b>	<b>66.1</b>	<b>21.2</b>	<b>550</b>	<b>12%</b>	<b>86</b>	<b>25%</b>

**Table 8.** Summary of Impacts on Covered Plants

Known Occurrences that May be Removed by Covered Activities <sup>a</sup>	Reporting Period		Cumulative	
	Extant	New	Extant	New
<b><i>Tiburon Paintbrush</i></b>				
0	0	0	0	0
<b><i>Coyote ceanothus<sup>b</sup></i></b>				
3,650	0	0	532 (individuals)	0
<b><i>Mount Hamilton Thistle</i></b>				
6	0	0	0	0
<b><i>Santa Clara Valley Dudleya</i></b>				
11	0	0	0	1
<b><i>Fragrant Fritillary</i></b>				
1	0	0	0	0
<b><i>Loma Prieta Hoita</i></b>				
0	0	0	0	0
<b><i>Smooth Lessingia</i></b>				
6	0	0	0	0
<b><i>Metcalf Canyon Jewelflower</i></b>				
2	0	0	0	0
<b><i>Most Beautiful Jewelflower</i></b>				
6	0	0	0	0

<sup>a</sup> 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.

<sup>b</sup> A total of 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.



# Land Acquisition and Preservation Status

This section documents properties acquired for the Reserve System during the reporting period. It also tracks impacts and preservation status across the Reserve System.

## Sites Acquired

There were no new properties acquired by the Habitat Agency during the reporting period. The Habitat Agency’s Reserve System remained at seven properties comprising approximately 6,500 acres. A map showing the current Reserve System can be found [on the Habitat Plan’s website](#).

## Preservation Achieved

**Figures 6 through 10** summarize the Habitat Plan’s progress in terms of impacts incurred and preservation achieved. **Figure 6** displays the percentages of impacts and preservation for terrestrial land cover types; **Figure 7** summarizes the same plus restoration/creation achieved for aquatic land cover types. **Figures 8 and 9** summarize impacts and preservation for wildlife and plant modeled habitat. **Figure 10** shows impacts incurred, conservation achieved, and funding received in comparison to the Habitat Plan targets for Year 9 of the 50-year permit term.

**Table 9** shows the status of species occupancy requirements for wildlife species in Reserve System. The reporting period (Year 9) represents 18% of the permit term. If a constant rate of impacts is assumed, allowable impacts should be at about 18% of the impact cap. **Table 10** shows covered plant preservation in the Reserve System.

## Figure 6. Cumulative Impacts Incurred and Preservation Achieved for Terrestrial Land Cover Types

There are two terrestrial land cover types with Habitat Plan targets for which 18% of the permanent impact cap was exceeded: California annual grassland (20%) and coyote brush (36%). Temporary impacts on both California annual grassland and serpentine bunchgrass grassland are each at 21% of the allowable temporary impacts.

Preservation of terrestrial land cover types achieved did not change from the previous year since there was no land acquisition during the reporting year, but adjustments were made to correct small accounting errors.



\* No Preservation Requirements

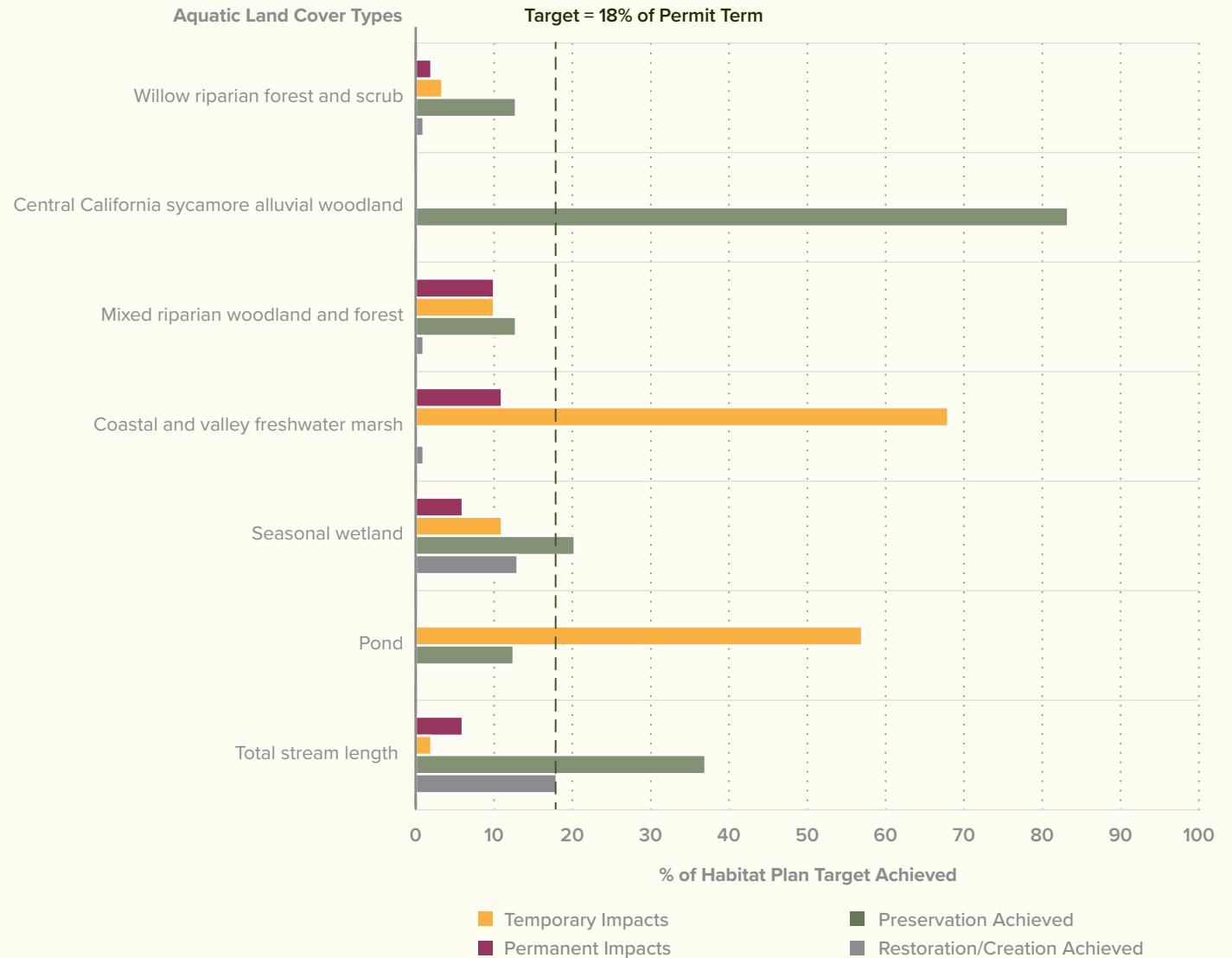
Temporary Impacts Permanent Impacts Preservation Achieved

Temporary impacts on coastal and valley freshwater marsh did not change between the FY2020–2021 and FY2021–2022 reporting periods, remaining at 68%. Temporary impacts on pond habitat greatly exceeded 18%. Permanent and temporary impacts on other aquatic land cover types did not exceed 18%.

Preservation of aquatic land cover types achieved did not change from the previous year since there was no land acquisition during the reporting year. However, adjustments were made to correct small accounting errors.

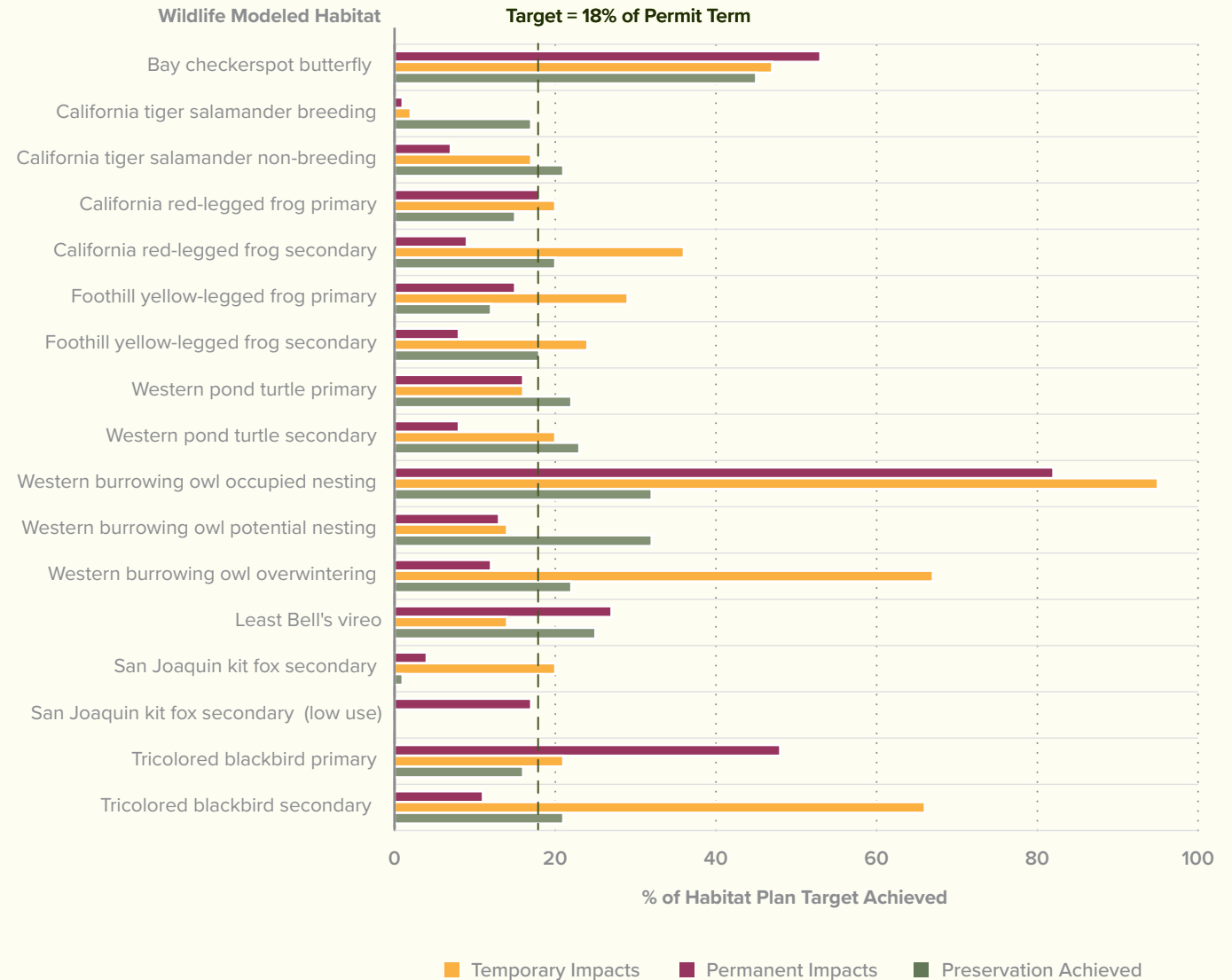
There was no restoration/creation achieved in FY2021–2022.

### Figure 7. Cumulative Impacts Incurred and Preservation Achieved for Aquatic Land Cover Types

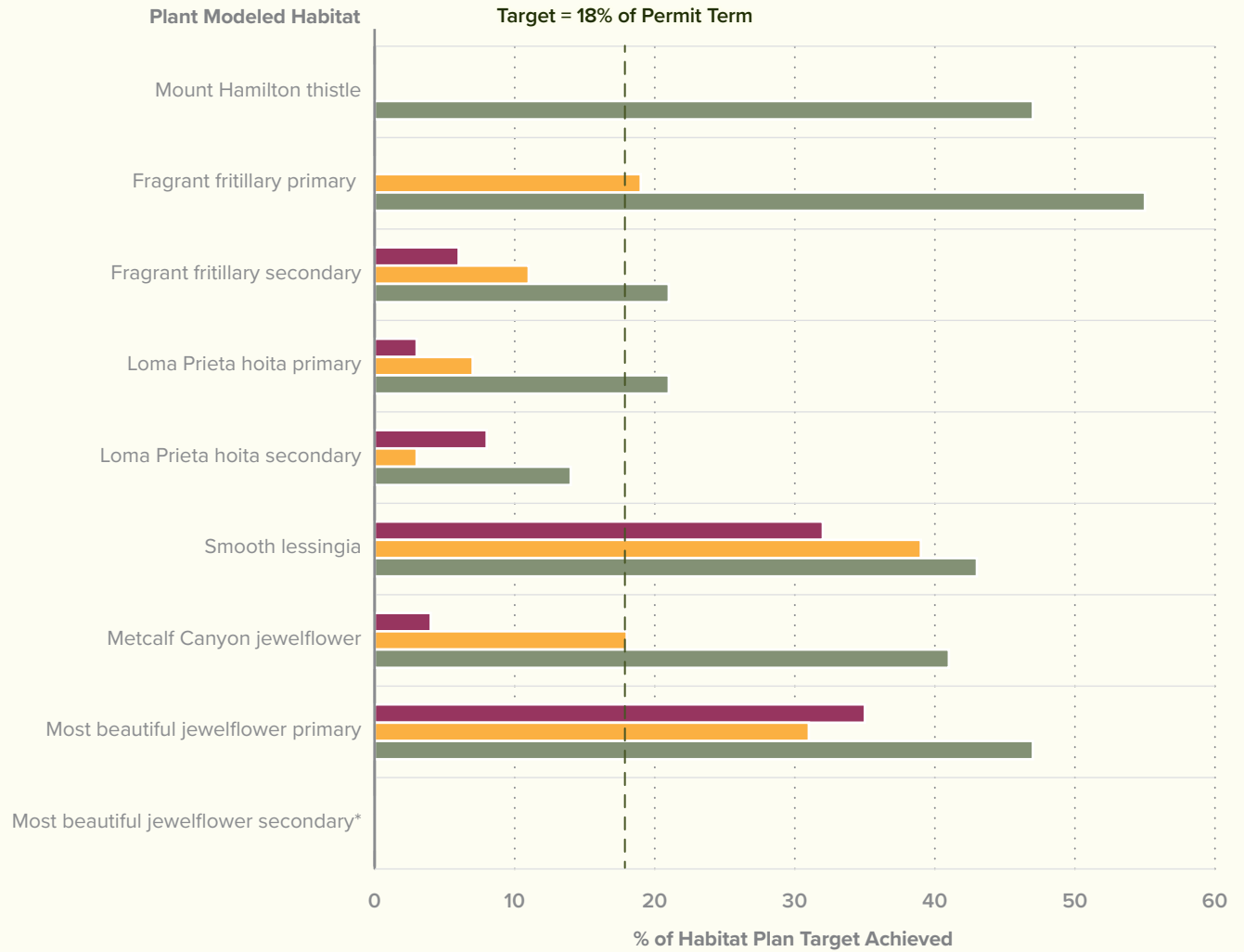


### Figure 8. Cumulative Impacts Incurred and Preservation Achieved for Wildlife Habitat

Permanent impact accrual rates far exceed 18% for Bay checkerspot butterfly (53%), western burrowing owl occupied nesting habitat (82%—same as last year), Least Bell’s vireo primary habitat (27%), and tricolored blackbird primary habitat (48%). Temporary impact accrual rates far exceed 18% for western burrowing owl occupied nesting habitat (95%—same as last year) and overwintering habitat (67%). Habitat preservation is generally tracking closely with impacts except for western burrowing owl.



### Figure 9. Cumulative Impacts Incurred and Preservation Achieved for Plant Habitat



\* To date no impacts have been incurred nor preservation achieved for this habitat.

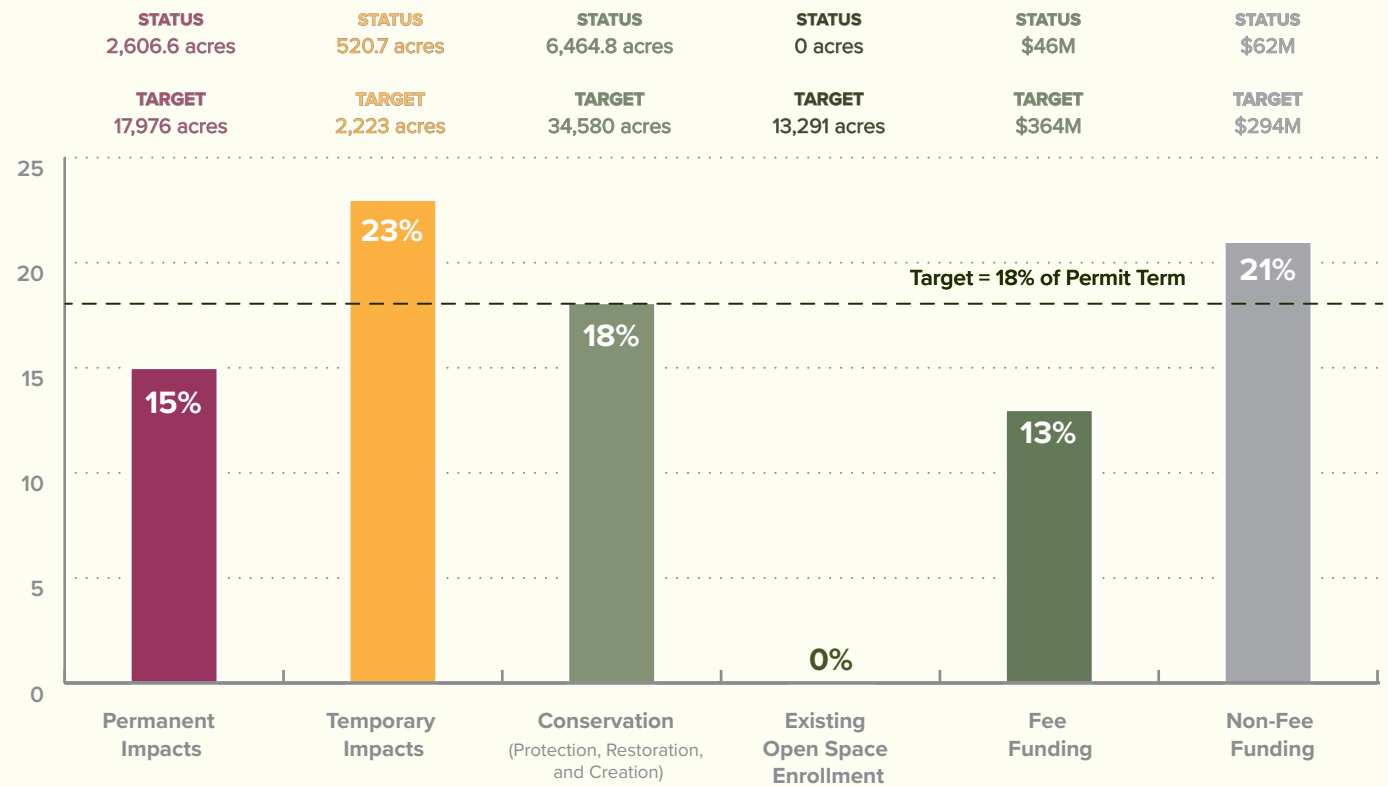
Temporary Impacts Permanent Impacts Preservation Achieved

As in previous years, only smooth lessingia and most beautiful jewelflower exceeded the 18% impact cap for the reporting period. Impacts on both species increased slightly during the reporting period, but preservation of modeled habitat for both species far exceeds impacts.

Preservation of covered plant species habitat did not change from the previous year since there was no land acquisition during the reporting year.

**Figure 10. Cumulative Impacts Incurred,  
Preservation Achieved, and Funding Received as  
Percentages of Habitat Plan Targets**

Permanent project impacts have largely occurred in urban and agricultural areas—40% and 39%, respectively—with only 21% occurring in natural lands. This results in lower fees paid, as most projects avoid high-fee sensitive land cover types. For this reason, the impacts accrued appear to outpace the fees paid. As more natural lands are developed and sensitive land cover types are affected, the fees paid will increase. The Reserve System totals approximately 6,500 acres with about 18% of the conservation target being achieved.



**Table 9. Status of Wildlife Species Occupancy Requirements for Select Species in Reserve System**

Species	Requirement	Status	Status Notes
Bay checkerspot butterfly	The four 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. Occupancy is met by demonstrating the presence of both larvae and adults.	1 of 4 core habitat units occupied <sup>b</sup>	Occupancy has been recorded 10 out of the 10 past years in the USFWS Kirby Recovery Unit
Bay checkerspot butterfly	Half of the satellite units occupied once by year 45 of the permit term. Occupancy is met by demonstrating the presence of both larvae and adults.	50% of satellite units surveyed and occupied	Tulare Hill, Calero, and North of Llagas Avenue occupied in 2021. W. Hills of Santa Clara Valley, Santa Teresa Hills; Communication Hill not surveyed in 2021
California red-legged frog <sup>a</sup>	40% of ponds and wetlands occupied (support full lifecycle) in Federal Recovery Unit 4	12%	3/25 Occupied
California red-legged frog <sup>a</sup>	40% of ponds and wetlands occupied (support full lifecycle) in Federal Recovery Unit 6	0%	0/4 Occupied
California tiger salamander <sup>a</sup>	30% of ponds and wetlands occupied (support full lifecycle) within the entire Reserve System.	34%	10/29 Occupied
Western pond turtle <sup>a</sup>	25% of ponds and wetlands occupied (adults and signs of successful reproduction) within the entire Reserve System.	22%	7/32 Occupied
Foothill yellow-legged frog	Occupancy (eggs masses detected) in at least four of the watersheds in Figure 3-6 of the Habitat Plan)	25%	Occupancy detected in 1 watershed within the Reserve System (Llagas) <sup>c</sup>

<sup>a</sup> Ponds created or wetlands restored in the Reserve System that meet occupancy criteria will count towards the occupancy requirement. Ponds created or wetlands restored that are not occupied do not count towards occupancy requirements.

<sup>b</sup> Metcalf Unit is likely occupied, although there are only records of Bay checkerspot occupation from 2014 and the preceding years. The Habitat Agency does not own, manage, or have interest in any land in the other two units, thus those units have not been surveyed consistently over the last 10 years. Insufficient data are available to evaluate occupancy in the other three core habitat units from the 1998 Serpentine Recovery Plan.

<sup>c</sup> This species was detected on the Calero Conservation Easement. Although this conservation easement was not enrolled in the Reserve System during the reporting period, surveys were conducted in anticipation of enrollment. This property was enrolled in the Reserve System in the FY2022–23 reporting period.

**Table 10.** Summary of Covered Plant Preservation to Date

Species	Number of Covered Plant Occurrences																		Total in Reserve System
	Coyote Ridge Open Space Preserve			Calero Conservation Easement			Tilton Ranch South & Davidson Reserves <sup>a</sup>			Tilton Ranch Reserve			East Coyote Ridge Reserve			Tulare Hill Wedge Reserve			
	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	Habitat Plan Occurrences	New Occurrences Identified in Baseline Surveys	Compliance	
Mt. Hamilton thistle	16	6	22	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	<b>24</b>
Santa Clara Valley dudleya	99	-3	96	6	2	8	0	1	1	1	2	3	2	0	2	0	1	1	<b>111</b>
Fragrant fritillary	3	0	3	1	-1 <sup>d</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>3</b>
Loma Prieta hoita	0	2	2	2	0	2	0	0	1	0	0	0	0	0	0	0	0	0	<b>5</b>
Smooth lessingia	6	0	6	3	1	4	0	1	1	0	3	3	1	0	1	0	1	1	<b>16</b>
Metcalf Canyon jewelflower	1 (45) <sup>b</sup>	7 <sup>c</sup>	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<b>8</b>
Most beautiful jewelflower	1 (45) <sup>b</sup>	1	2	4	1	5	0	1	1	0	2	2	1	0	1	0	0	0	<b>11</b>
Coyote ceanothus	0	0	0	0	0	0	1	0	1	TBD	0	0	0	0	0	0	0	0	<b>1</b>
<b>Total</b>	<b>225</b>	<b>13</b>	<b>139</b>	<b>18</b>	<b>16</b>	<b>21</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>7</b>	<b>8</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>179</b>

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

<sup>a</sup> Reserves are adjacent parcels that support the same covered plant occurrences.

<sup>b</sup> There are 45 occurrences of an unknown species of jewelflower at the Coyote Ridge Open Space Preserve. At this time, these occurrences cannot be identified to species due to a color gradation between Metcalf Canyon jewelflower and most beautiful jewelflower. The Habitat Agency is currently conducting a genetic study to determine how to categorize each species by color and make a species determination. This study will be completed in summer 2023, and the Habitat Agency will be able to accurately categorize these 45 occurrences.

<sup>c</sup> This number may increase or decrease based upon the genetic study results (see footnote b).

<sup>d</sup> There was one California Natural Diversity Database occurrence of fragrant fritillary; however, this species was not relocated after baseline surveys and is now considered possibly extirpated at the Calero Conservation Easement.



**This section summarizes habitat restoration and creation projects undertaken during the reporting period and documents cumulative restoration and creation by watershed.**

## **Habitat Restoration and Creation**

### **Coyote Ridge Open Space Preserve Ponds Restoration Project, Ponds CR 1 and CR 4**

In 2019, the Habitat Agency constructed the Coyote Ridge Open Space Preserve Ponds Restoration Project, Ponds CR 1 and CR 4 in partnership with the Santa Clara Valley Open Space Authority (OSA). The project was constructed to restore and establish pond habitat at two locations (CR 1 and CR 4) in the Coyote Ridge Open Space Preserve, located in the Coyote Creek watershed. Within the 5-year post-construction monitoring period, 2022 was Year 3 of monitoring.

Year 3 management activities included infrastructure maintenance, wetland planting, and invasive plant species control. Because FY2021–2022 was a below-average rainfall year, CR 1 and CR 4 only held water temporarily and were dry by May 1 and May 23, respectively. Performance standards for target hydrologic regime, California red-legged frog and California tiger salamander breeding, western pond turtle presence, and aquatic predator presence/absence were not applicable because of below-average precipitation. Wetland vegetation continued recruiting in the ponds and container plants were installed in January.

Pond CR 1 exceeded the wetland plant cover target, but Pond CR 4 did not at the time of sampling because of the extent of ponded water. Both ponds exceeded the performance standard for species richness. Conducting the visual assessment of open water and wetland plants earlier in the season (February or March) will capture plant growth in open water areas. Invasive plant cover decreased from Year 2 and poses a minimal threat to wetland habitat establishment at the pond sites, but cover of some individual invasive species exceeded the performance standard. The native wetland vegetation planted per the project's design and management of invasive plant species are expected to increase the likelihood that the site achieves performance standards in the future.

Future monitoring will be conducted to determine if California red-legged frog and California tiger salamander are present and successfully breeding during at least 1 of the first 5 monitoring years.

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This project will help restore habitat for California red-legged frog, California tiger salamander, and western pond turtle. Shown here is Pond CR 1 post-construction (left) and in 2022 (right).

## Calero Pond and Wetland Restoration

The Habitat Agency constructed the Calero County Park Pond and Wetland Restoration Project in 2016. The project was constructed to restore and establish pond and wetland habitats at two locations (pond mitigation site and wetland mitigation site) in Calero County Park, located in the eastern foothills of the Santa Cruz Mountains in the Alamitos Creek watershed. Having missed important success criteria in Year 5 (2021), an additional year of monitoring was conducted in 2022, marking Year 6 for the monitoring effort.



These photos show the condition of Calero Park Pond (left) and Calero Park Wetland (right) during the Year 6 field surveys.

Year 6 management activities included infrastructure maintenance to weirs and a spring box, invasive plant species control, primarily focused on nonnative weed species, and implementation of a technique to increase Mount Hamilton thistle seedling recruitment where weeds are cleared around the base of individuals and the soil is lightly scarified. Because 2021–2022 was a below-average rainfall year, performance standards for target hydrologic regime were not applicable, and the pond water depth did not exceed 2 feet on August 31, 2021. The pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and continue to prove geomorphically stable.

All applicable wildlife performance standards were achieved, except the California red-legged frog standard, which calls for documented successful breeding in at least 1 monitoring year. California red-legged frog was not observed in Years 1–6.

The California tiger salamander performance standard, which requires continued successful breeding in each year, is now considered to have met the criterion. California tiger salamander breeding was not detected in Year 4, but this species has been detected breeding in every other year for a total of 5 years.

The Mount Hamilton thistle population was stable, and invasive plant species remained at low densities and below 5% cover across the pond and wetland sites. Accordingly, these performance standards were met in addition to the jurisdictional wetland creation and restoration criteria for both pond and wetland mitigation. The wetland site met the percent wetland vegetation, despite drought conditions. The habitat goals of the pond mitigation site, as described in the project mitigation plan, have been achieved, and this project is now deemed complete.

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## San Felipe Creek Restoration at Grant Park

Monitoring results for Year 4 of the San Felipe Creek Restoration Project consist of the restoration, establishment, and enhancement of aquatic resources along San Felipe Creek and its tributaries between the Corral and Cañada de Pala trails in the Joseph D. Grant County Park. Monitoring began in October 2018 following the completion of construction activities and will extend for a 10-year period through October 2028. Qualitative monitoring was conducted during Year 1 (2019) through Year 4 (2022), and quantitative monitoring began in Year 2 and continued in Years 3 and 4.



The success of the project site is determined through comparison of the monitoring data to the performance standards and success criteria. These criteria include wetland re-establishment success criteria, wetland rehabilitation and enhancement performance standards, and stream and riparian buffer performance standards.

In Year 4, the project met some performance standards. The site met all the performance standards related to hydrology and geomorphology but did not meet the success criterion for there to be flow in two or more Boyds Creek channels. This deficiency is a result of three subsequent below-average rainfall years, and it is anticipated that during an average water year this criterion would be met. There are also some deficiencies in performance related to the vegetation criteria, including container plant cover, weed species cover, vegetated cover of cuttings, and relative cover of native species. Site challenges that influenced site performance have been identified; these challenges include feral pig activity, irrigation system reliability, and a below-average water year.

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This project will help restore, establish, and enhance aquatic resources for several covered species. Photos show progress of San Felipe Creek restoration.

## Pacheco Creek Reserve Riparian Planting

In early 2018, native riparian species were planted in a 2-acre portion of the Pacheco Creek Reserve site extending east and west of the primary access driveway between the north bank of Pacheco Creek and Highway 152. Plant establishment monitoring was performed on October 19, 2022. The overall plant survival rate at the end of 2022 at the riparian planting area was 36%—down from 41% in 2021. Of the surviving plants, most are of high vigor, exhibiting new height and foliage growth as well as flowering and fruiting.



The 2022 maintenance season focused on keeping areas with surviving plants weeded and watered. After an initial weeding in late spring, little weeding was required throughout the summer; however, yellow star-thistle infestations were targeted during follow-up maintenance. Cattle were confirmed in the planting area at one point in September 2022, and they were observed jumping over the fence to exit, indicating that the fencing was inadequate. No significant herbivory was reported. To ensure adequate watering capacity, solar well pump operations were monitored, and the Habitat Agency conducted maintenance.

Moving forward into 2023, the site will be assessed for damage sustained during extremely high flows in Pacheco Creek, cages and irrigation will be decommissioned as needed, and the project team will assess any recommendations for long-term management at the site.

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**Pacheco Riparian Planting in Year 1 (top) and Year 5 (bottom). The restoration project will fulfill the Habitat Plan's biological goals and objectives and generate habitat restoration credits per the requirements of the Habitat Plan and Regional General Permit 18.**

## The Pacheco Creek Restoration Project

The Habitat Agency initiated the Pacheco Creek Restoration Project in 2018 to meet as many Habitat Plan goals and objectives as possible, including sycamore alluvial woodland habitat restoration.

A watershed approach was taken to understand the historic and current hydrologic and geomorphic conditions, and site-specific studies and baseline monitoring were conducted to identify opportunities and constraints for habitat enhancement and restoration.

The Pacheco Creek Restoration Project Feasibility Study was completed in 2020 to describe the results of baseline studies and inform project design. The Pacheco Creek Restoration Project Phase 1 project description was prepared in 2020 and shared with the regulatory agencies to kick off the project design and receive feedback.

The Habitat Agency has contracted with two qualified native plant nurseries to begin collection of native California sycamore (*Plantanus racemosa*) plant propagules for the project, building on previous California sycamore genetics and propagation studies and mapping efforts partially funded by the Habitat Agency.

Project design is underway, and it is anticipated that final design and permitting will be completed during FY2023–2024, with project implementation beginning in summer or fall of 2023.



**This project will create in-channel wetland habitat and plant both native riparian and beneficial pollinator species adjacent to Pacheco Creek. This photo shows the current conditions of the area to be restored; project implementation will begin in summer or fall of 2023.**

The restoration project will fulfill the Habitat Plan's biological goals and objectives and generate habitat restoration credits per the requirements of the Habitat Plan and Regional General Permit 18.



## Pajaro River Riparian Habitat Restoration

The Pajaro River Riparian Habitat Restoration Project is a coordinated effort between the Habitat Agency, OSA, and Point Blue Conservation Science. The project purpose is to enhance the habitat value of approximately 3,800 linear feet of stream by creating riparian and wetland habitat in a currently channelized and degraded stream. The project will restore sustainable natural channel and floodplain functions in the reach of the Pajaro River just upstream of the confluence with Llagas Creek. The project site is near one of the only recent observations of the least Bell's vireo in Santa Clara County.

The current condition is variable in the project reach but can be generally categorized as an incised channel with a disconnected historical floodplain, limited groundwater connectivity, and areas that have converted to upland plant species (denuded of riparian vegetation). Agricultural activities have influenced overland flow pathways and channel morphology. Restoration of Pajaro River will mitigate impacts from historical land uses and disturbances, enhance aquatic and upland habitats, and make Pajaro River more resilient to climate change.

CDFW has awarded Local Assistance Grant funding for the project to support field studies, a feasibility study, design, and regulatory agency permitting. The project will be implemented in phases; the first two phases will create approximately 4.0 acres of riparian and wetland habitat along the Pajaro River.

In 2022, Phase II of this project has progressed to the point where the Habitat Agency has submitted permit packages, received a 401 Certification from the Regional Water Quality Control Board, ordered custom grown container plants from a phytosanitary nursery, and has the 65% design plan set, based on a mitigation plan and feasibility study. Next steps will be to complete permitting and start construction in fall 2023.

This project contributes to the Habitat Plan's requirement to manage 5,300 acres of occupied or potential nesting habitat for burrowing owls in the Permit Area.



## San José-Santa Clara Regional Wastewater Facility Bufferlands Pilot Planting

The Habitat Agency has an agreement with the City of San José to manage the San José-Santa Clara Regional Wastewater Facility bufferlands and coordinates with the City, the Santa Clara Valley Audubon Society, and Talon Ecological Resource Group to enhance habitat quality, increase the number of nesting burrowing owls, and increase their reproductive success. Activities to restore breeding habitat for the burrowing owl include maintaining vegetation height, excluding predators, maintaining perimeter fencing, performing monitoring surveys, installing artificial burrow substrate and prey refugia, and expanding the prey base through active revegetation.

The Habitat Agency selected Grassroots Ecology to implement pilot planting in plots throughout the Regional Wastewater Facility bufferlands to test the durability of their selected native plant palette and whether those plants will remain short-statured to prevent its use as cover for predators at the site. Three pilot planting zones were established: a seasonally wet planting area, upland area, and a transition zone. A combination of container plants and seed were installed that are suitable for insect pollinators. Grassroots Ecology staff along with community and student volunteers installed the pilot planting plots during winter 2020–2021 and maintained and monitored plant performance. Maintenance of existing pilot planting plots and additional plantings based on the resulting on the pilot plots will continue with funding from the Habitat Agency and Valley Water.

In 2022 both Grassroots Ecology and Talon Ecological Resource Group conducted the plant management work, and they coordinated separate volunteer weed management efforts. Grassroots Ecology also expanded planting areas, focused on replacing hundreds of plants in an upland area where previous plantings had died. In addition, Grassroots Ecology conducted a bioblitz monitoring of insects within the planting area, documenting 28 distinct species.

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## Coyote Ceanothus Population Creation Project

The Habitat Plan requires protection of five occurrences of Coyote ceanothus, with creation of one or more occurrences permitted under the Habitat Plan. The focus on meeting the biological goals and objectives for the species has been centered on population creation because it is highly unlikely that any additional occurrences will be discovered in the Permit Area. Valley Water has collected data that have been used to develop a comprehensive population creation strategy on mitigation land purchased by Valley Water on Coyote Ridge north of the Anderson Dam population.



By 2021 the four original test plots, or habitat types, at the site (Chaparral Edge, Pine, Lower Sage, and Upper Sage) had reached capacity and all additional plant installation is now focused in the larger mitigation site, dominated by serpentine grassland that surrounds the original test plots. In late November 2022, 200 new container plants were installed, and in mid-December an additional 60 basins were direct seeded, for a total installation of 260 new planting basins this winter. This brings the current total of created and planted basins at the population creation site to approximately 1,500. (This does not indicate the current number of surviving individuals at the site, due to some mortality and the design of direct seeded basins often having multiple surviving individuals.)

Results for 2022 indicate that container plants maintained high survival rates over time (85% survival 6 years after planting across all habitat types), and there was not much difference in survival rates in different habitat types over time. In contrast, direct seeded

**Mature Coyote ceanothus in flower at Anderson Dam. (Photo: Janell Hillman, Valley Water)**

plants exhibited the opposite pattern, with a much lower average survival rate (43% six years after planting). There was a significant difference between habitat types over time for direct seeded plants, ranging from a low of 8% survival rate in Year 6 in the Lower Sage test plot, to a high of 85% survival rate in the Pine test plot.

Year 2022 represented the final year of scheduled planting of Coyote ceanothus in the introduction site, which began in 2015 and has occurred annually since then. Annual planting has allowed the site to develop structural complexity and phenological diversity due to different age classes of plants, mimicking natural recruitment seen in native populations. The use of different seed collection lots from the Anderson Dam occurrence for the annual planting has been designed to increase genetic diversity and microsite suitability.

**Table 11.** Aquatic Land Cover Restoration and Creation by Watershed—Cumulative<sup>a</sup>

Watershed	Aquatic Land Cover (acres)							
	Willow Riparian Forests, Woodlands, and Scrub	Central California Sycamore Alluvial Woodland	Mixed Riparian Woodland and Forest	Coastal and Valley Freshwater Marsh	Seasonal Wetland	Pond	Stream (linear feet)	Aquatic Land Cover Total
<b>Coyote</b>								
Restoration	0.82	-	0.82	0.15	3.72	-	9,645.00	5.51
Creation	-	-	-	-	-	-	-	0.00
<i>Subtotal</i>	0.82	0.00	0.82	0.15	3.72	0.00	9,645.00	5.51
<b>Guadalupe</b>								
Restoration	-	-	-	0.16	0.21	0.22	-	0.59
Creation	-	-	-	-	0.03	-	-	0.03
<i>Subtotal</i>	-	-	-	0.16	0.24	0.22	-	0.62
<b>Pajaro</b>								
Restoration	-	-	3.30	-	-	-	-	3.30
Creation	-	-	-	-	-	-	-	0.00
<i>Subtotal</i>	0.00	0.00	3.30	0.00	0.00	0.00	0.00	3.30
<b>Uvas</b>								
Restoration	-	-	-	-	-	-	-	-
Creation	-	-	-	-	-	-	-	-
<i>Subtotal</i>	-	-	-	-	-	-	-	-
<b>Llagas</b>								
Restoration	-	-	-	-	-	-	-	-
Creation	-	-	-	-	-	-	-	-
<i>Subtotal</i>	-	-	-	-	-	-	-	-
<b>Total</b>	<b>0.82</b>	<b>0.00</b>	<b>4.12</b>	<b>0.31</b>	<b>3.96</b>	<b>0.22</b>	<b>9,645.00</b>	<b>9.43</b>

<sup>a</sup> No aquatic land cover restoration and creation occurred during the reporting period.



# Western Burrowing Owl Management and Monitoring

This section notes western burrowing owl–related management and monitoring actions undertaken during the reporting period and shows young fledged annually since 2014.

The Habitat Agency manages two of five western burrowing owl breeding sites and conducts surveys throughout the Permit Area and Extended Permit Area for burrowing owl conservation. Management agreements with the San José–Santa Clara Regional Wastewater Facility and the Don Edwards San Francisco National Wildlife Refuge include 920 acres of burrowing owl breeding habitat, approximately 17% of the total 5,300 acres required under the Habitat Plan.

The 2022 western burrowing owl surveys documented breeding owls at four of five sites; burrowing owls did not breed at the Don Edwards National Wildlife Refuge for the fourth year in a row, and 2022 is the second year in which no adult owls were observed during the breeding season. Accordingly, the total number of adults owls observed during the breeding season decreased from 36 to 33 adults between 2021 and 2022, of which a total of 16 pairs were documented. However, the number of young fledged doubled, from 36 young to 64 young, and the average number of offspring per pair also



Three single males inside a hacking enclosure during soft-release as part of the Juvenile Overwintering Project.



Volunteers helped remove invasive, nonnative vegetation.  
(Photo taken on October 21, 2022)

increased from 2.1 to 3.67 between 2021 and 2022. Despite extreme drought and higher spring temperatures, these results were a positive sign.

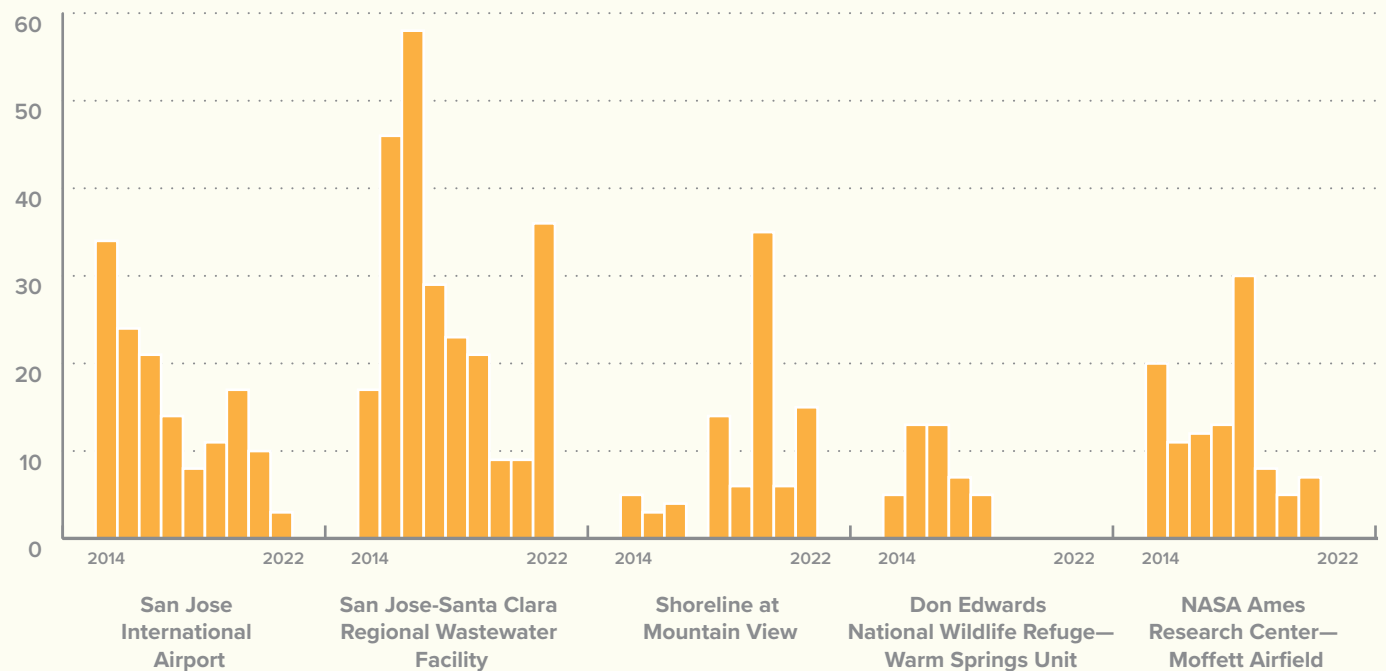
In addition to the annual breeding season surveys described above, the Habitat Agency conducted Tier 3 recovery actions during the FY2021–2022 reporting period. This year, 17 of the breeding owls as well as nine adults were released at the Regional Wastewater Facility as part of the Juvenile Burrowing Owl Overwintering Project. These 26 owls represented 51.5% of the total breeding population in the Permit Area. Additionally, four owls (two females and two males) from the overwintering project were retained to initiate a captive breeding program. These two captive pairs produced a total of 14 offspring. The success of the overwintering project and the captive breeding program are crucial for maintaining—and hopefully increasing—a source population in the Permit Area.

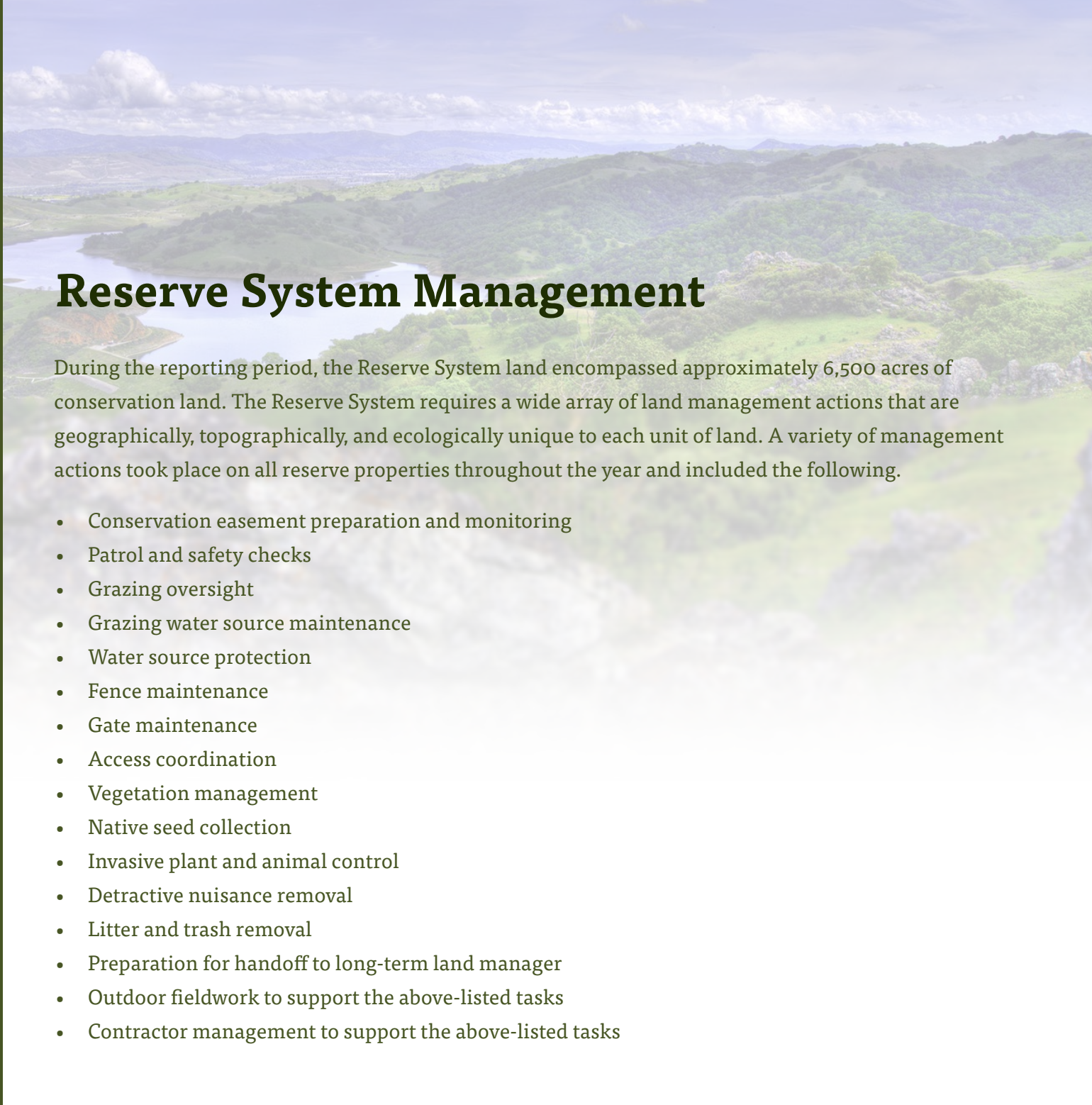
**Figure 11** on the following page shows the number of western burrowing owls fledged at management sites from 2014 through 2022.

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The number of young fledged at the five conservation sites each year has varied over time; however, the total number of young produced across these sites has decreased since 2014. The decreasing trend in offspring rate is attributable partly to inbreeding depression (i.e., the reduction in the average fitness of offspring born to parents that are closely related to each other). Other factors include climate change, habitat loss and disturbance, rodent eradication, lack of suitable habitat, and increase in predation by non-native predators.

**Figure 11. Number of Young Fledged (2014-2022)**





## Reserve System Management

This section summarizes management actions that took place during the reporting period and highlights notable accomplishments.

During the reporting period, the Reserve System land encompassed approximately 6,500 acres of conservation land. The Reserve System requires a wide array of land management actions that are geographically, topographically, and ecologically unique to each unit of land. A variety of management actions took place on all reserve properties throughout the year and included the following.

- Conservation easement preparation and monitoring
- Patrol and safety checks
- Grazing oversight
- Grazing water source maintenance
- Water source protection
- Fence maintenance
- Gate maintenance
- Access coordination
- Vegetation management
- Native seed collection
- Invasive plant and animal control
- Detractive nuisance removal
- Litter and trash removal
- Preparation for handoff to long-term land manager
- Outdoor fieldwork to support the above-listed tasks
- Contractor management to support the above-listed tasks



**Reserve System management activities: pampas grass removal and trail camera installation at the Uvas South Reserve.**

Highlights from the aforementioned tasks include the following.

- Habitat Agency staff made 176 site visits to Reserve System properties.
- Wildlife Detections, LLC removed 2,384 feet of old barbed wire fencing at East Coyote Ridge Reserve and installed four wildlife escape ramps in cattle water troughs at the Baird and Tilton Ranch Reserves.
- AGCO Hay installed welded-wire fence panels around a population of several hundred Loma Prieta hoita plants at Baird Ranch Reserve and replaced 3,200 feet of old barbed wire fence in the flats of Baird Ranch Reserve to prevent cattle from accessing the sensitive habitat.
- Habitat Agency staff removed over 1,000 pounds of trash illegally dumped on various reserves.
- LD Ford, Consultants in Rangeland Conservation Science conducted residual dry matter surveys on Baird, Davidson and Tilton Reserves and initiated the writing of a Grazing Management Plan for Tilton Ranch.
- Confluence Restoration, Wildlife Detections, OSA, and the Habitat Agency removed large patches of artichoke thistle, purple star-thistle, stinkwort, barbed goat grass, yellow spurge, yellow star-thistle, pampas grass, and French broom from the reserves.
- In collaboration with the Habitat Agency, OSA contracted with Southwest Fence and Supply to implement the Coyote Ridge Fence Removal and Installation Project to remove and replace 12,687 linear feet of old ranch fence, install 17,704 linear feet of wildlife friendly fence, install 20 new steel gates, install two pedestrian gates and one elk crossing.



Pacheco Pass is essential to connectivity between the Diablo and the Inner Coast Ranges, and is a wildlife corridor priority for many local, state, and federal conservation organizations. The Pacheco Pass Wildlife Connectivity Project will link wildlife habitat and protected public lands on both sides of State Route 152 including current and future Reserve System lands, existing protected lands, and working ranch lands. Over the next 5 years, the Habitat Agency will utilize grant funding to implement a suite of wildlife connectivity improvements in Pacheco Pass.

A brief summary of the grants awarded during FY2021–2022 is below.

- **SR-152 Pacheco Creek Wildlife Connectivity and Corridor Enhancement:** Funding awarded by the State of California Wildlife Conservation Board (WCB) will support: 1) creating a wildlife pathway under Pacheco Creek Reserve bridge; 2) restoration of Pacheco Creek to improve wildlife habitat and movement; 3) installing directional fencing between the bridges and culverts at the Pacheco Creek Reserve.
- **Pacheco Pass Wildlife Linkage and Connectivity Improvements:** Additional WCB funding for directional fencing. It is essential that both sides of the highway be fenced to prevent wildlife from accessing from one unfenced side and becoming trapped on the road behind the new fence on the other. Based on the data collected during prior wildlife studies in Pacheco Pass, these structures are facilitating the movement of multiple species under State Route 152.
- **Pacheco Pass Wildlife Overpass Planning:** The key project outcomes are a Conservation Easement over Malech Ranch; directional fencing installation to guide wildlife towards existing crossing infrastructure; and final land bridge design, permitting, and environmental clearance. WCB funded.
- **Pacheco Pass Wildlife Connectivity:** The key project outcomes are: protection of the Malech Ranch; GPS collars placed on tule elk and mountain lions to inform wildlife crossing infrastructure investments; directional fencing installation to nudge wildlife towards existing crossing infrastructure; and final land bridge design, permitting, and environmental clearance. Funded by the Wildlife Conservation Network.

# Monitoring, Research, and Adaptive Management

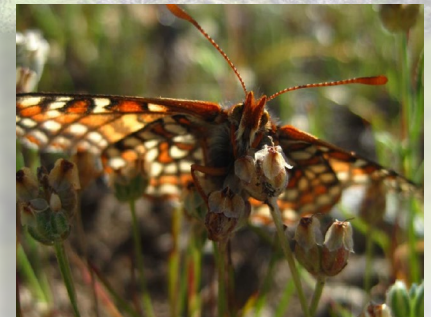
This section summarizes monitoring, research, and adaptive management projects undertaken during the reporting period.

## Bay Checkerspot Translocation

The goal of the Bay Checkerspot Translocation Project is to enhance the Bay checkerspot butterfly population in restored habitat at Tulare Hill in San José by translocating larvae from the existing Coyote Ridge population. This year there was one postdiapause larva found, leading to an estimate that the larval population was in the low hundreds. This is decreased from an estimated high of 20,000 in 2015. No larvae were translocated between 2017 and 2022.

In 2022 four adult Bay checkerspot butterflies were observed over a very short 2-week flight season. The highest number of adults observed since this project began was 268 in 2015 (which was a translocation year) and the lowest number of adults was one adult observed in 2018. The number of butterflies estimated on Tulare Hill in 2022 is within the historical range of variability observed since 1987, and it has historically been vulnerable to crashes and local extirpation following poor weather. The low cover of the secondary larval hostplant, *Castilleja* spp. (which generally stays fresher much longer in the season), may also explain why Bay checkerspot larvae can persist on the lower slopes of Coyote Ridge but not on Tulare Hill.

**THE FULL REPORT CAN BE FOUND ON THE HABITAT AGENCY'S WEBSITE [HERE](#).**



Bay checkerspot butterfly habitat on Tulare Hill is high quality, with decent cover of the host plant *Plantago erecta*. However, the low elevation and overall trend of increasingly warm spring temperatures may lead to premature host plant senescence. Climate change could render Tulare Hill inhospitable. (Photo: Creekside Science 2022)



This project is crucial to the survival of breeding western burrowing owls in the South Bay given the below-average reproductive success of burrowing owls in this region.



This project tracks the status and trends of Bay checkerspot butterfly populations in the Reserve System to determine whether the number of populations and the geographic distribution of the species are increasing or decreasing.

## Western Burrowing Owl Supplemental Feeding Study

The Western Burrowing Owl Supplemental Feeding Study at the Shoreline Regional Wildlife Area (Shoreline), NASA's Ames Research Center in Mountain View, and San José-Santa Clara RWF in San José contributes to the Habitat Plan's commitment to burrowing owl conservation actions. Owls were fed mice each week throughout the breeding season. A total of 13 breeding pairs were observed at the three sites included in this study. At Shoreline, a total of five owl pairs attempted to breed in 2022; three pairs successfully reproduced. At the Ames Research Center, one owl pair attempted to breed in 2022, but was unsuccessful. At the RWF, a total of seven owl pairs attempted to breed in 2022; six pairs successfully reproduced. In total, 36 offspring were produced at these three sites. No burrowing owl pairs were observed at Warm Springs during the 2022 breeding season.

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## Bay Checkerspot Butterfly Surveys

In early 2022, the Habitat Agency retained Creekside Center for Earth Observation (Creekside) to conduct Bay checkerspot butterfly larvae and adult surveys to determine occupancy patterns in Coyote Ridge Open Space Preserve.

Bay checkerspot butterfly phenology shifts every year, and its visible life stages are always ephemeral. This demands constant tracking of conditions and regional phenology so that surveys can be appropriately timed. Creekside found that phenology was very similar throughout the surveyed region this year.

On the Coyote Ridge Open Space Preserve, Creekside used larvae surveys for population estimates, but there are some areas on Coyote Ridge Open Space Preserve where adult surveys were utilized to determine occupancy. In general, Bay checkerspot butterfly occupancy is best determined by adult

surveys, especially in areas of very low densities. Because adults are easier to detect at low densities, surveying them on the western properties shed light on where to place postdiapause larval plots. However, because of the low densities at these properties, Creekside recommends adult surveys as the primary means of tracking annual presence. The population numbers at the preserve declined during the reporting year due to extreme drought and above-average spring temperatures but were in line with 2018–2020 records. Compared with the very low numbers of larvae detected, the adult numbers overall show a more positive trend.

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## Name that Jewelflower

The Habitat Agency continued to coordinate with Santa Clara University and Creekside to differentiate Metcalf Canyon jewelflower (*Streptanthus albidus* ssp. *albidus*) and most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*) by their white and pink flower colors, respectively.

The project aims to address the following questions at two scales:

1. On the individual scale, are there phenotypic, biochemical, and genetic boundaries that define these taxa? If so, can a method for field identification be developed that is both functional in the field and biologically relevant?
2. On the population scale, how is an occurrence defined when it is composed of individuals with a range of flower colors? How is an occurrence defined when the frequency of phenotypes changes year to year?

In order to investigate the genetic nature of the two taxa, 12 petri dishes containing seeds representing the second generation of inbred lines were established. Germinated seedlings were transferred to

1-gallon pots. Once the inbred lines flower, it will be possible to make the crosses necessary to decipher the inheritance and genetics of the sepal pigmentation that differentiates the two putative lineages.

In order to map the color frequencies in Santa Clara County, 50 color collection sites were visited in May 2021. On each plant, the flower nearest the tip in full anthesis (anthers exerted) was selected. Color was scored to a Dunn-Edwards paint chip that most closely matched the sepal color. The goal of the analysis is to find natural groupings of sites, based on the composition of Dunn-Edwards colors scored in the field. Appropriate Dunn-Edwards paint chip colors were chosen the previous year during pilot color data collection. The observer records the number of plants assigned to each color on the tool. These color frequencies allowed the observers to thoroughly map the color variation present on Coyote Ridge in spring 2021.

These color frequencies will allow the observers to thoroughly map the color variation present on Coyote Ridge in 2022 and compare it with 2021 data.



Inbred lines of parental *Streptanthus albidus* ssp. *albidus* (left) and *S. albidus* ssp. *peramoenus* (right) growing in one-gallon pots.



Enclosure 1, showing one of several plants growing intertwined with fencing (top), and Enclosure 2, showing grass and thatch buildup inside (bottom). (Photos taken March 2021.)

## Tiburon Indian Paintbrush Project

Tiburon Indian paintbrush is a covered species under the Habitat Plan and is restricted to only two occurrences in the Habitat Plan area (and Santa Clara County). Both occurrences are at risk of extirpation from threats (e.g., grazing, feral pig uprooting) and have shown declines in recent years. The Paintbrush Hill occurrence on property owned and managed by Valley Water has historically been documented as three separate subpopulation clusters, or polygons (Figure 1). No plants were observed in the two smaller polygons until 2019, when plants were rediscovered near the north polygon. The number of plants in the Paintbrush Hill occurrence has fluctuated over time, with the number of plants counted per year ranging from a low of 9 individuals in 1994 to a high of 208 or 224 in 2018, depending on the count method.

In the 2022 monitoring season 116 reproductively mature plants and 2 seedlings were counted, for a total population size of 118 individuals. This included 100 plants and 2 seedlings in the main (central) polygon, and 16 plants in the northern polygon. The number of plants observed inside cages declined over the first 3 years of monitoring, but increased this year. The proportion of the total population within enclosures is consistent with the number of plants, declining from 19% in 2019 to 14% in 2021 and increasing to 17% in 2022.

Seed from two plants (5% of plants that set fruit in 2022) was collected and sent to the California Botanic Garden. The 2022 collection was so small that germination tests will not be conducted. Germination was 80% for seeds tested from the lot collected from Paintbrush Hill in 2019, with no pretreatment or stratification. Germination for the 2020 seeds was 50% and 70% for the 2021 seeds.

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# Stay-Ahead Provision

This section evaluates compliance with the Habitat Plan’s Stay-Ahead provisions for natural communities, the burrowing owl conservation strategy, and covered plants.

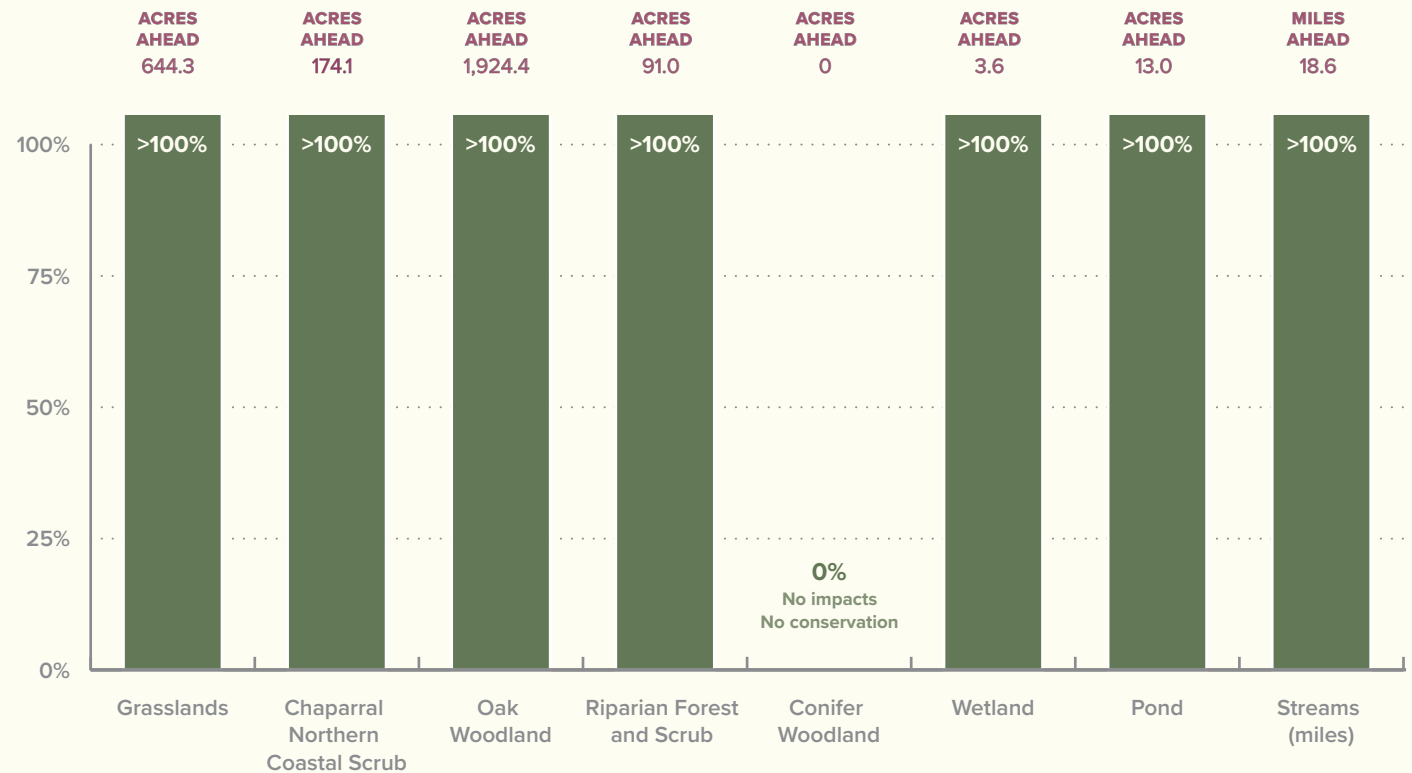
The Stay-Ahead provision requires that the amount of each land cover type conserved, restored, or created by the Habitat Agency as a proportion of the total requirement for each land cover type must be roughly proportional to the impact on that land cover type as a proportion of the total impact expected by all covered activities. For example, if 25% of the expected impacts on mixed serpentine chaparral have occurred, then at least 25% of the required land acquisition for mixed serpentine chaparral must also have occurred. To provide flexibility during implementation, the Habitat Agency may fall behind by a maximum of 10% of its conservation strategy requirements (conservation overall and by each applicable land cover type) and still be in compliance with the Stay-Ahead provision. This deviation accounts for the likely pattern of infrequent land acquisition of large parcels that will allow the Habitat Agency to jump far ahead of impacts with just one acquisition.

The Habitat Plan’s Stay-Ahead provision requires that conservation is ahead of or proportional to impacts for natural communities, plants, and the western 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.

The following pages show Stay-Ahead compliance for natural communities (**Figure 12**), western burrowing owl (**Figure 13**), and plants (**Figure 14**).

## Figure 12. Stay-Ahead Compliance for Natural Communities

Stay-Ahead requirements for natural communities are still being exceeded. Although the Habitat Agency did not acquire any properties within the reporting period, the Habitat Agency acquired seven properties in the FY2019–2020 and FY2020–2021 reporting periods, contributing to compliance with the Stay-Ahead provision. The Habitat Agency will continue to acquire land throughout the permit term in order to remain in compliance with the Stay-Ahead requirement.



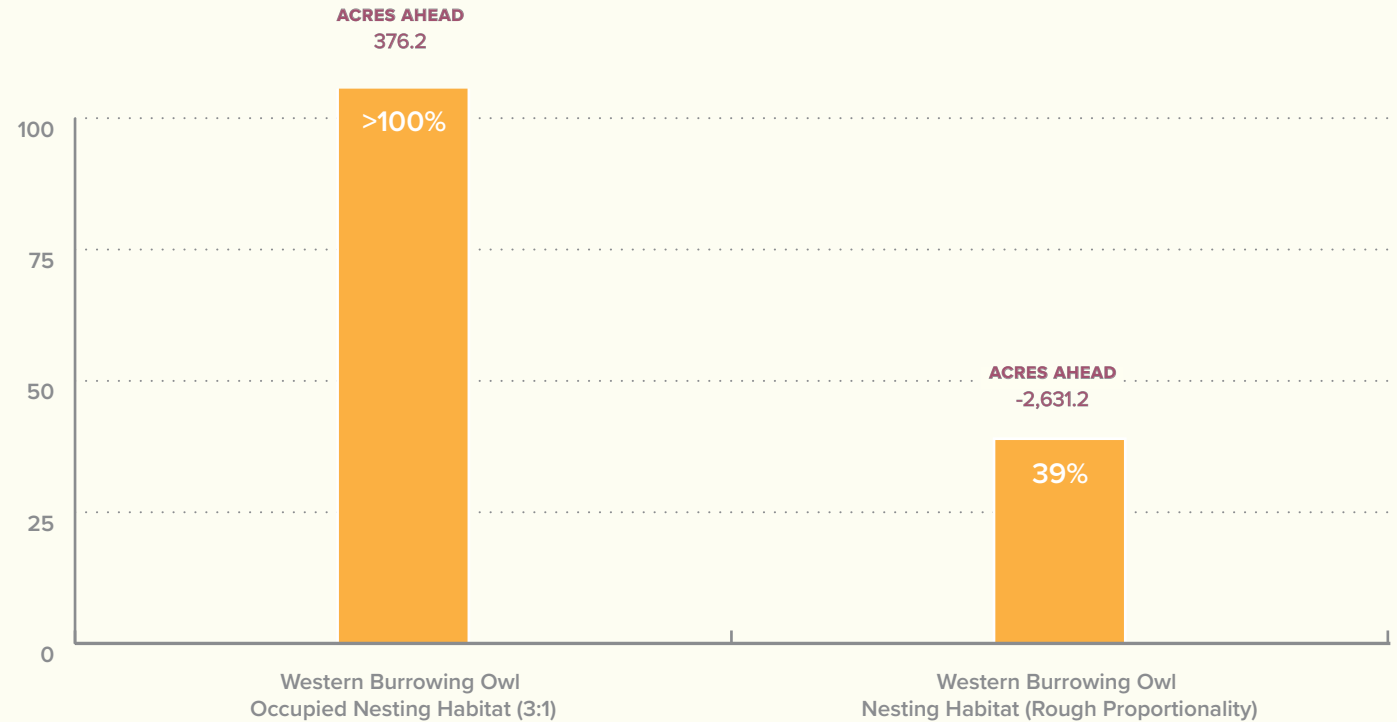
### Notes

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.

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

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

### Figure 13. Stay-Ahead Compliance for Western Burrowing Owl



The Habitat Agency continues to remain in compliance with the Stay-Ahead requirement for occupied nesting habitat but is not in compliance with nesting habitat (rough proportionality).

**Notes**

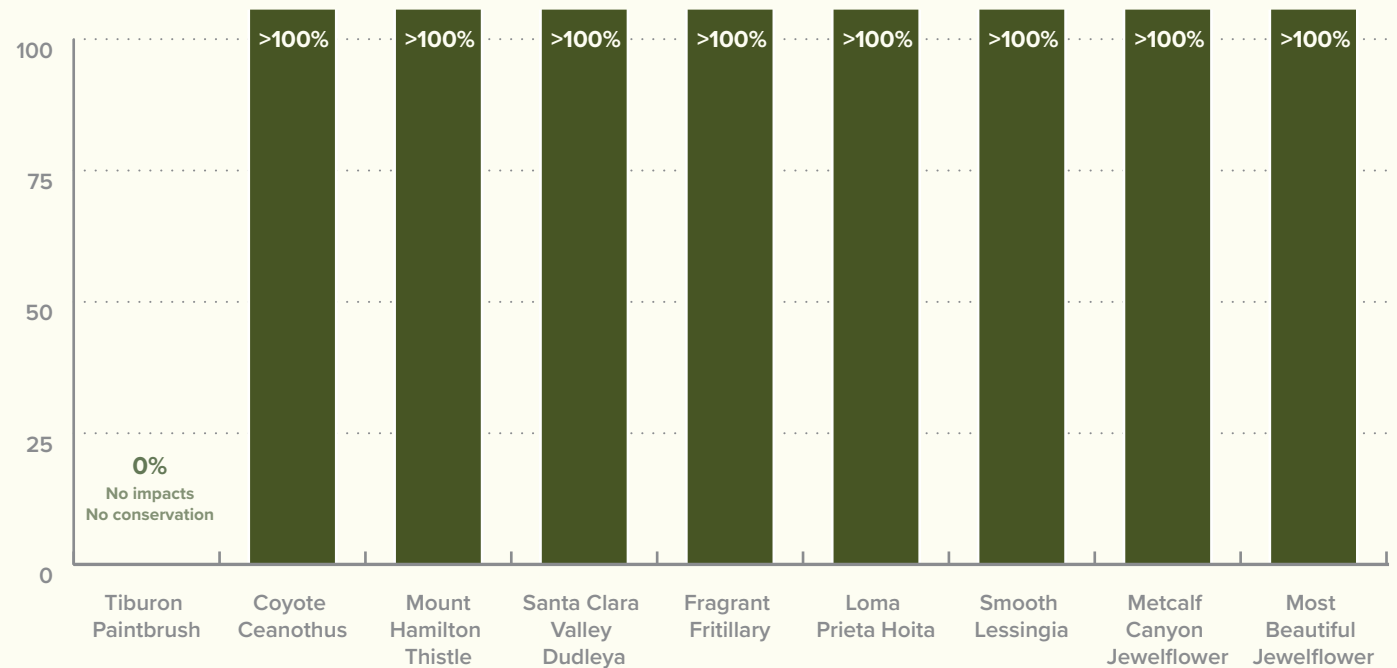
The western burrowing owl Stay-Ahead requirement measures two different compliance metrics— (1) occupied nesting habitat: impacts and conservation of occupied nesting habitat using a 3:1 ratio within a 10% deviation, and (2) nesting habitat rough proportionality: rough proportionality for impacts to 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 = (Conservation Achieved) – (Conservation Required).

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

**Figure 14. Stay-Ahead Compliance for Plants**

All the covered plant species continue to exceed the Stay-Ahead requirements in the Habitat Plan for the reporting period, given that there have been very few impacts on covered plant species occurrences to date.

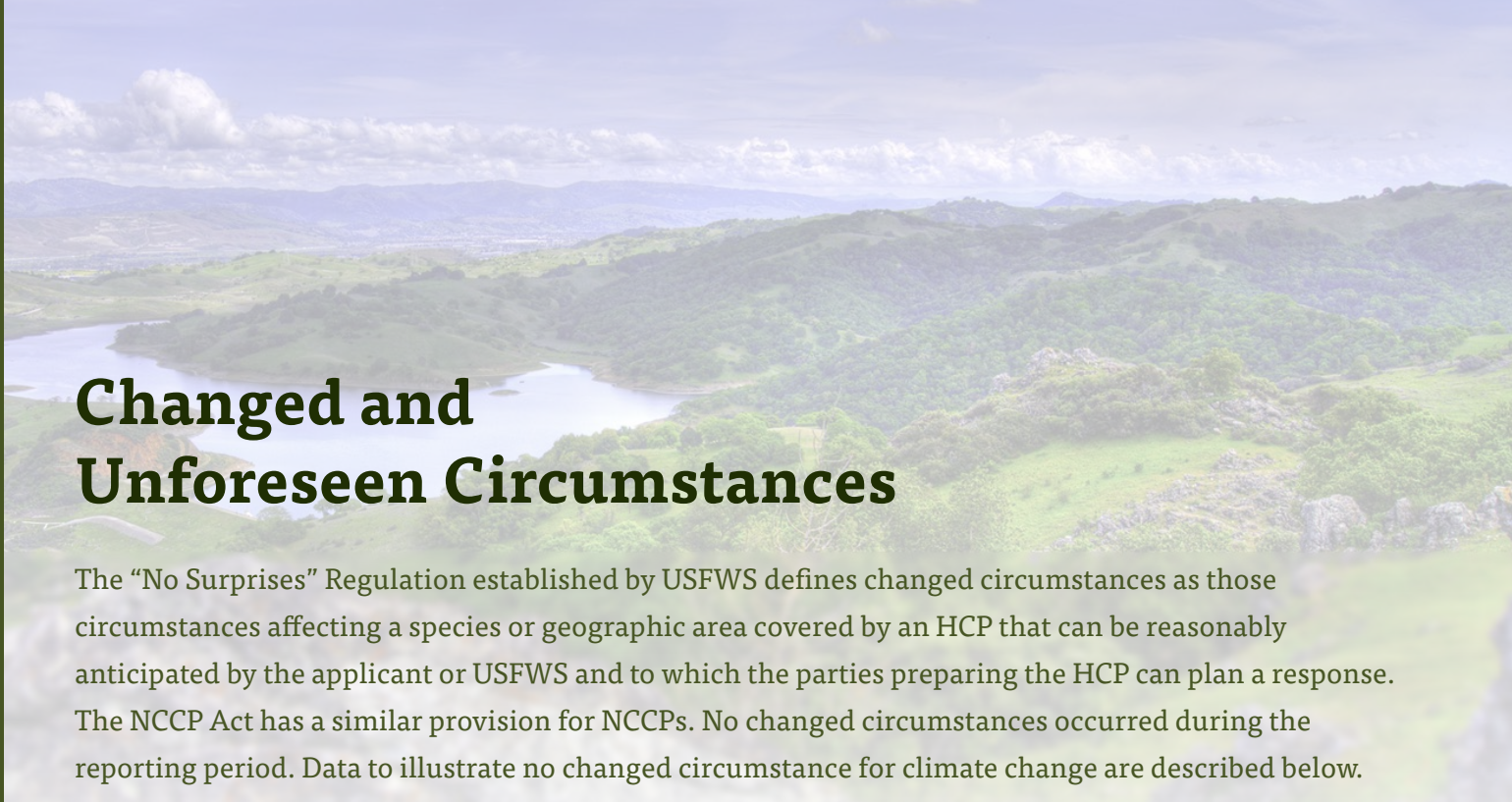


**Notes**

Stay-Ahead requirements for covered plants are 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.

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

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



## Changed and Unforeseen Circumstances

This chapter notes any changed or unforeseen circumstances that occurred during the reporting period.

The “No Surprises” Regulation 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 USFWS and to which the parties preparing the HCP can plan a response. The NCCP Act has a similar provision for NCCPs. No changed circumstances occurred during the reporting period. Data to illustrate no changed circumstance for climate change are described below.

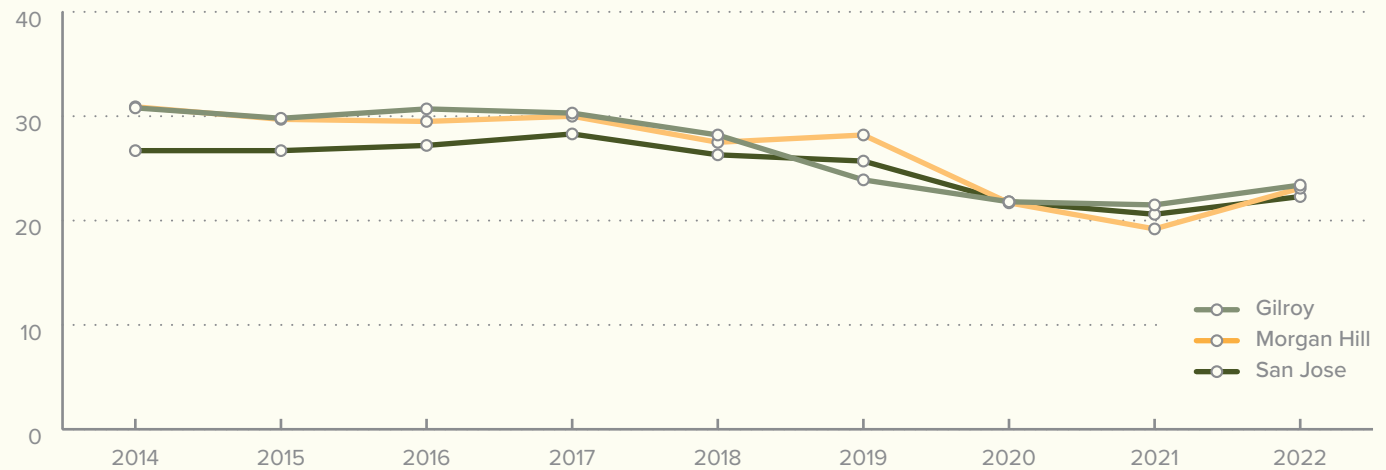
### Climate Change

Under the Habitat Plan, an increase in temperature of up to 2.8 degrees Celsius for any of the three baseline periods measured as a 10-year running average is a changed circumstance. The Habitat Agency is tracking these average annual temperatures. The changed circumstance **has not been met**; based on the last 9 years of data, temperatures have generally been stable or decreasing. These trends are shown on the following page in **Figure 15**, which charts the average annual summer and winter temperatures in the Permit Area since Habitat Plan inception.

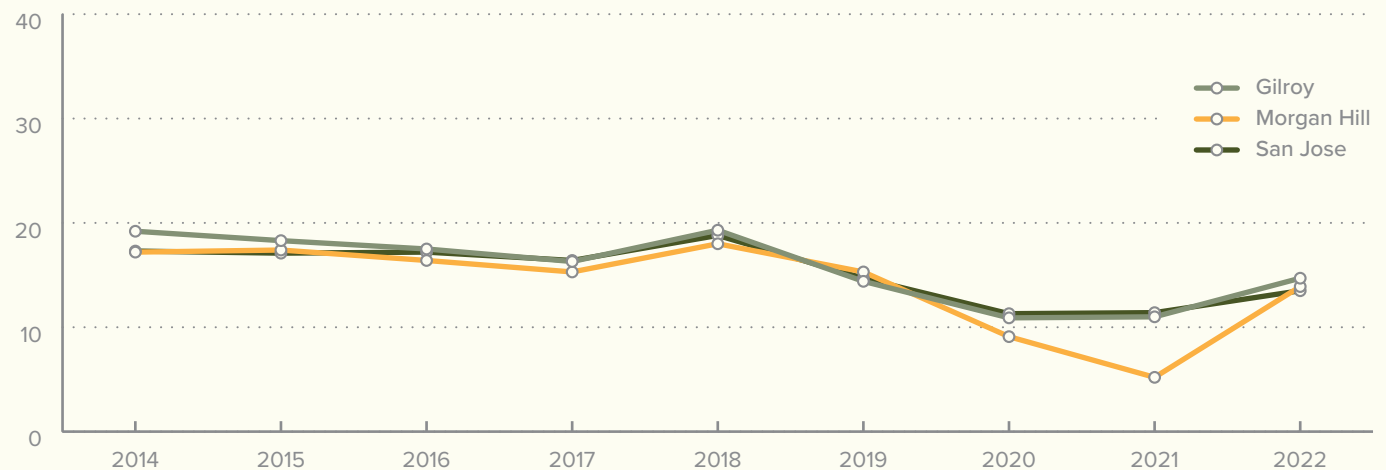
Since Habitat Plan inception, temperatures have generally been stable or decreasing within the Permit Area, meaning the climate change changed circumstance has not occurred.

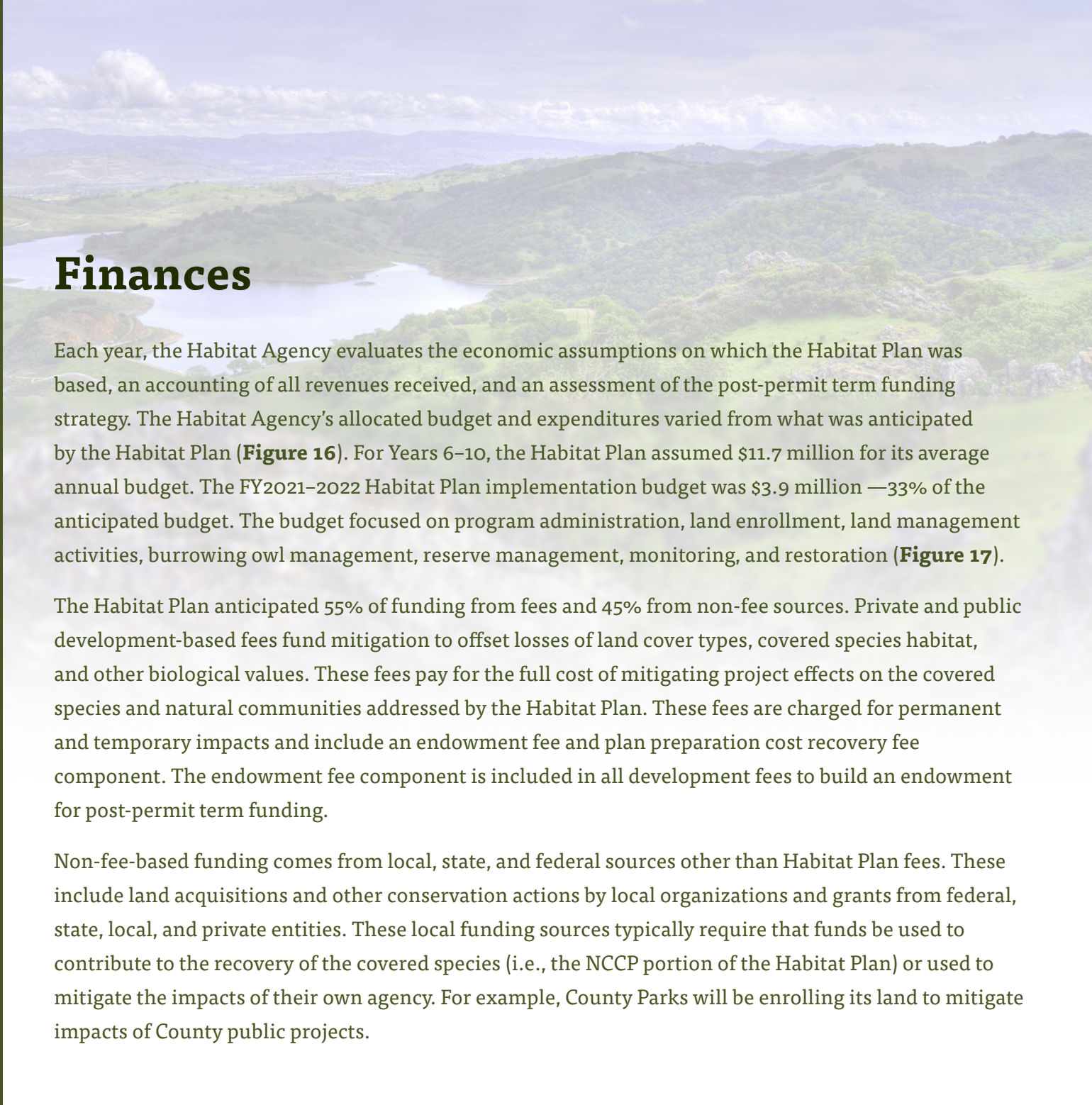
### Figure 15. Average Temperatures in the Permit Area

#### Average Annual Summer Temperature (°C)



#### Average Annual Winter Temperature (°C)





# Finances

This section includes the economic assumptions on which the Habitat Plan was based, summarizes all revenues received, and assesses the post-permit term funding strategy.

Each year, the Habitat Agency evaluates 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 Habitat Agency’s allocated budget and expenditures varied from what was anticipated by the Habitat Plan (**Figure 16**). For Years 6–10, the Habitat Plan assumed \$11.7 million for its average annual budget. The FY2021–2022 Habitat Plan implementation budget was \$3.9 million —33% of the anticipated budget. The budget focused on program administration, land enrollment, land management activities, burrowing owl management, reserve management, monitoring, and restoration (**Figure 17**).

The Habitat Plan anticipated 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.

Non-fee-based funding comes from local, state, and federal sources other than Habitat Plan fees. These include land acquisitions and other conservation actions by local organizations and grants from federal, state, local, and private entities. These local funding sources typically require that 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.

A percentage of collected development fees is set aside for an endowment fund. For land cover and serpentine fees, the endowment is 20%. In the FY2021–2022 reporting period, endowment funds were deposited to and managed by the Silicon Valley Community Foundation.

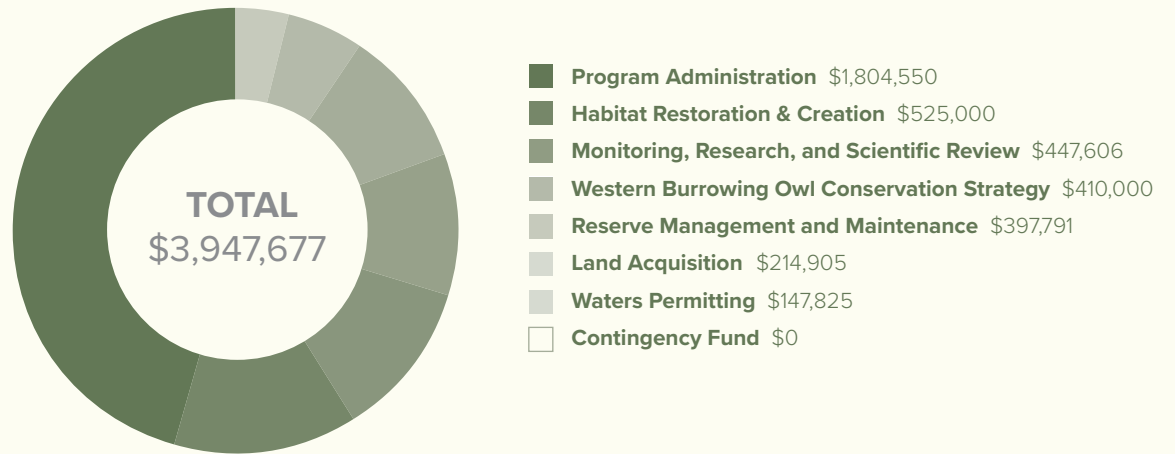
The reporting year began in the second year of the COVID-19 pandemic, which significantly affected the ability of the Habitat Agency to manage Habitat Plan implementation due to site access restrictions, staffing challenges, and intermittent closures of facilities. Complicating the Habitat Agency's efforts was the continuing rise of inflation that many economists are tying to the pandemic and local and global market responses to it.

The challenges presented by the pandemic have affected Habitat Agency operations and its ability to conduct management of the Reserve System lands. Preceding the pandemic and continuing past it, the Habitat Agency has experienced 2 of the last 3 years of fee revenue shortfalls. The shortfalls are not due to inadequate land cover fees per acre but instead are a direct result of fewer acres of impact being realized than was anticipated by the Habitat Plan. The Effects Analysis relied on anticipated build-out of the general plans of the Co-Permittee agencies as well as master planning for Valley Water, VTA, and Co-Permittee public agencies.

As of the end of the reporting year, the Habitat Agency has provided take coverage for permanent impacts to 2,606 acres of land. This amount is 623 acres short of land conversion expectations that drive the Habitat Plan conservation and restoration requirements. When taken as an average of Zone A and Zone B land cover fees since Plan inception, the 623 acres of impacts equates to revenue shortfalls of at least \$11.2 million, a conservative estimate. The amount is much higher if specialty land cover types are impacted. The resulting revenue deficit is becoming a persistent problem that will likely need to be addressed.

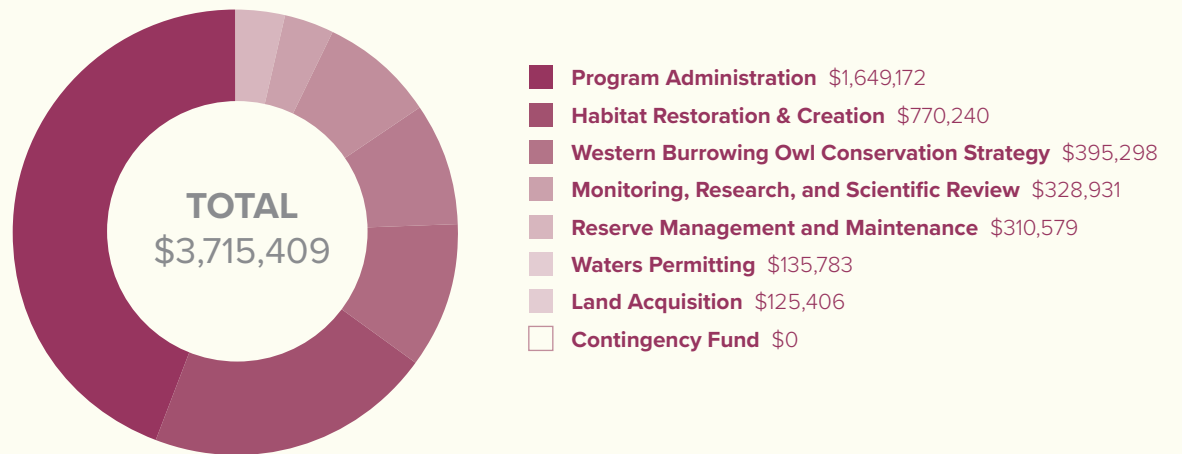
### Figure 16. Summary of Expenditures

#### Budget (Reporting Period)



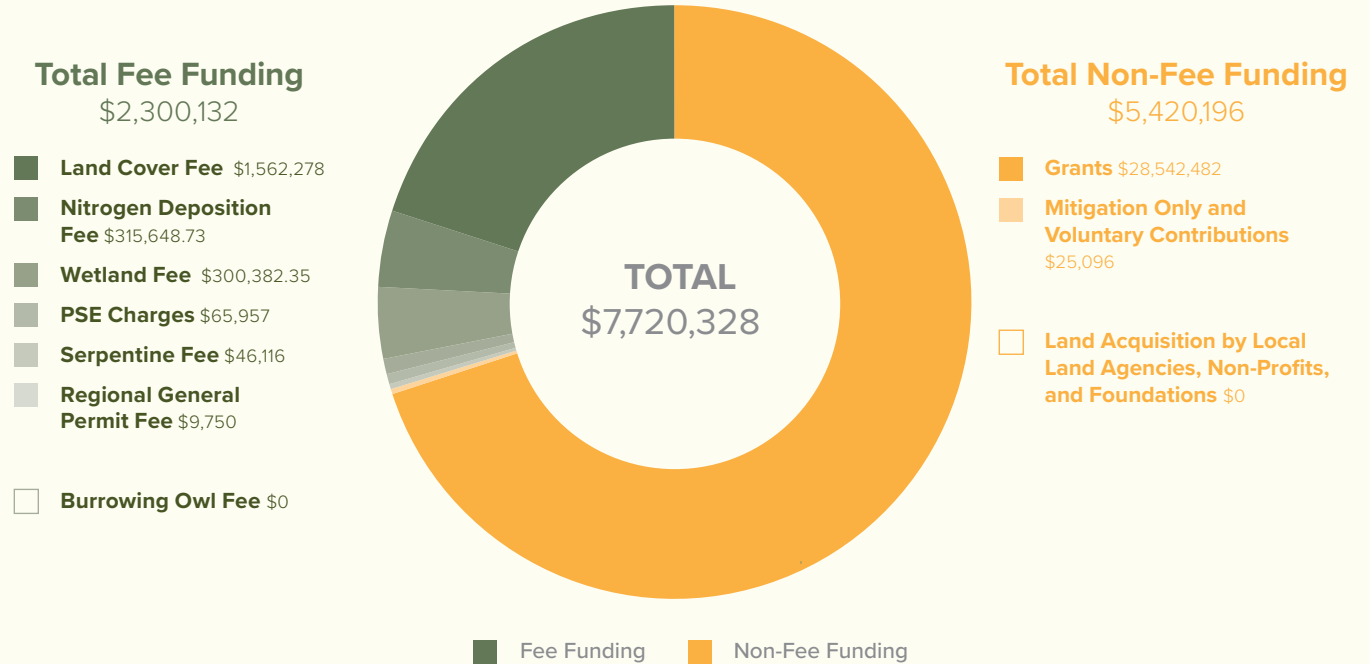
The Habitat Agency expended 94% of its budget during the FY2021–2022 reporting period, with a budget of \$3.95M and expenditures of \$3.7M. The largest expenditure (46%) was program administration, which consists of the overhead or indirect costs needed by the Habitat Agency to carry out the Habitat Plan requirements, such as employees and equipment. The second largest expenditure (22%) was habitat restoration and creation planning and permitting.

#### Expenditures (Reporting Period)



**Figure 17. Summary of Revenue**

**Revenue (Reporting Period)**



The Habitat Agency received approximately \$7.7 million in funds during the reporting period from fee and non-fee funding sources.

Fee funding totaled approximately \$2.3 million (30% of total revenues) across private, public, and PSE projects.

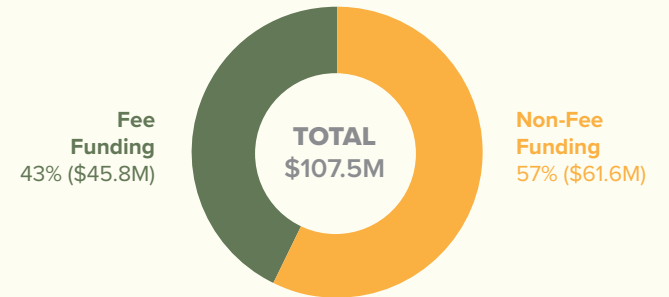
Non-fee funding totaled approximately \$5.4 million (70%).

Cumulatively, fee funding and non-fee funding are different from the Habitat Plan’s assumptions, with a 43%/57% split, respectively.

**Habitat Plan Assumptions**



**Actual Revenue (Cumulative)**



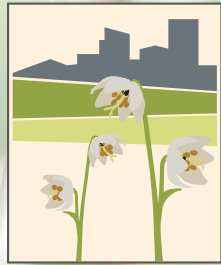


# Plan Modifications

**This section summarizes any administrative changes, minor modifications, and amendments made to the Habitat Plan during the reporting period.**

During the FY2021–2021 reporting period, there were no administrative changes or minor modifications made to the Habitat Plan. However, the Habitat Agency initiated a major amendment to the Habitat Plan. The amendment is required for the Habitat Agency and its co-permittees to remain in compliance with the Habitat Plan and associated take permits. The Habitat Plan amendment is also necessary to protect additional species that were not originally included in the Habitat Plan, but that may now warrant inclusion due to changes in listing status, range, or life history information. By including these species in the Habitat Plan, impacts resulting from the covered activities can be mitigated through a well-established, landscape-level conservation program rather than on a project-by-project basis.

The Habitat Plan amendment will evaluate a total of 10 special-status species for inclusion in the Habitat Plan, including federally listed and candidate species, state fully protected species, and state species of special concern. The amendment will also evaluate expanding the Plan Area to include the unincorporated portions of Santa Clara County, which will protect or enhance additional occupied and suitable habitat for the Habitat Plan’s existing covered species. The Habitat Plan amendment will also evaluate revising existing take limits of covered species, address administrative changes (such as correcting discrepancies), clarify language, and provide more guidance on topics such as the covered plant occurrences. The Habitat Plan amendment will also evaluate adding new co-permittees to the Habitat Plan.



SANTA CLARA VALLEY  
HABITAT AGENCY