

# East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan Annual Report 2021



East Contra Costa County  
Habitat Conservancy

April 2022

Cover Photograph: View of East County from the Preserve System

Photo credit: Stephen Joseph

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## Acronyms and Abbreviations

2013/2017 Fee Report	<i>East Contra Costa County HCP/NCCP Mitigation Fee Audit and Nexus Study, Final Report</i>
APWRA	Altamont Pass Wind Resource Area
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
Conservancy	East Contra Costa County Habitat Conservancy
Corps	U.S. Army Corps of Engineers
County	Contra Costa County
EBRPD	East Bay Regional Park District
GIS	geographic information system
GPS	global positioning system
HCP	Habitat Conservation Plan
HCP/NCCP	<i>East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan</i>
ILF	In-Lieu Fee
Mitigation Rule	<i>Compensatory Mitigation for Losses of Aquatic Resources</i>
NCCP	Natural Community Conservation Plan
Plan	<i>East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan</i>
Regional Water Board	Regional Water Quality Control Board
RGP	Regional General Permit
SFSU	San Francisco State University
SMD	Save Mount Diablo
State Water Board	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

# EXECUTIVE SUMMARY



This is the thirteenth Annual Report for the *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan)* prepared by the East Contra Costa County Habitat Conservancy (Conservancy). This Annual Report summarizes implementation activities undertaken between January 1, 2021 and December 31, 2021, per the conditions of the Plan and Implementing Agreement.

The HCP/NCCP proactively addresses the region’s long-term conservation needs by strengthening local control over land use and providing greater flexibility in meeting other needs such as housing, transportation, and economic growth. It provides a framework for regional conservation and development. The plan provides for the protection of natural resources while streamlining the permitting process for take coverage of state and federally listed species and for mitigating impacts on sensitive habitats and resources. Permits issued by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) in 2007 allow the Permittees<sup>1</sup> to comply with the federal Endangered Species Act and California’s Endangered Species Act. Over the 30-year permit term, impacts from urban development and rural infrastructure projects will be offset by the creation of a Preserve System managed for the benefit of 28 covered species, as well as the natural communities that they—and hundreds of other species—depend on for habitat.

## Covered Activities

In 2021, 19 projects received permits through the HCP/NCCP. The projects include residential and commercial development, transportation, utility infrastructure, rural infrastructure projects, rural infrastructure operations and maintenance, and restoration projects providing a range of

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<sup>1</sup> The Permittees are Contra Costa County; the cities of Brentwood, Clayton, Oakley, and Pittsburg; the East Contra Costa County Habitat Conservancy; the Contra Costa County Flood Control and Water Conservation District; and the East Bay Regional Park District.

benefits for the communities of eastern Contra Costa County. Some of these covered activities are highlighted below.

**Residential:** There was an increase in residential development in the Plan Area. The City of Clayton permitted the Diablo Meadows project to develop 18 single-family residential units, each with a home and ancillary services. The City of Oakley permitted the Tuscany Estates project which includes development and construction of 98 single-family lots and a public park as well as utility and roadway improvements including widening of the adjacent intersection. The Cypress Preserve Project is a nearly 1,250-acre regional mixed-use development in Oakley. The project includes residential, commercial, public schools, parks, open space, flood control, and roads among other elements including on-site restoration. The developer-constructed on-site restoration work started in 2021, with the development portions to follow in phases.

**Utility-Infrastructure:** The Conservancy provided permit coverage for the PG&E T-1527 and T-1528 Hydrostatic Strength Test Project where PG&E conducted pipeline hydrostatic testing and pipeline improvements on an approximately 3.5-mile section of Gas Transmission Line 131. The project is to identify potential pipeline defects that could subsequently cause a rupture or leak. Contra Costa County provided permit coverage for the Byron Highway Solar Project, the first solar energy facilities project outside the UDA to receive permits through the Plan. The project consists of the development of a small-scale commercial utility solar and energy storage facility that will generate a total of 5.0 megawatts alternating current of clean, reliable solar energy.

**Transportation:** The Contra Costa County Public Works Department's Byron Highway/Byer Road Safety Improvements project includes installation of traffic safety improvements along approximately 2,000 feet of Byron Highway in front of Excelsior Middle School in the community of Byron. The project consists of construction of left turn lanes and road widening to improve traffic circulation and improve safety near the school.

## **Land Acquisition and Stay-Ahead Provision**

The Conservancy made significant progress toward the Plan's acquisition goals (see Figures ES-1 through ES-4) since Plan implementation. By the end of 2021, 42 properties have been acquired for the Preserve System, totaling over 14,500 acres. All but one of the acquisitions were completed in partnership with the East Bay Regional Park District (EBRPD). EBRPD owns these properties and, together with the Conservancy, manages the Preserve System lands.

In the reporting year, one property, Civic Rancho Meadows, was added to the Preserve System. The property is located adjacent to existing Preserve System properties and protects approximately 80.45 acres of land within the inventory area.

The Conservancy remains in compliance with the Plan's Stay-Ahead Provision. The Conservancy has made progress in 14 years of implementation toward many of the Plan's 30-year conservation requirements. Conservation of all land cover types is ahead of impacts incurred (see Figures ES-1 through ES-4). Though the Stay-Ahead Provision only reflects land cover acreage requirements and does not reflect geographical requirements intended to ensure Preserve

System connectivity, the Conservancy is aware of both the qualitative and quantitative goals of the Plan. Figure ES-4 illustrates that the Conservancy is on target with the average pace necessary to assemble the 30,300-acre Preserve System estimated to be required by Year 30 under the maximum impact scenario. Since actual impacts incurred are well below the maximum impact scenario, assembly of the Preserve System is still on target.

## **Habitat Restoration and Creation**

The Plan requires stream, wetland, and pond restoration and creation to compensate for impacts by development activities covered by the Plan. Over the 30-year life of the Plan, the Conservancy anticipates restoring or creating up to 500 acres of wetlands and ponds and six miles of streams (this represents the maximum impact scenario and the ultimate impacts and restoration/creation requirements may be much less).

No new restoration projects were constructed in 2021. Planning, development of design alternatives, preparatory on-site land management, and public engagement for the Roddy Ranch Golf Course Restoration Project and the Knightsen Wetland Restoration Project were ongoing in 2021. To date, 11 restoration projects have been constructed. Six of the restoration projects have met success criteria and are no longer monitored annually against their restoration success criteria. The remaining projects continue to be monitored and adaptively managed to ensure success criteria are met. In 2021, the projects monitored were: Irish Canyon Riparian Restoration Project, Upper Hess Watershed Restoration Project, Hess Creek Channel Restoration Project, Ang Riparian Restoration Project, and Horse Valley Wetland Creation and Creek Restoration Project. Monitoring efforts at several restoration projects were hampered by the severe drought and lack of rainfall that made it impossible to determine whether the performance criteria were being met for seasonal wetlands. Projects affected were: Upper Hess Watershed Restoration Project, Vaquero Farms Seasonal Wetland 1, 2, and 3, Creation, and Souza II Corral.

## **Coordinated Wetland Permitting**

The HCP/NCCP was designed not only to conserve endangered species, but also wetlands and waters that provide habitat for these species and support other natural resource functions and values. This conservation approach was intended, in part, to enable permit streamlining to extend beyond endangered species and to include regional permitting under state and federal laws for impacts on jurisdictional wetlands and waters. The interest in integrating federal and state wetland permitting into the HCP/NCCP process is the same as the articulated purpose of the Plan—to benefit streams and wetlands on a regional scale by conserving these resources in a more coordinated fashion. This would provide an integrated, coordinated approach to permitting in lieu of the often inefficient and costly project-by-project approach.

Discussions with the U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency, State Water Resources Control Board (State Water Board), the Regional Water Quality Control Boards (Regional Water Boards), CDFW, and USFWS regarding this parallel approach to

compliance with wetlands regulations started in 2002 during the early stages of developing the HCP/NCCP.

Important milestones reached to date are summarized below.

On May 4, 2012, the Corps issued a Regional General Permit (RGP) related to the HCP/NCCP. The RGP is designed to streamline wetland permitting in the HCP/NCCP inventory area by coordinating the avoidance, minimization, and mitigation measures in the Plan with the Corps' wetland permitting requirements.

On April 30, 2012, USFWS issued a Biological Opinion for the RGP. The Biological Opinion relies on the HCP/NCCP for mitigation measures and eliminates the need for the Corps to consult individually with USFWS for each project covered by the RGP. The term of the Biological Opinion corresponds with the 30-year term of the HCP/NCCP.

The Conservancy is seeking to establish an In-Lieu Fee (ILF) program to comply with the *Compensatory Mitigation for Losses of Aquatic Resources* (Mitigation Rule; Code of Federal Regulations [CFR], Title 33, Part 332). The proposed ILF program would be implemented in conjunction with requirements of the RGP and HCP/NCCP. The ILF program would enable payment of HCP/NCCP fees as suitable mitigation under Corps permits. The Conservancy continued working with the Corps to develop the ILF program agreement.

Until the ILF program is in place, the interim approach is *permittee-responsible compensatory mitigation*, an option defined in Mitigation Rule 33 CFR Part 332. Under this approach, until the ILF is approved, the Conservancy will designate a portion of its existing wetland restoration sites as compensatory mitigation for an applicant's project, and this will fulfill the applicant's Section 404 compensatory mitigation requirements under the RGP. The Corps initially approved using this interim strategy for up to 1 year, at which time the interim strategy would be replaced by the ILF program. In 2013, the Corps approved extending the interim strategy while the agencies continue to work on the ILF program. In 2021 The Conservancy submitted a third draft of an ILF program to the Corps.

The Corps issued the first RGP in 2012 for a 5-year period and an expiration date of May 4, 2017. On June 6, 2017, the Corps re-issued RGP 1 with a new expiration date of June 6, 2022. In 2021, the Conservancy discussed with the Corps the 2022 expiration and began coordination on re-issuing the RGP.

To date, 23 covered projects and three Conservancy restoration projects have received permit coverage through the RGP.

## Funding

In 2021, the Conservancy's expenditures totaled \$1,932,983 for the implementation of the ECCC HCP/NCCP, which includes grant funds used for restoration projects and preserve management activities. The Conservancy remained under the approved 2021 Budget. The Conservancy received \$325,900 of grant funds toward restoration projects and preserve management activities. Mitigation fees and other payments from covered activities totaled \$2,417,949. In

total, the Conservancy received \$2,847,722 in revenue (interest included). Additional local funds totaled \$951,335.

### Figure ES-1. Stay Ahead Compliance

This is a graphical representation of data in Table 14.

The chart compares conservation achieved to impacts incurred according to the specific guidelines set forth in the Stay Ahead Provision.

The green bars display the percent of the land cover acquired as a percent of the conservation required.

The red bars display the percent of land cover impact incurred as a percent of the impact limits.

To comply with the Stay Ahead Provision, for terrestrial land covers the green bars need to be not more than 5% below the red bars.

With the extensive conservation effort to date, progress toward conservation goals have met, exceeded or vastly exceeded Stay Ahead Provision requirements.

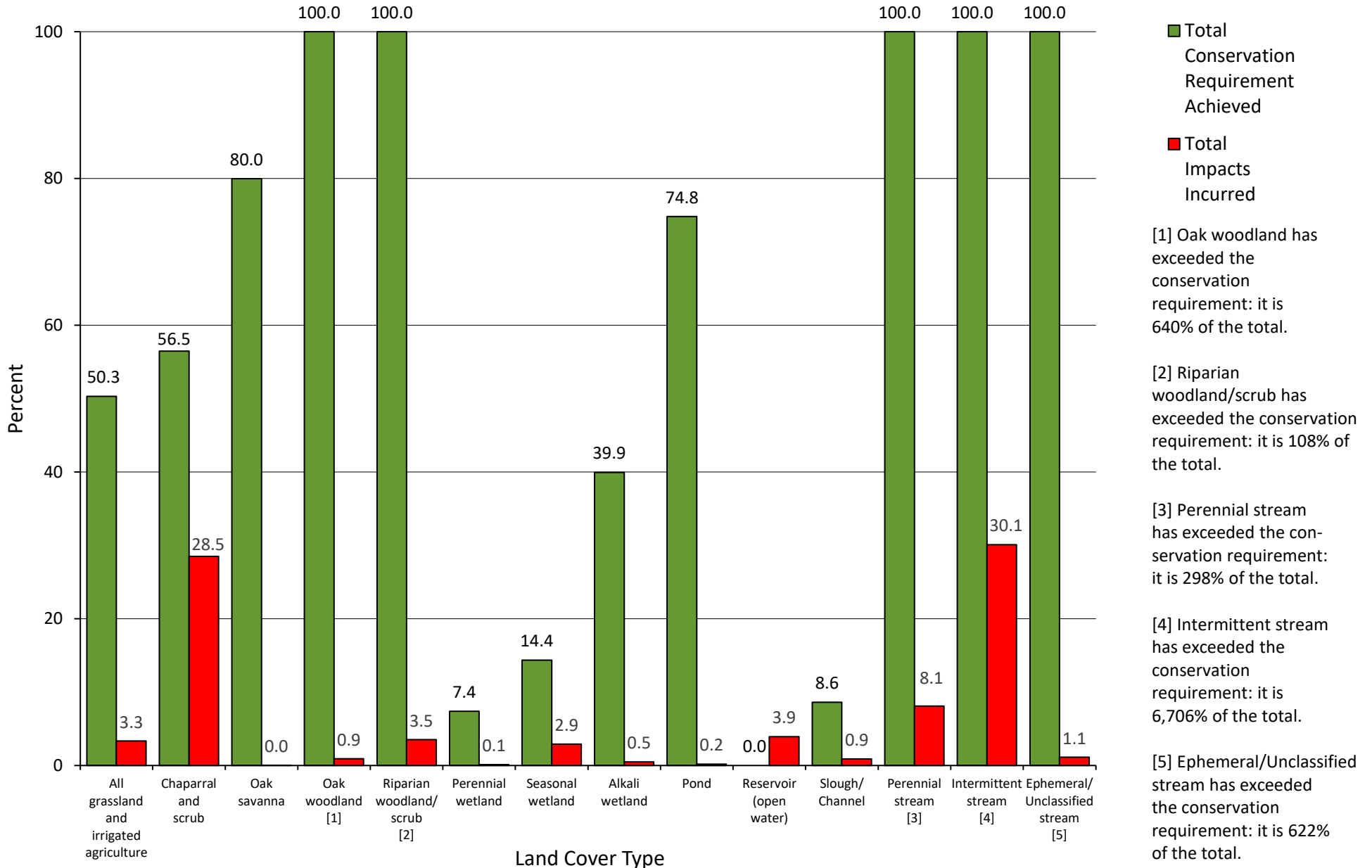


Figure ES-2a. Detailed Comparison of Conservation Required and Achieved to Impact Limit and Incurred for Terrestrial Land Cover Types

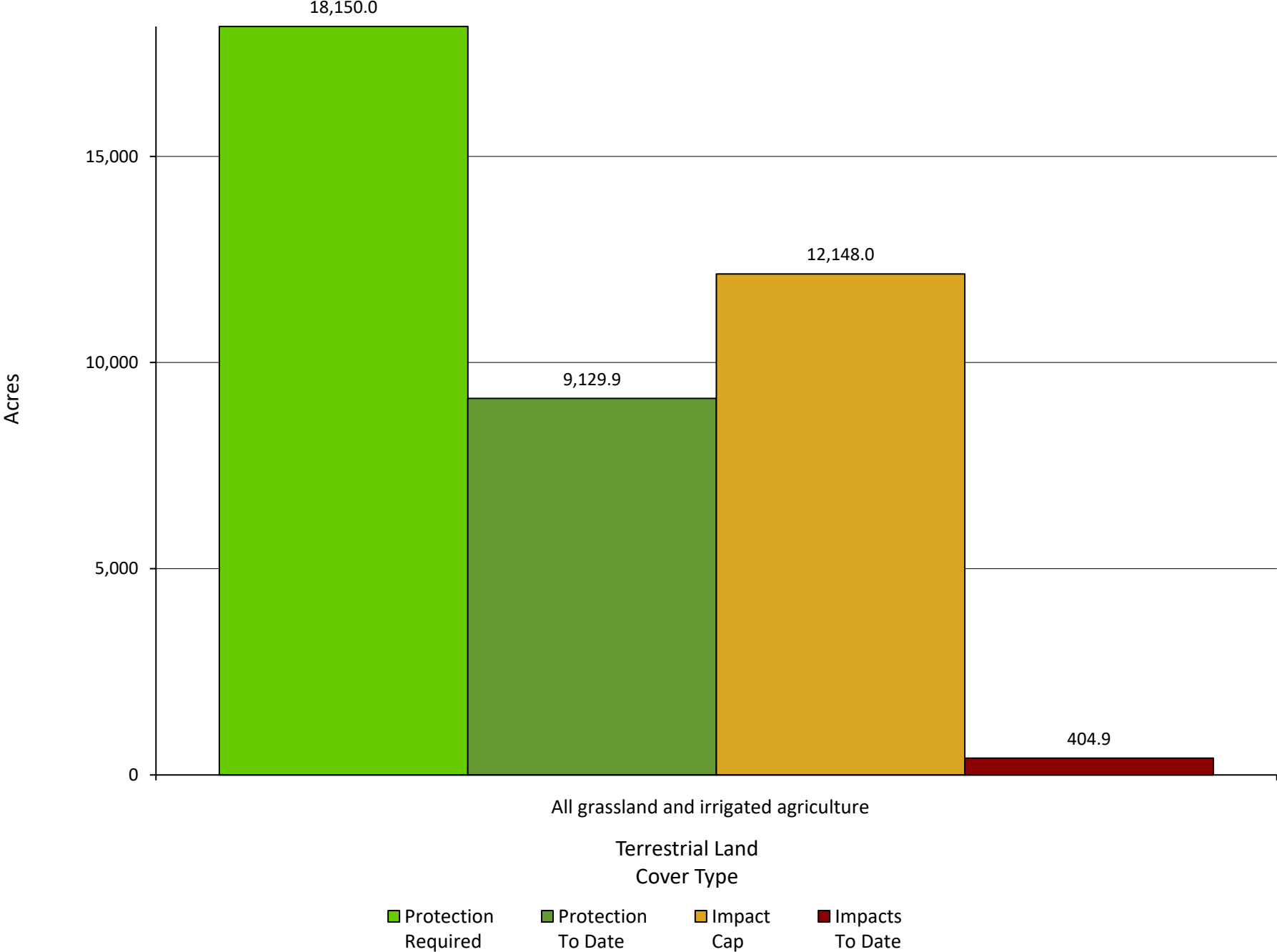


Figure ES-2b. Detailed Comparison of Conservation Required and Achieved to Impact Limit and Incurred for Terrestrial Land Cover Types

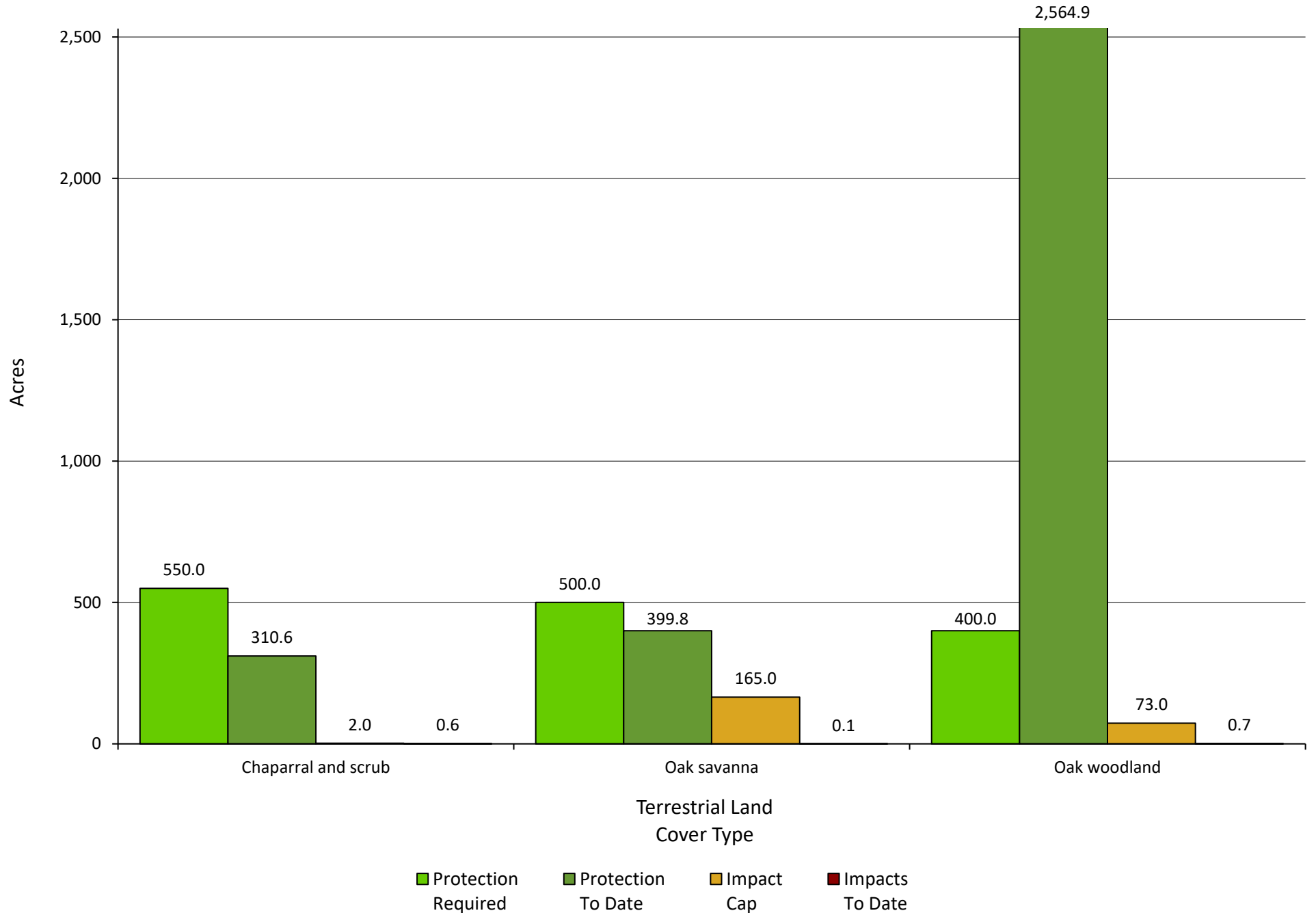


Figure ES-3a. Detailed Comparison of Conservation Required and Achieved to Impact Limit and Incurred for Aquatic Land Cover

Note: Aquatic land cover requirements are linked to mitigation ratios rather than absolute acreage figures.  
The caps and requirements shown here are based on the maximum estimated impacts.

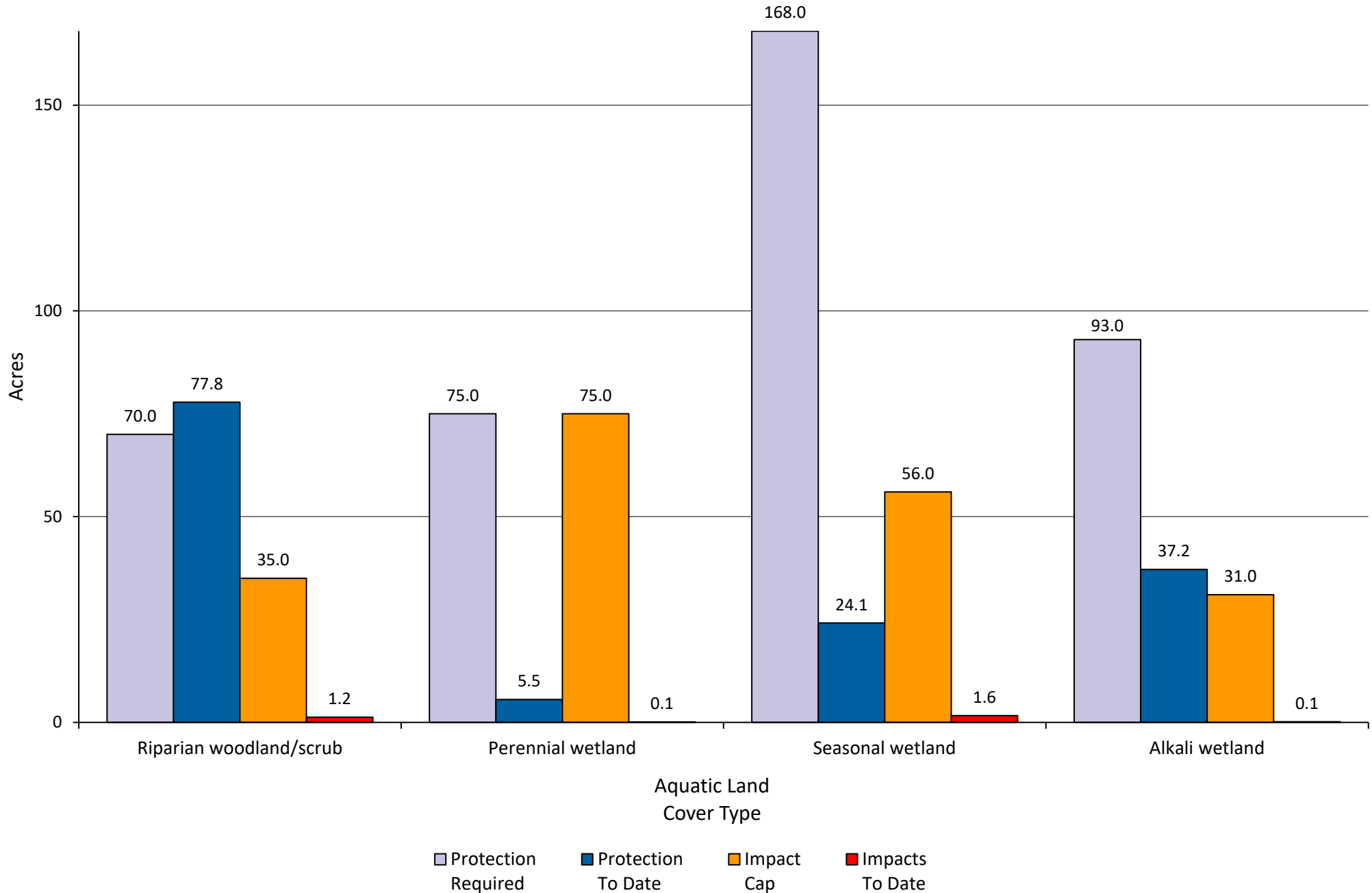
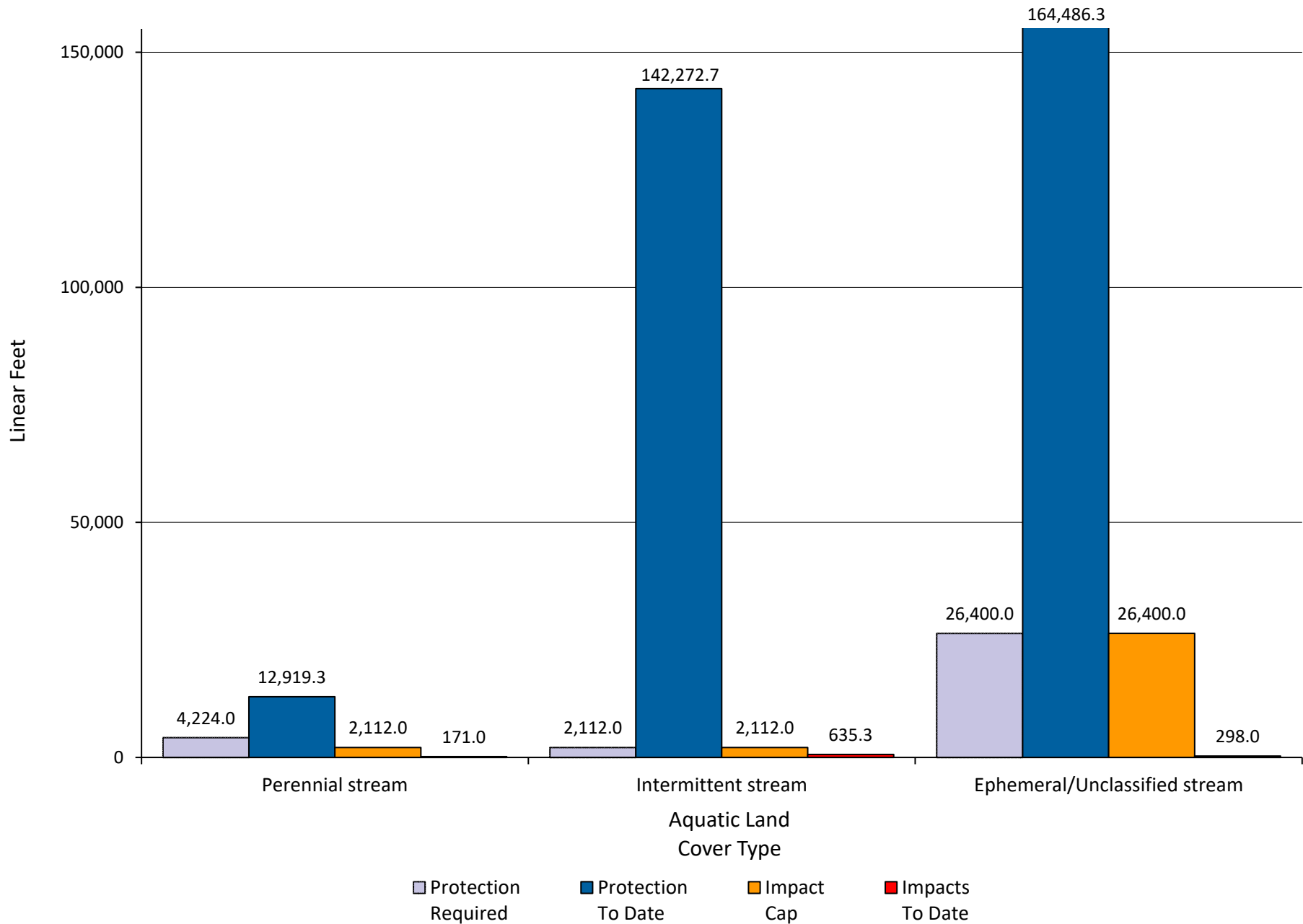


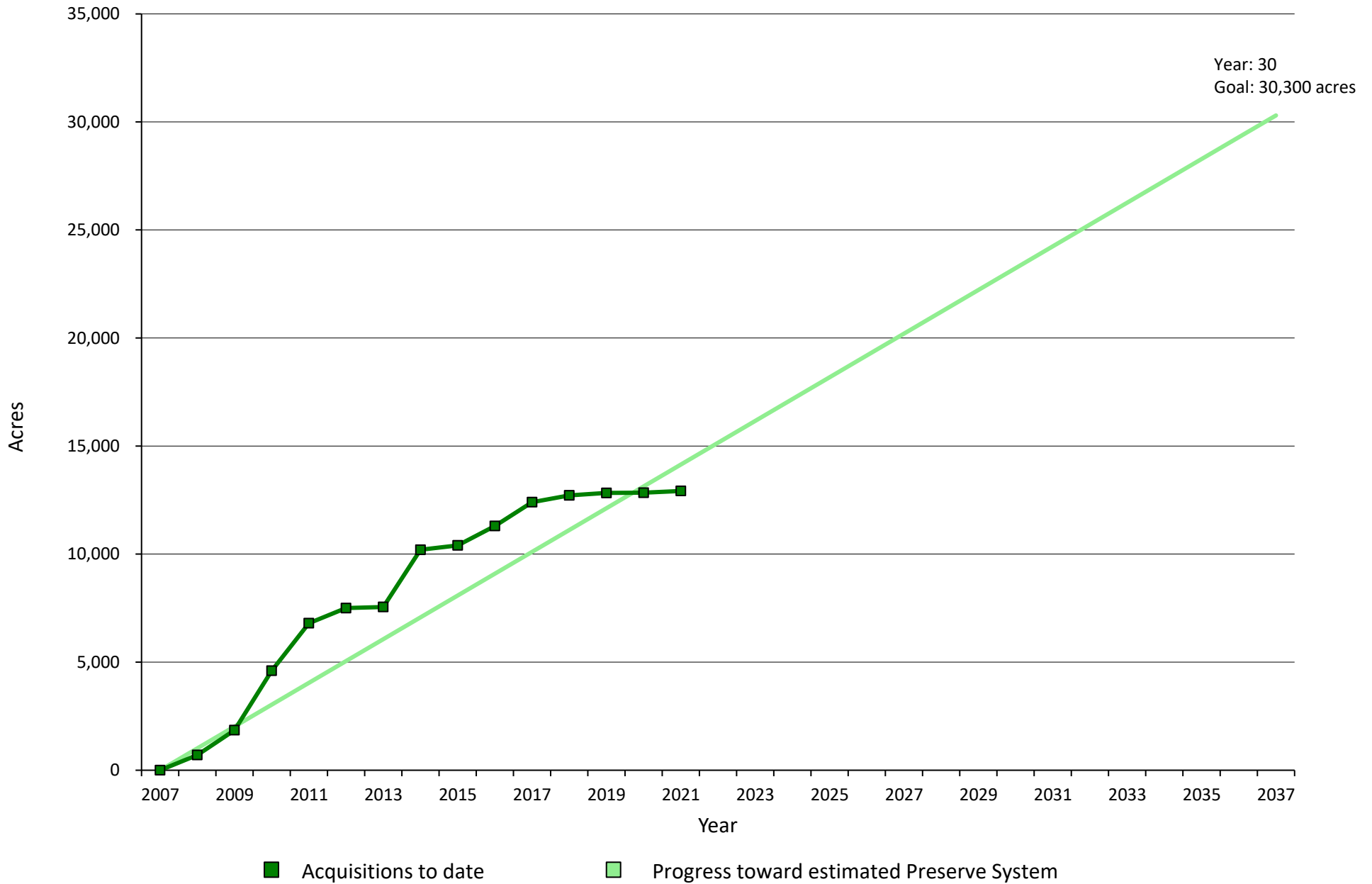
Figure ES-3b. Detailed Comparison of Conservation Required and Achieved to Impact Limit and Incurred for Aquatic Land Cover

Note: Aquatic land cover requirements are linked to mitigation ratios rather than absolute acreage figures.  
 The caps and requirements shown here are based on the maximum estimated impacts.



### Figure ES-4. Progress Toward Assembling the Preserve System

Note: The HCP/NCCP estimates a maximum of approximately 30,300 acres will be necessary by 2037 (Year 30) to achieve all conservation requirements.



# I. INTRODUCTION

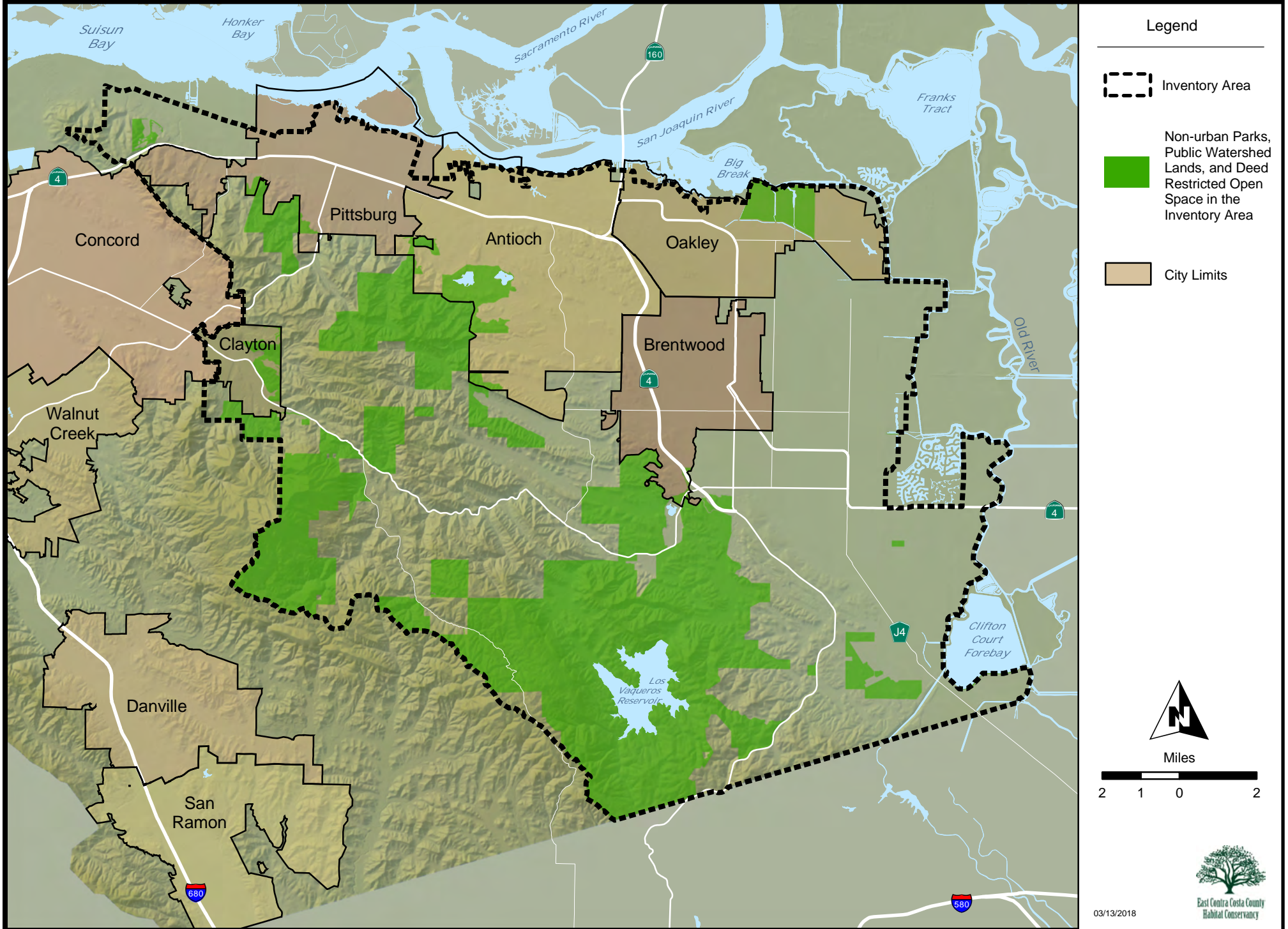
## East Contra Costa County HCP/NCCP Background

Eastern Contra Costa County is a unique region where the San Francisco Bay Area, Sacramento–San Joaquin River Delta, and Central Valley meet (Figure 1). Much of the area retains a rural lifestyle supporting housing, farms, and ranches. It features a rich landscape that is home to a number of rare plants and animals. More than 150 rare species occur in the east Contra Costa County area, including the San Joaquin kit fox (*Vulpes macrotus mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), western burrowing owl (*Athene cunicularia hypugea*), vernal pool fairy shrimp (*Brachinecta lynchi*), and Diablo helianthella (*Helianthella castanea*). Located east of San Francisco, the area’s convenient location, natural beauty, and mild climate have led to rapid population growth. Contra Costa County’s population is predicted to grow by 127,000 people between 2007 and 2025, providing important new housing for the San Francisco Bay Area’s growing workforce. A significant portion of this growth will occur in east Contra Costa County in habitat that supports state and federally listed species, resulting in a conflict between conservation and development.

Between 2001 and 2006, the East Contra Costa County Habitat Conservation Plan Association developed the *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan* (HCP/NCCP or Plan) that provides regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for state and federally listed species and wetland regulations. The Plan was approved at the local level in 2006 and 2007, and permits were issued by the California Department of Fish and Wildlife (CDFW, formerly the California Department of Fish and Game) and the U.S. Fish and Wildlife Service (USFWS) in 2007. The Plan allows Contra Costa County (County); the Contra Costa County Flood Control and Water Conservation District; the East Bay Regional Park District (EBRPD); the Cities of Brentwood, Clayton, Oakley, and Pittsburg; and the East Contra Costa County Habitat Conservancy (Conservancy), a group collectively referred to as the *Permittees*, to control endangered species permitting for activities and projects in the region, performed or approved by the Permittees, while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in northern California. The Plan helps to avoid project-by-project permitting, which is generally costly and time-consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

The Plan was developed by a team of scientists and planners led by the East Contra Costa County Habitat Conservation Plan Association with input from independent science reviewers, stakeholders, and regulators. Within the 174,018-acre inventory area, the issued permits provide take authorization under the California Natural Community Conservation Planning Act and federal Endangered Species Act for 8,670–11,853 acres of urban development and 1,126 acres of

Figure 1. East Contra Costa County Habitat Conservation Plan Inventory Area



rural infrastructure projects. The primary means to offset these impacts is to conserve, restore, and manage lands in a Preserve System. The assembled Preserve System will encompass between 23,800–30,300 acres of land that will be managed to benefit the 28 species covered by the Plan as well as the natural communities that they, and hundreds of other species, depend on for habitat.

The Conservancy is the Entity tasked with the implementation of the HCP/NCCP. The Conservancy is a joint exercise of powers authority formed by the participating cities and the County. The Conservancy Governing Board consists of elected officials from participating city councils and the County Board of Supervisors. The Executive Director and the Conservancy Secretary manage day-to-day activities of the Conservancy under the direction of the Governing Board. The Executive Director, in partnership with dedicated staff members, performs a wide range of tasks necessary to implement the Plan. Responsibilities include coordinating real estate activities; assisting, reviewing, and tracking applications for take authorization; coordinating habitat restoration; overseeing monitoring and adaptive management; maintaining the budget; managing consultants; applying for outside funding and administering approved grants; coordinating with external agencies; compiling annual reports to CDFW and USFWS; and supporting the Governing Board and advisory committees.

EBRPD is the primary landowner and land manager for the Preserve System, and thus far, all but one of the land acquisitions have been completed in partnership with EBRPD. EBRPD has nearly 90 years of experience managing public open space lands and now owns more than 125,000 acres. HCP/NCCP Preserve System lands acquired by EBRPD will eventually be available for public access.

## **Annual Report**

The purpose of this Annual Report is to provide the Governing Board, USFWS, CDFW, Permittees of the HCP/NCCP, and the general public the opportunity to review the Conservancy's actions and progress made toward implementing the Plan. These entities can use the Annual Report to assess the success of the Plan and provide recommendations to the Governing Board and the Conservancy staff for Plan implementation in subsequent years. The goals of the Annual Report are as follows:

- Providing the information and data necessary for the Permittees to demonstrate to CDFW and USFWS that implementation is proceeding according to the Plan, the Implementing Agreement, and the take permits;
- Disclosing and documenting issues with Plan implementation that require consultation and resolution with CDFW, USFWS, and/or the Permittees; and
- Identifying administrative or minor changes to Plan components implemented in the last calendar year that were adopted to improve the success of the Plan.

The Annual Report is focused on implementation actions taken during the reporting period of January 1, 2021, through December 31, 2021. The required elements of the Annual Report as defined by the Plan are listed below.

#### Covered Activities and Impacts

Land Acquisition

Habitat Restoration and Creation

Preserve Management

Monitoring, Research, and Adaptive Management

Stay-Ahead Provision

Changed Circumstances and Remedial Measures

Finances

Program Administration

### **Covered Activities and Impacts**

Section II of this Annual Report describes all projects and activities for which incidental take authorization was approved (covered activities) during the reporting period, including an accounting of the acreage of impact by project, activity type, and land cover type. Conditions on covered activities applied to each project are identified, and impacts on riparian and wetland land cover types are reported by watershed.

### **Land Acquisition**

Section III describes the land acquisitions that occurred during the reporting period, including a summary of land acquisition funding from local, state, and federal sources. Each land acquisition property is identified, and a summary of natural communities protected during the reporting period and permit term is provided. In addition, progress toward all acquisition requirements, including land cover types, habitat connectivity, covered plant populations, and wetland and creek protection is assessed.

### **Habitat Restoration and Creation**

Section IV describes natural community creation and restoration conservation measures implemented during the reporting period and summarizes cumulative accomplishments made during the permit term, including riparian and wetland restoration by watershed.

### **Preserve Management**

Section V describes all land management activities undertaken on Preserve System properties and discusses the management issues facing the Conservancy at each preserve unit. Habitat enhancement measures implemented are also identified.

### **Monitoring, Research, and Adaptive Management**

Section VI summarizes the monitoring, research, and adaptive management activities that were conducted by the Conservancy and partners during the reporting period. These actions are summarized at the landscape level, natural community level, and species level.

### **Stay-Ahead Provision**

Section VII assesses compliance with the Stay-Ahead Provision, a set of requirements to ensure that progress toward acquisition of Preserve System lands precedes impacts associated with covered activities. This assessment includes a cumulative summary of impacts and conservation for all land cover types.

### **Changed Circumstances and Remedial Measures**

Section VIII describes actions taken or anticipated regarding changed circumstances, including remedial actions.

### **Finances**

Section IX includes accounting of revenue received by type (e.g., development fees, wetland fees, grants), an overview of the Conservancy's budget and expenditures during the reporting period, and mitigation fee act annual reporting.

### **Program Administration**

Section X summarizes administrative changes, minor modifications, or major amendments proposed or approved during the reporting year. Policy clarifications and early implementation tasks that occurred during the reporting period are described in subsections.

## II. COVERED ACTIVITIES AND IMPACTS

This section describes the activities and projects within the inventory area that were approved for take authorization pursuant to the Plan (covered activities) during the reporting period. The Plan requires covered activities to compensate, avoid, and minimize impacts on covered species through a variety of conservation measures. The Plan allows incidental take coverage for the following four activities (Figure 2).

Urban Development Area Projects: All activities and projects associated with urban growth within the urban development area as defined by the Plan.

Rural Infrastructure Projects: Transportation projects, flood protection projects, and utility projects occurring outside the urban limit line that support urban development.

Rural Infrastructure Operation and Maintenance Activities: Road, flood protection facility, and utility line or facility operation and maintenance projects that occur outside the urban development area and urban limit line.

Preserve System Activities: Management and recreational facilities; habitat enhancement, restoration, and creation; species surveys, monitoring, and research; emergency activities; and utility construction and maintenance that occur within the Preserve System; and neighboring landowner activities.

### **Covered Activities Receiving Take Coverage**

A total of nineteen (19) projects received take coverage under the Plan during the reporting period (Table 1 and Figures 3a and 3b). Covered activities include the following.

Eleven (11) urban development area projects

One (1) rural infrastructure project

Five (5) rural infrastructure operation and maintenance projects

Two (2) Preserve System activities

All covered activities mitigated impacts through the payment of HCP/NCCP fees. In 2021, mitigation fees and contribution to recovery charges from covered projects totaled \$2,417,949. See Section IX for more details.

### **Conditions on Covered Activities**

The purpose of conditions on covered activities is to meet regulatory standards to avoid and minimize potential impacts on covered species. Conditions also reduce and minimize impacts on important natural communities. Conditions on covered activities include completion of preconstruction surveys, minimization of development footprints that are adjacent to preserves, establishment of stream setbacks and fuel management buffers, management of the urban-wildland interface, maintenance of hydrologic conditions, avoidance of direct impacts on

extremely rare plants and fully protected wildlife species and covered migratory birds, best management practices for flood control, and design requirements for roads outside the urban development area. Each condition is described in detail in Chapter 6 of the Plan under Section 6.4, *Specific Conditions on Covered Activities*.

Specific project circumstances determine which conditions apply to each project. For example, Condition 1.12 *Implement Best Management Practices for Rural Road Maintenance* only applies to rural road maintenance projects. Compliance with the conditions on covered activities is an important part of the conservation strategy.

As shown in Tables 2 and 3, landscape, natural community, and species level conditions were applied to all 19 covered activities implemented during the 2021 reporting period.

## **Impacts on Land Cover Types and Covered Plants**

Covered activity impacts are tracked by land cover type (Table 4), covered plant occurrences (Table 5), and aquatic habitat and stream by watershed (Table 6). During the reporting period there were a total of 121.4 acres of permanent land cover impacts and 95.2 acres of temporary land cover impacts (Table 4) and 398 linear feet of temporary impacts on streams during the reporting period. No covered plants were removed by covered projects in the reporting period (Table 5). Impacts on aquatic land cover types during the reporting period occurred in two watersheds: East County Delta Drainages and Kellogg Creek (Table 6).

Figure 2. Initial Urban Development Area and Specific Rural Infrastructure Projects that may be Covered

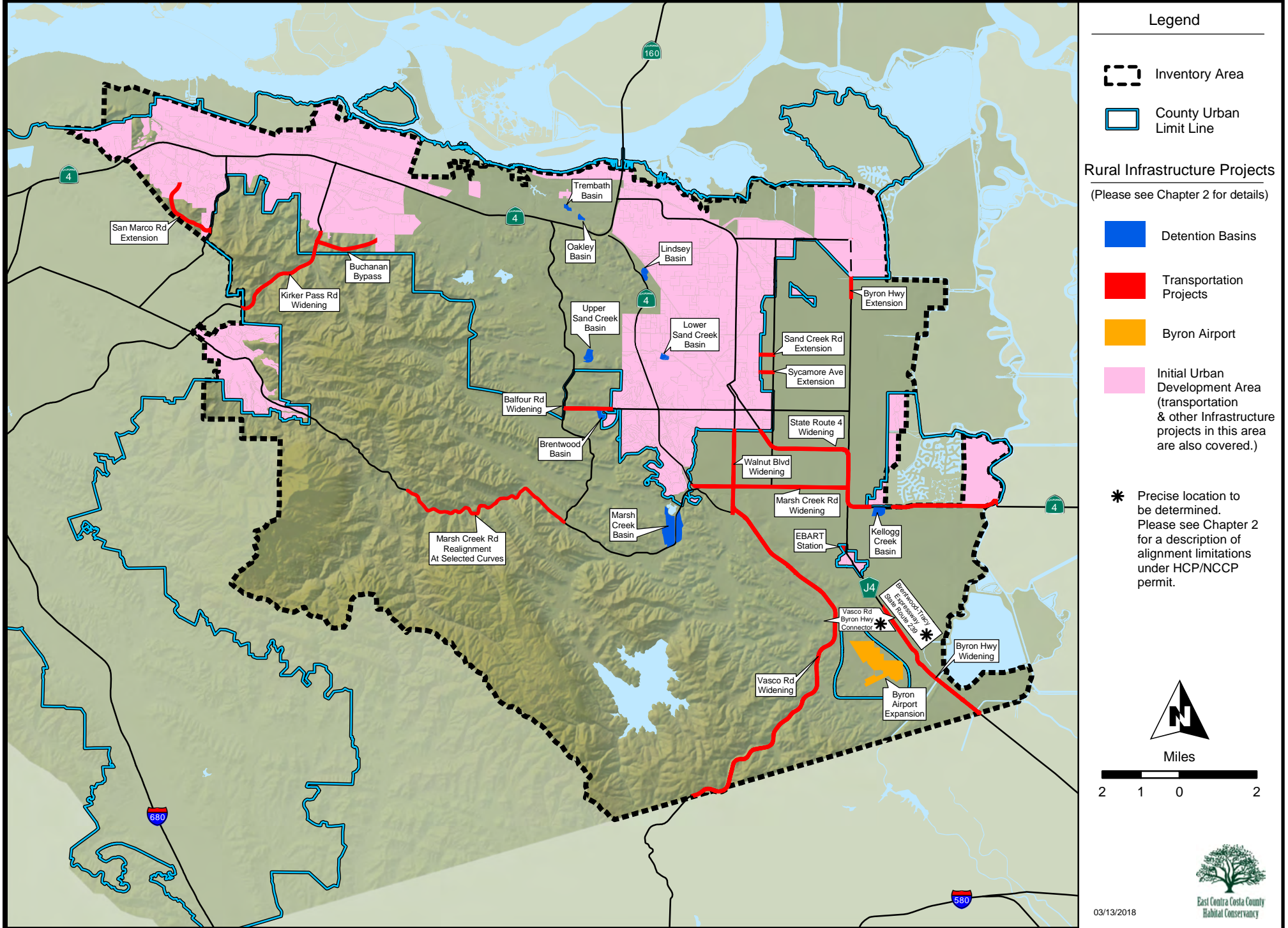


Figure 3a. Location and Impact Acreage for Projects that Received Coverage in 2021

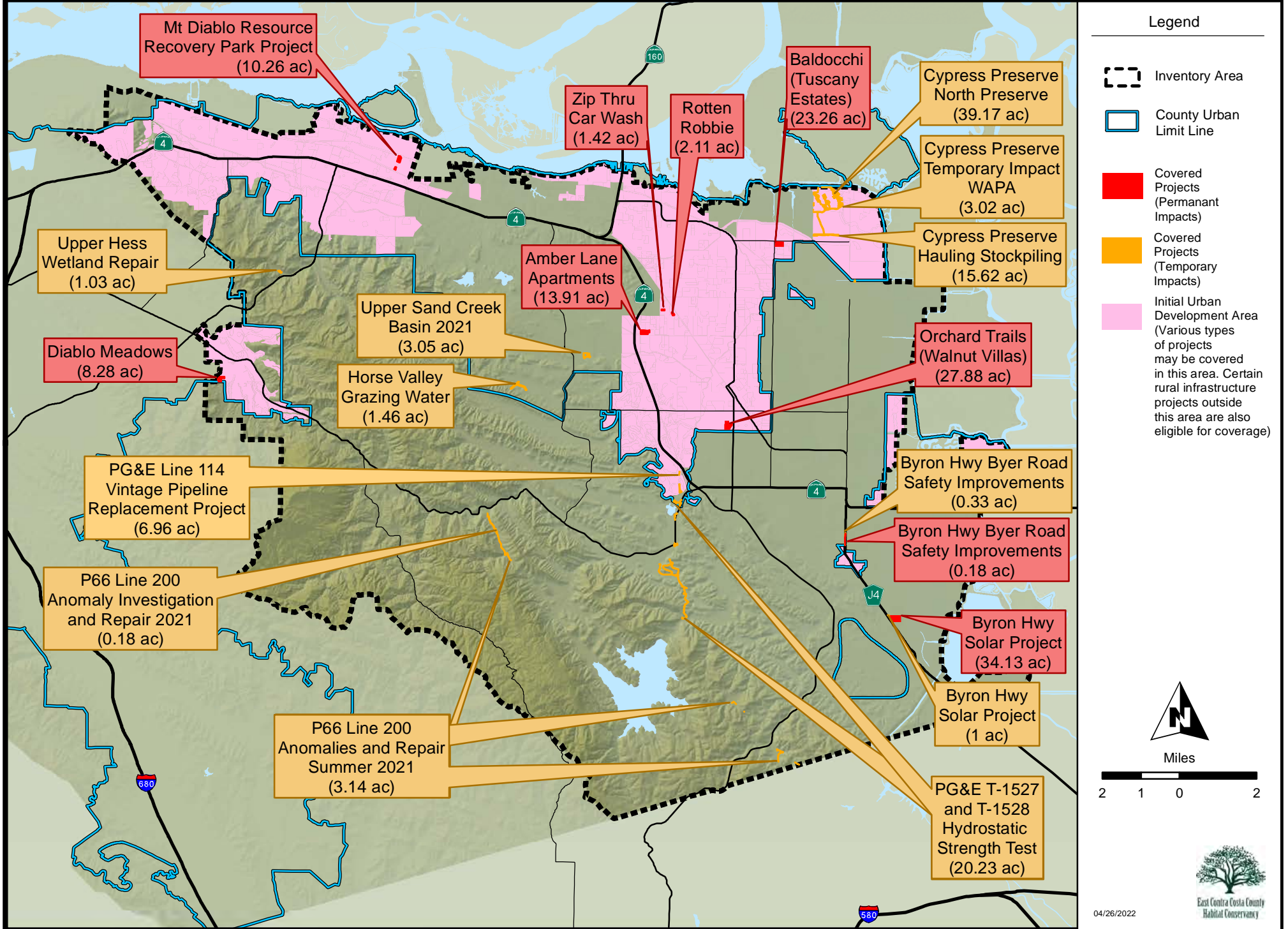
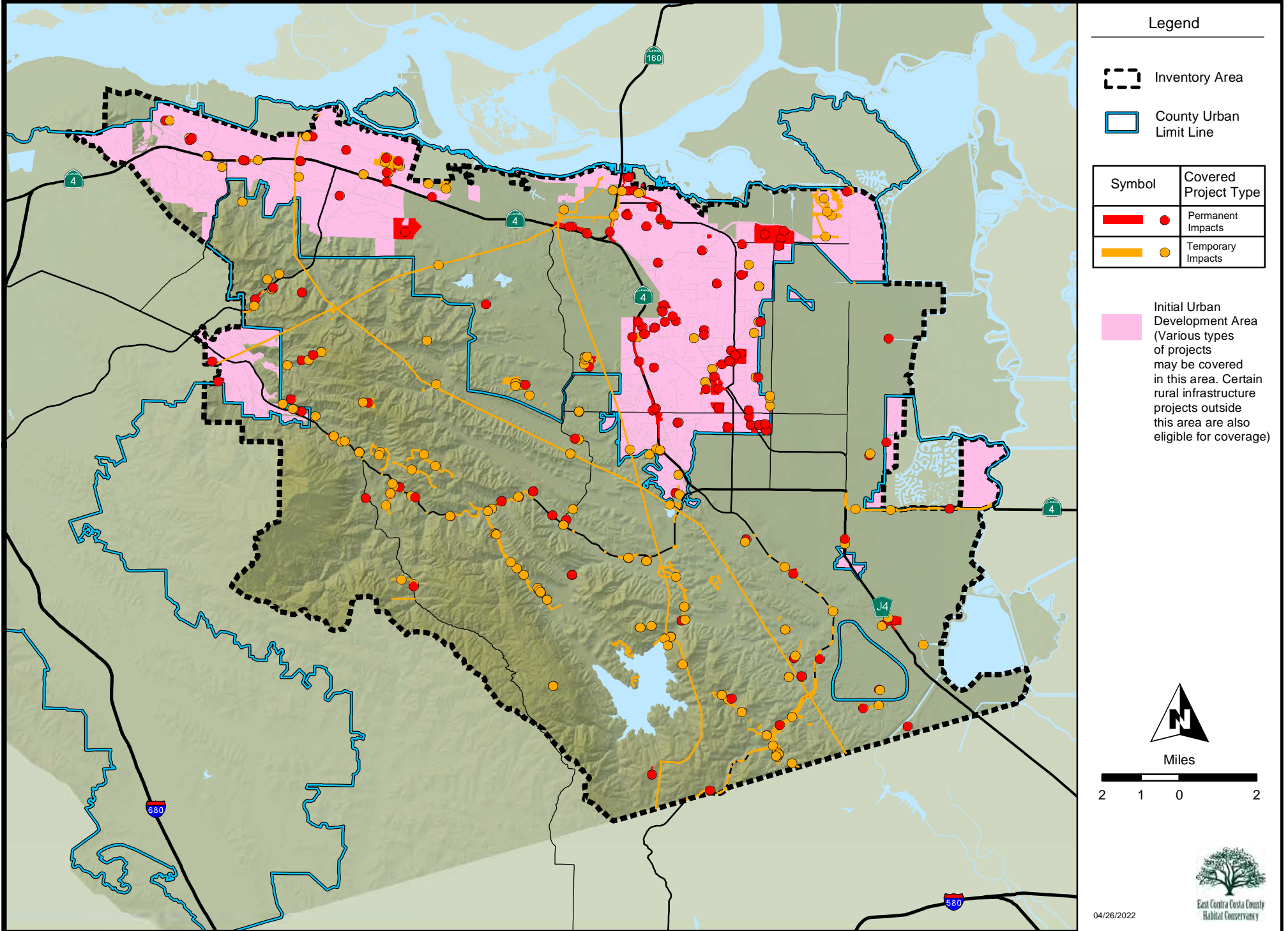


Figure 3b. Location of Covered Projects to Date (2008-2021)



**Table 1. Reporting Summary of Covered Activities for Reporting Year**

<b>Project Name</b>	<b>Activity Type</b>	<b>Covered By</b>	<b>Location</b>	<b>Description</b>
<b><i>Activities within the Urban Development Area</i></b>				
<b>Amber Lane Apartments</b>	Residential	City of Brentwood	South of Amber Lane, between Jeffery Way and Shady Willow in the City of Brentwood	Apartment community located south of Amber Lane, west of Shady Willow Lane and north of Grant Street. The development involves construction of 300 units across 9 apartment buildings, a central clubhouse, pool, and park. There will be one constructed entrance off of Amber Lane, internal driveways, and a total of 539 parking spaces.
<b>Cypress Preserve Project (North Preserve)</b>	Residential	ECCC Habitat Conservancy	East side of Jersey Island Road, north of Rock Slough, south of Dutch Slough and west of the Summer Lake Project	Applicant-led wetland restoration project on the "North Preserve" of the large Cypress Preserve Project. The Cypress Preserve Project is a large-scale, regional mixed-use residential project in Oakley. The community consists of the development of residential uses, commercial uses, public schools, parks, common area, open space/easements/lakes, gas well sites, wetlands/dunes, flood control levees, and roads.
<b>Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road</b>	Residential	ECCC Habitat Conservancy	East side of Jersey Island Road, north of Rock Slough, south of Dutch Slough and west of the Summer Lake Project	A part of the Cypress Preserve project pertaining to an area of temporary impacts associated with the WAPA (southern) access road, located along the southern boundary of the North Preserve and along the toe of the proposed future ultimate levee for the Cypress Preserve project. This road is used for construction haul and access during construction of the North Preserve.
<b>Cypress Preserve Project – Temporary Impacts Related to Hauling and Stockpiling</b>	Residential	ECCC Habitat Conservancy	North of East Cypress Road and south of the North Preserve	This part of the project is north of East Cypress Road and south of the North Preserve and is largely made up of the area defined as Fee Part 4 in the HCP Agreement, which includes the area and impacts associated with a haul route and stockpile area needed to bring excavated material from the North Preserve during construction, south to the Phase 1 area of the project for ultimate use in constructing the Phase 1 levee and East Cypress Road improvements.
<b>Diablo Meadows Residential Development</b>	Residential	City of Clayton	West side of Mitchell Canyon Road and east of the south end of Lewis Way in Clayton	The project proposes the development of 18 single-family residential units, each with a home and ancillary services with access to the site from Mitchell Canyon Road.
<b>Mt. Diablo Resource Recovery Park</b>	Commercial	City of Pittsburg	1300 Loveridge Road, Pittsburg	Operational and physical expansion and reorganization of the existing Mt. Diablo Resource Recovery Park and Recycling Center and Transfer Station.

**Table 1.** Continued

<b>Project Name</b>	<b>Activity Type</b>	<b>Covered By</b>	<b>Location</b>	<b>Description</b>
<b>Orchard Trails (Walnut Villas)</b>	Residential	City of Brentwood	West side of Walnut Boulevard, 0.30+/- miles south of Balfour Road, Brentwood	A 77-home residential subdivision with a water quality basin. Vehicle access to this residential development is from Contiente Avenue. The project includes a network of roadways, several pedestrian paths and landscaping along the paths.
<b>PG&amp;E Gas Transmission Pipeline (L-)114 Vintage Pipeline Replacement</b>	Utility	ECCC Habitat Conservancy	City of Brentwood near Marsh Creek Historic State Park	Replacement of a segment of the existing 22-inch L-114 that crosses Marsh Creek, a "vintage pipe". Approximately 2,000 feet of 22-inch pipe was replaced with new 24-inch pipe using a horizontal directional drill to avoid the Marsh Creek waterway and sensitive habitat within Marsh Creek Historic State Park.
<b>Rotten Robbie Brentwood</b>	Commercial	City of Brentwood	Northwest corner of Fairview Avenue and Lone Tree Way, Brentwood	Construction of a fueling station, drive-through car wash, convenience store and associated parking areas.
<b>Tuscany Estates</b>	Residential	ECCC Habitat Conservancy	Southeast corner East Cypress Road/Sellers Avenue intersection in the Oakley	Grading and construction of 98 single family lots and a public park. The project included utility and roadway improvements, including widening of East Cypress Road and Sellers Avenue in the vicinity of the site.
<b>Zip Thru Car Wash</b>	Commercial	City of Brentwood	East side of Empire Ave, 550+/- feet north of Lone Tree Rd, Brentwood	Construction of a 14,200 square foot drive-through car wash with associated parking areas.

Project Name	Activity Type	Covered By	Location	Description
<b><i>Rural Infrastructure Projects</i></b>				
<b>Byron Highway Solar</b>	Utility	Contra Costa County	Adjacent to Byron Highway, approximately 1.5 miles southeast of Byron	Development of a small-scale utility solar and energy storage facility, consisting of approximately 18,424 solar modules, 40 string inverters, two energy storage systems, a 20-ft wide aggregate-based access road and a one-acre staging area. When complete, the Project will generate a total of 5.0 megawatts alternating current of clean, reliable solar energy.
<b><i>Rural Infrastructure O&amp;M Activities</i></b>				
<b>Byron Highway/Byer Road Safety Improvements</b>	Transportation	Contra Costa County-Public Works	Byron Highway in front of Excelsior Middle School between Byer Road and Hoffman Lane in Byron	CCCPWD's traffic safety improvements along approximately 2,000 feet of Byron Highway in front of Excelsior Middle School between Byer Road and Hoffman Lane in Byron. The project consists of the construction of a left turn lane on southbound Byron Highway onto Byer Road to improve the traffic circulation at the intersection.
<b>PG&amp;E T-1527 and T-1528 Hydrostatic Strength Test</b>	Utility	ECCC Habitat Conservancy	Near Marsh Creek State Historic Park and extends south terminating north of Walnut Blvd near Los Vaqueros Reservoir	Pipeline hydrostatic testing and pipeline improvements on Gas Line 131 for test segments T-1527 and T-1528 between Mile Posts 17.55 and 20.98 in Contra Costa County.
<b>Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021</b>	Utility	ECCC Habitat Conservancy	Latitude: 37.8780211, Longitud: -121.80965422	Investigation and repairs at one dig location to address one anomaly along the existing Line 200 Mainline trunk pipeline in eastern Contra Costa County, which allows P66 to conduct needed inspection and maintenance actions to maintain its structural integrity.
<b>Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021</b>	Utility	ECCC Habitat Conservancy	Near Vasco Hills Regional Preserve and Vasco Caves Regional Preserve in east Contra Costa County	Investigation and repairs at six dig locations to address a total of nine anomalies along the existing Line 200 Mainline trunk pipeline in eastern Contra Costa County, which allows P66 to conduct needed inspection and maintenance actions on Line 200 to maintain its structural integrity.
<b>Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021</b>	Flood Control	CCC Flood Control District	6100 Deer Valley Rd, Antioch, CA	Ongoing burrow management at the soil stockpile at the Upper Sand Creek Detention Basin.

Project Name	Activity Type	Covered By	Location	Description
<b><i>Activities within the HCP/NCCP Preserve System</i></b>				
<b>Horse Valley Infrastructure Installation</b>	Other	ECCC Habitat Conservancy	Roddy Ranch Preserve	Installation of a water tank and trough to be used by cattle grazing in Horse Valley. Includes connection of the tank and trough to the existing well through an above-ground pipe. A solar array will be installed next to the well to pump water through the pipe and into the tank. An existing trough and its concrete apron will also be removed with the resulting disturbed area then being restored to the surrounding grade.
<b>Upper Hess Wetland Restoration Repair</b>	Other	ECCC Habitat Conservancy	Land Waste Management Property	Minor grading in the Upper Hess Wetland Restoration project area to correct elevations in uplands that have led to poor wetland function. Also includes excavation of a fire break that was graded along the eastern edge of the restoration area to contain a recent grass fire to facilitate flow to the lower channel.

Table 2. Reporting Period Summary of Natural Community and Landscape-level Conditions on Covered Activities by Project

Project Name	Natural Community		Landscape								
	2.11 Enhance Cultivated Agricultural Lands to Benefit Covered Species	2.12 Wetland, Pond, and Stream Avoidance and Minimization Measures	1.6 Minimize Development Footprint Adjacent to Open Space	1.7 Establish Stream Setbacks	1.8 Establish Fuel Management Buffer to Protect Preserves and Property	1.9 Urban-Wildland Interface Design Elements	1.10 Maintain and Improve Hydrologic Conditions and Minimize Erosion	1.11 Avoid Direct Impacts on Extremely Rare Plants or Fully Protected Wildlife Species	1.12 Implement Best Management Practices for Rural Road Maintenance	1.13 Implement Best Management Practices for Flood Control Facility Operations and Maintenance	1.14 Design Requirements for Covered Roads outside UDA
Amber Lane Apartments							✓	✓			
Byron Highway Solar							✓	✓			
Byron Highway/Byer Road Safety Improvements								✓			✓
Cypress Preserve Project (North Preserve)		✓	✓	✓	✓	✓	✓	✓			
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road								✓			
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling		✓					✓	✓			
Diablo Meadows Residential Development		✓		✓			✓	✓			
Horse Valley Infrastructure Installation								✓			
Mt. Diablo Resource Recovery Park							✓	✓			
Orchard Trails (Walnut Villas)							✓	✓			
PG&E Gas Transmission Pipeline (L-)114 Vintage Pipeline Replacement		✓						✓			
PG&E T-1527 and T-1528 Hydrostatic Strength Test		✓						✓			
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021		✓						✓			
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021		✓						✓			
Rotten Robbie Brentwood							✓	✓			
Tuscany Estates Project							✓	✓			
Upper Hess Wetland Restoration Repair		✓						✓			
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021								✓			
Zip Thru Car Wash							✓	✓			

**Table 3. Reporting Period Summary of Species-Level Conditions on Covered Activities by Project**

	Species-Level Measures <sup>1</sup>																											
	Townsend's Big-Eared Bat				San Joaquin Kit Fox				Golden Eagle				Western Burrowing Owl				Swainson's Hawk				Giant Garter Snake							
	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring				
Amber Lane Apartments									X	X			X	X			X	X										
Byron Highway Solar					X	X			X	X			X	X			X	X										
Byron Highway/Byer Road Safety Improvements					X	X			X	X			X	X			X	X										
Cypress Preserve Project (North Preserve)	X	X							X				X	X			X	X							X	X		
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road	X								X				X				X								X			
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling	X	X	X						X	X			X	X			X	X							X	X		
Diablo Meadows Residential Development					X	X			X	X			X	X			X	X										
Horse Valley Infrastructure Installation					X	X			X	X			X	X			X	X										
Mt. Diablo Resource Recovery Park													X	X			X	X										
Orchard Trails (Walnut Villas)									X	X			X	X							X	X						
PG&E Gas Transmission Pipeline (L)-114 Vintage Pipeline Replacement	X				X	X			X	X			X	X			X	X										
PG&E T-1527 and T-1528 Hydrostatic Strength Test					X	X			X	X			X	X			X	X										
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021					X	X			X	X			X	X														
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021					X	X			X	X			X	X														
Rotten Robbie									X	X			X	X			X	X										
Tuscany Estates Project	X												X	X			X	X										
Upper Hess Wetland Restoration Repair					X	X			X	X			X	X														
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021													X	X														
Zip Thru Car Wash					X	X			X	X			X	X			X	X										

<sup>1</sup> The implementation of these conditions and their results can be found in the planning survey reports and are available upon request from the Conservancy.

Table 3. Reporting Period Summary of Species-Level Conditions on Covered Activities by Project

	Species-Level Measures <sup>1</sup>																							
	CA Tiger Salamander				CA Red-Legged Frog				Covered Shrimp				Alkali Milkvetch				Big Tarplant				Brewers Dwarf Flax			
	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring
Amber Lane Apartments																								
Byron Highway Solar																								
Byron Highway/Byer Road Safety Improvements																								
Cypress Preserve Project (North Preserve)								X	X															
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road								X																
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling								X	X			X	X											
Diablo Meadows Residential Development												X	X			X	X				X	X		
Horse Valley Infrastructure Installation												X	X			X	X				X	X		
Mt. Diablo Resource Recovery Park																								
Orchard Trails (Walnut Villas)																								
PG&E Gas Transmission Pipeline (L-114 Vintage Pipeline Replacement	X				X							X	X			X	X							
PG&E T-1527 and T-1528 Hydrostatic Strength Test	X	X			X	X			X	X			X	X							X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021	X				X																X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021	X				X											X	X				X	X		
Rotten Robbie																								
Tuscany Estates Project																								
Upper Hess Wetland Restoration Repair												X												
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021																								
Zip Thru Car Wash																								

<sup>1</sup> The implementation of these conditions and their results can be found in the planning survey reports and are available upon request from the Conservancy.

**Table 3. Reporting Period Summary of Species-Level Conditions on Covered Activities by Project**

	Species-Level Measures <sup>1</sup>																			
	Contra Costa Goldfields				Diamond-Petaled Poppy				Large-Flowered Fiddleneck				Mount Diablo Buckwheat				Round-Leaved Filaree			
	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring
Amber Lane Apartments																				
Byron Highway Solar																				
Byron Highway/Byer Road Safety Improvements																				
Cypress Preserve Project (North Preserve)																				
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road																				
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling	X	X																		
Diablo Meadows Residential Development	X	X			X	X			X	X			X	X			X	X		
Horse Valley Infrastructure Installation	X	X			X	X			X	X			X	X			X	X		
Mt. Diablo Resource Recovery Park																				
Orchard Trails (Walnut Villas)																				
PG&E Gas Transmission Pipeline (L-114 Vintage Pipeline Replacement					X	X			X	X							X	X		
PG&E T-1527 and T-1528 Hydrostatic Strength Test					X	X			X	X			X	X			X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021													X	X			X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021	X	X			X	X			X	X			X	X			X	X		
Rotten Robbie																				
Tuscany Estates Project																				
Upper Hess Wetland Restoration Repair	X				X				X				X				X			
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021																				
Zip Thru Car Wash																				

<sup>1</sup> The implementation of these conditions and their results can be found in the planning survey reports and are available upon request from the Conservancy.

**Table 3. Reporting Period Summary of Species-Level Conditions on Covered Activities by Project**

	Species-Level Measures <sup>1</sup>																			
	Showy Madia				Adobe Navarretia				Brittlescale				San Joaquin Spearscale				Diablo Helianthella			
	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring
Amber Lane Apartments																				
Byron Highway Solar																				
Byron Highway/Byer Road Safety Improvements																				
Cypress Preserve Project (North Preserve)																				
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road																				
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling																				
Diablo Meadows Residential Development	X	X			X	X														
Horse Valley Infrastructure Installation	X	X			X	X			X	X			X	X			X	X		
Mt. Diablo Resource Recovery Park																				
Orchard Trails (Walnut Villas)																				
PG&E Gas Transmission Pipeline (L-114 Vintage Pipeline Replacement	X	X			X	X														
PG&E T-1527 and T-1528 Hydrostatic Strength Test	X	X			X	X			X	X			X	X						
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021	X	X															X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021	X	X			X	X			X	X			X	X			X	X		
Rotten Robbie																				
Tuscany Estates Project																				
Upper Hess Wetland Restoration Repair	X				X															
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021																				
Zip Thru Car Wash																				

<sup>1</sup> The implementation of these conditions and their results can be found in the planning survey reports and are available upon request from the Conservancy.

**Table 3. Reporting Period Summary of Species-Level Conditions on Covered Activities by Project**

	Species-Level Measures <sup>1</sup>															
	Caper Fruited Tropicocarpum				Mount Diablo Fairy-Lantern				Mount Diablo Manzanita				Recurved Larkspur			
	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring	Planning Surveys	Pre-Construction Surveys	AMM	Construction Monitoring
Amber Lane Apartments																
Byron Highway Solar																
Byron Highway/Byer Road Safety Improvements																
Cypress Preserve Project (North Preserve)																
Cypress Preserve Project – Temporary Impacts Related to WAPA Access Road																
Cypress Preserve Project– Temporary Impacts Related to Hauling and Stockpiling																
Diablo Meadows Residential Development					X	X										
Horse Valley Infrastructure Installation	X	X			X	X							X	X		
Mt. Diablo Resource Recovery Park																
Orchard Trails (Walnut Villas)																
PG&E Gas Transmission Pipeline (L-)114 Vintage Pipeline Replacement																
PG&E T-1527 and T-1528 Hydrostatic Strength Test													X	X		
Phillips 66 Line 200 Anomaly Investigation and Repair – Spring 2021					X	X										
Phillips 66 Line 200 Anomaly Investigation and Repair – Summer 2021	X	X			X	X							X	X		
Rotten Robbie																
Tuscany Estates Project																
Upper Hess Wetland Restoration Repair																
Upper Sand Creek Detention Basin - Burrowing Owl Burrow Management 2021																
Zip Thru Car Wash																

<sup>1</sup> The implementation of these conditions and their results can be found in the planning survey reports and are available upon request from the Conservancy.

**Table 4. Reporting Period and Cumulative Impacts on Land Cover Types from Covered Activities and Conservation Measure Implementation**

Land Cover Type	Reporting Period		Cumulative <sup>3</sup>	
	Impacts (acres, unless otherwise noted)		Impacts (acres, unless otherwise noted)	
	Permanent	Temporary	Permanent	Temporary
<b>Terrestrial</b>				
Annual grassland	8.3	22.5	135.5	238.2
Alkali grassland	0	0.4	0.8	3.2
Ruderal	42.3	12.6	858.5	333.8
Chaparral and scrub	0	0.1	0.6	1.7
Oak savanna	0	0.2	0.1	2.5
Oak woodland	0	0.2	0.7	2.3
<i>Subtotal terrestrial</i>	<i>50.61</i>	<i>36.03</i>	<i>996.07</i>	<i>581.64</i>
<b>Aquatic</b>				
Riparian woodland/scrub	0	0	1.23	2.00
Perennial wetland <sup>1</sup>	0	0	0.08	0.73
Seasonal wetland	0	1.55	1.62	4.03
Alkali wetland	0	0.11	0.15	1.00
Pond	0	0	0.01	0.11
Reservoir (open water) <sup>2</sup>	0	0	0.47	4.14
Slough/Channel (includes stream)	0	0.07	0.65	0.28
<i>Subtotal aquatic</i>	<i>0</i>	<i>1.73</i>	<i>4.22</i>	<i>12.29</i>
<b>Stream (length in linear feet)</b>				
Total stream length	0	398	1,104	10,880
<i>Stream length by width category</i>				
≤ 25 feet wide	0	398	707	6,156
> 25 feet wide	0	0	397	4,724
<i>Stream length by type and order</i>				
Perennial	0	0	171	4,697
Intermittent	0	0	635	4,497
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	215
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	398	298	1,471
<i>Subtotal stream length</i>	<i>0</i>	<i>398</i>	<i>1,104</i>	<i>10,880</i>
<b>Irrigated agriculture</b>				
Cropland	36.69	0.23	168.6	33.4
Pasture	34.13	57.19	34.9	59.5
Orchard	0	0	14.5	0.2
Vineyard	0	0	50.7	7.2
<i>Subtotal irrigated agricultural</i>	<i>70.8</i>	<i>57.4</i>	<i>268.7</i>	<i>100.3</i>
<b>Other</b>				
Nonnative woodland	0	0	1.0	1.9
Wind turbines	0	0		0.6
<i>Subtotal other</i>	<i>0</i>	<i>0</i>	<i>1.0</i>	<i>2.5</i>

**Table 4. Reporting Period and Cumulative Impacts on Land Cover Types from Covered Activities and Conservation Measure Implementation**

Land Cover Type	Reporting Period		Cumulative <sup>3</sup>	
	Impacts (acres, unless otherwise noted)		Impacts (acres, unless otherwise noted)	
	Permanent	Temporary	Permanent	Temporary
<b>Uncommon Vegetation Types (subtypes of above land cover types)</b>				
Purple needlegrass grassland	--	--	0	0.4
Wildrye grassland	--	--	0	0.0
Wildflower fields	--	--	--	--
Squirreltail grassland	--	--	--	--
One-sided bluegrass grassland	--	--	--	--
Serpentine grassland	--	--	--	--
Saltgrass grassland (alkali grassland)	--	--	0.2	0.5
Alkali sacaton bunchgrass grassland	--	--	--	--
Other uncommon vegetation types	--	--	0.1	--
<i>Subtotal uncommon vegetation types</i>	--	--	<i>0.3</i>	<i>0.9</i>
<b>Uncommon Landscape Features or Habitat Elements</b>				
Rock outcrop	--	--	0.2	0.1
Cave	--	--	--	--
Springs/seeps	--	--	--	--
Scalds	--	--	--	--
Sand deposits	--	--	--	--
Turf	--	--	0.5	5.7
Buildings - Bat Roosts (number)	--	--	--	--
Mines (number)	--	--	--	--
Buildings (number)	--	--	--	--
Potential nest sites (number)	--	--	--	--
<i>Subtotal uncommon landscape features (acres)</i>	--	--	<i>0.7</i>	<i>5.8</i>
<i>Subtotal uncommon landscape features (number)</i>	--	--	--	--
<b>Totals (excludes subtypes)</b>				
Acres	121.4	95.2	1,270.0	696.7
Linear feet	0	398	1,104	10,880

<sup>1</sup> Perennial wetlands are equivalent permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to aquatic.

<sup>3</sup> Cumulative impact acreages and linear feet may differ slightly from previous years as refinements to the data tracking system have occurred.

**Table 4. Reporting Period and Cumulative Impacts on Land Cover Types from Covered Activities and Conservation Measure Implementation**

Land Cover Type	Reporting Period		Cumulative <sup>3</sup>	
	Impacts (acres, unless otherwise noted)		Impacts (acres, unless otherwise noted)	
	Permanent	Temporary	Permanent	Temporary
<b>Terrestrial</b>				
Annual grassland	8.3	22.5	135.5	238.2
Alkali grassland	0	0.4	0.8	3.2
Ruderal	42.3	12.6	858.5	333.8
Chaparral and scrub	0	0.1	0.6	1.7
Oak savanna	0	0.2	0.1	2.5
Oak woodland	0	0.2	0.7	2.3
<i>Subtotal terrestrial</i>	<i>50.61</i>	<i>36.03</i>	<i>996.07</i>	<i>581.64</i>
<b>Aquatic</b>				
Riparian woodland/scrub	0	0	1.23	2.00
Perennial wetland <sup>1</sup>	0	0	0.08	0.73
Seasonal wetland	0	1.55	1.62	4.03
Alkali wetland	0	0.11	0.15	1.00
Pond	0	0	0.01	0.11
Reservoir (open water) <sup>2</sup>	0	0	0.47	4.14
Slough/Channel (includes stream)	0	0.07	0.65	0.28
<i>Subtotal aquatic</i>	<i>0</i>	<i>1.73</i>	<i>4.22</i>	<i>12.29</i>
<b>Stream (length in linear feet)</b>				
Total stream length	0	398	1,104	10,880
<i>Stream length by width category</i>				
≤ 25 feet wide	0	398	707	6,156
> 25 feet wide	0	0	397	4,724
<i>Stream length by type and order</i>				
Perennial	0	0	171	4,697
Intermittent	0	0	635	4,497
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	215
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	398	298	1,471
<i>Subtotal stream length</i>	<i>0</i>	<i>398</i>	<i>1,104</i>	<i>10,880</i>
<b>Irrigated agriculture</b>				
Cropland	36.69	0.23	168.6	33.4
Pasture	34.13	57.19	34.9	59.5
Orchard	0	0	14.5	0.2
Vineyard	0	0	50.7	7.2
<i>Subtotal irrigated agricultural</i>	<i>70.8</i>	<i>57.4</i>	<i>268.7</i>	<i>100.3</i>
<b>Other</b>				
Nonnative woodland	0	0	1.0	1.9
Wind turbines	0	0		0.6
<i>Subtotal other</i>	<i>0</i>	<i>0</i>	<i>1.0</i>	<i>2.5</i>

**Table 4. Reporting Period and Cumulative Impacts on Land Cover Types from Covered Activities and Conservation Measure Implementation**

Land Cover Type	Reporting Period		Cumulative <sup>3</sup>	
	Impacts (acres, unless otherwise noted)		Impacts (acres, unless otherwise noted)	
	Permanent	Temporary	Permanent	Temporary
<b>Uncommon Vegetation Types (subtypes of above land cover types)</b>				
Purple needlegrass grassland	--	--	0	0.4
Wildrye grassland	--	--	0	0.0
Wildflower fields	--	--	--	--
Squirreltail grassland	--	--	--	--
One-sided bluegrass grassland	--	--	--	--
Serpentine grassland	--	--	--	--
Saltgrass grassland (alkali grassland)	--	--	0.2	0.5
Alkali sacaton bunchgrass grassland	--	--	--	--
Other uncommon vegetation types	--	--	0.1	--
<i>Subtotal uncommon vegetation types</i>	--	--	<i>0.3</i>	<i>0.9</i>
<b>Uncommon Landscape Features or Habitat Elements</b>				
Rock outcrop	--	--	0.2	0.1
Cave	--	--	--	--
Springs/seeps	--	--	--	--
Scalds	--	--	--	--
Sand deposits	--	--	--	--
Turf	--	--	0.5	5.7
Buildings - Bat Roosts (number)	--	--	--	--
Mines (number)	--	--	--	--
Buildings (number)	--	--	--	--
Potential nest sites (number)	--	--	--	--
<i>Subtotal uncommon landscape features (acres)</i>	--	--	<i>0.7</i>	<i>5.8</i>
<i>Subtotal uncommon landscape features (number)</i>	--	--	--	--
<b>Totals (excludes subtypes)</b>				
Acres	121.4	95.2	1,270.0	696.7
Linear feet	0	398	1,104	10,880

<sup>1</sup> Perennial wetlands are equivalent permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to aquatic.

<sup>3</sup> Cumulative impact acreages and linear feet may differ slightly from previous years as refinements to the data tracking system have occurred.

**Table 5. Reporting Period and Cumulative Impacts on Covered Plants**

Common Name	Scientific Name	Known Occurrences that May Be Removed by Covered Activities <sup>1</sup>	Impacts (occurrences)	
			Reporting Period	Cumulative
Mount Diablo manzanita	<i>Arctostaphylos auriculata</i>	0	--	0
Brittlescale	<i>Atriplex depressa</i>	1	--	0
San Joaquin spearscale	<i>Atriplex joanquiniana</i>	0	--	1
Big tarplant	<i>Blepharizonia plumosa</i>	1	--	0
Mount Diablo fairy lantern	<i>Calochortus pulchellus</i>	0	--	0
Recurved larkspur	<i>Delphinium recurvatum</i>	1	--	0
Round-leaved filaree	<i>Erodium macrophyllum</i>	2	--	[see note <sup>2</sup> ]
Diablo helianthella	<i>Helianthella castanea</i>	0	--	0
Brewer's dwarf flax	<i>Hesperolinon breweri</i>	0	--	0
Showy madia	<i>Madia radiata</i>	0	--	0
Adobe navarretia	<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	1	--	0
<b>Total</b>		<b>6</b>	<b>0</b>	<b>1</b>

<sup>1</sup> This column provides the limit of impacts, by number of occurrences, on plant species allowable under the HCP/NCCP per HCP/NCCP Table 5-5.

<sup>2</sup> Temporary impacts occurred to round-leaved filaree as part of the PG&E Contra Costa Las Positas Project (2009). The soil was protected from disturbance, the site was returned to pre-project connections, seeds collected on site were propagated, and monitoring reports document that round-leaved filaree persists on site and is as abundant as before the project.

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Brushy</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0.01	0.12
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0.02	0.63
	Pond	0	0	0.01	0.03
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0.01
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.03</i>	<i>0.79</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	132	368.5
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	110	381.5
	> 25 feet wide	0	0	22	118.0
	<i>Stream length by type and order</i>				
	Perennial	0	0	56	282.5
	Intermittent	0	0	0	0
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	131.0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	76	86	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>132</i>	<i>499.5</i>	
<b>Clifton Court Forebay</b>	<b>Aquatic (acres)</b>				
Riparian woodland/scrub	0	0	0	0	
Perennial wetland <sup>1</sup>	0	0	0	0	
Seasonal wetland	0	0	0	0	
Alkali wetland	0	0	0	0	
Pond	0	0	0	0	
Reservoir (open water) <sup>2</sup>	0	0	0	0	
Slough/Channel (includes stream)	0	0	0	0	
<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
	<b>Stream (linear feet)</b>				
Total stream length	0	0	47	112	
<i>Stream length by width category</i>					
≤ 25 feet wide	0	0	0	0	
> 25 feet wide	0	0	47	112	
<i>Stream length by type and order</i>					
Perennial	0	0	0	0	
Intermittent	0	0	47	112	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>47</i>	<i>112</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Deer</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	12	43
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	15
	> 25 feet wide	0	0	12	28
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
	Intermittent	0	0	12	43
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>12</i>	<i>43</i>	
<b>East Antioch</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0	0.0
	Seasonal wetland	0	0	0	0.1
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0.1</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	0	12
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	12
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
	Intermittent	0	0	0	12
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>12</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>East County Delta</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.42	0
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	1.55	0.25	1.55
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0.34	3.35
	Slough/Channel (includes stream)	0	0.07	0.58	0.07
	<i>Subtotal aquatic</i>	<i>0</i>	<i>1.62</i>	<i>1.59</i>	<i>5.17</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	0	0
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	0
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
Intermittent	0	0	0	0	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	
<b>Kellogg</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.05	0.31
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0.29	0.01
	Alkali wetland	0	0.11	0	0.11
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0.07	0.14
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0.11</i>	<i>0.41</i>	<i>0.57</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	398	6	440
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	398	0	440
	> 25 feet wide	0	0	6	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
Intermittent	0	0	6	0	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	398	0	440	
<i>Subtotal stream length</i>	<i>0</i>	<i>398</i>	<i>6</i>	<i>440</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Kirker</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.05	0.09
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.05</i>	<i>0.09</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	0	35
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	35
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
Intermittent	0	0	0	35	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>35</i>	
<b>Lower Marsh</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0.04
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0.13	0.24
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0.13	0.79
	Slough/Channel (includes stream)	0	0	0	0.06
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.26</i>	<i>1.13</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	33.31	4,659.7
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	622
	> 25 feet wide	0	0	33.31	4,073.7
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	4,211
Intermittent	0	0	33.31	364.7	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	84	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>33.31</i>	<i>4,659.70</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Lower Mt. Diablo</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	193	0
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	193	0
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
Intermittent	0	0	0	0	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	193	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>193</i>	<i>0</i>	
<b>Oakley</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0.98	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.98</i>	<i>0</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	0	0
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	0	0
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
Intermittent	0	0	0	0	
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Sand</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.30	0.73
	Perennial wetland <sup>1</sup>	0	0	0.04	0.57
	Seasonal wetland	0	0	0.02	2.37
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.36</i>	<i>3.67</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	295	3,639
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	295	3,639
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
	Intermittent	0	0	295	3,639
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>295</i>	<i>3,639</i>	
<b>Upper Marsh</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.34	0.61
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0.06	0.03
	Alkali wetland	0	0	0	0
	Pond	0	0	0.01	0.08
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.41</i>	<i>0.72</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	299	1,297.50
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	58	978
	> 25 feet wide	0	0	241	359.50
	<i>Stream length by type and order</i>				
	Perennial	0	0	93	191
	Intermittent	0	0	177	242.50
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	29	904	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>299</i>	<i>1,337.50</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Upper Mt. Diablo</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0.02	0.02
	Seasonal wetland	0	0	0.01	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0.02</i>	<i>0.02</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	22	53
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	22	53
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	22	12
	Intermittent	0	0	0	0
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	41	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>22</i>	<i>53</i>	
<b>West Antioch</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0	0
	Perennial wetland <sup>1</sup>	0	0	0	0
	Seasonal wetland	0	0	0	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	8	10
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	8	10
	> 25 feet wide	0	0	0	0
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
	Intermittent	0	0	8	10
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>8</i>	<i>10</i>	

**Table 6. Impacts to Aquatic and Stream Land Cover Types by Watershed:  
Reporting Period and Cumulative**

Watershed/ Basin	Land Cover Type	Impacts			
		Reporting Period		Cumulative <sup>3</sup>	
		Permanent	Temporary	Permanent	Temporary
<b>Willow</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	0.08	0.02
	Perennial wetland <sup>1</sup>	0	0	0.02	0
	Seasonal wetland	0	0	0.01	0
	Alkali wetland	0	0	0	0
	Pond	0	0	0	0
	Reservoir (open water) <sup>2</sup>	0	0	0	0
	Slough/Channel (includes stream)	0	0	0	0
	<i>Subtotal aquatic</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0.02</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	0	57	39
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	0	21	6
	> 25 feet wide	0	0	36	33
	<i>Stream length by type and order</i>				
	Perennial	0	0	0	0
	Intermittent	0	0	57	39
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	0	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	0	0	0	
<i>Subtotal stream length</i>	<i>0</i>	<i>0</i>	<i>57</i>	<i>39</i>	
<b>Total</b>	<b>Aquatic (acres)</b>				
	Riparian woodland/scrub	0	0	1.23	2.00
	Perennial wetland <sup>1</sup>	0	0	0.08	0.73
	Seasonal wetland	0	1.55	1.62	4.03
	Alkali wetland	0	0.11	0.15	0.98
	Pond	0	0	0.02	0.11
	Reservoir (open water) <sup>2</sup>	0	0	0.47	4.14
	Slough/Channel (includes stream)	0	0.07	0.65	0.28
	<b>Total aquatic</b>	<i>0</i>	<i>1.73</i>	<i>4.22</i>	<i>12.26</i>
	<b>Stream (linear feet)</b>				
	Total stream length	0	398	1,104.31	10,708.7
	<i>Stream length by width category</i>				
	≤ 25 feet wide	0	398	707	6,191.5
	> 25 feet wide	0	0	397.31	4,724.2
	<i>Stream length by type and order</i>				
	Perennial	0	0	171	4,696.5
	Intermittent	0	0	635.31	4,497.2
Ephemeral, 3 <sup>rd</sup> or higher order	0	0	0	215	
Ephemeral, 1 <sup>st</sup> or 2 <sup>nd</sup> order	0	398	298	1,471	
<b>Total stream length</b>	<i>0</i>	<i>398</i>	<i>1,104.31</i>	<i>10,879.70</i>	

<sup>1</sup> Perennial wetlands are equivalent to permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to aquatic.

<sup>3</sup> Cumulative impact acreages and linear feet may differ slightly from previous years due to refinements to the data tracking system.

## III. LAND ACQUISITION

### Preserve System

The Conservancy is required to establish a Preserve System through acquisition of land in fee title, conservation easement, mitigation banking, or land dedication. Land acquired as part of the Preserve System will be for the benefit of covered species, natural communities, biological diversity, and overall ecosystem function. The following principles guide the development of the Preserve System.

Maximize Size

Preserve the Highest-Quality Natural Communities

Linkage to Other Preserve System Acquisitions

Buffers Urban Impacts

Minimize Edge Effects

Fully Represent Environmental Gradients

Watershed Protection

Full Ecological Diversity within Communities

Management Considerations

### Acquisition Analysis Zones

To develop priorities and identify potential locations for acquisition, the inventory area was subdivided geographically into six Acquisition Analysis Zones (Zones; Figure 4). These Zones were further divided into Subzones to distinguish between important landscape features. Acquisition priorities for each Zone were developed primarily on the basis of the ecological opportunities and constraints for collectively achieving the biological goals and objectives for covered species, natural communities, and landscapes.

#### Land Acquisition Requirements by Acquisition Zone

To ensure that acquisition occurs in locations that will maximize the benefits to natural communities and covered species, acquisition requirements are defined by Zone and, in some cases, by Subzone. The priorities for land acquisition within the Zones under the Initial Urban Development area are shown in Figure 5. Land acquisition priorities under the Maximum Urban Development Area are shown in Figure 6. The differences between the acquisition priorities for the two urban development areas are in Zones 4, 5, and 6. There are no differences between the acquisition priorities for the two urban development scenarios in Zones 1, 2, and 3.

In addition to quantitative land acquisition requirements by land cover type and Zone, qualitative land acquisition requirements are also provided for some Zones. For instance, connection to

existing public lands or preservation of a certain number of ponds or covered plant populations are required.

## 2021 Land Acquisition

The Conservancy acquired the Civic Rancho Meadows property in 2021 for the Preserve System. The property is shown in Figure 7, with details shown in Figures 8 and 9. Table 7 is the summary of acquired properties in the reporting period and their funding sources.

Tables 8a, 8b, and 9 detail the land cover types protected by the acquisitions.

### Civic Rancho Meadows Property

The 80.9-acre Civic Rancho Meadows property is located in Zone 2, Subzone 2f. It is located south of the City of Antioch in a rural unincorporated area of east-central Contra Costa County. The property and was one of the two inholdings within Roddy Ranch which was acquired and incorporated into the Preserve System in 2014.

The Civic Rancho Meadows property is comprised of one rectangular-shaped parcel with level to moderately sloping terrain. The property has one homesite with outbuildings and a four-acre olive orchard. Improvements include a detached single-family residence, and two metal “butler” style buildings accessed from a gravel road. The property has historically been grazed, though recently it was dry farmed for a number of years. The property is bordered on three sides (east, west, and south) by Preserve System land, with Chadbourne Road traversing the parcel’s northern boundary. The elevation ranges from approximately 360 feet in the northeast corner, to about 660 feet near the southwest corner. Several areas near the southwest and northwest corners of the property support oak woodland, and a seasonal swale crosses the eastern portion of the site from south to north.



Zone 2, Subzone 2f is identified in the HCP/NCCP as high priority for acquisition. Properties in this zone are of important to the Preserve System because they support a variety of high-quality habitat for target species and provide habitat movement corridors for San Joaquin kit fox habitat. This zone provides habitat linkages between Cowell Ranch/Los Vaqueros in the east, Black Diamond Mines Regional Preserve and the Concord Naval Weapons Station (outside the inventory area) to the west. It is also an important habitat linkage between Black Diamond Mines Regional Preserve and Mount Diablo State Park.

The property is comprised mostly of annual grassland and also supports oak woodland, chaparral, and pond habitats. It provides suitable habitat for a variety of covered wildlife species including

San Joaquin kit fox, California red-legged frog, California tiger salamander, golden eagle, western burrowing owl, Swainson's hawk, Alameda whipsnake, silvery legless lizard, western pond turtle and covered fairy shrimp species. In addition, a site reconnaissance visit on November 9, 2021 by Nomad Ecology found one individual of big tarplant near the southern boundary of the property.

Please note the Nortonville Strip property acquisition was included in the 2020 Annual Report though its formal incorporation in the Preserve System occurred January 2021.

### Required Plant Occurrence Preservation

Table 10 summarizes progress toward preservation requirements of covered plant populations.<sup>2</sup> To date, 56 known occurrences of covered plant populations have been protected in the Preserve System. Monitoring of covered plant populations in 2021 focused on re-surveying monitoring sites. During the 2021 reporting period, 11 Preserve System properties were subject to targeted monitoring of covered plant populations with small population sizes recorded in previous survey years (2011-2019). The target populations



were revisited to assess extirpation danger due to low population numbers or signs of decline. However, due to low rainfall and timing of surveys, some populations visited in 2020 had no observed individuals. The populations where no individuals were recorded in 2020 were surveyed again in 2021. Covered species assessed included San Joaquin spearscale (*Extriplex joaquinana*), big tarplant (*Blepharizonia plumosa*), and round-leaved filaree (*California macrophylla*). These surveys occurred on Coelho, Fox Ridge, Roddy Ranch, Vaquero Farms Central, and Vaquero Farms North Preserves.

Table 11 describes land acquisition, species habitat, and covered plant preservation requirements by Zone and/or Subzone.

### A Note on Property Acreages

All acreage figures provided in this section were derived from the Conservancy's geographic information system (GIS). GIS measurements typically do not match the acreage stated in deeds and legal descriptions. Because the existing parcel data is not necessarily accurate in rural areas, the Conservancy uses a variety of techniques to better map the boundaries of the acquired properties. These techniques include aerial photography and descriptions of metes and bounds. Following these refinements, GIS acreage calculations and those reported in deeds may differ. Any remaining discrepancies are probably related to discrepancies in assessor parcel maps, inaccurate fence line placement, and errors made in original and sometimes very old surveys. GIS acreages

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<sup>2</sup> The reported covered plant populations include only those occurrences confirmed in annual inventories. As such, plant populations that may have been acquired in the current reporting year are not included because an inventory has not yet been conducted.

are used in this section because GIS is the only practical means of reliably measuring the amount of land cover and the other features within each property.

#### **A Note on Land Cover Mapping Refinements and Cumulative Acreages**

The Conservancy revises its GIS land cover mapping in the Preserve System as survey and inventory of these lands progress. These revisions can result in changes to cumulative acreages from year to year.

#### **Pre-Existing Conservation Easements**

The Plan provides the Conservancy with the choice of counting or not counting the areas within conservation easements toward conservation requirements. If they are counted, the impacts associated with the development projects mitigated by these conservation easements must be counted toward impact allocations. Acreages of acquired lands that are not counted as preserved due to existing conservation easements or development restrictions are shown in Table 8a. Additionally, the acreage as mapped in GIS by the Conservancy once a site is acquired is often different from the acreage recorded by the County Assessor. As such, this accounts for differences between deeded acres as presented in Table 7 and GIS acres as presented in tables 8a, 8b, 9, 11, and 12. Generally, the acreages presented in the text of this annual report are acres mapped in GIS.

Figure 4. Acquisition Analysis Zones and Sub-Zones

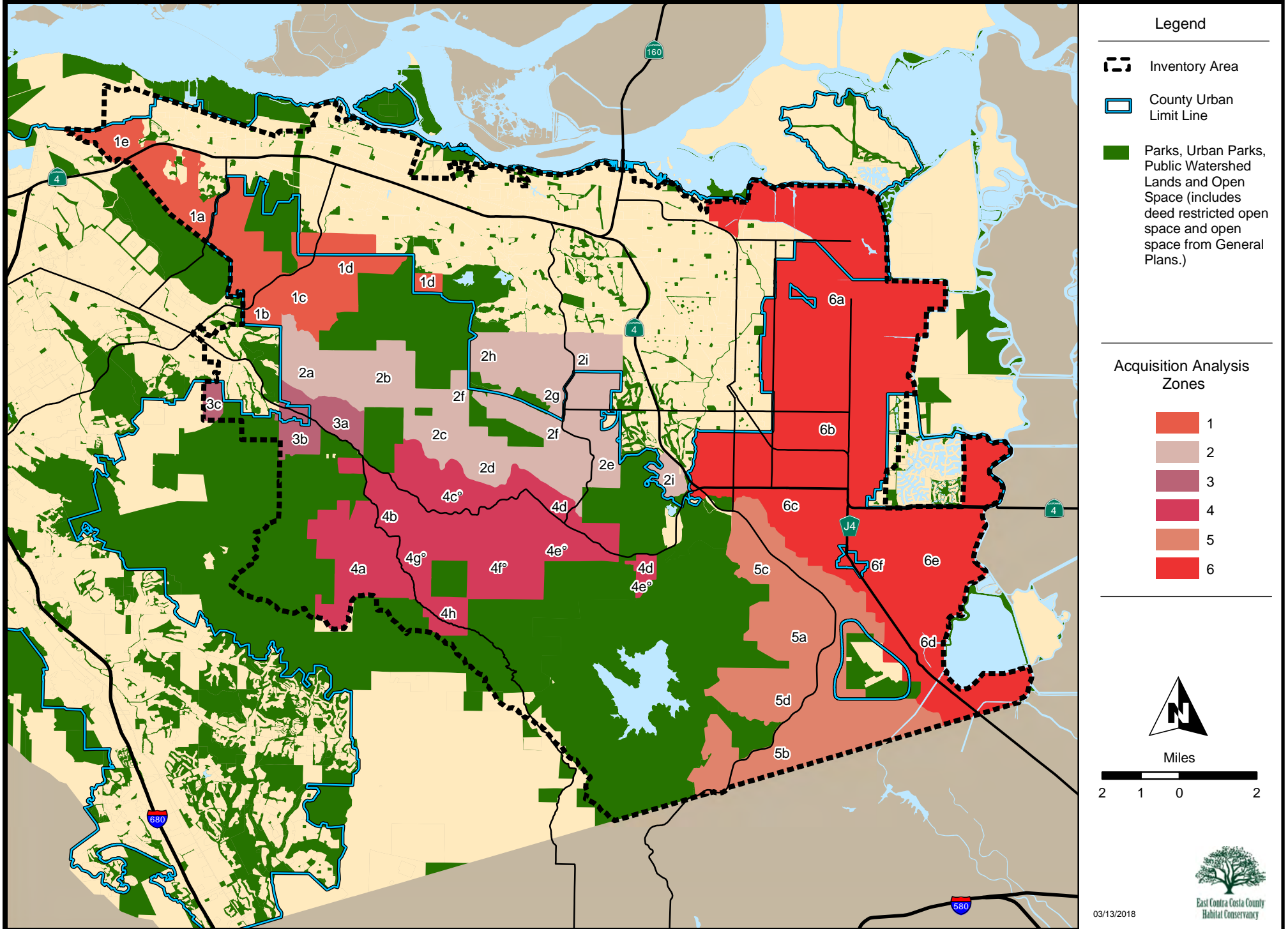
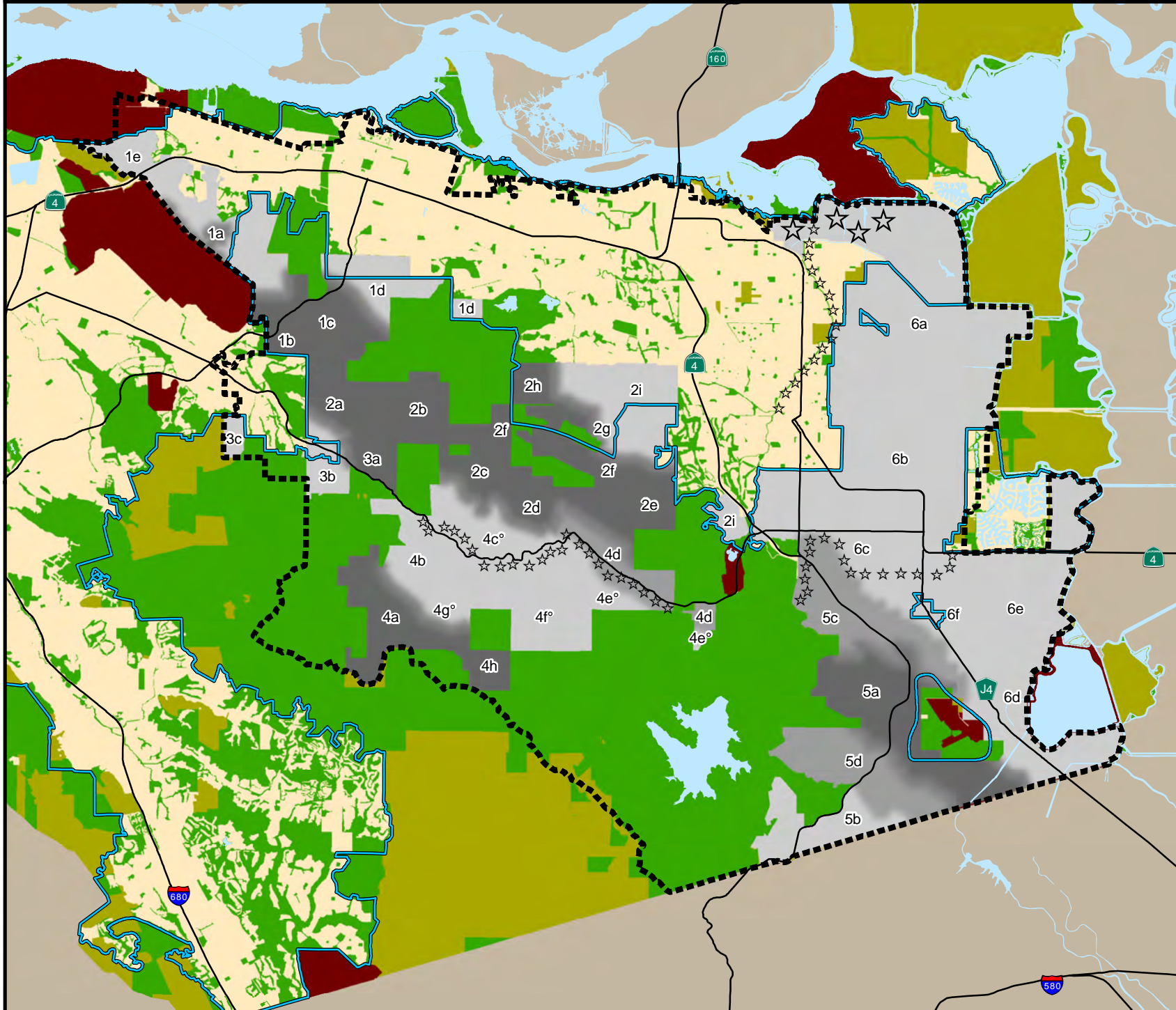


Figure 5. Acquisition Priorities Under Initial Urban Development Area Scenario



**Legend**

- Inventory Area
- County Urban Limit Line

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**Level of Acquisition Effort**

- Lower
- Medium *1a* Sub-Zone
- Higher

*Please see Chapter 5 of the NCCP/HCP for additional information on the purpose of this map.*

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**Land Use Designations Outside Acquisition Analysis Zones**

- Parks, Urban Parks, Open Space, and Public Watershed
- Public Facilities with Undeveloped Land
- Agricultural Land Uses
- Development Land Uses

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- Additional key restoration priorities  
Extensive restoration is also planned within areas also emphasized for acquisition
- Some acquisitions in subzones 4c, 4e, 4f, 4g are interchangeable

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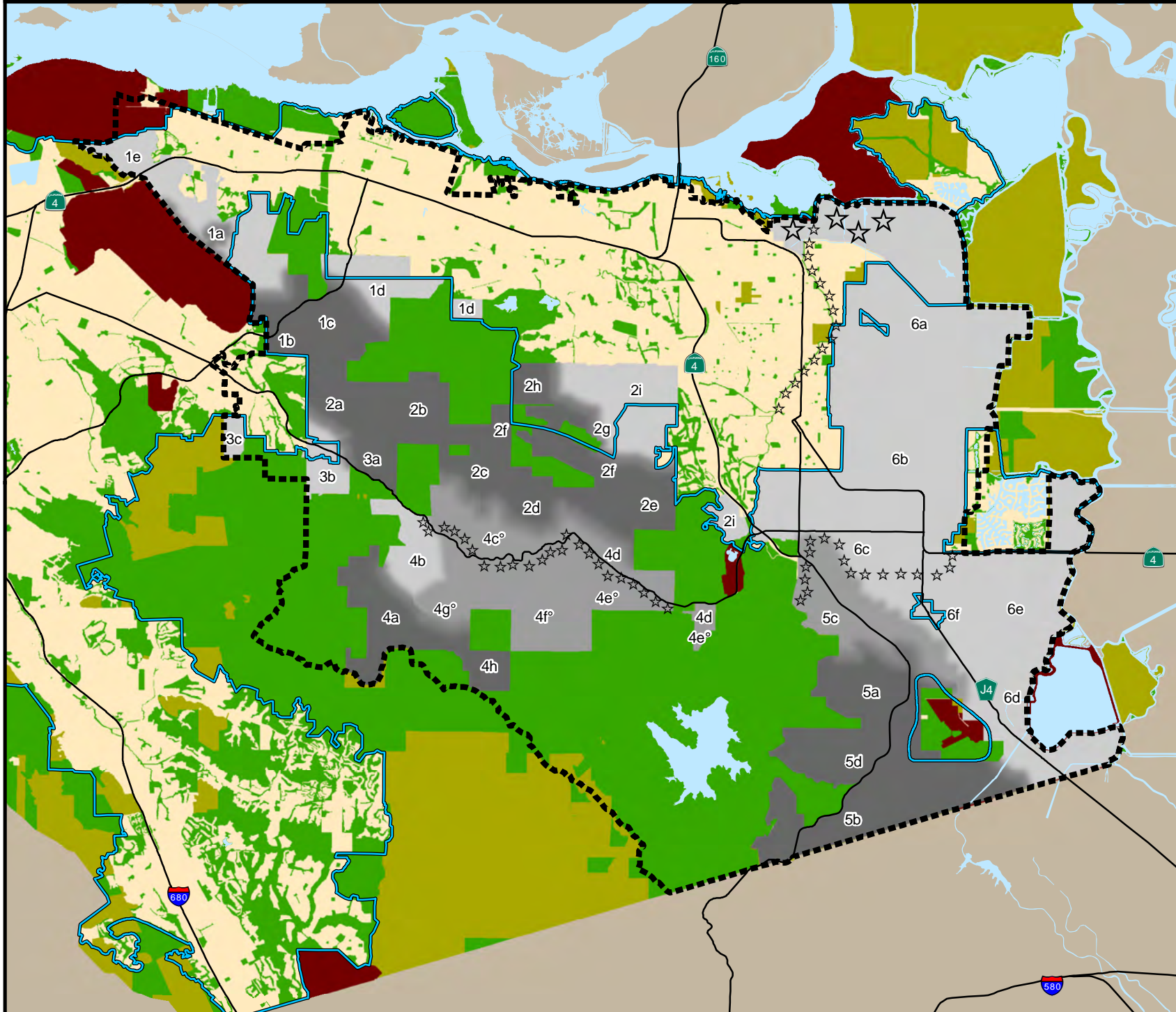
Miles

2 1 0 2

East Contra Costa County Habitat Conservancy

03/13/2018

Figure 6. Acquisition Priorities Under Maximum Urban Development Area Scenario



**Legend**

- Inventory Area
- County Urban Limit Line

**Level of Acquisition Effort**

- Lower
- Medium 1a *Sub-Zone*
- Higher

*Please see Chapter 5 of the NCCP/HCP for additional information on the purpose of this map.*

**Land Use Designations Outside Acquisition Analysis Zones**

- Parks, Urban Parks, Open Space, and Public Watershed
- Public Facilities with Undeveloped Land
- Agricultural Land Uses
- Development Land Uses

Additional key restoration priorities  
Extensive restoration is also planned within areas also emphasized for acquisition

Some acquisitions in subzones 4c, 4e, 4f, 4g are interchangeable

Miles  
2 1 0 2

East Contra Costa County Habitat Conservancy  
03/13/2018

Figure 7. Acquisitions Completed under HCP/NCCP as of December 31, 2021

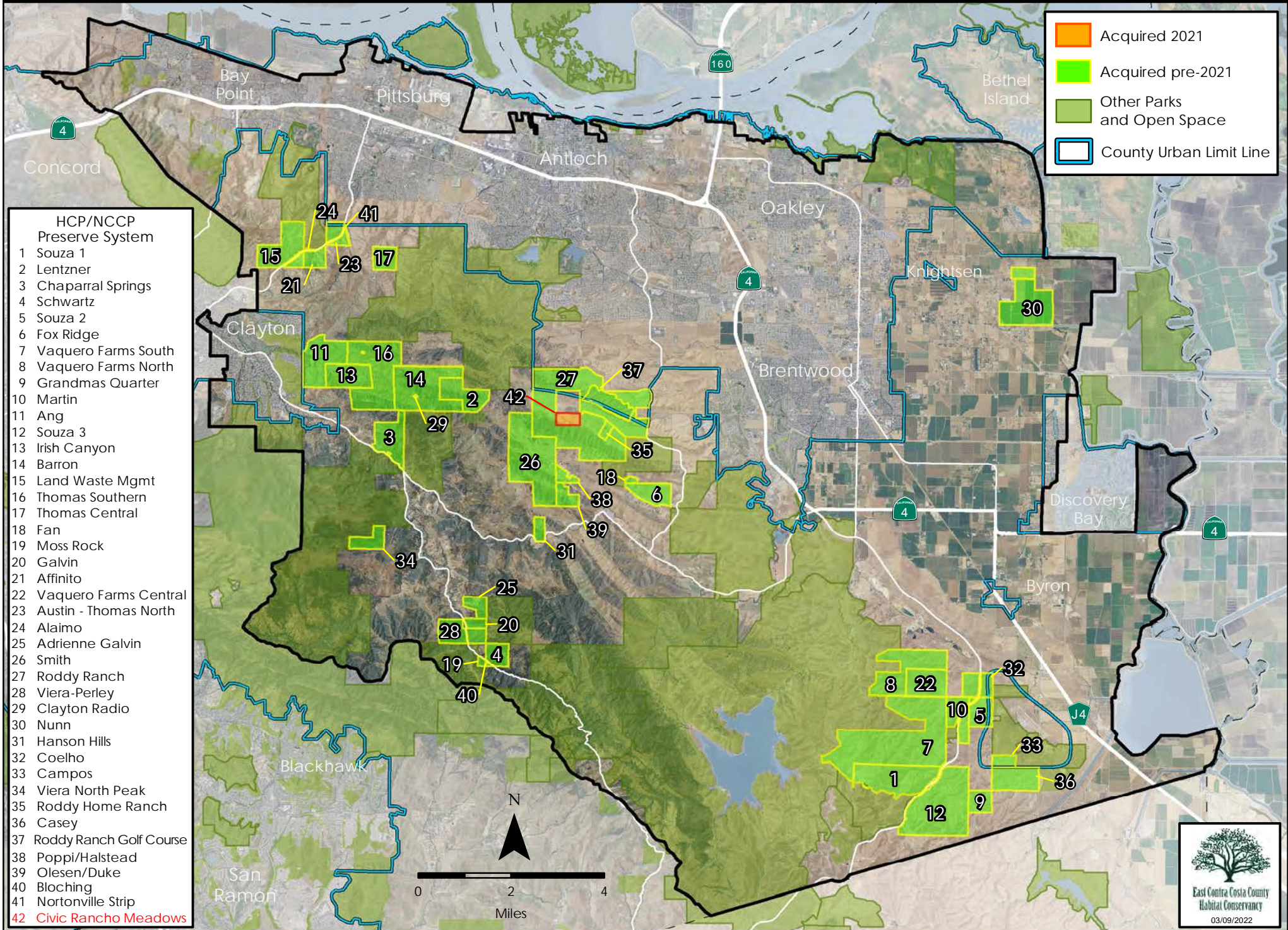
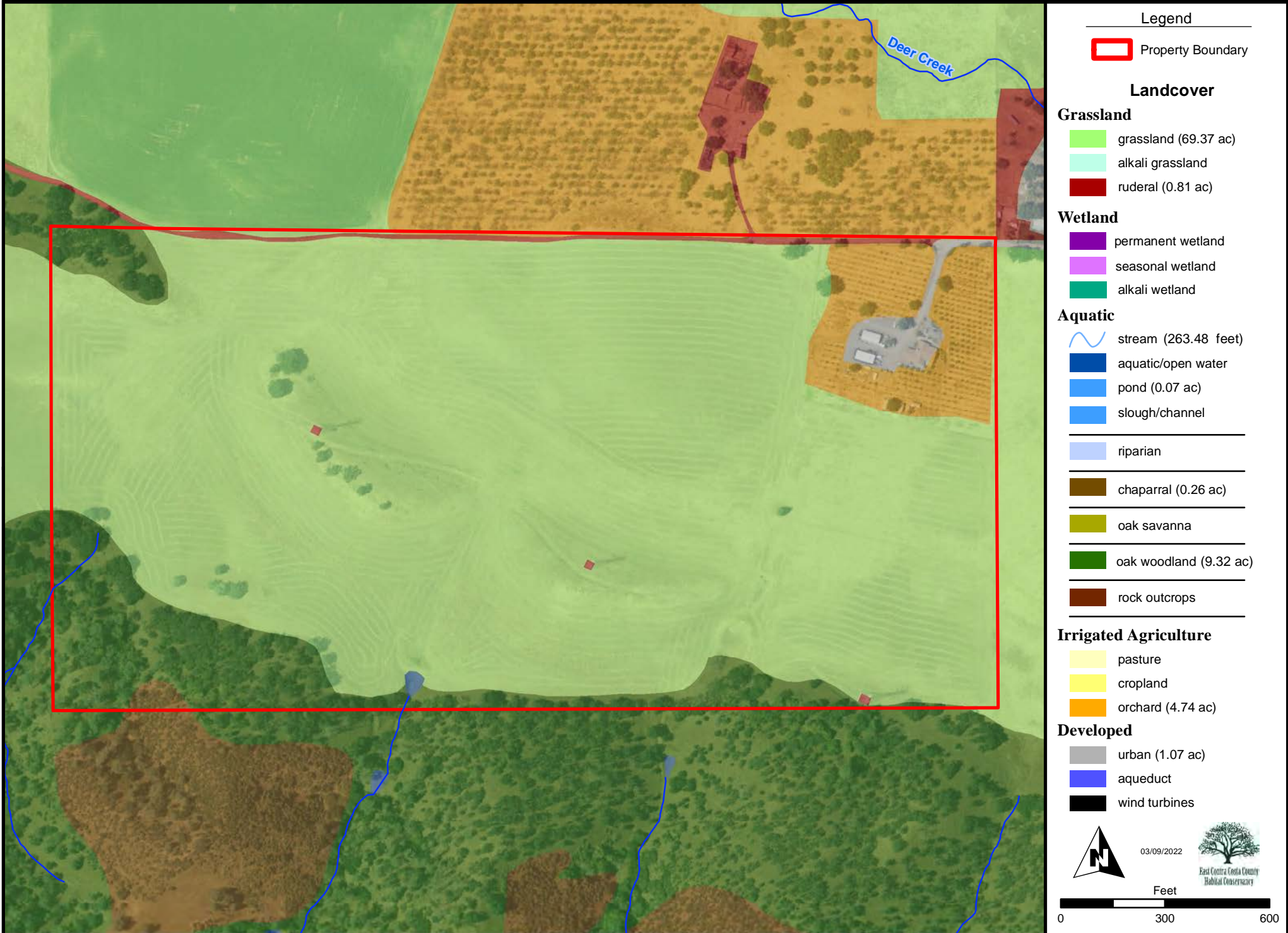


Figure 8 Civic Rancho Meadows Property - Landcover Map



**Figure 9. Civic Rancho Meadows Representative Photographs**



Photo 1. Wildflowers on the property.



Photo 2. Drainage feature on the property.



Photo 3. Looking up a ridge on the property.

**Figure 9. (cont.)**



Photo 4. View from the central portion of the property looking north toward Chadbourne Rd and toward the ridge between Deer Valley and Horse Valley.

**Civic Rancho Meadows**

Acquired by: EBRPD in partnership with Conservancy  
 Date acquired: 11/30/2021  
 Acres: 80.45  
 Key land cover: Annual Grassland, Oak Woodland, Ruderal, Orchard, Chaparral, Urban, Pond, Stream  
 Appraised Value: \$1,500,000  
 Purchase Price: \$1,500,000

<u>Source</u>	<u>Funding amount</u>	<u>Percent</u>
EBRPD (Measures WW, AA)	\$939,500	63%
Preserve System Lease Rev	<u>\$560,500</u>	<u>37%</u>
TOTAL	\$1,500,000	100%

Table 8a. Summary of Natural Community Protection, Restoration, and Creation by Land Cover Type

Land Cover Type	Land Cover Requirements <sup>3</sup> (acres)			Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
	Protection	Creation	Restoration	Protection	Existing Easement (no credit)	Creation	Restoration	Protection	Existing Easement (no credit)	Creation	Restoration	Protection	Creation	Restoration
<b>Terrestrial</b>														
Annual grassland	16,500	--	--	69.4	--	--	--	8,096.4	1,463.60		0.62	49%	--	--
Alkali grassland	1,250	--	--	--	--	--	--	275.8	17.50		0.02	22%	--	--
Ruderal	--	--	--	0.8	--	--	--	126.3	25.70		--	--	--	--
Chaparral and scrub	550	--	--	0.3	--	--	--	310.6	0.00		--	56%	--	--
Oak savanna	500	--	165	--	--	--	--	399.8	23.00		--	80%	--	0%
Oak woodland	400	--	--	9.3	--	--	--	2,564.9	131.60		--	641%	--	--
<i>Subtotal terrestrial</i>	<i>19,200</i>	<i>0.0</i>	<i>165</i>	<i>79.8</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>11,773.7</i>	<i>1,661.4</i>	<i>0.0</i>	<i>0.6</i>	<i>61%</i>	<i>--</i>	<i>0%</i>
<b>Aquatic</b>														
Riparian woodland/scrub	70	--	55	--	--	--	--	72.4	0.20		5.40	103%	--	10%
Perennial wetland <sup>1</sup>	75	--	85	--	--	--	--	5.4	5.80		0.16	7%	--	0%
Seasonal wetland	168	--	163	--	--	--	--	13.4	1.40		10.70	8%	--	7%
Alkali wetland	93	--	67	--	--	--	--	34.8	4.30		2.40	37%	--	4%
Pond	16	16	--	0.07	--	--	--	11.4	2.70	0.61	--	71%	4%	--
Reservoir (open water) <sup>2</sup>	12	6	--	--	--	--	--	0.0	0.00		--	0%	--	--
Slough/Channel	36	--	72	--	--	--	--	3.1	0.00		--	9%	--	0%
<i>Subtotal aquatic</i>	<i>470</i>	<i>22</i>	<i>442</i>	<i>0.07</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>140.43</i>	<i>14.40</i>	<i>0.61</i>	<i>18.66</i>	<i>30%</i>	<i>3%</i>	<i>4%</i>
<b>Stream (length in linear feet)</b>														
Perennial	4,224	--	2,112	--	--	--	--	12,919.3	889.1		--	306%	--	0%
Intermittent	2,112	--	2,112	--	--	--	--	137,944.6	25,242.1		4,328.1	6531%	--	205%
Ephemeral <sup>4</sup>	26,400	--	26,400	263.5	--	--	--	68,212.0	877.8		4,102.7	258%	--	16%
Classification pending <sup>4</sup>	--	--	--	--	--	--	--	89,220.2	16,445.3		2,951.4	--	--	--
<i>Subtotal stream length</i>	<i>32,736</i>	<i>0.0</i>	<i>30,624</i>	<i>263.5</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>308,296.1</i>	<i>43,454.3</i>	<i>0.0</i>	<i>11,382.2</i>	<i>942%</i>	<i>--</i>	<i>37%</i>
<b>Irrigated agriculture</b>														
Cropland	400	--	--	--	--	--	--	541.4	--		--	135%	--	--
Pasture	--	--	--	--	--	--	--	71.3	--		--	--	--	--
Orchard	--	--	--	--	--	--	--	4.7	--		--	--	--	--
Vineyard	--	--	--	--	--	--	--	--	--		--	--	--	--
<i>Subtotal irrigated agricultural</i>	<i>400</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>617.5</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>Other</b>														
Nonnative woodland	--	--	--	--	--	--	--	0.7	--		--	--	--	--
Wind turbines	--	--	--	--	--	--	--	20.0	--		--	--	--	--
<i>Subtotal other</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>20.7</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>Developed</b>														
Urban	--	--	--	1.1	--	--	--	62.0	0.8		--	--	--	--
Aqueduct	--	--	--	--	--	--	--	--	--		--	--	--	--
Turf	--	--	--	--	--	--	--	--	--		--	--	--	--
Landfill	--	--	--	--	--	--	--	--	--		--	--	--	--
<i>Subtotal developed</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>1.1</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>62.0</i>	<i>0.8</i>	<i>0.0</i>	<i>0.0</i>	<i>--</i>	<i>--</i>	<i>--</i>

Table 8a. Summary of Natural Community Protection, Restoration, and Creation by Land Cover Type

Land Cover Type	Land Cover Requirements <sup>3</sup> (acres)			Reporting Period (acres)				Cumulative (acres)				Percent Complete (%)		
	Protection	Creation	Restoration	Protection	Existing Easement (no credit)	Creation	Restoration	Protection	Existing Easement (no credit)	Creation	Restoration	Protection	Creation	Restoration
<b>Uncommon Vegetation Types (subtypes of above land cover types)</b>														
Purple needlegrass grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wildrye grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wildflower fields	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Squirreltail grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
One-sided bluegrass grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Serpentine grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Saltgrass grassland (alkali grassland)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Alkali sacaton bunchgrass grassland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other uncommon vegetation types	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Subtotal uncommon vegetation types</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	--	--	--
<b>Uncommon Landscape Features or Habitat Elements</b>														
Rock outcrop	--	--	--	--	--	--	--	18.2	4.5	--	--	--	--	--
Cave	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Springs/seeps	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Scalds	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand deposits	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mines (number)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Buildings (number)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potential nest sites (number)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>Subtotal uncommon landscape features</i>	--	--	--	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>18.2</i>	<i>4.5</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Totals (excludes subtypes)</b>														
Acres	--	--	--	80.9	0.0	0.0	0.0	12,632.4	1,681.1	0.6	19.3	--	--	--
Linear feet (Streams)	--	--	--	263.48	0.00	0.00	0.00	308,296.10	43,454.30	0.00	11,382.20	--	--	--

<sup>1</sup> Perennial wetlands are equivalent to permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to aquatic.

<sup>3</sup> All land cover requirements assume the Maximum Urban Development Area scenario. The requirements for restoration and creation are dependent upon amount of impact. The requirements provided are based on the conservative estimates of wetland impacts provided in the Plan.

<sup>4</sup> Many of the streams identified as "classification pending" will ultimately be classified as ephemeral.

**Table 8b. Reporting Period Summary of Natural Community Protection**

Land Cover Type	Civic Rancho Meadows		Reporting Period Totals	
	Protection	Existing Easement (No credit)	Protection	Existing Easement (No credit)
<b>Terrestrial</b>				
Annual grassland	69.4	--	69.4	--
Alkali grassland	--	--	--	--
Ruderal	0.8	--	0.8	--
Chaparral and scrub	0.3	--	0.3	--
Oak savanna	--	--	--	--
Oak woodland	9.3	--	9.3	--
<i>Subtotal terrestrial</i>	<i>79.8</i>	<i>0.0</i>	<i>79.8</i>	<i>0.0</i>
<b>Aquatic</b>				
Riparian woodland/scrub	--	--	--	--
Perennial wetland <sup>1</sup>	--	--	--	--
Seasonal wetland	--	--	--	--
Alkali wetland	--	--	--	--
Pond	0.07	--	0.07	--
Reservoir (open water) <sup>2</sup>	--	--	--	--
Slough/Channel	--	--	--	--
<i>Subtotal aquatic</i>	<i>0.07</i>	<i>0.00</i>	<i>0.07</i>	<i>0.00</i>
<b>Stream (length in linear feet)</b>				
Total stream length	263	--	263	--
<i>Stream length by width category</i>	--	--	--	--
≤ 25 feet wide	--	--	--	--
> 25 feet wide	--	--	--	--
<i>Stream length by type and order</i>	--	--	--	--
Perennial	--	--	--	--
Intermittent	--	--	--	--
Ephemeral	263	--	263	--
Classification pending	--	--	--	--
<i>Subtotal stream length</i>	<i>263</i>	<i>0</i>	<i>263</i>	<i>0</i>
<b>Irrigated agriculture</b>				
Cropland	--	--	--	--
Pasture	--	--	--	--
Orchard	--	--	--	--
Vineyard	--	--	--	--
<i>Subtotal irrigated agricultural</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Other</b>				
Nonnative woodland	--	--	--	--
Wind turbines	--	--	--	--
<i>Subtotal other</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Developed</b>				
Urban	1.1	--	1.1	--
Aqueduct	--	--	--	--
Turf	--	--	--	--
Landfill	--	--	--	--
<i>Subtotal developed</i>	<i>1.1</i>	<i>0.0</i>	<i>1.1</i>	<i>0.0</i>

Land Cover Type	Civic Rancho Meadows		Reporting Period Totals	
	Protection	Existing Easement (No credit)	Protection	Existing Easement (No credit)
<b>Uncommon Vegetation Types (subtypes of above land cover types)</b>				
Purple needlegrass grassland	--	--	--	--
Wildrye grassland	--	--	--	--
Wildflower fields	--	--	--	--
Squirreltail grassland	--	--	--	--
One-sided bluegrass grassland	--	--	--	--
Serpentine grassland	--	--	--	--
Saltgrass grassland (alkali grassland)	--	--	--	--
Alkali sacaton bunchgrass grassland	--	--	--	--
Other uncommon vegetation types	--	--	--	--
<i>Subtotal uncommon vegetation types</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Uncommon Landscape Features or Habitat Elements</b>				
Rock outcrop	--	--	--	--
Cave	--	--	--	--
Springs/seeps	--	--	--	--
Scalds	--	--	--	--
Sand deposits	--	--	--	--
Mines (number)	--	--	--	--
Buildings (number)	--	--	--	--
Potential nest sites (number)	--	--	--	--
<i>Subtotal uncommon landscape features</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>
<i>Subtotal uncommon habitat elements</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
<b>Totals (excludes subtypes)</b>				
Acres	80.9	0.0	80.9	0.0
Linear feet	263	0	263	0

<sup>1</sup> Perennial wetlands are equivalent to permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to aquatic.

<sup>3</sup> All land cover requirements assume the Maximum Urban Development Area scenario. The requirements for restoration and creation are dependent upon amount of impact. The requirements provided are based on the maximum estimates of wetland impacts provided in the Plan.

**Table 9. Cumulative Summary of Progress towards Fulfilling Preservation Requirements for Jurisdictional Wetlands and Waters**

<b>Jurisdictional Wetlands and Waters Requirement</b>	<b>Total Requirement<sup>1</sup></b>	<b>Reporting Period Area Acquired</b>	<b>Cumulative Area Acquired</b>	<b>Percentage of Requirement Met by Acquisition</b>
Preserve-wide Riparian woodland/scrub (acres)	70	0.00	72.41	103%
Preserve-wide Perennial wetland (acres)	75	0.00	5.38	7%
Preserve-wide Seasonal wetland (acres)	168	0.00	13.43	8%
Preserve-wide Alkali wetland (acres)	93	0.00	34.75	37%
Preserve-wide Pond (acres)	16	0.07	11.36	71%
Preserve-wide Reservoir (open water) (acres)	12	0.00	0.00	0%
Preserve-wide Slough/Channel (acres)	36	0.00	3.10	9%
Preserve-wide stream length (feet)	32,736	263.48	308,296.10	942%
<i>Stream length by type</i>				
Perennial (feet)	4,224	0.00	12,919.30	306%
Intermittent (feet)	2,112	0.00	137,944.60	6531%
Ephemeral <sup>2</sup> (feet)	26,400	263.48	68,212.00	258%
Classification Pending <sup>2</sup> (feet)	--	0.00	89,220.20	--

<sup>1</sup> Requirements are dependent on the amount of impacts. The requirements provided are based on the conservative estimates of wetland impacts provided in the Plan.

<sup>2</sup> Many of the streams identified as "classification pending" will ultimately be classified as ephemeral.

**Table 10. Reporting Period and Cumulative Conservation of Covered Plants**

Common Name	Scientific Name	Required	Number of Occurrences Protected		
			Reporting Period	Cumulative	% Complete
Mount Diablo manzanita	<i>Arctostaphylos auriculata</i>	2	0	0	0%
Brittlescale	<i>Atriplex depressa</i>	2 (4) <sup>1</sup>	0	3	150%
San Joaquin spearscale	<i>Atriplex joaquiniana</i>	0	0	10	--
Big tarplant	<i>Blepharizonia plumosa</i>	3	1 <sup>2</sup>	13	433%
Mount Diablo fairy lantern	<i>Calochortus pulchellus</i>	1	0	6	600%
Recurved larkspur	<i>Delphinium recurvatum</i>	2	0	0	0%
Round-leaved filaree	<i>Erodium macrophyllum</i>	2	0	5	250%
Diablo helianthella	<i>Helianthella castanea</i>	2	0	13	650%
Brewer's dwarf flax	<i>Hesperolinon breweri</i>	3	0	6	200%
Showy madia	<i>Madia radiata</i>	0	0	0	--
Adobe navarretia <sup>2</sup>	<i>Navarretia nigelliformis subsp. nigelliformis</i>	1	0	0	0%
Shining navarretia	<i>Navarretia nigelliformis subsp. radians</i>	0	0	(7)	--
<b>Total</b>		<b>18 (20)</b>	<b>1</b>	<b>56</b>	

<sup>1</sup> With the initial urban development area, at least two occurrences of brittlescale will be preserved. As soon as permitted urban development exceeds this, four occurrences of brittlescale must be preserved.

<sup>2</sup> One dessicated big tarplant was observed in November 2021 at the Civic Rancho Meadows property.

<sup>3</sup> The species *Navarretia nigelliformis subsp. nigelliformis* is no longer believed to occur within Contra Costa County based on specimen annotations at the University and Jepson Herbaria at the University of California Berkeley, as well as the opinions of experts in the genus. This taxon is now recognized as *Navarretia nigelliformis subsp. radians*. Pending further policy clarification, the Conservancy is continuing to track occurrences of shining navarretia (*Navarretia nigelliformis subsp. radians*).

**Table 11. Achievement of Zone-Specific Land Acquisition Requirements: Reporting Period and Cumulative Summary**

Zone/ Subzone	Requirements <sup>1</sup>	Minimum Required	Maximum Required	Acquired Reporting Period	Acquired Cumulative To date	% Achieved (based on Max Req)
<b>Zone 1</b>						
1a	Annual grassland	85	85	0.0	0.0	0%
1b	Annual grassland (1,450 acres combined w/ 1c)	TBD	1,450	0.0	49.5	3%
1c	Annual grassland (1,450 acres combined w/ 1b)	TBD	--	0.0	486.3	--
1d	25% of total area	478	478	0.0	204.3	43%
1e	No specific requirements	--	--	--	--	--
All	Estimated minimum requirement	2,100	2,250	0.0	865.4	38%
All	Estimated maximum requirement	2,850	3,150	0.0	865.4	27%
<b>Zone 2</b>						
2a	At least 60% of subzone	1,104	1,104	0.0	1,414.3	128%
2a	Annual grassland (850 acres)	--	850	0.0	934.9	110%
2a	90% of chaparral in 2a, 2b, and 2c (122 acres total)	--	see below	--	--	--
2a	Land to protect Mount Diablo manzanita	--	--	--	--	--
2b	Annual grassland (450 acres)	450	450	0.0	391.3	87%
2b	Connection between Black Diamond R.P. and Clayton Ranch (w/ 2c)		see below	--	--	--
2b	90% of chaparral in 2a, 2b, and 2c (122 acres total)		see below	--	--	--
2c	Annual grassland (400 acres)	400	400	0.0	146.5	37%
2c	0.5-mile wide connect b/w Black Diamond and Clayton Ranch (w/ 2b)			--	--	--
2c	90% of chaparral in 2a, 2b, and 2c (122 acres total)		122	0.0	3.8	3%
2c	Seven (7) of thirteen (13) ponds for TRBL, CTS, WPT, or CRLF (#)	13	7	0	0	--
2d	Annual grassland (800 acres)	800	800	0.0	496.3	62%
2d	Known occurrence of round-leaved filaree (#)	1	1	0	1	100%
2e	Annual grassland (800 acres)	800	800	0.0	420.6	53%
2e	See 2e/2f/2h below		see below	--	--	--
2f	Annual grassland (1,000 acres)	1,000	1,000	69.4	521.7	52%
2f	San Joaquin kit fox movement corridor	--	--	--	--	--
2f	Land for SJKF Movement must include 2 occurrence of big tarplant	--	--	--	--	--
2f	Land for SJKF Movement must include 1 occurrence of round-leaved filaree	--	--	--	--	--
2f	Where possible, land for SJKF and plants, should include alkali soils	--	--	--	--	--
2f	See 2e/2f/2h below	--	see below	--	--	--

**Table 11. Achievement of Zone-Specific Land Acquisition Requirements: Reporting Period and Cumulative Summary**

<b>Zone/ Subzone</b>	<b>Requirements<sup>1</sup></b>	<b>Minimum Required</b>	<b>Maximum Required</b>	<b>Acquired Reporting Period</b>	<b>Acquired Cumulative To date</b>	<b>% Achieved (based on Max Req)</b>
2g	No specific requirements	--	--	--	--	--
2h	Annual grassland (600 acres)	600	600	0.0	274.7	46%
2h	Two occ. of big tarplant (number)	2	2	0	1	50%
2h	Known occ. of Mt. Diablo manzanita and Brewer's dwarf flax (number)	2	2	0	3	150%
2h	San Joaquin kit fox (75%)			0	301.6	0%
2h	Silvery legless habitat, if present			0	33.0	0%
2h	See 2e/2f/2h below		see below	--	--	--
2i	No specific requirements	--	--	--	--	--
2b/2c	0.5-mile wide connect between Black Diamond and Clayton Ranch	--	--	--	--	--
2a/2b/2c	Chaparral habitat (90%)	122	122	0.0	9.8	8%
2e/2f/2h	Annual grassland, combined	2,400	2,400	69.4	1,217.1	0%
All	Vernal pool invertebrate suitable habitat, wherever possible	--	--	--	--	Yes (not quantified)
All	Estimated minimum requirement	7,500	7,500	85.6	5,093.2	68%
All	Estimated maximum requirement	9,550	9,550	85.6	5,093.2	53%
All	Alternative Stay Ahead Measurement for Zone 2	--	4,900	0.0	0.0	0%
<b>Zone 3</b>						
3a	90% of modeled AWS suitable core habitat	159	159	0.0	94.9	60%
3a	Land to increase linkage from chaparral in zone to Mt. Diablo chaparral	--	--	--	--	--
3b	No specific requirements	--	--	--	--	--
3c	No specific requirements	--	--	--	--	--
All	Estimated minimum requirement	400	400	0.0	292.7	73%
All	Estimated maximum requirement	750	750	0.0	292.7	39%
<b>Zone 4</b>						
4a	75% of natural land cover types	1,700	1,700	0.0	160.0	9%
4a	Known occ. of Diablo helianthella and Brewer's dwarf flax	--	--	--	--	--
4a	See 4a/4h below	--	see below	--	--	--
4b	Known occ. for Mt. Diablo fairy lantern if extant	--	--	--	--	--
4c	See 4c/4e/4f/4g below	--	see below	--	--	--
4d	60% of natural land cover types	953	953	0.0	0.0	0%

**Table 11. Achievement of Zone-Specific Land Acquisition Requirements: Reporting Period and Cumulative Summary**

Zone/ Subzone	Requirements <sup>1</sup>	Minimum Required	Maximum Required	Acquired Reporting Period	Acquired Cumulative To date	% Achieved (based on Max Req)
4e	See 4c/4e/4f/4g below	--	see below	--	--	--
4f	Known occ. for Brewer's dwarf flax (number)	TBD	TBD	--	--	--
4f	See 4c/4e/4f/4g below	--	see below	--	--	--
4g	See 4c/4e/4f/4g below	--	see below	--	--	--
4h	75% of natural land cover types	791	791	0.0	505.9	64%
4h	Linkage between Morgan Territory Ranch, Morgan Territory RP and Mt. Diablo	--	--	--	--	--
4h	See 4a/4h below	--	see below	--	--	--
4a/4h	90% of modeled AWS suitable core habitat	200	200	0.0	132.5	66%
4c/4e/4f/4g	18%IUDA or 39%MUDA of natural land cover types in 4c, 4e, 4f, 4g	1,400	3,000	0.0	0.0	0%
All	Chaparral/Scrub	270	270	0.0	133.8	50%
All	Estimated minimum requirement	4,900	6,050	887.7	887.7	15%
All	Estimated maximum requirement	6,150	8,350	0.0	887.7	11%
<b>Zone 5</b>						
5a	See 5a/5d and 5a/5b/5d below	--	see below	--	--	--
5b	See 5a/5b/5d below	--	see below	--	--	--
5c	Annual Grassland/Suitable foraging habitat for Swainson's hawk/ SJKF core and movement habitat	1,000	1,000	0.0	0.0	0%
5c	Modeled silvery legless lizard habitat, if feasible (for MUDA)	--	--	0.0	0.0	0%
5d	See 5a/5d and 5a/5b/5d below	--	see below	--	--	--
5a/5d	2 (IUDA) or 4 (MUDA) of the occ. of brittlescale	--	2(4)	--	--	--
5a/5d	At least 2 occurrences of recurved larkspur	--	2	--	--	--
5a/5d	170 acres connected to Byron Airport preserved areas	--	170	--	--	--
5a/5b/5d	Annual grassland	--	7,100	0.0	3,631.8	51%
All	Grassland	5,300	8,100	0.0	3,631.8	45%
All	Alkali grassland	750	900	0.0	175.1	19%
All	Alkali wetland	40	40	0.0	21.5	54%
All	Vernal pool invertebrate suitable habitat, wherever possible	--	--	--	--	Yes (not quantified)
All	Estimated minimum requirement	6,100	9,050	0.0	3,954.6	44%
All	Estimated maximum requirement	7,200	11,450	0.0	3,954.6	35%

**Table 11. Achievement of Zone-Specific Land Acquisition Requirements: Reporting Period and Cumulative Summary**

Zone/ Subzone	Requirements <sup>1</sup>	Minimum Required	Maximum Required	Acquired Reporting Period	Acquired Cumulative To date	% Achieved (based on Max Req)
<b>Zone 6</b>						
6a	See 6a/6b/6c/6f below	--	see below	--	--	--
6b	See 6a/6b/6c/6f below	--	see below	--	--	--
6c	See 6a/6b/6c/6f below	--	see below	--	--	--
6d	See 6d/6e below	--	see below	--	--	--
6e	See 6d/6e below	--	see below	--	--	--
6f	See 6a/6b/6c/6f below	--	see below	--	--	--
6d/6e	Alkali grassland	100	300	0.0	0.0	0%
6d/6e	Alkali wetland	20	40	0.0	0.0	0%
6a/6b/6c/6f	Cropland or Pasture	250	400	0.0	612.7	153%
All	Estimated minimum requirement	450	800	0.0	639.3	80%
All	Estimated maximum requirement	550	1,100	0.0	639.3	58%
<b>All Zones</b>						
All	Estimated minimum requirement	21,450	26,050	85.6	12,635.4	49%
All	Estimated maximum requirement	27,050	34,350	85.6	12,635.4	37%

<sup>1</sup> The requirements in this table are a summary of the land acquisition requirements in Chapter 5 of the HCP/NCCP; consult Chapter 5 for a complete description of all land acquisition requirements.

TRBL = Tricolored blackbird

CTS = California tiger salamander

SJKF = San Joaquin kit fox

WPT = western pond turtle

CRLF = California red-legged frog

AWS = Alameda whipsnake

## IV. HABITAT RESTORATION AND CREATION

Habitat restoration and creation is an integral component of the Plan's conservation strategy. Restoration and creation of specific habitats and land cover types is required in addition to protection of land within the Preserve System. Together, land preservation and restoration/creation provide benefits to covered species, natural communities, biological diversity, hydrologic function, and ecosystem function to compensate for impacts and to contribute to recovery of covered species. Habitat restoration and creation includes several focus areas, as summarized below.

### **Wetlands and Streams**

Wetlands and streams exhibit a high degree of biological, physical, and hydrologic diversity in the inventory area. Consequently, it is important to preserve, enhance, restore, or create the full range of diversity of these land cover types. Restoration of wetlands ensures no net loss of wetlands in the inventory area and replacement of the ecosystem functions lost to covered activities.

### **Alkali Wetlands**

Alkali wetlands are particularly rare in the inventory area, mainly occurring on a 380-acre wetland complex in the southeastern portion of the inventory area south and east of Byron. Land cover mapping indicates that less than 1% of the Plan inventory area contains alkali wetlands (see page 3-18 of the Plan).

### **Mitigation and Contribution to Recovery**

Conservation Measure 2.1 *Enhance, Restore, and Create Land Cover Types and Species Habitat* and Conservation Measure 2.3 *Restore Wetlands and Create Ponds* of the Plan require wetland restoration and pond creation to compensate for future impacts on these land cover types caused by development activities. Additionally, the Plan requires wetland restoration and creation actions over and above mitigation requirements to contribute to recovery of covered species. Restoration or creation activities must stay ahead of impacts.

Over the 30-year life of the Plan, the Conservancy may be required to restore or create a large number of acres of various types of wetlands and waters. If impacts on wetlands and waters are substantial during those 30 years, the cumulative total restoration/creation acreage could be as large as 500 acres. Restoration projects that the Conservancy has undertaken since the commencement of plan implementation are shown in Tables 13a and 13b.

Restoration projects that have completed their monitoring requirements, met their success criteria, and were deemed complete in or prior to the reporting year, are no longer described in the annual report but are still tracked in Tables 13a and 13b. The Conservancy will continue to monitor these sites to track ongoing ecological functions. No new restoration projects were constructed in 2021. Two large restoration projects continue to move through planning and

design phases. These are the former Roddy Ranch Golf Course and the Knightsen Wetland Restoration Project.

In 2021, the Conservancy monitored all restoration projects though only the following four projects have final annual reports. Extremely low rainfall impacted monitoring efforts at several additional restoration projects: the Upper Hess Creek Watershed Habitat Restoration Project, Vaquero Farms Seasonal Wetland Creation Project – Seasonal Wetlands 1, 2, and 3; and Souza II Corral. Biological monitors from Monk and Associates visited the Upper Hess Restoration Area three times and conducted only one site visit to Vaquero Farms and Souza II Corral (Monk and Associates 2022).

(Figure 10)

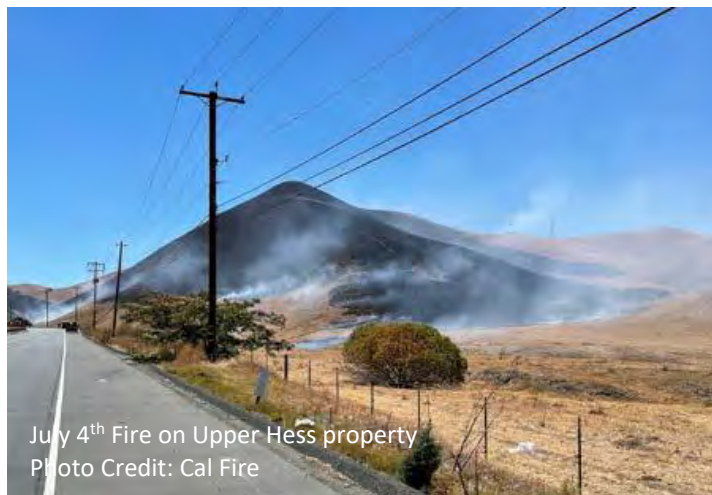
- Irish Canyon Riparian Restoration Project (constructed 2010)
- Hess Creek Channel Restoration Project (constructed 2014)
- Ang Riparian Restoration Project (constructed 2017)
- Horse Valley Creek and Wetland Restoration Project (constructed 2018)

Monitoring in 2021 demonstrated some advancement toward achievement of site-specific restoration objectives. Rainfall during the monitoring year was significantly below average which had a negative effect on the performance of most of the wetland features at the restoration project sites that were monitored.

### **Upper Hess Restoration Project**

The reporting period was monitoring year ten (10) for the Upper Hess Restoration Project. While hydrologic monitoring was scheduled to be completed each month from November through June, monitoring did not occur until March 2, 2021, due to the lack of rain. On this visit, a small area of the Main Stock Pond was inundated, but all other features were dry. Additional visits were made, though drought conditions persisted.

On July 4, 2021 a car accident on Kirker Pass Road ignited a grass fire that spread to the Alaimo and Upper Hess properties. Contra Costa Fire Protection District and the California Department of Forestry and Fire Protection (Cal Fire) responded to the incident and the fire was contained to 35 acres. The ground response involved cutting a large fire break across the Upper Hess property and unfortunately through a portion of the seasonally dry wetland restoration project. Remedial grading of the firebreak within the wetland restoration area occurred in late 2021. The Conservancy took advantage of having equipment mobilized on site and completed minor adaptive



management actions in the area to maximize wetland project performance.

### **Vaquero Farms Seasonal Wetlands (Pools 1, 2 and 3)**

The reporting period was year nine (9) of hydrologic monitoring for the Vaquero Farms Seasonal Wetlands 1 and 2, and year six (6) of monitoring for Seasonal Wetland 3. Rainfall data for the project site was obtained from the California Irrigation Management Information System weather station #47 in Brentwood, California. From November 2020 to June 2021, the total measured rainfall in the area was 3.92 inches, approximately 52% of average. Rain events in December did not lead to inundation of the seasonal wetlands, and after additional rain in January, Seasonal Wetland 2 was found to be inundated while all other features remained dry. Seasonal Wetland 2 receives runoff from an adjacent ranch road so receives a concentrated flow during rain events. With only trace amounts of rain falling between February through June 2021, no further site visits were conducted.

### **Souza II Corral**

The seasonal wetland constructed at Souza II Corral was dry during the January 2021 site visit and due to the lack of rain events and the absence of inundation observed during the January 2021 site visit, no additional site visits were conducted during the remainder of the 2021 monitoring year.

Project summaries and discussions of monitoring and management actions, if applicable, for the remaining restoration projects are included in the sections below. Table 8a summarizes restoration and creation to date by land cover type. Table 12 provides cumulative restoration and creation information by watershed.<sup>3</sup> Table 13c through Table 13g contain summaries of the performance criteria for restoration projects.

## **Irish Canyon Riparian Restoration Project (2010)**

The Irish Canyon Riparian Restoration Project is located on the 320-acre Irish Canyon property in the Mount Diablo Creek watershed. The goal of the restoration project is to fill in gaps in riparian woodland habitat. The restoration was initiated in late 2009 with the planting of more than 400 locally collected valley oak (*Quercus lobata*) acorns and California buckeye (*Aesculus californica*) nuts in a denuded stream corridor. The planting effort was completed in March 2010. The project is expected to result in the restoration of 0.91 acre of riparian habitat and 688.5 linear feet of stream.

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<sup>3</sup> The restoration summary provided in Table 12 is based on GIS data. It differs slightly from the numbers provided in the text of the Annual Report.

## Monitoring and Adaptive Management

Nomad Ecology biologists conducted a site visit in August 2021 to monitor the creek enhancement planting areas. An infestation of stinkwort (*Dittrichia graveolens*) was observed in a creek drainage during this visit and Save Mount Diablo (SMD) staff and volunteers mobilized to remove approximately 100 stinkwort plants. Many caged trees had started to outgrow the tree tubes and cages. SMD removed plastic tree tubes, rebar, T-posts, and metal cages from trees in two of the four planting areas. The remaining cages will be removed in 2022.



## Hess Creek Channel Restoration Project (2014)

### Project Overview

The 5.22-acre Hess Creek Channel Restoration Project is located on the north edge of the Diablo Range and west of the boundary between the Great Central Valley and the San Francisco Bay Area in the northwest foothills/upper valley region of the HCP/NCCP Plan Area. The property is located southwest of the City of Pittsburg, north of the City of Clayton, adjacent to the south side of Kirker Pass Road, and east of Hess Road. Project construction was completed in February 2015. The restoration design involved re-routing, stabilization, and enhancement of 930 linear feet of the Hess Creek channel, as well as re-establishment of approximately 0.30 acre of seasonal wetland habitat and approximately 2.57 acres of riparian woodland and streamside habitats. Habitat establishment was primarily achieved through earthwork and planting. Monitoring was performed for Years 1, 2, 3, and 5, however no annual monitoring other than site maintenance was required in Year 4 or Year 6. Year 7 of annual monitoring spans from November 2020 to October 2021. Overall, the project is meeting all Year 7 performance criteria, except for re-established wetland acreage. The project goal was to create 0.30 acre of seasonal wetland; based on the wetland delineation conducted in Year 5, 0.172 acre of seasonal wetland was created. The monitoring results are summarized from the *Annual Monitoring Report Year 7, Hess Creek Watershed Restoration* (Nomad Ecology 2021a).

### Monitoring and Adaptive Management

Monitoring in Year 7 occurred from October 2020 to September 2021. Precipitation data was obtained from the Black Diamond Mines rain gauge located near the restoration site; prior years monitoring reports used the Concord Pavilion station which is no longer operative. Total recorded

annual precipitation for the monitoring year was 5.62 inches. The largest storm events occurred in February 2021 with approximately 0.51 inches of precipitation recorded that month. The last rain event occurred in March, depositing approximately 0.24 inches of rain before the cessation of the rainy season. The 2020-2021 winter rain season was the driest since 2012. The site received roughly 63 percent less precipitation in 2020-2021 than the previous season in 2019-2020.

The monitoring the site indicates that overall progress is being made toward success criteria for habitat features. On site vegetation remains for all tree and shrubs on site. There is some sign of natural recruitment and spread of vegetation planted during construction.

Invasive weeds were mapped in October 2020, and February, April, and September 2021. Nine invasive weed species were observed in the restoration area. These weed species varied in distribution from widespread to limited to just a few or more populations.

Some species were scattered throughout the restoration site and were not mapped (black mustard [*Brassica nigra*] and hoary mustard [*Hirschfeldia incana*]). Yellow starthistle (*Centaurea solstitialis*) was observed onsite in 2019, but due to control efforts was not observed in 2021. The performance criterion specifies that total percent cover of non-native invasive plant species is no more than 10% cover in wetlands. Based on the transect sampling data collected in April 2021, all seasonal wetlands have invasive weed cover less than 4% which meets the performance criterion. The performance criterion for total percent cover of non-native invasive plant species in riparian woodland habitat is no more than 10% cover. Overall, invasive weeds comprised 1-5% cover (estimated visually) in riparian woodland habitat which also meets the performance criterion.



## Recommendations

### Invasive Weed Control

Invasive weeds should continue to be controlled on site. Species that have a limited distribution are the highest priority for control since they can be treated before they become well established. These species include poison hemlock (*Conium maculatum*), stinkwort, Harding grass (*Phalaris aquatica*), and oblong spurge (*Euphorbia oblongata*). Recently eradicated species, including artichoke thistle (*Cynara cardunculus*), purple starthistle (*Centaurea calcitrapa*), yellow starthistle, perennial pepperweed (*Lepidium latifolium*), and periwinkle (*Vinca major*) should also be surveyed for in case they reoccur on site. Other species that are present on site and are also high priority for control include milk thistle (*Silybum marianum*), Italian thistle (*Caruus pycnocephalus* subsp. *pycnocephalus*), bull thistle (*Cirsium vulgare*), and fennel (*Foeniculum vulgare*). Milk thistle, Italian thistle, yellow starthistle, and bull thistle should be sprayed with a selective herbicide (aminopyralid or clopyralid) when they are in the rosette stage. Fennel can be hand removed using tools or sprayed with glyphosate or triclopyr. Other species, including black

mustard and hoary mustard, should be treated as feasible. Surveys should be conducted every 6 to 8 weeks throughout the growing season to detect target species early and control them prior to them setting seed.

### **Increasing Acreage of Seasonal Wetlands**

Based on the wetland delineation completed in Year 5, wetland acreage onsite has increased by 0.172 acre, which is lower than the targeted 0.30 acre. This is due to portions of the created seasonal wetlands not ponding as designed, which resulted in establishment of upland vegetation. It is also due to limited water available on site to saturate all wetland features. Options for increasing the acreage of seasonal wetlands on site could include targeted grading to reduce elevations to encourage ponding and water flow. Seasonal Wetland-5 is ponded each year and grading could expand the size of this wetland feature.

## **Ang Riparian Restoration Project (2017)**

In late September 2017, Save Mount Diablo (SMD) initiated a new riparian planting project downstream of the 2010 Irish Canyon restoration project. The objective of this project, taking place on the 462 acre Ang property, is similar to that of the Irish Canyon Riparian Restoration Project: improve approximately 1.56 acres of riparian woodland habitat for wildlife by filling in gaps in existing vegetation along the banks of Irish Canyon Creek.

The restoration plan called for a mix of valley oak, buckeye and red willow planted across five Riparian Planting Areas (RPAs). The plantings of valley oak and buckeye were completed by the end of 2018, and plantings of red willow were completed by the end of the first quarter of 2019.

In January and February 2021, SMD continued with the pause of all restoration workdays due to the Covid-19 pandemic. The volunteer watering crew was able to resume tri-weekly summer watering in March as a small group to alleviate the dry conditions. The full watering crew resumed in June, and continued watering into October. Adequate rainfall in October led to the cancellation of the final four watering days in November and December. Because of the reduced number of workdays in the early part of the year, SMD staff focused on monitoring plant survival and assessed all RPAs. Plantings in RPAs 2, 3, 4, and 5 had a 100% survival rate from the previous year.



Riparian Planting Area 5, February 2021  
Photo Credit: Save Mount Diablo

# Horse Valley Wetland Creation and Creek Restoration Project (2018)

The Horse Valley Wetland Creation and Creek Restoration Project was constructed in the summer and fall of 2018. The project is located on the Roddy Ranch property and was selected based on the relatively flat terrain conducive to seasonal wetland creation and the presence of a natural creek channel that had been disturbed and straightened, offering a good opportunity for creek restoration with net channel gain. The project is also specifically intended to create new wetland habitats where none previously existed.

The final design included 37 seasonal wetland basins intended to support a total of 2.19 acres of newly created seasonal wetland habitat, including a large pond along the restored channel intended to provide suitable breeding habitat for California red-legged frog (*Rana draytonii*), and five wetlands intended to provide suitable breeding habitat for California tiger salamander (*Ambystoma californiense*). The wetlands were also designed to provide suitable habitat for vernal pool invertebrates. The As-Built Report maps the area of the wetlands at 2.246 acres. The as-built stream channel length is 4,150 linear feet.

Because rainfall is a major driver of wetland performance, restoration monitoring years are synchronized to California's Water Year, beginning October 1 and ending September 31 the following calendar year. Monitoring Year 3 began on October 1, 2020 and ended September 31, 2021. The monitoring results are summarized from *Annual Restoration Monitoring Report Year 3, Horse Valley Creek and Wetland Restoration Project* (Nomad Ecology 2022).

General site conditions in Year 3 included positive levels of revegetation and almost no signs of equipment access and construction. Cattle were reintroduced to the site partway through Year 1, and in Year 2 and Year 3, cattle trails were evident throughout the site, including trails and hoofprints through many of the wetlands. In March 2021, an old, non-functional well present near the center of the site was replaced with a solar-powered well, which feeds a newly installed cattle trough and water tank just south of the restoration area. An old, broken concrete cattle trough near the east end of the site was also removed.



## Recommendations

No significant invasive plant issues were documented in 2021. No significant erosion issues were observed during Year 3. Erosion and downcutting were noted along the same upland spillway that was identified in the as-built report and previous annual reports. This section is not causing any immediate issues, but should be repaired before any more significant erosion occurs.

## Knightsen Wetland Restoration Project (In Planning)

The 645-acre Nunn Property is in the community of Knightsen. The majority of the property (~560 acres) was managed as irrigated agriculture until December 2021 when the property started a conversion to rangeland. 80 acres of the property is located north of Delta Road and is already being seasonally grazed. The Conservancy is working with local agencies to develop a restoration project that will address habitat, and water quality to support species and also have incidental benefits to stormwater management. Future planning phases may include recreation elements. In 2017, the Conservancy hired ESA, Balance Hydrologics and Nomad Ecology to complete initial assessments of the property and initiate restoration planning for the site. The planning work, development of concept designs, and additional studies to move the project toward a preferred alternative are all underway. Conceptual alternative designs were completed in 2019 and work to refine the project continues. Soil characterization studies and interim groundwater investigations were completed in 2021. Neighbor and Community meetings, including an open house and tour of the site, were held in 2021.

Reports and other information are available on the project website:

<https://www.contracosta.ca.gov/7624/Knightsen-Wetland-Restoration-Project>

## Roddy Ranch Golf Course (In Planning)

The former Roddy Ranch Golf Course was a 230-acre, 18-hole course located off Deer Valley Road at the south end of the City of Antioch. EBRPD and the Conservancy are currently developing a Habitat Restoration and Public Access Plan for the site to restore native grassland habitat and include paths and facilities for passive public recreation, such as walking, jogging, and picnicking. The former golf course property will be a part of the future Deer Valley Regional Preserve.

In 2020, EBRPD and the Conservancy hired Restoration Design Group who has partnered with Nomad Ecology and other consultants to complete initial studies to inform concept designs for restoration and for public access on the property.



### Invasive Weed Control and Monitoring

During the golf course's development and operation, the soil, landforms, and hydrology of the site were altered, and continual additions of soil amendments, fertilizers, and herbicides were used to keep desired grass species growing throughout the year. When the golf course was closed, weeds rapidly colonized and dominated the fairways and golf course features. Invasive weed mapping conducted in spring 2018, approximately 8 months after the closure, found 160 acres of the 230-acre property were infested with 14 different non-native invasive weeds, including 152 acres of Italian thistle.

The Conservancy has implemented weed control on site for the immediate habitat benefits and to prevent weeds from propagating into the rest of the Preserve System, potentially impacting covered plant populations, healthy rangeland and recently restored habitats at the Horse Valley Creek and Wetland Restoration Project to the north. Initial control efforts were focused on maintenance travel corridors to prevent spread within the property facilitated by vehicles, and then efforts moved into fairways. Due to the large acreage of invasive weeds on site, a combination of mowing and herbicide application was determined to be the most effective method to control annual species before they set seed. Isolated or patchily distributed weeds are controlled via hand pulling or herbicide application with a backpack sprayer.

In March 2021, crews focused on herbicide applications to mustard, Italian thistle, and yellow starthistle in the native grassland restoration area seeded in 2020, and spot treatments of travel routes throughout the site. Later in October, infestations of stinkwort were hand pulled, bagged, and hauled off site.

### **Native Grassland Restoration**

In 2019, a local ecotype of Great Valley gumplant (*Gindelia camporum*) was collected from Deer Valley and grown out by Hedgerow Farms for seed production to supply the restoration project. The species will be combined with other local species to develop a rigorous local native seed mix for the property.

An initial 2-acre test plot was identified for experimental seeding on the northwest area of the course on two former fairways. Prior to seeding the standing dead vegetation was string-line trimmed to a less than one-inch height. The site was drill seeded at a rate of 21.5 pounds per acre in November 2020 with a locally sourced native seed mix consisting of blue wildrye (*Elymus glaucus*), purple needle grass (*Stipa pulcha*), California melic (*Melica californica*), annual fescue (*Festuca microstachys*), and blue eyed grass (*Sisyrinchium bellum*). Only grasses were seeded so that broadleaf selective herbicide could be used in March 2021 to control thistles and mustards.



Propagation of Great Valley gumplant (*Gindelia camporum*)  
Photo Credit: Hedgerow Farms

In November 2021, crews hand seeded the locally collected and amplified Great Valley gumplant seed in the same area that was drill seeded previously with the native grass seed mix in 2020. Great Valley gumplant was hand seeded at a rate of 3 pounds of pure live seed per acre.

### **Summary and Recommendations**

Invasive weeds have been significantly reduced at the former Roddy Ranch Golf Course since 2018, and monitoring and control efforts will continue. The initial 152 acres of dense

monoculture stands of Italian thistle has been reduced to scattered patches of low density, typical of grasslands in the region. Jubata grass (*Cortaderia jubata*) and fennel have been eradicated from the site. Stinkwort is still present but in much smaller numbers, as is artichoke thistle, and these species will continue to be controlled. Other weeds present in small, scattered patches include mustard, hoary mustard, Medusahead grass (*Elymus caput-medusae*), wild radish (*Raphanus sativus*), and Italian thistle. Eradication of these species is not feasible nor a good use of resources.

In the area that was seeded with native seed mix, dense non-native grass was present in January 2022, which suggests that non-native grass will move in and colonize gaps left by invasive weed control. Additional surveys will be conducted in 2022 to survey for species that were seeded to determine if seeding was successful.

Reports and other information are available on the project website:

<https://www.ebparks.org/about/planning/roddyrancho/>

Figure 10. Location of Habitat Restoration and Creation Projects

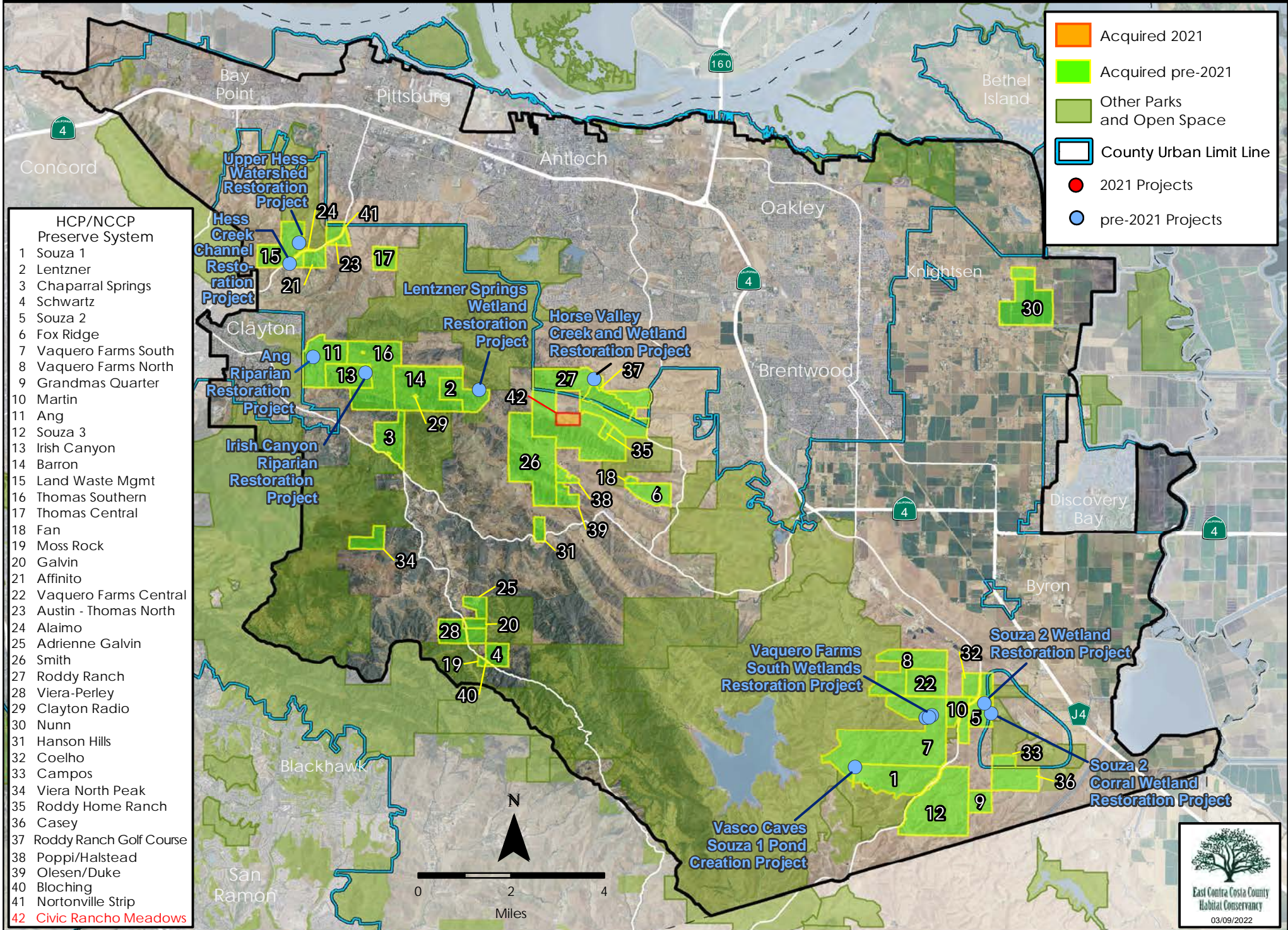


Table 12. Aquatic and Stream Land Cover Restoration and Creation by Watershed

Basin/Watershed	Aquatic Land Cover (acres)								Stream Land Cover (linear feet)				
	Riparian woodland/ scrub	Perennial wetlands <sup>1</sup>	Seasonal wetlands	Alkali wetlands	Ponds	Reservoir (open water) <sup>2</sup>	Slough/ channel	Aquatic Land Cover Total	Perennial	Intermittent	Ephemeral	Classification Pending	Stream Land Cover Total
<b>Brushy Creek N Stem Sub Basin</b>													
Restoration	--	0.16	8.10	--	--	--	--	8.26	--	2,074.58	507.62	--	2,582.20
Creation	--	--	--	--	0.30	--	--	0.30	--	--	--	--	0.00
<i>subtotal</i>	--	0.16	8.10	--	0.30	--	--	8.56	--	2,074.58	507.62	0.00	2,582.20
<b>Frisk Creek Sub Basin</b>													
Restoration	--	--	0.33	--	--	--	--	0.33	--	--	--	--	0.00
Creation	--	--	--	--	--	--	--	--	--	--	--	--	0.00
<i>subtotal</i>	--	--	0.33	--	--	--	--	0.33	--	0.00	0.00	0.00	0.00
<b>Kirker Creek</b>													
Restoration	3.08	--	0.23	2.40	--	--	--	5.71	--	--	1,759.56	--	1,759.56
Creation	--	--	--	--	0.12	--	--	0.12	--	--	--	--	0.00
<i>subtotal</i>	3.08	--	0.23	2.40	0.12	--	--	5.83	--	0.00	1,759.56	0.00	1,759.56
<b>Sand Creek Sub Basin</b>													
Restoration	--	--	2.00	0.05	--	--	--	2.05	--	--	684.26	4,102.71	4,786.97
Creation	--	--	--	--	0.19	--	--	0.19	--	--	--	--	0.00
<i>subtotal</i>	--	--	2.00	0.05	0.19	--	--	2.24	--	0.00	684.26	4,102.71	4,786.97
<b>Upper Mt. Diablo Creek</b>													
Restoration	2.31	--	--	--	--	--	--	2.31	--	2,253.51	--	--	2,253.51
Creation	--	--	--	--	--	--	--	--	--	--	--	--	0.00
<i>subtotal</i>	2.31	--	--	--	--	--	--	2.31	--	2,253.51	0.00	0.00	2,253.51
<b>Total Creation for Inventory Area</b>	<b>5.39</b>	<b>0.16</b>	<b>10.66</b>	<b>2.45</b>	<b>0.61</b>	<b>--</b>	<b>--</b>	<b>19.27</b>	<b>--</b>	<b>4,328.09</b>	<b>2,951.44</b>	<b>4,102.71</b>	<b>11,382.24</b>

<sup>1</sup> Perennial wetlands include wetlands of indeterminate hydrology. In Appendix J, perennial wetlands are classified as wetlands.

<sup>2</sup> The term aquatic used in Appendix J refers to reservoirs and open water. Reservoir (open water) is used in place of aquatic in this table to remain consistent with the other tables in this report.

**Table 13a. Restoration Project Summary**

<b>Restoration Project Name</b>	<b>Year Constructed</b>	<b>Habitat Type</b>	<b>Required Monitoring</b>	<b>Performance/ Success Criteria</b>	<b>2021 Status</b>	<b>Target Species Observed On-Site (Post Restoration)</b>	<b>Notes</b>
Lentzner Spring Wetland Restoration Project	2008	Alkali Wetland	Years 1-5	Years 1-3 survival; Years 4-5 (or more) total relative cover of native wetland vegetation	Completed: Year 7 (2015) Recommended modified success criteria and project completion	N/A	
Vasco Caves Souza I Pond Creation	2008	Seasonal Wetland	Years 1-5	Inundation; Edges and margins dominated by Wetland vegetation	Completed: Year 7 (2015)	CTS and CRLF	
Souza II Wetland Restoration Project	2009	Alkali Wetland Seasonal Wetland	Years 1-5	Total relative cover of native wetland vegetation; Total absolute cover of non-native invasive species inundation; wetland acreage	Completed: Year 6 (2015)	CTS and CRLF	
Irish Canyon Riparian Restoration Project	2009-2010	Riparian woodland	N/A	N/A	Completed: Year 12 (2021)	CRLF continue to be present in the area	
Upper Hess Watershed Restoration Project	2011	Seasonal Wetland Stream Channel CTS Breeding	Years 1-5	Relative cover of wetland vegetation; Wetland acreage Stream channel; CTS breeding pond area	Year 10 (2021)	CRLF	Hydrologic monitoring did not occur until March 2, 2021 due to the lack of rain. The main stock pond was the primary feature holding water this year.

**Table 13a. Restoration Project Summary**

Restoration Project Name	Year Constructed	Habitat Type	Required Monitoring	Performance/ Success Criteria	Target Species		Notes
					2021 Status	Observed On-Site (Post Restoration)	
Souza II Corral Seasonal Wetland Restoration Project	2012	Seasonal Wetland Vernal Pool	Years 1-5	Inundation; % Dominated by wetland vegetation; Relative cover of native wetland vegetation; Wetland acreage	Completed: Year 5 (2017)	CTS, VPFS	
Vaquero Farms Seasonal Wetlands Creation Project (Pools 1 and 2)	2012	Seasonal Wetland	Years 1-5	Inundation; % Dominated by wetland vegetation; Relative cover of native wetland vegetation; Wetland acreage	Completed: Year 6 (2018)	VPFS only in pond 1, CTS only in pond 2	
Hess Creek Channel Restoration Project	2014	Seasonal Wetland Stream Channel Riparian Woodland Riparian Streamside	Years 1, 2, 3, 5, 7, 10	Relative cover of wetland vegetation; Wetland acreage; Stream channel; Riparian vegetation cover; Riparian vegetation survival; Invasive vegetation cover	Year 7 (2021)	Project is movement habitat and not breeding habitat	The project is meeting all Year 7 performance criteria, with the exception of re-established wetland acreage. The project goal was to create 0.30 acre of seasonal wetland. Based on the wetland delineation conducted in Year 5, 0.172 acre of seasonal wetland was created. Wetland and aquatic feature monitoring was not required in Year 7.
Vaquero Farms Seasonal Wetland Creation (Pool 3)	2015	Seasonal Wetland	Years 1-5	Inundation; % Dominated by wetland vegetation; Relative cover of native wetland vegetation; Wetland acreage	Year 6 (2021)	VPFS Year 2 and 4	November 2020 to June 2021, the total measured rainfall in the area was 3.92 inches, approximately 52% of average. This feature remained dry through the monitoring season.

**Table 13a. Restoration Project Summary**

Restoration Project Name	Year Constructed	Habitat Type	Required Monitoring	Performance/ Success		Target Species	Notes
				Criteria	2021 Status	Observed On-Site (Post Restoration)	
Ang Riparian Restoration Project	2017	Riparian woodland	N/A	N/A	Year 5 (2021)	N/A	Plant inventory monitoring was conducted in March and used to create monitoring maps. Planting sites were watered roughly every three weeks from March through October.
Horse Valley Creek and Wetland Restoration Project	2018	Seasonal Wetland Stream Channel CRLF and CTS Breeding	Years 1-5	N/A	Year 3 (2021)	CTS	Positive levels of revegetation and almost no signs of construction. In March 2021, the old, non-functional well as replaced with a solar-powered well, serving a newly installed cattle trough and water tank to better manage cattle around the site.

**Table 13b. Restoration Acreage Summary**

Restoration, Creation, and Enhancement Design Target if Not Complete or Final (acres unless otherwise noted)														
Restoration Project Name	Year Constructed	Year Completed	Permanent Wetland Created	Permanent Wetland Restored	Seasonal Wetland Created	Seasonal Wetland Restored	Seasonal Alkali Wetland Created	Seasonal Alkali Wetland Restored	Pond Restored	Riparian Restored	Stream Channel Restored (In ft)	Stream Channel Created (In ft)	Enhanced	
Lentzner Spring Restoration Project	2008	2015	0.00	0.00	0.00	0.00	0.08	0.23	0.00	0.00	0.00	0.00	N/A	
Vasco Caves Souza I Pond Creation Project	2008	2015	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	
Souza II Wetland Restoration Project	2009	2015	0.00	0.54	0.17	0.00	1.17	0.64	0.00	0.00	2,782	0.00	N/A	
Irish Canyon Riparian Restoration Project	2009-2010	2016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	688.50	0.00	N/A	
Upper Hess Watershed Restoration Project	2011	N/A	0.00	0.00	0.00	2.47	0.00	0.00	0.06	0.00	226	0.00	N/A	
Souza II Corral Seasonal Wetland Restoration Project	2012	2017	0.00	0.00	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.117	
Vaquero Farms Seasonal Wetlands Creation (Pools 1 and 2)	2012	2018	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	
Hess Creek Channel Restoration Project	2015	N/A	0.00	0.00	0.30	0.00	0.00	0.00	0.00	3.13	1,364.00	730	N/A	
Vaquero Farms Seasonal Wetland Creation (Pool 3)	2015	N/A	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	
Ang Riparian Restoration Project	2016 (late Fall)	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56	0.00	0.00	N/A	
Horse Valley Creek and Wetland Restoration Project	2018	N/A	0.00	0.00	2.25	0.00	0.00	0.00	0.17	0.00	4,150.00	0.00	N/A	
<b>TOTAL</b>			<b>0.00</b>	<b>0.54</b>	<b>4.58</b>	<b>2.47</b>	<b>1.25</b>	<b>0.87</b>	<b>0.23</b>	<b>5.60</b>	<b>9,210.50</b>	<b>730.00</b>	<b>1.12</b>	

**Table 13c. Hess Creek Channel Restoration Project (2014) Specific Objectives and Performance Criteria**

<b>Restoration Specific Objectives</b>	<b>Performance Criteria</b>
<b>Wetlands (and Other Aquatics)</b>	
SO-1. Maintain or increase native emergent wetland vegetation.	Qualitative assessments, including photo documentation before and after restoration activities in Years 1-3, and 5, determine that native emergent wetland vegetation has been maintained or increased.
SO-2. Reduce sediment deposition and transport along Hess Creek.	Maintenance of a stable channel that conveys flow through the restoration site in Year 1-3, 5, 7 and 10.
SO-3. Maintain or increase wetland capacity.	Wetland acreage onsite has been maintained or increased and is in the range of the targeted 0.3 ac of restored wetlands within 5 years following restoration implementation.
SO-4. Maintain or increase flows to and connectivity among wetlands and wetland complexes.	Qualitative assessment, including photo-documentation before and after restoration activities in Years 1-3, 5, 7 and 10, determines that Hess Creek is hydrologically connected between the restored channel and seasonal wetlands.
SO-5. Eliminate or reduce non-native invasive plant species <sup>1</sup> in the project area wetlands.	Total percent cover of non-native invasive plant species is no more than 10% cover in wetlands.
SO-6. Maintain or enhance upland habitat in close proximity to wetlands to support the life-history requirements of wetland dependent covered species.	Qualitative assessment, including photo-documentation before and after restoration activities in Years 1-3, 5, 7 and 10, determines that upland habitat in close proximity to the restored wetlands has been maintained or enhanced to support the life-history requirements of wetland-dependent covered species.
SO-7. Restore approximately 0.30 ac of seasonal wetlands to compensate for permanent loss of this habitat.	Approximately 0.30 ac seasonal wetlands have been restored (confirmed via wetland delineation in Year 5) and meet the annual performance criteria.
SO-8. Restore approximately 0.3 ac of seasonal wetlands to contribute to the recovery of covered species.	Approximately 0.3 ac seasonal wetlands have been restored (confirmed via wetland delineation in Year 5) and meet the annual performance criteria.

<b>Stream and Riparian Woodland Scrub</b>	
SO-9. Protect a minimum of 0.5 linear mi of Hess Creek.	Qualitative assessment, including photo-documentation before and after restoration activities in Years 1-3, 5, 7 and 10, determines that a minimum of 0.5 linear mi of Hess Creek has been protected.
SO-10. Acquire approximately 2.6 ac of riparian/scrub habitat.	Acquire 2.6 ac of riparian/scrub habitat.
SO-11. Maintain or increase the cover, width, and connectivity of existing riparian vegetation.	Mapping before and after restoration activities in Years 3, 5, 7 and 10, determines that the cover, width, and connectivity of existing riparian vegetation has been maintained or increased.
SO-12. Reduce the biomass, cover, and extent of non-native invasive plant species in riparian woodland habitat.	Total cover of non-native invasive plant species is no more than 10% in riparian woodland habitat.
SO-13. Restore shaded riverine aquatic habitat to reduce water temperature and temperature variation.	Approximately 0.45 ac riparian streamside habitat has been restored and meets the annual performance criteria.
SO-14. Restore shaded riverine aquatic habitat to increase inputs of organic matter into Hess Creek.	Approximately 0.45 ac riparian streamside habitat has been restored and meets the annual performance criteria.
SO-15. Reduce sediment input and downstream sediment transport and deposition in Hess Creek.	Maintenance of a stable channel that conveys flow through the restoration site in Year 1-3, 5, 7 and 10.
SO-16. Maintain and enhance instream structural diversity.	Maintenance of a stable channel that conveys flow through the restoration site in Year 1-3, 5, 7 and 10.
SO-17. Improve stream flow and connectivity along Hess Creek for native aquatic wildlife.	Maintenance of a stable channel that conveys flow through the restoration site in Year 1-3, 5, 7 and 10.
SO-18. Restore riparian woodland in addition to that required above as compensation for habitat loss.	Approximately 2.57 ac of riparian woodland/streamside habitat have been restored and meets the annual performance criteria.

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SO-19. Restore native species richness and diversity, vegetative cover, wildlife function and hydrologic function.	Approximately 0.3 ac of seasonal wetland and 2.57 ac of riparian woodland/streamside habitat have been restored and meets the annual performance criteria in Tables 7, 8, and 9; and approximately 930 ln ft of stable channel has been created/maintained that conveys flow through the restoration site in Year 1-3, 5, 7 and 10.
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<sup>1</sup> Non-native invasive plant species include those species with high impact rankings by the California Invasive Plant Council (Cal-IPC), and any other species determined to threaten successful restoration of the native plant communities onsite (California Invasive Plant Council 2006).

**Table 13d. Vaquero Farms Seasonal Wetlands Creation Project (Pools 1 and 2; 2012)**  
**Specific Objectives and Performance Criteria**

<b>Restoration Specific Objectives</b>	<b>Performance Criteria</b>
SO-1. Create two new seasonal wetlands.	At the end of the five-year monitoring period the maximum wetland acreage for Seasonal Wetland 1 will be 0.07 acre and it will be 0.15 acre for Seasonal Wetland 2.
SO-2. Increase wetland capacity and water duration in the project area.	The created wetland area must remain saturated or inundated to the surface for at least 30 days each fall/winter/spring over a five year monitoring period, but should not exceed 4 months of continuous standing water.
SO-3. Establish hydrophytic plant species.	Total cover must not vary between the natural pool and the created seasonal pools by more than 25 percent. At the end of five years the created seasonal wetlands shall support at least 51% total cover. At least 51% of hydrophytic species cover shall be composed of native California wetland species.

**Table 13e. Upper Hess Habitat Restoration Project (2011) Specific Objectives and Performance Criteria**

<b>Wetlands (and other Aquatic)</b>	<b>Performance Criteria</b>
SO-1. Increase the abundance and distribution of native emergent vegetation in the project area.	See annual performance criteria in Table 13f.
SO-2. Reduce erosion along Upper Hess Creek.	Qualitative assessment including photo documentation before and annually for 5 years after restoration activity determines that erosion along the Upper Hess Creek onsite has been reduced.
SO-3. Increase wetland and pond capacity and water duration in the project area.	Wetland and pond acreage onsite has increased and is in the range of the targeted 2.47 acres of restored wetlands and 0.12 acre of restored pond within 5 years following restoration construction.
SO-4. Hydrologically reconnect the Upper Hess Creek from lower stock pond to channel at property boundary.	Qualitative assessment and hydrologic monitoring based on photo-documentation and seasonal shallow groundwater monitoring annually for 5 years after restoration activity shows that Upper Hess Creek is hydrologically connected between the lower stock pond and the restored channel at the property line.
SO-5. Reduce non-native plant species in restored wetlands.	Total absolute cover of non-native invasive plant species <sup>a</sup> no more than 10% relative cover.
SO-6. Restore approximately 2.32 acres of alkali wetlands in the project area.	Approximately 2.32 acres alkali wetlands have been restored and confirmed via wetland delineation.
SO-7. Create an approximately 0.12 acre California tiger salamander breeding pond.	An approximately 0.12 acre pond will have been restored and confirmed via wetland delineation.
SO-8. Restore approximately 2.32 acres of alkali wetlands.	Approximately 2.32 acres alkali wetlands have been restored and met the annual performance criteria in Table 7 and confirmed via wetland delineation.
SO-9. Create an approximately 0.12 acre California tiger salamander breeding pond in upper tributary.	Same as for SO-7
SO-10. Restore 489 linear feet of stream channel and hydrologically connect Upper Hess Creek from the main stock pond to channel at property boundary.	Same as for SO-4
SO-11. Create 0.12 acres California tiger salamander pond, enhance existing main pond, restore 489 linear feet of channel, restore approximately 2.32 acres of alkali wetlands.	Same as for SO-6, SO-7, and SO-8

<sup>a</sup> Non-native invasive plant species include those species with high impact rankings by the California Invasive Plant Council (Cal-IPC), and any other species determined to threaten successful restoration of the native plant communities onsite (California Invasive Plant Council 2006).

<b>Year</b>	<b>Criterion</b>	<b>Satisfactory Progress Threshold</b>
1	Average relative percent cover of dominant wetland indicator species	5% Cover
2	Average relative percent cover of dominant wetland indicator species	10% Cover
3	Average relative percent cover of dominant wetland indicator species	20% Cover
4	Average relative percent cover of dominant wetland indicator species	35% Cover
5	Average relative percent cover of dominant wetland indicator species	50% Cover

**Table 13g. Horse Valley Creek and Wetland Restoration Project (2018) Specific Objectives and Performance Criteria**

<b>Wetlands (and other Aquatic)</b>	<b>Performance Criteria</b>
SO-1. Increase native emergent vegetation and habitat for benefited species by creating 37 new seasonal wetlands (2.25 acres)	a) Wetland remains ponded for a minimum of 14 continuous days during the rainy season. b) Wetland is dominated by wetland vegetation or otherwise meets the USACE definition of wetland vegetation. c) Invasive weeds are less than 10% absolute cover. d) Wetland supports a minimum 20% vegetation cover within the ordinary high water mark.
SO-2. Reduce sediment deposition and downstream transport by remediating the onsite sources of excessive sediment and repairing incised and erosive stream channel.	Qualitative assessment including photo documentation before and annually for 5 years after restoration activity determines that erosion in tributary drainages and on site has reduced. Restored creek channels are generally stable and intact with <1% of all channel banks exhibiting signs of erosion or other instability.
SO-3. Increase wetland and pond capacity and duration by creating new seasonal wetlands.	Wetland and pond acreage onsite has increased and is in the range of the targeted 2.25 acres of restored wetlands within 5 years following restoration construction. A Formal wetland delineation completed at the end of Year 5 shows wetland meets jurisdictional criteria.
SO-4. Increase flows to and connectivity among wetlands and wetland complexes by creating 37 new pools within a hydrologically connected wetland complex.	Qualitative assessment and hydrologic monitoring based on photo-documentation annually for 5 years after restoration activity shows the creek is hydrologically connected between the channel and floodplain wetlands.
SO-5. Improve streamflow and connectivity by restoring the ephemeral stream channel to its historic location and channel geometry.	Restored creek channel demonstrate a measured net increase in linear footage from pre-restoration conditions and maintains stability in the historic channel.
SO-6. Restore wildlife habitat function and hydrologic function by creating a new wetland complex and restoring the ephemeral stream channel to its historic location and channel geometry.	a) CTS habitat wetlands (designed for greater than 15 inches maximum ponding depth) remain ponded for a minimum of 100 continuous days during the rainy season. b) CRLF habitat wetland (designed for greater than 24 inches maximum ponding depth) remains ponded for a minimum of 200 continuous days during the rainy season. c) Wetland supports presence of target listed shrimp species for several years after initial inoculation with cysts (timing of inoculation TBD based on site conditions and cyst availability).

## V. PRESERVE MANAGEMENT

The Plan requires that preserve management plans be developed for each preserve to identify management actions necessary for maintaining ecosystem characteristics and functions and for maintaining or improving existing habitat conditions for covered species. Preserve management plans also describe allowed uses such as recreation. This approach ensures that preserve land management is consistent with the Plan's goals and objectives.

Preserve System lands are managed according to the preserve management plan or if a management plan is not yet prepared, the lands are managed consistent with the Plan. The following sections describe the progress to date in developing the first preserve management plan and implementing management actions.

### Preserve Management Plans

The HCP/NCCP expected preserve management plans to be prepared within one year of land acquisition. However, due to the decision to cover many adjacent properties under one coordinated management plan, the rapid pace of acquisition, and the complexity of developing plans for larger areas, these preserve management plans have taken longer to develop. Preserve management plans are working documents and may be modified based on the evaluation of management methods in achieving objectives as well as on results of outside research. The Conservancy will formally review and systematically revise preserve management plans at least every five years, but management measures may be modified prior to plan updates in cases where adaptive management or new research identifies more effective techniques.

The *Vasco Hills/Byron Vernal Pools Preserve Management Plan* has been under development. The Vasco Hills/Byron Vernal Pools Preserve Management Area is the southeastern portion of the inventory area, covering Acquisition Analysis Zone 5. The management area consists of the following properties: Vaquero Farms North, Vaquero Farms Central, Vaquero Farms South, Souza I, Souza II, Souza III, Grandma's Quarter, Martin, Coelho, Campos, and Casey.

The Conservancy and EBRPD are working together on finalizing the *Vasco Hills/Byron Vernal Pools Preserve Management Plan*, reviewing numerous iterations of draft materials. The final draft was provided to the Wildlife Agencies and EBRPD for review in 2018. A public draft was released in 2018 and is going through subsequent edits prior to finalization. Significant progress was made in 2021 in revising the document, and the Conservancy expects to finalize the plan in 2022. This will be the first preserve management plan prepared by the Conservancy and can be expanded to include neighboring properties as others in the area are acquired. This plan will also become a template for future preserve management plans prepared for other regions of the Preserve System.

While comprehensive management planning is underway, management activities have occurred throughout the Preserve System and are described below.

## Conceptual Ecological Models

A component of preserve management plans is a monitoring plan. The initial “monitoring design phase” of the HCP/NCCP focuses on the development of management-oriented conceptual ecological models, prioritization and implementation of projects, the identification of focal species or groups of species for intensive monitoring, and the selection of biotic and abiotic indicators of ecosystem condition. The HCP/NCCP requires annual reports to describe any conceptual ecological models developed to date and any changes to them that have taken place. To date, four separate conceptual ecological models for the grassland, wetland/pond, oak woodland, and riparian natural communities have been developed for the HCP/NCCP.

The conceptual ecological model includes all the threats and stressors that may affect these natural communities over the life of the permit term that can be managed. Based on the monitoring program’s passive management approach, the focus of management actions in grasslands will be on grazing and invasive species management and will expand to address the other threats/stressors as needed. The initial focus of management actions for wetlands/ponds is on grazing, invasive species management, and habitat restoration/enhancement, and will expand to address the other threats/stressors as needed. For oak woodlands, the focus of management will be those factors that limit oak regeneration, which includes non-native plant species and feral pigs. For riparian woodland, the focus of management will be to minimize habitat degradation through management of livestock access to watercourses and management of riparian vegetation. The riparian woodland conceptual ecological model also includes an action to restore engineered channels and restore floodplain connectivity.

## Natural Community Enhancement

Natural community enhancement has been ongoing since Plan implementation. This section describes the HCP/NCCP natural community enhancement conservation measures implemented during the 2021 reporting period and provides an effort-to-date summary of the extent of land cover types enhanced.

### Efforts in 2021

During the reporting period, several management strategies were applied to enhance natural communities within the Preserve System. Management techniques have been implemented in support of Conservation Measure 2.1 *Enhance, Restore, and Create Land Cover Types and Species Habitat*, Conservation Measure 2.2 *Manage Wetlands and Ponds*, Conservation Measure 2.4 *Manage Grassland*, Conservation Measure 2.6 *Manage Oak Woodland and Oak Savannah*, and Conservation Measure 2.9 *Manage Streams and Riparian Woodland/Scrub*.

### *Natural Resource Maintenance and Enhancement Projects*

In 2021, natural resource maintenance and enhancement projects continued on all properties within the Vasco Hills/Byron Vernal Pools Preserve management area, Clayton Ranch management area, Concord Hills management area, Deer Valley management area, as well as at the Black Diamond Mines Regional Preserves and the Nunn property. Projects initiated in previous years continued in 2021.

### *Invasive Plant Control*

- Five individuals of Russian knapweed were observed and hand pulled in Horse Valley (Roddy Ranch property)
- Approximately 100 stinkwort plants were hand pulled on the Irish Canyon property
- Invasive weeds were sprayed and stinkwort was hand pulled at the Roddy Ranch Golf Course.
- Pepperweed was hand pulled at the Upper Hess project site.

### *Invasive Wildlife Control*

In 2021, feral pig management was continued at various locations around the preserve to address damage to grasslands and young trees.

### *Grazing Management*

EBRPD staff oversees the grazing operations in the Preserve System and met with grazing tenants to prepare annual work plans, monitor grazing units and produce stocking reports. The grazing leases are based on the EBRPD template and maximize natural resource management. Under this lease structure, rent is based on stocking rate rather than per acre. The goal is to encourage the use of sustainable stocking rates that maximize resource values rather than maximizing the number of livestock per acre. Stocking reports were reviewed monthly. Residual dry matter samples were collected in September at monitoring sites. Grazing management occurred on all properties in the Preserve System.

A number of livestock infrastructure improvements were completed including over 4,000 linear feet of new fencing, installation of water tanks and troughs and refurbishing of wells and pumps.

## **Land Management**

This section summarizes management activities undertaken on Preserve System properties during the 2021 reporting year and discusses management issues on the preserves.

For the 2021 reporting year, management consisted of the enhancement actions described above, as well as ongoing maintenance, safety and security and planning activities. Land management activities conducted in 2021 are summarized below (excludes those activities that were discussed above in *Natural Community Enhancement*).

- General Inspections and Safety and Security
  - All properties patrolled at least once a week (on foot or by vehicle), as well as additional visits if needed to respond to emergencies or address outstanding issues. This includes managing deceased wildlife, responding to fire, replacing locks, securing gates, removing graffiti, and replacing fencing.

- Responded to alarms (motion sensor) at various properties, review and monitor security camera recordings. Installed security alarms on some properties in the Deer Valley area.
- Responded to reports of trespassers including break-ins to facilities.
- Mowed along fire roads and trails where appropriate, repaired potholes and performed other fire road maintenance to ensure safe access to properties.
- Cleanup
  - Unclaimed property as well as illegally dumped trash was removed.
  - Cleared vegetation around property entrances and infrastructure. Pruning, mowing, and vegetation clearing conducted. Removed tree pruning and brush clearing debris and chip slash piles.
  - Old infrastructure was removed from properties, including dilapidated shed at Roddy Ranch Golf Course.
- General Maintenance and Infrastructure Improvements
  - Replacement fencing was installed at multiple properties (>4,000 feet).
  - Road drainage maintenance and clearing after winter storms was conducted. Rocked driveways as needed for safe access to properties.
  - Repaired and secured stock water infrastructure. Built cattle barrier around water storage tank plumbing
  - Retaining wall and French drain installed at the Deer Valley Corp Yard.
- Invasive Weed Management
  - Dittrichia removal (approximately 3 acres) in the Vasco-Byron area.

## VI. MONITORING, RESEARCH, AND ADAPTIVE MANAGEMENT

The Plan provides a framework, guidelines, and specific suggestions to help the Conservancy develop a detailed monitoring program during the initial years of Plan implementation. The purpose of the monitoring and adaptive management program is to inform and improve conservation actions in the Preserve System and to ensure that the Plan achieves its biological goals and objectives. The scope of the monitoring and adaptive management program is limited to habitat restoration and creation and the assembly, management, and monitoring of the Preserve System.

### Monitoring

The Plan requires two broad types of monitoring: effectiveness monitoring and compliance monitoring.

#### Effectiveness Monitoring

Effectiveness monitoring is the measurement of variables that allow the Conservancy to assess the success of the Plan in meeting its stated biological objectives. The Plan divides the effectiveness monitoring program into three main phases: 1) the *initial monitoring design phase*, to lay the foundation of the overarching monitoring program; 2) the *inventory phase*, which focuses on the collection of basic information as the Preserve System is assembled; and 3) the *long-term monitoring phase*, which will use the framework developed during the planning and inventory phases to carry out effectiveness monitoring. Each of these three phases, as well as progress toward completing each phase, is discussed below.

Restoration monitoring is a type of effectiveness monitoring that is specific to restoration projects. Restoration monitoring is discussed in Section IV, *Habitat Restoration and Creation*.

#### Monitoring Design Phase

The monitoring design phase occurs during the first five years of Plan implementation/preserve management. It involves the development of a comprehensive monitoring strategy that will provide a framework for the inventory and long-term monitoring. This phase includes the development of species conceptual models and monitoring protocols.

In 2015 and 2016, draft protocols were developed for the Vasco Hills/Byron Vernal Pools Management Area for monitoring the effectiveness of management actions and the status and trends of covered species. A complete draft of the revised protocols were provided to the Wildlife Agencies in early 2018. When finalized, the Conservancy anticipates these protocols will be standardized for implementation throughout the Preserve System.

## **Inventory Phase**

The inventory phase is intended to provide baseline data for monitoring the success of habitat restoration, creation, enhancement, and management actions to meet the Plan's biological goals and objectives. The inventory design includes standardized protocols necessary for implementing the inventory phase so that meaningful and consistent baseline data are collected.

The inventory phase was initiated in early- to mid-2008 in the form of pre-acquisition surveys when the first lands were considered for acquisition and incorporation into the Preserve System. Since 2010, Nomad Ecology has been inventorying new acquisitions for special-status plant species and for wetland features. An annual report is produced and the Conservancy updates GIS data. Nomad Ecology did not complete any acquisition inventories in 2021, as only one property was acquired and that was late in the year. Though an initial site visit was conducted, a complete inventory will be included in a 2022 report.

## *Plants*

Due to low rainfall, timing of surveys, or possible extirpation, several previously documented populations of big tarplant, round-leaved filaree, and San Joaquin spearscale were absent during plant surveys conducted in 2020. These populations are located on the Coelho, Fox Ridge, Roddy Ranch, Vaquero Farms Central, and Vaquero Farms North properties. The Five round-leaved filaree populations were monitored in March 2021: four populations of round-leaved filaree recorded in past surveys and one previously undocumented population. Monitoring of the big tarplant and San Joaquin spearscale populations, which would have occurred in May and September, was called off due to exceptional lack of rain. These two populations (Blpl10 and Exjo7) should be surveyed again in 2022.

The primary objective of these surveys was to revisit known populations with previously recorded low population numbers to assess current population size, health, and habitat quality. Botanists navigated to GPS points for the target populations recorded in previous surveys, then searched suitable habitat around the GPS point. Searching was executed by walking transects up to 10 meters apart, depending on the target species, topography, or subject plant community, within target species' suitable habitat. A minimum of a 20-meter radius around the GPS point was surveyed. Habitat descriptions and photographs from prior inventory reports were also used to find previously documented populations.

Data collected in the field conformed to reporting requirements appearing in Chapter 5, *Incorporating Covered Plant Populations in the Preserve System*, of the HCP/NCCP. Accordingly, five relevant characteristics were recorded for relocated populations (physical condition, age structure, reproductive success, availability of suitable habitat, and diversity of suitable habitat). Census data for plant populations encountered were enumerated by direct count. GIS shapefiles of covered species occurrences were created using global positioning system (GPS) data collected in the field.

Overall, of the four surveyed populations, three were observed to still support round-leaved filaree. Combined with the newly recorded population, an estimated 835 individuals of round-leaved filaree were recorded. The four target populations of round-leaved filaree all had low numbers of individuals when they were recorded during preserve acquisition surveys, and zero individuals

when they were monitored in 2020. Of these, two had a decrease in abundance since they were last censused (prior to 2020) and two increased in abundance since they were last censused. Zero individuals were found at the Vaquero Farms North population for the second year in a row.

2021 monitoring efforts produced a third year of population data. Although the absence of round-leaved filaree populations in these locations in 2020 was likely due to poor timing of monitoring, three years of data is enough to begin looking at population trends. Three of the known populations have had consistently low abundance and may not be robust enough to survive long term without management actions such as direct seeding to bolster the populations. One population had a large increase in abundance between 2014 and 2021, which is remarkable due to the extreme lack of rainfall in the 2021 rain year.

Total precipitation for the 2021 Water Year was measured at 4.54 inches, well below the historical annual precipitation average of 12.37 inches for the Antioch area. The majority of rain fell in December 2020 and January 2021 with very little precipitation in February and March and no measurable rainfall from April through August. The 2021 Water Year was exceptionally dry and followed the second driest year recorded in the last decade. The lack of precipitation likely affected germination and abundance of populations monitored in 2021, and overall low precipitation could have affected the vigor and abundance of the populations.

Regular monitoring of all these round-leaved filaree populations should continue in order to better understand population trends and how the number of individuals and reproduction varies from year to year. Based on 2021 observations, these populations of round-leaved filaree were noted as having threats such as small population size, invasive weeds, and disturbance from cattle that should be considered for management action. Management should include increasing population size and genetic diversity through direct seeding or outplanting. One population was potentially threatened by nearby yellow starthistle. Management actions should consider regular monitoring and controlling yellow starthistle within the vicinity of the round-leaved filaree population. In addition, cattle hoof prints were visible at two of the population in the soil directly around round-leaved filaree plants. Trampling by cattle could impact the reproduction and/or survival of individuals. Future management actions should consider restricting cattle access seasonally by fencing off the population or moving infrastructure that attracts cattle such as water troughs and salt licks.

To date, 72% percent of the species-specific biological goals for covered plant populations have been met. Remaining conservation targets includes two populations each of Mount Diablo manzanita (*Arctostaphylos auriculata*) and recurved larkspur (*Delphinium recurvatum*).

A table of HCP/NCCP covered plants that have been identified in the Preserve System, along with progress toward meeting preservation objectives, is provided in Table 10.

### **Long-term Preserve Monitoring Phase**

As of December 2021, long-term preserve monitoring had not yet commenced. The long-term monitoring phase will begin once a comprehensive strategy has been developed and approved by USFWS and CDFW (monitoring design phase) and baseline studies are complete (inventory

phase), or before then, if appropriate. Long-term monitoring will use the framework developed during the planning and inventory phases to carry out effectiveness monitoring and to implement adaptive management.

## **Compliance Monitoring**

Compliance monitoring is the process of evaluating Plan implementation and documenting that all requirements of the Plan are being met (i.e., permit compliance). This Annual Report, which describes progress toward Plan implementation, is the documentation for Plan compliance.

To support the development of the Annual Report, the Conservancy developed a project-tracking database early on in Plan implementation. This database tracks permitted activities, impacts on land cover types and species habitat, and conditions on covered activities. In addition, a Python-based script was developed to search both the project tracking database and HCP/NCCP GIS database (includes land cover mapping, acquisitions, etc.) and generate information required for the annual report.

## **Directed Research**

Directed research is research that provides new information or direction regarding management actions. The purpose of directed research is to inform management in cases where species and natural community response to management is uncertain. Each year the Conservancy seeks project proposals across all scientific disciplines that advance the Plan's conservation strategy, monitoring and adaptive management program, and/or inform successful compliance with the biological goals and objectives of the HCP/NCCP.

The Conservancy may fund research that endeavors to illuminate, and where possible to resolve, uncertainties associated with adaptive management of natural communities and covered species found in the HCP/NCCP. Research selected for funding under the Science and Research Grant Program aids in achieving the biological goals and objectives of the HCP/NCCP and informs management actions and/or contributes to the general understanding of a covered species. Such research generally relates to the following.

- Efficacy of natural community enhancement/creation/restoration techniques,
- Refining ecological requirements of covered species,
- Response of covered species and natural communities to implementation of management actions within the Preserve System, or
- Strategies to conduct management or monitoring actions that support and/or lead to better management of natural communities or covered species.

The following is a list of recently completed and on-going research efforts on or related to understanding Preserve System Lands.

## Longhorn Fairy Shrimp Study

In 2016, the EBRPD, in partnership with the Conservancy and Vollmar Consulting and with funding from the U.S. Bureau of Reclamation and USFWS, began a study on longhorn fairy shrimp (*Branchinecta longiantenna*). While the sites selected for the study are not on Conservancy Preserve properties, they are adjacent to the Preserve at Vasco Caves and on Contra Costa Water District property. Longhorn fairy shrimp are a covered species, and the Conservancy will be providing in-kind (staff) assistance for the study. The study was originally scheduled to run through December 2019 but was extended for an additional year. Low precipitation rates in 2019/2020, combined with the suspension of field work in response to the COVID-19 pandemic led to an extension of the grant agreement through June 2022. A summary of study results is provided from Bell et al. 2021.



To date, a total of 931 rock pools have been mapped and surveyed in Contra Costa and Alameda Counties. Of these, longhorn fairy shrimp presence was documented in 76 rock pools and suspected in one additional pool. Biotic and abiotic parameters have been measured for each longhorn fairy shrimp rock pool and one to four of its nearest-neighbor pools during wet season surveys. In addition, the study has documented simultaneous co-occurrence of longhorn fairy shrimp with vernal pool fairy shrimp (*Branchinecta lynchi*) and California fairy shrimp (*Linderiella occidentalis*) in one rock pool. Further analysis of all compiled data sets to characterize habitat suitability, develop restoration methods, and identify suitable reintroduction sites for longhorn fairy shrimp is ongoing and planned for completion by June 2022.

## Baseline Mapping of California Ground Squirrel Burrows

Management actions to be implemented on the Marsh Creek Preserve and Conservancy Preserve System Properties were formulated to benefit multiple special-status species, all of which benefit in one form or another from the presence of California ground squirrels (*Otospermophilus beecheyi*). In July 2019, EBRPD began characterizing baseline conditions of environmental resources on the Preserve, including mapping the burrow systems of California ground squirrels as a baseline condition. Initial results were provided in 2020, and work was completed in 2021. The final report for this work will be provided in 2022.

## Baseline Surveys and Long-term Monitoring Protocol for Burrowing Owls

In 2018, the Conservancy initiated baseline surveys for western burrowing owl within the 5,362-acre Vasco Hills/Byron Vernal Pools Management Area to aid in its implementation of the HCP/NCCP. In 2021, these surveys were repeated during the burrowing owl breeding season as part of long-term monitoring of the burrowing owl population within the Management Area.

The third year of surveys (detailed in *Burrowing Owl Surveys Year 3, East Contra Costa Habitat Conservancy Vasco Hills/Byron Vernal Pools Management Area* [Nomad Ecology 2021c])

was designed to monitor the size and distribution of burrowing owl populations in the Management Area with the goal of assessing the success of the HCP/NCCP in satisfying its stated species-specific goal to “increase the population size and distribution of western burrowing owl”. These surveys also replicated previous surveys conducted by Albion Environmental (2006, 2007) within a portion of the Management Area (the 617-acre Souza 1 parcel) to determine whether there have been any changes in the size and reproductive success of the burrowing owl population within that parcel, which may serve as an index of the population status throughout the Management Area.

In 2021, the survey area was expanded to include properties in the greater Roddy Ranch area. The baseline surveys for burrowing owls in the Deer Valley Management Area were completed in 2021 (detailed in *Burrowing Owl Surveys 2021 East Contra Costa Habitat Conservancy Deer Valley Management Area* [Nomad Ecology 2021d]).

### Burrowing Owl Survey Methodology for Preserve System Lands

Point count surveys consisted of a minimum six-minute survey at each station which included an initial three-minute passive observation segment followed by a three-minute call-broadcast segment. During the passive observation segment, surveyors used binoculars and spotting scopes to scan the landscape in a 360-degree arc around each survey station. For the call-broadcast segment, a smartphone or tablet paired to a wireless speaker was used to broadcast a 30-second series of burrowing owl calls (coo-coo call and alarm call), followed by 30 seconds of silence. During this time, the surveyors listened for audible responses to the call-broadcast while continuing to scan the landscape with binoculars and spotting scopes. When burrowing owls were detected, the bearing and distance to each owl location, sex, and age class (adult or juvenile) when identifiable, and behavioral notes were recorded. At locations where juveniles were observed, additional time was taken to record an accurate count of the number of young to estimate breeding success. Each station was surveyed three times (mid-April to early May, late



Adult burrowing owl, Vasco Hills/Byron Vernal Pools Management Area July 2020  
Photo Credit: Nomad Ecology

May to mid-June, and July to August) in 2021 with timing chosen to coincide with successive burrowing owl nesting stages (incubation, nestling, and fledgling). Surveys were conducted at least three weeks apart.

### **Vasco Hills/Byron Vernal Pools Management Area**

The 2021 survey results showed similar numbers of total nests and successful nests when compared to the 2020 surveys, but indicated a decrease in reproductive success from the 2019 and 2020 surveys. Fewer fledglings were produced and the ratio of fledglings produced per nest decreased from 2.79 to 1.5. Burrowing owls were observed in many of the same locations where they had been observed in 2019 and/or 2020. Specific nest burrows from previous years were not necessarily re-used as many of the nests found in 2021 were on the same slopes or in the same valleys as previous years. However, some nest locations were in areas where owls had not been previously observed.

Overall site conditions and land management did not change noticeably between 2019 and 2021, so the decrease in reproductive success may have been the result of a combination of environmental factors and prey availability. Conditions in 2021 were much drier than the previous two years, and vegetation appeared to be shorter and sparser, including some areas that remained barren when annual grasses did not germinate. Although short, sparse vegetation is generally considered beneficial to burrowing owls, the extreme drought conditions that occurred in 2021 may have offset any benefits by reducing prey availability.

The management area continues to provide abundant suitable habitat for burrowing owls. Some areas with substantial concentrations of unmaintained, collapsed burrows were observed, suggesting that ground squirrel colonies that had been present in prior years were no longer extant. However, even in large ground squirrel colonies where suitable burrows were abundant, burrowing owls still appeared to be absent from much of the available habitat. There are no obvious or documented indicators of why burrowing owl populations in the Management Area have declined so dramatically, but it is likely that they are being affected by the factors that are depressing populations on a larger, regional scale.

### **Deer Valley Management Area**

The Deer Valley Management Area is in the center of the HCP/NCCP inventory area, immediately south of the City of Antioch. It includes nine properties that have been acquired by the Conservancy and EBRPD: Fan, Fox Ridge, Hanson Hills, Olesen/Duke, Poppi/Halstead, Roddy Home Ranch, Roddy Ranch, Roddy Ranch Golf Course, and Smith. These nine properties total approximately 3,592 acres. This management area spans a series of tall, steep ridges oriented roughly east-west that define three large, flat-bottomed valleys. From north to south, they are named Horse Valley, Deer Valley, and Briones Valley. The management area is a mix of open grassland with scattered oak trees in valley bottoms and on south-facing slopes, with oak woodland and scrubland on north-facing slopes. The entire management area is grazed by cattle.

To survey the Deer Valley Management Area, Nomad used the same methodology described above under Burrowing Owl Survey Methodology for Preserve Lands. A set of 72 point count stations was established in the Deer Valley Management Area in 2021 (Nomad 2021d).

No burrowing owls were observed within the management area at any point during the surveys. During the second round of surveys, a burrowing owl was heard responding to the call broadcast from adjacent property immediately north of Empire Mine Road. Although the owl was heard clearly, it could not be located visually. An active Swainson's hawk nest was observed in a tree immediately adjacent to one of the point count stations on the Roddy Ranch Golf Course parcel. To avoid disturbance to the nest, the area covered by this station was surveyed from a nearby ridgetop during the second and third round of surveys. Ground squirrels were active above ground and readily observable in several locations during the surveys, and their burrows were abundant in many locations containing open grassland within the management area, indicating that suitable habitat for burrowing owls is available on site.

The lack of breeding burrowing owl detections within the Deer Valley Management Area could be due to the upper parts of the three main valleys supporting oak woodland near open grasslands. Burrowing owls may be avoiding what appears to be abundant suitable habitat in the flat valley bottoms and south-facing slopes, due to risk from predation by raptors and other predators that may be residing in the thickly wooded north-facing slopes. It is likely that if burrowing owls do breed within the management area, breeding occurs at relatively low densities. The ongoing drought and extreme dry conditions in 2021 could also have been a factor in reducing prey populations, which may have contributed to the lack of breeding pairs detected in the management area.

### **Recommendations**

Burrowing owl surveys should continue within both Vasco Hills/Byron Vernal Pools and Deer Valley Management Areas. At Vasco Hills/Byron Vernal Pools, population trends should be monitored in the context of the severely reduced numbers that were observed from 2019 to 2021. Without ongoing monitoring, there will be no way to determine if management actions have been effective or should be discontinued. At Deer Valley, a reduced survey area that focuses on higher-quality habitat farther from tree cover in the lower portions of the valleys should be used for future surveys. The upper portions of the valleys are marginal breeding habitat compared to the lower portions of the valleys.

Surveys to assess the status of the rodent population within the management areas would be helpful in determining potential linkages between prey abundance and burrowing owl populations. The establishment of refugia for rodents may be explored as an option to enhance prey populations, which could be as simple as rock and/or debris piles placed strategically within the management areas. Finally, additional land acquisitions surrounding the management areas would likely be beneficial for the species. Suitable habitat appears to be abundant surrounding Vasco Hills/Byron Vernal Pools, and lands to the north and east of Deer Valley also appear to contain suitable habitat for burrowing owls.

## **Ecological Requirements and Conservation Priorities for Golden Eagles in Eastern Contra Costa County**

In December 2018, the Conservancy Board approved the full funding of a proposal from J. David Wiens (USGS), Patrick Kolar (USGS), and Doug Bell (EBRPD) to conduct research on golden eagle habitat. Funding was provided under the Conservancy's 2019 Science and Research Grant Program.

The goal of the project is to identify and map spatial patterns in site occupancy and reproduction for golden eagles associated with the network of protected lands in the HCP/NCCP inventory area. To meet this goal, the project leads will expand their established monitoring design to gain complete survey coverage of the HCP/NCCP Preserve System. They will then use established survey protocols to determine occurrence and location of breeding and non-breeding golden eagles, in addition to reproductive success of any nesting pairs we identify. Results from this study are expected to be available by December 2021 and will be reported in 2022.

## **Fungal Disease Risk of California Tiger Salamander and California Red-Legged Frog in the Los Vaqueros Watershed**

In December 2018, the Conservancy Board approved the partial funding of a proposal from Kurt Lutz (San Francisco State University [SFSU]), Jeff Wilkinson (H.T. Harvey & Associates), and Vance Vredenburg (SFSU) to conduct research on amphibian fungal diseases. Funding was provided under the Conservancy's 2019 Science and Research Grant Program, and the was expect to run through March 2021.

Due to work restrictions and constraints in access and use of lab equipment during 2020 and 2021, there are portions of this study that were greatly delayed. Though field work was completed, lab work was unable to be completed in a timely manner and this project has been abandoned.

## **Adaptive Management**

Based on the best scientific information currently available, it is expected that the Plan's conservation measures will effectively achieve the biological goals and objectives. However, there is uncertainty associated with management techniques, conditions within the inventory area and region, and the status of covered species and natural communities. It is also possible that new and different management measures not identified in the Plan will be identified and proven to be more effective in achieving biological goals and objectives than those currently proposed. Alternatively, results of effectiveness monitoring may indicate that some management measures are less effective than anticipated.

Adaptive management is a method for examining current or alternative strategies for meeting measurable biological goals and objectives and, if necessary, adjusting future management actions according to what is learned. Adaptive management follows initial implementation of effectiveness monitoring and research, but it is an ongoing process utilized throughout Plan implementation.

In 2021, implementation of adaptive management was focused primarily on restoration sites. As discussed in Section IV, *Habitat Restoration and Creation*, each site was monitored to measure progress toward achieving success criteria, and management was adjusted based on monitoring results.

## VII. STAY-AHEAD PROVISION

### Stay-Ahead Provision

The Plan's Stay-Ahead provision requires that the Conservancy "stay ahead" by acquiring land for the Preserve System in advance of impacts. The Plan defines two compliance methods: Stay-Ahead Measurement Method #1 and Stay-Ahead Measurement Method #2. Stay-Ahead Measurement Method #1 states that the amount of each land cover type conserved to date as a proportion of the total requirement for each land cover type must be equal to or greater than the impact to date on the land cover type as a proportion of the total anticipated impact under the Maximum Urban Development Area scenario by all covered activities. This option aggregates the following land cover types: cultivated agriculture, annual grassland, alkali grassland, and ruderal. The sum of the acres of these land cover types acquired is measured against the sum of the respective acquisition requirements. Other terrestrial land cover types are not aggregated.

Stay-Ahead Measurement Method #2 states that the amount of annual grassland conserved by the Conservancy in Zone 2 as a proportion of the total requirement for annual grassland acquisition in Zone 2 must be equal to or greater than the impact on annual grassland and all cultivated agriculture land cover types (cropland, irrigated pasture, vineyard, orchard) as a proportion of the total impact expected under the Maximum Urban Development Area scenario on these land cover types by all covered activities. This option provides an incentive for the Conservancy to acquire land in Zone 2 early in Plan implementation as land in this Zone is likely to be more expensive and at higher risk than land in other Zones. The Conservancy must comply with at least one of these methods during the first 10 years. After Year 10, the Conservancy may use only Measurement Method #1.

### Stay-Ahead Assessment

Using Stay-Ahead Measurement Method #1, the Conservancy is currently in compliance with the Stay-Ahead Provision (Table 14). The aquatic (open water) category is not ahead (-4%); however, the Plan allows a 5% deviation from the Stay-Ahead Provision requirements without penalty to account for the likely pattern of infrequent land acquisition of large parcels. Preliminary analysis of properties in the Plan Area with "aquatic" habitat are not-yet available for acquisition. More analysis will be needed in the future to determine acquisition of this habitat category and this Stay-Ahead requirement. For all other land cover types, the percent ahead ranges from 7% to over 100%. Overall, the Conservancy is 11,790 acres (rounded) ahead across all land cover types and 318,403 (rounded) linear feet ahead in streams. The Conservancy is 8,525 acres (rounded) ahead of the Stay-Ahead requirement for grassland and irrigated agriculture land cover types (the current Stay-Ahead requirement is 605 acres). For plant occurrences, the Conservancy is meeting the Stay-Ahead requirement (Table 15).

### Vernal Pool Crustaceans Stay Ahead

The Conservancy's preservation and creation of fairy shrimp habitat is ahead of impacts. Impacts on covered shrimp habitat include disturbances to seasonal wetlands, including vernal pools, and

their adjacent uplands by covered activities both directly through project implementation and indirectly through human intrusion, introduced species, or pollution caused by the project. Applicants who impact vernal pools must determine if the pools provide suitable habitat for covered shrimp. If vernal pools are occupied by covered shrimp, then impacts must be compensated. Compensation for loss of occupied habitat is achieved by implementing the following actions for every acre of impact.

- Preserve two acres of occupied habitat within the Preserve System or purchase an equivalent amount of vernal pool preservation credits in a USFWS-approved mitigation bank for each acre affected.
- Restore one acre of suitable habitat within the Preserve System or purchase an equivalent amount of vernal pool restoration credit in a USFWS-approved mitigation bank for each acre affected.

There were no impacts on vernal pool crustacean habitat during the reporting year. Table 16 details the cumulative impacts on and compensation for vernal pool shrimp since Plan implementation.

#### **Giant Garter Snake Habitat Impacts**

The Conservancy's preservation of giant garter snake aquatic habitat is ahead of impacts. The Conservancy's preservation of giant garter snake upland habitat is ahead of impacts. Compensation for permanent loss of giant garter snake habitat is achieved by implementing the following actions for every acre of impact.

- For every acre of aquatic habitat lost, preserve one acre of aquatic habitat and at least two acres of upland habitat adjacent to the preserved aquatic habitat, and
- For every acre of upland habitat lost, preserve one acre of upland habitat (in addition to the upland habitat preserved as a result of lost aquatic habitat.)

If giant garter snake habitat has not been preserved within the Preserve System in excess of that required to offset impacts, there are two options for implementing this compensation requirement: (1) by applicants selecting, acquiring, and managing in perpetuity a local mitigation site that is approved by USFWS for the sole purpose of compensating project impacts on giant garter snake, or (2) by applicants participating in a pre-existing, USFWS- approved mitigation bank with a service area that includes Contra Costa County. If a local mitigation site is selected, the site will be incorporated into the HCP/NCCP Preserve System and managed under the direction of the Conservancy to support or enhance habitat for giant garter snake.

There were impacts to giant garter snake habitat during the reporting year from the Cypress Preserve project in the City of Oakley. These impacts are being addressed through applicant-led restoration work at the Cypress Preserve Project. Table 17 details the cumulative impacts on and compensation for giant garter snake since Plan implementation.

Table 14. Stay-Ahead Assessment: Land Cover

Land Cover Type	Conservation			Impact			Acres Required to be Ahead	Acres Ahead	% Ahead <sup>3</sup> (Conservation % - Impacts %)
	Protection Required (acres)	Protection, Creation, Restoration to date (acres)	% of Required	Estimated Impacts (acres)	Impacts to date (acres)	% of Impacts			
<b>Terrestrial</b>									
All grassland, cropland, pasture	18,150	9,129.9	50.3%	12,148.0	404.9	3.3%	604.9	8,525.0	47%
Chaparral and scrub	550	310.6	56.5%	2.0	0.6	28.5%	156.8	153.8	28%
Oak savanna	500	399.8	80.0%	165.0	0.1	0.0%	0.2	399.7	80%
Oak woodland	400	2,564.9	641.2%	73.0	0.7	0.9%	3.6	2,561.3	640%
<i>Subtotal terrestrial</i>	<i>19,600</i>	<i>12,405.2</i>	<i>63.3%</i>	<i>12,388</i>	<i>406.2</i>	<i>3%</i>	<i>765.5</i>	<i>11,639.7</i>	<i>60%</i>
<b>Aquatic</b>									
Riparian woodland/scrub	70	77.81	111.2%	35.0	1.23	3.5%	2.47	75.34	108%
Perennial wetland <sup>1</sup>	75	5.54	7.4%	75.0	0.08	0.1%	0.08	5.46	7%
Seasonal wetland	168	24.13	14.4%	56.0	1.62	2.9%	4.87	19.26	11%
Alkali wetland	93	37.15	39.9%	31.0	0.15	0.5%	0.45	36.70	39%
Pond	16	11.97	74.8%	8.0	0.01	0.2%	0.03	11.94	75%
Reservoir (open water) <sup>2</sup>	12	0.00	0.0%	12.0	0.47	3.9%	0.47	-0.47	-4% <sup>2</sup>
Slough/Channel	36	3.10	8.6%	72.0	0.65	0.9%	0.32	2.78	8%
<i>Subtotal aquatic</i>	<i>470</i>	<i>159.70</i>	<i>34.0%</i>	<i>289</i>	<i>4.22</i>	<i>1%</i>	<i>8.68</i>	<i>151.02</i>	<i>33%</i>
<b>Stream (length in linear feet)</b>									
Perennial stream	4,224	12,919.3	305.9%	2,112	171.0	8.1%	342.0	12,577.3	298%
Intermittent stream	2,112	142,272.7	6736.4%	2,112	635.3	30.1%	635.3	141,637.4	6706%
Ephemeral stream <sup>4</sup>	26,400	164,486.3	623.1%	26,400	298.0	1.1%	298.0	164,188.3	622%
<i>Subtotal stream length</i>	<i>32,736</i>	<i>319,678.3</i>	<i>976.5%</i>	<i>30,624</i>	<i>1,104.3</i>	<i>4%</i>	<i>1,275.3</i>	<i>318,403.0</i>	<i>973%</i>
<b>Totals</b>									
Acres	30,300	12,564.9	41%	12,677	410.4	3.2%	774.2	11,790.7	38%
Linear feet	32,736	319,678.3	977%	30,624	1,104.3	3.6%	1,275.3	318,403.0	973%

<sup>1</sup> Perennial wetlands are equivalent to permanent wetlands.

<sup>2</sup> Reservoir (open water) is equivalent to "aquatic" and requires conservation ratio of 1:1 wetted acres (pond) and creation of ponds at a ratio of 0.5:1. The (-4%) calculation is from comparing reservoir impacts to conservation and creation of reservoir; therefore, there is no deviation from stay-ahead requirements as the pond conservation and creation are ahead of these impacts. Also see Table 8a.

<sup>3</sup> The Plan allows a 5% deviation from Stay-Ahead requirements. For terrestrial land cover, the Plan provides that Stay Ahead be measured against the following categories: chaparral, oak savanna, oak woodland and the sum of all grassland and irrigated agricultural land cover types.

<sup>4</sup> Many of the streams identified as "classification pending" will ultimately be classified as ephemeral. As such, they are tracked as ephemeral streams for the purposes of the Stay-Ahead provision.

**Table 15. Stay-Ahead Assessment: Plants**

Common Name	Scientific Name	Conservation	Impacts	Difference	% Ahead
Mount Diablo manzanita	<i>Arctostaphylos auriculata</i>	0	0	0	--
Brittlescale	<i>Atriplex depressa</i>	3	0	3	100%
San Joaquin spearscale	<i>Atriplex joaquiniana</i>	10	1	9	90%
Big tarplant	<i>Blepharizonia plumosa</i>	13	0	13	100%
Mount Diablo fairy lantern	<i>Calochortus pulchellus</i>	6	0	6	100%
Recurved larkspur	<i>Delphinium recurvatum</i>	0	0	0	--
Round-leaved filaree	<i>Erodium macrophyllum</i>	5	[see note <sup>2</sup> ]	5	100%
Diablo helianthella	<i>Helianthella castanea</i>	13	0	13	100%
Brewer's dwarf flax	<i>Hesperolinon breweri</i>	6	0	6	100%
Showy madia	<i>Madia radiata</i>	0	0	0	--
Adobe navarretia <sup>3</sup>	<i>Navarretia nigelliformis</i> subsp. <i>nigelliformis</i>	0	0	0	--
Shining navarretia	<i>Navarretia nigelliformis</i> subsp. <i>radians</i>	(7)	1	(7)	--
<b>Total</b>		<b>56</b>	<b>1</b>	<b>55</b>	

<sup>1</sup> Vasco Road Safety Phase 1 Project population was translocated to Souza II property in 2011, however the population did not survive. This table has been updated to account for the single impact to San Joaquin spearscale (*Atriplex joaquiniana*).

<sup>2</sup> Temporary impacts occurred to round-leaved filaree as part of the PG&E Contra Costa Las Positas Project. The soil was protected from disturbance, the site was returned to pre-project connections, seeds collected on site were propagated, and monitoring reports document that round-leaved filaree persists on site and is as abundant as before the project.

<sup>3</sup> The species *Navarretia nigelliformis* subsp. *nigelliformis* is no longer considered to occur within Contra Costa County based on specimen annotations at the UC and Jepson Herbaria at the University of California Berkeley as well as the opinions of experts in the genus. This taxon is now recognized as *Navarretia nigelliformis* subsp. *radians*. Pending further policy clarification, the Conservancy is continuing to track occurrences of shining navarretia (*Navarretia nigelliformis* subsp. *radians*).

**Table 16. Vernal Pool Shrimp Stay-Ahead Summary<sup>1</sup>**

<b>Project Name/ Preserve Property Name</b>	<b>Species</b>	<b>Impacts to Date (acres)</b>	<b>Preserved Occupied to Date (acres)</b>	<b>Restored/ Created Occupied to Date (acres)</b>
Deer Valley Road Safety Improvements Project, 2012	VPFS	0.060		
Chevron KLM Site 1357 Maintenance Project, 2013	Covered shrimp	0.007		
Coelho	VPFS		0.980	
Souza I	VPFS		0.001	
Souza II	VPFS		0.180	
Vaquero Farms South	VPFS		0.052	
Souza II-Corral	VPFS			0.400 <sup>2</sup>
Vaquero Farms South (Pool 1)	VPFS			0.070
Vaquero Farms South (Pool 3)	VPFS			0.150
Casey	Covered shrimp		0.313	
Campos	VPFS		0.550	
<b>Total</b>		<b>0.067</b>	<b>2.076</b>	<b>0.620</b>

<sup>1</sup>The ECCC HCP/NCCP requires preservation and creation of vernal pool fairy shrimp habitat be ahead of impacts at a preservation ratio of 2:1 acres occupied habitat and a restoration ratio of 1:1 acre of occupied habitat. The Conservancy is in compliance with the stay ahead requirement.

<sup>2</sup>The Souza II Corral wetland was inoculated in 2012 with soil from the Deer Valley Road Widening Project. VPFS have not been found during annual surveys. The Conservancy will continue to survey for 10 years (through 2022) to determine if VPFS are present.

Project Name/Preserve Property Name	Aquatic Habitat Impacts to Date (acres)	Upland Habitat Impacts to Date (acres)	Aquatic Habitat Preserved to Date (acres)	Upland Habitat Preserved to Date (acres)
Caltrans/Hwy 4 Median Buffer and Shoulder Widening Project, 2012	0.01	4.77		
Emerson Ranch, 2013		5.47		
Gilbert, 2016	0.577	18.34		
Cypress Preserve Project, 2021 <sup>1</sup>	0.43	12.46		
Nunn Property (Preserve System Acquisition) <sup>2</sup>			3.10	612.71
<b>Total</b>	<b>0.59</b>	<b>28.58</b>	<b>3.10</b>	<b>612.71</b>

<sup>1</sup> The Cypress Preserve project's impacts to GGS habitat will be mitigated through an applicant-led restoration project and therefore the impact acreages are not included in the "total" in this table. The Cypress Preserve project is being constructed in phases. Impacts in this table represent all impacts to GGS from the entire project.

<sup>2</sup> The Conservancy is currently in the planning and design phase of a proposed restoration project on the Nunn property and the acres of preservation will change and will be adjusted in forthcoming annual reports.

Notes: The ECCC HCP/NCCP requires preservation of giant garter snake habitat be ahead of impacts at a preservation ratio of 1:1 for aquatic habitat and 3:1 for upland habitat. The Conservancy is in compliance with the stay-ahead requirement.

## VIII. CHANGED CIRCUMSTANCES AND REMEDIAL MEASURES

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 the USFWS and to which the parties preparing the HCP can plan a response. The changed circumstances identified by the Plan include non-covered species in the inventory area becoming listed, wildfires that result in the large-scale loss of natural communities, pond or wetland control structure failure, or destruction of riparian plantings from flooding, prolonged drought, and vandalism of preserves. Occurrence of a changed circumstance requires the Conservancy to notify USFWS and CDFW to determine the necessity for additional conservation or mitigation measures. If the mitigation or conservation measure has already been identified in the Plan, the Conservancy must comply with the measure. However, if the measure is not currently included in the Plan, USFWS and CDFW will not require additional mitigation or conservation measures.

In the event that an anticipated changed circumstance prohibits or damages a conservation action that meets the goals of the HCP, a remedial measure must be undertaken. Remedial measures are funded by the Plan and must be undertaken by the Conservancy.

### Changed Circumstances

#### Covered Species Listed

On December 28, 2021, the Central Coast Distinct Population Segment for the foothill yellow-legged frog was proposed for listing as threatened under the ESA. This species is a covered species under the HCP/NCCP, and during HCP/NCCP development, each covered species was treated as though it is listed under ESA and CESA. Under Section 2835 of the California Fish and Game Code, CDFW may issue take authorization for covered species (plants or wildlife) regardless of their listing under CESA.

#### New Non-covered Species Becoming Listed

##### Appendix B: November 2020 CEQA Species Assessment Update

In December 2020, the Conservancy Board approved Appendix B to the report entitled “Assessment of Plan Effects on California Environmental Quality Act (CEQA) Species”. The original 2015 Report provides an assessment of the effects of the Plan on 59 special-status species that were not covered by the Plan but are often addressed in CEQA analyses (“CEQA species”), 41 plant and 18 animal species. The purpose of the assessment is to provide a programmatic, cumulative CEQA effects analysis for CEQA species considering impacts of all covered activities, including all adverse and beneficial effects of covered development activities and conservation measures. The cumulative effect on each species was determined to be beneficial, neutral, or adverse but less-than-significant, by considering the number of known populations and extent of

suitable habitat that could be adversely affected within areas of anticipated development as well as those that would benefit from being in areas that may be preserved, enhanced, and managed for covered species and communities by the Plan.

Appendix B was prepared to augment the list of species analyzed in 2015. The preparation of Appendix B followed a similar process to the original document. Conservancy staff worked with H.T. Harvey and Associates to develop the document. Biologists from ICF Jones & Stokes provided additional review. Appendix B analyzes the HCP/NCCP effects on these eight species and concludes that the Plan will not have a significant negative effect on these species. The 2020 update adds three plants, two invertebrates, two fish and one mammal to the analysis.

The species addressed in Appendix B are: alkali grass (complex), Jepsen's coyote thistle, long-styled sand spurrey, monarch butterfly, Crotch's bumble bee, Central California roach, Sacramento hitch, and mountain lion.

### **Monarch Butterfly Listed as a Candidate Species**

On December 15, 2020, the monarch butterfly (*Danaus plexippus*) was listed as a candidate species under the ESA. Monarchs occur in the Plan area primarily as migrants in the spring and fall, though small numbers may also breed within the Plan area where milkweeds are present. No current or historical overwintering sites are known as far inland as the Plan area, and it is possible that overwintering monarchs may be absent from the Plan area, or that they only occur in very low numbers. Adults forage on flowering plants throughout the Plan area.

The Plan's general conservation measures will minimize the footprint of work activities as well as impacts from staging, stockpiling, spills or leaks of chemicals, and other activities, effectively minimizing impacts of Plan activities on monarch habitat. In addition, milkweeds are a common component of native plant communities in the Plan area, and the proposed preservation of habitat areas that support native milkweeds (which are common and widespread in many habitats) is substantially greater than the proposed loss of such habitat under both Urban Development Area (UDA) scenarios. Furthermore, habitat enhancement techniques will increase the value of preserves for this species relative to existing conditions. Therefore, the determination was made in the 2020 CEQA Species Assessment Update that Plan implementation will have a net benefit for monarch butterfly.

## IX. FINANCES

### Budget

The Conservancy analyzed cost projections from the HCP/NCCP, the previous years' actual costs, and the anticipated 2021 work plan to develop the 2021 Budget (Table 18). 2021 expenditures to implement the HCP/NCCP totaled \$1,932,983, staying within the approved 2021 Budget.

During the reporting period, the largest expenditures were in program administration, followed by planning and design, and then land acquisition. This focus reflects the Conservancy's continued efforts to provide permitting for projects and maintaining stay-ahead compliance. In addition, the Conservancy continues to make progress toward restoration requirements. Monitoring, research, and adaptive management budget and expenditures demonstrate the Conservancy's efforts to establish baseline inventories for new and existing properties.

### Revenue Sources

There are three main revenue sources of the Plan.

Fee collection: Development, wetland, rural road (for certain rural road projects), and temporary impact mitigation fees are paid to mitigate impacts on special-status species, natural communities, and open space.

Local public funding and foundation grants: Acquisition and management of land by local agencies, primarily EBRPD, but could include partnerships with other local agencies. Voters approved several revenue measures for EBRPD in the prior decade, including Measure WW, which provides funding EBRPD may use to partner with the Conservancy. In addition, Foundation grants (e.g., Gordon and Betty Moore Foundation) are anticipated to help the Conservancy fund acquisition, management, restoration, and monitoring.

State and federal: Funding from the state and federal governments to assemble and monitor Preserve System lands. State and federal grants also fund restoration projects on Preserve System lands.

Revenue sources also include Contribution to Recovery charges on certain covered activities. Contribution to Recovery payments are levied on Participating Special Entities to contribute funds over and above fee requirements in order to contribute to the recovery of species in the inventory area. Lease income from Preserve System properties is also a source of revenue but is generally received and held by EBRPD and used for Preserve System management activities, land acquisition, and long-term management.

The HCP/NCCP allows for additional revenue to be received from non-covered activities. There may be a number of benefits to addressing the mitigation needs of non-covered projects through the structure of the HCP/NCCP. USFWS and CDFW may wish to use the conservation strategy and implementing structure of the Plan to maximize the conservation benefits to covered species and

natural communities. Project proponents may wish to utilize the mitigation approach of the Plan to facilitate their mitigation obligations under a variety of state and federal regulations.

- Mitigation funds collected from non-covered activities must augment the mitigation and conservation obligations of the Plan (i.e., they may not offset these requirements). Mitigation funding arrangements vary by project, and are reviewed and approved by the USFWS and CDFW before acceptance of these funds. The Conservancy did not receive revenue from non-covered activities in 2021. There has only been one project where fees were received from non-covered activities – the Kirker Pass Road Northbound Truck Climbing Lane (Area Outside HCP/NCCP) (2018).

The Conservancy received a total of \$2,847,722 in revenue in 2021 (Tables 19 and 20). This amount includes development fees from covered activities (\$1,989,757), temporary impact fees (\$325,803), Contributions to Recovery payments from covered activities (\$102,389), other revenues (\$103,873), and grants (\$325,900). Local funding from partners totaled \$951,335.

All grants awarded to date are summarized in Table 21. Since the start of Plan implementation through the end of 2021, the Conservancy has been awarded over \$73.2 million in grants. Of this amount, \$69,110,672 has been spent on implementation of the Plan and \$2,881,047 of awarded grant funds remain. These amounts do not include match funding provided by partners. Since Plan implementation, EBRPD has contributed an estimated \$24 million of its own funds or its grant funds.

## Funding in Perpetuity

In the HCP/NCCP, annual costs to operate and maintain the Preserve System in perpetuity are estimated to be slightly less than the annual cost for program administration, preserve management, and monitoring estimated during the final funding period of the Plan, or approximately \$3.0 million or \$3.3 million<sup>4</sup> annually under the Initial or Maximum Urban Development Area, respectively. Actual long-term costs may be lower if the Conservancy can develop streamlined procedures for management and monitoring during the permit term, secure partners, or reduce administrative costs. Responsibility for funding long-term management and monitoring rests solely with the Permittees.

The Conservancy is required to develop a detailed plan for the long-term funding of operation and maintenance and to secure all necessary commitments to implement this Plan before using 50% of all authorized take under the Maximum Urban Development Area (this equals 50% of 12,704 acres, or 6,352 acres) or at the end of year 15 of implementation, whichever occurs first. In 2017, the Conservancy completed a fee audit (adopted by the Governing Board in February 2021) which included a long-term funding analysis. In 2019, the Conservancy Board selected the Regional Parks Foundation as the preferred endowment manager and directed staff to prepare

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<sup>4</sup> This is equivalent to approximately \$125 per acre per year or \$110 per acre per year in operational and capital costs for Preserve System operation under the Initial or Maximum Urban Development Areas, respectively.

an Endowment Agreement for consideration. The final Endowment Agreement between the Conservancy and the Regional Parks Foundation was approved in October 2020.

The initial endowment deposited, totaling \$3,100,556, came from two sources: an ECCC HCP/NCCP account held by the California Wildlife Foundation and Preserve System lease revenue held by the East Bay Regional Park District. Other sources of endowment funding include community facility districts, lease revenue on Preserve System lands, existing real estate transfer fees, and other new sources identified in the future. Under the terms of the Endowment Agreement, the Regional Parks Foundation meets with the Conservancy quarterly to review asset allocation and investment performance. In addition, prior to the expiration of the Plan permits, a separate agreement will be negotiated between the Conservancy and Regional Parks Foundation to establish the terms and conditions for distribution of funds from the endowment to be used for Preserve System management and monitoring in perpetuity. In 2021, a subsequent deposit from EBRPD was made to the endowment in the amount of \$72,596.89, which was a portion of lease revenue collected on Preserve System properties.

## **Mitigation Fee Act Annual Reporting**

The Annual Report also functions as the East Contra Costa County Habitat Conservancy's Annual Report on fees collected pursuant to the Mitigation Fee Act. The information for compliance with this reporting requirement is included in this document. The required elements include the following seven categories and references, and information is provided where applicable for the Development Fee and the Wetland Mitigation Fee:

### **1. A brief description of the type of fee in the account or fund:**

- a) The purpose of the Development Fee is to mitigate for impacts to open space, habitat and species covered by the HCP/NCCP. The Development Fee revenues will be used to fund the acquisition of land that does or could provide habitat for covered species, the management and enhancement of such land and habitat, and the administrative actions necessary to accomplish these tasks, as more particularly set forth in the HCP/NCCP, incorporated herein by reference.
- b) The purpose of the Wetland Mitigation Fee is to mitigate for impacts to Jurisdictional Wetlands and Waters, riparian woodland/scrub, or stream buffers. The Wetland Mitigation Fee revenues will be used to fund the restoration, creation, and management of Jurisdictional Wetlands and Waters and riparian woodland/scrub, and the administrative actions necessary to perform these tasks, as more particularly set forth in the HCP/NCCP.

FEE TYPE	Audited	Non-Audited
<b>Development Fees (per acre)</b>		
Zone 1	\$16,890.46	\$17,602.20
Zone II	\$33,780.93	\$35,204.40
Zone III	\$8,445.23	\$8,801.84
<b>Wetland Mitigation Fees</b>		
Riparian woodland/scrub	\$101,220.24	\$85,924.69
Perennial Wetland	\$153,401.41	\$117,581.16
Seasonal Wetland	\$358,985.11	\$254,759.18
Alkali wetland	\$362,908.51	\$241,192.12
Pond	\$197,540.18	\$128,133.32
Aquatic (open water)	\$98,770.65	\$64,820.38
Slough/ Channel	\$141,043.28	\$146,222.72
Streams 25 feet wide or less - fee per linear foot	\$520.50	\$700.52
Streams greater than 25 feet wide - fee per linear foot	\$781.31	\$1,055.22

\*Co-permittees were on two different fee schedules, depending on whether they had adopted the 2017 East Contra Costa County HCP/NCCP Mitigation Fee Audit and Nexus Study.

**2. The beginning and ending balance of the account or fund:**

The beginning and ending fund balances are detailed in the 2021 financial. A summary of the finances including beginning and ending balance, revenue (which includes mitigation fees collected, grants, contribution to recovery fees, and administrative fees), interest earned, and funds expended is summarized below. Please note that the amounts presented below are from the 2021 financial audit and may differ from the numbers in this Annual Report's tables and text, namely due to timing differences in past reporting of revenue and expenditures.

	<u>Beg. Balance</u>	<u>Revenue</u>	<u>Interest Earned</u>	<u>Expended</u>	<u>Ending Balance</u>
Total Balance	\$4,621,398	\$2,809,900	\$16,768	\$2,005,580	\$5,442,486

- 3. The amount of the fees collected and the interest earned:** See Tables 19 and 20.
- 4. An identification of each public improvement on which fees were expended and the amount of the expenditure on each improvement, including the total percentage of the cost of the public improvement that was funded with the fees:** See Table 7.
- 5. An identification of an approximate date by which the construction of the public improvement will commence if the Board determines that sufficient funds have been collected to complete financing on an incomplete public improvement, and the public improvement remains incomplete:** There are no Conservancy funded construction projects in 2021.
- 6. A description of each interfund transfer or loan from the account or fund, including the public improvement on which the transferred or loaned fees will be expended,**

**and, in the case of an interfund loan, the date on which the loan will be repaid, and the rate of interest that the account or fund will receive on the loan: Not Applicable.**

- 7. The amount of refunds made pursuant to Government Code section 66001 (e) and any allocations pursuant to Government Code section 66001 (f): Not Applicable.**

**Table 18. 2021 Conservancy Budget: Approved Budget and Actual Expenditures**

Cost Category	HCP/NCCP Projected Cost Estimate			2021 Budget by Revenue Source					2021 Actuals
	Years 11-15	Average Cost Per Year (Years 11-15)	% of Total	Development Fee Account	Wetland Mitigation Account	Contributions to Recovery/ Grants	Total	% of Total	Total
Program Administration and Permitting Program	\$2,978,706	\$595,741	3%	\$1,197,069	\$0	\$150,000	\$1,347,069	19%	\$1,056,022
Land Acquisition	\$31,752,559	\$6,350,512	37%	\$273,054	\$0	\$3,364,204	\$3,637,257	53%	\$156,243
Planning and Design	\$849,699	\$169,940	1%	\$163,269	\$0	\$557,000	\$720,269	10%	\$488,024
Habitat Restoration and Creation	\$3,469,095	\$693,819	4%	\$0	\$32,740	\$410,000	\$442,740	6%	\$74,938
Environmental Compliance	\$459,000	\$91,800	1%	\$67,868	\$0	\$50,000	\$117,868	2%	\$46,950
Preserve Management and Maintenance	\$5,398,690	\$1,079,738	6%	\$65,408	\$0	\$100,000	\$165,408	2%	\$16,447
Monitoring, Research, and Adaptive Management	\$39,509,059	\$618,873	46%	\$190,120	\$0	\$125,000	\$315,120	5%	\$94,358
Remedial Measures	\$30,000	\$6,000	0%	\$6,000	\$0	\$0	\$6,000	0%	\$0
Contingency Fund	\$723,186	\$144,637	1%	\$0	\$0	\$156,337	\$156,337	2%	\$0
<b>TOTAL</b>	<b>\$85,169,994</b>	<b>\$9,751,060</b>	<b>100%</b>	<b>\$1,962,788</b>	<b>\$32,740</b>	<b>\$4,912,540</b>	<b>\$6,908,068</b>	<b>100%</b>	<b>\$1,932,983</b>

**Table 19. Summary of All Revenues Received**

<b>Type</b>	<b>Reporting Period</b>	<b>Cumulative<sup>1</sup></b>
Development Fees	\$1,989,757	\$17,754,700
Wetland Mitigation Fees	\$0	\$1,551,000
Temporary Impact Fees	\$325,803	\$2,160,200
Contributions to Recovery	\$102,389	\$1,638,900
Grants <sup>2</sup>	\$325,900	\$69,877,300
Other Revenue <sup>3</sup>	\$103,873	\$2,702,600
Local Matching Funds <sup>4</sup>	\$951,335	\$26,877,300
<b>Total</b>	<b>\$3,799,057</b>	<b>\$122,562,000</b>

<sup>1</sup> Cumulative amount are the most up-to-date with corrections. Amounts are rounded.

<sup>2</sup> These are grants received, not grants awarded. Please see Table 21 for all grants details.

<sup>3</sup> Other includes staff/administrative costs for certain permitting projects, interest earnings, and lease revenue.

<sup>4</sup> Includes grants awarded to local partners. Grants awarded to the Conservancy are shown in *Grants*. EBRPD land acquisition due diligence costs and preserve management expenditures are also included.

**Table 20. Summary Accounting of Fee and Grant Revenues Received in Reporting Period**

Type	Amount
<b>Development Fees</b>	
Public Works Byron Hwy/Byer Road Safety Improvements Project	\$4,406.78
Twin Oaks Senior Residence - City of Oakley (fee calculator correction)	\$1,159
Diablo Meadows Project - City of Clayton	\$291,492
Mt Diablo Resource Recovery Park - City of Pittsburg	\$180,599
Byron Hwy Solar Project - Contra Costa County	\$288,236
Tuscany Estates/Baldocchi - City of Oakley	\$409,427
Public Works Byron Hwy/Byer Road Safety Improvements Projects	\$336
Amber Lane Apartments - City of Brentwood	\$244,847
Orchard Trails/Walnut Villas - City of Brentwood	\$490,749
Zip Thru Car Wash - City of Brentwood	\$35,204
Rotten Robbie - City of Brentwood	\$43,301
<i>Development Fees subtotal</i>	<i>\$1,989,757</i>
<b>Temporary Impact Fees</b>	
Public Works Byron Hwy/Byer Road Safety Improvements Project	\$539
P66 Line 200 Anomaly Investigations and Repair Spring 2021	\$6,081
PG&E Line 114 Pipeline Replacement Project	\$62,022
P66 Line 200 Anomaly Investigations and Repair Summer 2021	\$16,271
PG&E T-1527 and T-1528 Hydrostatic Strength Test Project	\$93,941
Byron Highway Solar Project - Contra Costa County	\$1,126
Cypress Preserve Project (North Preserve) - City of Oakley	\$48,184
Cypress Preserve Project Hauling and Stockpile - City of Oakley	\$18,717
Cypress Preserve Project WAPA Road - City of Oakley	\$4,818
Byron Hwy/Byer Road Safety Improvements Projects	\$41
Upper Sand Creek Basin Soil Stockpile Management (2020)	\$3,491
Upper Sand Creek Basin Soil Stockpile Management (2021)	\$3,434
Columbia Solar - City of Pittsburg <sup>1</sup>	\$67,141
<i>Temporary Impact Fees subtotal</i>	<i>\$325,803</i>
<b>Contributions to Recovery</b>	
P66 Line 200 Anomaly Investigations and Repair Spring 2021	\$6,081
PG&E Line 114 Pipeline Replacement Project	\$31,202
P66 Line 200 Anomaly Investigations and Repair Summer 2021	\$13,136
PG&E T-1527 and T-1528 Hydrostatic Strength Test Project	\$51,970
<i>Contributions to Recovery subtotal</i>	<i>\$102,389</i>
<b>Other (Admin/Staff Time Fees for Participating Special Entities, Interest, Miscellaneous)</b>	
PG&E Line 114 Pipeline Replacement Project - Environmental Review	\$7,576
PG&E Line 114 Pipeline Replacement Project - Staff Time	\$5,000
Refund for invoice overpayment, HT Harvey Inv 56750 CEQA Species 11/20	\$285
CCWD Los Vaqueros Geotechnical Investigations Project	\$1,647
EBRPD Lease Revenue 2020/21 for Subsequent Transfer to the Endowment	\$72,597
Pooled Interest Earnings	\$16,768
<i>Other subtotal</i>	<i>\$103,873</i>

**Table 20. Summary Accounting of Fee and Grant Revenues Received in Reporting Period**

<b>Type</b>	<b>Amount</b>
<b>Grants<sup>2</sup></b>	
CCC Buena Vista Fund for Use on Burrowing Owl Studies	Local \$45,000
Delta Conservancy Prop 1 Knightsen Wetland Restoration and Flood Protection Project	State \$202,332
WCB LAG WC1945KM 2019224 Roddy Ranch Grassland & Wetland Restoration Project	State \$78,568
<i>Grants subtotal</i>	<i>\$325,900</i>
<b>Local Matching Funds</b>	
Civic Rancho Meadows Acquisition - East Bay Regional Park District	\$951,335
<i>Local funding subtotal</i>	<i>\$951,335</i>
<b>Total</b>	<b>\$3,799,057</b>

<sup>1</sup> Annual temporary impact mitigation fee payment (22 years)

<sup>2</sup> Grants awarded to the Conservancy for implementation of the HCP/NCCP's conservation strategy

**Table 21. Grants Awarded to the Conservancy for Implementation of the East Contra Costa County HCP/NCCP**

Funding Source	Agency	Purpose	Amount	Required Match	Expended through 2021	Remaining	Grant Close Date	Complete
Section 6 (2006)	USFWS, through WCB	Acquisition	\$6,531,054	\$7,982,399	\$6,531,054	\$0	June 2010	Y
Section 6 (2007)	USFWS, through WCB	Acquisition	\$7,000,000	\$8,555,600	\$7,000,000	\$0	June 2011	Y
Section 6 (2008)	USFWS, through WCB	Acquisition	\$6,000,000	\$7,333,333	\$5,934,114	\$0	Feb 2013	Y
Section 6 (2009)	USFWS, through WCB	Acquisition	\$2,500,000	\$3,055,556	\$2,500,000	\$0	Aug 2014	Y
Section 6 (2010)	USFWS, through WCB	Acquisition	\$6,000,000	\$7,333,333	\$6,000,000	\$0	Aug 2014	Y
Section 6 (2011)	USFWS, through WCB	Acquisition	\$4,463,936	\$5,455,922	\$4,463,936	\$0	Oct 2016	Y
Section 6 (2012)	USFWS, through WCB	Acquisition	\$1,000,000	\$1,222,222	\$1,000,000	\$0	Sep 2016	Y
Section 6 (2014)	USFWS, through WCB	Acquisition	\$2,000,000	\$2,444,444	\$2,000,000	\$0	Dec 2017	Y
Section 6 (2015)	USFWS, through WCB	Acquisition	\$2,000,000	\$2,444,444	\$2,000,000	\$0	July 2019	Y
Section 6 (2017)	USFWS, through WCB	Acquisition	\$2,000,000	\$1,100,000	\$0	\$2,000,000	Aug 2022	
CVPIA HRP	USBR	Acquisition	\$1,241,631	\$500,000	\$1,241,631	\$0	Sep 2010	Y
IRWMP - Prop 50	SWRCB	Acquisition or restoration	\$1,400,000	\$500,000	\$1,400,000	\$0	Mar 2012	Y
IRWMP - Prop 50 (reprogrammed)	SWRCB	Acquisition or restoration	\$750,000	\$500,000	\$750,000	\$0	June 2012	Y
IRWMP - Prop 84	DWR	Acquisition or restoration	\$650,000	\$216,667	\$650,000	\$0	Dec 2014	Y
NCCP Local Assistance (P0630019)	CDFW	Historical Ecology and Implementation	\$120,000	\$0	\$120,000	\$0	Mar 2009	Y
NCCP Local Assistance (P0730010)	CDFW	Start-up Restoration	\$60,000	\$120,000	\$60,000	\$0	Dec 2008	Y
NCCP Local Assistance (P0882016)	CDFW	Souza 2 Wetland Restoration Project	\$150,000	\$0	\$125,100	\$0	April 2011	Y
NCCP Local Assistance (P0982030)	CDFW	Hess Restoration Project	\$150,000	\$111,000	\$150,000	\$0	Mar 2012	Y
NCCP Local Assistance (P1082019)	CDFW	Wetland and rare plant inventory	\$27,000	\$0	\$27,000	\$0	April 2013	Y
NCCP Local Assistance (P1082020)	CDFW	Effective Monitoring Plan	\$50,000	\$0	\$50,000	\$0	April 2013	Y
NCCP Local Assistance (P1082021)	CDFW	Restoration Project Monitoring/Management	\$85,000	\$0	\$85,000	\$0	April 2013	Y
NCCP Local Assistance (P1182103)	CDFW	Baseline Inventory	\$40,000	\$0	\$40,000	\$0	April 2014	Y
NCCP Local Assistance (P1182104)	CDFW	Restoration Project Monitoring/Management	\$50,000	\$0	\$50,000	\$0	April 2014	Y
NCCP Local Assistance (P1182105)	CDFW	Preserve Management Plan Development	\$75,000	\$0	\$75,000	\$0	April 2014	Y
NCCP Local Assistance (P1282108)	CDFW	Ang Pond Restoration Project	\$95,000	\$0	\$24,816	\$0	April 2015	Y
NCCP Local Assistance (P1382112)	CDFW	Baseline Inventory	\$60,157	\$0	\$60,157	\$0	Mar 2016	Y
NCCP Local Assistance (P1582104)	CDFW	Rare and Invasive Plant Management	\$50,000	\$0	\$50,000	\$0	Mar 2018	Y
NCCP Local Assistance (P1682905)	CDFW	Native Bunchgrass and Invasive Weed Mapping	\$50,100	\$0	\$50,100	\$0	Mar 2019	Y
NCCP Local Assistance (P1682906)	CDFW	Baseline Sampling for CRLF, CTS, and WPT Habitat	\$50,000	\$0	\$50,000	\$0	Mar 2019	Y
NCCP Local Assistance (P1830905)	CDFW	Baseline & Long-Term Monitoring Burrowing Owls	\$48,000	\$0	\$48,000	\$0	March 2021	Y
NCCP Local Assistance (awarded)	CDFW	Endemic Manzanita Die-off	\$20,000	\$0	\$20,000	\$0	March 2024	
Prop 1 (GA:18-002)	Coastal Conservancy	Horse Valley Creek and Wetland Restoration	\$300,000	\$0	\$300,000	\$0	Jan 2019	Y
Prop 1 (P1696007)	CDFW	Knightsen Wetland Restoration and Flood Protection	\$240,000	\$40,000	\$239,994	\$6	Sept 2019	Y
Prop 1 (Prop 1-1709)	Delta Conservancy	Knightsen Wetland Restoration	\$1,225,000	\$70,000	\$608,929	\$616,071	Nov 2022	
Prop 68 LAG (WC-1945KM)	WCB	RRGC Grassland & Wetland Restoration	\$555,000	\$0	\$339,731	\$215,269	Mar 2024	
Prop 84 (WC-1720DC)	WCB	Horse Valley Creek and Wetland Restoration	\$350,000	\$0	\$350,000	\$0	Oct 2021	Y
EQIP	NRCS	Ang Grazing and Habitat Improvements	\$75,585	\$0	\$18,920	\$0	Oct 2019	Y
Gordon and Betty Moore Foundation	-	Acquisition Fox Ridge	\$880,000	50% desired	\$880,000	\$0	Dec 2009	Y
Gordon and Betty Moore Foundation	-	Acquisition and Research Souza 3	\$2,250,000	50% desired	\$2,229,695	\$20,305	On-going	
Gordon and Betty Moore Foundation	-	Acquisition Fan, Galvin, Moss Rock, VF Central	\$1,300,000	50% desired	\$1,300,000	\$0	Jan 2012	Y
Gordon and Betty Moore Foundation	-	Acquisition of Roddy Ranch	\$1,000,000	\$0	\$1,000,000	\$0	July 2014	Y

**Table 21. Grants Awarded to the Conservancy for Implementation of the East Contra Costa County HCP/NCCP**

Funding Source	Agency	Purpose	Amount	Required Match	Expended through 2021	Remaining	Grant Close Date	Complete
Prop 84 NCCP account	WCB	Acquisition of Barron	\$973,930	\$0	\$973,930	\$0	Feb 2012	Y
Prop 84 NCCP account	WCB	Acquisition of Thomas	\$1,842,966	\$0	\$1,842,966	\$0	June 2012	Y
Prop 84 NCCP account	WCB	Acquisition of Affinito	\$1,005,750	\$0	\$1,005,750	\$0	Dec 2012	Y
Prop 84 NCCP account	WCB	Acquisition of Vaquero Farms Central	\$230,000	\$0	\$230,000	\$0	Dec 2012	Y
Prop 84 NCCP account	WCB	Acquisition of Thomas North	\$388,755	\$0	\$388,755	\$0	Aug 2013	Y
Prop 84 NCCP account	WCB	Acquisition of Smith	\$2,260,275	\$0	\$2,260,275	\$0	July 2014	Y
Prop 84 NCCP account	WCB	Acquisition of Roddy Ranch	\$4,841,875	\$0	\$4,841,875	\$0	July 2014	Y
Prop 84 NCCP account	WCB	Acquisition of Viera/Perley	\$877,500	\$0	\$877,500	\$0	July 2014	Y
Prop 84 NCCP account	WCB	Acquisition of Nunn	\$2,732,400	\$0	\$2,732,400	\$0	Jan 2016	Y
Prop 84 NCCP account	WCB	Acquisition of Coelho	\$454,239	\$0	\$454,239	\$0	Dec 2016	Y
Prop 117	WCB	Acquisition of Campos	\$226,200	\$0	\$226,200	\$0	May 2017	Y
Prop 84 NCCP account	WCB	Acquisition of Viera North Peak	\$427,000	\$0	\$427,000	\$0	July 2017	Y
Prop 84 NCCP account	WCB	Acquisition of Roddy Home Ranch	\$307,200	\$0	\$307,200	\$0	Oct 2017	Y
Prop 84 NCCP account	WCB	Acquisition of Casey	\$1,055,800	\$0	\$1,055,800	\$0	Oct 2017	Y
Prop 84 NCCP account	WCB	Acquisition of Roddy Ranch Golf Course	\$1,055,250					
Prop 84 NCCP account	WCB	Acquisition of Olesen/Duke	\$100,000	\$0	\$100,000	\$0	July 2019	Y
Prop 84 NCCP account	WCB	Acquisition of Bloching	\$105,000	\$0	\$105,000	\$0	July 2020	Y
Contra Costa Avian Fund	NFWF	Acquisition of Casey	\$28,000	\$0	\$26,600	\$1,400	-	
Contra Costa County Buena Vista Fund	Contra Costa County	Burrowing owl research	\$60,000	\$0	\$32,005	\$27,995	-	
			<b>\$73,264,603</b>	<b>\$49,647,420</b>	<b>\$69,110,672</b>	<b>\$2,881,047</b>		

**Note: EBRPD has contributed an estimated \$24 million of its own funds or its grants funds to joint land acquisitions.**

Acronyms:

- CalOES: California Office of Emergency Services
- CDFW: California Department of Fish and Wildlife
- CVPIA HRP: Central Valley Project Improvement Act Habitat Restoration Program
- DWR: Department of Water Resources
- EBRPD: East Bay Regional Park District
- EQIP: Environmental Quality Incentives Program
- IRWMP: Integrated Regional Water Management Plan
- NCCP: Natural Community Conservation Plan
- NFWF: National Fish and Wildlife Foundation
- NRCS: Natural Resource Conservation Service
- Section 6: Cooperative Endangered Species Conservation Fund, HCP Land Acquisition (authorized in Section 6 of federal Endangered Species Act)
- SWRCB: State Water Resources Control Board
- USBR: United States Bureau of Reclamation
- USFWS: United States Fish and Wildlife Service
- WCB: California Wildlife Conservation Board, affiliated with CDFW

## X. PROGRAM ADMINISTRATION

### Minor and Major Amendments

The Conservancy made no minor or major amendments to the Plan during the reporting period.

### Implementation Policies

The Conservancy Governing Board approved the Implementation Policy Regarding Installation of Solar Energy Facilities Outside the Urban Development Area (“Solar Policy”) in February 2021. The Solar Policy establishes criteria and guidelines to cover solar energy facilities on land outside of the UDA. This Policy was developed in response to the Contra Costa County Board of Supervisors adopting a Solar Energy Facilities Ordinance. The County’s commercial solar ordinance provides parameters for the establishment of commercial solar facilities in a specific geographic area in eastern Contra Costa County to ensure the health, safety, and general welfare of the community. The County received multiple applications for commercial solar facilities since the adoption of the County’s Solar Energy Facilities Ordinance. Conservancy staff was approached by County staff and project proponents for guidance on opting into the HCP/NCCP to receive take coverage and how to apply the provisions of the HCP/NCCP to these projects.

Conservancy staff considered many different factors in determining how HCP/NCCP permit coverage could apply to installation and operation of commercial solar energy facilities outside the UDA. Discussion and research included: impacts to habitat and species, on-going research and data gaps, the HCP/NCCP permitting process, and the Brownfield Solar Policy precedent. Conservancy staff also consulted the following stakeholders and partners: solar energy developers, regulatory agencies, other California HCP/NCCP implementors, and the Conservancy’s Public Advisory Committee (PAC). It should be noted that the PAC expressed concerns regarding project impacts to agriculture and farmland. Conservancy staff intends to review all projects on a case-by-case basis and will consider all aspects of the HCP/NCCP, including its conservation strategy which addresses conservation of agriculture and farmland. The following key areas of implementation policy are integral to the Conservancy’s ability to extend permit coverage to solar energy facility projects outside the UDA

- *Impact Area*: the proposed policy defines the impact area of solar energy projects to be the total project area of the facility, and subsequently, mitigation fees will be charged over this area.
- *Impact Type*: the proposed policy defines the impact type of a solar energy facility project to be permanent if it will not be decommissioned within the HCP/NCCP permit period.
- *Mitigation Fees*: the proposed policy allows for the option of phasing mitigation fee payments.

### Criteria for Projects

Coverage will be determined on a case-by-case basis by the Conservancy, USFWS, and CDFW, and will meet all the following conditions.

- The project site is located on a parcel designated as Solar Energy Generation (-SG) combining zoning district, as shown in Exhibit A, the Overlay Summary Map;
- The project is located in Fee Zone 1 in the HCP/NCCP;
- In the most recent Annual Report, the HCP/NCCP is exceeding terrestrial land cover, wetland, or species-specific stay ahead requirements;
- Permit coverage for the project will not exceed the limits of take coverage as authorized under the HCP/NCCP; and
- Permit coverage for the project will not preclude the HCP/NCCP from providing coverage for a named rural infrastructure project outside the UDA.

### **Guidelines for Permitting and Mitigation for Solar Projects Outside the UDA**

Once coverage eligibility has been determined based on the above criteria, the following guidelines will be followed.

- The impact area includes the entire project site, which is at a minimum the leased/owned area, if the project is not on the entire parcel.
- All impacts are considered permanent impacts.
- Phased payment of mitigation fees may be considered; an upfront payment and financial assurances acceptable to the Conservancy for the remainder of the fee must be provided.
- Any grading or fill of jurisdictional wetlands and waters will be mitigated as required in the HCP/NCCP in one complete payment prior to issuance of take coverage.
- The approved mitigation strategy would be made enforceable through conditions of approval or a separate agreement with the Conservancy.

## **Coordinated Wetland Permitting**

### **Background and 2021 Achievements**

The HCP/NCCP was designed to conserve not only endangered species, but wetlands and waters that provide habitat for these species and support other natural resource functions and values. This approach was intended, in part, to enable permit streamlining to extend beyond endangered species and to include regional permitting under state and federal laws for impacts on jurisdictional wetlands and waters. The interest in integrating federal and state wetland permitting into the HCP/NCCP process is the same as the articulated purpose of the Plan—to benefit stream and wetland resources by conserving these resources in a more coordinated and comprehensive fashion on a regional scale and to provide an integrated, coordinated approach to permitting in lieu of the often inefficient and costly project-by-project approach.

Discussions with U.S. Army Corps of Engineers (Corps), U.S. Environmental Protection Agency, State Water Resources Control Board (State Water Board), the Regional Water Quality Control Boards (Regional Water Boards), CDFW, and USFWS regarding this parallel approach to

compliance with wetlands regulations started in 2002 during the early stages of developing the HCP/NCCP. Coordinating wetlands regulation with HCPs is a difficult process in part because there is no precedent.

On May 4, 2012, the Corps issued a Regional General Permit (RGP) related to the HCP/NCCP. On April 30, 2012, USFWS issued a Biological Opinion on the RGP. The issuance of the RGP and Biological Opinion are important milestones for the overall goals of the HCP/NCCP. On June 6, 2017, the USACE re-issued RGP 1 with a new expiration date of June 6, 2022. To date, 23 covered projects and three Conservancy restoration projects have received permit coverage through the RGP.

## **Summary of Regional General Permit and Associated Biological Opinion**

The RGP is designed to streamline wetland permitting in the HCP/NCCP inventory area by coordinating the avoidance, minimization, and mitigation measures in the Plan with the Corps' wetland permitting requirements. Projects eligible to apply for the RGP are those covered by the HCP/NCCP that meet specified wetland impact limitations (i.e., wetland impacts are less than 1.5 acres). The RGP has a greater impact threshold than the Corps' existing Nationwide Permit Program, which limits wetland impacts to 0.5 acre.

The USFWS Biological Opinion for the RGP relies on the HCP/NCCP for mitigation measures and eliminates the need for the Corps to consult individually with USFWS for each project covered by the RGP. The term of the Biological Opinion corresponds with the 30-year term of the HCP/NCCP. By regulation, RGPs must be renewed every five years, but in this case, a new Biological Opinion would not be needed, and on June 6, 2017, the Corps re-issued RGP 1 with a new expiration date of June 6, 2022.

With the RGP in place, project proponents will still apply directly to the wetland agencies for their wetland permits. However, due to the close match between HCP/NCCP and RGP permit conditions, the process will be expedited and improved. Key improvements include the following.

- Consistent mitigation ratios and offsite mitigation requirements, which makes it possible to satisfy Corps requirements with HCP/NCCP fees (see *Proposed In-Lieu Fee Instrument/Program* below).
- Consistent emphasis on regional avoidance to avoid “postage-stamp” conservation on project sites that can hinder projects and compromise the functions and values of conserved resources.
- Consistent, regional, watershed approach to conserving wetlands, waters, and species, which will maximize the value and sustainability of conservation actions.

Currently, the RGP only relates to Clean Water Act Section 404 permits issued by the Corps, but discussions are ongoing with the State Board and Regional Water Boards to coordinate their requirements with the RGP and HCP/NCCP. This coordination would lead to further permitting assurances and streamlining.

## **Proposed In-Lieu Fee Instrument/Program**

The In-Lieu Fee (ILF) Instrument is the agreement with the Corps and U.S. Environmental Protection Agency (and possibly other agencies such as the State Water Board and Regional Water Boards) that will sanction payment of HCP/NCCP fees as eligible mitigation under the RGP. The ILF Instrument will also provide the Corps and other signatories with oversight of the Conservancy's use of the fees. The resulting ILF program would comply with the recent federal *Compensatory Mitigation for Losses of Aquatic Resources* (Mitigation Rule; 33 [Code of Federal Regulations] CFR Part 332). The proposed ILF program would be implemented in conjunction with the RGP and HCP/NCCP. Until the ILF program is in place, an interim mitigation strategy is needed to enable payment of HCP/NCCP fees to satisfy RGP requirements. The Conservancy has initiated work with the regulatory agencies to develop an in-lieu fee instrument that would be aligned with HCP/NCCP. An updated draft of the ILF was submitted to the Corps in 2021.

## **Interim Strategy**

With the RGP issued, but the ILF program not yet in place, an interim strategy is needed to coordinate mitigation required under the RGP with HCP/NCCP mitigation fees. The Corps' proposed approach is *permittee-responsible compensatory mitigation*, an option defined in Mitigation Rule 33 CFR Part 332. Under this approach, until the ILF is approved, the Conservancy will designate a portion of its existing wetland restoration sites as compensatory mitigation for an applicant's project, and this will fulfill the applicant's Section 404 compensatory mitigation requirements under the RGP. The Corps initially approved using this interim strategy for up to one year. In 2014, the Corps approved extending the interim strategy until the ILF program is approved to replace it. Before one or more of the Conservancy's existing wetland restoration sites is deemed eligible by the Corps for permittee-responsible mitigation purposes, the Conservancy must submit detailed information to the Corps on the site. This information includes point-by-point documentation of how the site complies with each requirement of the Mitigation Rule for a final mitigation plan (33 CFR 332.4[c] 2-14). For the Conservancy's existing wetland restoration projects, the required documentation already exists in the form of construction plans and mitigation and monitoring plans for each project.

## **Mitigation Fee Audit and Update**

The HCP/NCCP requires automatic annual adjustments to HCP/NCCP mitigation fees based on economic indices as well as periodic audits in years 3, 6, 10, 15, 20, and 25 of Plan implementation. These periodic audits assess whether changes in HCP/NCCP implementation costs over time require additional fee adjustment. A periodic audit was completed in 2011 to assess HCP/NCCP costs through Year 3 of Plan implementation.

The Conservancy initiated work on the 2017 (Year 10) mitigation fee audit and update in late 2016. Urban Economics and Hausrath Economics Group completed the 2017 East Contra Costa County HCP/NCCP Mitigation Fee Audit and Nexus Study (2017 Fee Audit) in early 2017. This was presented to the Conservancy Board as a draft and informational update in June 2017. The Conservancy Governing Board adopted the 2017 Fee Audit on February 22, 2021. Contra Costa County and the cities of Clayton, and Oakley also adopted the 2017 Fee Audit in 2021. The cities

of Brentwood and Pittsburg scheduled their fee adoptions for 2022. Fees were subsequently adjusted accordingly for the Conservancy and the Co-permittees who adopted the 2017 Fee Audit.

## Other Activities

### Public Outreach/Engagement



### Volunteer Engagement

In 2021, 7 volunteers working with Save Mount Diablo contributed 88.5 hours towards an overall total of 199.5 hours worked by staff and volunteers over 11 workdays at the Ang Riparian and Irish Canyon Restoration Project sites. Work involved restoration planting inventory, invasive weed removal, and watering.

### Restoration Projects

The Conservancy currently has two restoration projects in the planning phase: the Knightsen Wetland Restoration Project and the former Roddy Ranch Golf Course Restoration Project. Community meetings to engage with the public and provide information on the status of these projects were held throughout 2021. The Conservancy and EBRPD hosted in-person site visit and open house events for the public to see the project sites and speak with staff.



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# APPENDIX A: GLOSSARY

## Definitions of Key Terms and Concepts

**Adaptive management.** A method for examining alternative strategies for meeting measurable biological goals and objectives and, if necessary, adjusting future conservation management actions according to what is learned (*65 Federal Register 106*; June 1, 2000). (See also Chapter 7 for alternative but similar definitions of adaptive management.)

**Anthropogenic.** Caused or produced through human agency.

**Baseline.** The existing environmental state, which includes past and present impacts as well as the anticipated impacts of all permitted projects in the inventory area.

**Biological opinion.** The document stating the opinion of the U.S. Fish and Wildlife Service and/or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service regarding whether a federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat (*50 Code of Federal Regulations [CFR] 402.02*). A biological opinion is one of the decision documents of a consultation under Section 7 of the federal Endangered Species Act.

**Biodiversity.** The variety of organisms considered at all levels, from genetic variants of a single species through arrays of species to arrays of genera, families, and higher taxonomic levels; includes the variety of ecosystems.

**Buffer areas.** Designated zones of agricultural lands, grassland, or other habitat types adjacent to preserves that are intended to prevent or reduce the undesired intrusion of biota, harmful materials, or disturbances into the preserve, as well as the movement of covered wildlife species from preserve areas into adjoining areas.

**Conservation.** According to the federal Endangered Species Act (Section 3[3]), the terms *conserve*, *conserving*, and *conservation* are defined as the methods and procedures necessary to bring any endangered or threatened species to the point at which the measures provided under the Act are no longer necessary. Such methods and procedures include, but are not limited to, activities associated with resource management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transportation. The Natural Community Conservation Planning Act defines *conserve*, *conserving*, and *conservation* as the use of methods and procedures within the plan area that are necessary to bring any covered species to the point at which the measures provided pursuant to Chapter 1.5 are not necessary, and for covered species that are not listed pursuant to Chapter 1.5 to maintain or enhance the condition of a species so that listing pursuant to Chapter 1.5 will not become necessary.

**Conservation measure.** A management action that, when implemented, will partially or wholly achieve Plan objectives for covered species, natural communities, biodiversity, or ecosystem function.

**Conserved habitat.** Species habitat that is protected, enhanced, and/or restored under the Plan.

**Construction monitoring.** Monitoring by biologists of construction activities to ensure that conservation measures are implemented and impacts on biological resources are avoided or minimized in accordance with Plan requirements.

**Contribute to recovery.** Actions that measurably increase the baseline conditions necessary to support covered species and contribute to the eventual de-listing of a listed species or prevention of listing of an unlisted species. A contribution to recovery does not include actions necessary to avoid, minimize, or mitigate impacts of covered activities.

**Cover (e.g., canopy cover, areal cover).** The area of ground covered by vegetation of particular species or vegetation type, generally expressed as a percentage.

**Covered species.** Those species addressed in the Plan for which conservation measures will be implemented and for which the permittee seeks authorization for take under Section 10 of the federal Endangered Species Act and Section 2081 of the California Endangered Species Act.

**Critical habitat.** An area designated as critical habitat by the U.S. Fish and Wildlife Service pursuant to the federal Endangered Species Act. Critical habitat areas are specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described and designated in the Federal Register.

**Dominance.** The extent to which a given species predominates a community by virtue of its size, abundance, or coverage.

**Ecosystem.** A community of organisms and their physical environment interacting as an ecological unit.

**Ecosystem function.** The sum total of processes operating at the ecosystem level, such as the cycling of matter, energy, and nutrients.

**Ecosystem restoration.** The reestablishment of ecological functions within an area that historically supported those functions.

**Environmental gradient.** A shift in physical and ecological parameters, as characterized by transition zones between land cover types and natural communities or topographic gradients across a landscape.

**Ephemeral stream.** A stream that flows only in response to rain events and receives no groundwater input.

**Executive Director.** The Executive Director leads the Implementing Entity, and is responsible for Plan implementation, staff management, funding acquisition, and other managerial duties.

**Extinct species.** A species no longer in existence.

**Extirpated species.** A species no longer surviving in regions that were once part of its range.

**Fossorial.** Adapted for digging or burrowing into the ground.

**Geographic Information System (GIS).** Computer-based mapping technology that manipulates geographic data in digital layers and enables one to conduct a wide array of environmental analyses.

**Goal.** A broad, guiding principle that identifies an expected outcome of the Plan. Conservation strategy goals describe the desired future condition for each covered species with full implementation of the Plan.

**Habitat.** The environmental conditions that support occupancy of a given organism in a specified area (Hall et al. 1997). In scientific and lay publications, habitat is defined in many different ways and for many different purposes. For the purpose of the Plan, habitat is defined as the specific places where the environmental conditions (i.e., physical and biological conditions) required to support occupancy by individuals or populations of a given species are present. Habitat may be occupied (individuals or population of the species are, or have recently been, present) or unoccupied (see *unoccupied habitat* below).

**Habitat creation.** The establishment of a vegetation community in an area that did not previously support it. For example, stock ponds can be created in areas that previously did not support them by grading and installing a check dam.

**Habitat enhancement.** The improvement of an existing degraded vegetation community. Enhancement involves improving one or more ecological factors, such as species richness, species diversity, overall vegetative cover, or wildlife value. Enhancement activities typically occur on substrates that are largely intact.

**Habitat-limited.** A habitat-limited species is one whose abundance, distribution, or reproduction is limited by the availability or quality of suitable habitat. See *suitable habitat*.

**Habitat quality.** The ability of the environment to provide conditions that support the persistence of individuals and populations. The precise meaning of quality varies by species and depends on the subject species' specific needs in the context of a particular area. High-quality habitat for some species comprises only foraging and resting elements; for others it comprises foraging, resting, and nesting elements; for still others it may encompass all elements needed for the species to complete its lifecycle. Low-quality habitat would include only the minimal elements that support occurrence of the species. High-quality habitat tends to support larger numbers of species than low-quality habitat.

**Habitat quantity.** The area of the environment that supports or could support occupancy of a given organism.

**Habitat replacement.** To replace habitat is to mitigate habitat loss by enhancing or restoring habitat equivalent to or greater than the habitat lost.

**Habitat restoration.** The establishment of a vegetation community in an area that historically supported it, but no longer supports it because of the loss of one or more required ecological factors. Restoration may involve altering the substrate to improve a site's ability to support the historic vegetation community.

**Harass.** An intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

**Harm.** An act that actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3).

**Hydrology.** The movement of surface and subsurface water flows in a given area. The hydrology of an area is intimately connected with its precipitation, soils, and topography.

**Incidental take.** Any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (50 CFR 17.3).

**In-kind/like-value creation.** Establishing the same vegetative community that would provide the same ecological values over time as the vegetation community affected. For example, creating an artificial vernal pool that supports species similar to those found in an affected vernal pool would be in-kind/like-value creation.

**Intermittent stream.** A stream that is supplied by both rainfall runoff and groundwater. Intermittent streams tend to be seasonal, flowing during the rainy season and into the late spring or early summer.

**Jurisdictional wetlands and waters.** State and federally regulated wetlands and other water bodies that cannot be filled or altered without permits from either the Corps under Section 404 of the Clean Water Act, the State Water Resources Board, or the Regional Water Quality Control Boards under either Section 401 of the Clean Water Act or the Porter-Cologne Water Quality Control Act, or the CDFW under Fish and Game Code Section 1602, as of the date the Plan takes effect.

**Land cover type.** The dominant feature of the land surface discernible from aerial photographs and defined by vegetation, water, or human uses.

**Land-use designation.** The designation, by parcel, in an adopted city or county General Plan of the allowable uses.

**Loss of habitat.** A reduction in habitat quality or quantity that results from an adverse change in an environmental condition. Environmental conditions may include cover, substrate, channel type, interacting species, river area, reservoir area, water quality, and groundwater depth.

**Metapopulation.** A group of partially isolated populations belonging to the same species that are connected by pathways of immigration and emigration. Exchange of individuals occurs between

such populations, enabling recolonization of sites from which the species has recently become extirpated.

**No-take species.** Species for which take is not authorized under this Plan. In order to comply with the terms of the Plan, applicants for coverage under the Plan must avoid all direct and indirect impacts on no-take species. See Table 5-3 of the HCP/NCCP for a list of no-take species.

**Out-of-kind/like-value.** Establishing a similar, but not identical, vegetative community with some of the same ecological functions and values as the affected vegetative community over time.

**Perennial stream.** A year-round stream that is supplied by both rainfall runoff and groundwater, as well as by substantial dry-season inputs.

**Performance indicator.** The environmental variables that are quantitatively measured over time to determine if enhanced/created/restored natural communities have successfully met Plan biological goals and objectives.

**Performance objective.** In monitoring, the optimal desired value for each performance indicator. Performance objectives establish a higher threshold for each indicator than that established for performance standards. Funding, design, and management objectives for enhanced/created/restored natural communities are established at levels that are designed to ensure that the performance objectives are achieved. Failure to meet a performance objective would not constitute a changed circumstance or require remedial measures.

**Performance period.** In monitoring, the time over which performance standards must be met.

**Performance standard.** In monitoring, a minimum requirement necessary to achieve biological goals and objectives. Failure to achieve a performance standard could constitute a changed circumstance and require that remedial measures be implemented.

**Permittees.** Those entities requesting a Section 10(a)(1)(B) incidental take permit from the USFWS and a take permit under the Natural Community Conservation Planning Act from the CDFW for the species and activities covered in the accompanying HCP/NCCP.

**Planning surveys.** Surveys conducted by applicants for Plan coverage and used in the project-planning process to identify constraints and determine which Plan conservation measures are applicable. Planning surveys also include surveys conducted by the Implementing Entity on potential preserve lands to evaluate whether these lands will meet Plan requirements.

**Population.** A group of individuals of the same species inhabiting a given geographic area, among which mature individuals reproduce or are likely to reproduce. Ecological interactions and genetic exchange are more likely among individuals within a population than among individuals of separate populations of the same species.

**Range.** The geographic area a species is known to occupy or believed to occupy.

**Practicable.** Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose (45 FR 85344, December 24, 1980: U.S. Environmental Protection Agency, *40 CFR 230.3*, Definitions).

**Preconstruction surveys.** Surveys conducted by applicants for Plan coverage for certain biological resources immediately prior to construction to ensure that species and habitat avoidance and minimization measures can be effectively implemented during construction of covered projects or implementation of covered activities.

**Preserves.** Discrete areas of conserved habitats managed as single units under the Plan.

**Preserve System.** All Plan preserves considered collectively.

**Protect habitat.** To maintain the existing or enhanced extent of species habitat through acquisition, easements, or other practicable processes for bringing unprotected sites under protected status.

**Recovery.** The process by which the decline of an endangered or threatened species is arrested or reversed or threats to its survival neutralized so that its long-term survival in nature can be ensured. Recovery entails actions to achieve the conservation and survival of a species (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998), including actions to prevent any further erosion of a population's viability and genetic integrity, as well as actions to restore or establish environmental conditions that enable a species to persist (i.e., the long-term occurrence of a species through the full range of environmental variation).

**Recovery Plan.** A document published by the USFWS that lists the status of a listed species and the actions necessary to remove the species from the endangered species list.

**Riparian habitat.** Vegetation associated with rivers, streams, lake banks, and floodplains.

**Ruderal.** A species or plant community that occurs on a highly disturbed site.

**Signature.** Characteristic value, color, or texture on an aerial photograph that correlates to a particular land cover type.

**Stream, perennial.** A stream that flows throughout the year.

**Stream, intermittent.** A stream that flows only at certain times of the year, generally in response to precipitation runoff or groundwater input.

**Stream, ephemeral.** A stream that flows only briefly in direct response to precipitation in the immediate vicinity, and that does not receive groundwater input.

**Succession.** The change in the composition and structure of a biological community over time. Successional patterns often shift dramatically following a major disturbance (e.g., fire, flood, anthropogenic clearing of land).

**Suitable habitat.** Habitat that exhibits the characteristics necessary to support a given species.

**Take.** According to the federal Endangered Species Act (Section 3[18]), to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. According to the California Endangered Species Act (Section 86 of the California Fish and Game Code), *take* means to hunt, pursue, catch, capture, or kill.

**Take Coverage.** Is defined in the HCP/NCCP in terms of land cover types lost as a result of covered activities. See HCP/NCCP Chapter 3 of for definition of land cover types and Chapter 4 for an estimate of loss of these land cover types.

**Umbrella species.** A species whose range and habitat requirements are large and broad enough to encompass the range and habitat requirements of other species.

**Unoccupied habitat.** Habitat that exhibits all the constituent elements necessary for a species, but where surveys have determined that the species is not currently present. The lack of individuals or populations in the habitat is assumed to be the result of reduced numbers or distribution of the species such that some habitat areas are unused. It is expected that these areas would be used if species numbers or distribution were greater. See also definition of *suitable habitat*.

**Urban-wildland interface.** The narrow zone (<100 feet) between dense urban development and natural land cover in which structures can be built to minimize the damaging indirect effects on covered species or habitats of activities within urban areas.

**Vegetation community.** A natural or artificial terrestrial community defined by the dominant vegetation and the vegetation structure. This term is used synonymously with the regulatory term *natural community* under the Natural Community Conservation Planning Act of 2002.