3.9 BIOLOGICAL RESOURCES

Introduction

This section addresses the biological resources along the project corridor and the potential for the Proposed Project to disturb sensitive biological species or habitats. In particular, the section provides a description of project area habitats; a listing of special-status plant and wildlife species that could potentially occur in the area; and federal, state, and regional regulations related to plant and wildlife species and the regulatory agencies that enforce these regulations.

Comments in response to the Notices of Preparation from 2005 and 2008 (see Appendix A) identified concerns regarding land use impacts, impacts to water resources, impacts to biological resources, and cumulative biological impacts. There were also requests to address the East Contra Costa County Habitat Conservation Plan (ECCCHCP). These comments are addressed in this section.

Information contained in this section is based on field and protocol-level surveys conducted in May, June, and July 2006, December 2007, and January, March, and April 2008 by PBS&J; wetland assessments and delineation surveys conducted in May, June, and July 2006; and a review of existing documentation, including:

- Environmental Reconnaissance for the SR 4 East Corridor Transit Study, 2002 (eBART);[1]
- Wetlands Assessment for the SR 4 East Corridor Study, 2003 (eBART);[2]
- Initial Study/Environmental Assessment on Route 4 in Contra Costa County from Railroad Avenue to Loveridge Road, January 2001;[3]
- State Route 4 (East) Widening Project: Loveridge Road to State Route 160 Negative Declaration Initial Study Final Environmental Assessment, August 2005;[4]
- Final East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCCHCP/NCCP) and EIR, October 2007;

[1] URS, *Environmental Reconnaissance, SR 4 East Corridor Transit Study* (eBART), 2002.
[2] URS, *Wetlands Assessment, SR 4 East Corridor Study* (eBART), 2003.
[3] Caltrans, *Initial Study/Environmental Assessment for the State Route 4 East Widening Project*. January, 2001.
[4] Caltrans, State Route 4 (East) Widening Project: Loveridge Road to State Route 160 Negative Declaration/ Initial Study/Final Environmental Assessment, Available online at: http://www.dot.ca.gov/dist4 /documents/sr4eais/route4eais.htm, August 2005.

- Preliminary Wetland Delineation and Jurisdictional Determination for the County Crossings Development, Antioch, July 2005; U.S. Army Corps of Engineers' Verification Number 2005-0115;[5] and
- Insect and Invertebrates Site Assessment for the County Crossings Development, Antioch, August 2005.[6]

Existing Conditions

Regional Overview and Survey Methods

The project corridor lies within highly urbanized landscapes in the eastern portion of Contra Costa County. Ornamental and ruderal (weedy) habitat is the most commonly encountered habitat type along State Route 4 (SR 4) and adjacent undeveloped areas. Outside these areas, landscapes are urban or semi-rural and consist of agricultural areas, wetlands, and open space. Approved and planned urban development in the City of Antioch, as well as the construction of the SR 4 Bypass through eastern Antioch, has already reduced much of the remaining open space in this portion of the project corridor.

Topographically, the project corridor starts at an elevation of approximately 125 feet above mean sea level (msl) at its western terminus in the City of Pittsburg, and drops to approximately 70 feet above msl at its eastern terminus at the proposed Hillcrest Avenue Station. The overall slope and aspect of the project corridor generally falls towards Suisun Bay to the north, and all drainages lie within the San Joaquin Delta and Suisun Bay watersheds (see Section 3.8, Hydrology and Water Quality, for more detailed information on local drainages).

The project corridor crosses several waters of the U.S., including Willow Creek, Kirker Creek, Los Medanos Wasteway, Markley Canyon Creek, West Antioch Creek, East Antioch Creek, and several unnamed tributaries. All of these watercourses have been historically channelized and culverted to some extent beneath SR 4.

A number of surveys were conducted by PBS&J biologists throughout the spring and early summer of 2006, winter 2007, and spring 2008, and are summarized below. The principal biological databases, including the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS) Online Electronic Inventory of Rare and Endangered Vascular Plants of California, and the United States Fish and Wildlife Service (USFWS) Online Species List of Federal Endangered and Threatened Species queries, were queried before field surveys were conducted.[7]

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5 RCL Ecology, County Crossings Development Preliminary Wetland Delineation and Jurisdictional Determination, Antioch, Contra Costa County, California, July 2005.

6 Entomological Consulting Ltd., County Crossings Development, Insect and Invertebrates Site Assessment, Antioch, Contra Costa County, California, August 2005.

7 The CNDDB, CNPS, and USFWS database query results in the Biological Resources Tech Report are available for review at the BART Planning Office.

- Rare plant surveys were conducted in accordance with the CDFG and CNPS published survey guidelines along the entire corridor on May 11, May 12, and May 15, 2006; June 8, June 12, and June 19, 2006; August 10, 2006; April 11, 2008; and May 21, 2008.
- The reconnaissance-level wildlife surveys consisted of walking meandering transects through representative habitats that occurred within an approximate half-mile area centered on the project corridor to assess their suitability for native plant and animal species. Particular attention was given to areas that appeared to provide the most suitable habitat for special-status species expected to occur in the region (especially seasonal wetlands, stream corridors, and isolated grassland remnants). Surveys were conducted on May 11, May 12, May 15, June 8, June 12, and June 19, 2006; December 3, 2007; and February 19 and April 3, 2008.
- A California red-legged frog habitat assessment was conducted in accordance with the August 2005 USFWS "Revised Guidance on Site Assessment and Field Surveys for California Red-legged Frog (*Rana aurora draytonii*)." The habitat assessment was performed on June 12 and June 19, 2006.
- A California tiger salamander habitat assessment was conducted in accordance with the October 2003 USFWS and the CDFG "Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (*Ambystoma californiense*)." The habitat assessment surveys for Alameda whipsnake, giant garter snake, and amphibians were conducted concurrently. These assessments were performed on June 12 and June 19, 2006.
- A San Joaquin kit fox habitat assessment was conducted in accordance with the June 1999 USFWS "San Joaquin Kit Fox Survey Protocol for the Northern Range." This assessment was performed on May 11, May 12, and May 15, 2006; June 8 and June 12, 2006.

Plant Communities and Associated Wildlife Habitats

Five primary plant communities occur within and along the project corridor: ruderal, non-native grassland, coastal/valley freshwater marsh, riparian scrub, and seasonal wetland (see Figure 3.9-1A through 3.9-1D). The plant communities were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California*.[8] The five plant communities in the project corridor are identified below (see Figures 3.9-2A through 3.9-2D), and the plant and wildlife species observed during the field surveys are presented in Table 3.9-1.

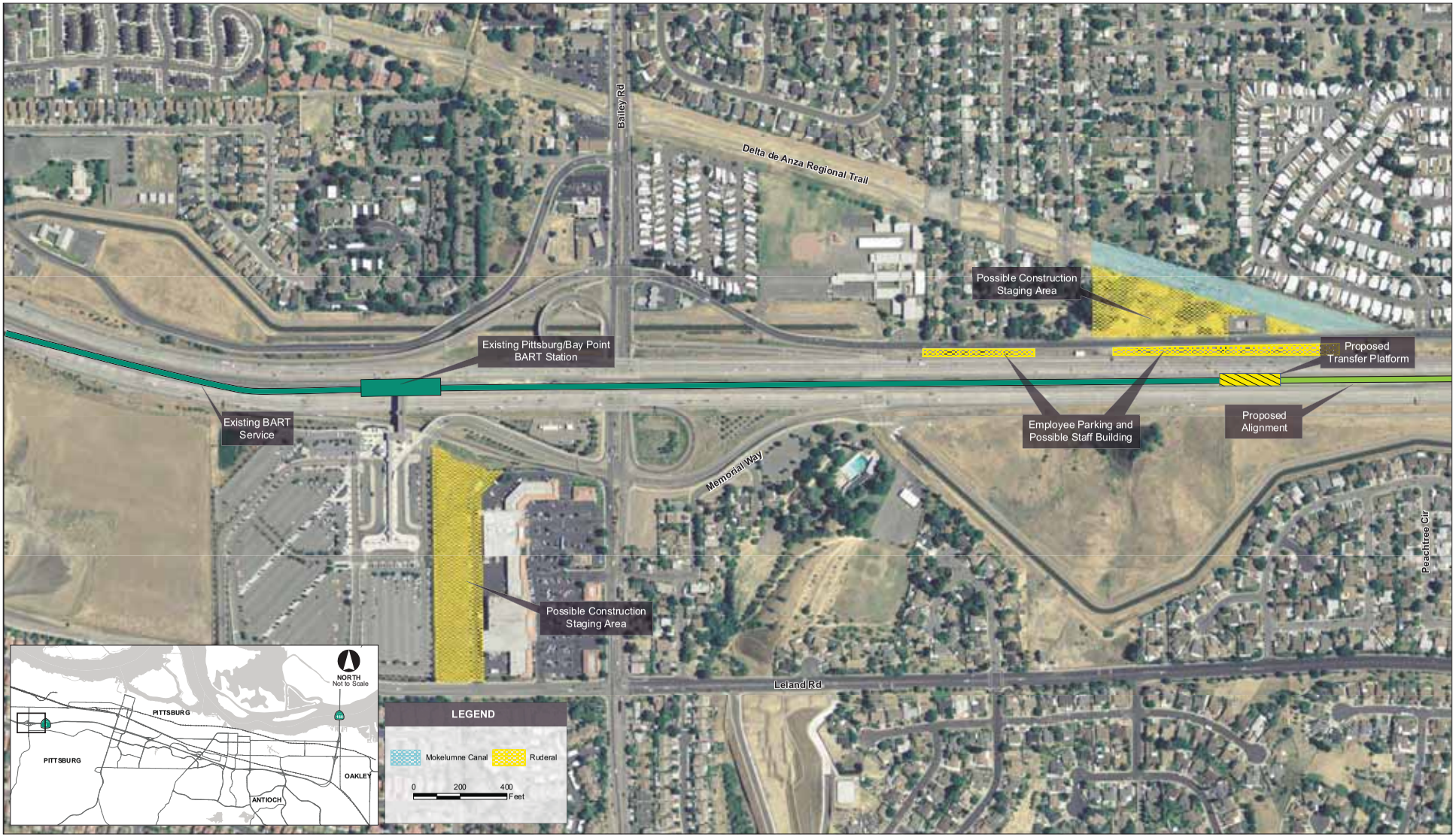
[8] Holland, R.F. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game, Sacramento, California. 1986.

Ruderal. Ruderal habitats often contain a high percentage of introduced, non-native annual and biennial grasses and broad-leaved plants (forbs) that undergo frequent disturbance (e.g., mowing, spraying, grading, discing). Native species are often infrequent within this habitat type due to their inability to compete with the more aggressive short-lived annual and biennial species. This community type is found in association with highly urbanized stretches of residential and commercial developments within the project corridor. While most frequently encountered along SR 4 in the cities of Pittsburg and Antioch, ruderal habitats were also found outside these areas where alteration of the landscape has occurred for agricultural, municipal, or construction maintenance and development activities. The ruderal habitat within the proposed Hillcrest Avenue Median Station area has undergone disturbances due to grazing, dumping, and storage activities, and thus the habitat value is low. This community type is the predominant vegetation community in the corridor. See Figure 3.9-2A for a ruderal habitat example.

Non-Native Grassland. Some open space along the stretch adjacent to the proposed Hillcrest Avenue Station area contains remnants of degraded grassland that is now dominated primarily by introduced, non-native grasses and broad-leaved plants associated with grazing land (pastures), although similar habitats occur adjacent to SR 4 in the City of Pittsburg. Due to the presence of non-native plants, wildlife, and trash, the habitat value within the project corridor is diminished. Nevertheless, this habitat still supports native vegetation and wildlife. See Figure 3.9-2B for a non-native grassland example.

Coastal/Valley Freshwater Marsh. Freshwater marsh habitat was found along and adjacent to East Antioch Creek. A visual prevalence of emergent, robust hydrophytic vegetation was used to delineate this habitat type within a particular area; ponded water and saturated soils were also present within these features at the time of the field surveys. Due to the topographic low areas, many of the freshwater marshes surveyed contained accumulated trash from the surrounding areas. See Figure 3.9-2C for a coastal/valley freshwater marsh example.

Riparian Scrub. Riparian scrub habitat was found along drainages and intermittent stream channels within the project corridor. Riparian scrub is described as a scrubby streamside thicket, varying from open to impenetrable. Prevalent species included willow species, together with several other fast-growing shrubs and vines such as Himalayan blackberry. Infrequent larger trees species include Fremont's cottonwood, particularly around urban landscapes. Peruvian peppertree also occurred along the edges of these features. See Figure 3.9-2D for a riparian scrub example.



Source: CDFG, December 2007; PBS&J, 2007.

AFFECTED HABITAT ALONG THE PROJECT CORRIDOR
FIGURE 3.9-1A

Source: CDFG, December 2007; PBS&J, 2007.

AFFECTED HABITAT ALONG THE PROJECT CORRIDOR
FIGURE 3.9-1B

Source: CDFG, December 2007; PBS&J, 2007.

AFFECTED HABITAT ALONG THE PROJECT CORRIDOR
FIGURE 3.9-1C

Source: CDFG, December 2007; PBS&J, 2007.

AFFECTED HABITAT ALONG THE PROJECT CORRIDOR
FIGURE 3.9-1D

Table 3.9-1
Plant Communities and Plant and Wildlife Species Observed in the Project Corridor

Plant Community	Plant Species	Wildlife Species
Ruderal	wild oat (*Avena fatua*), rip-gut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), hare barley (*Hordeum murinum* ssp. *leporinum*), Italian ryegrass (*Lolium multiflorum*), sweet fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativus*), prickly sow-thistle (*Sonchus asper*), Italian thistle (*Carduus pycnocephalus*), black mustard (*Brassica nigra*), yellow star-thistle (*Centaurea solstitialis*), purple star-thistle (*Centaurea calcitrapa*), California bur-clover (*Medicago polymorpha*), red-stem filaree (*Erodium cicutarium*), filaree (*Erodium botrys*), prickly lettuce (*Lactuca serriola*), wild blue lettuce (*Lactuca virosa*), hairy vetch (*Vicia sativa*), milk thistle (*Silybum marianum*), field bindweed (*Convolvulus arvensis*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), annual fireweed (*Epilobium brachycarpum*), flowering almond (*Prunus dulcis*), blackwood acacia (*Acacia melanoxylon*), eucalyptus (*Eucalyptus* spp.), toyon (*Heteromeles arbutifolia*), Peruvian peppertree (*Schinus molle*), coyote brush (*Baccharis pilularis*) giant reed (*Arundo donax*), artichoke thistle (*Cynara cardunculus*), and pampas grass (*Cortaderia selloana*).	monarch butterfly (*Danaus plexippus*), western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), black phoebe (*Saynoris nigricans*), Brewer's blackbird (*Euphagus cyanocephalus*), killdeer (*Charadrius vociferus*), meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), goldfinch (*Carduelis psaltria*), house sparrow (*Passer domesticatus*), tree swallow (*Tachycineta bicolor*), northern mockingbird (*Mimus polyglottos*), California quail (*Callipepla californica*), pheasant (*Phasianus colchicus*), western scrub jay (*Aphelocoma coerulescens*), northern shrike (*Lanius excubitor*), summer tanager (*Piranga rubra*), American robin (*Turdis migratorius*), American crow (*Corvus brachyrhynchos*), black-tailed hare (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), Swainson's hawk (*Buteo swainsoni*), western burrowing owl (*Athene cunicularia hypugea*).
Non-native Grassland	rip-gut brome, hare barley, Italian ryegrass, Italian thistle, yellow star-thistle, prickly lettuce, field bindweed, fiddleneck, annual fireweed, blue wild-rye (*Elymus glaucus*), curly dock (*Rumex crispus*), crown brodiaea (*Brodiaea coronaria*), gumplant (*Grindelia camporum* var. *camporum*), blow-wives (*Achyrachaena mollis*), California poppy (*Eschscholzia californica*), English plantain (*Plantago lanceolata*), rose clover (*Trifolium hirtum*), owl's clover (*Castilleja exserta*), turkey mullein (*Croton setigerus*), narrow-leaved milkweed (*Asclepias fascicularis*), California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*), and purple needlegrass (*Nasella pulchra*).	kingsnake (*Lampropeltis getulus californiae*), barn swallow (*Hirundo rustica*), black phoebe, western kingbird, meadowlark, mourning dove, California quail, American crow, black-tailed hare, Botta's pocket gopher, coyote, California ground squirrel, red-tailed hawk, red-shouldered hawk, and turkey vultures.

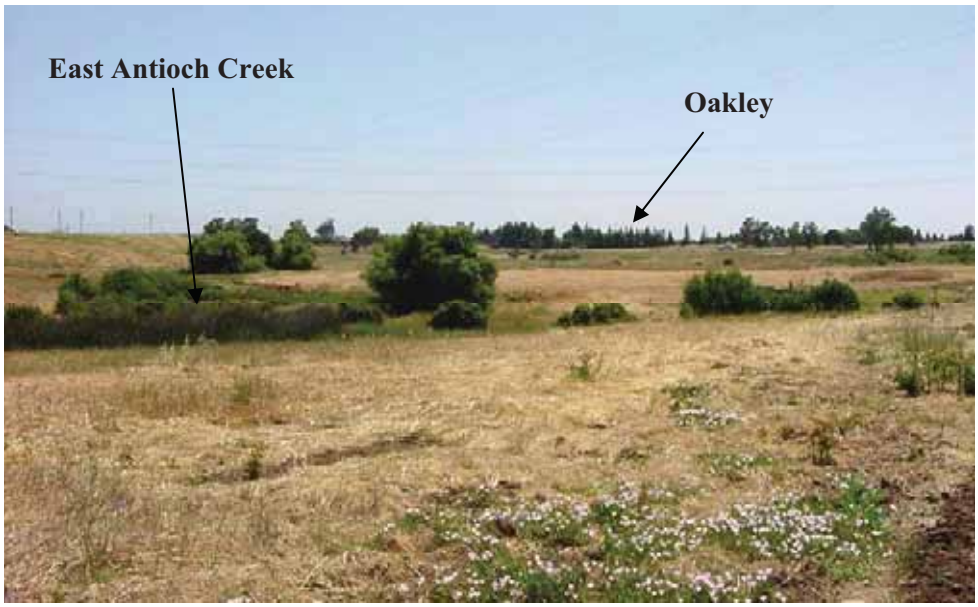
Table 3.9-1
Plant Communities and Plant and Wildlife Species Observed in the Project Corridor

Plant Community	Plant Species	Wildlife Species
Coastal/Valley Freshwater Marsh	cattail (*Typha latifolia* and *T. angustifolia*), tule (*Schoenoplectus [Scirpus] acutus* var. *occidentalis* and *S. americanus*), sturdy bulrush (*Schoenoplectus robustus*), watercress (*Nasturtium officinale*), water-weed (*Polygonum lapathifolium*), curly dock (*Rumex crispus*), annual beardgrass (*Polypogon monspeliensis*), Bermuda grass (*Cynodon dactylon*), Harding grass (*Phalaris aquatica*), willowherb (*Epilobium ciliatum* var. *ciliatum*), cocklebur (*Xanthium strumarium*), perennial pepperweed (*Lepidium latifolium*), western goldenrod (*Euthamia occidentalis*), spearscale (*Atriplex triangularis*), flatsedge (*Cyperus eragrostis*), spiny-fruit buttercup (*Ranunculus muricatus*), and Blue wild-rye.	dragonfly (Order *Odonata*), Pacific tree frog and tadpoles (*Pseudacris regilla*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), black phoebe, barn swallow, tree swallow, western scrub jay, northern mockingbird, mourning dove, California ground squirrels coyote, raccoon (*Procyon lotor*), and skunk (*Mephistis mephistis*).
Riparian Scrub	willow (*Salix* spp.), blackberry (*Rubus* spp.), Pacific willow (*Salix lucida*), red willow (*Salix laevigata*), narrow-leaved willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), Himalayan blackberry (*Rubus discolor*), Fremont's cottonwood (*Populus fremontii*), and Peruvian peppertree.	dragonfly, crayfish (*Procambarus* sp.), mosquito fish (*Gambusia* sp.), American bullfrog (*Rana catebeiana*), hummingbird (*Archilochus* sp.), wild turkey (*Meleagris gallopavo*), western kingbird, black phoebe, Brewer's blackbird red-winged blackbird, mourning dove, northern mockingbird, western scrub jay, coyote, skunk, and raccoon.
Seasonal Wetland	annual beardgrass, hare barley, Italian ryegrass, prickly lettuce, curly dock, spearscale, English plantain, willow dock (*Rumex salicifolius*), canarygrass (*Phalaris minor*), hoary cress (*Cardaria draba*), alkali mallow (*Malvella leprosa*), dense boisduvalia (*Epilobium densiflorum*), and hyssop loosestrife (*Lythrum hyssopifolium*).	dragonfly, crayfish, mosquito fish, American bullfrog, Pacific tree frog, yellowlegs (*Tringa falvipes*), cliff swallow (*Petrochelidon pyrrhonota*), barn swallow, Brewer's blackbird, red-winged blackbird, coyote, skunk, and raccoon.

Source: PBS&J field surveys, 2006, 2007, 2008.

Figure 3.9-2A and 3.9-2B Plant Communities along the Project Corridor

A. Example of ruderal habitats flanking the Union Pacific Railroad Right-of-Way (UP ROW) near the proposed Hillcrest Avenue Station. This community type is dominated primarily by non-native grasses and broad-leaved plants that undergo periodic disturbance regimes (e.g., grading, spraying, mowing).



B. Example of non-native grassland and wetland habitats associated with East Antioch Creek, facing east, and north of the UP ROW (not shown). The City of Oakley can be seen in the background of the photograph.

Figure 3.9-2C and 3.9-2D Plant Communities along the Project Corridor

C. Example of freshwater marsh habitat north of the UP ROW in the City of Antioch. This feature is hydrologically connected with East Antioch Creek. Dominant plant species seen in the photograph include broad-leaved cattail and perennial pepperweed. This community type interfaces with riparian scrub habitat (dominated primarily by willow species), which can be seen in the background of the photograph.

D. Example of riparian scrub habitat north of SR 4 in the City of Antioch, facing southeast. This feature is hydrologically connected with East Antioch Creek. Dominant plant species seen in the photograph include willow species, broad-leaved cattail, broad-leaved pepperweed, spearscale, and non-native grasses.

Seasonal Wetland (see Figure 3.9-2E). Seasonal wetlands within the project corridor occur primarily along the SR 4 and UP ROW often forming in long linear depressions at the toe of the elevated SR 4 and railroad track. Additionally, a created wetland is located near the remote maintenance facility for the Northside East and Northside West Hillcrest Avenue Station options. This feature was created as mitigation for wetland impacts associated with the SR 4 Bypass project. Refer to Figure 3.9-2E for a seasonal wetland example.

Figure 3.9-2E Plant Communities along the Project Corridor

E. Example of a small seasonal wetland located north of SR 4 in the City of Antioch. This type of wetland ponds water for short periods during the rain season and soils remain saturated for a sufficient duration to allow hydrophytic species to persist, such as cocklebur, annual beardgrass, and curly dock.

Special-Status Species

Research and Databases. The potential occurrence of special-status plant and animal species within the vicinity of the project corridor has been determined through review of the references identified below and habitat information collected during field surveys conducted in May and June 2006, December 2007, and February, April, and May 2008. In conducting the database searches, 7.5 minute USGS quadrangles that either encompass or surround the project corridor were included. Specifically, searches were performed for the Honker Bay, Antioch North, Jersey Island, Antioch South, Brentwood, Woodward Island, and Byron Hot Springs 7.5 minute USGS topographic quadrangles (quads). Although the project corridor does not go into all of these quads, species occurring in these quads could move into quads where the project corridor is located. Knowing which species occur within the adjacent quad helps determine

which species have the greatest potential of occurring within the project area. Below is a list of the sources and databases queried.

- CDFG's CNDDB;
- USFWS Online Species List of Federal Endangered and Threatened Species that Occur in or may be Affected by Projects;
- CNPS On-line Electronic Inventory of Rare and Endangered Vascular Plants of California; and
- Final East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan (ECCC HCP/NCCP) and EIR (October 2007).

For the purposes of this report, special-status species include:

- species listed, proposed, or candidate species for listing as Threatened or Endangered by the USFWS pursuant to the federal Endangered Species Act (FESA) of 1969, as amended;
- species listed as Rare, Threatened, or Endangered by the CDFG pursuant to the California Endangered Species Act (CESA) of 1970, as amended;
- species designated as Fully Protected under Sections 3511 (birds), 4700 (mammals), and 5050 (reptiles and amphibians) of the California Fish and Game Code;
- species designated by the CDFG as California Species of Concern;
- plant species listed as List 1B and 2[9] by the CNPS; and
- species not currently protected by statute or regulation, but considered rare, threatened or endangered under the California Environmental Quality Act (CEQA) Guidelines (Section 15380).

According to the CNDDB, USFWS, and CNPS queries, a total of 114 special-status species and 10 sensitive natural communities have the potential to be affected by the Proposed Project or are known to occur in the 7.5 minute topographic quadrangles that the project corridor crosses. Information gathered during the site visits and data on range, habitat requirements and known localities were used to refine the species list and determine which species were likely to occur based on the plant communities (i.e., habitat types) identified along the project corridor. Lack of suitable habitat (e.g., chaparral, sand dunes, oak woodland or savanna), suitable soil substrates (e.g., serpentine, alkaline, sandy soils), and/or suitable elevation clines for known occurrences of special-status plant and animal species generated by the CNDDB, USFWS, and CNPS queries were dismissed, and are not discussed further in this section. None of the

[9] Recent modifications to the CNPS Ranking System include the addition of a new Threat Code extension to listed species (e.g., List 1B.1, List 2.2, etc.). A Threat Code extension of .1 signifies that a species is seriously endangered in California; .2 is fairly endangered in California; and .3 is not very endangered in California.

sensitive natural community types identified from the database queries were found within the project corridor.[10]

Research and Survey Results. Based on the database queries and the site surveys, one special-status invertebrate and five special-status birds could occur within the project area and potentially be affected by the Proposed Project. No special-status plant species were identified. Figure 3.9-3 shows recorded CNDDB occurrences within a two-mile radius of the project corridor. Life histories of special-status plant and animal species generated by the CNDDB, USFWS, and CNPS lists that have a moderate or higher likelihood of occurring along the project corridor are described below.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Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) (VELB) is listed as a threatened species under the FESA. In September 2006, the USFWS recommended de-listing the VELB based on the findings from the VELB 5-Year Review: Summary and Evaluation, prepared by the Sacramento Fish and Wildlife Office.[11] Until the delisting becomes final, the VELB is still considered threatened and protected by the FESA and projects would be required to comply with the most current USFWS mitigation guidelines.

The VELB occurs throughout the year in riparian woodlands and other Central Valley habitats containing elderberry shrubs (*Sambucus* spp.), upon which the VELB are completely dependent for all stages of their life cycle. The females lay their eggs in crevices in the bark. After hatching, the larvae burrow into the stems of the shrub where they feed on the interior wood for the next one to two years until they form pupae, from which the adults emerge. The adults bore their way out of the stems, leaving a distinctive oval-shaped hole. As the larvae and adults are rarely seen, these bore holes are often the only evidence of this species' presence. After emergence from the stems, the adults remain in association with the elderberries, where they will feed on the elderberry foliage and eventually reproduce. All elderberry shrubs within the known range of the VELB that have one or more stems with diameters of one inch or greater at ground level, are considered potential habitat for this species. A group of elderberry shrubs was observed in the eastern portion of the proposed Northside East Station option during field surveys in May 2006 and February 2008.

[10] The CNDDB, CNPS, and USFWS database query results in the Biological Resources Technical Report are available for review at the BART Planning Office.

[11] U.S. Fish and Wildlife Service, Valley Elderberry Longhorn Beetle 5-Year Review: Summary and Evaluation, 2006, Sacramento Fish and Wildlife Office, Sacramento, California, www.fws.gov, accessed October 17, 2006.

The VELB is not covered by the ECCC HCP/NCCP. Therefore, BART would need to consult directly with the USFWS if the Proposed Project would impact the VELB.

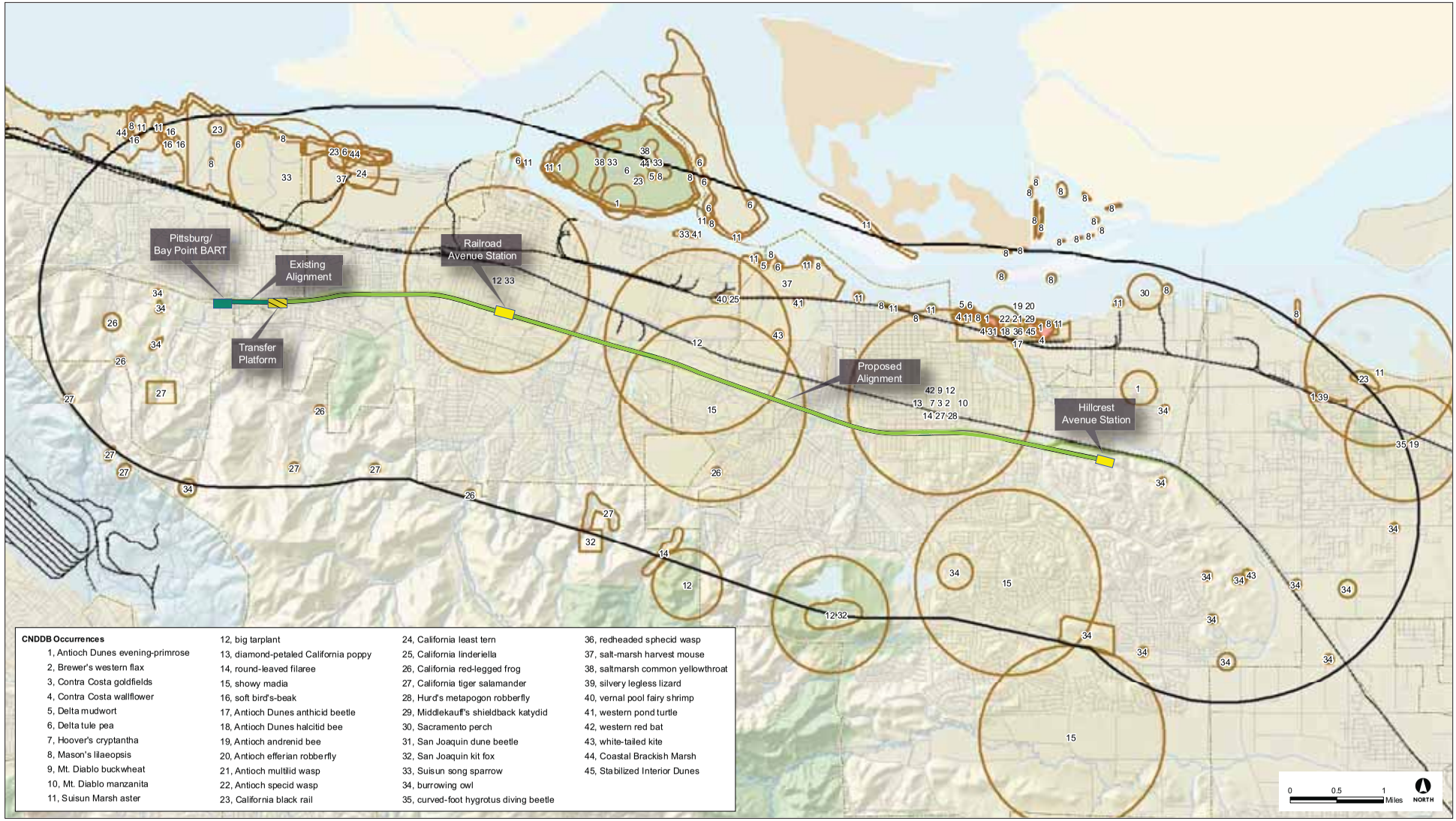
USFWS

Tricolored Blackbird (Agelaius tricolor) is a California Species of Concern and is endemic to the Central and coastal valleys of California. They are highly gregarious, forming large flocks in both breeding and non-breeding seasons. Nests are built near or over water and occasionally in agricultural fields. Recently, tricolored blackbirds have displayed increased tendencies toward nesting in patches of blackberry, willows, mustard, thistles, nettles, and even grasses. Wetland habitat associated with the various drainages and freshwater marshes along the project corridor may provide suitable habitat for this species; however, none were observed during the various field surveys conducted by PBS&J in May and June 2006.

The tricolored blackbird is covered by the ECCC HCP/NCCP. The ECCC HCP/NCCP contains Conservation Measures that can be implemented to reduce potential impacts to this species.

PBS&J, C. Alvarado

Western Burrowing Owl (Athene cunicularia hypugea) is a California Species of Concern. Burrowing owls are year-long residents in generally flat, open dry grasslands, pastures, deserts, and shrub lands, and in grass, forbs, and open shrub stages of pinyon-juniper and ponderosa pine habitats. They use communal ground squirrel and other small mammal burrow colonies for nesting and cover, as well as artificial structures such as roadside embankments, levees, and berms. They prefer open, dry, nearly level grassland or prairie habitat and can exhibit high site fidelity, often reusing burrows year after year.



CNDDB Occurrences

1, Antioch Dunes evening-primrose
2, Brewer's western flax
3, Contra Costa goldfields
4, Contra Costa wallflower
5, Delta mudwort
6, Delta tule pea
7, Hoover's cryptantha
8, Mason's lilaeopsis
9, Mt. Diablo buckwheat
10, Mt. Diablo manzanita
11, Suisun Marsh aster
12, big tarplant
13, diamond-petaled California poppy
14, round-leaved filaree
15, showy madia
16, soft bird's-beak
17, Antioch Dunes anthicid beetle
18, Antioch Dunes halcitid bee
19, Antioch andrenid bee
20, Antioch efferian robberfly
21, Antioch multilid wasp
22, Antioch specid wasp
23, California black rail
24, California least tern
25, California linderiella
26, California red-legged frog
27, California tiger salamander
28, Hurd's metapogon robberfly
29, Middlekauff's shieldback katydid
30, Sacramento perch
31, San Joaquin dune beetle
32, San Joaquin kit fox
33, Suisun song sparrow
34, burrowing owl
35, curved-foot hygrotus diving beetle
36, redheaded sphecid wasp
37, salt-marsh harvest mouse
38, saltmarsh common yellowthroat
39, silvery legless lizard
40, vernal pool fairy shrimp
41, western pond turtle
42, western red bat
43, white-tailed kite
44, Coastal Brackish Marsh
45, Stabilized Interior Dunes

Source: CDFG, December 2007.
Note: Swainson's hawk has been reported within 3 miles of the project corridor. Thus, its occurrence was reported outside the study area (delineated by the black border), but its foraging habitat would include portions of the project corridor.

SENSITIVE SPECIES OCCURRENCES IN THE PROJECT VICINITY
FIGURE 3.9-3

Occupancy of suitable burrowing owl habitat can be verified at a site by observation of a pair of burrowing owls during their breeding season (March to August) or, alternatively, by the presence of molted feathers, cast pellets, prey remains (rodents, small reptiles, and large insects), eggshell fragments, or excrement (guano or must), near or at a burrow. There are known CNDDB occurrences for this species within one mile of the project corridor. A number of active burrows were identified during the various field surveys conducted by PBS&J in May and June 2006. While a few active burrows were found in ruderal habitats adjacent to the UP ROW, this species was observed readily using ground squirrel burrows embedded within the gravel ballast of the UP tracks.

Burrowing owl is covered by the ECCC HCP/NCCP. The ECCC HCP/NCCP contains Conservation Measures that can be implemented to reduce potential impacts to this species.

USFWS

Swainson's Hawk (Buteo swainsoni) is state listed as threatened. They are found during the breeding season throughout the Central Valley where suitable nesting and foraging habitat is available. Swainson's hawks often nest within or peripheral to riparian areas, adjacent to suitable foraging habitat as well as in single or stands of trees in agricultural fields. They are open country birds that forage in large, open grasslands and agricultural fields, especially after the fields have been disced or harvested. Swainson's hawks can forage as much as 10 miles from the nest. Ruderal habitats along the project corridor provide suitable foraging habitat. A single individual was observed foraging over a ruderal field north of the UP ROW in Antioch during a field survey conducted in June 2006. The nearest recorded CNDDB nest occurrence is approximately 3 miles east of the project corridor.

The inventory area of the ECCC HCP/NCCP is at the western edge of this species' range, which is covered by the ECCC HCP/NCCP. The ECCC HCP/NCCP contains Conservation Measures that can be implemented to reduce potential impacts to this species.

PBS&J C Alvarado

White-tailed kite (Elanus leucurus) (also known as black-shouldered kite) is a state "fully protected" raptor. It breeds between February and October and feeds on rodents, small reptiles, and large insects in fresh emergent wetlands, annual grasslands, pastures, and ruderal vegetation. Unlike other raptors, kites often roost and occasionally nest communally; therefore, disturbance of a relatively small roost or nesting area could affect a large number of birds. Suitable nesting and foraging habitat occurs along portions of the project corridor.

This species is not covered by the ECCC HCP/NCCP. The ECCC HCP/NCCP did not recommend coverage due to the likely de-listing from fully protected status when the category is revised and its low potential for listing under CESA or FESA. However, the white-tailed kite is still a fully protected species and CDFG does not authorize the take of fully protected birds.

USFWS

Loggerhead Shrike (Lanius ludovicianus) is a California Species of Concern. Loggerhead shrikes are common residents in lowlands and foothills throughout California, preferring open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. The greatest density of this species occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua Tree habitats. Loggerhead shrike build well concealed nests on a stable branch in densely-foliaged shrub or tree.

The diet of the loggerhead shrike includes large insects, small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates. Shrikes forage from a perch at least 0.6 meters (2 feet) above the ground, and are often much higher. They frequently skewer prey on a thorn, sharp twig, wire barb, or force it into a crotch to feed on or to cache for feeding later. The breeding season for loggerhead shrike is from March to May with fledging the nest around July or August.

The project corridor is within the known range for this species and moderately suitable foraging and nesting habitat occurs within the project area. This species was not observed during field surveys conducted in May and June 2006.

This species is not covered by the ECCC HCP/NCCP.

Sensitive Habitats

Wetlands and Other Waters of the U.S. Jurisdictional wetland features found within the proposed project area include seasonal wetlands, riparian scrub, and freshwater marsh habitats.

Under Section 404 of the Clear Water Act (CWA), the U.S. Army Corps of Engineers (Corps) has the authority to regulate activity that discharges fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S., which are defined as follows:

Created wetland located south of the UP ROW, and north of SR 4, east of Antioch.

1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2) All interstate waters including interstate wetlands;
3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii) Which are used or could be used for industrial purposes by industries in interstate commerce;
4) All impoundments of water otherwise defined as waters of the U.S. under the definition;
5) Tributaries of waters identified in paragraphs (1)-(4) of this section;
6) The territorial seas; and

7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1)-(6) of this section. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the U.S. The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes and the like are "adjacent wetlands."

Wetlands are further defined as those areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

The project corridor intersects several "waters of the U.S.," including Willow Creek, Kirker Creek, Los Medanos Wasteway, Markley Creek, West Antioch Creek, Marsh Creek, East Antioch Creek, and unnamed tributaries. All of these watercourses have been historically channelized and altered to some extent beneath SR 4 or for agricultural purposes. They appear to collect runoff from surrounding slopes and hardscape surfaces during the rain season. The distribution of the various wetland types found within the project corridor corresponds to subtle differences in topography, soils, and land use along the project corridor; most of the wetlands are found at the eastern end of the project corridor at the Hillcrest Station area. These features are considered jurisdictional under the authority of the Corps, and any discharge of material into these features would require permitting under the CWA. There are also a number of drainages along the project corridor that would fall under CDFG's jurisdiction. Construction activities around these features could require a Streambed Alteration Agreement.

Wildlife Corridors. Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. The Proposed Project is not part of a major or local wildlife corridor/travel route, because it does not connect two significant habitats.

Applicable Policies and Regulations

A number of federal and state statutes and local policies provide the regulatory structure that guides the protection of biological resources. The following discussion summarizes those laws and regulations that are most relevant to biological and wetland resources found within the project corridor.

Federal Endangered Species Act (FESA). The FESA of 1973 provides legal protection for plant and animal species in danger of extinction, and requires definitions of critical habitat and development of recovery plans for specific species.

Section 3 of the FESA defines an endangered species as "any species, including subspecies, in danger of extinction throughout all or a significant portion of its range;" and a threatened species as any species "likely to become endangered within the foreseeable future throughout all or a significant portion of its range." "Federally listed" or "listed" indicates that a species has been designated as endangered or threatened through publication of a final rule in the Federal Register. Endangered and threatened species listed under Section 4 of the FESA receive the full protection of the FESA. Proposed endangered and threatened species are those for which a proposed regulation, but not a final rule, has been published in the Federal Register. Proposed species are granted limited protection, while candidate species and species of special concern are afforded no protection under the FESA.

Projects that would result in adverse effects on federally listed threatened or endangered species are required to consult with the USFWS. The objective of consultation is to determine whether the project would adversely affect a protected species or its designated critical habitat, and to identify mitigation measures to avoid or reduce impacts to the species. This consultation can be pursuant to either Sections 7 or 10 of the FESA. Section 7 consultation is required when a federal agency is involved in project approval, funding, or permitting. Section 10 consultation is required when no federal agencies are involved with the project.

Section 7 of the FESA requires federal agencies to make a finding on the potential to jeopardize the continued existence of any listed species potentially impacted by all federal actions, including the approval of a public or private action, such as the issuance of a permit pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA).

Section 9 of the FESA prohibits the take of any member of an endangered species. Take is defined by the FESA as "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." USFWS has further defined the terms harass and harm. Harass is defined as follows:

> "…an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering."

Harm is defined to include the following:

> "…significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering."

Section 10(a) of the FESA permits the incidental take of listed species if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Migratory Bird Treaty Act of 1936. The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a "take." The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).

Clean Water Act. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 404 of the CWA, the Corps has the authority to regulate activities that discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or function.

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, as well as the Porter-Cologne Water Quality Control Act (described below), California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy.

The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the U.S.) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The Central Valley Regional Water Quality Control Board (CVRWQCB) and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) are the appointed authorities for Section 401 compliance along the project corridor. A request for certification or waiver is submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, these boards may effectively veto or add conditions to any Corps permit.

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act charges the SWRCB and the nine Regional Water Quality Control Boards (RWQCB) statewide with protecting water quality throughout California. Typically, the SWRCB and RWQCB act in concert with the Corps under Section 401 of the CWA in relation to permitting fill of federally jurisdictional waters. The U.S. Supreme Court has recently acted to limit the regulatory jurisdiction of the Corps under Section 404 of the Clean Water Act. However, this action did not limit the state's regulatory jurisdiction over "waters of the State." "Waters of

the State" are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "…any surface water or groundwater, including saline waters, within the boundaries of the state." Currently, an applicant would delineate the wetlands on their property utilizing methodology presented in the 1987 U.S. Corps of Engineers Wetland Delineation Manual[12] and the delineation would be verified by the Corps. In cases where an area meets the criteria to be considered a wetland, but the Corps does not have jurisdiction, the applicant is referred to the appropriate RWQCB.

California Endangered Species Act (CESA). The CESA was enacted in 1984. Under the CESA, the California Fish and Game Commission has the responsibility for maintaining a list of threatened species and endangered species. CDFG also maintains lists of species of special concern for which impacts would be considered significant under CEQA Guidelines Section 15380 and could require mitigation. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project area and determine whether the proposed project would have a potentially significant impact on such species. In addition, CDFG encourages informal consultation on any proposed project, which may impact a candidate species. CESA prohibits the take of California listed animals and plants in most cases, but CDFG may issue incidental take permits under special conditions.

California Fish and Game Code, Sections 3503, 3503.5, and 3513. Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act. These regulations could require that elements of the proposed project (particularly vegetation removal or construction near nest trees) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFG and/or USFWS.

California Fish and Game Code, Sections 3511, 4700, 5050, and 5515. Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code designate certain species as "fully protected." Fully protected species may not be taken or possessed at any time, unless authorization is received from the California Fish and Game Commission for scientific research. Legally imported and fully protected species may be possessed under a permit issued by CDFG.

CDFG Streambed Alteration Agreements. Under Sections 1600-1616 of the California Fish and Game Code, the CDFG regulates activities that would alter the flow, or change or use any material from the bed, channel, or bank of any perennial, intermittent, or ephemeral river, stream, and lake.

[12] U.S. Army Corps of Engineers, Waterways Experiment Station Corps of Engineers, Wetland Delineation Manual, 1987.

Notification is required prior to any such activities, and CDFG will issue an Agreement with any necessary mitigation to ensure protection of the state's fish and wildlife resources.

California Native Plant Protection Act. The California Native Plant Protection Act (California Fish and Game Code Sections 1900-1913) prohibits the taking, possession, or sale within the state of any rare, threatened, or endangered plants as defined by CDFG. Under this act, landowners with rare plants on their property must provide CDFG ten days notice to salvage (remove for transplant) the plants before destruction occurs. Project impacts to these species would be considered "significant" if the species are known to occur within the area of disturbance associated with construction of the project, or "potentially significant" if the species has a high potential to occur within the area of disturbance.

California Environmental Quality Act (CEQA). Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals, and allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFG (i.e., species of concern) would occur. Whether a species is rare, threatened, or endangered can be legally significant because, under CEQA Guidelines Section 15065, an agency must find an impact to be significant if a project would "substantially reduce the number or restrict the range of an endangered, rare, or threatened species." Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan (ECCC HCP/NCCP). The ECCC HCP/NCCP is intended to provide a comprehensive framework to protect natural resources in east Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered and threatened species. It describes how to avoid, minimize, and mitigate the impacts on Covered Species (see Table 3.9-2) and their habitats. The primary goal of the ECCC HCP/NCCP is to streamline development projects by eliminating costly and time-consuming project-by-project permitting that often results in uncoordinated and biologically ineffective mitigation, while providing ecosystem conservation and contributing to the recovery of threatened or endangered species in California.[13]

[13] East Contra Costa County Habitat Conservation Plan Association, *East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan*, October, 2007.

Table 3.9-2
Species and Habitats Covered Under ECCC HCP/NCCP

Mammals
- Townsend's western big-eared bat (*Plecotus townsendii*)
- San Joaquin kit fox (*Vulpes macrotis*)

Birds
- Tricolored blackbird (*Agelaius tricolor*)*
- Golden eagle (*Aquila chrysaetos*)
- Western burrowing owl (*Athene cunicularia*)*
- Swainson's hawk (*Buteo swainsoni*)*

Reptiles
- Silvery legless lizard (*Anniella pulchra*)
- Alameda whipsnake (*Masticophis lateralis euryxanthus)*
- Giant garter snake (*Thamnophis gigas*)
- Western pond turtle (*Actinemys marmorata*)

Amphibians
- California tiger salamander (*Ambystoma californiense*)
- California red-legged frog (*Rana aurora draytonii*)
- Foothill yellow-legged frog (*Rana boylii*)

Invertebrates
- Longhorn fairy shrimp (*Branchinecta longiantenna)*
- Vernal pool fairy shrimp *(Branchinecta lynchi)*
- Midvalley fairy shrimp (*Branchinecta mesovallensis*)
- Vernal pool tadpole shrimp (*Lepidurus packardi)*

Plants
- Mount Diablo manzanita (*Arctostaphylos auriculata*)
- Brittlescale (*Atriplex depressa*)
- San Joaquin spearscale (*Atriplex joaquiniana*)
- Big tarplant (*Blepharizonia plumosa*)
- Mount Diablo fairy lantern (*Calochortus pulchellus*)
- Recurved larkspur (*Delphinium recurvatum*)
- Round-leaved filaree (*Erodium macrophyllum*)
- Diablo helianthella (*Helianthella castanea*)
- Brewer's dwarf flax (*Hesperolinon breweri*)
- Showy madia (*Madia radiata*)
- Adobe navarretia (*Navarretia nigelliformis* ssp. *Radians*)

Habitats Covered Under Adaptive Management and Monitoring
- Grassland, including native grassland*
- Oak woodland and oak savanna
- Wetlands and ponds*
- Streams and riparian woodland*
- Chaparral/Scrub

Source: East Contra Costa County Habitat Conservation Plan Association. *Final East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan,* October, 2007.

Note:

*Species and habitats along the project corridor

The ECCC HCP/NCCP entails the issuance of 30-year incidental take permits for 28 listed and non-listed species from USFWS and CDFG to local jurisdictions, allowing them to use those permits and extend take authorization to development and other projects that meet the terms of the ECCC HCP/NCCP. The conservation strategy for the ECCC HCP/NCCP is a system of new preserves linked to existing protected lands that would preserve between 23,800 and 30,300 acres of land. The ECCC HCP/NCCP calls for the creation of an Implementing Entity to oversee assembly and operation of the preserve system, and ensure compliance with all terms of the HCP/NCCP. The Implementation Entity is a Joint Exercise of Powers Authority, formed by the cities of Clayton, Pittsburg, Oakley, and Brentwood, and Contra Costa County and is called the East Contra Costa County Habitat Conservancy (Conservancy).

The permit area for the ECCC HCP/NCCP generally includes land within the urban limit lines in the cities of Clayton, Pittsburg, Oakley, Brentwood, and Contra Costa County. The local jurisdictions who are Permittees under the ECCC HCP/NCCP include the cities of Brentwood, Clayton, Oakley, and Pittsburg, Contra Costa County, Contra Costa County Flood Control and Water Conservation District, East Bay Regional Park District, and the Conservancy. The City of Antioch is not participating in the ECCC HCP/NCCP. HCPs are typically voluntary; however, the participating cities (Pittsburg, Clayton, Oakley, and Brentwood) and Contra Costa County enacted ordinances that direct development projects to go through the HCP/NCCP process. In general, local jurisdictions would implement the ECCC HCP/NCCP through their planning departments.

Activities covered under the ECCC HCP/NCCP are those associated with future urban development in the permit area, such as the Proposed Project. While the City of Antioch is not a participating entity, eBART was included as a covered project in the HCP. BART would have to apply to the Conservancy, requesting coverage under the ECCC HCP/NCCP as a Participating Special Entity. BART falls under the definition of an organization (i.e., transportation agencies) that is not subject to the jurisdiction of the Permittees.

As required by the FESA, the ECCC HCP/NCCP includes measures to avoid and minimize take of covered species, and are included as conditions on development. The permit area excludes most high-quality habitat and jurisdictional waters; low-quality habitat impacts would be allowed under the ECCC HCP/NCCP. It is the responsibility of project proponents to design and implement their projects in compliance with listed measures in the ECCC HCP/NCCP. Planning surveys are required prior to permit application. Additionally, the ECCC HCP/NCCP has divided eastern Contra Costa County into three zones, depending on habitat types, with corresponding development fees. The development fee for the portion of the project in the City of Pittsburg, Zone 1, is currently $12,078 per acre. Since the fee zone map does not cover the City of Antioch, the precise fee for the portion of the Proposed Project

in the City of Antioch would need to be determined in consultation with CDFG and USFWS.[14] It is expected that the fee would be somewhere between the fees for Zone 1 and Zone 2 (currently $24,155 an acre), such as was provided for the flood control facilities covered by the ECCC HCP/NCCP in that area of Antioch.[15]

BART could qualify as a Participating Special Entity under the ECCC HCP/NCCP. The process for requesting coverage under the plan is summarized below. BART would submit an application for the Proposed Project directly to the Conservancy that would contain:

- A detailed description of the activity proposed for coverage under the HCP/NCCP;
- A map of the proposed activity area;
- An analysis of the potential impacts of the proposed activity on covered species and their habitats; and
- The results of required planning surveys.

BART would have to conduct surveys to identify the following biological resources:

- Land cover types (i.e, the dominant feature of the land surface discernible from aerial photographs, defined by vegetation, water or human uses and field verified);
- Suitable breeding habitat for Swainson's hawk, California tiger salamander, California red-legged frog, covered shrimp species, and no-take wildlife species (golden eagle, peregrine falcon, white-tailed kite, and ringtail[16]);
- Suitable breeding, roosting, or denning habitat for Townsend's big-eared bat, San Joaquin kit fox, and western burrowing owl;
- All suitable habitats for giant garter snake;
- Covered and no-take plants;
- Rare vegetation and landscape features; and
- Jurisdictional wetlands and waters.

The results of the surveys will provide BART with the information necessary to comply with the requirements of the ECCC HCP/NCCP. BART will be required to pay development fees, as described above. Additionally, BART will be required to pay fees to offset impacts to

[14] Since the City of Antioch is not a signatory to the HCP, it is not clear that impacts to habitat within Antioch could be covered by such a fee payment. In the event Antioch does not sign the HCP and such impacts are not covered, BART would either (1) elect to perform Mitigation Measures BIO-4.1 through BIO-4.4, or (2) mitigate impacts outside Antioch as provided in the HCP pursuant to Mitigation Measure BIO-4.5, and undertake separate mitigation within Antioch as provided in Mitigation Measures BIO-4.1 through BIO-4.4.

[15] John Kopchik, Community Development Department, Contra Costa County, Personal Communication, July 24, 2008.

[16] A member of the *Procyonidae* (Racoon) family and a fully protected species in California.

wetland habitats, should those impacts occur. The current fees for impacts to wetlands are presented in Table 3.9-3.

Table 3.9-3
ECCC HCP/NCCP Wetland Fee and Acreage Determination Methods

Land Cover Type	Fee per unit of Impact[a]	Required Compensation Ratio for Restoration/Creation[a]	Method for Determining Fee Boundary
Riparian woodland/scrub	$61,969/acre	1:1	Limit of tree or shrub canopy (drip line)
Perennial wetland	$84,799/acre	1:1	Jurisdictional wetland boundary of state or federal government,[b] whichever is greater.
Seasonal wetland	$183,731/acre	2:1	Same as above.
Alkali wetland	$173,947/acre	2:1	Same as above.
Ponds	$92,409/acre	1:1	Jurisdictional waters boundary of state or federal government,[b] whichever is greater.
Slough/channel	$105,455/acre	1:1	Area of impact within banks.
Streams 25 feet wide or less	$505/linear foot	1:1	Stream length measured along stream centerline. Stream width measured between top of bank.
Stream greater than 25 feet wide[c]	$761/linear foot	1:1	Stream length measured along stream centerline. Stream width measured between top of bank.

Source: East Contra Costa County Habitat Conservation Plan Association, *Final East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan*, October, 2007.

Notes:

a. The latest fee schedule was obtained at: http://www.co.contra-costa.ca.us/depart/cd/water/HCP/news/ECCCHCP_2008_annual_fee_adjustments

b. Using methods for determining state and federal jurisdictional waters and wetlands at the time of HCP/NCCP approval.

c. Impact fee for wider streams is 1.5 times the base stream fee to account for higher construction costs on wider streams.

Furthermore, in order for the Conservancy to grant take authorization to BART, the Conservancy will need a legally enforceable contractual relationship with BART. The Conservancy will issue a Certificate of Inclusion to BART that will allow the Proposed Project to be covered under the HCP/NCCP if the following conditions are met:

- The Conservancy signs a contract with BART binding BART to the relevant terms of the ECCC HCP/NCCP;

- The Conservancy finds that the Proposed Project complies with all terms and requirements of the Plan, the permits, and the Implementing Agreement, and CDFG and USFWS concur;
- The impacts of the Proposed Project fall within those analyzed in the ECCC HCP/NCCP and the EIR in general type, magnitude, and effects;
- The impacts of the Proposed Project do not substantially deplete the amount of take coverage available for future project applicants considered by the ECCC HCP/NCCP; and
- The Proposed Project does not conflict with the conservation strategy or the ability of the Conservancy to meet the ECCC HCP/NCCP goals and objectives.

The Certificate of Inclusion will be issued to BART upon payment of the fee specified in the contract and completion of any and all other steps required by contract to occur prior to issuance of the Certificate of Inclusion. The Conservancy may require BART to pay fees over and above those specified in Chapter 9 of the ECCC HCP/NCCP to cover indirect costs of extending permit coverage under the HCP/NCCP, including the costs of Conservancy staff time to assist with permit coverage, a portion of the costs of the initial preparation of the Plan, and a portion of the costs of conservation actions designed to contribute to species recovery. The Certificate of Inclusion will include an attached map depicting the parcel number(s), acreage, and owner of lands to which the take authorization(s) would apply. The Implementing Agreement could contain additional details and procedures that apply to BART.

City of Pittsburg Street Tree Ordinance. Although BART is exempt under state law from compliance with local land use ordinances, it does consider local tree ordinances to identify protected trees. Chapter 12.32 of the City of Pittsburg Municipal Code contains the City of Pittsburg Street Tree Ordinance, which promotes and protects the public health, safety and general welfare by providing for the regulation of planting, maintenance and removal of trees within the city.

Section 12.32.040 of the Municipal Code states that the public services director shall plan, administer, control and regulate the street tree program of the City. Street trees are defined as trees planted or growing within a public right-of-way, public easement, street, alley, road or way within the City. Section 12.32.070 requires that no person may plant, cut, trim, remove, prune, shape, injure, interfere with or do maintenance work on a street tree without first obtaining a street tree permit from the city public services department.

City of Antioch Tree Ordinance. Although BART is exempt under state law from compliance with local land use ordinances, it does consider local tree ordinances to identify protected trees. The City of Antioch tree ordinance requires approval for the removal of any indigenous (see Table 3.9-4), “established (10-inch diameter),” “mature (26-inch diameter),” or “landmark tree (48-inch diameter or more than 40 feet tall).” Tree diameters are measured 4.5 feet above natural or finished grade. Trees to be removed or protected shall be shown on a site map that includes a description including species, size, general health, and reason for

removal. Approval of tree removal and replacement size will be considered during project approval. A bond is required to ensure compliance with replacement and protection conditions specified in the approval document.

Table 3.9-4
Indigenous Trees in the City of Antioch

Scientific Name	Common Name
Quercus douglasii	Blue oak
Quercus lobata	Valley oak
Quercus agrifolia	Coast live oak
Quercus chrysolepis	Canyon live oak
Quercus wislizenii	Interior live oak
Aesculus californica	California buckeye
Umbellularia californica	California bay

Source: City of Antioch, Municipal Code, Title 9, Chapter 5, Article 12.

California Native Plant Society (CNPS). CNPS maintains an inventory of special-status plant species. CNPS maintains four species lists of varying rarity. Vascular plants listed as rare or endangered by the CNPS,[17] but which have no designated status or protection under federal or state-endangered species legislation, are defined as follows:

List 1A Plants Believed Extinct.

List 1B Plants Rare, Threatened, or Endangered in California and elsewhere.

List 2 Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.

List 3 Plants About Which More Information is Needed - A Review List.

List 4 Plants of Limited Distribution - A Watch List.

Threat Code Extension—CNPS has modified their ranking system to describe how endangered plants are in California. The extension code descriptions are as follows:

1) Species seriously endangered in California.

2) Species fairly endangered in California.

3) Species not very endangered in California.

In general, plants appearing on CNPS List 1 or 2 are considered to meet CEQA Guidelines Section 15380 criteria.

[17] California Native Plant Society, *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (sixth edition), 2001.

Impact Assessment and Mitigation Measures

Standards of Significance

The Proposed Project would result in a significant impact to biological resources if it were to result in a:

- Substantial effect, either directly or through habitat modifications, on any candidate, sensitive, or special-status species;
- Substantial effect on any riparian habitat or other sensitive natural community;
- Substantial effect on protected wetlands;
- Substantial interference with the 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; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

In order to classify impacts, a level of significance is determined and reported in the italicized summary impact statement that precedes each impact discussion. Conclusions of significance are defined as follows: significant (S), potentially significant (PS), less than significant (LTS), no impact (NI), and beneficial (B). If the mitigation measures would not diminish potentially significant or significant impacts to a less-than-significant level, the impacts are classified as "significant and unavoidable effects (SU)." For this section, BIO refers to Biological Resources.

Project-Specific Environmental Analysis

Operational Impacts

Impact BIO-1 Operation of the Proposed Project would result in increased noise and groundborne vibration that could affect wildlife; however, species are already exposed to such effects because of the proximity of SR 4 and SR 160. (LTS)

Operation of the Proposed Project would result in additional noise and groundborne vibration in the project vicinity. Common and special-status wildlife species, including migratory birds and raptors could be potentially disturbed from the increase in noise and groundborne vibration and would most likely avoid the areas where frequent and fast-moving transportation vehicles operate. This impact would be localized to the Hillcrest Avenue Station area since that is the only area within the project corridor where suitable habitat for wildlife species is present. However, wildlife in the Hillcrest Avenue Station

area is already habituated to noise and vibration associated with vehicles and trucks traveling on SR 4 and SR 160. Wildlife would likely also become accustomed to noise and vibration levels associated with operation of the Proposed Project. As a result, this impact is considered less than significant.

Construction and Operational Impacts

Impact BIO-2 Construction and operation of the Proposed Project may result in the filling or adverse modification of jurisdictional wetlands, other "waters of the U.S.," or "waters of the State." (PS)

Wetland delineations for the County Crossing project[18] and the SR 4 widening project[19] include the Proposed Project's footprint and the acreages discussed below are based on those delineations. Jurisdictional wetland features found along the project corridor include ephemeral streams, seasonal wetlands, riparian scrub, and freshwater marsh habitats. No non-jurisdictional wetlands, that would qualify as "waters of the State" were delineated in the project corridor. The project corridor also intersects several waters of the U.S., including Kirker Creek, Los Medanos Wasteway, Markley Creek, Marsh Creek, West Antioch Creek, East Antioch Creek, and several unnamed tributaries. All of these watercourses have been historically channelized, altered or culverted (in either reinforced concrete boxes or concrete pipes) to some extent beneath SR 4. The existing highway culverts of these "waters of the U.S.," would be modified or extended prior to the construction of the Proposed Project as part of the SR 4 widening project. Runoff from the Proposed Project would connect to existing storm drain systems. BART would also have to comply with the Contra Costa Clean Water Program (CCCWP) Phase 1 National Pollutant Discharge Elimination System (NPDES) Permit. Impacts to water quality are addressed in Section 3.8, Hydrology and Water Quality, and are not further discussed in this section.

SR 4. No impacts to wetlands are anticipated for the portion of the Proposed Project within the SR 4 median, including the proposed transfer platform, Railroad Avenue Station, staging areas, the employee parking lot and staff building near the transfer platform, and the tracks, because no wetlands exist in this stretch of the median. The creeks that cross SR 4 are in culverts or box channels and would not be affected by the construction of the Proposed Project.

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[18] RCL Ecology, County Crossings Development Preliminary Wetland Delineation and Jurisdictional Determination, Antioch, Contra Costa County, California, July 2005; U.S. Army Corps of Engineers' Verification Number 2005-0115.

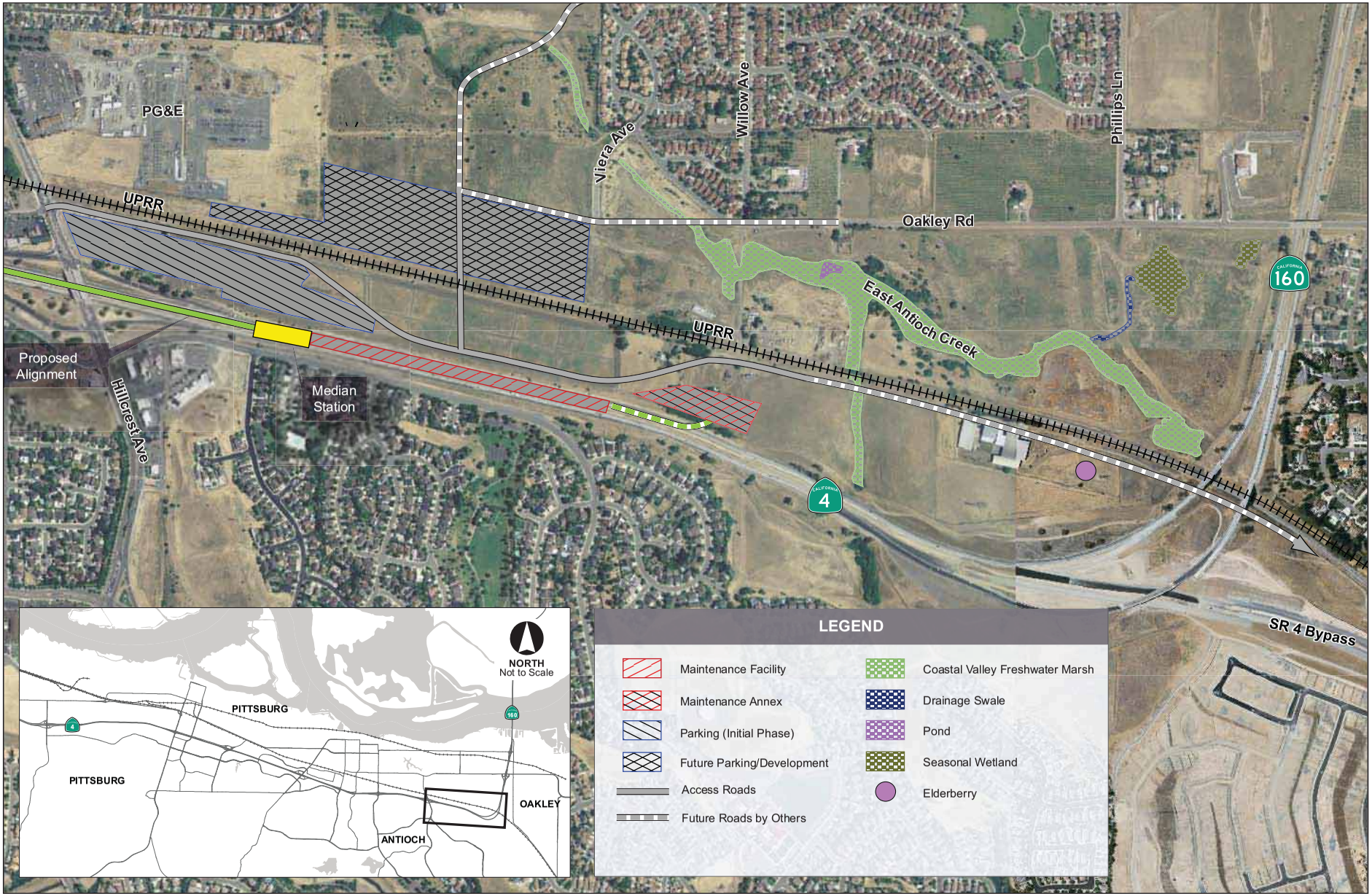
[19] The previously verified wetland delineation for the SR 4 Widening Project expired in July 2007. A revised Wetland Delineation and Reverification Report was submitted to the Corp in January 2008 and is awaiting reverification by the Corps. Novak, Jan, Soil Scientist, URS Corp, email communication with PBS&J, September 5, 2008.

The Proposed Project also includes eight possible train control huts along the corridor outside the SR 4 median that could affect wetlands. In locating these communications facilities, BART considered potential environmental constraints, such as wetlands; however, a detailed site reconnaissance of each site has not been completed. Due to the small size of the train control huts (all eight combined would affect about 0.07 acres of land), the final locations could be adjusted at the proposed sites to avoid wetlands, "waters of the U.S.," and "waters of the State" if they are present. A preliminary review of the train hut locations indicates that they are ruderal in nature and no wetlands or wetland features are expected to exist at these locations. However, because detailed site investigations have not been performed, this EIR conservatively assumes that wetland features could be present and potentially disturbed by the train control huts, which would be a significant impact.

Median Station Area. The Median Station and maintenance yard would not affect wetlands, since no wetlands are found within the median of SR 4 where these facilities are proposed. The habitat at the proposed station parking area and access road north of SR 4 is ruderal in nature, and no wetlands or wetland features were found at the location for either the proposed parking or the area identified for possible future parking (see Figure 3.9-4). Additionally, there are no wetlands where the maintenance-of-way tunnel and maintenance annex are proposed north of SR 4. Because no wetland habitat is present where Proposed Project facilities are sited, no impact would occur.

MITIGATION MEASURE. Implementation of the measure below would reduce impacts to wetlands from the train control huts to a less-than-significant level. (LTS)

BIO-2.1a Verify that final locations of train control huts do not affect wetlands, "waters of the U.S." or "waters of the State." Prior to approval of the final design and location of the train control huts, BART shall ensure that the huts would not be located on wetlands, "waters of the U.S." and "waters of the State." BART or its contractor shall retain a biologist qualified in wetland delineations to verify that the proposed sites do not have these features. If the biologist determines that a train hut location could directly or indirectly affect a wetland, water of the U.S., or water of the state, BART shall identify an alternative location that avoids affecting the resource.



Source: PBS&J, 2008.

SENSITIVE HABITAT IN THE VICINITY OF THE MEDIAN STATION
FIGURE 3.9-4

BIO-2.1b Comply with permit requirements of the U.S. Army Corps of Engineers and/or state agencies. If an alternative location is not feasible, BART shall ensure that the Corps' Section 404 permit requirements or requirements of state agencies, as applicable, are followed, as described later in Mitigation Measure BIO-8.1.

Impact BIO-3 Construction and operation of the Proposed Project would result in the loss of foraging habitat for the Swainson's hawk. (PS)

SR 4. There is no suitable Swainson's hawk foraging habitat within the median of SR 4 between the Pittsburg/Bay Point BART Station and the Hillcrest Avenue Station (a stretch encompassing the transfer platform, the Railroad Avenue Station, and the Median Station). Therefore, no impact would occur to foraging habitat along this portion of the project corridor.

Median Station Area. The non-native grassland/ruderal area north of the proposed Hillcrest Avenue Median Station could provide suitable foraging habitat for Swainson's hawk. The nearest Swainson's hawk nest to the proposed Hillcrest Avenue Station area is approximately three miles. CDFG considers a 10-mile flight distance between active nest sites and suitable foraging habitats as a standard for direct impact analysis. Their recommended mitigation ratio for the loss of foraging habitat located between one and five miles from an active nest is 1 to 0.75 (that is, for each acre impacted, 0.75 acre of preserved land is required). The potential Swainson's hawk foraging habitat loss due to the construction of the Proposed Project would total 39.51 acres (including 23.9 acres of habitat from future parking). At the recommended mitigation ratio, 29.6 acres of habitat should be preserved. Loss of foraging habitat due to the implementation of the Proposed Project would be considered a potentially significant impact.

MITIGATION MEASURE. The following measures would reduce the loss of Swainson's hawk foraging habitat to a less-than-significant level. Mitigation Measure BIO-3.1 would ensure that an appropriate acreage of suitable raptor foraging habitat is preserved to compensate for the loss of foraging habitat due to the construction of the Proposed Project by one of the following mitigation Options: 1) the purchase of mitigation credits, 2) payment of mitigation fee at an approved CDFG mitigation bank, or 3) purchasing conservation easements or fee titles in east Contra Costa County or an area within 10 miles of the nearest Swainson's hawk nest to the Proposed Project. Alternatively, Mitigation Measure BIO-3.2 recommends protection in accordance with the ECCC HCP/NCCP if BART chooses to participate in the ECCC HCP/NCCP. BART would be required to comply with either Mitigation Measure BIO-3.1 or Mitigation Measure BIO-3.2. As the Proposed Project would be constructed in

an initial phase, followed by subsequent phases, mitigation would be implemented in a manner proportional to each phase. This would effectively reduce potential impacts on foraging habitat to less than significant. (LTS)

BIO-3.1 Compensate for loss of Swainson's hawk foraging habitat. BART shall ensure that an appropriate number of acres (as approved by CDFG) of agricultural land, annual grasslands, or other suitable raptor foraging habitat are preserved off site within Contra Costa, Sacramento and/or Solano counties at a 1 to 0.75 (habitat lost to preserved) ratio. Given the proximity of the nest site to Sacramento and Solano counties, it is acceptable to have this off site preservation outside of Contra Costa County. Preserve areas should be established prior to project construction, if feasible, and may occur through at least one of the following options:

a) Purchase of mitigation credits at an approved CDFG mitigation bank that is within east Contra Costa County, lower Sacramento County, or Solano County. The service area of the mitigation bank must include the project corridor.

b) Payment of a mitigation fee to a habitat development and management company, through a negotiated agreement between said company, BART, and CDFG. The lands must be within 10 miles of the nearest Swainson's hawk nest, unless otherwise approved by CDFG (consistent with CDFG guidelines).

c) Purchase of conservation easements or fee title in east Contra Costa County, Lower Sacramento County, or Solano County. This mitigation must occur within 10 miles of the nearest Swainson's hawk nest, unless otherwise approved by CDFG (consistent with CDFG Guidelines).

OR

BIO-3.2 *Participate in the ECCC HCP/NCCP.* If BART chooses to participate as a Participating Special Entity in the ECCC HCP/NCCP, it will pay a development fee, based on the acreage of land that is permanently lost. This fee would offset any impacts to foraging habitat.

Impact BIO-4 Construction and operation of the Proposed Project could result in the disturbance of special-status nesting birds. (PS)

A variety of special-status birds are likely to be present throughout the project corridor; some are resident species and some are migratory species that breed within the area. These special-status birds include the Swainson's hawk, white-

tailed kite, burrowing owl, tri-colored blackbird, and loggerhead shrike. The proposed staging/construction yards, train control hut sites, the employee parking lot east of Bailey Road and north of SR 4 (near the transfer platform), and the Hillcrest Avenue Median Station area contain suitable nesting habitat that include nest trees, and non-native grassland.

Construction of the Proposed Project would require grading and could require removal of trees within the footprint of the staging/construction yard, the employee parking lot and staff building near the transfer platform, the train control huts, Hillcrest Avenue Station, and its proposed parking lots, resulting in the possible take of protected bird nests and/or burrows.

During site visits, burrowing owls, white-tailed kites, Swainson's hawks, northern harriers, and red-tailed hawks were observed foraging within the Hillcrest Avenue Station area. The presence of foraging birds indicates the potential for nesting activity within the project area. Existing trees within the project facility locations outside the SR 4 right-of-way, cattails located within the coastal/valley freshwater marsh, and the grassland area within the Hillcrest Avenue Station area represent suitable nesting habitats for the above species. Therefore, construction of the Proposed Project could potentially result in the loss of active nests and would create a significant impact on special-status bird species.

MITIGATION MEASURES. The following measures would reduce the impact on nesting birds to less than significant. Mitigation Measures BIO-4.1 through BIO-4.4 address particular sensitive bird species. Alternatively, Mitigation Measure BIO-4.5 recommends protection in accordance with the ECCC HCP/NCCP if BART chooses to participate in the ECCC HCP/NCCP. BART would be required to comply with either Mitigation Measures BIO-4.1 through BIO-4.4 *or* Mitigation Measure BIO-4.5, which would effectively reduce potential impacts to nesting birds to less than significant. (LTS)

BIO-4.1 Protect Swainson's hawk nests. Pre-construction surveys for Swainson's hawk shall be conducted no more than 30 days prior to the initiation of any ground-disturbing or vegetation-clearing activities that occur between February 15 and September 15. Surveys for nesting Swainson's hawk shall be conducted within one-half mile[20] of any construction activities for the proposed construction yard/staging area and the Hillcrest Avenue Station. If no active Swainson's hawk nests are identified on or within one-half mile of construction

[20] Swainson's Hawk Technical Advisory Committee, *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*, May 31, 2000.

activities, a letter report summarizing the survey results shall be sent to the CDFG and no further mitigation is required.

If active nests are found, measures consistent with the CDFG Staff Report Regarding Mitigation for Impacts to Swainson's hawks in the Central Valley of California[21] shall be implemented as follows:

a) Nest trees shall not be removed, unless there is no feasible way of avoiding their removal.

b) If there is no feasible alternative to removing a nest tree, a Management Authorization (including conditions to offset the loss of the nest tree) shall be obtained from CDFG with the tree removal period (generally between October 1 and February 1) to be specified in the Management Authorization.

c) No intensive disturbances (e.g., heavy equipment operation associated with construction or use of cranes) or other project-related activities that could cause nest abandonment or forced fledging shall be initiated within 1,320 feet (0.25 miles) (buffer zone as defined in the CDFG Staff Report) of an active nest between February 15 and September 15 or until August 15 if a Management Authorization is obtained from CDFG for the project. The 1,320-foot buffer zone could be adjusted in consultation with CDFG.

d) If construction activities are unavoidable within the buffer zone, BART shall retain a qualified biologist to monitor the nest to determine if abandonment occurs. If the nest is abandoned and the nestlings are still alive, BART shall retain the services of a qualified biologist to reintroduce the nestling(s) (recovery and hacking). Prior to implementing, any hacking plan shall be reviewed and approved by the Environmental Services Division and Wildlife Management Division of the CDFG.

BIO-4.2 Protect burrowing owl nests. No more than 30 days prior to project-related grading a qualified biologist shall conduct focused surveys for burrowing owls in areas of suitable habitat on and within 500 feet of the project corridor. Surveys shall be conducted in accordance with prevailing CDFG protocol.[22] If no occupied burrows are found in the

[21] California Department of Fish and Game, *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo Swainsoni) in the Central Valley of California*, 1994.

[22] California Department of Fish and Game. Staff Report on Burrowing Owl Mitigation. 1995 Online at http://www.dfg.ca.gov/wildlife/species/docs/boconsortium.pdf. May 2008.

survey area, a letter report documenting survey methods and findings shall be submitted to CDFG, and no further mitigation is necessary.

If occupied burrows are found in the survey area, BART shall take the following steps:

a) Impacts to the burrowing owl shall be avoided, if feasible, by establishing a buffer of 165 feet during the non-breeding season (September 1 through January 31) or 300 feet during the breeding season (February 1 through August 31). The size of the buffer area may be adjusted if a qualified biologist and CDFG determine that construction activities would not adversely affect the owl(s). No project activity shall commence within the buffer area until a qualified biologist confirms that the burrow is no longer occupied. If the burrow is occupied by a nesting pair, a minimum of 6.5 acres of foraging habitat contiguous to the burrow shall be preserved and no disturbance or construction activities shall occur within the buffer until the breeding season is over.

b) If impacts to occupied burrows are unavoidable, on-site passive relocation techniques shall be used if approved by CDFG to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that the birds are not nesting.

c) If relocation of the owls is approved for the project by CDFG, BART shall hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include: (1) the location of the nest and owls proposed for relocation; (2) the location of the proposed relocation site; (3) the number of owls involved and the time of year when the relocation is proposed to take place; (4) the name and credentials of the biologist who will be retained to supervise the relocation; (5) the proposed method of capture and transport for the owls to the new site; (6) a description of the site preparations at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control, etc.); and (7) a description of efforts and funding support proposed to monitor the relocation. Relocation options may include passive relocation to another area of the site not subject to disturbance through one-way doors on burrow openings, or construction of artificial burrows in accordance CDFG guidelines.

BIO-4.3 Protect tri-colored blackbird nests. If initiation of site grading is proposed during the tri-colored blackbird's nesting season (April 1 – July 1), BART shall retain a qualified biologist to conduct focused surveys for nesting tri-colored blackbirds in areas of suitable habitat on and within 300 feet of the Hillcrest Avenue Station and related construction footprint. The survey shall be conducted no more than 30 days prior to the start of grading, if grading is to occur during the nesting season. If surveys identify an active tri-colored blackbird nest in the survey area, BART shall installed brightly colored construction fencing that establishes a boundary 200 feet (as defined by CDFG) from the active nest. No disturbance associated with the Proposed Project shall occur within the 200-foot fenced area during the nesting season of April 1 through July 1 or until a qualified biologist has determine that the young have fledged or that the nest is no longer occupied prior to disturbance of the nest site.

BIO-4.4 Protect birds covered by the Migratory Bird Treaty Act (including white-tailed kite, loggerhead shrike and other special-status species). Between March 1 and September 15, BART shall have a qualified biologist conduct nest surveys no more than 30 days prior any demolition/construction or ground-disturbing activities that are within 500 feet of potential nest trees or suitable nesting habitat (i.e., trees, tule, cattails, grassland). A pre-construction survey shall be submitted to CDFG that includes, at a minimum: (1) a description of the methodology including dates of field visits, the names of survey personnel with resumes, and a list of references cited and persons contacted; and (2) a map showing the location(s) of any bird nests observed on the project site. If no active nests of MBTA covered species are identified, then no further mitigation is required.

If active nests of protected bird species are identified in the focused nest surveys, BART shall take the following steps.

a) BART, in consultation with CDFG, shall delay construction in the vicinity of active nest sites during the breeding season (March 1 through September 15) while the nest is occupied with adults and/or young. A qualified biologist shall monitor any occupied nest to determine when the nest is no longer used. If the construction cannot be delayed, avoidance measures shall include the establishment of a non-disturbance buffer zone around the nest site. The size of the buffer zone shall be determined in consultation with the CDFG, but will be a minimum of 100 feet.

The buffer zone shall be delineated with highly visible temporary construction fencing.

b) No intensive disturbance (e.g., heavy equipment operation associated with construction, or use of cranes) or other project-related activities that could cause nest abandonment or forced fledging shall be initiated within the established buffer zone of an active nest between March 1 and September 15.

c) If construction activities are unavoidable within the buffer zone, BART shall retain a qualified biologist to monitor the nest site to determine if construction activities are disturbing the adult or young birds. If abandonment occurs, the biologist shall consult with CDFG or USFWS (who monitor compliance with the MBTA) for the appropriate salvage measures. BART will be required to fund the full costs of the salvage measures.

d) If fully protected species are found to be nesting in the project corridor, their nests shall be completely avoided until the birds fledge. Avoidance will include the established line of a non-disturbance buffer zone of 250 feet, or as determined in consultation with the CDFG.

BIO-4.5 Comply with appropriate provisions of the ECCC HCP/NCCP to protect nesting birds. If BART chooses to participate as a Participating Special Entity, it will pay a development fee, based on the acreage of land that is permanently lost. Additionally, to offset impacts on burrowing owl and Swainson's hawk, it shall comply with the measures described in Section 6.4.3 of the ECCC HCP/NCCP, as summarized below. For impacts to fully protected bird species, Conservation Measures 1.11 of the ECCC HCP/NCCP shall be followed as summarized below.

Western Burrowing Owl. Prior to initiating covered activities, BART shall conduct surveys for burrowing owl as described below and in accordance with the guidelines from CDFG's Staff Report on Burrowing Owl Mitigation.

Planning Surveys will be conducted by a USFWS/CDFG-approved biologist. The biologist will identify potential burrowing owl breeding habitat (ECCC HCP/NCP Section 6.3.1, Planning Surveys). If the project does not fully avoid impacts to suitable breeding habitat, preconstruction surveys will be required.

Preconstruction Surveys shall be conducted no more than 30 days prior to any ground disturbance related to the Proposed Project. A USFWS/CDFG approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as having potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFG survey guidelines.

The preconstruction survey shall include the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Surveys should take place around sunrise or sunset in accordance with CDFG guidelines. All burrows or burrowing owls will be identified and mapped. During the breeding season (February 1–August 31), surveys will document whether burrowing owls are nesting in, or directly adjacent to, disturbance areas. During the nonbreeding season (September 1–January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

Avoidance and Minimization and Construction Monitoring will be performed by BART. If burrowing owls are found during the breeding season (February 1–August 31), BART shall avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a nondisturbance buffer zone of 250 feet. Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged.

During the nonbreeding season (September 1–January 31), BART shall avoid the owls and the burrows they are using, if possible with the use of a 160-foot buffer zone. If occupied burrows for burrowing owls are not avoided, passive relocation will be implemented. Owls shall be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These doors shall be in place for 48 hours prior to excavation. The project area shall be monitored daily for one week to confirm that the owl has abandoned the burrow. Whenever possible, burrows shall be excavated using hand tools and refilled to

prevent reoccupation. Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

Swainson's Hawk. Prior to initiating covered activities, BART shall conduct surveys for Swainson's hawk nest sites as described below.

Planning Surveys shall be conducted by a USFWS/CDFG–approved biologist, in accordance with the May 2000 Swainson's Hawk Technical Advisor Committee's methodology or updated methodologies as issued by USFWS or CDFG. The biologist will inspect all large trees with binoculars to document whether Swainson's hawk nests occur on site. If occupied nests are identified, BART shall incorporate avoidance and minimization measures (in accordance with the MBTA and Fish and Game Code (Section 3503) into the project design and other portions of the ECCC HCP/NCCP application. Avoidance measures will include preserving the nest tree. If project construction occurs during the nesting season (March 15–September 15), a preconstruction survey will be required.

Preconstruction Surveys shall be conducted prior to any ground disturbance related to the Proposed Project that occurs during the nesting season (March 15–September 15). A qualified biologist will conduct a preconstruction survey no more than 30 days prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. If potentially occupied nests within 1,000 feet are outside of the project corridor, then their occupancy will be determined by observation from public roads or by observations of Swainson's hawk activity (e.g., foraging) near the project corridor. If nests are occupied, minimization measures and construction monitoring are required (see below).

Avoidance and Minimization and Construction Monitoring shall be performed by BART. During the nesting season (March 15–September 15), no construction shall occur within 1,000 feet of occupied nests or nests under construction to prevent nest abandonment. If site-specific conditions or the nature of the Proposed Project (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the Conservancy will coordinate with CDFG/USFWS to determine the appropriate buffer size. If young fledge prior to September 15, project construction can proceed normally. If the active nest site is shielded from view and noise from the project corridor by other development, topography, or other features, BART can apply to the

Conservancy for a waiver of this avoidance measure. Any waiver must also be approved by USFWS and CDFG.

All active nest trees will be preserved on site, if feasible. Nest trees, including non-native trees, lost to covered activities will be mitigated by BART according to the requirements below.

Mitigation for Loss of Nest Trees shall be provided by BART. The loss of non-riparian Swainson's hawk nest trees will be mitigated by:

- If feasible on site, planting 15 saplings for every tree lost with the objective of having at least 5 mature trees established for every tree lost according to the requirements listed below.

  AND either:

- Paying the Conservancy an additional fee to purchase, plant, maintain, and monitor 15 saplings on the HCP/NCCP Preserve System for every tree lost according to the requirements listed below; OR

- Planting, maintaining, and monitoring 15 saplings for every tree lost at a site to be approved by the Conservancy (e.g., within an HCP/NCCP Preserve or existing open space linked to HCP/NCCP preserves), according to the requirements listed below.

The following requirements will be met for all planting options:

- Tree survival shall be monitored at least annually for 5 years, then every other year until year 12. All trees lost during the first 5 years will be replaced. Success will be reached at the end of 12 years if at least 5 trees per tree lost survive without supplemental irrigation or protection from herbivory. Trees must also survive for at least three years without irrigation.

- Irrigation and fencing to protect from deer and other herbivores may be needed for the first several years to ensure maximum tree survival.

- Native trees suitable for this site should be planted. When site conditions permit, a variety of native trees will be planted for each tree lost to provide trees with different growth rates, maturation, and life span, and to provide a variety of tree canopy structures for Swainson's hawk. This variety will help to ensure that nest trees will be available in the short term (5-10 years for

cottonwoods and willows) and in the long term (e.g., valley oak, sycamore). This will also minimize the temporary loss of nest trees.

- Riparian woodland restoration conducted as a result of covered activities (i.e., loss of riparian woodland) can be used to offset the nest tree planting requirement above, if the nest trees are riparian species.

- Whenever feasible and when site conditions permit, trees should be planted in clumps together or with existing trees to provide larger areas of suitable nesting habitat and to create a natural buffer between nest trees and adjacent development (if plantings occur on the development site).

- Whenever feasible, plantings on the site should occur closest to suitable foraging habitat outside the Urban Development Area (UDA, as defined in the ECCC HCP/NCCP).

- Trees planted in the HCP/NCCP preserves or other approved offsite location will occur within the known range of Swainson's hawk in the inventory area and as close as possible to high-quality foraging habitat.

Fully Protected Species. For fully protected species and species protected under the Migratory Bird Treaty Act, BART shall comply with Conservation Measure 1.11 of the ECCC HCP/NCCP, applicable portions of which are summarized below.

Several bird species that occur in the ECCC HCP/NCCP inventory area are listed as fully protected (as defined under Section 3511 of the California Fish and Game Code): white-tailed kite, peregrine falcon, and golden eagle. CDFG cannot issue permits for take of these species. To comply with this regulation and Section 3503 of the California Fish and Game Code, BART shall avoid any take (including the disturbance or destruction of nests) of fully protected and other bird species. Planning surveys will establish whether suitable habitat is present for any of these species and the Proposed Project will be designed to avoid take should any such species be found on the project corridor.

All birds covered by the ECCC HCP/NCCP (tricolored blackbird, western burrowing owl, golden eagle, and Swainson's hawk) are also considered migratory birds and subject to the prohibitions of the

MBTA. Actions conducted under the ECCC HCP/NCCP must comply with the provisions of the MBTA and avoid killing or possessing covered migratory birds, their young, nests, feathers, or eggs.

Impact BIO-5 Construction and operation of the Proposed Project would not conflict with the provisions of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCC HCP/NCCP). (NI)

The ECCC HCP/NCCP is intended to provide a comprehensive framework to protect natural resources in east Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered and threatened species. The ECCC HCP/NCCP describes how to avoid, minimize, and mitigate the impacts on Covered Species and their habitats while allowing for urban development in selected regions of the County and the cities of Clayton, Pittsburg, Oakley, and Brentwood.

Covered Activities and/or projects within the ECCC HCP/NCCP are those activities and projects associated with urban growth within the urban development area, activities and projects that occur inside the HCP/NCCP preserves, and specific projects and activities outside of the urban development area. The Proposed Project, in its entirety, is a Covered Project under the Plan and is included within the inventory area for which the Plan would grant compensation, avoidance, and minimization of impacts for covered species. Habitat conservation plans are voluntary; should BART choose to participate in the ECCC HCP/NCCP, it would have to apply to the Conservancy for coverage as a Participating Special Entity. Since the BART falls under the definition of an organization (i.e., transportation agencies), it is not subject to the jurisdiction of the Permittees.

Since the Proposed Project is not required to participate in the ECCC HCP/NCCP and the mitigation measures included in this section mirror or exceed the Conditions on Covered Activities and Conservation Measures presented in the ECCC HCP/NCCP, the Proposed Project would not conflict with the provisions of the ECC HCP/NCCP. Additionally, construction of the Proposed Project would not alter the effectiveness of the HCP, since the Proposed Project would primarily be located on previously developed land or land that is proposed for development. As a result, the Proposed Project would not conflict with the ECCC HCP/NCCP, and no impact would occur in terms of implementing the ECCC HCP/NCCP.

Impact BIO-6 Construction and operation of the Proposed Project would include removal of trees that could be protected by a local tree preservation policy or ordinance. (PS)

Construction activities for the Proposed Project would result in the grading and removal of trees within the project corridor. Trees within the project corridor include, but are not limited to, blackwood acacia (*Acacia melanoxylon*), tree of heaven (*Ailanthus altissima*), eucalyptus (*Eucalyptus* spp.), Fremont's cottonwood (*Populus fremontii*), apricot (*Prunus armeniaca*), almond (*Prunus dulcis*), Peruvian peppertree (*Schinus molle*), Chinese elm (*Ulmus parviflora*), English walnut (*Juglans regia*), date palm (*Phoenix canariensis*), western sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia var. agrifolia*), valley oak (*Quercus lobata*), Mexican fan pal (*Washingtonia robusta*), and willow (*Salix spp*.). Trees within the proposed construction yard/staging areas, the employee parking lot near the transfer platform, the train control hut sites, the Hillcrest Avenue Station area, and the L Street aerial structure that would be removed could fall under the jurisdiction of the cities of Pittsburg and/or Antioch Tree Ordinance. Although BART is exempt by state law from compliance with local land use ordinances and as such is not legally required to comply with local ordinances, BART considers loss of protected trees a significant impact.

MITIGATION MEASURE. The following mitigation measure would reduce this impact to a less-than-significant level. (LTS)

BIO-6.1 Conduct tree survey and replace trees at suitable ratios. BART shall retain a certified arborist to survey trees along the project corridor, including potential construction yard/staging areas, to identify and evaluate trees that shall be removed. A report shall be prepared and submitted to BART to document the trees that are to be removed. Mitigation shall be required for impacts to trees designated as "street trees" in the City of Pittsburg and indigenous established, mature, or landmark trees in the City of Antioch. Replacement trees will be a native tree species. At a minimum, each removed tree meeting the above classifications will be replaced either with one replacement tree of 24-inch box size, or three replacement trees of 15-gallon size. Trees will be planted in locations suitable for the replacement species. Selection of the replacement sites and installation of replacement plantings will be supervised by a qualified botanist. A qualified botanist will monitor newly planted trees at least once a year for 5 years. Each year during that period, any trees that do not survive will be replaced. Any trees planted as remediation for failed plantings will be planted as stipulated here for original plantings, and will be monitored for a period of 5 years following installation. Tree replacement will occur after project construction.

Impact BIO-7 Construction of the Proposed Project would result in impacts to common biological resources, but would not result in a significant decline in their population or range. (LTS)

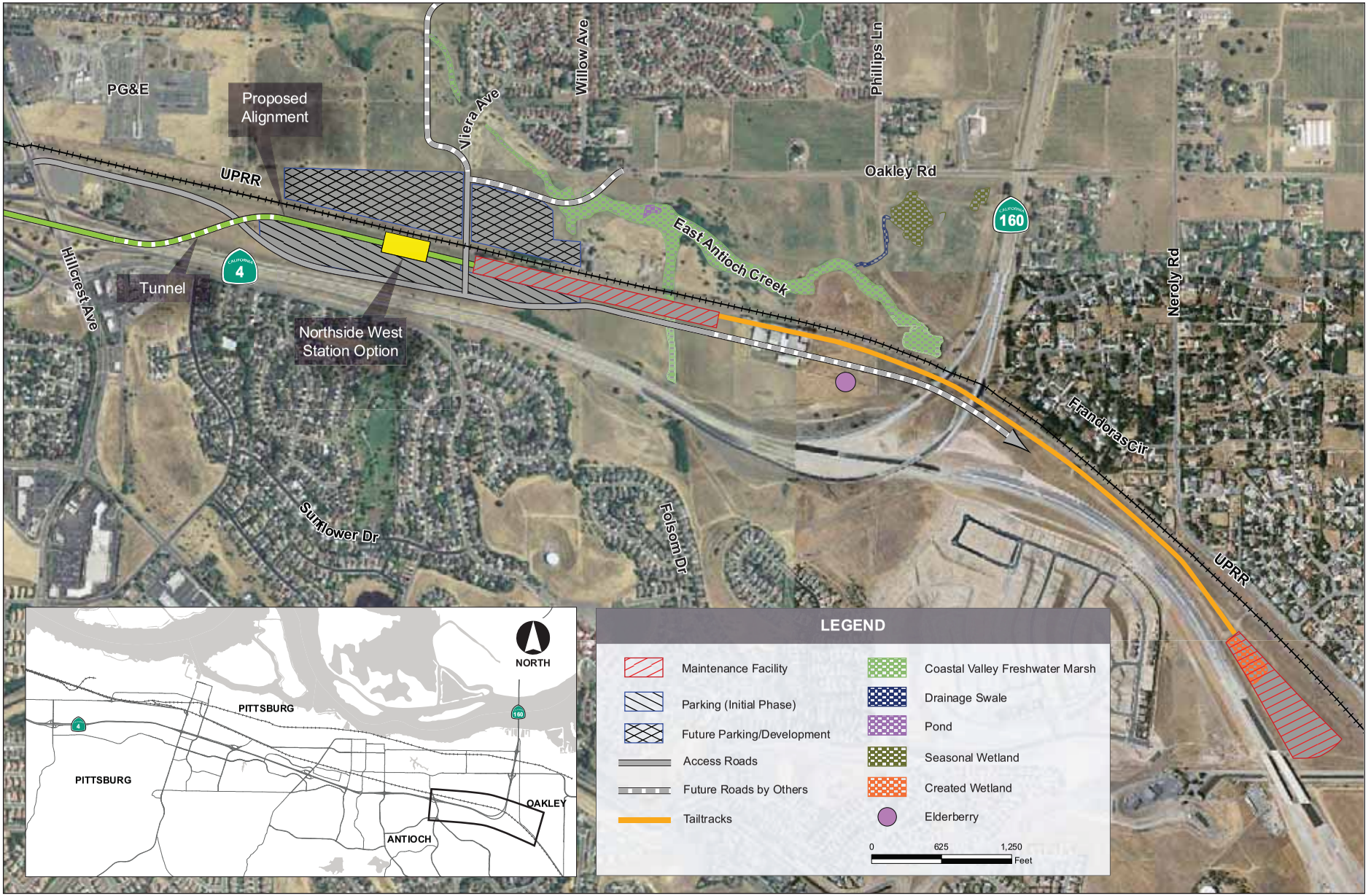
Construction activities for the Proposed Project would result in the loss of habitat used by common plant and wildlife species. Much of the Proposed Project would be constructed in areas that have already been developed, within the SR 4 median. However, the Hillcrest Avenue Station would be located in an area that is more natural. Plant and wildlife species using this habitat would be displaced by construction and operation of this station. The vegetation communities in this area included 15.6 acres of ruderal habitat; an additional 23.9 acres of ruderal habitat would be impacted with development of future parking. This habitat type is vegetated largely by plant species that are not native to California and that adapt quickly in disturbed areas. Invertebrates, amphibians, reptiles, birds and mammals are currently in the project area and those species that are sufficiently mobile would be able to move to adjacent habitats. While the Proposed Project would result in their displacement, it would not result in a significant decline of their population or their range. Therefore, this impact would be less than significant.

Hillcrest Avenue Station Options Analysis

Operational impacts associated with the Northside West Station, Northside East Station, and Median Station East options are the same as described under the Proposed Project, i.e., increased noise and groundborne vibration may disturb existing wildlife, but the impact would be less than significant because there are already existing noise and groundborne vibration sources in the area and the wildlife species would be acclimated to Proposed Project activities and operations. Construction impacts under each station option would also be similar to the Proposed Project (e.g., potential disturbance to nesting birds and removal of protected trees), except where project components would affect different land cover or habitat. These differences specific to each station option are noted below.

Impact BIO-8 Construction and operation of the Northside West Station, Northside East Station and Median Station East options could result in the filling or adverse modification of jurisdictional wetlands, other "waters of the U.S.," and "waters of the State." (S)

Northside West Station Option. The tunnel and the parking lots of the Northside West Station option would not affect any wetlands, since no wetlands were observed in the vicinity of these station elements (see Figure 3.9-5). The maintenance facilities for the Northside West Station, however, could be located in one of two different areas, each potentially affecting wetlands. One area would be immediately east of the station; the other area would be located



Source: PBS&J, 2008.

SENSITIVE HABITAT IN THE VICINITY OF THE NORTHSIDE WEST STATION OPTION

FIGURE 3.9-5

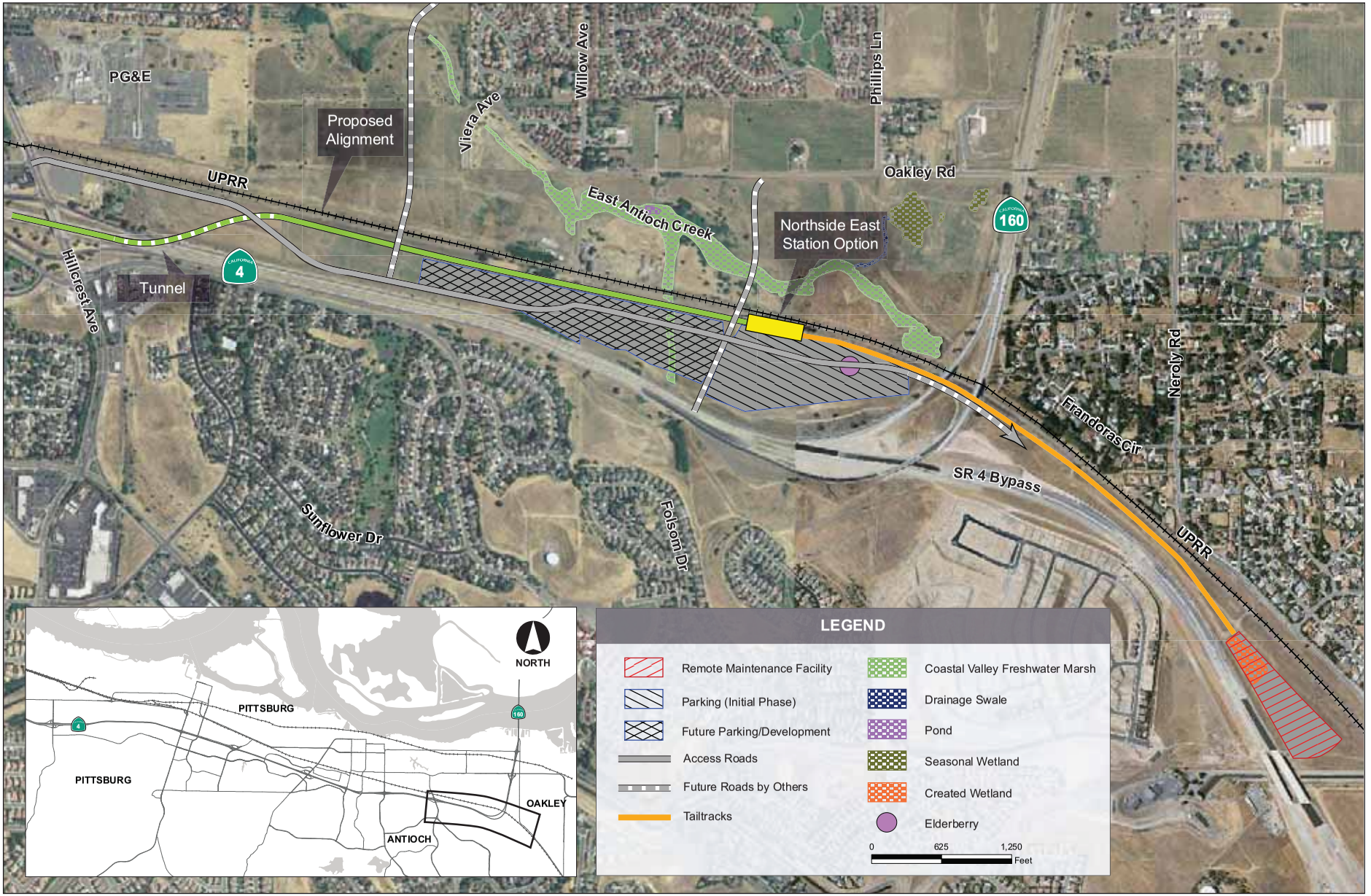
east of SR 160 and the SR 4 Bypass near the Contra Costa Canal (remote maintenance facility) (see Figure 3.9-5). For the maintenance facility immediately east of the station, the proposed construction would permanently impact approximately 0.12 acres of coastal/valley freshwater marsh and 0.01 acres of a pond (connected to the coastal/valley freshwater marsh) (see Table 3.9-5). This impact would be considered significant. The remote maintenance facility option and its associated tracks could impact an existing created wetland (approximately 1.36 acres), coastal/valley freshwater marsh (0.01 acres), and pond habitat (0.01 acres). Additionally with either option, Slatten Ranch Road would need to be constructed, impacting 0.04 acres of coastal/valley freshwater marsh habitat. These impacts would be considered significant.

Table 3.9-5
Acreage of Wetlands at the Hillcrest Northside West Station, Northside East Station and Median Station East Options

Station Option	Coastal/Valley Freshwater Marsh	Pond	Created Wetland	Total
Northside West Station				
Parking	0	0	0	0
Slatten Ranch Road	0.04	0	0	0.04
Maintenance Facility Option and Tailtracks (east of Station)	0.12	0.01	0.0	0.13
Remote Maintenance Facility Option and Tailtracks	0.01	0.01	1.36	1.38
Total (Maintenance Facility east of Station/Remote Maintenance Facility)	**0.16/0.05**	**0.01/0.01**	**0.0/1.36**	**0.17/1.42**
Northside East Station				
Future Parking	0.45	0	0	0.45
Slatten Ranch Road	0.08	0	0	0.08
Remote Maintenance Facility and Tailtracks	0.01	0.01	1.36	1.38
Total	**0.54**	**0.01**	**1.36**	**1.91**
Median Station East				
Maintenance Facility and Tailtracks	0.19	0	0	0
Slatten Ranch Road	0.04	0	0	0
Total	**0.23**	**0**	**0**	**0.23**

Source: PBS&J, 2008.

Northside East Station Option. Under this option, the proposed remote maintenance facility would be constructed on a created wetland, affecting approximately 1.36 acres of jurisdictional wetlands (see Table 3.9-5 and Figure 3.9-6). The tailtracks would also impact 0.01 acres of coastal/valley freshwater marsh habitat and 0.01 acres of pond habitat. Additionally, the future parking would impact 0.45 acres of coastal/valley freshwater marsh



Source: PBS&J, 2008.

SENSITIVE HABITAT IN THE VICINITY OF THE NORTHSIDE EAST STATION OPTION

FIGURE 3.9-6

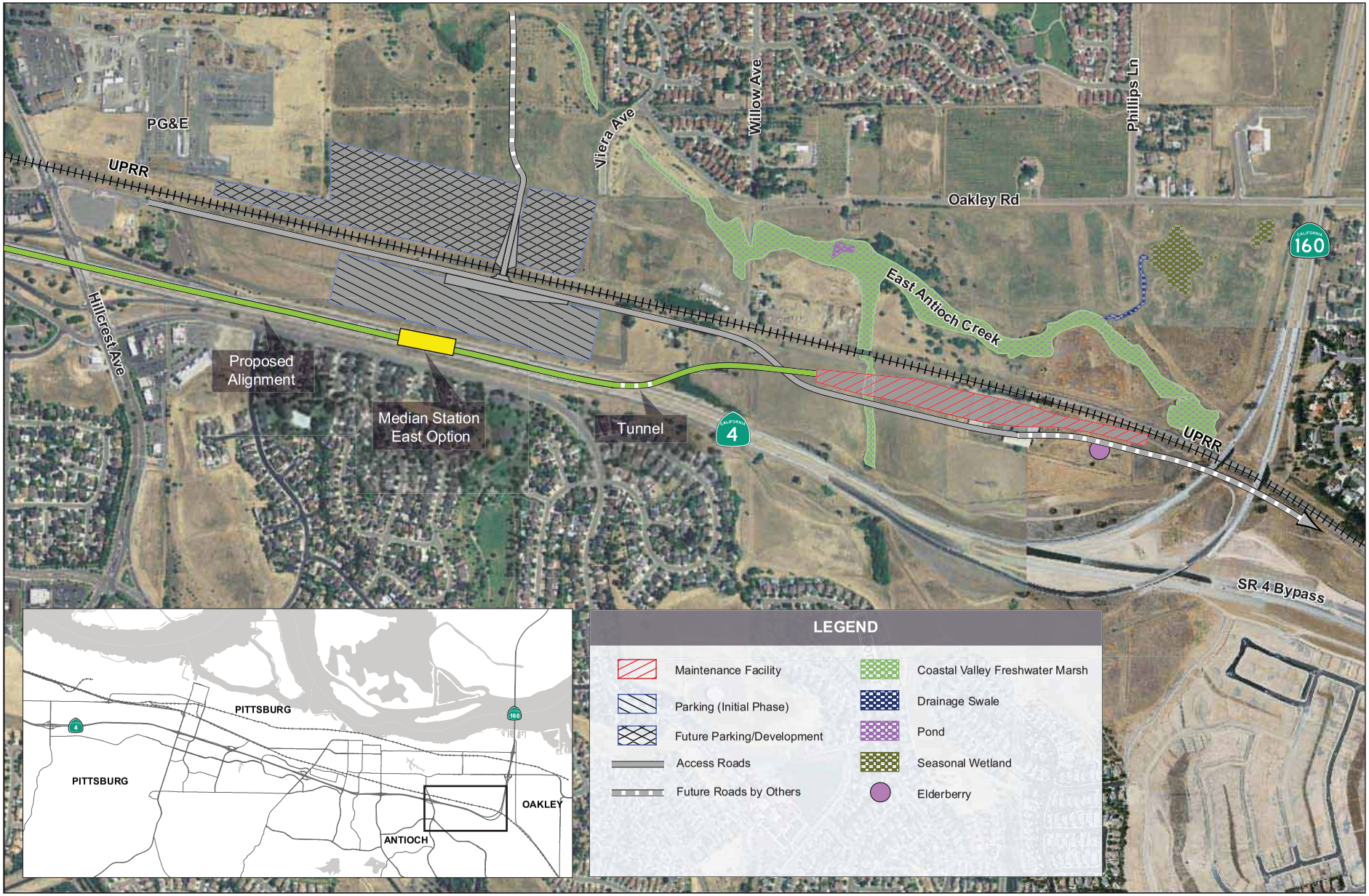
habitat. Finally, 0.08 acres of coastal/valley freshwater marsh habitat would be affected by the construction of Slatten Ranch Road. This station option would affect a total of 1.91 acres of jurisdictional wetlands, resulting in a significant impact.

Median Station East Option. The proposed maintenance facility for the Median Station East option would affect approximately 0.19 acres of coastal/valley freshwater marsh habitat (see Table 3.9-5 and Figure 3.9-7). Additionally the construction of Slatten Ranch Road would affect 0.04 acres of coastal/valley freshwater marsh habitat. The remaining facilities, including the station platform, tracks, maintenance annex and parking would not affect any wetlands or waters of the U.S. This station option would affect a total of 0.23 acres of jurisdictional wetlands, resulting in a significant impact.

MITIGATION MEASURES. Implementation of the mitigation measures below would reduce impacts to wetlands from the Hillcrest Avenue Station options to a less-than-significant level. Mitigation Measure BIO-8.1 requires BART to comply with the 404 permitting process. Mitigation Measure BIO-8.2 provides mitigation measures that would satisfy the requirements of the ECCC HCP/NCCP, in the event that BART decides to participate as a special entity. If BART chooses to participate in the ECCC HCP/NCCP, compliance with Mitigation Measures BIO-8.1 and BIO-8.2 would be required; if not, then compliance with Mitigation Measure BIO-8.1 would be required. (LTS)

BIO-8.1 Comply with permit requirements of the US Army Corps of Engineers and/or state agencies. For wetland habitats where the Corps takes jurisdiction, an accurate estimate of the acres of fill shall be identified and submitted to the Corps along with concept plans for mitigation, as outlined below.

a) BART shall, where feasible, avoid the maximum amount of existing wetlands and establish a minimum 75-foot buffer around all sides of these features. The buffer will help prevent indirect and temporary impacts to the wetland features. In addition, the final project design shall not cause significant changes (i.e., alter the hydrology such that the wetland areas no longer function as wetlands) to the pre-project hydrology, water quality, or water quantity in any wetland that is to be avoided. This shall be accomplished by avoiding or repairing any disturbance to the hydrologic conditions supporting these wetlands, as verified through wetland protection plans that will be required during the permitting process.



Source: PBS&J, 2008.

SENSITIVE HABITAT IN THE VICINITY OF THE MEDIAN STATION EAST OPTION
FIGURE 3.9-7

b) Where avoidance of existing wetlands and drainages is not feasible based on the project design, BART shall identify mitigation measures such that there is no net loss of wetland acreage or habitat value. Wetland mitigation shall be developed as a part of the Section 404 CWA permitting process, or for non-jurisdictional wetlands, during permitting through the CVRWQCB and/or CDFG. Mitigation is to be provided prior to construction-related impacts on the existing wetlands. The exact mitigation ratio is variable, based on the type and value of the wetlands affected by the project, but agency standards typically require a minimum of 1:1 (impacted acreage: mitigation acreage) for preservation and 1:1 for construction of new wetlands; impacts to the created wetland could require higher ratios. In addition, a wetland mitigation and monitoring plan shall be developed that includes the following:

- Description of the wetland types, and their expected functions and values;
- Performance standards and monitoring protocol to ensure the success of the mitigation wetlands over a period of five to ten years;
- Engineering plans showing the location, size, and configuration of wetlands to be created or restored;
- An implementation schedule showing when construction of mitigation areas shall occur; and
- A description of legal protection measures for the preserved wetlands (i.e., dedication of fee title, conservation easement, and/or an endowment held by an approved conservation organization, government agency, or mitigation bank). This plan shall be prepared and submitted to the Corps, for wetlands under their jurisdiction and the CVRWQCB for non-jurisdictional wetlands. Additionally, CDFG will review plans as part of the Streambed Alteration Agreement. This plan will be prepared as part of the permitting process.

c) Prior to ground disturbance for project construction in the Hillcrest Avenue Station options area, BART shall acquire all applicable wetland permits. These permits could include, but would not be limited to, a Section 404 Wetlands Fill Permit from

the Corps, or a Report of Waste Discharge from the CVRWQCB; a Section 401 Water Quality Certification from the RWQCB; and a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Game.

BIO-8.2 Comply with ECCC HCP/NCCP. If BART chooses to participate in the ECCC HCP/NCCP as a Participating Special Entity, a fee shall be paid to offset impacts to wetland features (per Table 3.9-3, above), in addition to the development fee. Additionally, BART shall comply with Conservation Measure 2.12 of the ECCC HCP/NCCP, applicable portions of which are summarized below.

All projects that discharge into or fill waters of the U.S or of the State are required to obtain applicable permits from the Corps and the RWQCB. Projects that fill streams or modify channel flow under the jurisdiction of the State are also required to obtain a Streambed Alteration Agreement with CDFG.

BART shall implement the following measures to avoid and minimize impacts of covered activities on wetlands, ponds, streams, and riparian woodland/scrub:

- BART must follow the stream setback requirements in the ECCC HCP/NCCP Conservation Measure 1.7; however, due to the developed nature of creeks along the project corridor, no setback would be required for the eBART project.

- Applicants for coverage under the ECCC HCP/NCCP must follow the guidelines in Conservation Measure 1.10 of the ECCC HCP/NCCP to minimize the effects of urban development on downstream hydrology, streams, and wetlands. Conservation Measure 1.10 requires project applicants to comply with applicable Provision C.3 Amendments of the Contra Costa County Clean Water Program's amended NPDES Permit (order no. R2-2003-0022; permit no.CAS002912) or the NPDES permit which is current at the time of project approval.

- All wetlands, ponds, streams, and riparian woodland/scrub to be avoided by covered activities will be temporarily staked in the field by a qualified biologist.

- Buffer zones should be established where feasible between the aquatic resource and development.

- Fencing will be erected between the outer edge of the buffer zone and the project area. The type of fencing will match the activity and impact types. For example, projects that have the potential to cause erosion will require erosion control barriers (see below). The temporal requirements for fencing also depend on the activity and impact type. For example, fencing for permanent impacts should be permanent, and fencing for short-term impacts should be removed after the activity is completed.

- Personnel conducting ground-disturbing activities within or adjacent to the buffer zone of wetlands, ponds, streams, or riparian woodland/scrub will be trained by a qualified biologist in these avoidance and minimization measures and the permit obligations of project proponents working under this HCP/NCCP. Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.

- Trash generated by covered activities will be promptly and properly removed from the site.

- No construction or maintenance vehicles will be refueled within 200 feet of wetlands, ponds, streams, or riparian woodland/scrub unless a bermed and lined refueling area is constructed and hazardous material absorbent pads are available in the event of a spill.

- Appropriate erosion-control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into wetlands, ponds, streams, or riparian woodland/scrub. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control blankets shall be used as a last resort because of their tendency to biodegrade slowly and trap reptiles and amphibians. Erosion-control measures will be placed between the outer edge of the buffer and the project site.

- Fiber rolls used for erosion control will be certified as free of noxious weed seed.

- Seed mixtures applied for erosion control will not contain invasive nonnative species, and will be composed of native species or sterile nonnative species.

- Where feasible, stream crossings will be located in stream segments without riparian vegetation, and bridge footings will be built outside the stream banks (i.e., clear span structures).

- Herbicide will not be applied within 100 feet of wetlands, ponds, streams, or riparian woodland/scrub; however, where appropriate to control serious invasive plants, herbicides that have been approved for use by EPA in or adjacent to aquatic habitats may be used as long as label instructions are followed and applications avoid or minimize impacts on covered species and their habitats. In seasonal or intermittent stream or wetland environments, appropriate herbicides may be applied during the dry season to control nonnative invasive species (e.g., yellow star-thistle). Herbicide drift should be minimized by applying the herbicide as close to the target area as possible.

Impact BIO-9 *Construction and operation of the Northside West Station, the Northside East Station, and the Median Station East options would result in the loss of potential foraging habitat for the Swainson's hawk. (PS)*

The non-native grassland/ruderal area around the proposed Hillcrest Avenue Station options could provide suitable foraging habitat for Swainson's hawk. As described for the Proposed Project, the CDFG recommends a mitigation ratio for the loss of foraging habitat located between one and five miles from an active nest of 1 to 0.75; the nearest known nest is three miles from the project corridor. Table 3.9-6 summarizes the potential Swainson's hawk foraging habitat loss due to the construction of the Hillcrest Avenue Station options. Loss of foraging habitat due to the construction of the station option would be considered a potentially significant impact.

Table 3.9-6
Potential Swainson's Hawk Foraging Habitat Loss per Station Option

Hillcrest Avenue Station Option	Habitat Loss (acres)[a]	Mitigation Acreage Required
Northside West Station	44.6	33.5
Northside East Station	46.3	34.7
Median Station East	46.3	34.7

Source: PBS&J, 2008.

Notes:

a. Acreage includes footprint of station platforms, track system, tailtracks, maintenance facilities and parking lots, including future parking.

MITIGATION MEASURES. Mitigation Measure BIO-3.1 or BIO-3.2 identified for the Median Station is also applicable to the station options and would reduce the loss of Swainson's hawk foraging habitat from the construction of the Hillcrest Avenue Station options to a less-than-significant level. (LTS)

Impact BIO-10 Construction and operation of the Northside West Station and Median Station East options would not result in the loss of habitat or potential disturbance of the valley elderberry longhorn beetle; however, construction and operation of the Northside East Station option could affect the valley elderberry longhorn beetle. (PS)

Northside West Station and Median Station East Options. Since there are no elderberry shrubs within the Northside West Station or the Median Station East option footprints, no impact to the VELB would occur.

Northside East Station Option. Construction of the Northside East Station option could result in the disturbance or removal (from construction or operation) of elderberry shrubs (Figure 3.9-6). Elderberry shrubs are the host plant for the VELB, a species federally listed as threatened. The USFWS considers all elderberry shrubs with stems equal or greater than one inch in diameter in the VELB range potential habitat for the beetle. The USFWS assumes that impacts to VELB would occur wherever there is ground disturbance within 100 feet of suitable habitat. Therefore, adverse effects on the shrubs with stems equal or greater to one inch in diameter would be considered "take" under the FESA.

Elderberry shrubs were observed in the eastern portion of the proposed parking lot for the Northside East Station option. Construction of this lot for the proposed Northside East Station option would require removal of the elderberry shrubs, a significant impact.

MITIGATION MEASURES. Either of the following measures would ensure the Northside East Station option facilities are designed to avoid the elderberry shrubs or would occur pursuant to a VELB Mitigation Plan. These mitigation measures, which depend on whether VELB continues to be listed as a protected species under the FESA or is delisted, would reduce impacts on VELB to less-than-significant levels. (LTS)

BIO-10.1 Avoid VELB habitat or prepare a VELB Mitigation Plan. The Northside East Station option shall be designed to avoid ground disturbance within 100 feet of the dripline of elderberry shrubs having stems greater than or equal to one inch in diameter. The 100-foot buffer can be adjusted in consultation with the USFWS. If

avoidance is achieved, a letter report confirming avoidance shall be sent to the USFWS and no further mitigation would be required.

If disturbance within 100 feet of the dripline of the elderberry shrubs with stems greater than or equal to one inch in diameter is unavoidable, then BART shall retain the services of a qualified biologist to develop a formal VELB mitigation plan in accordance with the most current USFWS mitigation guidelines for unavoidable take of VELB habitat pursuant to either Section 7 or Section 10(a) of the Federal Endangered Species Act. Prior to construction in the Northside East Station option area, the mitigation plan shall be reviewed and approved by the USFWS.

BIO-10.2 Comply with USFWS provisions for VELB if delisted. If the VELB is delisted by the USFWS prior to the initiation of any ground disturbing, demolition, or construction activities associated with the Proposed Project, BART shall proceed with construction in a manner consistent with any requirements that accompany the VELB delisting notice.

Cumulative Analysis

Given that the preparation of the ECCC HCP/NCCP defines a particular geographic area for the protection of sensitive biological species and habitats, and the Proposed Project lies within that area, east Contra Costa County is an appropriate area for consideration of cumulative biological impacts. The EIR prepared for the ECCC HCP/NCCP defines the potential loss of biological resources from development in the area but identifies conservation measures, mitigation processes, and fees to reduce impacts. Development in east Contra Costa County, including development in the local jurisdictions and major infrastructure projects, like SR 4 widening, SR 4 Bypass, and the Proposed Project, would cumulatively contribute to biological impacts as described below.

Impact BIO-CU-11 *The Proposed Project in combination with other foreseeable development in east Contra Costa County could result in the loss of jurisdictional wetlands, other "waters of the U.S.," and "waters of the State." (S)*

The historic and ongoing loss of wetlands in east Contra Costa County occurred and continues to occur as natural habitats are converted to agricultural and urban uses, and watercourses are altered for flood control and water supply purposes. Continued development and the loss of wetlands within east Contra Costa County would result in a cumulatively significant impact. Efforts are underway, as part of the ECCC HCP/NCCP, to ensure preservation of wetland habitat in the region, through avoidance, creation of wetland habitat, and/or payment of fees for impacting wetlands. Additionally, projects currently being

planned or constructed within the cities and County would or have been analyzed under the CEQA process. Any project with the potential to disturb wetlands would have to comply with the state's policy of the no-net loss of wetlands.

Based on the wetland delineations verified by the Corps along the project corridor, no wetlands would be impacted by construction of the Proposed Project. Therefore, the Proposed Project would have no contribution to cumulative wetland impacts.

The Northside West Station option with the maintenance facility immediately adjacent to the station would impact 0.17 acres of wetland habitat. The Northside West Station option with the remote maintenance facility option would impact 1.42 acres of wetland habitat. The Northside East Station option and remote maintenance facility would impact 1.91 acres of wetland habitat. The Median Station East option maintenance facility would impact 0.23 acres of wetland habitat. The Northside West Station, Northside East Station, and Median Station East's potential contribution to this significant cumulative impact without mitigation would be cumulatively considerable.

MITIGATION MEASURES. Implementation of Mitigation Measures BIO-8.1 and BIO-8.2 (should BART choose to participate in the ECCC HCP/NCCP) would ensure that the impact on wetlands and jurisdictional waters from the Northside West Station, Northside East Station, or Median Station East options are fully mitigated. As a result, the project's contribution to this cumulative impact would be less than considerable. Moreover, the same state and federal policies and regulations governing wetland protection and mitigation apply to all of the foreseeable development projects that are considered in this cumulative assessment. As a result, the cumulative impact to wetlands, waters of the U.S., and waters of the State would be less than significant. (LTS)

Impact BIO-CU-12 *The Proposed Project in combination with other foreseeable development in east Contra Costa County would contribute to the loss of special-status wildlife and their habitat. (S)*

Historical development from both agricultural activities and urbanization has encroached upon and displaced biological resources throughout east Contra Costa County by replacing grassland, oak woodland, riparian woodland, wetland, riverine, and other native habitats that support special-status species. Conversion of the remaining natural ecosystems has accelerated within the past few decades due to increased development pressures to accommodate the County's rapidly growing population. The proposed Hillcrest Avenue Station area of the project corridor supports non-native grassland habitat and freshwater marsh that can support special-status species. While neither pristine

nor undisturbed, this open space habitat could still be used by special-status species that include but are not limited to burrowing owl, Swainson's hawk, and other special-status avian species. Additionally, the Northside East Station option area supports habitat for VELB.

As previously described under Impacts BIO-3 through BIO-6, the Proposed Project by itself would result in significant impacts to special-status species and their habitats. These impacts would also occur during construction of other foreseeable projects in east Contra Costa County. In particular, the development envisioned for the City of Antioch Hillcrest Station Specific Plan (Ridership Development Plan), the SR 4 Bypass, and other development in east Contra Costa County would all affect the same biological resources and habitats and cumulatively would have a significant impact on special-status wildlife species.

MITIGATION MEASURES. The project-specific analysis identified significant impacts to special-status species due to construction and operation of the Proposed Project. Implementation of Mitigation Measures BIO-3.1, BIO-4.1, BIO-4.2, BIO-4.3, BIO-4.4, and BIO-6.1 would minimize the Proposed Project's incremental contribution to the loss of special-status wildlife and the loss or fragmentation of their habitat through the regulatory process. Implementation of these measures would reduce the project's contribution to the cumulative impacts to less than cumulatively considerable. Moreover, the mitigation measures identified for the Proposed Project regarding Swainson's hawks, burrowing owl, tri-colored blackbirds, and other protected bird species are applicable to other development projects that may affect these species. Compliance with permit conditions of the USFWS and CDFG are anticipated for future growth in east Contra Cost County, since Clayton, Pittsburg, Oakley, Brentwood, Contra Costa County and Contra Costa County Flood Control and Water Conservation District are all participants in the ECCC HCP/NCCP. Jurisdictions not participating in the HCP would still be subject to the provisions of the state and federal Endangered Species Acts. As a result, cumulative impacts to special-status wildlife species would be reduced to less than significant. (LTS)