2.4 Biological Environment

2.4.1 Natural Communities

This section of the document discusses natural communities of concern, with a focus on biological communities, not individual plant or animal species. The emphasis of this section should be on the ecological function of the natural communities within the area. This section also includes information on wildlife corridors, which are areas of habitat used by wildlife for seasonal or daily migration; and habitat fragmentation, which involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Wetlands and other waters are discussed in Section 2.4.2. Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in Section 2.4.5, Threatened and Endangered Species.

2.4.1.1 Affected Environment

The following analysis is based on the Natural Environment Study (NES) approved in February 2011(Department, 2011c).

The Biological Study Area (BSA) for the project corridor encompasses all areas of ground disturbance that would occur during the construction of the Build Alternative. The BSA extends 100 feet from the edge of the paved freeway surface and/or the edge of any component of the Build Alternative. The BSA encompasses a total area of 445.08 acres.

Biologists conducted field surveys of the BSA on August 26 and 27, 2008; September 10 and 11, 2008; December 16^{t} and 17, 2008; and February 11, 12, and 13, 2009 to characterize and map the type and quality of habitat.

Biologists identified the following five vegetation communities within the BSA: valley and foothill grasslands, northern coastal salt marsh, north coast riparian scrub, coastal and valley freshwater marsh, and landscaped. With the exception of the portion of the BSA located within the Berkeley Aquatic Park, the majority of the study area is developed with paved roadways and residential, industrial, and commercial land uses.

Table 2.4-1 lists the acreage of natural communities present within the BSA. Principal characteristics and general locations of these communities are presented in the following descriptions. More detailed descriptions of each habitat and vegetation mapping are discussed in the NES.

Valley and Foothill Grasslands

Valley and foothill grasslands were observed primarily in the northern portion of the BSA, where less development has occurred. This natural community is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands and scrub as a result of human disturbance. Characteristic non-native annual grasses found within the BSA include wild oats (*Avena spp.*), brome grasses (*Bromus spp.*), wild barley (*Hordeum murinum ssp. leporinum*), Italian ryegrass (*Lolium multiflorum*), and fescue (*Vulpia spp.*). Common non-

native forbs include yellow star thistle (*Centaurea solstitialis*), field bindweed (*Convovulus arvensis*), crane's-bill (*Geranium dissectum*), sheep sorrel (*Rumex acetosella*), bur-clover (*Medicago polymorpha*), and filaree (*Erodium spp*.), among others.

Table 2.4-1: Natural Communities within the Biological Study Area

Natural Communities/Land Cover	Total Acreage
Valley and Foothill Grasslands	41.32
Northern Coastal Salt Marsh	0.54
North Coast Riparian Scrub	1.73
Coastal and Valley Freshwater Marsh	0.19
Landscaped	106.05

Northern Coastal Salt Marsh

Northern coastal salt marsh occurs in the southwest portion of the BSA, between El Cerrito and the San Francisco-Oakland Bay Bridge Toll Plaza. This community is typically found along the margins of bays, lagoons, and estuaries that are sheltered from excessive wave action. The lower margin of the community experiences two high tides and two low tides per day. Elevation changes with distance from the shore, producing a gradient of salinity as well as depth and duration of flooding that determines the species of plants, and ultimately animals, found. For example, the lower regions of the marsh support cordgrass (*Spartina foliosa*), pickleweed (*Salicornia virginica*), jumea (*Jaumea carnosa*), California seablite (*Suaeda californica*), and saltgrass (*Distichlis spicata*), which attracts shorebirds and rails; the upper regions of the marsh support California bulrush (*Schoenoplectus californicus*), common cattail (*Typha latifolia*), and carex (*Carex* sp.) which attract passerines (perching birds) and mammals.

North Coast Riparian Scrub

North coast riparian scrub occurs along the drainages that cross or run parallel to the I-80 freeway. The north coast riparian scrub community typically occurs close to river channels and on fine-grained sand and gravel bars with a high water table. It is distributed along and at the mouths of most perennial and many intermittent streams in the Bay Area. Characteristic native species occurring within this community include willow (*Salix* sp.), California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*), among others.

Coastal and Valley freshwater marsh

Coastal and valley freshwater marsh occurs at the intersection of I-80 and SR-4. However, because this area does not support hydrophytic vegetation[1], the coastal and valley freshwater marsh within the BSA is classified as non-wetland waters of the U.S. Emergent vegetation, including cattails (*Typha* sp.), sedges (*Carex* sp.), and willows (*Salix* sp.), often form a dense canopy in this natural community.

[1] Hydrophytic vegetation is the final parameter of the wetland definition. In general terms, hydrophytic vegetation is plant-life that thrives in wet conditions.

Landscaped

Landscaping and planted grasses occur throughout the BSA, including landscaping and erosion control plantings that are immediately adjacent to the shoulder of the I-80 corridor.

Many of the trees adjacent to the proposed device and ramp disturbance locations would be considered protected by the various cities' tree protection ordinances. These protected trees may include landscaped trees or native trees.

Sensitive Natural Communities

Four natural communities of special concern were identified in the California Natural Diversity Database (CNDDB) search of the United States Geological Survey (USGS) Mare Island, Benicia, Richmond, and Oakland West 7.5-minute quadrangle maps (CNDDB 2010): northern coastal salt marsh, coastal brackish marsh, northern maritime chaparral, and valley needle-grass grassland.

The occurrence of northern coastal salt marsh within the BSA is described above.

The other three communities do not occur within the BSA and would not be impacted by the project.

Wildlife Corridors

Given the large amount of development along the I-80 corridor, there is limited connectivity between existing habitat areas in the BSA. There are no linkages between the primary wildlife foraging areas within the BSA. The project corridor is not within any regional conservation plans, such as habitat conservation plans or multiple species conservation plans.

2.4.1.2 Environmental Consequences

Build Alternative

Direct Impacts

Table 2.4-2 identifies the anticipated impacts to the natural communities within the BSA. Two communities, valley and foothill grasslands and landscaped, would be directly impacted by the Build Alternative. Installation of foundations and conduits for the Build Alternative would result in impacts to approximately 3.87 acres of valley and foothill grasslands and approximately 5.25 acres of landscaped areas.

Table 2.4-2: Impacts to Natural Communities

Natural Community	Total Impacts (acres)
Northern Coastal Salt Marsh	-
North Coast Riparian Scrub	-
Coastal and Valley Freshwater Marsh	-
Valley and Foothill Grasslands	3.87
Landscaped	5.25

The areas of impact consist of thin slivers of land along the I-80 corridor. Given the relatively small area of impact, the project would not affect the function of the natural communities in terms of services it provides for water quality, habitat, or breeding.

No trees would be removed as part of the Build Alternative, although trees could be impacted via pruning or from trenching activities associated with conduit installation. Avoidance and minimizations efforts to protect root systems are provided below.

Impacts related to special-status plant and animal species associated with these communities are discussed in Sections 2.4.3, 2.4.4, and 2.4.5.

Indirect Impacts

Indirect impacts to the northern coastal salt marsh could occur during construction. Potential fluid leaks from construction workers parking their vehicles in close proximity to this habitat could result in harmful run-off that degrades the water quality and soil conditions. Additionally, sedimentation could occur as a result of earth moving activities.

Wildlife Corridors

As described above, no wildlife corridors have been identified within the BSA; accordingly, no impacts to wildlife corridors are anticipated.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative and therefore avoid the effects to natural communities associated with the Build Alternative.

2.4.1.3 Avoidance, Minimization, and/or Mitigation Measures

Pursuant to California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), the Department has proposed a number of reasonable and prudent measures to minimize and avoid impacts to sensitive natural communities. These measures are considered part of the project design, as described below.

Storm Water Pollution Prevention

In conformance with Department standards, Storm Water Pollution Prevention Plans (SWPPP) that include erosion control best management practices (BMPs) would be developed to minimize any wind or water-related erosion. The SWPPP would provide guidance for design staff to include provisions in construction contracts to include measures to protect sensitive areas and to prevent and minimize storm water and non-storm water discharges. Protective measures shall include, at a minimum:

- No discharge of pollutants from vehicle and equipment cleaning will be allowed into any storm drains or water courses.

- Vehicle and equipment fueling and maintenance operations will be at least 50 feet away from water courses, except at established commercial gas stations or established vehicle maintenance facility.
- Concrete wastes will be collected in washouts and water from curing operations will be collected and disposed of and not allowed into water courses.
- Dust control will be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access road entrances and exits, and covering temporary stockpiles when weather conditions require.
- Protection of graded areas from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas.
- Spill containment kits will be maintained on site at all times during construction operations and/or staging or fueling of equipment.

All slopes or unpaved areas temporarily affected by the project would be reseeded with native grasses and shrubs to stabilize the slopes and bare ground against erosion. Following construction, native (and non-native if appropriate) plant species would be planted at the disturbed area.

Environmentally Sensitive Areas

Prior to the start of construction, areas containing sensitive habitats adjacent to or within construction work areas would be clearly delineated as environmentally sensitive areas (ESAs) using high-visibility orange fencing. The ESAs would include all potential habitat areas for the threatened and endangered species with the potential to occur along the project corridor (i.e., California red-legged frogs and Alameda whipsnakes). In addition, all hydrologic features within the BSA that have been identified as waters of the U.S. or state waters would be delineated on project design plans and designated ESAs.

The final project plans would depict the locations where ESA fencing would be installed and how it would be installed. The special provisions of the bid package would clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. The ESA fencing would remain in place throughout the duration of the project-related construction activities to prevent the encroachment of construction equipment/personnel into sensitive areas.

2.4.2 Wetlands and Other Waters

2.4.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act [CWA (33 USC 1344)] is the primary law regulating wetlands and surface waters. The CWA regulates the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Under Section 404 of the CWA, discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits. Nationwide permits, a type of General permit, are issued to authorize a variety of minor project activities with no more than minimal effects. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration (FHWA) and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG), the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the CWA. Please see the Water Quality section for additional details.

2.4.2.2 Affected Environment

The following analysis is based on the NES approved in February 2011(Department, 2011c). Wetland delineations were conducted within the BSA by consultant biologists on December 16 and 17, 2008 and on February 11, 12, and 13, 2009. The delineations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) guidance. A preliminary Wetland Delineation and Assessment Report is provided in Appendix C of the NES.

In all, Waters of the U.S. and State occupy approximately 12.28 acres of the BSA. All conclusions regarding jurisdictional status are preliminary and subject to verification by the USACE and the State. Detailed mapping of the jurisdictional areas is included in the Wetland Delineation and Assessment Report.

Potentially jurisdictional aquatic features identified within the BSA consist of the following: named creeks; un-named drainages; freshwater wetlands; salt marsh; freshwater lakes; and San Francisco Bay. The wetlands within the BSA are perennial (marsh) and vary in size and quality.

The non-wetland waters of the U.S. and State waters include the following drainages within and adjacent to the BSA that cross or run parallel to I-80. All of the major drainages are perennial.

- I-80 Rodeo Creek crossing at Willow Avenue
- I-80 Refugio Creek crossing at north of Sycamore Avenue
- An unnamed creek that splits from Refugio Creek crossing I-80 south of Sycamore Avenue
- I-80 Pinole Creek crossing south of Pinole Valley Road
- San Pablo Creek crossing at the El Portal Drive westbound I-80 on-ramp
- I-80 Wildcat Creek crossing south of San Pablo Dam Road and north of McBryde Avenue
- I-80 Cerrito Creek crossing south of Central Avenue and north of Buchanan Street
- I-80 Codornices Creek crossing south of Buchanan Street and parallel run to the I-80 westbound on-ramp at Buchanan Street
- Berkeley Aquatic Park adjacent to I-80 south of the University Avenue interchange.

2.4.2.3 Environmental Consequences

Build Alternative

Implementation of the Build Alternative would not result in any direct or indirect impacts to jurisdictional waters of the U.S. or State (loss of acreages), including wetlands. No work is proposed to occur within the San Francisco Bay, the Berkeley Aquatic Park, salt marsh, freshwater wetlands, creeks, drainages, and freshwater lakes that may be potential jurisdictional waters of the U.S. or State.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative. However, the Build Alternative would not result in either direct or indirect effects on jurisdictional waters. Thus the effects of the No-Build Alternative and the Build Alternative would be similar.

2.4.2.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization and/or mitigation measures are recommended because no direct or indirect impacts to jurisdictional waters of the U.S. or State are anticipated to occur.

2.4.3 Plant Species

2.4.3.1 Regulatory Setting

The United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Section 2.4.5, Threatened and Endangered Species, for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code (USC) 16, Section 1531, et. seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), Public Resources Code, Sections 2100-21177.

2.4.3.2 Affected Environment

The following analysis is based on the NES approved in February 2011 (Department, 2011c). The identification of special-status plant species with potential to occur in the region was based on a search of the USFWS Species List Database, the CNDDB, and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants for the four USGS quadrangles within the BSA: Mare Island, Benicia, Richmond, and Oakland West. Reconnaissance level surveys were also conducted to determine the potential for special-status plant species to occur. The detailed results of these database searches and the reconnaissance level surveys are documented in the NES and are summarized below.

The database searches identified 36 special-status plant species that could potentially occur in the region. **Appendix E** lists each of these species and describes whether or not the species could occur in the BSA.

None of the species are expected to occur in the BSA. Of these 36 species, only two— bent-flowered fiddleneck (*Amsinckia grandiflora*) and robust monardella (*Monardella villosa ssp. Globosa*)—have habitat requirements that are present in the BSA. Although grasslands potentially supporting these species exist in the BSA, the bent-flowered fiddleneck species has not been documented within one mile of the BSA since 1883. Similarly, the last sighting of robust monardella within one mile of the BSA was in 1903.

2.4.3.3 Environmental Consequences

Build Alternative

With respect to plant species, all direct impacts (i.e., trenching, moving project equipment, placing device structures and footings, clearing and grubbing prior to construction work) are considered permanent. Implementation of the Build Alternative would permanently remove approximately 3.87 acres of suitable special-status plant species habitat. Potential indirect effects include disturbances from the generation of dust and degradation of water quality during construction activities.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative and therefore avoid the permanent removal of 3.87 acres of suitable special-status plant species habitat associated with the Build Alternative.

2.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

Measures to implement erosion control BMPs and storm water pollution prevention plans would also reduce indirect impacts on special-status plant species.

Pursuant to CEQA and NEPA, the Department has proposed a number of reasonable and prudent measures to minimize and avoid impacts to special-status plant species within the BSA. The following measure is considered part of the project design.

Preconstruction Surveys

Special-Status Plant Species

Preconstruction surveys during the blooming season would be conducted in suitable habitat where construction activities would occur to ensure no special-status plant species would be directly or indirectly affected by the project. If special-status plants are found prior to or during construction activities, a buffer zone shall be clearly delineated as an environmentally sensitive area by a qualified biologist (see discussion above in Section 2.4.1.3).

2.4.4 Animal Species

2.4.4.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Services (NOAA Fisheries Service), and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.4.5 below. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

2.4.4.2 Affected Environment

The identification of special status animal species with potential to occur in the region was based on a search of the USFWS Species List Database, the CNDDB, and the CNPS Inventory of Rare and Endangered Plants for the four USGS quadrangles within the BSA, as well as field reconnaissance surveys, habitat assessments, and the wetland delineation survey completed for the project. The results of these efforts are further discussed in the appropriate sections below, and are documented in the NES.

The database searches identified 41 special-status wildlife species that could potentially occur in the region. **Appendix E** lists each of these species and describes whether or not the species could occur in the BSA. Of these 41 species, 18 special-status wildlife species have the potential to occur in the BSA. Five of those species are listed as endangered or threatened under CESA or FESA and are described in Section 2.4.5, Threatened and Endangered Species. The remaining 13 special-status species are described in this section:

- Monarch butterfly (*Danaus plexippus*)
- Western pond turtle (*Emmys marmorata*)
- Nesting raptors - Coopers hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), white-tailed kite (*Elanus leucurus*), and western burrowing owl (*Athene cunicularia*)
- Nesting passerines - Suisun song sparrow (*Melospiza melodia maxillaris*), Alameda song sparrow (*Melospiza melodia pusillula*), San Pablo song sparrow (*Melospiza melodia samuelis*), and salt marsh common yellowthroat (*Geothlypis trichas*)
- Roosting bats - pallid bat (*Antrozous pallidus*), silver haired bat (*Lasionycteris noctivagans*), and hoary bat (*Lasiurus cinereus*)

All of these species, with the exception of the monarch butterfly, are protected under CESA as California species of concern. The monarch butterfly is considered a special animal by the state. All of the nesting raptors and nesting passerines are also protected under the Migratory Bird Treaty Act (MBTA).

Monarch Butterfly

Overwintering sites in California occur within a mile of the coast, generally consisting of wooded trees of mixed height and trunk diameter, as well as understory brush. Trees such as blue gum (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and Monterey cypress (*Cupressus macrocarpa*) are most often used as roosts, as well as other native and non-native species in large groves which provide thermal

regulation and cover from predators. Cool moist air that pools in depressions and drainages within forest groves are important requirements for overwintering monarchs. The overwintering season typically occurs between October 1 through February 28 and may vary according to weather conditions.

Within the BSA, monarch butterflies overwinter in the riparian corridor along Codornices Creek in Contra Costa County.

Western Pond Turtle

The western pond turtle occurs throughout California and inhabits rivers, streams, lakes, ponds, wetlands, reservoirs, and brackish estuarine waters. Western pond turtles use aquatic habitat primarily for foraging, thermoregulation, and predator avoidance. Although it is primarily an aquatic species, pond turtles can survive on land or in water, and may remain active during the winter season, depending on environmental conditions. Females travel from aquatic sites into open, grassy areas to lay eggs in shallow nests approximately 600 to 1,300 feet or more from water.

Within the BSA, the seasonal and perennial wetlands at the I-80/SR-4 interchange and San Pablo Creek provide suitable aquatic habitat for the western pond turtle. This species has been reported in Rodeo Creek approximately 2.5 miles east of the BSA.

Nesting Raptors and Migratory Birds

Trees, riparian areas, and man-made bridges within the BSA may provide potential nesting habitat for raptors and birds protected under the MBTA.

No nesting raptors or evidence of nesting raptors were observed during field visits, although Cooper's hawk, white-tailed kite, and northern harrier have all been reported within or adjacent to the BSA (CNDDB 2010).

The red-shouldered hawk and Cooper's hawk nest in riparian corridors, typically choosing the tallest trees in the area. There is suitable nesting habitat present along riparian corridors within the BSA for Cooper's hawk and red-shouldered hawk. White tail kites also choose tall trees but typically at the edge of grasslands.

Bat Species

No roosting bat surveys were conducted in the preparation of the NES. However, there is potential that the landscaped and native trees and existing overpass and/or under pass structures within the BSA may provide roosting habitat for protected bat species. In particular, there is a potential for bats to roost in the underpass I-80 crossing at Buchanan Street and Gilman Street.

2.4.4.3 Environmental Consequences

Build Alternative

Monarch Butterfly

The vegetation along Codornices Creek and associated riparian habitat would not be directly impacted by the Build Alternative. However, exhaust and low frequency vibrations, inherent to the operation of heavy construction equipment in this area may disturb and/or dislodge roosting monarchs during the overwintering season (October 1 through February 28). This would increase colony disturbance and butterfly mortality.

Western Pond Turtle

No work is proposed within creeks inhabited by western pond turtle. However, the degradation of water quality from construction-related sediment and runoff could temporarily impact this species.

Nesting Raptors - Nesting Passerines

There is potential for burrowing owls to nest in the valley and foothill grasslands within the BSA. As previously discussed in Section 2.4.1 above, installation of the Build Alternative foundations and conduits would result in impacts to approximately 3.87 acres of valley and foothill grasslands. As a result, there is potential for impacts to approximately 3.87 acres of suitable burrowing owl nesting and foraging habitat within the BSA.

The Build Alternative would not require the removal of any trees within the BSA. As such, permanent impacts to all other nesting raptors and migratory bird species, due to the loss of possible nests and associated eggs and/or nestlings, are not anticipated by the project.

Temporary noise and construction activities within the BSA may preclude or disrupt nesting within the vegetated areas of the BSA (February 1 through August 31).

Roosting Bats

There is a potential for bats to roost in the I-80 underpass crossing at Buchanan Street and Gilman Street where an eastbound closed-circuit television camera would be installed (CCTV EB1a). There is a potential for roosting bats to be adversely affected by carbon monoxide emissions from construction vehicles if bats are roosting when installation machinery is parked under the underpass. The Build Alternative would not require the removal of any trees within the BSA. As such, the direct mortality of roosting bats as a result of tree removal is not anticipated by the project.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative and therefore avoid the effects on animal species associated with the Build Alternative.

2.4.4.4 Avoidance, Minimization, and/or Mitigation Measures

Pursuant to CEQA and NEPA, the Department has proposed a number of reasonable and prudent measures to minimize and avoid impacts to special-status animal species. These measures are considered part of the project design, as described below.

Measures to implement erosion control BMPs and storm water pollution prevention plans would also reduce adverse effects to western pond turtle habitat within the BSA.

Environmental Awareness Training

Before the onset of construction activities, a qualified biologist would conduct an education program for all construction personnel. The training would include a description of special-status species and their potential habitats within or adjacent to the project corridor. A fact sheet would be prepared and distributed to all construction crews conveying: (1) the status of these species and their protection under the Endangered Species Act; (2) the measures to conserve listed species and their habitats as they relate to the work site; and (3) the identification of the habitat boundaries within which construction may occur. Upon completion of the program, personnel would sign a form stating that they attended the program and understand all the avoidance and minimization measures.

Construction Site Management Practices

The following restrictions would be implemented to avoid or minimize effects on listed species and their habitats:

a) A speed limit of 20 miles per hour (mph) in the project footprint in unpaved areas would be enforced to reduce dust and excessive soil disturbance.
b) Construction access, staging, storage, and parking areas would be located within the Caltrans project ROW or temporary easements and outside of any designated environmentally sensitive areas (see discussion below). Access routes and the number and size of staging and work areas would be limited to the minimum necessary to construct the project. Routes and boundaries of roadwork would be clearly marked prior to initiating construction or grading.
c) For on-site storage of pipes and conduits and other materials that could provide shelter for listed animals, an open top trailer would be used to elevate the materials above ground. This will reduce the potential for animals to climb into the conduits and other materials.
d) All food and food-related trash items would be enclosed in sealed trash containers and removed completely from the site at the end of each day.
e) No pets from project personnel would be allowed anywhere in the construction areas.
f) No firearms would be allowed in the project corridor except for those carried by authorized security personnel, or local, state or federal law enforcement officials.

Seasonal Work Restrictions

In areas adjacent to salt marsh habitat, work would be restricted to the non-nesting season, from September 1 to January 31. The MBTA, as discussed above in Section 2.4.4.2, also limits vegetation clearing (shrubs, etc.) throughout the proposed project to the non-nesting season, from September 1 through January 31.

No work would be conducted in the area of Codornices Creek during the overwintering season for monarch butterflies (October 1 through February 28).

To the extent practicable, in areas where California red-legged frog may occur, construction would be restricted to May 1 to October 15.

To the extent practicable, in areas where Alameda whipsnake may occur, construction would be restricted to March 1 to November 15.

Preconstruction Surveys

Protected Bird Species

If construction activities are scheduled to occur during the nesting season for protected bird species with the potential to occur within the project corridor (February 1 through August 31), a preconstruction nesting bird survey would be performed by a qualified biologist within seven days of ground breaking activities. The preconstruction survey would identify any active nest sites within or immediately adjacent to the project corridor. If no nesting sites are observed, no further action is required and grading would occur within one week of the survey.

If preconstruction surveys indicate that nesting sites would be impacted by construction activities, a no-disturbance buffer (i.e. 300 feet for raptors) would be established around the nest to avoid disturbance or destruction of the nest until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late-June to August). To delineate the buffer zone around a nesting tree, orange construction fencing would be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude. The extent of these buffers would be determined by a wildlife biologist in consultation with the California Department of Fish and Game, and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers.

Areas of bare ground or with grass less than six inches in height may attract western burrowing owls during the winter season. If construction is to occur after a period of inactivity and soil is left barren, a burrowing owl habitat evaluation to determine occupancy of the site would be conducted prior to ground disturbance the following season.

Roosting Bats

Conduct preconstruction surveys of the I-80 underpass crossing at Buchanan Street and Gilman Street for roosting bats where an eastbound closed-circuit television camera would be installed (CCTV EB1a). If roosting bats are present, consultation with CDFG is necessary to assess options for avoiding impacts on the bats. Avoidance could include determining a no-disturbance buffer around maternal bat roosts, appropriate timing for construction, or the feasibility of installing exclusion devices at roosts.

Restricted Construction Methods

No pile driving would occur at any of the gantry locations adjacent to salt marsh habitat.

To the extent practicable, nighttime construction will be minimized to avoid effects to nocturnally active species, especially for those areas adjacent to salt marsh habitat. All lighting shall be directed away from potential special-status species habitat when nighttime work is to be conducted.

Predator Perches

To prevent increased predation on threatened and endangered species through the provision of additional artificial perch structures, the project would incorporate anti-predator perching devices on gantries and sign structures located adjacent to sensitive areas such as salt marsh habitat and California red-legged frog habitat.

Conduit Installation

In general, a trencher machine would be used to create new conduits for the electrical and/or fiber optic lines. In some locations, existing conduit can be used and no ground disturbance would be required. As previously discussed, all work would be relocated to avoid and reduce potential impacts to environmentally sensitive areas.

In order to avoid potential construction-related impacts to protected trees along the project corridor, the project design would include conduit runs that would be routed outside of tree drip lines to the extent practicable. In cases where the conduit cannot be routed away from the tree's drip line, hand digging would be used for placing the conduit to ensure that no root systems in the area are damaged. If necessary, trenchless construction techniques would be used to place the conduit without damaging tree roots. A Department-approved biologist would be on hand during construction activities that could impact trees to oversee hand digging, tree pruning, and other construction activities within tree drip lines.

The electric and communications conduit being placed at the I-80 crossing at Buchanan Street (CCTV EB1a) would be installed using horizontal directional drilling to prevent impacts to bats potentially roosting in the overpass. All directional drilling adjacent to salt marsh habitat would be conducted on the east side of the frontage road to the westbound lanes. The staging for the work would be placed on the east side of the overpass to avoid adding harmful exhaust into the area.

2.4.5 Threatened and Endangered Species

2.4.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code USC, Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion (BO) or an Incidental Take Statement. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.4.5.2 Affected Environment

The identification of threatened and endangered species with potential to occur in the region was based on a search of the USFWS Species List Database, the CNDDB, and the CNPS Inventory of Rare and Endangered Plants for the four USGS quadrangles within the BSA, as well as field reconnaissance surveys, habitat assessments, and the wetland delineation survey completed for the project. The results of these efforts are further discussed in the appropriate sections above, and are documented in the NES.

As previously discussed, there are no threatened or endangered plant species with the potential to occur within the BSA. The database searches identified 41 special-status wildlife species that could potentially occur in the region. **Appendix E** lists each of these species and describes whether or not the species could occur in the BSA. Of these 41 wildlife species, five are listed as endangered or threatened under CESA or FESA:

- California red-legged frog (*Rana draytonii*)
- Alameda whipsnake (*Masticophis lateralis euryxanthus*)
- California clapper rail (*Rallus longirostris obsoletus*)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*)
- California black rail (*Laterallus jamaicensis coturniculus*).

Biological Assessment

A Biological Assessment (BA) was prepared as part of the consultation process with the USFWS to determine if the Build Alternative would likely jeopardize the continued existence of threatened or endangered species or adversely affect critical habitat. Pursuant to CEQA and NEPA, the Department

proposed a number of reasonable and prudent measures to minimize and avoid impacts to threatened or endangered animal species. These measures are considered part of the project design and are described in detail in Chapter 1. As a result, the Build Alternative is not anticipated to result in the "take" of any of the listed species described in this section. The project effects are primarily temporary and discountable with the avoidance and minimization measures in place, and the permanent effects are insignificant and limited to very small discreet locations. Chapter 3 includes the correspondence with USFWS to date.

The USFWS issued a letter of concurrence for the project on June 30, 2011. (See **Appendix F**).

California Red-legged Frog

The California red-legged frog (CRLF) is federally listed as threatened. CRLF are found in aquatic sites that support substantial riparian and aquatic vegetation and lack non-native predators. Upland CRLF habitat includes areas up to 295 feet from a stream corridor or breeding pond and includes natural features, such as boulders, rocks, trees, shrubs, and logs. In general, densely vegetated terrestrial areas within the riparian corridor provide important sheltering habitat during the winter flooding of the streams. Over-harvesting, habitat loss, non-native species introduction, and urban encroachment are the primary factors that have negatively affected the species throughout its range.

Within the BSA, CRLF habitat is present in the southeast quadrant of the I-80/SR-4 interchange in a tributary to Refugio Creek that supports deep pools. In this area there is a documented occurrence (#407, CNDDB 2010) reporting the identification 2 adults and 9 juvenile CRLF in the year 2000. There are no known occurrences of CRLF in the pond in the northeastern quadrant of the I-80/SR-4 interchange; however, this area is hydrologically connected to the pond on the southeastern quadrant. As such, both areas have potential to be occupied by CRLF. Although the grasslands adjacent to the ponds provide potential upland habitat for CRLF, the quadrants are separated by heavily used roadways that make the movement of CRLF from one quadrant to the other unlikely.

There is also the potential for CRLF to occur in the upper watersheds of the creeks that traverse the BSA, such as San Pablo Creek. The nearest documented occurrence of CRLF in these upper watershed areas was a 2008 sighting near San Pablo reservoir, approximately four miles from the BSA. For individual frogs to access the BSA from this area, they would have to be washed downstream through four miles of urbanized creek.

The closest USFWS-designated critical habitat for CRLF (CSS-1) is located approximately two miles east of the BSA. Given that this habitat is located well outside the BSA, it is not discussed further in this assessment.

Alameda Whipsnake

The Alameda whipsnake is both state and federally listed as threatened. The Alameda whipsnake typically occupies habitats on east, southeast, south, and southwest facing slopes that contain coastal scrub and chaparral and rock outcrops. Vegetation communities (e.g., annual grassland, blue oak-foothill pine, blue oak woodland, coastal oak woodland, valley oak woodland, eucalyptus, redwood, and riparian communities) adjacent to scrub habitat is considered a feature essential to the conservation of the Alameda whipsnake.

There are reported sightings of the Alameda whipsnake east and northeast of the northern portion of the BSA. The closest documented occurrence (AWS #74, CNDDB 2010) was in 2002, approximately 3.25 miles east of the project BSA, just south of Franklin Canyon Road. Because of the relative proximity to the nearest reported occurrence, the presence of the Alameda whipsnake is likely within potential foraging habitats in the BSA.

No Critical Habitat occurs for the Alameda whipsnake within or adjacent to the BSA.

California Clapper Rail

The California clapper rail is both state and federally listed as endangered. The typical habitat for this species is salt marsh broken up by tidal sloughs, where cordgrass and pickleweed dominate. The California clapper rail tends to concentrate along edges of tidal creeks or marshes during the breeding season. Nests are usually built in dense cover above the high water mark. In Alameda County, the California clapper rail is known to breed in the Emeryville Crescent, and potentially forage in the salt marsh habitat areas west of the BSA (CCR #79, USFWS 2010b).

No Critical Habitat occurs for the California clapper rail within or adjacent to the BSA.

Salt Marsh Harvest Mouse

The salt marsh harvest mouse is both state and federally listed as endangered. The salt marsh harvest mouse inhabits tidal and non-tidal salt and brackish marshes around San Francisco Bay. Optimal habitat for this species typically contains a dense mat of vegetation cover and a network of open areas, usually of pickleweed. Mice have also been observed to move into adjoining grasslands during the highest winter tides. Subsidence and diking have removed most of the habitat for the salt marsh harvest mouse and few mice can survive in the created wetlands that do not support salt tolerant upland species.

The salt marsh harvest mouse was reported at the Emeryville Crescent salt marsh in 1982 and 1987 (SMHM #102, CNDDB 2010). There are approximately 0.54 acres of suitable salt marsh harvest mouse habitat within the BSA.

California Black Rail

The California black rail is state listed as threatened. This species occupies tidal and freshwater marshes in coastal California between Bodega Bay and Morro Bay and inland at the Salton Sea and lower Colorado River. Drastic population declines have been recorded throughout its range, corresponding with the widespread loss of marsh habitat to agriculture, salt-production and urban development. Nesting habitat generally consists of a dense cover of pickleweed, bulrush, saltgrass and/or cattails near the upper limits of tidal flooding.

In Alameda County, rails are known to breed in the Emeryville Crescent, and potentially forage in the salt marsh habitat areas west of the BSA (USFWS 2010). There are approximately 0.54-acres of suitable black rail habitat within the BSA.

2.4.5.3 Environmental Consequences

Build Alternative

The USFWS issued a letter of concurrence for the project on June 30, 2011. (See **Appendix F**).

California Red-legged Frog

The Build Alternative would permanently impact approximately 0.0017 acres and temporarily impact 1.09 acres of CRLF upland dispersal habitat. Effects to habitat would be associated with the placement of the Intelligent Transportation Systems devices along the freeway ROW. Permanent impacts to a federally listed threatened or endangered species are considered a significant adverse impact. Construction vehicle traffic, vehicle parking, and staging also could generate construction-related sediment or storm water runoff, which could indirectly affect adjacent suitable CRLF habitat by degrading water quality. The BA and subsequent USFWS letter of concurrence concluded that the project is not likely to adversely affect the CRLF.

Alameda Whipsnake

The Build Alternative would permanently impact approximately 0.0047 acres and temporarily impact 1.26 acres of Alameda whipsnake upland foraging habitat. Effects to habitat would be associated with the placement of the Intelligent Transportation Systems devices along the freeway ROW. Permanent impacts to a federally listed threatened or endangered species are considered a significant adverse impact. Construction vehicle traffic, vehicle parking, and staging also could generate construction-related sediment or storm water runoff, which could indirectly affect adjacent suitable whipsnake habitat by degrading water quality. The BA and subsequent USFWS letter of concurrence concluded that the project is not likely to adversely affect the Alameda whipsnake.

California Clapper Rail

No direct displacement of California clapper rail habitat would occur from the implementation of the Build Alternative.

Construction noise could potentially affect individual clapper rails in the adjacent salt marsh habitat. There is also a potential that clapper rails would be indirectly impacted by the predator perches provided by the Build Alternative.

The BA and subsequent USFWS letter of concurrence concluded that the project is not likely to adversely affect the California clapper rail.

Salt Marsh Harvest Mouse

No direct displacement of salt marsh harvest mouse habitat would occur from the implementation of the Build Alternative. However, there is potential that salt marsh harvest mice would be indirectly impacted by the Build Alternative where predator perches are provided. Permanent impacts to a federally listed threatened or endangered species are considered a significant adverse impact.

Construction vehicle traffic, vehicle parking, and staging also could generate construction-related sediment or storm water runoff, which could indirectly affect adjacent suitable salt marsh harvest mouse habitat by degrading water quality.

The BA and subsequent USFWS letter of concurrence concluded that the project is not likely to adversely affect the salt marsh harvest mouse.

California Black Rail

No direct displacement of California black rail habitat would occur from the implementation of the Build Alternative.

Construction noise could potentially affect individual black rails in the adjacent salt marsh habitat. There is also a potential that black rails would be indirectly impacted by the predator perches provided by the Build Alternative.

The BA and subsequent USFWS letter of concurrence concluded that the project is not likely to adversely affect the California black rail.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative and therefore avoid the effects on threatened and endangered species associated with the Build Alternative.

2.4.5.4 Avoidance, Minimization, and/or Mitigation Measures

Pursuant to CEQA and NEPA, the Department has proposed a number of reasonable and prudent measures to minimize and avoid impacts to threatened or endangered animal species. These measures are considered part of the project design, as described below. As a result, the Build Alternative is not anticipated to result in the "take" of any of the listed species described in this section as defined by Section 86 of the California Fish and Game Code and Section 2.4.5.1 above. The project effects are primarily temporary and discountable with the avoidance and minimization measures in place, and the permanent effects are insignificant and limited to very small discreet locations.

Preconstruction Surveys

Special-Status Animal Species

Preconstruction surveys would be conducted by a U.S. Fish and Wildlife Service (USFWS)-approved biologist immediately prior to the initiation of any ground disturbing activities within or adjacent to suitable habitat for special-status animal species. Visual encounter surveys would be conducted within areas subject to ground disturbing activities. All suitable aquatic and upland habitat including refugia habitat such as under shrubs, downed logs, small woody debris, burrows, etc., would be thoroughly inspected. If a special-status species is observed, the individual(s) would not be captured or handled without authorization from the USFWS, and would be allowed to move away on its own.

Avoidance of Entrapment

To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep would be covered at the close of each working day with plywood or other suitable material, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled they must be thoroughly inspected for trapped animals. In

addition, the contractor would seal (using tape at both ends) all pipes or tubing 4 inches or greater to prevent animals from entering the pipes at night. All pipes, culverts, or similar structures stored overnight would be inspected before they are subsequently moved, capped, and/or buried. If at any time a listed species is discovered, the Resident Engineer and USFWS-approved biologist would be immediately informed. The animal would be allowed to move out of the area on its own.

Wildlife Exclusion Fencing

Specific areas that may be in proximity of or adjacent to special-status animal species habitat may require the installation of wildlife exclusion fencing. These areas would be identified by a USFWS-approved biologist and shown on the project design plans. The installation of the fencing would be directed by the qualified biologist and the Department's Resident Engineer based on habitat suitability. The special provisions of the bid solicitation package would clearly describe acceptable fencing material and proper fencing installation and maintenance.

California red-legged frog exclusion fencing consists of silt fence that extends 20 feet beyond the area of construction activities in specific locations, with the ends angled back towards the habitat to direct movement back to the aquatic habitat. When construction activities in or adjacent to Alameda whipsnake habitat are anticipated to last longer than 10 days, exclusion fencing would consist of plywood.

The fencing would remain in place throughout the duration of project-related construction activities, and would be regularly inspected and maintained. The fencing would be completely removed upon completion of project. The topography and grade would be restored to preconstruction conditions, and the areas revegetated to preconstruction condition or better.

Erosion Control Materials

To prevent animals from becoming entangled or trapped in erosion control materials, plastic mono-filament netting (i.e., erosion control matting) or similar material would not be used. Several commercially available products that are marketed as photodegradable and biodegradable contain synthetic netting, which can take several months to decompose and should not be used in habitat areas. Acceptable erosion control materials are those that use natural fibers such as jute, coconut, twine or other similar fibers.

Construction Monitoring

A USFWS-approved biologist would be present on site during active construction in areas identified as potential special-status animal species habitat. The biologist would conduct work area clearance surveys at the beginning of each day and regularly throughout the workday during active construction within or adjacent to suitable habitat areas.

If special-status animal species are observed during the course of active construction, all construction activities within 50 feet of the animal(s) would be stopped. Using best professional judgment, the USFWS-approved biologist may determine that project activities can be resumed without harming or injuring the animal(s). At no time shall work occur within 50 feet of the animal without the biological monitor present. The animal(s) would not be captured or handled without authorization from the USFWS, and would be allowed to move away on its own.

Conduit Installation

All trenching would be conducted on the side of roadways furthest from identified California red-legged frog breeding habitat, where possible. Otherwise, horizontal directional drilling[2] would be used in areas closer to this sensitive habitat. Horizontal directional drilling would be used to install conduit between the Powell Street and Ashby Avenue interchanges (a distance of approximately 1 mile) and along the south side of Buchanan Street between I-80 and I-580 (a distance of approximately 300 feet). All directional drilling adjacent to salt marsh habitat would be conducted on the east side of the frontage road to the westbound lanes.

Any removal of vegetation near Alameda whipsnake habitat would be conducted using hand tools (i.e., weed-whacker).

Measures to implement erosion control BMPs and storm water pollution prevention plans would also reduce indirect impacts on special-status animal species habitat within the BSA.

2.4.6 Invasive Species

2.4.6.1 Regulatory Setting

On February 3, 1999, President Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States (U.S.). The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the State's invasive species list currently maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a project.

2.4.6.2 Affected Environment

The following analysis is based on the NES approved in February 2011 (Department, 2011c). Reconnaissance level surveys of the BSA were conducted to determine the potential for invasive plant species to occur in the BSA.

Weedy, non-native grasses are dominant throughout the upland portions of the BSA and are particularly dense in the northern portion of the BSA. The presence and density of the weeds can be attributed to the intense and frequent disturbance of native plant communities by human activities. Non-native landscaped plantings such as Pines (*Pinus* spp.) and Eucalyptus (*Eucalyptus* spp.) trees are also common immediately adjacent to I-80 in the central and southern portions of the BSA. In addition, five exotic, invasive plant species identified by the California Invasive Plant Council were observed in the BSA.

- Pampas grass (*Cortaderia selloana*)
- Wild fennel (*Foeniculum vulgare*)
- Himalayan blackberry (*Rubus discolor)*

[2] Horizontal directional drilling is a steerable, trenchless method of installing underground conduits with minimal impact on the surrounding area.

- Atlantic or smooth cordgrass (*Spartina alterniflora)*
- Black mustard (*Brassica nigra)*

2.4.6.3 Environmental Consequences

Build Alternative

Construction activities may introduce or spread noxious weeds (non-native, invasive plants) into currently uninfested areas within or adjacent to the BSA. Once established, these weeds may invade wildlands, potentially degrading existing habitat for special-status plants and animals. The spread of noxious weeds could also result in a reduction or elimination of species diversity or abundance within the BSA and adjacent areas.

None of the species on the California list of noxious weeds are currently used by the Department for erosion control or landscaping, and would not be used in areas that would be temporarily disturbed during construction and require restoration.

No-Build Alternative

The No-Build Alternative would avoid implementation of system management strategies within the project corridor, including ramp meter signal installations, large gantries, stand-alone variable advisory speed signs and information display boards proposed under the Build Alternative and therefore avoid the effects on invasive species associated with the Build Alternative.

2.4.6.4 Avoidance, Minimization, and/or Mitigation Measures

Avoidance measures discussed in Section 2.4.1 regarding erosion control, storm water pollution prevention plans, replanting and re-seeding disturbed areas, and restrictions of construction activities will help to reduce adverse effects from invasive species.

To minimize the dispersal of invasive species, construction supervisors and managers shall be educated on weed identification and the importance of controlling and preventing the spread of noxious weeds. Areas with populations of high-priority noxious weed infestations shall be identified and flagged for easy identification by construction crews. Construction equipment shall be cleaned after leaving areas with high-priority noxious weed infestation areas.

In addition, in compliance with the EO 13112, and subsequent guidance from the FHWA, the landscaping and erosion control included in the project will not use species listed as noxious weeds. Erosion control species would be certified "weed free" to reduce the chances of introducing a new invasive species to the area. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

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