IV. HABITAT RESTORATION AND CREATION

Habitat restoration and creation is a critical 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.

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 diversity of these land-cover types. Restoration of wetlands ensures no net loss of wetlands in the Plan inventory area, and replaces the functions of land-covers types lost to covered activities.

Alkali Wetlands

Alkali wetlands are particularly rare in the Plan inventory area, mainly occurring on a 380-acre wetland complex 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 (Plan, pp. 3-18).

Mitigation and Contribution to Recovery

Conservation Measure 2.1 in the Plan requires wetland restoration and pond creation to compensate for future impacts on these land-cover types caused by development activities. Although no impacts on wetlands or ponds have occurred under the Plan to date, the Conservancy expects these impacts may occur soon. Likewise, 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, as required by the NCCP Act.

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 exceed 500 acres. A more likely but still conservative projection is 300 acres, which amounts to 10 acres of restoration/creation per year. By the end of the second year of implementing the Plan, the Conservancy must have caught up to the mitigation requirements of impacts that have occurred. At this point, no impacts have occurred, though fees have been paid in advance of the Plan for minor impacts on wetlands totaling much less than one acre. The Conservancy's intention is to be aggressive in its wetlands restoration and creation program and in doing so

has initiated pilot projects during the first year of implementation and one large project in the second year.

During the reporting period, the Conservancy initiated three restoration projects (Figure 28).

- Lentzner Springs Wetland Restoration Project
- Vasco Caves Souza I Pond Project
- Souza II Wetland Restoration Project (Phase I)

For each project, a discussion of goals and objectives, contribution to restoration and creation requirements, and performance criteria and monitoring is provided below. Tables 8b and 8b provide natural community-level and property specific restoration and creation summaries. Table 12 provides a summary of aquatic and stream land cover restoration and creation by watershed. During the reporting period, the three restoration projects resulted in a total of

- 0.4 acres of alkali grassland restored
- 0.4 acres of native grassland restored
- 0.2 acres of alkali wetlands restored
- 8.9 acres of seasonal wetlands restored
- 0.4 acres of riparian woodland restored
- 1.3 acres of ponds created
- 3,508 feet of intermittent stream restored

A fourth project, restoration of riparian woodland adjacent to the Ang property was initiated in late 2009 and completed in March 2010. This project was performed by Save Mount Diablo Staff and volunteers. The project involved the planting of 150 valley oaks and buckeyes in a denuded stream corridor. It will result in the restoration of 0.5 acres of riparian habitat. This project will be discussed in detail in the Annual Report for 2010.

The three restoration projects constructed so far will provide a range of benefits to covered species. Already, California tiger salamanders are breeding in the restored wetlands at Souza 2 and Souza 1. In addition to California tiger salamander, components of the restoration projects have been specifically designed to benefit California red-legged frog, vernal pool fairy shrimp (and other covered branchiopods) and alkali plant species such as brittlescale and spearscale. The projects also provide benefits at the natural community scale. For example, the projects will increase the abundance of rave wetland land cover types in the area. The projects are still new, but as monitoring and adaptive management continue, a move complete picture of project benefits will emerge as will an understanding of how to make future projects more successful.

Lentzner Springs Wetland Restoration Project

Project Overview

The Lentzner Springs Wetland Restoration is located in the Sand Creek sub-basin of Marsh Creek Watershed (Figures 29 and 30).[8] The project takes advantage of the limited opportunities to increase alkali wetland features in the Preserve System. This includes restoring the natural function and increasing the extent of alkali wetlands in a degraded section of the Lentzner property, increasing the abundance and distribution of native plant species, and increasing the extent of alkali wetlands that potentially support covered species. Within the Lentzner property, the project is located on the eastern end in the upper part of a valley that drains to Sand Creek.

The Lentzner Springs Wetland Restoration project was the first wetland restoration project implemented under the Plan. For this project, a wetland area was graded just downstream of an alkali spring. The spring and an intermittent stream provide flows to the wetland. The project also included installation of locally-collected native plant species to increase plant diversity, and the establishment of a native grassland area south of the alkali wetland. The entire restoration area was 0.5 acre. The Conservancy restored 0.2 acre of alkali wetland and 0.4 acre of native grassland (Table 8b). The Lentzner Springs Wetland Restoration project had the following objectives.

- Restore the natural function and increase the extent of alkali wetlands in a degraded section of the Lentzner preserve.
- Better integrate existing constructed features in the area with the natural environment by relocating an existing unpaved road and fence away from the restoration area and by improving two stream crossings to increase durability, reduce erosion, and enhance hydrologic connectivity.
- Increase the abundance and distribution of native perennial grassland on the Lentzner parcel.
- Develop a framework for successful implementation of Plan restoration projects through a EBRPD and Conservancy partnership.

Requirements of natural alkali wetlands were used to design the restoration of 0.2 acres of alkali wetlands at the Lentzner site within the Sand Creek sub-basin. This included one larger 0.1-acre area downstream (north) of the spring and west of the unnamed tributary, and one smaller 0.02 acre area upstream of and east of the spring.

Alkali wetlands establishment requires dominance by plants with a wetland indicator status of facultative species or wetter (Reed 1988) and that are known to occur in areas of high salinity, such as saltgrass and alkali heath (*Frankenia salina*). Another key requirement for alkali wetlands is the seasonal delivery of surface flows or shallow subsurface flows that support the

[8] Project is located within the Oil Canyon Creek sub-basin of the Sand Creek sub-basin within the Marsh Creek Watershed.

wetland environment. Accordingly, the site was cleared, grubbed, and graded to enhance flow connectivity. Approximately 2,982 4-inch diameter plugs of native herbaceous wetland species, harvested from adjacent sites within ¼ mile of the project site, were planted in the alkali wetland restoration area. These species included saltgrass, alkali heath, Great Valley gumweed (*Grindelia camporum* var. *camporum*) and bulrush (*Scirpus* spp.).

The native grassland area is adjacent to and upland of the alkali wetland. It was also cleared, grubbed, and graded to prepare the site for planting. After grading, the site was broadcast-seeded with native seed mix that included purple needle grass (*Nasella pulchra*), creeping wildrye (*Leymus triticoides*), and meadow barley (*Hordeum brachyantherum*). The site was also hydromulched.

Contribution to Restoration and Creation Requirements

It is estimated that up to 31 acres of alkali wetlands will be lost under the Maximum Urban Development Area scenario. As a result, up to 67 acres of alkali wetlands will need to be restored or created in order to offset these impacts and contribute to recovery. The construction of the Lentzner Springs Wetland Restoration Project contributes 0.2 acres of alkali wetlands (0.2%) to the restoration and creation requirements (Tables 8a and 8b). Native grassland restoration (0.4 acre) supports Plan Goal 11, *Enhance grassland to promote native biological diversity and habitat heterogeneity,* and Objectives 11.1, *Increase the relative cover of native grasses and forbs in native grassland alliances and other grassland types,* and 11.2, *Increase structural diversity by creating and maintaining a mosaic of grassland types and conditions.*

Performance Criteria and Monitoring

Performance monitoring will occur for the restored seasonal alkali wetland. The native grassland area will not be monitored or have specific performance criteria, as the land-cover type does not have Plan-established targets. Performance criteria for the alkali wetland are based on survivorship and health of individual plants during the three years following construction (Table 13a). If performance criteria for survivorship are not met during this time, then adaptive management actions will be triggered and annual monitoring of survivorship of planted plants will continue until performance criteria are met.

After survivorship performance criteria are met, monitors will measure and evaluate absolute cover of native wetland vegetative annually for two additional years. If after two years, performance criteria detailed in Table 13a for vegetative cover are met each year, then monitoring will cease and the project will be considered successful. If performance criteria are not met each year, then adaptive management actions will be taken to supplement existing plantings and/or to modify the site grading. In this case, monitoring will continue until the criteria are met for two consecutive years.

Monitoring to Date

The restoration site is meeting its performance criteria of at least 75% survival of the planted species. This includes extremely high survival of three of the species, saltgrass, gumweed and alkali heath. On the other hand, all of the individuals of one species, bulrush, have died.

The site hydrology is likely the cause of the success and failure of these species, respectively. Bulrush requires a substantial amount of inundation of its roots to survive. The site is not as wet as anticipated when that species was selected, and it is unlikely that the species could survive on the site. It is not recommended that this species be replanted. The area where the bulrush was planted could be replanted with a more appropriate mix of species that would thrive in the existing conditions. Saltgrass is the most likely species to succeed in this area.

The site does seem to have ideal conditions to support growth of saltgrass, gumweed, and alkali heath. All three of these plants are surviving and spreading on the site. The fact that only three alkali heath were planted and 12 are now growing on the site indicates that the site can support this species. It is possible that the new seedlings are propagules from the transplanted individuals. However, it is also possible that this species was present in the seed bank, and that because the site is being maintained weed-free, banked seeds now have the conditions needed to support their germination.

The saltgrass and gumweed individuals that were planted are thriving across the site. The majority of individuals observed in and out of sample plots were putting out new growth. The success of all three of these species may indicate appropriate and successful hydrology. However, it is also important to take into account the fact that the site was watered and maintained for the first year. This maintenance should carry on into the second year in order to sustain conditions conducive to these plants continued establishment.

Since the site does need to be self-sustaining, it may be appropriate to stop supplemental watering in 2010. However, if the 2009/2010 winter is exceptionally dry, then supplemental water may be merited. This decision will need to be made as the rainy season unfolds and in light of the monthly maintenance reports on plant health and vigor on the site.

Vasco Caves Souza I Pond Project

Project Overview

The 2.6-acre Vasco Caves Souza I Pond project is located within the northwestern side of the 775-acre Vasco Caves Regional Preserve located about 1 mile north of the Alameda/Contra Costa County border (Figures 31 and 32). The Vasco Caves Souza I Pond Project aims to create a 1.1-acre seasonal pond with surrounding wetland habitat. The pond will collect water from an approximately 15-acre sub-watershed of Brushy Creek watershed and along a swale into a pond with minor grading and bed contouring. The pond was designed to provide breeding habitat for California tiger salamander and to support seasonal wetland vegetation. The seasonal pond was constructed with an approximately 1-acre, 1-foot deep portion and a

smaller 2- to 3-foot deep portion.[9] The seasonal pond was designed with three depths because the project area is subject high evaporation and low rainfall rates. The 2- to 3-foot portion of the pond was created with the intent to hold water farther into spring.

The Vasco Caves Souza I Pond project captures water from two sources, precipitation and stormwater sheet flow. The 3-foot deep area of the pond fills and spills into the 2- and 1-foot areas of the pond. The 2- to 3-foot area of the pond will provide breeding habitat for the California tiger salamander prior to desiccation of the pond. The project takes advantage of being located in a region were the pond creation and grassland establishment will provide habitat for special status wildlife species. The installation of native wetland plant species and the establishment of native grasslands on the disturbed upland areas of the created wetland will increase plant diversity. The Vasco Caves Souza I Pond project includes the following objectives.

- Increase the extent of aquatic features in a degraded section of the Vasco Caves Regional Preserve.
- Increase the abundance and distribution of native hydrophytic wetland plant species in the Vasco Caves Regional Preserve.
- Develop a template for successful initiation of Plan pond creation projects through a EBRPD and Conservancy partnership.

Requirements of the pond and a grassland area were used to create the pond and establish grasslands. The pond site was cleared, graded, and recontoured to meet the pond grading plan. The pond spillway was protected with a geotextile channel liner (i.e., Pyramat) to prohibit unanticipated scour. In addition, a high density polyethylene (HDPE) sheet (80 mil) was installed vertically within the berm to counter damage by burrowing rodents and to otherwise ensure the berm remains structurally sound. The bottom contours of the pond were seeded with a native hydroseed mixture that includes native plants such as creeping spikerush (*Eleocharis macrostachya*), Vasey's coyote-thistle (*Eryngium vaseyi*), flat-face downingia (*Downingia pulchella*), and toad rush (*Juncus bufonius*).

Establishment of annual grassland occurred in disturbed areas upland from the created pond. Native seeds from purple needle grass (*Nasella pulchra*), creeping wildrye (*Leymus triticoides*—Rio or White Lake), meadow barley (*Hordeum brachyantherum californicum*), valley gumplant (*Grindelia camporum*) and blue wildrye (*Elymus galucus*—Anderson variety) were planted throughout the disturbed areas.

Contribution to Restoration and Creation Requirements

The Plan estimates that approximately 8 acres of ponds will be permanently impacted under the Maximum Urban Development Area scenario. Per the Plan requirements, impacts on ponds must be restored and/or created at a 2:1 ratio to compensate for impacts. As a result,

[9] There is a gradient rather than discrete steps between the 2- and 3-foot portions. The project narrative sometimes refers to discrete 2- and 3-foot portions as monitoring and design elements are specific to the absolute depths.

approximately 16 acres of ponds must be restored/created within the Preserve System. The construction of the Vasco Caves Souza I Pond project contributes 1.1 acres of ponds (6.8%) to the pond creation requirement. In addition, the Vasco Caves Souza I Pond project provides breeding habitat for the California tiger salamander. Finally, establishment of the pond increases the abundance and distribution of native hydrophytic wetland plant species such as creeping spikerush, Vasey's coyote-thistle, flat-face downingia, and toad rush. Native grassland restoration supports Plan Goal 11, *Enhance grassland to promote native biological diversity and habitat heterogeneity,* and Objective 11.1, *Increase the relative cover of native grasses and forbs in native grassland alliances and other grassland types,* and Objective 11.2, *Increase structural diversity by creating and maintaining a mosaic of grassland types and conditions.*

Performance Criteria and Monitoring

Performance and success of the created seasonal pond and established native wetland plant species will be assessed by the Conservancy over a 5-year monitoring period. Performance criteria were not established for the native grassland area as it is not goal of the Plan. Monitoring the restored seeded native grassland area will be limited to Preserve System effectiveness and compliance monitoring, not effectiveness monitoring specific to the restoration project. The performance criteria for the created seasonal pond and wetland species will be based on the number of days the pond is inundated and survivorship of the hydrophytic species over the 5-year monitoring period. Progress of the restoration plantings will be considered satisfactory if the criteria in Table 13b are met or exceeded. After the performance criteria are met, the restoration project will be considered successful. The long-term maintenance and monitoring will become the responsibility of the EBRPD.

Failure to meet the performance criteria may result in further improvements to the pond or removal of the pond completely; the course of action that will be taken upon failure of the restoration project will be decided by the EBRPD and the Conservancy.

Monitoring to Date

The restoration site met the hydrology and vegetation performance criteria for Year 1. The 1-foot portion of the pond remained inundated for a period of 60 days with a depth of 25.6 inches while the 2- to 3-foot portion was inundated for almost 6 months. The vegetative cover of hydrophitic plants with a wetland status of faculative or greater was 87.3% for the 1-foot section, 100% for the 2-foot section, and 0% within the 3-foot section. Vegetation was not observed in the deeper portion of the pond because the water suppressed plant growth.

During the monitoring period, 21 bird species, two amphibians, one reptile, six invertebrates, and five mammal species were observed in the vicinity of the pond or in of the pond. Non-native wetland species were not observed in the pond.

Souza II Wetland Restoration Project (Phase I)

Project Overview

The Souza II Wetland Restoration project is located within the Brushy Peak Watershed (Figures 33 and 34). The project aims to improve aquatic functions and values of the wetland and pond. In addition, the natural hydraulic function of the Brushy Creek tributary will be enhanced by reconnecting it to its floodplain. The restoration project will create suitable stream and pond habitat for covered species, such as the California red-legged frog and California tiger salamander, and restore the site with native grasses.

The restoration project will take place within the northern 97-acre portion of the Souza II property. An intermittent tributary of Brushy Creek traverses the project site from west to east for approximately 2,700 linear feet. The intermittent tributary is relatively permanent with surface water that flows into Brushy Creek. There are depressional wetlands throughout the site that are primarily fed by ephemeral drainages and flows from across the parcel.

The project focused on restoring the degraded banks of the tributary, restoring a pond, and restoring seasonal wetlands. The banks of the tributary were stabilized to promote onsite flooding by removing the berms north and south of the tributary. Removal of the berms will increase the tributary's connectivity with the adjacent wetlands and floodplain. South of the restored tributary, a pond was created to provide breeding habitat for California tiger salamander. Restoration of the seasonal wetland involved retiring a dirt road and a culvert installed on the tributary. Areas upland from the restored wetland were seeded with native grasses. Upland from the restored wetland and grassland area, an area infested with milk thistle, a non-native plant species, was enhanced with native grasses.

The entire restoration site is 97 acres. The project restored 3,508 feet of an intermittent stream tributary, 0.2 acre of a pond, and 8.9 acres of seasonal wetland. The Souza II Wetland Restoration project includes the following objectives.

- Increase the abundance and distribution of native emergent vegetation.
- Reduce erosion along the tributary to Brushy Creek.
- Increase wetland and pond capacity and water duration in the project area.
- Hydrologically reconnect the Brushy Creek tributary with its floodplain and adjacent wetland complex.
- Reduce non-native plant species in the project area wetlands.
- Restore seasonal wetland in the project area.
- Create pond habitat capable of supporting California tiger salamander.
- Restore suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.

To achieve the project objectives, work occurred on approximately 97 acres which included the total footprint of all clearing, grading, and other construction activities. A 0.2-acre pond was

created south of the intermittent channel. An 8.9-acre seasonal wetland system was restored or created and enhanced. A portion of the seasonal wetlands will capture and treat drainage from Vasco Road. This system included the extension of an existing ephemeral drainage to connect it with the intermittent stream channel, and the restoration of remnant historical drainages at the eastern edge of the site. Creek banks (0.4 acre) in selected areas (lay back and revegetate) were stabilized and revegetated. In-stream rock weirs were installed to pool water, increase channel complexity and increase sinuosity of creek. A dirt access road was removed and revegetated, including a crossing over the intermittent stream. Finally, project features were planted and seeded with new appropriate native vegetation, using local seed stock and plants propagated from seeds collected in the watershed.

Contribution to Restoration and Creation Requirements

It is estimated that approximately 59 acres of seasonal wetland and 8 acres of pond will be impacted under the Maximum Urban Development Area scenario. Under the Plan, the restoration ratio for wetlands is 2:1 and 1:1 for ponds. Thus, a total of 118 acres of wetland and 8 acres of pond will need to be restored within the Preserve System. In addition, the plan requires the restoration of 2,112 linear feet of intermittent stream. The Souza II wetland and pond restoration contributes 8.5 acres of seasonal wetlands (7.2%) and 0.2 acre of ponds (2.3%) to meet the Plan goal and objective of permanent loss of wetlands and ponds compensation. The project also contributes 3,508 feet (166%) to the intermittent stream restoration requirements. Native grassland restoration supports Plan Goal 11, *Enhance grassland to promote native biological diversity and habitat heterogeneity,* and Objective 11.3, *Reduce the biomass, cover, and extent of exotic plants (i.e., non-native invasive plants) in the Preserve System*.

Performance Criteria and Monitoring

The restoration project will be monitored for satisfying the performance criteria set forth for the restored wetland and established pond. Vegetation monitoring will occur during the first three years early to mid-spring, after or during the end of the rainy season. During this time vegetation will be monitored for plant survival and health. Throughout the 5-year monitoring period, the percent cover of non-native invasive plant species would be considered satisfactory if less than 5% of the project site is covered with non-native invasive plants. Table 13c shows the project's criterion and satisfactory thresholds. Progress of the restoration plantings will be considered satisfactory if the criteria in Table 13c are met or exceeded.

Adaptive management measures will be implemented if the restoration project fails to meet the performance criteria. Measures that may be implemented include additional plantings or installation of erosion control structures/devices. Failure of the adaptive management measures to meet the performance criteria, may result in the reduction of restoration acreages counted towards the Plan requirements.

Monitoring to Date

The restoration project was completed in 2009. Monitoring will begin spring 2010.

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[1]	Seasonal wetlands	Alkali wetlands	Ponds	Reservoir (open water)[2]	Slough/ channel	Riparian woodland/ scrub	Aquatic Land Cover Total	Perennial	Intermittent	Ephemeral	Stream Land Cover Total
Brushy													
Restoration	0.0	--	8.9	--	--	--	--	--	--	--	3,508.0	--	3,508.0
Creation	--	--	--	--	1.3	--	--	--	--	--	--	--	--
subtotal	*0.0*	*0.0*	*8.9*	*0.0*	*1.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*3,508.0*	*0.0*	*3,508.0*
Sand													
Restoration	--	--	--	0.2	--	--	--	--	--	--	--	--	--
Creation	--	--	--	--	--	--	--	--	--	--	--	--	--
subtotal	*0.0*	*0.0*	*0.0*	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Total for Inventory Area	**0.0**	**0.0**	**8.9**	**0.2**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3,508.0**	**0.0**	**3,508.0**

[1]*Perennial wetlands* include wetlands of indeterminate hydrology. In Appendix J, perennial wetlands are classified as *wetlands*

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

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Table 13a. Lentzner Springs Wetland Restoration Project Performance Standards for Restoration Plantings

Year	Criterion	Satisfactory Progress Threshold
1	% of plants surviving	75% survival in Good or Fair condition
2		70% survival in Good or Fair condition
3 (and subsequent years if necessary)		65% survival in Good or Fair condition
4–5 (and subsequent years if necessary)	Absolute cover of native wetland vegetation	60% cover

Table 13b. Vasco Caves Souza I Pond Project Performance Standards

Year	Criterion	Satisfactory Progress Threshold
1	# of wetland species	3 wetland species established
3	Absolute cover of native vegetation	50-60% cover with dominance by hydrophytic plants
1 and 3	Duration of saturation	Saturation for 60 days annually (in addition to inundation)
1 and 3	Absence of plant species on the California Exotic Pest Plant Council's List A-1: Most Invasive and Damaging Wildland Pest Plants	Species absence
1, 3 and 5	Duration of inundation	Inundation for 30 days annually
5	Absolute cover of native vegetation	Pond edges and margin will be dominated by wetland vegetation (FAC, FACW and/or OBL species).

Table 13c. Souza II Wetland Restoration Project (Phase I) Performance Standards for Restoration Plantings

Year	Criterion	Satisfactory Progress Threshold
1	% of plants surviving	75% survival in Good or Fair condition
2		70% survival in Good or Fair condition
3-5	Cover of native wetland	60% native cover
1-5	Cover of non-native invasive	Less than 5% non-native cover

Figure 29: Lentzner Springs Wetland Restoration Site Plan

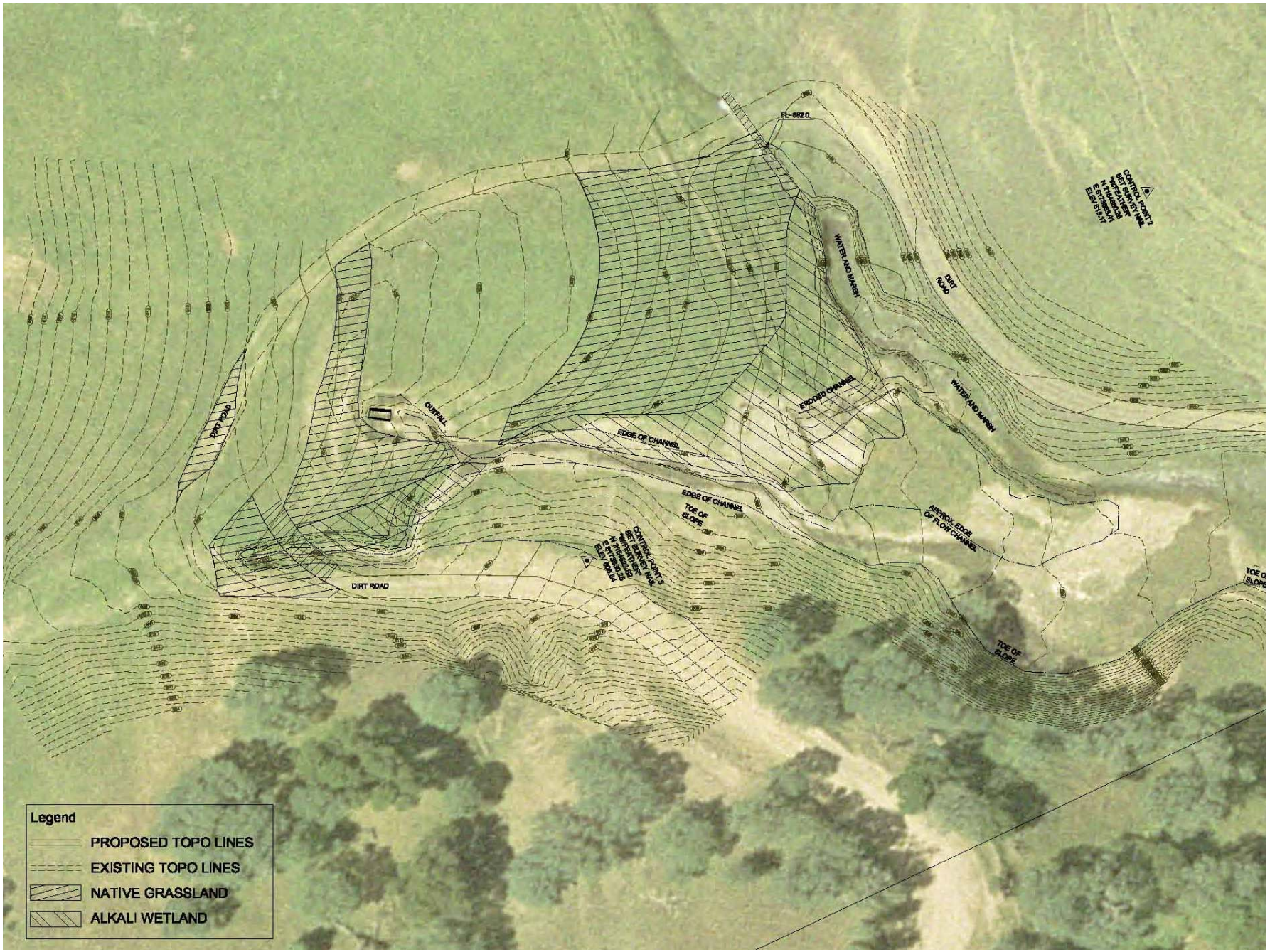

Figure 30: Lentzner Springs Wetland Restoration: Representative Photographs

Before Project

Final project walk through, 2008

Saltgrass and other plantings and seeding at end of construction

Saltgrass and other plantings one year later

View of site one year later

Spring drainage

Figure 31: Vasco Caves Souza I Pond Project Site Plan

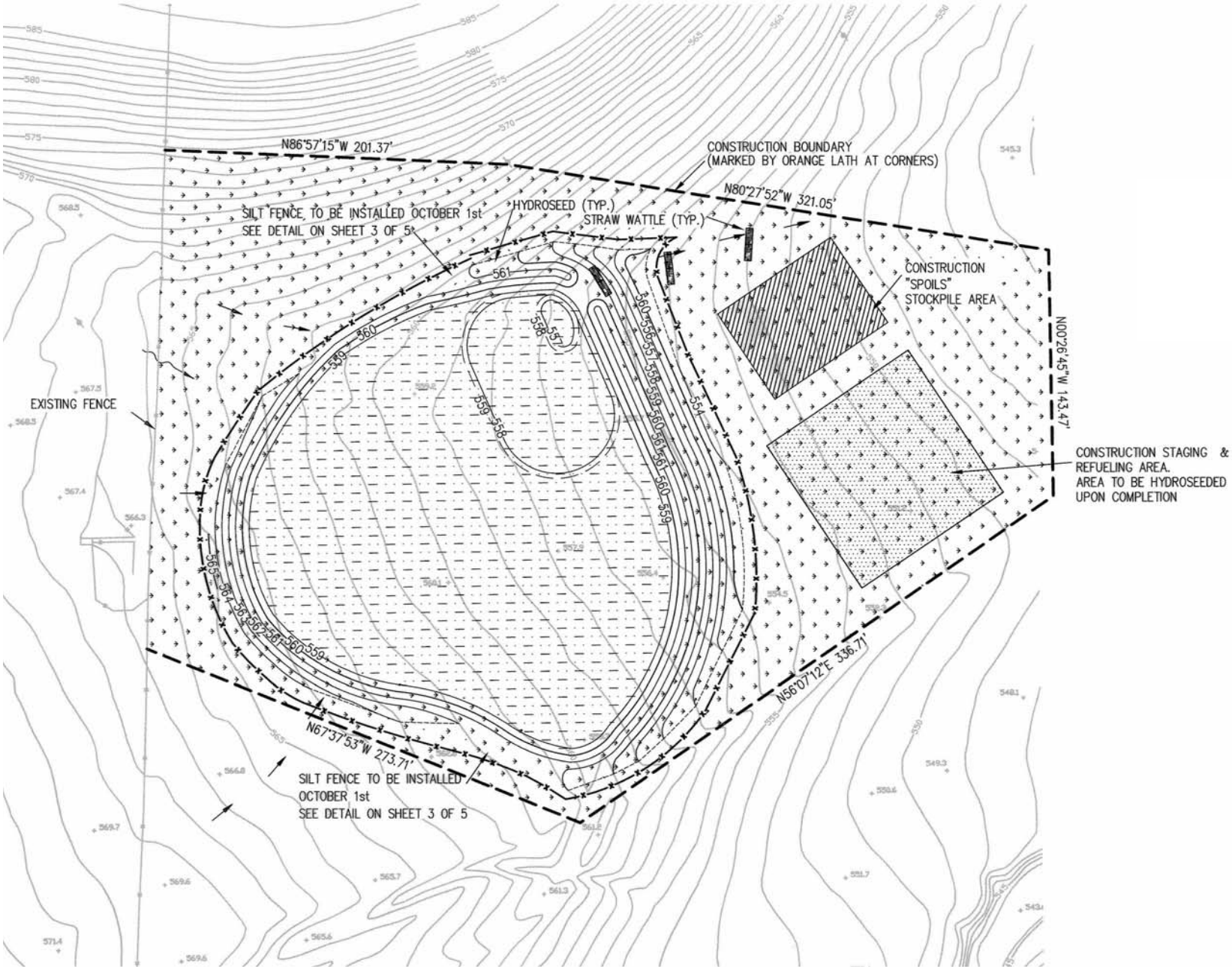

Figure 32: Vasco Caves Souza I Pond Project: Representative Photographs

Before pond construction

During pond construction, Summer 2008

Approximately 1 year after construction

Western Toads in pond, first wet season, 2008/09

Tree Frog in pond, first wet season, 2008/09

California tiger salamander egg in pond, second wet season , 2009/10

Figure 33: Souza II Wetland Restoration (Phase I) Site Plan

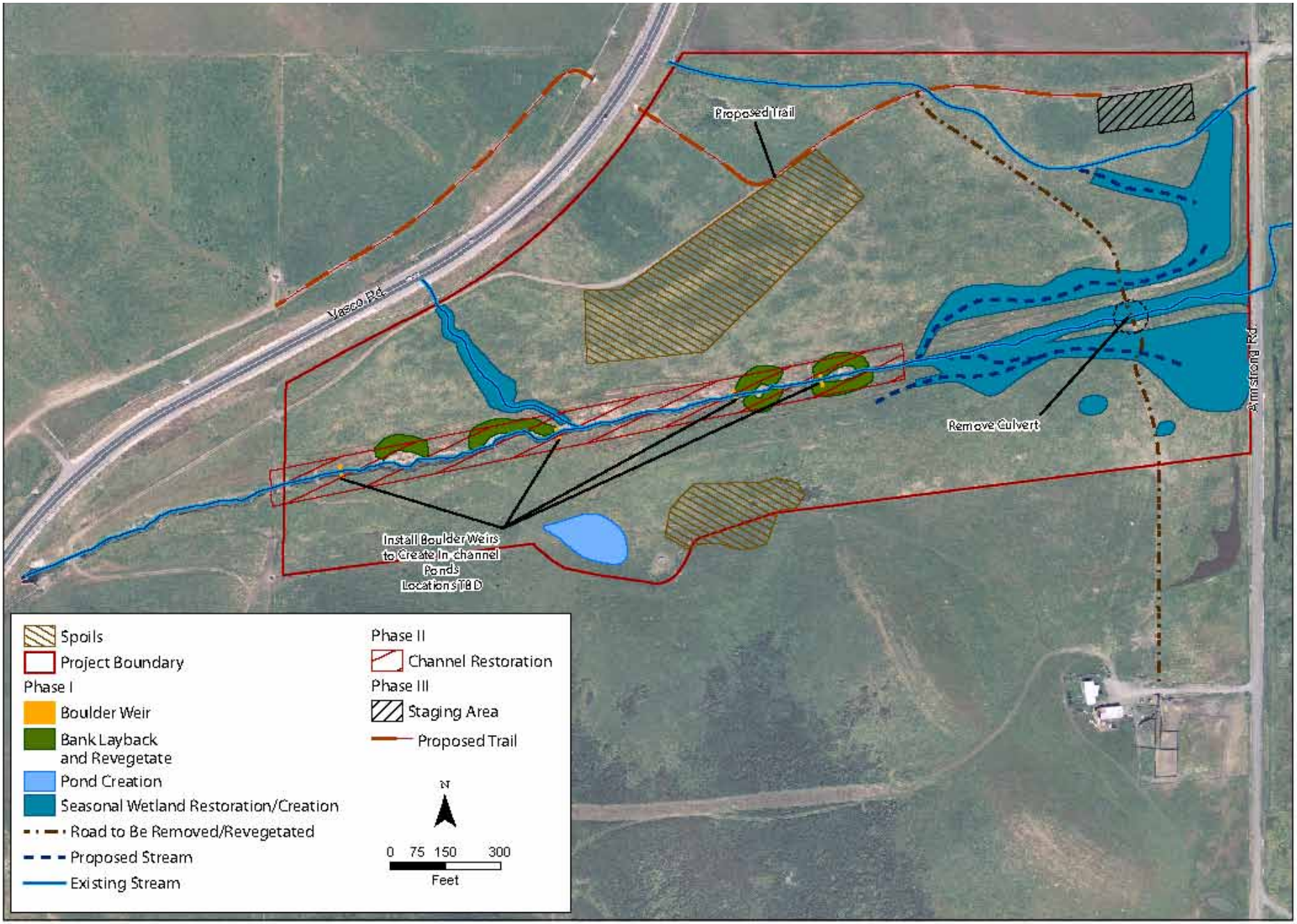

Figure 34: Souza II Wetland Restoration Project (Phase I): Representative Photographs

Aerial view of grading, August 2009

Creek banks pulled back

Plantings

New pond

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. Such management ensures that preserve lands are managed consistent with Plan's goals and objectives.

Preserve management plans are prepared within 1 year of land acquisition. However, 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 other outside research. The Conservancy will formally review and systematically revise preserve management plans at least every 10 years, but management measures may be modified prior to plan updates in cases where adaptive management or new research identifies more effective techniques.

The Byron Hills Preserve Unit Management Plan is currently under development. The Byron Hills Management Area is in the southern central portion of the inventory area in Acquisition Analysis Zone 5. This management plan covers six properties that have been, or will be, acquired by the Conservancy: Vaquero Farms North, Vaquero Farms South, Souza I, Souza II, Souza III, and Martin. This Byron Hills Management Plan is the first preserve management plan prepared by the Conservancy. As such, it will likely become a template for future preserve management plans prepared for other parts of the Preserve System.

As of December 2009, the Byron Hills Management Plan was not finalized and implementation of management activities had not commenced.

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. Each of these types of monitoring is described below.

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, and 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 above under the *Habitat Restoration and Creation* section.

Monitoring Design Phase

The monitoring design phase must occur within the first 5 years of Plan implementation. 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. As of December 2009, the monitoring design phase is in its inception.

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 monitoring design will include standardized protocols that will be necessary for implementing the inventory phase such 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 being considered for acquisition and incorporation into the Preserve System. This phase will continue for acquired lands once the monitoring protocols have been developed during the monitoring design phase described in the above paragraph.

Long-Term Monitoring Phase

The long-term monitoring phase will occur as soon as a comprehensive strategy has been developed (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. As of December 2009, Long-term monitoring has not yet commenced.

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. This Annual Report is the first such reports to be developed.

To support the development of the Annual Report, in 2009 the Conservancy developed a project tracking database. This database is capable of tracking covered activities, impacts on land-cover types and species habitat, and conditions on covered activities.

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. The Plan's Table 7-2 contains a list of potential directed research projects. This list is unchanged from the Plan. None of these projects have been implemented.

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. Finally, 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 then if necessary, adjusting future management actions according to what is learned. Adaptive management follows initial implementation of effectiveness monitoring and research, but is an ongoing process utilized throughout Plan implementation. As of December 2009, adaptive management has not yet commenced.

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. There are two methods to comply with the provision: 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 separates out the following land-cover types: cultivated agriculture, annual grassland, alkali grassland, and ruderal. The separated land-cover types are aggregated and measured against the sum of the acquisition requirement of these land-cover types.

Under Stay-Ahead Measurement Method 2, 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 because 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 only use 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). For all land cover types, the percent ahead ranges from 0% to 95%. The Conservancy is 2,204 acres ahead of the stay ahead requirement for grassland and irrigated agriculture land cover types of 72 acres. For plant occurrences, the percent ahead ranges from 100% to 200% (Table 15).

Jump-Start Guidelines

To support the Plan's Stay-Ahead provision, the Conservancy is encouraged to acquire land prior to the issuance of permits. The Plan provides Jump-Start Guidelines, which recommend that approximately 2% of the expected preservation requirement be acquired prior to ESA and Natural Community Conservation Planning Act (NCCPA) permit issuance. The Conservancy complied with the Jump-Start Guidelines by acquiring or preserving 2,383 acres during the

development of the Plan. This is 9% of the estimated minimum preservation requirement and 7% of the estimated maximum preservation requirement.

Table 14. Stay-Ahead Assessment: Land Cover

Land Cover Type	Conservation			Impact			Acres Required to be Ahead	Acres Ahead	% Ahead[3] (Conservation % - Impacts %)
	Protection Required (acres)	Protection to date	% of Required	Limits (acres)	Impacts to date (acres)	% of Impacts			
Terrestrial									
Annual grassland	16500.0	2,217.6	13%	4152.0	23.4	1%	93.0	2124.7	13%
Alkali grassland	1250.0	35.7	3%	115.0	0.0	0%	0.0	35.7	3%
Ruderal	--	23.3	--	1311.0	13.8	1%	--	--	--
Cropland	400.0	0.0	0%	3545.0	9.4	0%	1.1	-1.1	0%
Pasture	--	0.0	--	1466.0	0.0	0%	--	--	--
Orchard	--	0.0	--	647.0	1.7	0%	--	--	--
Vineyard	--	0.0	--	912.0	0.0	0%	--	--	--
Subtotal all grassland/irrigated ag.	18150.0	2276.6	12.5%	12148.0	48.4	0.4%	72.3	2204.3	12.1%
Chaparral and scrub	550.0	37.1	7%	2.0	0.0	0.0%	0.0	37.1	7%
Oak savanna	500.0	111.0	22%	165.0	0.0	0.0%	0.0	111.0	22%
Oak woodland	400.0	380.5	95%	73.0	0.0	0.0%	0.0	380.5	95%
Subtotal terrestrial	*37750.0*	*2,805.2*	7%	*24536.0*	*37.2*	0%	57.2	2748.0	7%
Aquatic									
Riparian woodland/scrub	0.4	0.0100	3%	35.0	0.2	1%	0.4	-0.4	--
Perennial wetland[1]	0.0	1.3	--	75.0	0.0	0%	0.0	1.3	--
Seasonal wetland	0.0	8.9	--	56.0	0.0	0%	0.0	8.9	--
Alkali wetland	0.0	1.8	--	31.0	0.0	0%	0.0	1.8	--
Pond	0.0	3.3	--	8.0	0.0	0%	0.0	3.3	--
Reservoir (open water)[2]	0.0	0.0	--	12.0	0.0	0%	0.0	0.0	--
Slough/Channel	0.0	0.0	--	72.0	0.0	0%	0.0	0.0	--
Subtotal aquatic	*0.4*	*15.3*	4013%	289.0	0.2	0%	0.4	14.9	--
Stream (length in linear feet)									
Stream length by type and order									
Perennial	0.6	886.4	143148%	2112.00	0.3	0.0	1	886	143148%
Intermittent	0.0	15,617.8	--	2112.00	0.0	0.0	0	15618	--
Ephemeral	0.0	41,350.6	--	26400.0	0.0	0.0	0	41351	--
Subtotal stream length	*0.6*	*57,854.8*	9343477%	30624.0	0.0	0.0	1	57854	9343477%
Totals									
Acres	37,750.4	2,820.5	40.2	24,825.0	37.4	0.0	57.6	2,762.8	4020%
Linear feet	0.6	57,854.8	93434.8	30,624.0	0.0	0%	1	57854	9343477%

[1] *Perennial wetlands* are equivalent *permanent wetlands.* .

[2] *Reservoir (open water)* is equivalent to *aquatic.* .

[3] *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 irrigigated agricultural land cover types (yellow highlighted rows).*

Table 15. Stay-Ahead Assessment: Plants

Common Name	*Scientific Name*	Conservation	Impacts	Difference	% Ahead
Mount Diablo manzanita	*Arctostaphylos auriculata*	*1*	--	*1*	*100%*
Brittlescale	*Atriplex depressa*	*1*	*[see note1]*	*1*	*100%*
San Joaquin spearscale	*Atriplex joanquiniana*	*1*	--	*1*	*100%*
Big tarplant	*Blepharizonia plumosa*	*1*	--	*1*	*100%*
Mount Diablo fairy lantern	*Calochortus pulchellus*	*1*	--	*1*	*100%*
Recurved larkspur	*Delphinium recurvatum*	*0*	--	*0*	--
Round-leaved filaree	*Erodium macrophyllum*	*0*	*[see note2]*	*0*	--
Diablo helianthella	*Helianthella castanea*	*1*	--	*1*	*100*
Brewer's dwarf flax	*Hesperolinon breweri*	*0*	--	*0*	--
Showy madia	*Madia radiata*	*0*	--	*0*	--
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	*0*	--	*0*	--
Total		**6**	**0**	**6**	**10500%**

[1] Temporary imapcts occurred to brittlescale as part of the Souza 2 Wetland Restoration Project. The project is intended to creat more suitable habitat for brittlescale. Seeds were collected and propagated.

[2] 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, and seeds collected on site were propagated.

VIII. CHANGED CIRCUMSTANCES AND REMEDIAL MEASURES

The No Surprise Regulation established by the USFWS defines changed circumstances as those circumstances affecting a species or geographic area covered by an HCP that can be reasonably anticipated by the applicant or USFWS and to which the parties preparing the HCP can plan a response. The 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, destruction of riparian plantings from flooding, prolonged drought, and vandalism of preserves. Occurrence of a changed circumstance requires the Conservancy to notify the USFWS and CDFG 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 CDFG 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. No changed circumstances occurred during the reporting period, as such, no remedial measures were implemented.

IX. FINANCES

Budget

The economic assumptions on which the Plan was based must be evaluated on an annual basis. To do this, the cost estimate information presented in the Table 9-2 in the Plan was used to evaluate the Plan's economic assumptions against the reporting period budgets. Cost estimate information for the first 5 years of implementation was extracted from the Appendix G in the Plan. The estimated average annual costs during the current 5-year period (year 1-5) was then calculated. For the purposes of evaluating the Plan's cost assumptions, the following metrics were used (Table 16).

- Plan summary cost estimate information,
- Budgeted funding by revenue source, and
- Annual expenditures.

During the reporting period, the total budgeted funding was greater than the Plan's average cost per year estimate. However, total expenditures fell below the Plan's average cost per year estimate. During the reporting period, expenditures focused on program administration; land acquisition; restoration planning, design, and construction; and environmental compliance. As such, funding for Plan preserve management and maintenance and monitoring, and research and adaptive management were under-spent in the reporting period.

Revenue Sources

Three main revenue sources are used to fund the Plan.

- Fee Collection: Development, wetland, rural road, and temporary impact fees are utilized to mitigate impacts on special status species and natural communities.
- Local Funding: Acquisition of land by local agencies, including park districts, cities, and the county, contribute to the land acquisition requirement of the Plan.
- State and Federal: Funding from the state and federal government to assemble, manage, and monitor Preserve System lands.

A total of $32,043,645 was received or approved in the reporting period (Table 17 and Table 18). This includes development fees from eight covered activities ($1,436,595), wetland fees from two covered activities ($11,774), local funding ($2,504,133), and grants ($28,052,685) (Table 18). Local funding came from various EBRPD funds and contributions to recovery collected by the Conservancy. Grants from six sources contributed to state, federal, and non-governmental funding. More detailed accounting of all revenue fee or grant revenue received or approved to date is summarized in Table 18.

Funding in Perpetuity

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[10] 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 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 (= 50% of 12,704 acres, or 6,352 acres) or at the end of year 15 of implementation, whichever occurs first. To date, no progress has been made on this requirement.

[10] 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 Area s, respectively.

Table 16. 2008/2009 Conservancy Budget: Expenditures and Comparison to Budget Projections

	HCP/NCCP Projected Cost Estimate Information			2008							2009						
				Budgeted funding by Revenue Source						Expenditures	Budget						Expenditures
Cost Category	Years 1-5	Average Cost Per Year (Years 1-5)[1]	% of Total	Existing Development Fee Revenues	Existing Wetland Mitigation Fee Revenues	CDFG's California Wildlife Foundation Account	Grant Funding	TOTAL	% of Total		Existing Development Fee Revenues	Existing Wetland Mitigation Fee Revenues	CDFG's California Wildlife Foundation Account	Grant Funding	TOTAL	% of Total	
Program Administration	$ 3,065,485	$ 613,097	5.8%	$ 224,575	$ -	$ 230,000	$ 40,000	$ 494,575	2.4%	$ 457,816	$ 235,000	$ -	$ 229,360	$ 29,305	$ 493,665	3.0%	$ 492,822
Land Acquisition	$ 37,337,984	$ 7,467,600	71.2%	$ 900,667	$ -	$ 1,000,000	$ 8,000,000	$ 9,900,667	47.6%	$ 4,131,000	$ 290,000	$ -	$ 110,000	$ 13,646,495	$ 14,046,495	85.0%	$ 5,517,438
Management, Restoration and Recreation Planning and Design	$ 1,861,131	$ 372,226	3.5%	$ 100,000	$ 28,322	$ 150,000	$ 60,000	$ 338,322	1.6%	$ 225,275	$ 75,000	$ 127,360	$ 65,810	$ 60,000	$ 328,170	2.0%	$ 168,062
Habitat Restoration/ Creation	$ 3,625,657	$ 725,131	6.9%	$ -	$ 7,869	$ 399,457	$ -	$ 407,326	2.0%	$ 375,197	$ -	$ -	$ 80,239	$ 900,000	$ 980,239	5.9%	$ 511,706
Environmental Compliance	$ 459,000	$ 91,800	0.9%	$ 36,000	$ -	$ 50,000	$ -	$ 86,000	0.4%	$ 86,272	$ 111,495	$ -	$ 55,000	$ -	$ 166,495	1.0%	$ 137,241
HCP/NCCP Preserve Management and Maintenance	$ 3,191,980	$ 638,396	6.1%	$ 204,100	$ -	$ 200,000	$ -	$ 404,100	1.9%	$ 35,487	$ 293,247	$ -	$ -	$ -	$ 293,247	1.8%	$ 11,492
Monitoring, Research, and Adaptive Management	$ 2,159,819	$ 431,964	4.1%	$ 16,500	$ -	$ -	$ 50,000	$ 66,500	0.3%	$ -	$ 94,345	$ -	$ -	$ -	$ 94,345	0.6%	$ 46,571
Remedial Measures	$ 30,000	$ 6,000	0.1%	$ 6,000	$ -	$ -	$ -	$ 6,000	0.0%	$ -	$ 6,000	$ -	$ -	$ -	$ 6,000	0.0%	$ -
Contingency Fund (5% of non-land acquisition costs)	$ 719,654	$ 143,931	1.4%	$ 90,141	$ -	$ -	$ -	$ 90,141	0.4%	$ -	$ 117,808	$ -	$ -	$ -	$ 117,808	0.7%	$ -
TOTAL	$ 52,450,710	$ 10,490,145	100.0%	$ 1,577,983	$ 36,191	$ 2,029,457	$ 8,150,000	$ 11,793,631	56.7%	$ 5,311,047	$ 1,222,895	$ 127,360	$ 540,409	$ 14,635,800	$ 16,526,464	100%	$ 6,885,331

[1] The annual average of the initial five year cost estimate may provide an unrealistic estimate of early annual costs because the level of effort on some categories ramps up from zero over the five year period.

Table 17. Summary of All Revenues Received/Approved

Type	Total	
Development fees	$	1,436,595
Wetland fees	$	11,774
Local Funding	$	2,504,133
Grants	$	28,052,685
Total	*$*	*32,005,188*

Table 18. Summary Accounting of Fee and Grant Revenues Received in Reporting Period (includes grant funds approved but not received)

Type	Source	Date	Amount
Development fees			
	Mount Diablo Recycling Center	10/8/2008	$ 10,065.00
	RileMart Company (Illegal Grading Site)	4/15/2009	$ 10,065.00
	U.S Coast Guard/SBA Towers Telecommunications Facility	7/13/2009	$ 1,770.71
	Keller Canyon Landfill Gas Power Plant	6/24/2008	$ 14,493.00
	Contra Costa-Las Positas 230 kV Transmission Line Reconductoring Project	3/9/2009	$ 491,314.72
	State Route 4 Bypass, Segment 4, Phase 2	Dec-08	$ 873,334.87
	Martin Cell Tower	3/6/2009	$ 34,179.00
	Marsh Creek Bridge Emergency Repair	10/15/2008	$ 1,372.86
Development fees subtotal			*$ 1,436,595.16*
Wetland fees			
	State Route 4 Bypass, Segment 4, Phase 2	Dec-08	$ 11,774.03
	Marsh Creek Bridge Emergency Repair	10/15/2008	$ 59.58
Wetland fees subtotal			*$ 11,774.03*
Local Funding			
	EBRPD	various	$ 2,455,002.00
	Contributions to recovery	2009	$ 49,131.47
Local funding subtotal			*$ 2,504,133.47*
Grants and Prior Grants to Others That Match Conservancy Activities			
Section 6 (2006)	U.S. Fish & Wildlife Service	2008	$ 6,531,054.00
Section 6 (2007)	U.S. Fish & Wildlife Service	2008	$ 7,000,000.00
Section 6 (2008)	U.S. Fish & Wildlife Service	2008	$ 6,000,000.00
Section 6 (2009)	U.S. Fish & Wildlife Service	2009	$ 2,500,000.00
CVPIA - HRP	U.S. Bureau of Reclaimation	2006	$ 1,241,631.00
IRWMP - Prop 50	Department of Water Resources	2006	$ 750,000.00
NCCP Local Assistance Funds (2006)	California Department of Fish & Game	2009	$ 40,000.00
NCCP Local Assistance Funds (2007)	California Department of Fish & Game	2009	$ 60,000.00
NCCP Local Assistance Funds (2008)	California Department of Fish & Game	2009	$ 150,000.00
	California Coastal Conservancy	2008	$ 1,400,000.00
	Moore Foundation grant	2005; 2009	$ 2,380,000.00
Grants subtotal			*$ 28,052,685.00*
Total			**$ 32,005,187.66**

X. PROGRAM ADMINISTRATION

Program Administration

The Plan Amendment process is detailed in the Plan Implementing Agreement. Amendments to the Plan are not anticipated to occur frequently. They may only be proposed by a Permittee; however, Plan amendments require compliance with USFWS and CDFG regulations (i.e., ESA, National Environmental Policy Act, NCCPA, California Environmental Quality Act). Amendments include both minor and major amendments. Minor amendment may include the following.

- Minor changes to survey, monitoring or reporting protocols;
- Changes to any measure(s) in the Conservation Strategy to respond to the Adaptive Management Plan or Changed Circumstances identified in Section 12.0 of the Implementing Agreement;
- Correction of any tables or appendices in the Plan to reflect previously approved amendments to the Plan or the Permits;
- Changes listed in Chapter 10.3.1 of the Plan as examples of administrative changes, or changes substantially similar to those examples;
- Changes listed in Chapter 10.3.2 of the Plan as examples of minor modifications; and
- Other changes that do not result in adverse effects to Covered Species beyond that analyzed in the Plan and the associated biological opinion, and do not limit the ability of the Implementing Entity to achieve the biological goals and objectives of the Plan.

Major Amendments include any changes that do not qualify as a minor amendment as identified above, and may include the following.

- Revisions of the permit area boundary that do not qualify for a minor modification.
- Addition of species to the covered species list.
- Increasing the allowable take limit of existing covered activities or adding new covered activities to the Plan.
- Modifications of any important action or component of the conservation strategy under the Plan including funding, that may substantially affect levels of authorized take, effects of the covered activities, or the nature or scope of the conservation program.
- A major change in performance standards if monitoring or research indicates that performance standards are not attainable because technologies to attain them are either unavailable or infeasible.

- Extending the permit term beyond 30 years.

The Conservancy made no minor or major amendments to the Plan during the Reporting Period.

XI. NEXT YEAR: 2010

The Conservancy 2010 Work Plan identifies Plan administration, preserve acquisition and management, preserve restoration/creation, and monitoring and adaptive management tasks in terms of Plan time frame, status, and the actions planned for 2010 (Table 19).

Table 19. Conservancy 2010 Work Plan

	Task	HCP/NCCP Time Frame	Status (Completion Date)	Actions Planned for 2010
HCP/NCCP Administration (general)				
1	Hire key administrative staff of Implementing entity or secure agreements or contacts with other organizations to fulfill these roles.	6 Months - 1 Year	Complete (Winter 2008)	Continue to retain consultant to assist Conservancy as a staff Conservation Planner, 3 days a week in lieu of hiring a full-time employee. 2010 agreement with EBRPD.
2	Increase public awareness of the Plan and provide opportunities for involvement in the implementation of the Plan by the public, interested agencies, and others.	N/A	On-going	PAC meetings will continue to be held quarterly. The Conservancy will actively recruit additional PAC participation using the website and other means. Staff will pursue greater media coverage of Plan activities to improve awareness of the public at large. Public events will be held to commemorate accomplishments. Monthly meetings with wildlife agencies to help coordinate implementation of the HCP, begun in 2008, will continue in 2010.
2a	Develop a Conservancy Volunteer Program	N/A	Ongoing	Finalize development of the program including drafting program overview and identifying goals and objectives for volunteer efforts. Conduct one large volunteer restoration event during 2010 and at least 6 volunteer monitoring events.
3	Establish HCP/NCCP Implementation web site.	6 Months - 1 Year	Development Complete Spring 2008, Maintenance Ongoing	In addition to the ongoing actions from 2009, staff will continue to update the website with news on Conservancy land acquisitions and restoration/creation projects, and highlight public involvement opportunities in 2010.
4	Develop and maintain annual budgets and work plans.	N/A	On-going (approval before start of 2008)	Conservancy staff will prepare the 2011 annual budget and the 2011 work plan for Board discussion in December 2010.
5	Calculate the amounts of automatic annual fee increases and distribute these calculations to the cities and the county by March 15 of each year, in accordance with Chapter 9 of the HCP/NCCP.	N/A	2009 adjustment complete. 2010 adjustment planned for March.	The calculations will be performed again in March 2010.
6	Prepare and submit annual report to CDFG and USFWS.	Required by March 15 following first full year of implementation	Planned (March 2010)	The 2008-2009 HCP Start-Up Period Annual report will be issued by March 15, 2010.
7	Pursue State and Federal Grants to assist in funding preserve acquisition and other implementation tasks	N/A	On-going	Conservancy staff continue to research and apply for available grant monies which make up a significant portion of the funding for implementation of the HCP/NCCP during 2010. Staff will apply for Section 6 funds and for non-federal grant funds that can match the Section 6 funds.
7a	Administer grants already awarded	N/A	On-going	Staff will continue with these duties in 2009 and continue to pursue additional streamlining of the Section 6 granting process.
8	Coordinate with other Regional HCPs and pursue a legislative program that will aid the Conservancy's implementation of the Plan.	N/A	On-going	Continue to participate in coalition to pursue common policy objectives and to learn from the experiences of other HCPs. Implement 2010 Legislative Platform, including continued work on mitigation as match and Section 6 funding..
9	Provide accounting services for the Conservancy.	N/A	On-going	In addition to the ongoing actions from 2008-2009 the Conservancy will commission an independent audit of the accounts and records of the Conservancy since inception. The auditors written report will be presented to the Board.
10	Pursue regional permits and permitting programs for jurisdictional wetlands and waters with the appropriate state and federal agencies to help ensure coordination between implementation of the HCP and the implementation of state and federal wetlands regulations.	N/A	On-going (end of 2010)	Prepare a public draft of the regional permit and continue coordination efforts between implementation and state and federal wetland regulations in 2010 with a goal of completing regional permitting instruments in 2010.

	Task	HCP/NCCP Time Frame	Status (Completion Date)	Actions Planned for 2010
HCP/NCCP Administration (permit issuance)				
11	Pass local ordinances to implement HCP/NCCP (cities and County).	0-6 Months	Complete (October-November)	---
12	Develop checklists and other materials for local planners to ensure compliance by each project receiving coverage under the Plan.	0-6 Months	On-going (materials to be updated in 2009)	Checklists and other resource materials will continue to be updated, expanded, and created in 2010.
13	Develop template survey report that may be used by project proponents as a guide and by local jurisdictions to evaluate the completeness of the survey reports they review.	0-6 Months	Complete (Spring 2008)	Additional review and revision is on-going based on experiences with projects that have used the form during 2009. A new version of the form is expected by early 2010.
14	Assist local jurisdictions with training staff to review and process HCP/NCCP applications. Assist local jurisdictions to ensure that project proponents comply with the provisions of the Plan, including performance of required avoidance, minimization and mitigation measures.	0-6 Months	On-Going	Staff will continue to provide assistance and technical support to local jurisdictions in 2010. Staff will hold regular meetings with the Contra Costa County Public Works Department, Environmental Unit Staff, in order to assist with facilitation of HCP/NCCP applicable CIP's.
15	Provide each participating local jurisdiction with detailed maps of fee zones and land cover so they can process and evaluate HCP/NCCP applications.	0-6 Months	Complete	Staff will check-in with participating local jurisdictions to evaluate whether using the maps for processing and evaluating HCP/NCCP applicability is useful.
16	Receive and Reviewing applications for coverage under the HCP/NCCP and collecting development fees.	0-6 Months	Ongoing	---
17	Prepare report documenting the expected benefits of the HCP/NCCP to non-covered special-status species to provide streamlining for future CEQA documents.	6 Months - 1 Year	In-process (complete by 2010)	A final draft of this document will be complete and circulated in 2010.
18	Develop policies, a template agreement and application form for Participating Special Entities (entities with projects not subject to the land use authority of the cities or the County) so they may receive take authorization through the Plan.	N/A	Complete (early 2008, revised in 2009, to be updated in 2010)	Continue to assist PSE's with their applications and continue to review such applications and bring to the Board for approval. Several PSE applications are expected in 2010. PSEs have been the majority of applicants to date.
19	Establish GIS and other databases to track land acquisitions and HCP/NCCP impacts.	6 Months - 1 Year	On-going	Work on GIS and other databases will continue in 2010 with specific emphasis on improving the HCP impact tracking database.
Preserve Acquisition and Management				
20	Acquire land to meet Jump Start guidelines as described in Chapter 8.	0-6 Months	Complete	In 2010, the pace land acquisition should remain high if not increase. Two properties are already in contract and will close within 2010: Vaquero Farms North (577 acres) and Ang (460 acres). With a generous amount of grant funding available and a number of willing sellers, it is important to aggressively pursue land acquisition to stay well ahead of the Stay Ahead provision.
21	Continue to acquire land to assemble Preserve System and Meet Stay Ahead requirements as described in Section 8.6.1	1-5 Years	On-going	
22	Develop a mutually agreeable programmatic strategy with East Bay Regional Park District (EBRPD) to collaborate on land acquisition and management in the HCP area.	N/A	On-going	
23	Conducting pre-acquisition surveys of potential acquisitions to determine their biological value for the HCP.	N/A	On-going	Continue streamlined approach in 2010.
24	Create template Conservation Easement Deeds and Deed Restrictions and other protective covenants to speed-up addition of land to the Preserve System and to protect the interests of the Conservancy in land it acquires.	N/A	On-going (Complete in 2010)	In 2010, staff will complete a draft of the Conservation Easements template.

	Task	HCP/NCCP Time Frame	Status (Completion Date)	Actions Planned for 2010
25	Develop and begin to implement a strategy for funding the long term management of the Preserve system before 50% of the authorized take under the maximum urban development area is used or before the end of year 15 of implementation, whichever comes first. Provide progress reports on this matter in the Annual Report.	Year 15 or when half of the impacts have occurred, whichever comes first.	Planned	Work on this effort will continue in 2010. Progress on this effort will be provided in the 2008 & 2009 annual reports.
26	Develop site-specific management plans for the Preserve System and individual preserves.	1-5 Years	On-going	In 2010, Preserve Management Plans will be completed to cover Fox Ridge and Schwartz and work on other plans will commence.
27	Prepare an Exotic Plant Control Plan to address exotic and invasive plants on Preserve System lands	1-5 Years	On-going	In 2010 Staff will begin developing a draft of the Exotic Plant Control Program. Once developed, the program will be evaluated and revised at least every 5 years.
28	Prepare a Recreation Plan to address recreational uses on Preserve System lands	1-5 Years	On-going	In 2010 Staff will begin developing this Plan.
Preserve Restoration/Creation				
29	Begin habitat restoration and creation design and additional environmental compliance for habitat restoration if needed.	1-5 Years	Ongoing	
30	Implement habitat restoration and habitat creation projects.	1-5 Years	On-going	In 2010, riparian restoration work will occur on the Irish Canyon-Chopra property and the initial design phase of the site includes three areas of oak/buckeye riparian planting. Fencing wetland areas may also commence in 2010. Additional sites for small scale planting projects will be explored in 2010 and planting may commence. One or more larger projects will be planned in 2010 for construction in 2011.
Monitoring and Adaptive Management Program				
31	Design Monitoring and Adaptive Management Program	1-5 Years	Ongoing	In 2010 efforts continue to focus on the monitoring design phase with attention on compiling information and data toward the development of a comprehensive monitoring strategy as well as determining monitoring priorities within each natural community type.
32	Initiate monitoring of restoration projects and new preserves.	1-5 Years	Ongoing	With expected completion of Preserve Management Plans, and need for interim monitoring in the meantime, monitoring and adaptive management efforts will ramp up substantially in 2010.

REFERENCES CITED

Jones & Stokes. 2006. *East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan.* October. (J&S 01478.01.) San Jose, CA.

Noss, R. F., E. T. LaRoe, and J. M. Scott. 1995. *Endangered Ecosystems of the United States: a Preliminary Assessment of Loss and Degradation.* Biological Report 28. Moscow, ID: National Biological Service.

Reed, P. B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: California (Region 0)*. (Biological Report 88 [26.01].) Washington, DC: U.S. Fish and Wildlife Service Research and Development. Prepared for National Wetlands Inventory, U.S. Fish & Wildlife Service, Washington, DC.

Hall, L.S., P.R. Krausman, and M.L. Morrison. 1997. The habitat concept and a plea for standard terminology. *Wildlife Society Bulletin* 25:173–182.

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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 then if necessary, adjusting future conservation management actions according to what is learned (*65 Federal Register 106*; June 1, 2000). (See also Chapter 6 for alternative but similar definitions of adaptive management.)

Anthropogenic. Caused or produced through human agency.

Baseline. The baseline is 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 as to whether or not 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 (ESA).

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. Buffer areas are 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 ESA (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 for 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. 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 Conservation 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 definition of *suitable habitat* below.

Habitat quality. The ability of the environment to provide conditions that support the persistence of individuals and populations (Hall et al. 1997). 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. Restoration is 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. 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 USACE under Section 404 of the CWA, the SWRCB or the RWQCBs under either Section 401 of the CWA or the Porter-Cologne Water Quality Control Act, or CDFG 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. Loss of habitat is 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.

Ordinary high water mark (OHWM). A line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; or the presence of litter and debris.

Perennial stream. 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 USFWS and a take permit under the NCCPA from CDFG 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 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. Preserves are 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 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 river, stream, or 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]), *take* means 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.

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.