4.2 BIOLOGICAL RESOURCES

Introduction

This section of the Draft EIR provides a description of the biological and wetland resources on the project site, information on regulations that serve to protect sensitive resources, an assessment of the potential impacts of the proposed project, and recommended measures to mitigate potentially significant impacts on sensitive resources.

Biological resources were identified through the compilation and review of existing information and a more recent field reconnaissance survey conducted by EcoSystems West Consulting Group (EcoSystems West), the EIR biologists, in 2005. Information reviewed by EcoSystems West included previous studies and mapping prepared by the City's former biological consultants and independent groups (Habitat Restoration Group, Brady and Associates, LSA Associates, Inc., Biotic Resources Group, Bland and Associates, D.W. Alley and Associates, and Entrix, Inc.); and input provided by representatives of the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), Federal Highway Administration (FHWA), California Department of Transportation (Caltrans), and National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS). A review was also undertaken of more recent (after 2001) information submitted to the City by Bengal Engineering and EcoSystems West.

Basic background information reviewed included records on occurrences of special-status species and sensitive natural communities maintained by the California Natural Diversity Data Base (CNDDB) of the CDFG (2003), the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (2005), the CDFG's list of special animals and plants (2005c); and the *California Statewide Wildlife Habitat Relationships System* (CDFG, 2005e). Certain environmental documents that were previously submitted for the earlier proposed bike/pedestrian trail alignments and former bridge crossings and the current project are summarized in Table 4.2-1.

Following the review of available information, EcoSystems West biologists conducted field reconnaissance surveys of the site during the spring/summer and early fall seasons of 2005. The reconnaissance surveys were used to 1) confirm the accuracy of available information on biological, botanical and wetland assessments; 2) provide a greater understanding of habitat values and relationship to surrounding lands; and 3) form the basis for determining the adequacy of the conclusions and recommendations made in reports by the City's consultants and possible need for any additional mitigation.[1] Walking transects were made along the proposed bridge and trail alignments, focusing on locations where previous sensitive resources were documented in earlier reports and noting the current condition of habitat and/or observations of wildlife activity.

[1] Many of the resource management policies of the Arana Gulch Master Plan would serve as mitigation measures for potential biological impacts.

Table 4.2-1: Summary of Project-Related Biological Studies

Title of Report/Letter	Author/Date	Summary of Conclusions
Arana Gulch Biotic Assessment	Habitat Restoration Group, 1996a	This assessment provides an inventory and description of the vegetation, identifies potential wetlands, assesses the potential occurrence of special-status species within the site, and evaluates five previously proposed conceptual land use scenarios and what effect they may have on sensitive biotic resources. The document also provides recommendations to minimize potential impacts to sensitive resources.
A Management Program for Santa Cruz Tarplant (*Holocarpha macradenia*) at Arana Gulch	BMP Ecosciences, 2005	This management program addresses the reproductive system of the tarplant, the general distribution and habitat characteristics, and population dynamics. Management options for protection of the tarplant are recommended. A summary of the program is included as Appendix A of the Arana Gulch Master Plan.
Broadway-Brommer Street Bicycle/ Pedestrian Path Connection Natural Environmental Study (NES)	Biotic Resources Group, 1999 (Brady/LSA)	The study determines no impacts would occur to the Waters of United States from constructing two previously proposed bridges, one over Arana Gulch and one over Hagemann Gulch. This document presumes the presence of the federally listed and protected California red-legged frog, concludes the project has the potential to affect aquatic resources within the two creek crossings and to affect possible breeding raptors in the project area, and describes how close the project alignment comes to known federally listed and protected Santa Cruz tarplant populations. To reduce or eliminate adverse impacts to any of these sensitive biological resources, the NES provides a comprehensive outline of mitigation measures to implement during and/or after the construction of the pathway. It also includes a copy of the Santa Cruz Tarplant Recovery and Management Program (April 1997). The document also identifies a total of 38 trees greater than 4 inches in diameter that would be removed and indicates that the City woodland revegetation program would implement a 2:1 replacement ratio on City property within the project vicinity.[a]
Broadway-Brommer Street Bicycle/ Pedestrian Path Connection Natural Environmental Study Final Addendum	Biotic Resources Group, 1999; Bland & Associates, 1999 (Brady/LSA)	This study presents changes to the original NES of May 1999. This document incorporates revisions to the original text in response to comments from the California Department of Transportation (Caltrans) and the Federal Highway Administration and clarifies any previous errors or omissions. It includes results of biological surveys conducted for the Santa Cruz tarplant (Brady/LSA, 1999a [Biotic Resources Group]), and California red-legged frog, nesting/night-roosting raptors and Great blue herons (Bland and Associates, 1999). It outlines the final potential impacts and provides suggested avoidance measures.
Broadway-Brommer Bicycle/Pedestrian Path Connection Environmental Impact	Brady/LSA, 1999b	This study addresses an overview of the previously proposed project alternatives and analyzes

Table 4.2-1 *continued*

Title of Report/Letter	Author/Date	Summary of Conclusions
Report/Environmental Assessment (EIR/EA) – Chapter VII, Environmental Consequences under CEQA, Section 6, Biological Resources		their impacts on environmental resources (i.e., biological resources) as required by the California Environmental Quality Act (CEQA). This chapter provides a table summarizing the impacts, discusses the level of significance the impacts will have on environmental resources, and offers mitigation measures to minimize or avoid such impacts.
Salmonid Densities and Habitat Conditions in 1999 for Arana Gulch, Santa Cruz County, California; Identifying Migrational Barriers, Streambank Erosion and Opportunities for Steelhead Enhancement	D.W. Alley & Associates, May 2000	This study provides a description of the habitat conditions of the Arana Gulch watershed. The study area included approximately three stream channel miles of the mainstem, west, and middle branch of Arana Gulch Creek, upstream of the Santa Cruz Harbor. Hagemann Gulch was not included in this study. The study concluded that salmonids were observed throughout the entire segment of study area. Low numbers of individual salmonids occurred in the downstream segments near the Upper Harbor while the numbers increased in the upstream study segments. An accumulation of sediment along the stream channel was observed throughout the study area in 1999; the sediment resulted in poor spawning substrate habitat. The study suggests winter storms during 2000 flushed some of the sediments from the upstream segments of the study area, which made marginal improvements to spawning habitat. The study also recommends incorporating habitat enhancement measures to improve the quality of spawning and rearing salmonid habitat.
Federally Endangered Fish, the Tidewater Goby, (*Eucyclogobius newberryi*), in Arana Gulch, City of Santa Cruz	Entrix, November 22, 2004	This study reports the results of tidewater goby surveys conducted for the City of Santa Cruz Parks and Recreation Department. Entrix, Inc. completed field surveys in September 2004 and prepared the report. The report concludes that no tidewater gobies were encountered after conducting one day of surveys along Arana Gulch Creek and that the present creek/harbor/lagoon system lacks suitable habitat for them to become established. The report also discusses the possibility of individual tidewater gobies becoming displaced from nearby populations to the north (San Lorenzo River) and south (Corcoran Lagoon) during large storm events. The report recognizes the potential for re-colonization of tidewater gobies in the Arana Gulch Creek system, but states the establishment of a resident population is unlikely under the current habitat conditions. The report also documents the occurrences of other fish species in Arana Gulch Creek and the potential for steelhead (*Oncorhynchus mykiss*) to occur. The report does not include a survey of Hagemann Gulch.
Results of Special-Status Bat Assessment/Survey for the Proposed City of Santa Cruz Arana Gulch Pedestrian/Bike Path Connection in Santa Cruz County, California	Letter to Amy Skewes-Cox, Environmental Planner, from EcoSystems West, September 2005	This letter provides the results of a recent reconnaissance-level survey of Arana Gulch. The survey areas of the site included the proposed bridge crossing over Hagemann Gulch, the lower reach of Arana Gulch Creek, and the

Table 4.2-1 *continued*

Title of Report/Letter	Author/Date	Summary of Conclusions
		approximate 6-acre site along Agnes Street that was originally outside the project boundaries (but is now part of the site). The survey involved day and nighttime field visits in August and September 2005. During the day, tree stands within 300 feet of the proposed pathways and residential area were evaluated to determine their potential as bat roosts and/or examined for evidence of roosting bats. Anabat II bat detectors were used for two consecutive nights to sample bat activity over the survey areas. Anabat units acoustically sampled bat species diversity and monitored levels of their activity occurring in these areas of interest. The letter documents the acoustic signature and observation of a special-status species, the western red-bat (*Lasiurus blossevilli*), emerging from an oak tree located on the east side of Arana Gulch Creek within 100 feet of the proposed pathways. Other more common species of bats such as the big brown bat, hoary bat, California myotis, and Mexican free-tailed bat were documented over the survey areas. Because the survey took place in the late summer/early fall season, evidence of maternity roosts was not observed.
Arana Gulch Greenbelt Lands Preliminary Wetland Delineation	Habitat Restoration Group, April 1996b (with table and maps prepared by Kathleen Lyons in December 2004)	This study summarizes the occurrence of wetlands potentially subject to U.S. Army Corps of Engineers or California Coastal Commission jurisdiction. The 1996 preliminary wetland delineation identified eight potential jurisdictional wetland areas on the coastal terrace portion of the site. Four of these are outside the boundaries of the current project site; all or portions of the remaining four are within the present site. The report presents vegetation, soils, and hydrology data to support the potential jurisdictional status of these areas. In addition to these areas, the 2004 mapping identified nine patches of *Juncus* sp. that could be potential jurisdictional wetlands.

[a] Since completion of this NES, the City of Santa Cruz decided to build only one bridge over Hagemann Gulch for bike/pedestrian use.

Regulatory Setting

Local, State, and federal regulations have been enacted to provide for the protection and management of sensitive biological and wetland resources. At the federal level, the U.S. Fish and Wildlife Service (USFWS) is responsible for protection of terrestrial and freshwater organisms through implementation of the federal Endangered Species Act and the Migratory Bird Treaty Act, and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) is responsible for protection of anadromous (migratory) fish and marine wildlife. The U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands and jurisdictional "other waters of the U.S." under Section 404 of the Clean Water Act. At the State level, CDFG is responsible for

administration of the California Endangered Species Act, and for protection of streams and water bodies through the Streambed Alteration Agreement process under Section 1600 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board (RWQCB) is also required when a proposed activity may result in discharge into navigable waters, pursuant to Section 401 of the Clean Water Act and the U.S. Environmental Protection Agency (EPA) Section 404(b) (1) Guidelines.

Federal Regulations for Special-Status Species. The following federal regulations apply to special-status species.

Federal Endangered Species Act. The federal Endangered Species Act (ESA) of 1973 (Title 16 United States Code, Section 1531 *et seq*., as amended) prohibits federal agencies from authorizing, permitting or funding any action that would result in biological jeopardy to a species listed as Threatened or Endangered under the ESA. Listed species are taxa for which proposed and final rules have been published in Federal Register (USFWS, 2005a, 2005b, 2005c, 2005d). If a proposed project may jeopardize federally listed species, Section 10(a) of the ESA requires consideration of those species through formal consultations with the USFWS. Federal proposed species (USFWS, 2005e) are species for which a proposed listing as Threatened or Endangered under the ESA has been published in the Federal Register. If a proposed project may jeopardize federal proposed species, Section 10(a) of the ESA affords consideration of those species through informal conferences with the USFWS. Federal Candidate species are "taxa for which [USFWS] has on file sufficient information on biological vulnerability and threats to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded" (USFWS, 1999). Federal Candidate species are not afforded formal protection, although USFWS encourages other federal agencies to give consideration to Candidate species in environmental planning.

The ESA prohibits "take" of a federally listed wildlife species. The USFWS determines whether the project represents a potential "take" of a federally listed wildlife species and advises the project proponent to seek Section 10(a) consultation if needed. The USFWS may grant an incidental take permit, which authorizes the take of a listed wildlife species incidental to project activities, but does not authorize any activities that will knowingly result in take.

To "take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or to attempt to engage in any such conduct. "Harassment" is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. "Harm" is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury of listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3).

Migratory Bird Treaty Act. All migratory birds and their nests are federally protected under the Migratory Bird Treaty Act of 1918 (MBTA) (Title 16 United States Code, Section 703-712 as amended; 50 Code of Federal Regulations Section 21; and 50 Code of Federal Regu-

lations Section 13) and by CDFG codes that support the act. The MBTA makes it unlawful to "take" (e.g., pursue, kill, harm, harass) any migratory bird or raptor listed in the 50 Code of Federal Regulations Section 10, including nests, eggs, or products.

While not all migratory birds meet criteria for listing under *CEQA Guideline*, Section 15380 (see next section below), the project would be required to comply with all applicable provisions of the MBTA. All special-status bird species that meet the criteria for listing under CEQA are also protected under the MBTA.

State of California Special-Status Species. The following State regulations and guidelines apply to special-status species.

California Endangered Species Act. The 1984 California Endangered Species Act (CESA) (Fish and Game Code, Section 2050-2098) prohibits the "take" of State-listed threatened and endangered species. Together with the 1977 Native Plant Protection Act (NPPA), the CESA authorizes the California Fish and Game Commission to designate Endangered and Threatened species and to regulate the taking of these species. The Habitat Conservation Planning Branch of the CDFG administers the State's rare species program. The CDFG maintains lists of designated Endangered, Threatened and Rare plant and animal species (CDFG, 2005a, 2005b). Listed species either were designated under the NPPA or designated by the Fish and Game Commission. In addition to recognizing three levels of endangerment, the CDFG can afford interim protection to candidate species while the Fish and Game Commission is reviewing them.

California Native Plant Protection Act. Project permitting and approval require compliance with the 1977 California Native Plant Protection Act (NPPA) (Fish and Game Code, Section 2050-2098). In addition to the Endangered and Threatened categories established by CESA, the NPPA establishes a Rare category for plant species only. It authorizes the California Fish and Game Commission to designate Endangered, Threatened, and Rare plant species and to regulate the taking of these species.

CDFG Species of Special Concern. In addition to lists of designated Endangered, Threatened, and Rare plant and animal species, the CDFG maintains a list of animal "Species of Special Concern" (CDFG, 2005c), most of which are species whose breeding populations in California may face extirpation.[2] Although these species have no legal status under the CESA, the CDFG recommends considering these species during analysis of proposed project impacts to protect declining populations, and to avoid the need to list them as threatened or endangered in the future. These species may "be considered rare or endangered [under CEQA] if the species can be shown to meet the criteria."

CEQA Guidelines Section 15380. Based on provisions of Section 15380 of the *CEQA Guidelines*, plants and animals with the following protected status must be addressed in CEQA documents on proposed development projects: federally listed Endangered or

[2] "Extirpate" means to destroy completely; to pull up by the root; to exterminate (Merriam-Webster).

Threatened species under the ESA, federal Proposed and Candidate species, and species listed by the State as Endangered, Threatened, or Rare under the CESA or NPPA.

In addition, under Section 15380(d) of the *CEQA Guidelines*, a species not included on any list recognized by the State "shall nevertheless be considered rare or endangered if the species can be shown to meet the criteria" for listing. The CDFG, USFWS and U.S. Forest Service all maintain independent lists of species with designated conservation status that meet the *CEQA Guidelines* criterion for consideration. Based on provisions of Section 15380(d) of the *CEQA Guidelines*, the lead agency and the CDFG, in making a determination of impact significance, must treat non-listed plant and animal species as equivalent to listed species if the non-listed species satisfy the minimum biological criteria for listing.

California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California. In general, the CDFG considers plant species on List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Tibor, 2001; CNPS, 2005) as qualifying for legal protection under CEQA. Species on CNPS List 3 (Plants About Which We Need More Information--A Review List) or List 4 (Plants of Limited Distribution – A Watch List) may, but generally do not, qualify for protection under CEQA.

Western Bat Working Group Listings. The CDFG maintains a list of bat species designated as "High Priority" by the Western Bat Working Group (WBWG). Species designated "High Priority" are defined as "imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats" (CDFG, 2005c). These species qualify for legal protection under Section 15380(d) of the *CEQA Guidelines*.

Sensitive Natural Communities. In addition to species-oriented management, protecting habitat on an ecosystem level is increasingly recognized as vital to the protection of natural diversity in the state. Ecosystem protection is considered the most effective means of providing long-term protection of ecologically viable habitat, and can include whole watersheds, ecosystems, and sensitive natural communities. Providing functional habitat connectivity between natural areas is essential to sustaining healthy wildlife populations and allowing for the continued dispersal of native plant and animal species.

Although sensitive natural communities have no legal protective status under the State or federal Endangered Species Acts, they are provided some level of protection under CEQA. The *CEQA Guidelines* identify potential impacts on a sensitive natural community as one of six significance criteria. As an example, a discretionary project that has a substantial adverse effect on any riparian habitat, native grassland, valley oak woodland, or other sensitive natural community would normally be considered to have a significant effect on the environment. Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on the community's relative abundance, quality, and degree of past disturbance, and the anticipated impacts to the specific community type. Where determined to be significant under CEQA, the potential impact would require mitigation

through avoidance, minimization of disturbance or loss, or some type of compensatory mitigation when unavoidable.

CNDDB maintains a working list of "high priority" habitats for inventory (i.e., those habitats that are rare or endangered within the borders of California) (Holland, 1986; CDFG, 2003). CNDDB "high priority" habitats are generally considered sensitive habitats under CEQA.

Wetlands and Waters of the U.S. Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and that support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the Corps and the USFWS, and generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

Under Section 404 of the Clean Water Act, the Corps is responsible for regulating the discharge of fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the Code of Federal Regulations. All three of the identified technical criteria (related to hydrology, soils, and vegetation) must be met for an area to be identified as a wetland under Corps jurisdiction, unless the area has been modified by human activity. In general, a permit must be obtained before fill can be placed in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to discretion of the Corps.

Jurisdictional authority of the CDFG over wetland areas is established under Section 1600 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake without notifying the CDFG, incorporating necessary mitigation, and obtaining a Streambed Alteration Agreement. The Wetlands Resources Policy of the CDFG states that the Fish and Game Commission will strongly discourage development in or conversion of wetlands, unless, at a minimum, project mitigation assures that there will be no net loss of either wetland habitat values or acreage. The CDFG is also responsible for commenting on projects requiring Corps permits under the Fish and Wildlife Coordination Act of 1958.

The California Coastal Commission (CCC) also regulates wetlands within the coastal zone under the California Coastal Act. Criteria for delineating wetlands potentially subject to regulation by the CCC are similar to those for delineating wetlands potentially subject to Corps jurisdiction, with one important exception. Following the California Department of Fish and Game criteria, the CCC requires that an area need only have positive indicators for one of the three technical criteria (hydrology, soil, or vegetation) in order to be defined as a wetland (Environmental Services Division, 1987; CCC, 1994).

The RWQCB is responsible for upholding State water quality standards. Pursuant to Section 401 of the Clean Water Act, projects that apply for a Corps permit for discharge of dredge or fill material and projects that qualify for a Nationwide Permit must obtain water quality certification from the RWQCB. The RWQCB is also responsible for regulating fill of hydrologically isolated wetlands under the Porter-Cologne Water Quality Control Act.

City of Santa Cruz City General Plan and Habitat Conservation Plan. In addition to protection provided by State and federal regulations, such as the Endangered Species Acts and Clean Water Act, the policies of the City of Santa Cruz recognize the importance of preserving sensitive biological and wetland resources and environmental quality through sustainable land use practices. Relevant policies and programs of the City of Santa Cruz General Plan are contained in the following General Plan elements: Environmental Quality (EQ), Land Use (L), Circulation (C), and Parks and Recreation (PR) (Santa Cruz, 2003). These policies and goals are addressed in Section 4.1, Land Use.

The City of Santa Cruz is in the planning process of a Section 10 Permit Program (SSP) to comply with the federal Endangered Species Act. The Section 10 process is outlined in the federal Endangered Species Act and allows the development of a Habitat Conservation Plan (HCP) to preserve endangered species while allowing permitted activities by local agencies to continue. The City's goal is to ensure that City work crews avoid or minimize impacts to endangered species as they perform regular operations and maintenance activities on City properties and facilities. City departments involved with the SSP include Water, Public Works, Planning, and Parks and Recreation.

The Section 10 Permit application and supporting Habitat Conservation Plan must be approved by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. State agencies such as the California Department of Fish and Game, Regional Water Quality Board, California Coastal Commission, and State Department of Parks and Recreation will also provide input to the program. Once approved, the City would be authorized to conduct the activities as specified in the permit and implementation agreement to achieve compliance with the Endangered Species Act.

Local Coastal Program and Environmentally Sensitive Habitat (ESHA) Area. The California Coastal Act was created in 1972 with the adoption of Proposition 20. The Local Coastal Program (LCP) was later devised to implement the policies of the Coastal Act at the local level. The LCP applies to projects that encompass an area within approximately 1,000 yards of the coastline. In Santa Cruz, the LCP is integrated with the City of Santa Cruz General Plan (Santa Cruz, 2003).

The California Coastal Act, Section 30240, addresses Environmentally Sensitive Habitat Areas (ESHA) and states the following (California Coastal Act, Section 30240):

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Development within an ESHA must be resource-dependent as stated in Section 30240 of the Coastal Act. Any exceptions to compliance with Local Coastal Program policies are to be within the context of a resource management plan that is approved by the Coastal Commission. ESHAs within Arana Gulch include the tarplant areas, riparian wetlands, and wetlands.

Tree Protection and Preservation Ordinance. The City of Santa Cruz also provides for regulation of Heritage Trees and Shrubs through a Heritage Tree Ordinance (Chapter 9.56). The ordinance is intended to provide for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development. The ordinance defines "heritage trees" and describes situations that require a tree removal permit, permit exceptions, and tree protection standards. A "heritage tree" is defined in several different ways in the ordinance, and a permit is typically required when the tree is to be cut down, destroyed, trimmed by topping or removed, or when trenching, grading, or filling is proposed within the dripline. The Heritage Tree Ordinance states the following:

Any tree, grove of trees, shrub or group of shrubs, growing on public or private property within the city limits of the city of Santa Cruz which meet(s) the following criteria shall have the "heritage" designation:

(a) Any tree which has a trunk with a circumference of forty-four inches (approximately fourteen inches in diameter or more), measured at fifty-four inches above existing grade;

(b) Any tree, grove of trees, shrub or group of shrubs which have historical significance, including but not limited to those which were/are:

(1) Planted as a commemorative; (2) Planted during a particularly significant historical era; or (3) Marking the spot of an historical event.

(c) Any tree, grove of trees, shrub or group of shrubs which have horticultural significance, including but not limited to those which are:

(1) Unusually beautiful or distinctive; (2) Old (determined by comparing the age of the tree or shrub in question with other trees or shrubs of its species within the city); (3) Distinctive specimen in size or structure for its species (determined by comparing the tree or shrub to average trees and shrubs of its species within the city); (4) A rare or unusual species for the Santa Cruz area (to be determined by the number of similar trees of the same species within the city); (5) Providing a valuable habitat; or (6) Identified by the city council as having significant arboricultural value to the citizens of the city.

Environmental Setting

Vegetation and Wildlife Habitat. Vegetation on the site consists of grassland, riparian scrub and woodland, oak woodland, seasonal wetland, emergent wetland, and open water

(see Figure 4.2-1). Stands of eucalyptus groves and remnants of landscape plantings are also within and/or adjacent to the project site. The gently rolling coastal terrace area, extending onto the upper slopes above Arana Gulch Creek and Hagemann Gulch, is occupied by grassland that is largely dominated by non-native species but that has some of the characteristics of native coastal prairie grassland. Oak woodland occurs on the lower west-facing slope of Hagemann Gulch and, more discontinuously, on the mid and lower east-facing slope above Arana Gulch Creek. Riparian scrub and woodland occupies the narrow bottom of Hagemann Gulch and much of the broad bottomland adjacent to Arana Gulch Creek, and locally extends onto the adjacent slopes where it transitions into oak woodland. A large area of heterogeneous vegetation in the central portion of the Arana Gulch Creek bottomland, which is influenced by brackish tidal flow and a high water table, is characterized as emergent wetland.

These habitat types and their associated wildlife are described below.

Grassland (Coastal Prairie and California Annual Grassland). The grassland on the site is dense, generally with 100-percent cover or nearly so. Considerable thatch accumulation is evident in most areas within this grassland. The dominant grasses are mostly annual and non-native. They include slender wild oat (*Avena barbata*), Italian rye grass (*Lolium multiflorum*, sometimes biennial), rattlesnake grass (*Briza maxima*), and soft chess (*Bromus hordeaceus*). Native perennial bunchgrasses are also of scattered occurrence in this grassland; species occurring on the site include purple needlegrass (*Nassella pulchra*) and California oatgrass (*Danthonia californica*). These grasses persist on the site as remnants of the original, perennial bunchgrass-dominated coastal prairie.

The herb associates of the grasses vary considerably from place to place within the grassland. They include both native and non-native species, although the latter are generally more abundant. Characteristic native species include California poppy (*Eschscholzia californica*) and coast tarplant (*Madia sativa*). Habitat Restoration Group (1996a) also reports as characteristic native species owl's-clover *(Castilleja densiflora* ssp. *densiflora*), yellow mariposa-lily (*Calochortus luteus*), and golden brodiaea (*Triteleia ixioides*), species that would not have been evident when EcoSystems West visited the site in July and September 2005. Large tufts of spreading rush (*Juncus patens*) are scattered throughout much of this grassland. The native annual herb, Santa Cruz tarplant (*Holocarpha macradenia*), a State Endangered and federal Threatened species, also occurs in the southwestern portion of this grassland, and historically was more widespread on the site. Characteristic non-native herbs associated with this grassland include hairy cat's-ear (*Hypocharis radicata*), prickly lettuce (*Lactuca serriola*), vetch (probably *Vicia sativa*), wild radish (*Raphanus sativus*), fiddle dock (*Rumex pulcher*), sheep sorrel (*Rumex acetosella*), English plantain (*Plantago lanceolata*), bindweed (*Convolvulus arvensis*), pennyroyal (*Mentha pulegium*), narrow-leaved clover (*Trifolium angustifolium*), and Italian thistle (*Carduus pycnocephalus*).

Habitat Restoration Group (1996a) recognizes distinct non-native grassland (California annual grassland) and coastal prairie habitats on the site, with the latter habitat type distinguished by a higher frequency of native perennial bunchgrasses relative to non-native grasses. This distinction was not evident on the site in July and September 2005, either because the bunchgrasses were not visually conspicuous on the site at that time of year or

because non-native grasses have increased in abundance relative to native bunchgrasses in the past decade.

A wide variety of wildlife species utilize the grassland community for foraging and breeding, such as western meadowlark, various sparrows, northern and southern alligator lizards, a variety of garter snakes, the common king snake, gopher snake, California ground squirrel, Botta's pocket gopher, California vole, and striped skunk. Black-tailed deer are commonly observed browsing on the grassland slopes, seeking cover in the dense scrub and tree canopy on and near the site. A number of predatory birds rely on the insects, smaller mammals, and birds of the grasslands as an important source of prey. These predatory birds include American kestrel, red-tailed hawk, red-shouldered hawk, great-horned owl, barn owl, and numerous swallows. Various bat species also catch insects rising from the open grasslands. Larger predatory mammal species, including the bobcat and gray fox, have been infrequently observed in the grassland areas. No evidence of larger predatory mammal species such as the American badger or coyote was observed on the site during previous studies or more recent reconnaissance surveys in 2005. This is most likely due to the isolated nature of the undeveloped land, surrounded by urban and harbor development.

Riparian Scrub and Woodland. This habitat type, occupying much of the broad bottomland adjacent to Arana Gulch Creek and the much narrower bottom of Hagemann Gulch, and locally extending onto the adjacent lower slopes, is dominated by trees and large, arborescent shrubs. It is mostly very dense, and often impenetrable. The dominant species are mostly willows, of which arroyo willow (*Salix lasiolepis*) is the most abundant. Pacific willow (yellow willow) (*Salix lucida* ssp. *lasiandra*) and red willow (*Salix laevigata*) are also present. Box elder (*Acer negundo* var. *californicum*) is locally a dominant tree in Hagemann Gulch, and the large riparian shrub American dogwood (*Cornus sericea*) is also a common associate in Hagemann Gulch.

Where the woody vegetation is most dense, there are often few associated species. The understory in the Hagemann Gulch riparian scrub and woodland is largely dominated by a dense cover of the invasive non-native woody vine Himalayan blackberry (*Rubus discolor*). Other species occurring locally in Hagemann Gulch include the native shrub or vine poison-oak (*Toxicodendron diversilobum*) and the native herbaceous species chain fern (*Woodwardia fimbriata*), California bulrush (*Scirpus californicus*), and water smartweed (*Polygonum punctatum*). In the Arana Gulch Creek bottomland, locally prominent associated species include Himalayan blackberry; the non-native vine English ivy (*Hedera helix*); the native woody vine Pacific blackberry (*Rubus ursinus*); the native herbs water smartweed, American stinging nettle (*Urtica dioica* ssp. *gracilis*), and goose grass or cleavers (*Galium aparine*, possibly non-native); and the non-native herb poison-hemlock (*Conium maculatum*). Dense patches of Himalayan blackberry occupy much of the boundary between the Arana Gulch Creek riparian scrub and woodland and the adjacent grassland.

Also mapped with this habitat type are two small areas dominated by large trees of the non-native blue gum (*Eucalyptus globulus*) just north of the Upper Harbor boundary. Another non-native tree, black wattle (*Acacia mearnsii*), occurs in one of these stands. The understory of these stands is more or less ruderal in character, and contains such non-native species as

Figure 4.2-1: Habitat Areas

the invasive shrub French broom (*Genista monspessulana*) and the grass and herb species ripgut grass (*Bromus diandrus*), rattlesnake grass, Italian rye grass, wild radish, and prickly lettuce. One of these stands contains considerable Pacific blackberry, while the other contains substantial numbers of the native shrub, coyote brush (*Baccharis pilularis*), and a large, dense patch of the non-native vine, greater periwinkle (*Vinca major*).

Factors affecting the value of riparian scrub and woodland habitat to wildlife include the extent of protective cover, complexity of vegetation, the proximity of existing development, and the potential for disturbance by humans and their pets. Drainages within these habitats tend to serve as movement corridors for larger wildlife species, such as deer, raccoon, bobcat, and gray fox, particularly where dense growth provides protective cover for wildlife.

The riparian scrub and woodland communities along the Hagemann Gulch and Arana Gulch Creek corridors provide important potential nesting and foraging habitat for numerous species of birds, and protective cover for larger wildlife such as black tailed deer, raccoon, striped skunk, and opossum. The trees provide essential habitat for cavity-nesting birds and small mammals, including the downy woodpecker and hairy woodpecker. The tree canopy and willow/shrub thickets provide foraging and potential nesting habitat for songbirds, such as the black-headed grosbeak, black phoebe, and chestnut-backed chickadee. This riparian scrub/woodland may also be utilized for nesting by raptors.

In previous years, a large grove of eucalyptus trees in Hagemann Gulch contained an active red-tailed hawk nest (Habitat Restoration Group, 1996a). This grove showed evidence of use during reconnaissance surveys done by EcoSystems West in 2005. This grove and other trees provide important perching habitat for birds and could support additional nests in the future. During 2005, a few bat species were acoustically and visually detected emerging from tree canopies along Arana Gulch Creek and Hageman Gulch and foraging over the riparian and grassland communities (EcoSystems West, 2005). The dense canopy also provides shaded areas along Arana Gulch Creek for fish to seek cover. The canopy also contributes to providing cooler water temperatures for steelhead.

Oak Woodland. The oak woodland on the site is quite variable in both physiognomy and species composition, and has obviously been greatly affected by past grazing, trampling by humans, and other forms of disturbance. The tree canopy is dominated by coast live oak (*Quercus agrifolia*). California bay (*Umbellularia californica*) is occasional throughout and is the only other native tree associated with this habitat type on the site. Non-native trees, including blue gum, Monterey pine (*Pinus radiata*, native to the Monterey Peninsula and northern Santa Cruz County, but not to the vicinity of Arana Gulch), and other species obviously escaped from nearby plantings, are also locally associated. Coast live oaks range from sapling size to large, specimen-sized trees. Canopy cover ranges from open to dense, with some areas having an essentially closed canopy. Poison-oak, Pacific blackberry, and the non-native vines Himalayan blackberry and English ivy are locally abundant in the understory. French broom is widely scattered around the margins of the oak woodland on the site.

Habitat Restoration Group (1996a) refers to this habitat type as "central coast live oak riparian forest." According to Brady/LSA (1999a), most of this habitat on the site is defined

as "coast live oak riparian forest," with "coast live oak woodland" restricted to the drier uppermost area dominated by coast live oak on the slope above Hagemann Gulch. Although the oak woodland does tend to become somewhat more mesic[3] downslope, there is no sharp dividing line between dry and moist oak woodland, and distinguishing between "coast live oak riparian forest" and "coast live oak woodland" does not appear to be warranted.

The oak woodland community occurs mostly along the western edge of the lower west branch of Arana Gulch Creek and along the eastern edge of Hagemann Gulch. Small scattered individual groups of oaks occur to the south of Arana Gulch, adjacent to the west side of the Upper Harbor. Oak woodlands are considered critical habitats for the conservation of many bird and mammal species (Block et al., 1990). As a seasonal food, acorns are important for the survival of many species of wildlife in fall and winter (Tietje, 1990). In addition, the segments of oak forest bordering the edges of both Hagemann Gulch and Arana Gulch Creek form an ecotone along the contiguous annual grassland (Ferris, 1987). Ecotones are areas where one plant community or ecosystem meets another plant community or ecosystem, creating an edge area. These edge areas support a diverse assemblage of species that are representative in both habitat types. Ecotones provide a diversity of homes and food for wildlife species and covered passage for dispersal.[4] Hagemann Gulch and the lower branch of Arana Gulch Creek are part of a dispersal network that allows wildlife to travel between upper and lower regions of the two watersheds that are predominately surrounded by urban development. Maintaining sufficient buffers along wildlife corridors and connecting land parcels with fragments of open space between existing resources gives wildlife access to foraging areas and water resources and contributes to the maintenance of species richness and diversity (Hayden, 2002). Bat species including the big brown bat, many of the *Myotis* species, and hoary bat may utilize these stands of oaks to roost in as winter migrants, possibly as maternity colonies, or as year-long residents.

Seasonal Wetland. Limited areas of seasonal wetland are mapped on the coastal terrace, surrounded by grassland (see Figure 4.2-1). One relatively large seasonal wetland, located near the margin of the riparian scrub and woodland adjacent to Arana Gulch Creek in the southeast portion of the project site, is a well-defined depression with dense, tall vegetation cover consisting of a distinctive assemblage of native and non-native grasses and herbs, including Italian rye grass, spreading rush, curly dock (*Rumex crispus*), cocklebur (*Xanthium strumarium*), velvet grass (*Holcus lanatus*), pennyroyal, annual beard grass (*Polypogon monspeliensis*), prickly lettuce, and bull thistle (*Cirsium vulgare*). A number of small seasonal wetlands mapped north and east of this wetland do not contain vegetation distinct from that of the grassland, except that velvet grass is relatively abundant in some of them.

The other relatively large seasonal wetland mapped on the site is located in the southern portion of the grassland near the center of the grassland terrace (see Figure 4.2-1). It consists of an indistinct depression that is not distinct in its vegetation from the surrounding

[3] "Mesic" means characterized by, relating to, or requiring a moderate amount of moisture (Merriam-Webster).

[4] "Dispersal" refers to movement from one place to another (Merriam-Webster).

grassland except that scattered plants of the native rhizomatous perennial grass creeping wild rye (*Leymus triticoides*) occur within it.

Wildlife use freshwater seasonal wetlands and the surrounding grasslands. The seasonal wetlands do not appear to retain surface water long enough to provide suitable breeding habitat for amphibians, but may provide limited foraging opportunities for waterfowl or Pacific tree frogs. Otherwise, habitat value of the seasonal wetlands in Arana Gulch is considered low for wildlife compared to the emergent wetlands along Arana Gulch Creek.

Emergent Wetland. The area mapped as "emergent wetland" (see Figure 4.2-1) is densely vegetated with a heterogeneous assemblage of mostly herbaceous vegetation in which both native species and weedy non-native species are prominent. This area occupies the central portion of the Arana Gulch Creek bottomlands (i.e., area at lowest elevation of Arana Gulch Creek). It is essentially level and underlain by silty alluvial deposits. It is likely that this area is affected by frequent flooding. The southern portion of this area is influenced by brackish tidal waters from the Upper Harbor. In this area, mostly close to the edge of the tidal channel, there are dense patches of native species characteristic of salt and brackish marsh habitats, including alkali heath (*Frankenia salina*), jaumea (*Jaumea carnosa*), and pickleweed (*Salicornia virginica*). Common associates in these patches include saltgrass (*Distichlis spicata*) and spearscale (*Atriplex triangularis*). Much of this area is dominated by the non-native perennial grasses velvet grass (*Holcus lanatus*), Italian rye grass, and creeping bentgrass (*Agrostis stolonifera*). Associates include both native species, such as spreading rush, alkali heath, spearscale, western goldenrod (*Euthamia occidentalis*), and Douglas' baccharis or false willow (*Baccharis douglasii*), and non-native species including curly dock, prickly lettuce, and bird's-foot trefoil (*Lotus corniculatus*). In a marshy area bordering the adjacent riparian scrub and woodland, the dominant native marsh species include Pacific oenanthe (*Oenanthe sarmentosa*), California bulrush, and Pacific silverweed (*Potentilla anserina* ssp. *Pacifica*). An adjacent area is dominated by cocklebur and willow weed (*Polygonum lapathifolium*), as well as native marsh and wetland species.

In the central portion of this emergent wetland area, north of the confluence of two tidal channels, the salt marsh species are narrowly confined to the banks of the channels. Most of this area is dominated by Italian rye grass, with weedy associates such as prickly lettuce, poison-hemlock, and Italian thistle. Northward, there is an area dominated by the weedy species wild radish and poison-hemlock, along with prickly lettuce and bull thistle. Scattered shrubs of coyote brush occur throughout the southern and central portions of the emergent wetland area. Dense patches of Himalayan blackberry also occur along the southern border of the area and in the central portion.

The emergent wetland community provides important estuary habitat for fish, amphibians, aquatic reptiles, and birds. The emergent vegetation provides essential reproductive habitat for invertebrates that offer a food supply for birds and mammals such as egrets, shorebirds, and raccoons. Further upstream along Arana Gulch Creek, the emergent vegetation is influenced by more freshwater exposure. Important habitat features in freshwater marsh areas provide breeding and foraging opportunities for amphibians, aquatic reptiles, waterfowl, and mammals including the Pacific tree frog, southwestern pond turtle, mallard, and vole. In

addition, on a seasonal basis, this estuary habitat provides succulent forage for mammals and birds long after adjacent grassland habitats have dried and gone to seed.

Open Water. The open water in the tidal reaches of Arana Gulch Creek contains no terrestrial vegetation. The open water region of the lower reach of Arana Gulch Creek is influenced by the ebb and flow of tides passing through the culverts at the north end of the Upper Harbor. Both the tidal flats and brackish waters of this area are rich in wildlife diversity. The shallow, warm, protected water in this area forms a salinity gradient that diversifies the habitat enough to provide nursery areas and/or transition zones for many species of fish, including the federally listed steelhead and potentially for the tidewater goby.[5] The tidal channel of Arana Gulch Creek and surrounding estuary also provides shelter for a large number of water birds during heavy winter storms when open coastal waters become rough. Double-crested cormorants and great blue herons have been observed foraging in the tidal channel of Arana Gulch Creek.

Special-Status Species. Records maintained by the CNDDB indicate that a number of special-status plant and wildlife species are known or suspected from the Arana Gulch vicinity. Occurrences of Santa Cruz tarplant (*Holocarpha macradenia*) and steelhead (*Oncorhynchus mykiss*) were recorded at the Arana Gulch site as recently as 2004 and 2005. Potential habitat occurs for special-status plants including San Francisco popcorn-flower (*Plagiobothrys diffusus*), Santa Cruz clover (*Trifolium buckwestiorum*), and maple-leaved checkerbloom (*Sidalcea malachroides*). Potential habitat occurs for special-status wildlife species including the tidewater goby, California red-legged frog, southwestern pond turtle, several species of birds and bats, and the San Francisco dusky-footed woodrat.

As previously noted, detailed surveys have been conducted by the City's consultants to confirm whether special-status species suspected to possibly occur on the site are present. Earlier studies include habitat assessments and supplemental surveys for special-status plant and animal species conducted by Morgan (1991); Habitat Restoration Group (1996a); Brady and Associates (Brady/LSA, 1999a); LSA Associates, Inc. (Brady/LSA, 1999a), Biotic Resources Group (1999, and Brady/LSA, 1999a); Bland and Associates (1999), D.W. Alley and Associates (2000); Entrix, Inc. (2004); and EcoSystems West (2005).

The initial assessment by Habitat Restoration Group (1996a) focused on five special-status plant species and eleven special-status animal species considered to have the highest potential for occurrence on the site. While the lists address all of the State- or federally-listed species suspected to occur in the site vicinity, a number of other special-status species may occur in the vicinity of Arana Gulch, including raptors, other birds, and bat species of concern. Table 4.2-2 provides information on special-status animal species considered to have the greatest potential for occurrence on the site, including the additional bird species not addressed in the 1996 habitat assessment by Habitat Restoration Group.

[5] A survey for the federally endangered tidewater goby in 2004 found no tidewater gobies within Arana Gulch Creek (Entrix, 2004).

Table 4.2-2: Special-Status Animal Species with Potential to Occur in the Project Vicinity

Species Name	Status: Federal/State/ Other	Habitat Characteristics (Occurrence Potential Within Project Site)
Insects		
Monarch butterfly *Danaus plexippus*	-/-Wintering Sites	Colonial over-wintering in eucalyptus and conifer groves. **(Unlikely)**
Fish		
Tidewater goby *Eucyclogobius newberryi*	FE/CSC/AFS-E	Coastal lagoons and creeks; found up to 3 miles upstream in slow-moving water; nearest known record occurs in San Lorenzo River. **(Unlikely)**
Steelhead (Central California ESU) *Oncorhynchus mykiss*	FT/-/-	Permanent ponds, pools, and streams. **(Present in Arana Gulch Creek)**
Amphibians/Reptiles		
California red-legged frog *Rana aurora draytonii*	FT/CSC/-	Requires the presence of surface water until mid to late summer for reproduction; occupies ephemeral and/or perennial water with standing or slow-moving flows; can tolerate brackish water environments; upland habitat includes leaf litter and small mammal burrows; adults are known to travel over 2 miles overland between aquatic sites. **(Unlikely)**
Western pond turtle *Emys marmorata*	-/CSC/-	Highly aquatic, ponds, marshes, rivers and streams; Basks along banks, floating logs and debris, boulders, gravel bars. **(Unlikely)**
Birds (rookeries, nesting, and/or wintering)		
Double-crested cormorant (rookery site) *Phalacrocorax auritus*	-/CSC/-	Inshore open waters, large coastal ponds and lagoons, and inland ponds and lakes; form rookeries and/or congregate at night-roosts on undisturbed structures or in trees; known to night-roost in tall eucalyptus grove at nearby Schwann Lagoon. No evidence of night-roosting along Hagemann Gulch. **(Possible)**
Great blue heron (rookery) *Ardea herodias*	-/CDF-S/-	Known to nest in eucalyptus grove along east side of Arana Gulch Creek. Uses same grove for night-roosting. No evidence of night-roosting or nesting along Hagemann Gulch. **(Present)**
Sharp-shinned hawk (nesting) *Accipiter striatus*	-/CSC/-	Nests in deciduous riparian forest associated with dense stands of smaller conifers and native understory; highly sensitive to disturbance. **(Unlikely)**
Cooper's hawk (nesting) *Accipiter cooperi*	-/CSC	Nests in deciduous riparian forest associated with dense stands of smaller conifers and native understory; highly sensitive to disturbance. **(Unlikely)**
Northern harrier (nesting) *Circus cyaneus*	-/CSC/	Ground nester; grasslands, sloughs, wet meadows, savanna, and prairies; highly sensitive to disturbance. **(Unlikely)**
White-tailed kite (nesting) *Elanus leucurus*	-/CFP/	Nests in conifers on the margins of large open areas including grasslands and sloughs containing a high abundance of small mammals and lizards. Nearest known nesting activity is at Natural Bridges and on UCSC campus. **(Unlikely)**
Merlin (wintering) *Falco columbarius*	-/CSC/-	Wintering habitats include riparian, dense woodlands, grasslands, open fields, marshes and developed areas; primarily feeds on small birds. **(Possible)**
Vaux's swift (nesting) *Chaetura vauxi*	-/CSC/-	Nests in man-made chimneys, large tree hollows. Nearest known nesting records occur in Natural Bridges and Westside Santa Cruz. **(Unlikely)**

Table 4.2-2 *continued*

Species Name	Status: Federal/State/ Other	Habitat Characteristics (Occurrence Potential Within Project Site)
Yellow warbler (nesting) *Dendroica petechia brewsteri*	-/CSC/-	Nests in deciduous riparian woodland with open canopy along streams or other watercourses; forages in dense understory of riparian woodland. Historically present along Arana Gulch Creek. **(Possible)**
Mammals		
Pallid bat	-/CSC/HP	Roosts in tree hollows, crevices, unused structures. **(Possible)**
Townsend's big-eared bat *Corynorhinus townsendii*	-/CSC/HP	Roost sites are highly associated with caves and mines; buildings must offer "cave-like" features; known to roost in tree hollows and under bridges. **(Unlikely)**
Western red bat *Lassiurus blossevillii*	-/CSC/HP	Roosts in foliage primarily in riparian and wooded habitats, detected along Arana Gulch Creek and emerging from tree canopy on east side of Arana Gulch Creek within 100 feet of proposed trail. **(Present)**
Fringed myotis *Myotis thysanodes*	-/-/HP	Roost sites are primarily in caves, rock crevices, cliffs, buildings or mines and in large conifer snags. **(Possible)**
Long-legged myotis *Myotis volans*	-/-/HP	Roosts primarily in large hollow tree snags, or live trees with exfoliating bark; also uses rock crevices, mines, and buildings. **(Possible)**
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	-/CSC/-	Associated with riparian, oak woodland habitats. Builds stick nests under or in trees, understory debris or buildings. Occurs along Arana Gulch Creek and in Hagemann Gulch woodlands. **(Present)**

Federal:
FE = Listed as "Endangered" under federal Endangered Species Act.
FT = Listed as "Threatened" under federal Endangered Species Act.

State:
CSC = Considered a California "Species of Special Concern" by the California Department of Fish and Game; roosts, nests, rookeries, and wintering areas are recognized as significant biotic features.
CP = "California Fully Protected" species; individuals may not be possessed or taken at any time.
CDF-S = Considered a "Sensitive" species by the California Department of Forestry and Fire Protection during timber operations.

Other:
AFS-E = American Fisheries Society categorizes as "Endangered" under a set of criteria utilized to determine global extinction.
HP = Considered as a "High Priority" for conservation by the Western Bat Working Group (WBWG).

Source: CDFG, 2005c.

Special-Status Wildlife Species. Records maintained by the CNDDB and other resources indicate that a moderate number of special-status wildlife species are known to occur within the vicinity of the project site, as shown in Table 4.2-2.

A discussion of the findings from the studies by the applicant's consultants is provided below, together with more detailed information on species of particular concern.

Monarch Butterfly. The monarch butterfly was not addressed in the initial habitat assessment by Habitat Restoration Group (1996a) or in other previous environmental documents for the project. The monarch butterfly has no federal or State status, but colonial over-winter-

ing locations are monitored by the CNDDB and are features of special interest because of the butterfly's migratory and wintering behavior. Adult monarch butterflies winter along the coast from Baja to Mendocino County, forming aggregations in groves of trees. Tree species used include eucalyptus, Monterey pine, and other conifers.

The habitat for monarch butterflies is identified as sensitive habitat in the City's General Plan/Local Coastal Program (City of Santa Cruz, 2003). However, the Arana Gulch area is not mapped as a potential monarch butterfly habitat in the City's General Plan. Because of on-site eucalyptus trees, supplemental site visits by EcoSystems West in 2005 were made after the typical time of year when aggregations may have been observed. However, no monarch butterflies were observed at the time of these visits. The groves of eucalyptus in Hagemann Gulch, along Arana Gulch Creek, could potentially provide such habitat.

Steelhead. The USFWS categorizes watersheds between Soquel Creek in Santa Cruz County and the Russian River to the north in Sonoma County as the Central California Evolutionary Significant Unit (ESU) for steelhead. Steelhead occurring in the Central California ESU is listed as "Threatened" under the federal Endangered Species Act. Steelhead spend their first few years of life in fresh water before migrating to the ocean. Adults will later return to breed in the freshwater location where they were spawned. Spawning sites require loose gravels mixed with a minimum amount of fine sand and silt that is continually exposed to flowing clean water. Eggs are laid in spawning gravels or coarse sand where water infusion and oxygenation of the substrate are maximized and streambed scour is minimized. Eggs require 4 to 6 weeks to incubate and hatchlings (sac-fry) spend another 1 to 2 weeks in the gravel before emerging. Young-of-year steelhead remain in the freshwater stream until they are physiologically transformed into smolt to survive in saltwater. Migrations to lagoons and the open ocean offer smolt and juveniles foraging opportunities for rapid growth, enabling them to become reproductive adults and return to spawning areas to breed. Canopies of shoreline and upland vegetation and eddies created by instream structures (e.g., logs, boulders, or emergent vegetation) offer necessary cover, shade, and refuge for steelhead.

Supplemental surveys conducted by D.W. Alley (2000) recorded an extremely small steelhead population in the lowest reach of Arana Gulch Creek attributing these low densities to extremely poor spawning habitat conditions and limited rearing habitat (cover and food). This reach of Arana Gulch Creek is characterized as a tidal channel that extends approximately 1,500 feet upstream to the four 72-inch culverts connecting to the Upper Harbor. Tidal effects result in a static backwater environment that causes settling of fine sediment onto the streambed that covers potential spawning gravels and aquatic insects. The best opportunity for enhancement of the steelhead fishery is within the upper reaches of Arana Gulch Creek where gradient flows remove sediment and expose spawning gravels and the tree canopy covers the open waters of the stream channel. Previous environmental documents did not include an assessment of Hagemann Gulch to determine whether it provides potential steelhead habitat; however, the lack of a perennial stream flow and urbanized upper reach suggests that rearing habitat for steelhead is lacking in Hagemann Gulch.

Tidewater Goby. The tidewater goby (TWG) is listed by the USFWS as "Endangered" under the federal Endangered Species Act and is recognized as a "Species of Special Concern"

(CSC) by the CDFG. It is also listed as "Endangered" based on a set of criteria developed by the American Fisheries Society (AFS) to determine global extinction. Previous environmental documents for the proposed project presumed the TWG occurred in Arana Gulch based on CNDDB records from 1984. A closer evaluation of the location information from the CNDDB records (2005) and an interview with the main source of information for the record (Camm Swift, PhD.) acknowledged that the CNDDB record location was inaccurate (C. Swift, pers. comm., 2005). A recent survey of Arana Gulch Creek by Camm Swift (Entrix, 2004) and information from the recent federal draft recovery plan for the TWG (USFWS, 2004) concluded that TWG do not occur in Arana Gulch Creek. While the creek does provide potential habitat for tidewater gobies that may become displaced from populations in the San Lorenzo River to the north during strong storm events, recolonization of an established population in Arana Gulch Creek is unlikely under the current altered habitat conditions from the past dredging of the harbor mouth. Constant tidal contact between the harbor mouth and Arana Gulch Creek prohibits development of a closed lagoon, which is essential for TWG breeding and long-term colonization success.

California Red-legged Frog. California red-legged frog (CRLF) is listed by the USFWS as "Threatened" under the federal Endangered Species Act and is recognized as a State "Species of Special Concern" (CSC) by the CDFG. It inhabits ponds, and streams that typically support riparian vegetation, but can also be found in man-made stock ponds, near seeps, and in ephemeral streams with pools. CRLF are also known to occur and reproduce in tidally influenced coastal marshes under certain conditions (Reis, 1999; USFWS, 2002). CRLF breeding habitat requires still or slow-moving water where large deposits of egg masses are usually attached to submerged or emergent vegetation. Adult CRLF are capable of dispersing long distances from aquatic habitat, and may utilize ephemeral water sources during the wet season. Individuals are known to disperse during the rainy season, presumably in search of new breeding locations. They may take refuge in small mammal burrows, beneath leaf litter, or in other moist areas during periods of inactivity or whenever it is necessary to avoid desiccation.

The initial habitat assessment by Habitat Restoration Group (1996a) and previous correspondences between the applicant and the USFWS include information on the life history and potential for occurrence of CRLF on the site. This initial assessment and these earlier correspondences with USFWS (1997 and 2000b) concluded that potential CRLF habitat occurred in both Arana Gulch Creek and Hagemann Gulch..

Supplemental CRLF surveys conducted by Bland and Associates (1999) resulted in finding no CRLF in Hagemann Gulch or in Arana Gulch Creek. EcoSystems West did not conduct a formal protocol-level survey for CRLF (USFWS, 2005f) during their site visits, but instead completed reconnaissance-level field visits (2005) focusing on evaluating the habitat for CRLF at the proposed bridge alignment crossing Hagemann Gulch and around the existing undeveloped trail alignment crossing over the culverts in Arana Gulch Creek. A 300-foot buffer was also scanned on either side of the alignments. EcoSystems West also made a preliminary review of local records of CRLF. The nearest known records for CRLF are approximately 3.5 miles to the west in Natural Bridges State Park, and over 5 miles to the northwest in the upper Soquel Creek watershed on the Soquel Demonstration Forest lands

(CNDDB, 2005). No occurrences have been reported from Arana Gulch Creek or Hagemann Gulch.

The likelihood for CRLF to be present in Arana Gulch (including Hagemann Gulch) is remote, due to the absence of suitable breeding habitat and the extent of surrounding urban and harbor development forming extensive barriers and separating the site from watersheds known to support CRLF. However, in previous consultations with the City, the USFWS included conditions requiring preconstruction surveys for CRLF and other stipulations if any CRLF are encountered on the site. To reiterate, these earlier recommendations did not constitute authorization for incidental take. The USFWS (1997) also stated that the project proponent would need to submit a federal application to the USFWS together with a Habitat Conservation Plan (HCP) if circumstances arise indicating that the project would result in incidental take of California red-legged frogs.

Western Pond Turtle. The western pond turtle (WPT) has no federal status, but is considered a State "Species of Special Concern" by the CDFG. The WPT is found in ponds, marshes, rivers, streams, and irrigation ditches containing aquatic vegetation. It is usually seen sunning on logs, banks, or rocks near banks. Individuals normally associate with permanent ponds, lakes, streams, irrigation ditches, or permanent pools along intermittent streams. The reproduction of WPTs associated with slow-moving streams and rivers occurs along banks and upper terraces. During the spring or early summer, females move overland up to 100 meters (325 feet) to find suitable egg-laying sites in loose sandy substrate or dense vegetation cover (Rathbun et al., 1992). Eggs are laid from March to August depending on local conditions and hatchlings emerge up to approximately 80 days later (Feldman, 1982). Individuals are active all year where climates are warm, but hibernate during cold periods in other seasonal areas of California (Holland and Bury, 1998). The turtle nests in burrows that can be up to several hundred feet away from river or pond banks and may be found in woodlands, grasslands, and open forest.

The initial habitat assessment, literature review, and reconnaissance-level surveys done by Habitat Restoration Group (1996a) showed no evidence of WPT occurring in Arana Gulch. Supplemental surveys of the site by Biotic Resources Group (Brady/LSA, 1999a), Bland and Associates (1999), D.W. Alley and Associates (2000), and Entrix (2004) also resulted in no observations of WPT. Based on current CNDDB records of Santa Cruz County (2005), the nearest WPT records occur approximately 2 miles to the northwest in Neary Lagoon, and over 5 miles to the northeast in the upper Soquel Creek watershed. Potential habitat occurs in Arana Gulch; however, the extent of surrounding urban and harbor development forming extensive barriers and separating the site from watersheds known to support WPT makes it unlikely for this species to occur there.

Bird Species. Several special-status birds have varying potential to frequent Arana Gulch, as indicated in Table 4.2-2. As noted in the assessment by Habitat Restoration Group (1996a), a few of these may forage over the grasslands and/or night-roost or nest in the woodlands and riparian scrub of the project area.
Previous studies initially documented an active red-tailed hawk nest in a grove of eucalyptus trees in Hagemann Gulch (see Figure 4.2-2). The grove and nest site were re-surveyed by

Bland and Associates (1999), but nesting activity was not observed during the time of their survey. In July 2005, EcoSystems West observed a red-tailed hawk fledgling and adult exchanging calls and flying between different trees near the suspected nest tree. This nest tree is approximately 300 feet north of the proposed bridge alignment over Hagemann Gulch. Although the red-tailed hawk is not considered a special-status species (Table 4.2-1), the Migratory Bird Treaty Act (MBTA) and California Fish and Game Codes (CFGC) prohibit the destruction or possession of individual birds, birds of prey, eggs or active nests without federal and/or State authorization.

Previous studies have documented the great blue heron night-roosting and nesting in a stand of eucalyptus trees along the east bank of Arana Gulch Creek (Habitat Restoration Group, 1996a). Bland and Associates (1999) did not observe great blue herons night-roosting or nesting in Arana Gulch during additional surveys. More recent reports from the Santa Cruz Bird Club have documented great blue herons nesting and roosting at the Santa Cruz Yacht Harbor (Suddjian, 2000a, 2001, 2003, and 2004). In 2005, EcoSystems West observed great blue herons night-roosting in the same stand of eucalyptus on the east side of Arana Gulch Creek (see Figure 4.2-2). Great blue heron nests and rookeries/night-roosts are considered "Sensitive" by the California Department of Forestry and are protected under the regulatory provisions of the MBTA and CFGC.

The initial assessment by Habitat Restoration Group (1996a) also documented yellow warblers nesting in the Arana Gulch area. This species is a neotropical migrant that has been known to breed locally in the spring and early summer months along Arana Gulch Creek. For nesting, yellow warblers prefer deciduous riparian forests dominated by such species as cottonwood and sycamore, but they also utilize willows. They prefer dense canopies to hide their nests and glean insects from foliage. Nesting yellow warblers are considered a California "Species of Special Concern" by the CDFG. Like many passerine birds of the Monterey Bay, yellow warbler populations have declined due to loss of habitat and parasitism by the brown-headed cowbird. Since the time of the initial assessment in 1996, Suddjian (2000b) has observed a noticeable decline in nesting yellow warblers from several watersheds in Santa Cruz County. Arana Gulch continues to provide suitable potential nesting habitat for the yellow warbler.

Nesting habitat in Arana Gulch is generally absent for most of the other bird species listed in Table 4.2-2. These species may occur as possible winter/spring migrants, or may forage over Arana Gulch. The extent of surrounding development limits the overall value of the area for nesting.

Bat Species. A number of bat species are known to occur or are suspected from the vicinity of Arana Gulch (see Table 4.2-2). EcoSystems West conducted a preliminary assessment of bat habitat in Arana Gulch during August and September 2005. The assessment included examining tree stands or other structures for potential roost sites near or in the proposed pathway and bridge alignment and in the northeastern portion of the site near Agnes Street.

Subsequent visits were made in the evening to see if bats emerged from potential roost sites. Anabat II bat detectors were set out for two consecutive nights to document the level of bat

Figure 4.2-2: Wildlife Resources

activity and diversity throughout the site. Detectors were also aimed at potential roost sites to record the acoustic signatures of any emerging bats and to assist in identifying bat species.

Trees with potential roost features (e.g., exfoliating bark, broken limbs, and crevices) were observed along Hagemann Gulch, Arana Gulch Creek, and in the area near Agnes Street. One special-status species, the western red bat, was visually and acoustically detected while emerging from an oak canopy on the east side of Arana Gulch Creek, approximately 100 feet from the proposed pathway (see Figure 4.2-2). Western red bats are considered a California "Species of Special Concern" by the CDFG and are listed as a "High Priority" for conservation by the Western Bat Working Group (CDFG, 2005c; WBWG, 1996). Common species of bats, not included in Table 4.2-2, were also detected. These include: big brown bat (*Eptesicus fuscus*), Mexican free-tailed bat (*Taderida braziliarensis*), and unidentified bat species with echolocation acoustic signatures within the 25 kilohertz and 50 kilohertz range. No other special-status bat species listed in Table 4.2-2 were visually or acoustically detected; however, potential roosting habitat occurs for all of those species with one exception. The site lacked suitable roosting habitat with cave-like features and undisturbed manmade structures for the special-status Townsend's big-eared bat.

The assessment was conducted when bat species are unlikely to be maintaining maternity colonies, since juveniles are typically able to fly from their roost by mid to late August. During this time of year, bats typically begin to disperse and form smaller roosts. Adults begin to breed from August to September or begin to migrate through the area. California Fish and Game Codes (CFGC) continue to protect non-listed bat species and their roosting habitat, including individual roosts and maternity colonies. Relevant regulations include CFGC Section 86; 2000; 2014; 3007; 4150, along with several sections under Title 14 of California Code of Regulations (CFGC, 2005).

San Francisco Dusky-footed Woodrat. The San Francisco dusky-footed woodrat is considered a California "Species of Special Concern" by the CDFG (2005c). It occurs generally along the Coast Range of California, from the San Francisco Bay Area south to the Pajaro River watershed. It is associated with riparian, oak woodland, and redwood forest habitats and builds stick nests on the ground, under or in buildings or bridges, in hollow trees, or in shrubs, some to heights of approximately 1 meter (3 to 4 feet) tall. These nests can be used by multiple generations of the woodrat, and some may be colonized and recolonized over decades.

The initial assessment by Habitat Restoration Group (1996a) documented a San Francisco dusky-footed woodrat nest within the riparian scrub habitat of Hagemann Gulch. Supplemental surveys conducted by EcoSystems West (2005) also recorded a woodrat nest within that portion of the drainage below the proposed bridge alignment over Hagemann Gulch (see Figure 4.2-2).

Special-Status Plant Species. One legally protected special-status plant species, Santa Cruz tarplant (*Holocarpha macradenia*), occurs on the Arana Gulch site. One other species historically known from the site, Choris's popcorn-flower (*Plagiobothrys chorisianus*), is considered a special-status species, but may or may not be legally protected, depending on which variety is represented.

Potentially suitable habitat for a number of other special-status plant species occurs, or historically occurred, on the site. However, based on the long history of intensive botanical surveys on the site (Morgan, 1991; Habitat Restoration Group, 1996a; Brady/LSA, 1999a), it is unlikely that any other special-status plant species occurs on the site, or has occurred at least since 1977, when botanical surveys of the site by qualified botanists began.

Santa Cruz Tarplant. Santa Cruz tarplant is a small to medium-sized, annual herb in the sunflower family (Asteraceae). It is glandular, aromatic, and more or less sticky to the touch, and produces solitary or clustered flower heads with short but prominent yellow ray flowers. The species is federally listed as Threatened (USFWS, 2000a) and State-listed as Endangered (CDFG, 2005a). It is also listed on List 1B of the CNPS *Inventory* (Tibor, 2001; CNPS, 2005).

Santa Cruz tarplant historically occurred around the northern and eastern sides of San Francisco Bay from Marin County to Alameda County, and around the northern end of Monterey Bay from Santa Cruz to extreme northern Monterey County, growing in coastal prairie grassland habitats (Palmer, 1987; USFWS, 2000a; Tibor, 2001; CNPS, 2005). All known historic native populations in the San Francisco Bay area are now extirpated. The only remaining populations in that area are artificially established populations on sites in Contra Costa County that did not historically support the species (Havlik, 1986, 1989). As recently as 2002, at least five of those populations were still extant[6] (unpublished data). According to CNDDB records, about 24 Santa Cruz tarplant populations were known historically from Santa Cruz County, with one additional population in Monterey County. CNDDB records indicate that at least 11 of the Santa Cruz County populations are extirpated or possibly extirpated. As of 2000, 11 Santa Cruz County populations and the one Monterey County population were known to be extant (USFWS, 2000a). However, most of those populations have declined substantially since the early 1990s and are threatened with extirpation.

The main reasons for the decline of Santa Cruz tarplant and the main threats to its future viability are conversion of its habitat to urban development and agriculture, and alteration of its habitat due to invasion of non-native species and cessation of grazing (USFWS, 2000a; BMP Ecosciences, 2005). Under present-day conditions, the grassland habitats of Santa Cruz tarplant are largely dominated by weedy, non-native annual grasses and other aggressive non-native species (rather than the native perennial bunchgrasses that originally dominated the coastal prairie), and large native grazing animals are no longer present. Moderate cattle grazing or some other periodic disturbance that reduces competition with non-native species and accumulation of thatch appears to be necessary for Santa Cruz tarplant to persist (Hayes, 2002, 2003; Bainbridge, 2003). The severe decline in Santa Cruz tarplant abundance at most of the extant Monterey Bay area locations over the past 15 years appears to be correlated with the removal of cattle grazing from those sites.

Santa Cruz tarplant has been known from the Arana Gulch site since at least 1977 (Habitat Restoration Group, 1996a). The plants in the Arana Gulch population differ from those in

[6] "Extant" means to stand out; to be in existence; currently or actually existing; not destroyed or lost (Merriam-Webster).

other populations of the species by chromosome arm arrangements (Palmer, 1987), making this population especially important for conservation of the genetic diversity of the species.

At the time of the discovery of Santa Cruz tarplant at Arana Gulch, the site was grazed by cattle. Only 50 to 100 plants were observed on the site in 1977 (Habitat Restoration Group, 1996a), perhaps because that year was a drought year. It was estimated, however, that between 1,000 and 10,000 plants were present on the site in 1980 and 1982 (R. Douglas Stone, California Native Plant Field Survey Forms on file with CNDDB) and that approximately 115,000 plants, in four distinct patches, were present in 1986 (Habitat Restoration Group, 1996a; Randall Morgan, California Native Plant Field Survey Form on file with CNDDB). These four sub-populations have since been designated as Areas A, B, C, and D (Figure 4.2-3). Areas A and D were, historically, the largest Santa Cruz tarplant colonies on the site. Area A is located in the southern portion of the grassland and historically spanned the width of the coastal terrace area, although plants were present only in the western half of the area in 2004 and 2005. Area D is in the east-central portion of the grassland, and extends down the east-facing slope above Arana Gulch Creek (see Figure 4.2-3). Area B is located near the edge of Hagemann Gulch south of the center of the grassland area, and Area C is located in the western portion of the grassland north of the center.

Sometime between 1986 and 1988, cattle grazing on the site ceased. Although he did not provide estimates of numbers of plants, Stone (1989) observed that: 1) Areas A and B contained Santa Cruz tarplant in approximately the same areas as previously; 2) Area D also supported the species, but in a smaller area than previously; and 3) no individuals of the species were present in Area C. Between 1989 and 1995, Santa Cruz tarplant numbers on the site declined precipitously. In 1993, only 131 plants were present in Area D and two plants were present in Area A, with no plants in the other two historic colonies (Habitat Restoration Group, 1993). In 1994 and 1995, no plants were observed anywhere on the site (Habitat Restoration Group, 1996a).

In 1995, following acquisition of the site by the City of Santa Cruz in 1994, it was decided that intensive management efforts should be undertaken to attempt to revive the Santa Cruz tarplant population on the site by stimulating germination and growth of dormant seed in the soil. In the fall of that year, a portion of Area A was scraped to bare soil, and other portions of Area A were weed-whipped, raked, and/or hoed. Over 7,000 individuals of Santa Cruz tarplant grew in Area A in 1996. Mowing, raking, and prescribed burns were used sporadically in Area A between 1996 and 1999 (in addition to a 1996 arson fire); over 10,000 plants were present in this area in 1997 and 1998 and over 1,000 in 1999 (Brady/ LSA, 1999a; BMP Ecosciences, 2005). Also in 1996 and 1997, small portions of Area D were hand-scraped (Brady/LSA, 1999a); during the subsequent 1997 and 1998 seasons, Area D supported about 21 and 60 tarplant individuals, respectively (BMP Ecosciences, 2005). Since 1999, no management, or only small-scale experimental treatments, has occurred in Areas A and D. Approximate tarplant numbers in Area A between 2000 and 2005 have ranged from 619 to 10,230, but have mostly been less than 2,500. Between 2000 and 2004, between 1 and 156 plants were observed in Area D; two plants occurred in this area in 2004, and none were present in 2005 (see Figures 4.2-4 and 4.2-5). Areas B and C have received no management other than periodic mowing without thatch removal for fire control; except

for 1998, when five plants were observed in Area B and 20 plants were observed in Area C, the species has not been seen in those areas since 1989.

A management plan has been prepared for the Santa Cruz tarplant on the Arana Gulch site (BMP Ecosciences, 2005). This plan prescribes regular semi-annual mowing and removal of cut material in the areas that support or historically supported the species, combined with periodic use of more intensive techniques such as scraping or prescribed burns. The plan also prescribes continued experimental research on management techniques and ongoing monitoring, with subsequent revisions of the management prescriptions as appropriate. Experimental work by Hayes (2002, 2003) and Bainbridge (2003), as well as the results of previous management actions on the site, suggest that this management program has the potential to be effective in the recovery of the tarplant population on Arana Gulch.

Choris's Popcorn-Flower. Choris's popcorn-flower is a low-growing, white-flowered annual herb in the borage family (Boraginaceae). Two varieties, both of which occur in Santa Cruz County, are currently recognized (Messick, 1993): *Plagiobothrys chorisianus* var. *chorisianus* and *Plagiobothrys chorisianus* var. *hickmanii*, known as Hickman's popcorn-flower. Var. *chorisianus* occurs near the coast from San Francisco to Santa Cruz County, and also in Alameda County, while var. *hickmanii* occurs from Santa Cruz County to San Luis Obispo County (Tibor, 2001; CNPS, 2005). Neither variety has any formal federal or State status; var. *chorisianus* is listed on List 1B of the CNPS *Inventory* (Tibor, 2001; CNPS, 2005), while var. *hickmanii* is listed on List 4. Therefore, var. *chorisianus* is legally protected under the provisions of Section 15380(d) of the *CEQA Guidelines*, while var. *hickmanii* has no specific federal or State legal protection.

Choris's popcorn-flower was observed in 1998 by CNPS representatives within Santa Cruz tarplant Area A (Brady/LSA, 1999a), following several years of management activities designed to enhance the habitat for Santa Cruz tarplant. Approximately 100 plants of Choris's popcorn-flower were present (Morgan, pers. comm., 2005). These plants could not be satisfactorily identified as to variety (Morgan, pers. comm., 2005). Messick (1993), Tibor (2001), and CNPS (2005) indicate that taxonomic study of the two recognized varieties is needed to determine if they are truly valid taxa rather than merely environmentally induced variants. If the plants on the Arana Gulch site represent var. *chorisianus*, they would fall under the regulatory authority of CEQA. The species has apparently not been observed on the site since 1998, but a seed bank may still be present.

Sensitive Natural Communities. The riparian scrub and woodland in the Arana Gulch Creek bottomlands and in Hagemann Gulch correspond to a phase of the arroyo willow riparian forests and woodlands alliance of the CDFG (2003), and to the central coast arroyo willow riparian forest of Holland (1986). This habitat type is a CNDDB "high priority" habitat (CDFG, 2003) and is thus recognized as a sensitive habitat.

The coastal terrace prairie habitat type (Holland, 1986; CDFG, 2003) is also a CNDDB "high priority" habitat. The original coastal prairie grassland on the site would have corresponded to this habitat type. Although the grassland on the site retains some of the attributes of coastal prairie, the current dominance of non-native annual grasses precludes it being

Figure 4.2-3: Santa Cruz Tarplant Areas 1989

Figure 4.2-4: Santa Cruz Tarplant Census 2004

Figure 4.2-5: Santa Cruz Tarplant Census 2005

recognized as coastal terrace prairie. This habitat does, however, support the special-status species Santa Cruz tarplant, a remnant of the original coastal prairie vegetation.

Wetlands. A preliminary delineation of wetlands potentially subject to U.S. Army Corps of Engineers jurisdiction on the coastal terrace portion of the Arana Gulch site was conducted by Habitat Restoration Group in 1996 (Habitat Restoration Group, 1996b). Biologist Kathleen Lyons conducted a reconnaissance visit to the site in December 2004 to identify additional potential jurisdictional wetlands, although she did not conduct a formal delineation.

Potential jurisdictional wetlands delineated in 1996 include the seasonal wetland area in the southern portion of the grassland (Site 8 in Habitat Restoration Group [1996b]), encompassing approximately 0.22 acre; a portion of a seasonal drainage swale in the northern portion of the grassland (part of Site 6 in Habitat Restoration Group [1996b]), with less than 0.1 acre within the study area; and two areas at the extreme northern end of the area (Sites 1 and 2 in Habitat Restoration Group [1996b]), encompassing 0.04 acre and 0.03 acre, respectively. In addition, nine patches of *Juncus* sp., presumably brown-headed rush (*Juncus phaeocephalus* var. *phaeocephalus*), were mapped in 2004 in the east-central portion of the grassland, corresponding approximately to the small seasonal wetlands in this vicinity. These could represent jurisdictional wetlands even though no formal delineation was done. The larger seasonal wetland in the southeast portion of the area also could be a jurisdictional wetland, although it has not been delineated.

Impacts and Mitigation Measures

Significance Criteria. Based on the CEQA Standards of Significance, the project would generally be considered to have a significant effect on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marshes, vernal pools, and coastal areas) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any applicable local policies protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or State habitat conservation plan.

Less-than-Significant Impacts. The City's Habitat Conservation Plan (HCP) is in process and has not yet been adopted. Thus, the project would not conflict with an HCP. No natural community conservation plan applies to the site. The site is considered an environmentally sensitive habitat area (ESHA) by the Coastal Commission (under Coastal Act Section 30240) and as such is required to have resource-dependent uses. The proposed interpretive trails that are identified in the Arana Gulch Master Plan are resource-dependent and would allow a diversity of visitors to the project area. With development of the proposed multi-use and pedestrian trails, the resources of Arana Gulch could be viewed and experienced by visitors on foot, in wheelchairs, and on bicycles.

The proposed multi-use interpretive Creek View Trail segment crossing Arana Gulch Creek at the Upper Harbor culvert may result in a short-term sedimentation source during construction but not at significant levels with implementation of construction best management practices (BMPs) to minimize construction sediments from entering the stream system. Since this section of Arana Gulch Creek does not provide breeding habitat for steelhead at present, minor additions of sediment would not have an impact on the fishery as it presently exists. Therefore, this impact is considered less-than-significant and no mitigation is required.

The San Francisco woodrat has been observed on the lower slopes of Hagemann Gulch well below the proposed suspension deck of the bridge. Supports for the bridge would be above the top of slope on the flat terraces on either side of the gulch and no construction activities would take place within the stream corridor. Also, no trees would be removed aside from some minor tree pruning below the deck. Therefore, no direct or indirect impacts to the woodrats are anticipated as a result of construction and operation of the bridge. Monitoring of construction activities would ensure that woodrats that may wander into the bridge construction area would be returned to the stream corridor. Since potential impacts to the nests would be avoided, this would be a less-than-significant impact and no mitigation would be required.

Potentially Significant Impacts. This section addresses impacts that could be potentially significant, based on the criteria listed above.

Impact BIO-1: Construction of the Hagemann Gulch bridge and improvements to existing trails would not result in removal of riparian vegetation or habitat, but could result in indirect impacts on riparian scrub and oak woodland, which is recognized as a sensitive habitat, due to potential inadvertent erosion and damage during construction (e.g., placement of soils stockpiles at staging locations). (PS)

The proposed bridge and trail construction would not result in direct removal of riparian scrub and woodland habitat. The Hagemann Gulch bridge would span this habitat type and no activity below the rim of the canyon would occur. Ground disturbance would occur only in the vicinity of the bridge abutments on either side of the bridge, at the edge of the oak woodland habitat. It is not known how much oak woodland habitat would be disturbed, but the disturbance is expected to be fairly minor. Bridge construction would require some

removal of tree limbs to provide clearance. The number of trees affected is not known, but probably would not exceed the six trees to be limbed.

Improvements to existing trails would be made on the upper slopes of Hagemann Gulch along the southwestern portion of the Coastal Prairie Loop Trail alignment, and along the slopes above Arana Gulch Creek on the Marsh Vista Trail alignment. In these areas, increased erosion and sedimentation during bridge and trail construction, as well as through future trail use, could indirectly disturb the riparian scrub and woodland habitat. Construction equipment and soil stockpiles could also indirectly impact this sensitive habitat.

Mitigation Measure BIO-1(a): All construction activities and equipment staging shall occur outside the riparian scrub and woodland habitat. The outside edge of the habitat shall be marked in the field by a qualified botanist. Prior to construction, 5-foot-high temporary construction mesh fencing and signs shall be installed. The location and integrity of the fencing shall be field-checked by a botanist prior to grading operations and periodically during the construction period.

A construction staging area that avoids any sensitive habitat shall be clearly identified prior to construction. For example, staging for the western portion of the Hagemann Gulch bridge should occur on City-owned property to the west of Hagemann Gulch that does not include sensitive habitat. Staging for the eastern portion of the Hagemann Gulch bridge should occur outside of the riparian corridor, oak woodland, historic mapped tarplant areas, and native grassland areas. The City shall work with the Port District to identify possible staging areas in disturbed areas of Port District property adjacent to Arana Gulch that could be used temporarily during construction.

Mitigation Measure BIO-1(b): Construction activities adjacent to Hagemann Gulch shall utilize standard best management practices (BMPs) to minimize effects on the nearby creek channel. BMPs shall include erosion control measures to minimize sedimentation and turbidity in the aquatic habitat. Areas disturbed by construction shall be revegetated with an erosion control seed mix.

Mitigation Measure BIO-1(c): If riparian habitat is inadvertently affected during construction, the City shall implement a 2:1 on-site habitat replacement program in the fall/winter following the completion of site construction work. A qualified botanist shall determine an appropriate degraded area within Arana Gulch for restoration as riparian habitat.

Mitigation Measures BIO-1(d): Any tree trimming shall comply with the City's Heritage Tree Ordinance. If any activity would disturb riparian habitat, the City shall comply with Section 1601 of the Fish and Game Code and applicable permits shall be obtained prior to construction.
The combination of the above measures would reduce this impact to less than significant. (LTS)

Impact BIO-2: Construction and use of the proposed Creek View Trail within the Arana Gulch property, near the southern entrance, could impact small seasonal wetland areas, both directly and indirectly. Off-trail usage could indirectly impact wetland vegetation by trampling of soils and associated disturbance to wetland flora. Trail construction could also indirectly impact small seasonal wetlands by alteration of the subsurface hydrology. The new multi-use trail alignment could directly affect one of the small seasonal wetland areas due to the alignment location. (PS)

The seasonal wetlands are mapped and shown in Figure 4.2-1. As shown in the this figure, very small areas of seasonal wetlands occur at the southern end of Arana Gulch, just north of the Upper Harbor property, in an area that may be crossed by the new alignment for the Creek View Trail.

Currently, an existing earthen trail passes in close proximity to these scattered seasonal wetland areas, in close proximity to where the Creek View Trail alignment is proposed. Thus, these wetland areas are currently potentially subject to indirect impacts associated with trampling of soils and vegetation due to human presence in their vicinity.

In the future, areas within Arana Gulch would be subject to management policies of the Master Plan that aim to protect on-site wetland resources. For example, management policies cover invasive vegetation management, erosion control, and policies to deter off-trail use.

Drainage patterns that support wetland conditions could be altered by the construction of paved trails as discussed further in Section 4.4, Hydrology and Water Quality, of this Draft EIR. If hydrology conditions are altered, these small, scattered seasonal wetlands could be indirectly impacted.

The initial visits completed by the project biologist appeared to indicate that the proposed paved, multi-use trail alignment was outside the boundaries of the seasonal wetlands, based on staking of the proposed trail alignment. A detailed design for the this trail must be completed before the precise alignment will be known. This detailed design would occur subsequent to adoption of the Arana Gulch Master Plan.

If there would be fill of seasonal wetlands due to construction of the new trail within the wetland area, a verification of the wetland jurisdictional delineation by the U.S. Army Corps of Engineers would be required, and adequate mitigation for such fill would also be required.

> *Mitigation Measure BIO-2(a): Following preparation of detailed design for the Creek View Trail, the trail alignment and the small seasonal wetlands at the southern end of Arana Gulch that are in the vicinity of the trail alignment should be staked to verify if the trail alignment would have a direct impact on seasonal wetlands. To the maximum extent feasible, the final Creek View Trail alignment should avoid direct impacts to these scattered seasonal wetland areas. If the paved, multi-use trail cannot be realigned to avoid direct wetland impacts due to the need to maintain an ADA-compliant gradient, the City shall ensure completion of a jurisdictional delineation of the wetlands that could be directly impacted, with verification by the U.S. Army Corps of Engineers (Corps). If the wetland is determined to be a jurisdictional wetland, and based on the Corps and any other regulatory requirements, the impacted seasonal wetland areas within the Arana Gulch property shall be replaced within Arana Gulch at a 2:1 ratio, or at a ratio determined necessary by the regulatory agency, or agencies. This effort shall be under the guidance of a qualified botanist.*
>
> *Mitigation Measure BIO-2(b): Prior to construction, temporary plastic mesh fencing shall be installed along the Creek View Trail alignment to exclude the seasonal wetland areas and to provide a 20- to*

30-foot buffer zone where feasible. During construction, this temporary fencing shall be monitored by City staff or a qualified botanist during construction to ensure that no indirect impacts on seasonal wetland areas occur. No soils, materials or construction materials shall be located within the buffer zone.

Mitigation Measure BIO-2(c): If the buffer zone is disturbed, the buffer zone near wetlands shall be revegetated with site-appropriate native vegetation. A qualified botanist shall determine the appropriate revegetation plantings.

Mitigation Measure BIO-2(d): The seasonal wetlands shall be monitored for indirect impacts from trail users and management options addressed in the Arana Gulch Master Plan shall be implemented.

Mitigation Measure BIO-2(e): Mitigation Measure HYDROLOGY-2, which addresses maintenance of flow conditions in the vicinity of paved trails, shall be implemented.

The combination of the above measures would reduce this impact to less than significant. (LTS)

Impact BIO-3: Construction and use of the proposed Creek View Trail segment through the Port District property (south of Arana Gulch) could impact wetlands indirectly due to off-trail usage that could damage wetland vegetation by trampling of soils and associated disturbance of wetland flora. (PS)

The Creek View Trail segment within the Port District property would be located within the 100-foot buffer from Arana Gulch Creek and associated emergent wetlands. Because this area is outside of the Arana Gulch Master Plan boundaries, it is not subject to City policies that exempt certain activities within 100 feet of wetlands when an area is subject to an adopted management plan.

The new multi-use trail would be located along the perimeter of the Upper Harbor dry storage area and extend up the slope on the southern side of Arana Gulch Creek. An informal pathway used by local residents currently exists along this fence line.

There would be no bridge over Arana Gulch Creek or fill within the emergent wetland. Indirect impacts on emergent wetland resources along Arana Gulch Creek could occur from activities such as grading for the paved multi-use trail (resulting in erosion and sedimentation affecting wetland flora and fauna) and off-trail usage by visitors which could affect wetland flora due to trampling.

Mitigation Measure BIO-3(a): Prior to construction, temporary plastic mesh fencing shall be placed along the trail alignment to limit construction-related impacts to the maximum extent possible. During construction, the fencing placement shall be monitored by City staff, or a qualified botanist, to ensure that no indirect impacts on wetlands occur. No soils, materials or construction equipment shall be stored within this fenced trail corridor. All staging and equipment storage shall be within the developed area of the Upper Harbor.

Mitigation Measure BIO-3(b): After construction of the trail, native species shall be planted within the 100-foot wetland buffer zone to further enhance the restoration efforts previously undertaken for the Upper Harbor dry storage area project.

Mitigation Measure BIO-3(c): After construction, permanent fencing shall be installed along the entire length of the Creek View Trail within the Port District property and extending along the north side of the trail. This fencing shall either be black, vinyl-coated chain link fencing (approximately 4 feet high), wood frame fencing with small wire mesh to prevent dogs from entering the wetland buffer zone, or other type of fencing acceptable to the Port District that prevents trail users and dogs from entering the buffer zone but that also maintains visibility of the creek. Solid fencing is not recommended because of graffiti and security concerns.

Mitigation Measure BIO-3(d): An interpretive display shall be posted along the trail route to highlight the significance of wetland and riparian habitats and to discourage inappropriate behavior that could damage such resources.

Mitigation Measure BIO-3(e): Mitigation Measure HYDROLOGY-2, which addresses maintenance of flow conditions in the vicinity of the paved trails, shall be implemented.

The combination of the above measures would reduce this impact to less than significant. (LTS)

Impact BIO-4: The proposed Canyon Trail east of Hagemann Gulch would pass through, or near the boundary of, Santa Cruz tarplant (SCT) Area B. The proposed Arana Meadow Trail would pass through, or near the boundary of, SCT Area C. The proposed Creek View Trail and Coastal Prairie Loop Trail would pass through, or near the boundary of, SCT Area D, and the proposed Marsh Vista Trail would pass close to the lower (eastern) boundary of Area D. The proposed Coastal Prairie Loop Trail would pass close to the boundaries of SCT Area A, which is also a known historic locality for Choris's popcorn-flower. Trail construction through or near the SCT areas, coupled with increased human activity in the area, may result in impacts on the SCT and popcorn-flower. (PS)

Any routing of trail segments through historic Santa Cruz tarplant habitat would represent a direct loss of habitat for the species. The tarplant has been observed in Areas B and C only once since 1989, when it was found in small numbers in 1998. It has been observed only in small numbers in recent years within the relatively large Area D. It is assumed, however, that a seed bank may still be present throughout these historic areas of tarplant occurrence. Thus, with appropriate management measures, the species could potentially be restored to those areas from the dormant seed bank. However, it should be noted that Areas A, B, C, and D were defined without the advantage of the more precise mapping provided by Global Positioning Systems (GPS) or Geographical Information Systems (GIS). Thus, the boundaries of these areas are approximate only. Project activities such as trail construction would avoid the areas that have been more recently noted (see Figures 4.2-4 and 4.2-5).

Since it is assumed that those historic areas of occurrence still represent suitable habitat, the tarplant could potentially be restored to those areas from seed derived from the tarplant

colonies still extant on the site. Construction of trails through these areas would result in permanent loss of tarplant habitat within the width of the trail; additional habitat for 1 to 2 feet outside the trail footprint could also be disturbed if pedestrians and bicyclists do not stay strictly within the trail width. The removal of unauthorized pathways that currently exist within Arana Gulch would reduce impacts on the Santa Cruz tarplant. Loss of tarplant habitat would be relatively greater with the multi-use trails (Canyon Trail, Arana Meadow Trail, and Creek View Trail) because these trails would be 8 feet wide, as compared to the pedestrian-only trails which would be 18 to 24 inches wide. To the extent that these trails cannot be routed to avoid the tarplant habitat (see Mitigation Measure BIO-5, below), this would be an impact that cannot be fully mitigated.

Due to the close proximity of proposed trail alignments to all four SCT areas, the SCT colonies (and Choris's popcorn-flower, for which a seed bank is presumed to be potentially still present within SCT Area A) may be indirectly affected by construction activities or changes such as deposition of fill from earth-moving activities, altered hydrology, or introduction of weeds. In addition, following construction, increased human activity in the area could result in trampling and trash accumulation in the SCT areas.

Mitigation Measure BIO-4(a): To the maximum extent feasible, all trail segments shall be aligned to avoid the mapped historic extent of the four Santa Cruz tarplant areas. Prior to construction, staging areas shall be identified that are outside historic tarplant areas, as addressed in Mitigation Measure BIO-1(a). All trail alignments shall have a fenced construction corridor to minimize disturbance to habitat outside this corridor and the corridor width shall be the minimum necessary to allow trail construction. The fencing shall be maintained through the construction phase and periodically monitored to ensure protection of tarplant habitat.

Mitigation Measure BIO-4(b): The Santa Cruz Tarplant Management Program (BMP Ecosciences, 2005) shall be fully implemented. This management program would incorporate the following elements:

(1) Active management practices and techniques, including, but not limited to, the following:
- *Mowing with removal of cut material.*
- *Prescribed burning.*
- *Soil disturbance.*
- *Removal of invasive non-native plant species.*

(2) Continued experimental research directed toward refining understanding of the management regime that maximizes long-term success of tarplant.

(3) Ongoing monitoring on an annual basis to determine the success of management measures, to monitor the overall well-being of tarplant colonies on the site, and to identify potential threats to tarplant persistence on the site.

(4) Revision of the management prescriptions and remedial actions as appropriate to enhance long-term viability of tarplant on the site.

Mitigation Measure BIO-4(c): For any trail alignments that would cross the historic mapped tarplant areas, soil shall be mechanically scraped under the approval of a qualified botanist and with the approval of the Adaptive Management Working Group (AMWG) for the Santa Cruz tarplant. Redistribution of scraped soil material shall also be under the approval of a qualified botanist and the AMWG as identified in the Santa Cruz Tarplant Adaptive Management Program.

Mitigation Measure BIO-4(d): Trail maintenance and management actions, such as repair of pavement or mowing of the grass edge, shall be conducted in a manner conducive to the management of the tarplant population. Maintenance actions shall be coordinated with the City Parks and Recreation Department and shall comply with the Santa Cruz Tarplant Adaptive Management Program.

Mitigation Measure BIO-4(e): If annual monitoring indicates that substantial adverse indirect impacts on the tarplant are occurring due to human use of the area, fencing shall be erected as necessary to discourage unauthorized human encroachment into the tarplant colonies. If tarplant areas do not demonstrate evidence of adverse impacts, permanent fencing should be avoided to allow for greater flexibility for mowing and other management practices.

The combination of the above measures would reduce this impact, but the impact would remain significant and unavoidable because it cannot be fully ensured that all tarplant habitat would be protected. (SU)

Impact BIO-5: Increased human activities on the site resulting from the new entrance and multi-use trails may cause indirect impacts on sensitive habitats. (PS)

Potentially adverse impacts could occur in wetlands, riparian areas, and habitats supporting species of concern due to human use and encroachment. Potential impacts include accumulation of litter and debris and damage by pedestrians or bicyclists straying off the main route and forming ad hoc pathways. These impacts could be more severe than at present because it is likely that the improved access provided by the new trail system would increase human use of the area. The Master Plan includes proposals for using interpretive displays to help protect sensitive areas, but the mitigation measures below provide clarification.

Mitigation Measure BIO-5(a): At strategic points along the multi-use trails, interpretive signs shall be posted to inform users when they are passing through a sensitive habitat or area of significant wildlife use. Descriptions of the habitats and their importance may be presented to increase pedestrians' understanding and respect for the resources of Arana Gulch. Guidelines regarding trail use shall be posted.

Mitigation Measure BIO-5(b): Annual monitoring of sensitive resources shall be conducted for a 5-year period following construction and operation of the multi-use and pedestrian trails. If there is evidence of adverse effects on sensitive resources, permanent fencing of affected habitats such as the wetlands and riparian areas shall be considered and implemented, as necessary.

The combination of the above measures would reduce this impact to less than significant. (LTS)

Impact BIO-6: Trail construction may remove or disturb native perennial bunchgrasses that are intermixed among the grassland. The bunchgrasses are indicators of remnant coastal terrace prairie, a sensitive habitat that should be protected. (PS)

The grassland within which most of the proposed trail system would be constructed is dominated by non-native plant species. Non-native grasses comprise approximately 60 percent of the plant cover; however, native perennial grasses also occur. Native grasses, such as purple needlegrass and California oatgrass, may locally comprise up to 30 percent of the plant cover, particularly in the southern end of the coastal terrace portion of the site. The remaining plant cover is comprised of other primarily non-native herbaceous plants (Brady/LSA, 1999a).

During construction, deposition of soil and spoil materials and/or surface grading that leaves areas unvegetated could result in an increased cover of non-native introduced grasses that would dominate and further exclude the native bunchgrasses.

> *Mitigation Measure BIO-6: The trail alignments shall attempt to avoid clumps of native grasses to the greatest extent feasible. Materials excavated during trail construction should not be side-cast onto adjacent native grasses. Areas temporarily disturbed by trail construction shall be reseeded with native grasses and native herbaceous plant species (locally-obtained seed). Seeding shall occur in the fall following construction. (LTS)*

Impact BIO-7: Construction of the bridge over Hagemann Gulch and the multi-use trail above the Arana Gulch Creek culverts may result in impacts on the California red-legged frog (CRLF), if this species is documented to occur in the area prior to construction. However, earlier surveys have not identified red-legged frogs on the site. (PS)

As noted earlier, protocol-level red-legged frog surveys were conducted in May 1999, and no red-legged frogs were observed at the site. However, standard avoidance mitigation measures are still recommended for the construction period because red-legged frog habitat exists and frogs could possibly (though not likely) migrate into the area. The Federal Highway Administration (FHWA) initiated a Section 7 consultation under the Endangered Species Act (ESA) with the USFWS. This consultation would be completed prior to final federal approvals of the multi-use trail, which would require federal funding.

> *Mitigation Measure BIO-7: Focused surveys for the California red-legged frog (CRLF) shall be conducted in the season immediately prior to construction activities. Surveys shall be conducted in accordance with current USFWS protocol (USFWS, 2005f). If CRLF are encountered during pre-construction surveys, during the inspection conducted immediately prior to ground-moving activities, or during project activities, all work on the site and adjacent staging area parcels shall cease. The USFWS and CDFG shall be notified immediately to determine whether additional avoidance measures or further action should be implemented to prevent possible take of this species. Depending on the results of the pre-construction surveys, the following measures shall be implemented to avoid impacts on the species:*

- *Initial construction activities (including grading and vegetation removal) shall occur during dry weather, during the day, and preferably before newly metamorphosed frogs disperse and when CRLF are less likely to be moving around. Initial ground-disturbing activities shall occur between May 15 and October 15.*
- *The riparian habitat shall be inspected by a USFWS-approved biologist before any clearing of vegetation, to avoid killing, injuring or harming individual frogs, if present, during these activities.*
- *A USFWS-approved biologist shall meet with the construction crew at the onset of construction to (1) provide CRLF life history information and habitat descriptions, (2) provide education regarding the workers' need to examine the ground before and during debris and vegetation removal and during initial ground disturbance activities, and (3) provide education about the need to halt activities and avoid handling or moving any CRLF or other special-status wildlife if encountered in the work area. (LTS)*

Impact BIO-8: The construction of the Hagemann Gulch bridge could have an impact (e.g., noise affecting breeding during construction) on avian species that reside in or utilize all habitats in the project area (see Table 4.2-2) such as raptors, yellow warblers, and great blue herons. (PS)

Noise during construction could cause breeding birds to abandon nesting areas, resulting in reproductive failure. For this reason, pre-construction surveys are recommended to ensure that such species are not present in close proximity to construction activities.

Mitigation Measure BIO-8(a): Before construction begins, nest and roost surveys shall be conducted by a qualified wildlife biologist during the period from March through July. These surveys shall be conducted for special-status birds, and all birds (and their nests) protected under the Migratory Bird Treaty Act (MBTA).

Surveys shall include the multi-use trail/bridge site and a 300-foot-wide buffer to examine nearby tree stands and structures for nesting special-status avian species. If an active nest is found, the City Parks and Recreation Department shall consult with the appropriate resource agencies (CDFG, USFWS) to determine appropriate construction buffers or other avoidance measures. If nesting birds are not found, no further action would be necessary.

Mitigation Measure BIO-8(b): As suggested in the Santa Cruz Harbor Wetland Consultation (Habitat Restoration Group, 1992), a temporary 300-foot-wide buffer zone from a heron nest tree shall be maintained during May through July, if/when young are present.

Mitigation Measure BIO-8(c): A yellow warbler nest survey shall be conducted in the riparian scrub prior to construction. If nests are found within 300 feet of the multi-use trail/bridge site, construction shall be delayed from April through July, or until the young have fledged.

Mitigation Measure BIO-8(d): While no lighting is proposed at this time, any future lighting should be limited. Any trail lighting shall consist of low-intensity lights, no higher than 3 feet off the ground, that would focus light on the trail and minimize lighting of natural areas adjacent to the trail and bridge.

The combination of the above measures would reduce this impact to less than significant. (LTS)

Impact BIO-9: Construction of the portion of the multi-use trail near Arana Gulch Creek could affect special-status roosting bats due to activity during construction. If trimming of trees is undertaken, bat roosts could be removed. (PS)

Bat activity was low during summer 2005 surveys; however, one special-status bat species, the Western red bat, was visually and acoustically detected emerging from a stand of coast live oak trees within 100 feet of the proposed Creek View Trail alignment on the east side of Arana Gulch Creek. Depending on the time of year, bat species assemblage and number of individuals can change. Therefore, the potential impact on bats from tree trimming could vary depending on the time of year. While no tree removal is proposed as part of the Master Plan, this would need to be verified at the time of construction of any improvements within Arana Gulch.

Mitigation Measure BIO-9: The following measures are recommended to avoid impacts to roosting bats:

- *Conduct surveys in late April or early May when bats are establishing maternity colonies but before females give birth. If roosting bats are found at this time, they should be excluded from establishing maternity colonies.*
- *Protect maternity colonies that have young not yet able to fly (pre-volant). The project biologist must confirm there are no pre-volant young present before a colony is displaced. It is assumed that after September 1 colonies have no pre-volant young.*
- *For any trees that could provide roosting space for bats, the trees shall be thoroughly evaluated prior to trimming to determine if a colony is present. Visual inspection, trapping, and acoustic surveys may be utilized as initial techniques.*
- *If a tree is not an active roost site, it may be immediately trimmed. If the tree is not trimmed within four days, the night surveys shall be redone.*
- *If a tree is an active roost site, the CDFG shall be contacted immediately and the bat species identified if possible. Active roost trees may still be trimmed after consultation.*
- *Removal of any native riparian tree, if necessary, shall be preceded by a thorough visual inspection to reduce the risk of displacing foliage-roosting bats.*
- *Removal of any occupied tree, if necessary, shall be mitigated for by the creation of a snag or other artificial roost structure. (LTS)*

Impact BIO-10: Monarch butterflies could be displaced if colonial wintering roost sites occur on the site and if trees are trimmed on such sites. (PS)

To date, no data are available that document the results of any formal surveys for wintering colonies of monarch butterflies within the Arana Gulch area. Stands of eucalyptus in Hagemann Gulch, along the east bank of Arana Gulch Creek, and near Agnes Street provide potential habitat aggregation areas for colonies of wintering monarch butterflies. Eucalyptus groves provide the predominant winter roosting habitat in the coastal zones of Santa Cruz County. Monarch wintering groves provide suitable roosting, appropriate protection from the wind and shade and sun exposure for roost limbs/trees, and a surrounding hedge of windbreak trees that protects the roosting trees. The eucalyptus trees in Hagemann Gulch could provide a combination of these requirements. The eucalyptus grove bordering the eastern edge of Arana Gulch Creek is less likely to provide winter roosting habitat due to the open exposure to wind.

> *Mitigation Measures BIO-10: Focused surveys for roosting colonies of monarch butterflies shall be conducted over the winter season (November to March) prior to construction activities. An examination of tree stands near and/or adjacent to the project area shall follow survey methods specified by the Xerces Society for Invertebrate Conservation (Xerces, 2004). The City shall avoid removing or trimming trees utilized by monarch butterflies or trees adjacent to the winter roost to prevent indirect changes to the humidity, wind exposure, and temperature within the immediate vicinity of the roost site. Any routine tree trimming shall be done between April and August to eliminate the risk of disturbance to monarch colonies, and shall be conducted under the guidance of a qualified monarch butterfly specialist if butterflies have been documented in the project area. (LTS)*

Cumulative Impacts

Development projects elsewhere in Santa Cruz (City and County as shown in Figure 6-1) would likely result in negligible impacts on the Arana Gulch site's biological resources. Development of lots near the site would likely result in increased use of Arana Gulch by new residents. However, the proposed Master Plan management guidelines provide measures to minimize or avoid any significant impacts on biological resources of Arana Gulch and adjacent habitats. In addition, the mitigation measures recommended for the project would reduce any contribution that the project would have to potential cumulative impacts on biological resources.

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